

**MAJOR STORMWATER MANAGEMENT PLAN
(MAJOR SWMP)**

For

***Winter Gardens Apartments
PDS2014-STP-14-013***

County of San Diego

Applicant/Developer:
Mr. Eric Wilson
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Prepared By:

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LK0313

Dated: December 18, 2014
Revised: September 8, 2015

**Major Stormwater Management Plan
(Major SWMP)
For
WINTER GARDENS APARTMENTS
PDS2014-STP-14-013**

**Preparation/Revision Date:
December 18, 2014/September 8, 2015**

Prepared for:

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The selection, sizing, and preliminary design of stormwater treatment and other control measures in this plan have been prepared under the direction of the following Registered Civil Engineer and meet the requirements of Regional Water Quality Control Board Order R9-2007-0001 and subsequent amendments.

William A. Snipes, RCE 50477



9/15/15
Date

The Major Stormwater Management Plan (Major SWMP) must be completed in its entirety and accompany applications to the County for a permit or approval associated with certain types of development projects. To determine whether your project is required to submit a Major or Minor SWMP, please reference the County's Stormwater Intake Form for Development Projects.

Project Name:	Winter Gardens Apartments
Project Location:	9208-9224 Winter Gardens Blvd., Lakeside, CA 92040
Permit Number (Land Development Projects):	PDS2014-STP-14-013
Work Authorization Number (CIP only):	
Applicant:	Eric Wilson
Applicant's Address:	3739 Rosecroft Lane, San Diego, CA 92106
Plan Prepared By (<i>Leave blank if same as applicant</i>):	Snipes-Dye Associates
Preparer's Address:	8348 Center Drive, Suite G, La Mesa, CA 91942-2910
Date:	September 8, 2015

The County of San Diego Watershed Protection, Storm Water Management, and Discharge Control Ordinance (WPO) (Ordinance No. 9926) requires all applications for a permit or approval associated with a Land Disturbance Activity to be accompanied by a Storm Water Management Plan (SWMP) (section 67.806.b). The purpose of the SWMP is to describe how the project will minimize the short and long-term impacts on receiving water quality. Projects that meet the criteria for a priority development project are required to prepare a Major SWMP.

Since the SWMP is a living document, revisions may be necessary during various stages of approval by the County. Please provide the approval information requested below.

Project Stages	Does the SWMP need revisions?		If YES, Provide Revision Date
	YES	NO	

Instructions for a Major SWMP can be downloaded at <http://www.sdcounty.ca.gov/dpw/watersheds/susmp/susmp.html>

Completion of the following checklists and attachments will fulfill the requirements of a Major SWMP for the project listed above.

STEP 1

PRIORITY DEVELOPMENT PROJECT DETERMINATION

TABLE 1: IS THE PROJECT IN ANY OF THESE CATEGORIES?

Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	A	Housing subdivisions of 10 or more dwelling units. Examples: single-family homes, multi-family homes, condominiums, and apartments.
Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	B	Commercial—greater than one acre (total disturbed area). Any development other than heavy industry or residential. Examples: hospitals; laboratories and other medical facilities; educational institutions; recreational facilities; municipal facilities; commercial nurseries; multi-apartment buildings; car wash facilities; mini-malls and other business complexes; shopping malls; hotels; office buildings; public warehouses; automotive dealerships; airfields; and other light industrial facilities.
Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	C	Heavy industry—greater than one acre (total disturbed area). Examples: manufacturing plants, food processing plants, metal working facilities, printing plants, and fleet storage areas (bus, truck, etc.).
Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	D	Automotive repair shops. A facility categorized in any one of Standard Industrial Classification (SIC) codes 5013, 5014, 5541, 7532-7534, or 7536-7539.
Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	E	Restaurants. Any facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC code 5812), where the land area for development is greater than 5,000 square feet. Restaurants where land development is less than 5,000 square feet shall meet all SUSMP requirements except for structural treatment BMP and numeric sizing criteria requirements and hydromodification requirements.
Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	F	Hillside development greater than 5,000 square feet. Any development that creates 5,000 square feet of impervious surface and is located in an area with known erosive soil conditions, where the development will grade on any natural slope that is twenty-five percent or greater.
Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	G	Environmentally Sensitive Areas (ESAs). All development located within or directly adjacent to or discharging directly to an ESA (where discharges from the development or redevelopment will enter receiving waters within the ESA), which either creates 2,500 square feet of impervious surface on a proposed project site or increases the area of imperviousness of a proposed project site to 10% or more of its naturally occurring condition. “Directly adjacent” means situated within 200 feet of the ESA. “Discharging directly to” means outflow from a drainage conveyance system that is composed entirely of flows from the subject development or redevelopment site, and not commingled with flows from adjacent lands.
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	H	Parking lots 5,000 square feet or more or with 15 or more (paved) parking spaces and potentially exposed to urban runoff.
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	I	Street, roads, highways, and freeways. Any paved surface that is 5,000 square feet or greater used for the transportation of automobiles, trucks, motorcycles, and other vehicles.
Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	J	Retail Gasoline Outlets (RGOs) that are: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.

To use the table, review each definition A through K. If any of the definitions match, the project is a Priority Development Project. Note some thresholds are defined by square footage of impervious area created; others by the total area of the development. Please see special requirements for previously developed sites and project exemptions on page 6 of the County SUSMP.

STEP 2

PROJECT STORMWATER QUALITY DETERMINATION

Total Project Site Area 4.31 Acres

Estimated amount of disturbed acreage: 3.28 Acres

(If >1 acre, you must also provide a WDID number from the SWRCB) WDID: (Will obtain prior to construction permit issuance)

Complete A through C and the calculations below to determine the amount of impervious surface on your project before and after construction.

A. Total size of project site: 4.31 Acres

B. Total impervious area (including roof tops) before construction 0.28 Acre

C. Total impervious area (including roof tops) after construction 1.46 Acres

Calculate percent impervious before construction: $B/A = \underline{6.5} \%$

Calculate percent impervious after construction: $C/A = \underline{33.9} \%$

Please provide detailed descriptions regarding the following questions:

TABLE 2: PROJECT SPECIFIC STORMWATER ANALYSIS

1.	Please provide a brief description of the project.
<p>The project is located in Lakeside, on the westerly side of Winter Gardens Boulevard between Cimbria Way and Pueblo Avenue. The 4.3-acre parcel is currently developed as two single-family residences and accessory structures. The project proposes the development of an eight building (60 unit) apartment complex. Access to the proposed development from Winter Gardens Boulevard via a proposed 26-foot wide private pervious paved driveway.</p>	
2.	Describe the current and proposed zoning and land use designation.
<p>The site is currently zoned RV (Residential Village) with minimum 6000-SF lot size. Land use designation is VR-4.3. The proposed zoning and land use designation are the same as the current.</p>	
3.	Describe the pre-project and post-project topography of the project. (Show on Plan)
<p>Pre-development: The site is occupied by two single-family residences, a detached garage and a paved driveway. Topography consists of flat land in the area occupied by the existing structures and driveway. The high point on-site, elevation 485, is located approximately at the southeast corner of site. The low point on-site, outside the creek, is located near the northwest corner of the site with an approximate elevation of 452. The elevation difference between high and low points is 33 feet in 700 feet run, approximately 4.7% average slope. It is sloping northerly across the site then westerly towards the existing natural drainage creek located along the westerly boundary. The adjoining road along the easterly boundary is slightly higher than site and slopes northerly. There is no stormwater runoff from the off-site area. The impervious surface consists of building rooftops and paved areas, approximately 6.5% of the site.</p> <p>Post-development: The proposed development consists of an eight building (60 unit) apartment complex with a 26-foot wide pervious paved driveway, and paved walkways. It will be between 0.25 to 2.0 feet difference in elevation between the building pads. The proposed impervious surface consists of building rooftops, paved walkways, and a private driveway, approximately 34% of the site. Site designs to create four sub-drainage basins. The northeasterly sub-basin (No. 1) consists of building pads 1 through 3, and the easterly portion of the proposed driveway. The northwesterly sub-basin (No. 2) consists of the westerly portion of the proposed driveway and building pads 4 and 5, as well as the northerly portion of building pads 7 and 8. The southwesterly sub-basin (No. 3) consists of building pad 6, the southerly portions of building pads 7 and 8, as well as the southwesterly portion of the private driveway. The fourth sub-basin bypasses the site and is located southeast of the site. The runoff from sub-basins 1, 2, and 3 will be collected in a private storm drain system where it will be conveyed westerly and discharged into the drainage creek near the west boundary of the site. All the runoff from these sub-basins will infiltrate into the pervious driveway pavement and directed into the proposed LIDs (sub-surface sand filter trenches). The LIDs are designed to meet both treatment and flow control (hydromodification) requirements in accordance to the County of San Diego Standard Urban Stormwater Mitigation Plan (SUSMP).</p>	

4.	Describe the soil classification, permeability, erodibility, and depth to groundwater for LID and Treatment BMP consideration. (Show on Plan) If infiltration BMPs are proposed, a Geotechnical Engineer must certify infiltration BMPs in Attachment E.
The BMP Sizing Calculator, from the San Diego County SUSMP, California, classifies surface soils of the areas where the LIDs are proposed as Hydrologic Soil Groups B and D. All infiltration trenches shall be equipped with an impermeable liner and subdrain.	
5.	Describe if contaminated or hazardous soils are within the project area. (Show on Plan)
There are no known contaminated or hazardous soils.	
6.	Describe the existing site drainage and natural hydrologic features. (Show on Plan).
See description in Item 3 above.	
7.	Describe site features and conditions that constrain, or provide opportunities for stormwater control, such as LID features.
The fill pads provide an opportunity for implementing the subsurface sand filter trenches.	
8.	Is this project within the environmentally sensitive areas as defined on the maps in Appendix A of the <i>County of San Diego Standard Urban Storm Water Mitigation Plan for Land Development and Public Improvement Projects</i> ?
Yes	
No	
9.	Is this an emergency project? If yes, please provide a description below.
Yes	
No	

CHANNELS & DRAINAGES

Complete the following checklist to determine if the project includes work in channels.

TABLE 3: CHANNEL & DRAINAGE ANALYSIS

No.	CRITERIA	YES	NO	N/A	COMMENTS
1.	Will the project include work in channels?		X		If YES go to 2 If NO go to 13.
2.	Will the project increase velocity or volume of downstream flow?				If YES go to 6.
3.	Will the project discharge to unlined channels?				If YES go to 6.
4.	Will the project increase potential sediment load of downstream flow?				If YES go to 6.
5.	Will the project encroach, cross, realign, or cause other hydraulic changes to a stream that may affect downstream channel stability?				If YES go to 8.
6.	Review channel lining materials and design for stream bank erosion.				Continue to 7.
7.	Consider channel erosion control measures within the project limits as well as downstream. Consider scour velocity.				Continue to 8.
8.	Include, where appropriate, energy dissipation devices at culverts.				Continue to 9.
9.	Ensure all transitions between culvert outlets/headwalls/wingwalls and channels are smooth to reduce turbulence and scour.				Continue to 10.
10.	Include, if appropriate, detention facilities to reduce peak discharges.				Continue to 11.
11.	“Hardening“ natural downstream areas to prevent erosion is not an acceptable technique for protecting channel slopes, unless pre-development conditions are determined to be so erosive that hardening would be required even in the absence of the proposed development.				Continue to 12.
12.	Provide other design principles that are comparable and equally effective.				Continue to 13.
13.	End				

TEMPORARY CONSTRUCTION BMPS

Please check the construction BMPs that may be implemented during construction of the project. The applicant will be responsible for the placement and maintenance of the BMPs incorporated into the final project design.

- Silt Fence
- Fiber Rolls
- Street Sweeping and Vacuuming
- Storm Drain Inlet Protection
- Stockpile Management
- Solid Waste Management
- Stabilized Construction Entrance/Exit
- Dewatering Operations
- Vehicle and Equipment Maintenance
- Any minor slopes created incidental to construction and not subject to a major or minor grading permit shall be protected by covering with plastic or tarp prior to a rain event, and shall have vegetative cover reestablished within 180 days of completion of the slope and prior to final building approval.
- Desilting Basin
- Gravel Bag Berm
- Sandbag Barrier
- Material Delivery and Storage
- Spill Prevention and Control
- Concrete Waste Management
- Water Conservation Practices
- Paving and Grinding Operations

EXCEPTIONAL THREAT TO WATER QUALITY DETERMINATION

Complete the checklist below to determine if a proposed project will pose an “exceptional threat to water quality,” and therefore require Advanced Treatment Best Management Practices during the construction phase.

TABLE 4: EXCEPTIONAL THREAT TO WATER QUALITY DETERMINATION

No.	CRITERIA	YES	NO	INFORMATION
1.	Is all or part of the proposed project site within 200 feet of waters named on the Clean Water Act (CWA) Section 303(d) list of Water Quality Limited Segments as impaired for sedimentation and/or turbidity? Current 303d list may be obtained from the following site: http://www.waterboards.ca.gov/water_issues/programs/tmdl/2010state_ir_reports/category5_report.shtml		X	If YES, continue to 2. If NO, go to 5.
2.	Will the project disturb more than 5 acres, including all phases of the development?			If YES, continue to 3. If NO, go to 5.
3.	Will the project disturb slopes that are steeper than 4:1 (horizontal: vertical) with at least 10 feet of relief, and that drain toward the 303(d) listed receiving water for sedimentation and/or turbidity?			If YES, continue to 4. If NO, go to 5.
4.	Will the project disturb soils with a predominance of USDA-NRCS Erosion factors k_f greater than or equal to 0.4? http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm			If YES, continue to 6. If NO, go to 5.
5.	Project is not required to use Advanced Treatment BMPs.			Document for Project Files by referencing this checklist.
6.	Project poses an “exceptional threat to water quality” and is required to use Advanced Treatment BMPs.			Advanced Treatment BMPs must be consistent with WPO section 67.811(b)(20)(D) performance criteria

Exemption potentially available for projects that require advanced treatment: Project proponent may perform a Revised Universal Soil Loss Equation, Version 2 (RUSLE 2), Modified Universal Soil Loss Equation (MUSLE), or similar analysis that shows to the County official’s satisfaction that advanced treatment is not required.

STEP 3

HYDROMODIFICATION DETERMINATION

The following questions provide a guide to collecting information relevant to hydromodification management plan (HMP) issues. If the project is exempt from the HMP criteria, please provide the supporting documentation in Attachment H. Please reference the full descriptions of the HMP exemptions located in Figure 1-1 of the County SUSMP.

TABLE 5: HYDROMODIFICATION DETERMINATION

	QUESTIONS	YES	NO	Information
1.	Will the project reduce the pre-project impervious area and are the unmitigated post-project outflows (outflows without detention routing) to each outlet location less as compared to the pre-project condition?		X	If NO, continue to 2. If YES, go to 7.
2.	Would the project site discharge runoff directly to an exempt receiving water, such as the Pacific Ocean, San Diego Bay, an exempt reservoir, or a tidally-influenced area?		X	If NO, continue to 3. If YES, go to 7.
3.	Would the project site discharge to a stabilized conveyance system, which has the capacity for the ultimate Q10, and extends to the Pacific Ocean, San Diego Bay, a tidally-influenced area, an exempt river reach or reservoir?		X	If NO, continue to 4. If YES, go to 7.
4.	Does the contributing watershed area to which the project discharges have an impervious area percentage greater than 70 percent?		X	If NO, continue to 5. If YES, go to 6.
5.	Is this an urban infill project which discharges to an existing hardened or rehabilitated conveyance system that extends beyond the “domain of analysis,” where the potential for cumulative impacts in the watershed are low, and the ultimate receiving channel has a “Low” susceptibility to erosion as defined in the SCCWRP channel assessment tool?		X	If NO, continue to 6. If YES, go to 7.
6.	Project is required to manage hydromodification impacts.			Reference Appendix G “Hydromodification Management Plan” of the County SUSMP.
7.	Project is not required to manage hydromodification impacts.			See Hydromodification Exemption letter in Attachment H.

STEP 4

POLLUTANTS OF CONCERN DETERMINATION

WATERSHED

Please check the watershed(s) for the project.

San Juan 901	Santa Margarita 902	San Luis Rey 903	Carlsbad 904
San Dieguito 905	Penasquitos 906	<input checked="" type="checkbox"/> San Diego 907	Sweetwater 909
Otay 910	Tijuana 911	Whitewater 719	Clark 720*
West Salton 721*	Anza Borrego 722*	Imperial 723*	

http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/index.shtml

*Projects located fully within these watersheds require only a Minor SWMP.

HYDROLOGIC SUB-AREA NAME AND NUMBER(S)

Basin Number	Sub-Area Name
907.1	Lower San Diego

http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/index.shtml

SURFACE WATERS that each project discharge point proposes to discharge to.

SURFACE WATERS (river, creek, stream, etc.)	Hydrologic Unit Basin Number	Impairment(s) listed [303(d) listed waters or waters with established TMDLs]. List the impairments identified in Table 7	Distance to Project
Los Coches Creek	907.12	Selenium	0.8 mi.

http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/303dlists2006/epa/r9_06_303d_reqtmlds.pdf

GROUND WATERS

Ground Waters	Hydrologic Unit Basin Number	MUN	AGR	IND	PROC	GWR	FRESH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Santee	907.12	●	●	●	●											

http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/index.shtml

+ Exempted from Municipal

● Existing Beneficial Use

○ Potential Beneficial Use

PROJECT ANTICIPATED AND POTENTIAL POLLUTANTS

Using Table 6, identify pollutants that are anticipated to be generated from the proposed priority project categories. Pollutants associated with any hazardous material sites that have been remediated or are not threatened by the proposed project are not considered a pollutant of concern.

TABLE 6: ANTICIPATED AND POTENTIAL POLLUTANTS GENERATED BY LAND USE TYPE

<i>PDP Categories</i>	<i>General Pollutant Categories</i>								
	Sediments	Nutrients	Heavy Metals	Organic Compounds	Trash & Debris	Oxygen Demanding Substances	Oil & Grease	Bacteria & Viruses	Pesticides
Detached Residential Development	X	X			X	X	X	X	X
Attached Residential Development	X	X			X	P ⁽¹⁾	P ⁽²⁾	P	X
Commercial Development 1 acre or greater	P ⁽¹⁾	P ⁽¹⁾		P ⁽²⁾	X	P ⁽⁵⁾	X	P ⁽³⁾	P ⁽⁵⁾
Heavy industry /industrial development	X		X	X	X	X	X		
Automotive Repair Shops			X	X ⁽⁴⁾⁽⁵⁾	X		X		
Restaurants					X	X	X	X	
Hillside Development >5,000 ft ²	X	X			X	X	X		X
Parking Lots	P⁽¹⁾	P⁽¹⁾	X		X	P⁽¹⁾	X		P⁽¹⁾
Retail Gasoline Outlets			X	X	X	X	X		
Streets, Highways & Freeways	X	P ⁽¹⁾	X	X ⁽⁴⁾	X	P ⁽⁵⁾	X		

X = anticipated

P = potential

- (1) A potential pollutant if landscaping exists on-site.
- (2) A potential pollutant if the project includes uncovered parking areas.
- (3) A potential pollutant if land use involves food or animal waste products.
- (4) Including petroleum hydrocarbons.
- (5) Including solvents.

PROJECT POLLUTANTS OF CONCERN SUMMARY TABLE

Please summarize the identified project pollutant of concern by checking the appropriate boxes in the table below and list any surface water impairments identified. Pollutants anticipated to be generated by the project, which are also causing impairment of receiving waters, shall be considered the primary pollutants of concern. For projects where no primary pollutants of concern exist, those pollutants identified as anticipated shall be considered secondary pollutants of concern.

TABLE 7: PROJECT POLLUTANTS OF CONCERN

Pollutant Category	Anticipated (X)	Potential (P)	Surface Water Impairments (determined by your receiving waters impairments on page 10)
Sediments	X		
Nutrients	X		
Heavy Metals	X		
Organic Compounds			
Trash & Debris	X		
Oxygen Demanding Substances	X		
Oil & Grease	X		
Bacteria & Viruses	X		
Pesticides	X		

STEP 5

LID AND SITE DESIGN STRATEGIES

Each numbered item below is a Low Impact Development (LID) requirement of the WPO. Please check the box(s) under each number that best describes the LID BMP(s) and Site Design Strategies selected for this project. LID BMPs selected on this table will be typically represented as a self-retaining area, self-treating area, pervious pavement and greenroof, which, should be delineated in the Drainage Management Area map in Attachment C.

TABLE 8: LID AND SITE DESIGN

1. Conserve natural Areas, Soils, and Vegetation
<input checked="" type="checkbox"/> Preserve well draining soils (Type A or B)
<input checked="" type="checkbox"/> Preserve Significant Trees
<input checked="" type="checkbox"/> Preserve critical (or problematic) areas such as floodplains, steep slopes, wetlands, and areas with erosive or unstable soil conditions.
<input type="checkbox"/> Other. Description:
2. Minimize Disturbance to Natural Drainages
<input checked="" type="checkbox"/> Set-back development envelope from drainages
<input checked="" type="checkbox"/> Restrict heavy construction equipment access to planned green/open space areas
<input type="checkbox"/> Other. Description:
3. Minimize and Disconnect Impervious Surfaces (see 5)
<input type="checkbox"/> Clustered Lot Design
<input checked="" type="checkbox"/> Items checked in 5?
<input type="checkbox"/> Other. Description:
4. Minimize Soil Compaction
<input checked="" type="checkbox"/> Restrict heavy construction equipment access to planned green/open space areas
<input type="checkbox"/> Re-till soils compacted by construction vehicles/equipment
<input type="checkbox"/> Collect & re-use upper soil layers of development site containing organic Materials
<input type="checkbox"/> Other. Description:
5. Drain Runoff from Impervious Surfaces to Pervious Areas
<u>LID Street & Road Design</u>
<input type="checkbox"/> Curb-cuts to landscaping
<input type="checkbox"/> Rural Swales
<input type="checkbox"/> Concave Median
<input type="checkbox"/> Cul-de-sac Landscaping Design
<input checked="" type="checkbox"/> Other. Description: Portion of street flow from project site is part of a major offsite drainage basin that is infeasible to treat.
<u>LID Parking Lot Design</u>
<input checked="" type="checkbox"/> Permeable Pavements

<input type="checkbox"/> Curb-cuts to landscaping
<input type="checkbox"/> Other. Description:
<u>LID Driveway, Sidewalk, Bike-path Design</u>
<input checked="" type="checkbox"/> Permeable Pavements
<input checked="" type="checkbox"/> Pitch pavements toward landscaping
<input type="checkbox"/> Other. Description:
<u>LID Building Design</u>
<input type="checkbox"/> Cisterns & Rain Barrels
<input type="checkbox"/> Downspout to swale
<input type="checkbox"/> Vegetated Roofs
<input type="checkbox"/> Other. Description:
<u>LID Landscaping Design</u>
<input checked="" type="checkbox"/> Soil Amendments
<input checked="" type="checkbox"/> Reuse of Native Soils
<input checked="" type="checkbox"/> Smart Irrigation Systems
<input type="checkbox"/> Street Trees
<input type="checkbox"/> Other. Description:
6. Minimize erosion from slopes
<input type="checkbox"/> Disturb existing slopes only when necessary
<input type="checkbox"/> Minimize cut and fill areas to reduce slope lengths
<input checked="" type="checkbox"/> Incorporate retaining walls to reduce steepness of slopes or to shorten slopes
<input type="checkbox"/> Provide benches or terraces on high cut and fill slopes to reduce concentration of flows
<input type="checkbox"/> Rounding and shaping slopes to reduce concentrated flow
<input type="checkbox"/> Collect concentrated flows in stabilized drains and channels
<input type="checkbox"/> Other. Description:

STEP 6

SOURCE CONTROL

Please complete the checklist on the following pages to determine Source Control BMPs. Below is instruction on how to use the checklist. (Also see instructions on page 60 of the *SUSMP*)

1. Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check each box that applies and list in Table 9.
2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your Source Control Exhibit in Attachment B.
3. Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs into Table 9.
4. Use the format in Table 9 below to summarize the project Source Control BMPs. Incorporate all identified Source Control BMPs in your Source Control Exhibit in Attachment B.

TABLE 9: PROJECT SOURCE CONTROL BMPS

<i>Potential source of runoff pollutants</i>	<i>Permanent source control BMPs</i>	<i>Operational source control BMPs</i>
Storm drain inlets	Mark all inlets with the words “No Dumping! Flows to Los Coches Creek”	Maintain and periodically repaint or replace inlet markings
Interior parking garages	Parking garage floor drains will be plumbed to the sanitary sewer.	Inspect and maintain drains to prevent blockages and overflow.
Landscape/ Outdoor Pesticide Use	Landscape plans will accomplish all of the following: 1) Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. 2) Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. 3) Consider using pest-resistant plants, especially adjacent to hardscape.	1) Maintain landscaping using minimum or no pesticides. 2) See applicable operational BMPs in Fact Sheet SC-41, “Building and Grounds Maintenance,” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com 3) Provide IPM information to new owners, lessees and operators.
Refuse Areas	1) Signs will be posted on or near dumpsters with the words “Do not dump hazardous materials here” or similar.	Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky

	<p>2) Designated areas will be covered, graded, and paved to prevent run-on.</p> <p>3) Trash pickup shall be done on a weekly basis.</p>	<p>receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post “no hazardous materials” signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, “Waste Handling and Disposal” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com</p>
Sidewalks and parking lots.		<p>Sidewalks and parking lots shall be swept regularly to prevent the accumulation of litter and debris.</p>
Pools, spas, ponds, decorative fountains, and other water features	<p>If pools are required to be plumbed to the sanitary sewer, this connection will be made according to local municipality requirements.</p>	<p>See applicable operational BMPs in Fact Sheet SC-72, “Fountain and Pool Maintenance,” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com</p>
Vehicle and Equipment Cleaning	<p>Multi-dwelling complexes where car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use.</p>	<p>Apartment complex rental agreement will include regulations that prohibit tenants from car washing on-site.</p>
Fire Sprinkler Test Water	<p>Fire sprinkler test water will drain to the sanitary sewer.</p>	<p>See the note in Fact Sheet SC-41, “Building and Grounds Maintenance,” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com</p>

Describe your specific Source Control BMPs in an accompanying narrative, and explain any special conditions or situations that required omitting BMPs or substituting alternatives.

The owners of Winter Gardens Apartments are responsible to maintain the storm drain inlets stencils, which located within the site.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants – List in Table 9	2 Permanent Controls—Show on Source Control Exhibit, Attachment B	3 Permanent Controls—List in Table 9 and Narrative	4 Operational BMPs—Include in Table 9 and Narrative
<input checked="" type="checkbox"/> A. On-site storm drain inlets	<input checked="" type="checkbox"/> Locations of inlets.	<input checked="" type="checkbox"/> Mark all inlets with the words “No Dumping! Flows to Los Coches Creek” or similar where feasible.	<input checked="" type="checkbox"/> Maintain and periodically repaint or replace inlet markings. <input type="checkbox"/> Provide stormwater pollution prevention information to new site owners, lessees, or operators. <input type="checkbox"/> See applicable operational BMPs in Fact Sheet SC-44, “Drainage System Maintenance,” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com <input type="checkbox"/> Include the following in lease agreements: “Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains.”
<input type="checkbox"/> B. Interior floor drains and elevator shaft sump pumps		<input type="checkbox"/> State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.	<input type="checkbox"/> Inspect and maintain drains to prevent blockages and overflow.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants – List in Table 9	2 Permanent Controls—Show on Source Control Exhibit, Attachment B	3 Permanent Controls—List in Table 9 and Narrative	4 Operational BMPs—Include in Table 9 and Narrative
<input checked="" type="checkbox"/> C. Interior parking garages		<input checked="" type="checkbox"/> State that parking garage floor drains will be plumbed to the sanitary sewer.	<input checked="" type="checkbox"/> Inspect and maintain drains to prevent blockages and overflow.
<input type="checkbox"/> D1. Need for future indoor & structural pest control		<input type="checkbox"/> Note building design features that discourage entry of pests.	<input type="checkbox"/> Provide Integrated Pest Management information to owners, lessees, and operators.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants – List in Table 9	2 Permanent Controls—Show on Source Control Exhibit, Attachment B	3 Permanent Controls—List in Table 9 and Narrative	4 Operational BMPs—Include in Table 9 and Narrative
<input checked="" type="checkbox"/> D2. Landscape/ Outdoor Pesticide Use <u>Note: Should be consistent with project landscape plan (if applicable).</u>	<input checked="" type="checkbox"/> Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained. <input type="checkbox"/> Show self-retaining landscape areas, if any. <input checked="" type="checkbox"/> Show stormwater treatment facilities.	<p>State that final landscape plans will accomplish all of the following:</p> <input checked="" type="checkbox"/> Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. <input checked="" type="checkbox"/> Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. <input type="checkbox"/> Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. <input checked="" type="checkbox"/> Consider using pest-resistant plants, especially adjacent to hardscape. <input type="checkbox"/> To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	<input checked="" type="checkbox"/> Maintain landscaping using minimum or no pesticides. <input checked="" type="checkbox"/> See applicable operational BMPs in Fact Sheet SC-41, “Building and Grounds Maintenance,” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com <input checked="" type="checkbox"/> Provide IPM information to new owners, lessees and operators.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants – List in Table 9	2 Permanent Controls—Show on Source Control Exhibit, Attachment B	3 Permanent Controls—List in Table 9 and Narrative	4 Operational BMPs—Include in Table 9 and Narrative
<input checked="" type="checkbox"/> E. Pools, spas, ponds, decorative fountains, and other water features.	<input checked="" type="checkbox"/> Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet.	<input checked="" type="checkbox"/> If the local municipality requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.	<input checked="" type="checkbox"/> See applicable operational BMPs in Fact Sheet SC-72, “Fountain and Pool Maintenance,” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
<input type="checkbox"/> F. Food service	<input type="checkbox"/> For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment. <input type="checkbox"/> On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.	<input type="checkbox"/> Describe the location and features of the designated cleaning area. <input type="checkbox"/> Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.	

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants – List in Table 9	2 Permanent Controls—Show on Source Control Exhibit, Attachment B	3 Permanent Controls—List in Table 9 and Narrative	4 Operational BMPs—Include in Table 9 and Narrative
<input checked="" type="checkbox"/> G. Refuse areas	<input type="checkbox"/> Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas. <input checked="" type="checkbox"/> If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area. <input type="checkbox"/> Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.	<input type="checkbox"/> State how site refuse will be handled and provide supporting detail to what is shown on plans. <input checked="" type="checkbox"/> State that signs will be posted on or near dumpsters with the words “Do not dump hazardous materials here” or similar.	<input checked="" type="checkbox"/> State how the following will be implemented: Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post “no hazardous materials” signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, “Waste Handling and Disposal” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
<input type="checkbox"/> H. Industrial processes.	<input type="checkbox"/> Show process area.	<input type="checkbox"/> If industrial processes are to be located on site, state: “All process activities to be performed indoors. No processes to drain to exterior or to storm drain system.”	<input type="checkbox"/> See Fact Sheet SC-10, “Non-Stormwater Discharges” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants – List in Table 9	2 Permanent Controls—Show on Source Control Exhibit, Attachment B	3 Permanent Controls—List in Table 9 and Narrative	4 Operational BMPs—Include in Table 9 and Narrative
<input type="checkbox"/> I. Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)	<input type="checkbox"/> Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area. <input type="checkbox"/> Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults. <input type="checkbox"/> Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.	<input type="checkbox"/> Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains. Where appropriate, reference documentation of compliance with the requirements of local Hazardous Materials Programs for: <ul style="list-style-type: none"> ▪ Hazardous Waste Generation ▪ Hazardous Materials Release Response and Inventory ▪ California Accidental Release (CalARP) ▪ Aboveground Storage Tank ▪ Uniform Fire Code Article 80 Section 103(b) & (c) 1991 ▪ Underground Storage Tank 	<input type="checkbox"/> See the Fact Sheets SC-31, “Outdoor Liquid Container Storage” and SC-33, “Outdoor Storage of Raw Materials ” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants – List in Table 9	2 Permanent Controls—Show on Source Control Exhibit, Attachment B	3 Permanent Controls—List in Table 9 and Narrative	4 Operational BMPs—Include in Table 9 and Narrative
<input checked="" type="checkbox"/> J. Vehicle and Equipment Cleaning	<input checked="" type="checkbox"/> Show on drawings as appropriate: (1) Commercial/industrial facilities having vehicle /equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses. (2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use). (3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer. (4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.	<input checked="" type="checkbox"/> If a car wash area is not provided, describe measures taken to discourage on-site car washing and explain how these will be enforced.	Describe operational measures to implement the following (if applicable): <input checked="" type="checkbox"/> Apartment complex rental agreement will include regulations that prohibit tenants from car washing on-site. <input type="checkbox"/> Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system. <input type="checkbox"/> Car dealerships and similar may rinse cars with water only. <input type="checkbox"/> See Fact Sheet SC-21, “Vehicle and Equipment Cleaning,” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants – List in Table 9	2 Permanent Controls—Show on Source Control Exhibit, Attachment B	3 Permanent Controls—List in Table 9 and Narrative	4 Operational BMPs—Include in Table 9 and Narrative
<input type="checkbox"/> K. Vehicle/Equipment Repair and Maintenance	<input type="checkbox"/> Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater. <input type="checkbox"/> Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas. Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.	<input type="checkbox"/> State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area. <input type="checkbox"/> State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements. <input type="checkbox"/> State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.	In the SUSMP report, note that all of the following restrictions apply to use the site: <input type="checkbox"/> No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains. <input type="checkbox"/> No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately. No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants – List in Table 9	2 Permanent Controls—Show on Source Control Exhibit, Attachment B	3 Permanent Controls—List in Table 9 and Narrative	4 Operational BMPs—Include in Table 9 and Narrative
<input type="checkbox"/> L. Fuel Dispensing Areas	<input type="checkbox"/> Fueling areas ¹ shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable. Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area ¹ .] The canopy [or cover] shall not drain onto the fueling area.		<input type="checkbox"/> The property owner shall dry sweep the fueling area routinely. <input type="checkbox"/> See the Business Guide Sheet, “Automotive Service—Service Stations” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

¹ The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants – List in Table 9	2 Permanent Controls—Show on Source Control Exhibit, Attachment B	3 Permanent Controls—List in Table 9 and Narrative	4 Operational BMPs—Include in Table 9 and Narrative
<input type="checkbox"/> M. Loading Docks	<input type="checkbox"/> Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas should be drained to the sanitary sewer where feasible. Direct connections to storm drains from depressed loading docks are prohibited. <input type="checkbox"/> Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation. <input type="checkbox"/> Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.		<input type="checkbox"/> Move loaded and unloaded items indoors as soon as possible. <input type="checkbox"/> See Fact Sheet SC-30, “Outdoor Loading and Unloading,” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants – List in Table 9	2 Permanent Controls—Show on Source Control Exhibit, Attachment B	3 Permanent Controls—List in Table 9 and Narrative	4 Operational BMPs—Include in Table 9 and Narrative
<input checked="" type="checkbox"/> N. Fire Sprinkler Test Water		<input checked="" type="checkbox"/> Provide a means to drain fire sprinkler test water to the sanitary sewer.	<input checked="" type="checkbox"/> See the note in Fact Sheet SC-41, “Building and Grounds Maintenance,” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
<p>O. Miscellaneous Drain or Wash Water</p> <input type="checkbox"/> Boiler drain lines <input type="checkbox"/> Condensate drain lines <input type="checkbox"/> Rooftop equipment <input type="checkbox"/> Drainage sumps <input type="checkbox"/> Roofing, gutters, and trim.		<input type="checkbox"/> Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system. <input type="checkbox"/> Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. <input type="checkbox"/> Rooftop mounted equipment with potential to produce pollutants shall be roofed and/or have secondary containment. <input type="checkbox"/> Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water. Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.	

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants – List in Table 9	2 Permanent Controls—Show on Source Control Exhibit, Attachment B	3 Permanent Controls—List in Table 9 and Narrative	4 Operational BMPs—Include in Table 9 and Narrative
<input checked="" type="checkbox"/> P. Plazas, sidewalks, and parking lots.			<input checked="" type="checkbox"/> Plazas, sidewalks, and parking lots shall be swept regularly to prevent the accumulation of litter and debris.

STEP 7

LID AND TREATMENT CONTROL SELECTION

A treatment control BMP and/or LID facility must be selected to treat the project pollutants of concern identified in Table 7 “Project Pollutants of Concern”. A treatment control facility with a high or medium pollutant removal efficiency for the project’s most significant pollutant of concern shall be selected. It is recommended to use the design procedure in Chapter 4 of the SUSMP to meet NPDES permit LID requirements, treatment requirements, and flow control requirements. If your project does not utilize this approach, the project will need to demonstrate compliance with LID, treatment and flow control requirements. Review Chapter 2 “Selection of Stormwater Treatment Facilities” in the SUSMP to assist in determining the appropriate treatment facility for your project.

Will this project be utilizing the unified LID design procedure as described in Chapter 4 of the Local SUSMP? <i>(If yes, please document in Attachment D following the steps in Chapter 4 of the County SUSMP)</i>	
Yes	No
If this project is not utilizing the unified LID design procedure, please describe how the alternative treatment facilities will comply with applicable LID criteria, stormwater treatment criteria, and hydromodification management criteria.	

- Indicate the project pollutants of concern (POCs) from Table 7 in Column 2 below.

TABLE 10: GROUPING OF POTENTIAL POLLUTANTS of Concern (POCs) by fate during stormwater treatment

Pollutant	Check Project Specific POCs	Coarse Sediment and Trash	Pollutants that tend to associate with fine particles during treatment	Pollutants that tend to be dissolved following treatment
Sediment				
Nutrients				
Heavy Metals				
Organic Compounds				
Trash & Debris	X	X		
Oxygen Demanding	X		X	
Bacteria	X		X	
Oil & Grease	X		X	
Pesticides				

- Indicate the treatment facility(s) chosen for this project in the following table.

TABLE 11: GROUPS OF POLLUTANTS and relative effectiveness of treatment facilities

Pollutants of Concern	Bioretention Facilities (LID)	Settling Basins (Dry Ponds)	Wet Ponds and Constructed Wetlands	Infiltration Facilities or Practices (LID)	Media Filters	Higher-rate biofilters*	Higher-rate media filters*	Trash Racks & Hydro-dynamic Devices	Vegetated Swales
Coarse Sediment and Trash	High	High	High	High	High	High	High	High	High
Pollutants that tend to associate with fine particles during treatment	High	High	High	High	High	Medium	Medium	Low	Medium
Pollutants that tend to be dissolved following treatment	Medium	Low	Medium	High	Low	Low	Low	Low	Low

- Please check the box(s) that best describes the Treatment Control BMP(s) and/or LID IMP selected for this project. Please check if the treatment facility is designed for water quality or hydromodification flow control. Check both boxes if the facility is designed for both water quality and hydromodification flow control.

TABLE 12: PROJECT TCBMPS – BMPs designed to treat stormwater (e.g., LID and hydromod) shall be considered TCBMPS.

TCBMP Type	Water Quality Treatment	Hydromodification Flow Control
Bioretention Facilities (LID)		
Bioretention area		
Flow-through Planter		
Cistern with Bioretention Facility		
Basins		
Extended/dry detention basin with grass/vegetated lining		
Extended/dry detention basin with impervious lining		
Underground vault		
Cistern		
Infiltration Devices (LID)		
Infiltration basin		
<input checked="" type="checkbox"/> Infiltration trench	Yes	Yes
Other _____		
Wet Ponds and Constructed Wetlands		

Wet pond/basin (permanent pool)		
Constructed wetland		
Vegetated Swales (LID⁽¹⁾)		
Vegetated Swale		
Media Filters		
Austin Sand Filter		
Delaware Sand Filter		
Multi-Chambered Treatment Train (MCTT)		
Higher-rate Biofilters		
Tree-pit-style unit		
Other_____		
Higher-rate Media Filters		
Vault-based filtration unit with replaceable cartridges		
Other_____		
Hydrodynamic Separator Systems		
Swirl Concentrator		
Other_____		
Trash Racks		
Catch Basin Insert		
Catch Basin Insert w/ Hydrocarbon boom		
Other_____		
Self-Retaining Areas (LID)		
Pervious Pavements		
Self-Retaining		
Vegetated Roof		

⁽¹⁾ Must be designed per SUSMP “Vegetated Swales” design criteria for water quality treatment credit (p. 102-103).

For design guidelines and calculations refer to Chapter 4 “Low Impact Development Design Guide” in the SUSMP. Please show all calculations and design sheets for all treatment facilities proposed in Attachment D.

- Create a Construction Plan SWMP Checklist for your project.

Instructions on how to fill out table

1. Number and list each measure or BMP you have specified in your SWMP in Columns 1 and Maintenance Category in Column 3 of the table. Leave Column 2 blank.
1. When you submit construction plans, duplicate the table (by photocopy or electronically). Now fill in Column 2, identifying the plan sheets where the BMPs are shown. List all plan sheets on which the BMP appears. This table must be shown on the front sheet of the grading and improvement plans.

Treatment Control BMPs ¹			
Description / Type	Sheet	Maintenance Category	Revisions
1. Sand filter trench facilities	C1.0	Second	

¹ BMPs designed to treat stormwater (e.g., LID and hydromod) shall be considered TCBMPs.

* BMP's approved as part of Stormwater Management Plan (SWMP) dated [December 15, 2013](#) on file with DPW. Any changes to the above BMP's will require SWMP revision and Plan Change approvals.

- Please describe why the chosen treatment BMP(s) was selected for this project. For projects utilizing a low performing BMP, please provide a **feasibility analysis** that demonstrates utilization of a treatment facility with a high or medium removal efficiency ranking is infeasible.

The selected sand filter trench facilities have the high removal efficiency rate for pollutants which are anticipated to be generated by the development of the project. See the facility sizing calculations in Attachment D.

Please provide the sizing design calculations for each Drainage Management Area in Attachment D. Guidelines for design calculations are located in Chapter 4 of the County SUSMP. To assist in these calculations a BMP sizing calculator is available for use at the following location: http://www.projectcleanwater.org/html/wg_susmp.html

STEP 8

OPERATION AND MAINTENANCE

- Please check the box that best describes the maintenance mechanism(s) for this project. The recorded maintenance agreement shall be included in the Maintenance Plan for this project (Attachment F).

TABLE 13: PROJECT BMP CATEGORY

CATEGORY	SELECTED		BMP Description
	YES	NO	
First ¹		X	Three sand filter trench facilities are located on the driveway. The owners of Winter Gardens Apartments will be responsible to maintain the BMPs located on their site.
Second ²	X		
Third ³		X	
Fourth ⁴		X	

Note:

1. A maintenance notification will be required.
2. A recorded maintenance agreement and access easement will be required.
3. Project will be required to establish or be included in a watershed specific Community Facility District (CFD) for long-term maintenance.
4. The developer would be required to dedicate the BMP (and the property on which it is located and any necessary access) to the County.

- Please list all individual Treatment Control BMPs (TCBMPs) incorporated into the project. Please attach the record plan sheets upon completion of project and amend the Major SWMP where appropriate. For each type of TCBMP provide an inspection sheet in Attachment F “Maintenance Plan”. Replicate Table 14 in Attachment G once the TCBMP has been constructed.

TABLE 14: PROJECT SPECIFIC LID AND TCBMPS

Treatment Control BMPs (TCBMPs) ^{1,2} (List all from SWMP)		
Lot Number or Location	Description/Type	Sheet
Driveway	Northeasterly sand filter trench	C1.0
Driveway	Northwesterly sand filter trench	C1.0
Driveway	Southwesterly sand filter trench	C1.0

¹ All Priority Development Projects (PDPs) require a TCBMP.
² BMPs designed to treat stormwater (e.g. LID and hydromod) shall be considered TCBMPs.

* For location of BMP's, see approved Record Plan dated _____, plan

➤ Responsible Party for the Construction Phase:

Identify the parties responsible for maintenance during the construction phase of the BMPs identified above and Source Controls specified in Attachment B.

Developer's Name: Eric Wilson
Address: 3739 Rosecroft Lane
City: San Diego State CA Zip 92106
Email Address:
Phone Number: (619)992-8305
Engineer of Work: SNIPES-DYE ASSOCIATES
Engineer's Phone Number: (619) 697-9234

➤ Responsible Party for Long-term Maintenance:

Identify the parties responsible for long-term maintenance of the BMPs identified above and Source Controls specified in Attachment B. Include the appropriate written agreement with the entities responsible for O&M in Attachment F. Please see Chapter 5 "Stormwater Facility Maintenance" of the County SUSMP for appropriate maintenance mechanisms.

Owner's Name: Eric Wilson, FLO-GROVE LLC.
Address: 3739 Rosecroft Lane
City: San Diego State CA Zip 92106
Email Address:
Phone Number: (619) 992-8305

* Note: If a corporation or LLC, provide information for principal partner or Agent for Service of Process. If an HOA, provide information for the Board or property manager at time of project closeout.

➤ Funding Source:

Provide the funding source or sources for long-term operation and maintenance of each BMP identified above. Please see Chapter 5 “Stormwater Facility Maintenance” of the County SUSMP for the appropriate funding source options. By certifying the Major SWMP the applicant is certifying that the funding responsibilities have been addressed and will be transferred to future owners.

It will be the owner(s) of Winter Gardens Apartments responsibility.

ATTACHMENTS

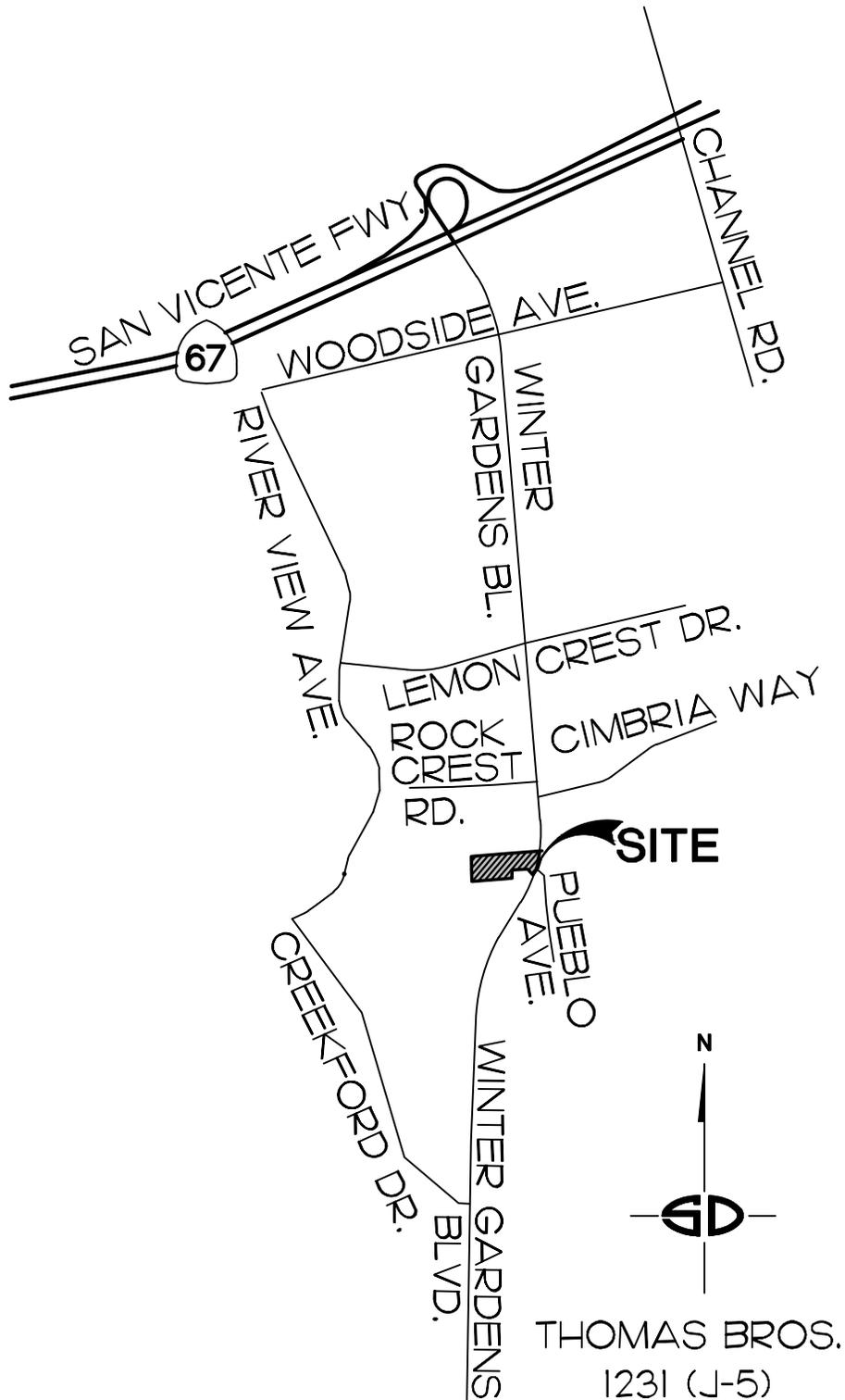
Please include the following attachments.

ATTACHMENT		COMPLETED	N/A
A	Project Location Map	X	
B	Source Control Exhibit	X	
C	Drainage Management Area (DMA) Exhibit	X	
D	BMP Sizing Design Calculations (Water Quality and Hydromodification) and TCBMP/IMP Design Details	X	
E	Geotechnical Certification Sheet		X
F	Maintenance Plan	X	
G	Treatment Control BMP Certification (due at project closeout)		X
H	HMP Study	X	
I	Geomorphic Assessment		X
J	HMP Exemption Documentation		X
K	Addendum		X

Note: Attachments B and C may be combined.

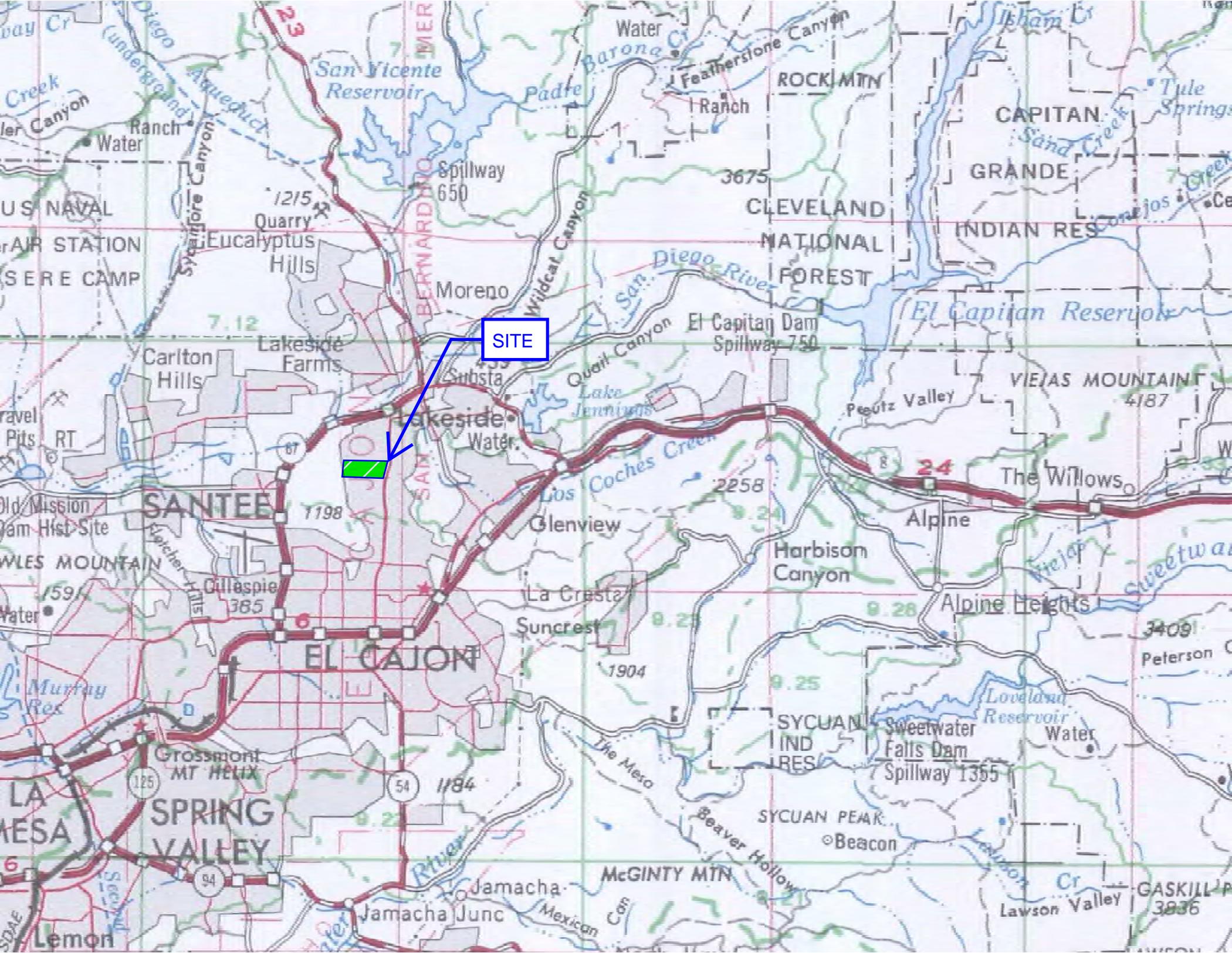
ATTACHMENT A

Project Location Map



VICINITY MAP

NO SCALE



SITE



OWNER / APPLICANT

ERIC WILSON, FLO-GROVE LLC.
3739 ROSECROFT LANE
SAN DIEGO, CA 92106
PHONE: (619) 992-8305

PROJECT INFORMATION

ASSESSOR'S PARCEL NUMBERS: 382-191-40,44,49
SITE ADDRESS: 9208-9224 WINTER GARDENS BLVD, LAKESIDE, CA
TOPOGRAPHY: AERIAL TOPO BY SAN-LO SURVEY, PREPARED JULY 2007.

LEGAL DESCRIPTION

A PORTION OF LOT 118 OF RIVERVIEW FARMS IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO MAP THEREOF NO. 1683 FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, FEBRUARY 25, 1916.

NUMBER OF PROPOSED UNITS

60 UNITS

FIRE NOTE

ANY PORTIONS OF FENCING LOCATED WITHIN 5' OF STRUCTURES SHALL BE CONSTRUCTED WITH NON-COMBUSTIBLE MATERIAL OR PRESSURE-TREATED EXTERIOR FIRE-RETARDANT WOOD.

PARKING TABULATION TABLE

DWELLING UNITS (3-BEDROOM)	REQUIRED PARKING SPACES	REQUIRED GUEST PARKING SPACES	TOTAL PROPOSED SPACES	ACCESSIBLE SPACES		BICYCLE SPACES	
				REQUIRED	PROPOSED	REQUIRED	PROPOSED
60	120 (60 X 0.2)	12 (60 X 0.2)	140*	5	5	30 (60 X .5)	30
TOTAL: 132 (120 + 12)							

* INCLUDES 5 TANDEM SPOTS (10 SPACES) THAT WILL BE ASSIGNED TO SPECIFIC UNITS AND WILL NOT BE GUEST SPACES.

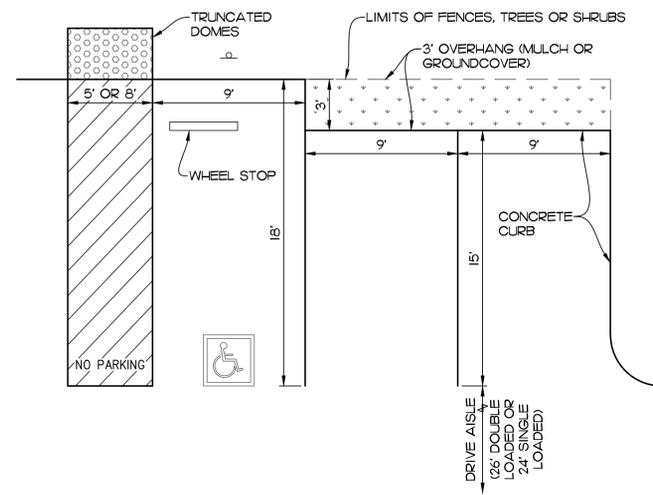
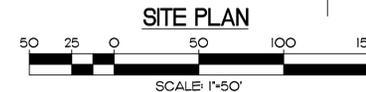
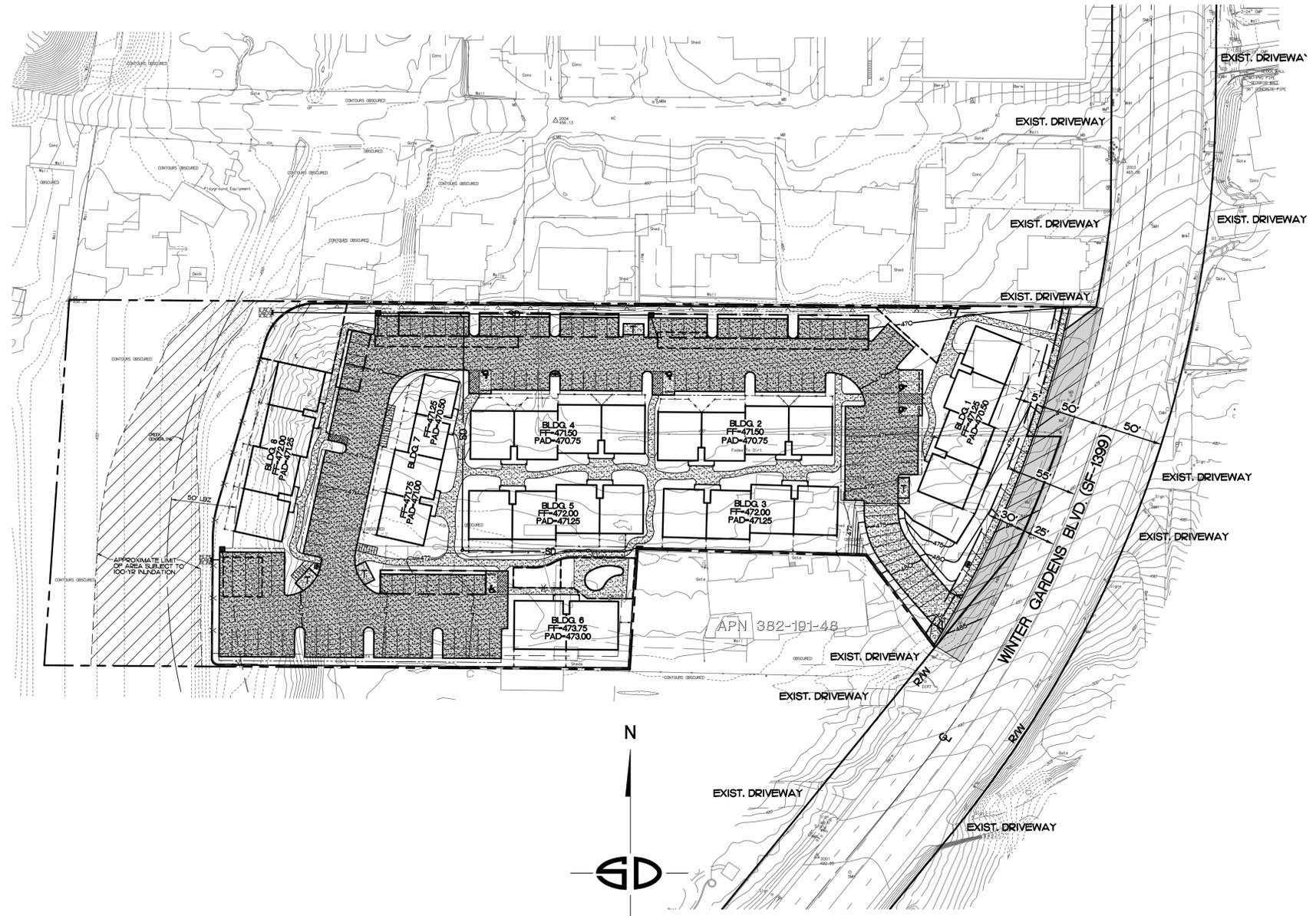
PRIVATE USABLE AREA

PROPOSED PRIVATE USABLE AREAS		REQUIRED PRIVATE USABLE AREAS (100 SF./UNIT)	
	TOTAL		
GROUND LEVEL UNITS (30)	260 SF./UNIT (8' X 33')	7,800 SF.	3,000 SF. - SATISFIED
UPPER LEVEL UNITS (30)	60 SF./UNIT (5' X 12')	1,800 SF.	3,000 SF. - 1200 SF. SHORT

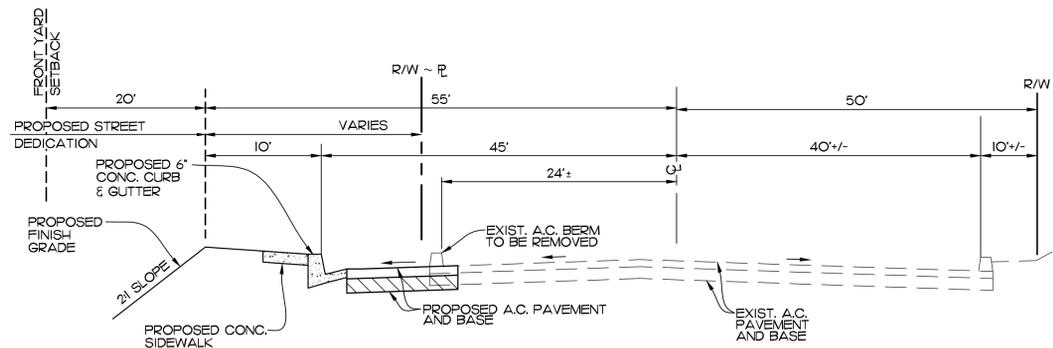
GROUP USABLE AREA

PROPOSED	REQUIRED (100 SF./UNIT) 6,000 SF.
7,235 SF. (600 SF PLAYGROUND AREA)	MITIGATION FOR PRIVATE USABLE AREA 1,200 SF. MINIMUM 7,200 SF.

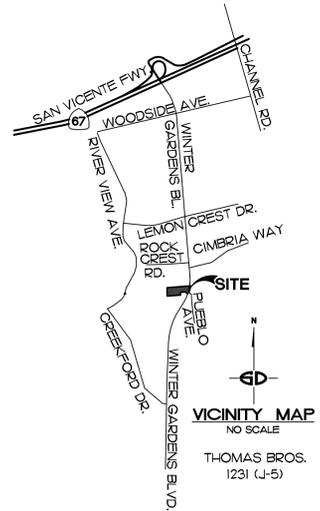
MEETS REQUIREMENT FOR PRIVATE AND GROUP USEABLE AREAS



TYPICAL PARKING SPACES DETAIL
NO SCALE



TYPICAL SECTION - WINTER GARDENS BLVD (SF 1399)
NO SCALE



VICINITY MAP
NO SCALE

THOMAS BROS.
1231 (J-5)



Snipes-Dye associates
civil engineers and land surveyors
8348 CENTER DRIVE, STE. G, LA MESA, CA 91942
TELEPHONE (619) 697-9234 FAX (619) 460-2033

ENGINEER OF WORK



WILLIAM A. SNIPES R.C.E. 50477
8/21/15
EXPIRES 06-30-17

CONCEPTUAL GRADING PLAN
WINTER GARDENS APARTMENTS

NO.	DATE	REVISION DESCRIPTION	BY	NO.	DATE
1	8/21/15	REVISIONS PER COUNTY COMMENTS.	SDA		

SHEET TITLE: CONCEPTUAL GRADING PLAN
JOB NAME: WINTER GARDENS APARTMENTS
JOB NO.: LK0313 (A-4)

SNIPES-DYE ASSOCIATES 8348 CENTER DRIVE, SUITE G, LA MESA, CA 91942-2910 (619) 697-9234, FAX (619) 460-2033

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Printed: Friday, September 11, 2015 9:10am by waman



CONCEPTUAL GRADING PLAN
WINTER GARDENS
APARTMENTS

DESIGNER: WIAS
 DRAWN: PSM
 CHECKED: WIAS
 DATE: 12/21/14

BY: _____
 REVISION DESCRIPTION

NO. DATE REVISIONS PER COUNTY REVIEW COMMENTS

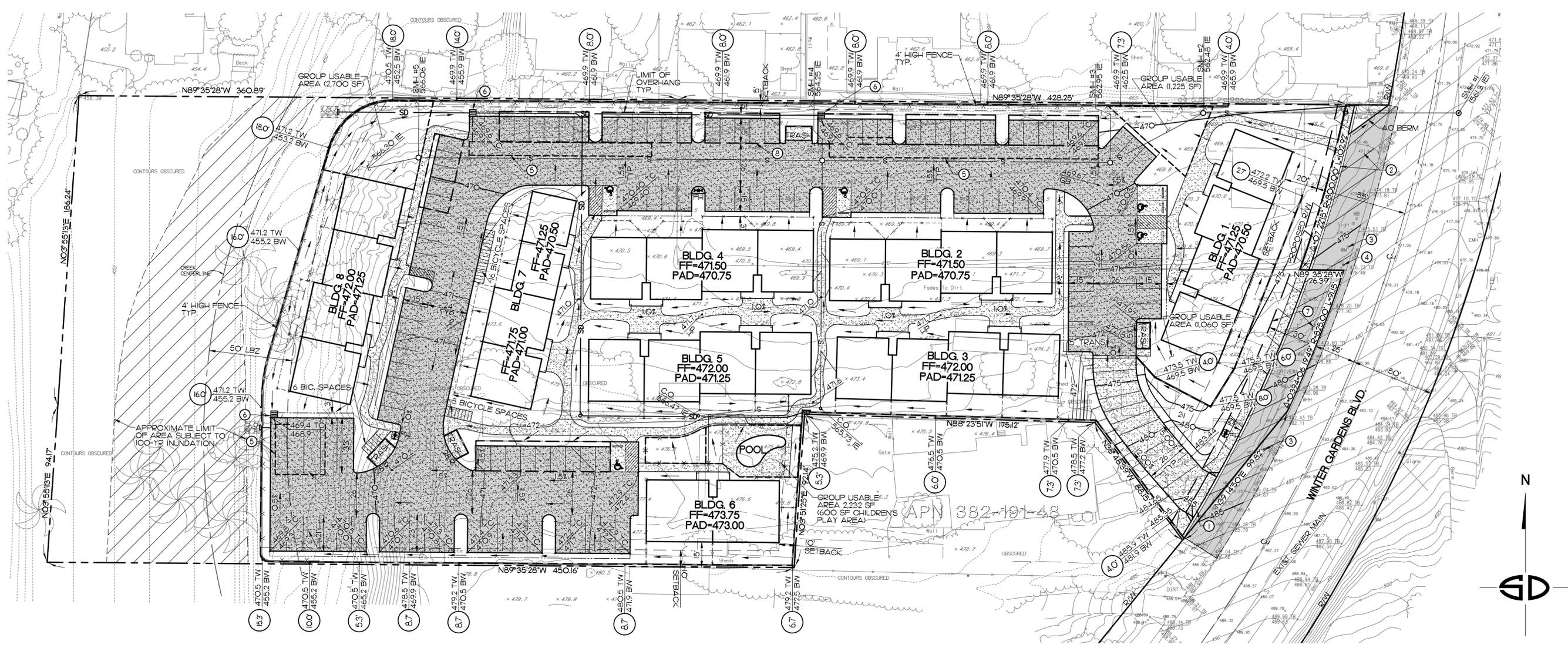
NO. DATE REVISION DESCRIPTION

NO. DATE REVISION DESCRIPTION

NO. DATE REVISION DESCRIPTION

NO. DATE REVISION DESCRIPTION

SNIPES-DYE ASSOCIATES 8348 CENTER DRIVE, SUITE 6, LA MESA, CA 91942-2910 (619) 697-9234, FAX (619) 460-2033



- KEYNOTES:**
- PROPOSED 28' CONCRETE DRIVEWAY.
 - PROPOSED SIDEWALK, CURB/GUTTER AND AC PAVEMENT
 - RELOCATE EXIST. FH, WATER METERS BEHIND SIDEWALK, TYP.
 - UTILITY POLE TO BE REMOVED/RELOCATED.
 - PROPOSED SUBSURFACE INFILTRATION TRENCH W/IMPERMEABLE LINER.
 - PROPOSED BMP OUTLET STRUCTURE WITH HYDROMODIFICATION CONTROL ORIFICE.
 - PROPOSED STREET DEDICATION.
 - PROPOSED CARPORTS.

PRELIMINARY GRADING PLAN NOTE

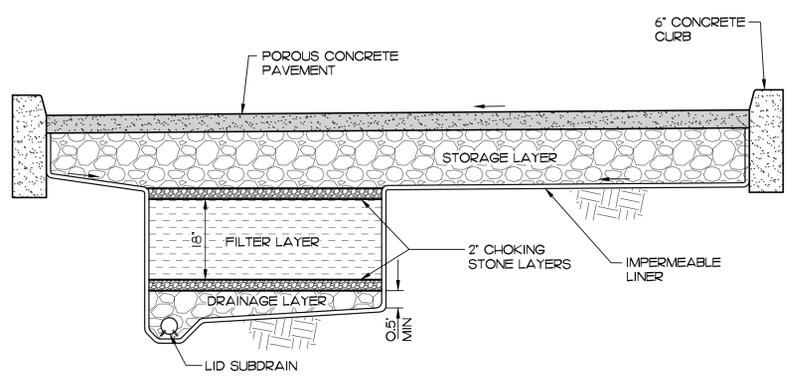
1. THIS PLAN IS PROVIDED TO ALLOW FOR FULL AND ADEQUATE DISCRETIONARY REVIEW OF A PROPOSED DEVELOPMENT PROJECT. THE PROPERTY OWNER ACKNOWLEDGES THAT ACCEPTANCE OR APPROVAL OF THIS PLAN DOES NOT CONSTITUTE ANY APPROVAL TO PERFORM ANY GRADING SHOWN HEREON, AND AGREES TO OBTAIN A VALID GRADING PERMIT BEFORE COMMENCING SUCH ACTIVITY.

EARTHWORK QUANTITIES

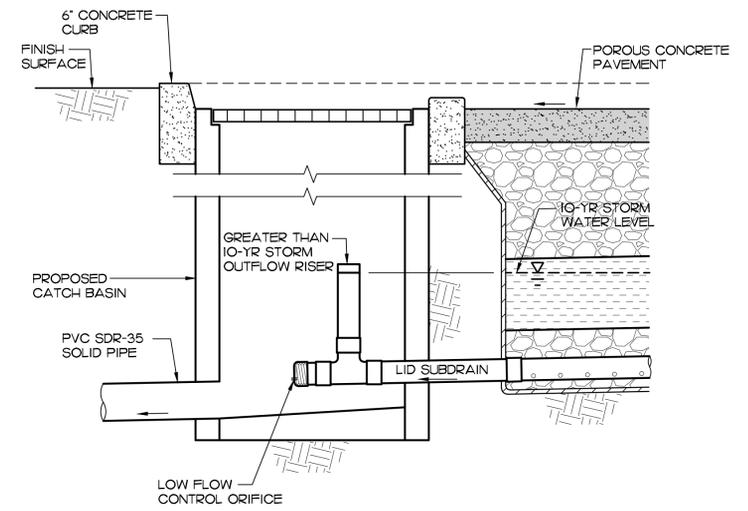
GRADING	
EXCAVATE:	8,850 C.Y.
FILL:	7,500 C.Y.
EXPORT:	1,350 C.Y.

LEGEND

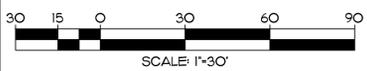
PROPOSED SLOPE	
PROPOSED DRIVEWAY	
PROPOSED ENERGY DISSIPATOR ROCK RIP RAP	
PROPOSED 6' CONC. CURB	
PROPOSED CATCH BASIN	
PROPOSED CLEANOUT	
PROPOSED SEWER MAN-HOLE	
PROPOSED FIRE HYDRANT	
PROPOSED STORM DRAIN	
PROPOSED SEWER LINE	
PROPOSED WATER LINE	
PROPOSED RETAINING WALL	
PROPOSED PERVIOUS CONCRETE PAVEMENT	
PROPOSED CONCRETE PAVEMENT	
PROPOSED AC PAVEMENT	



TYPICAL: SUBSURFACE INFILTRATION TRENCH
NO SCALE



TYPICAL DETAIL - BMP OUTLET STRUCTURE
NO SCALE



ENGINEER OF WORK
Snipes-Dye associates
 civil engineers and land surveyors
 8348 CENTER DRIVE, STE. G, LA MESA, CA 91942
 TELEPHONE (619) 697-9234 FAX (619) 460-2033
 WILLIAM A. SNIPES R.C.E. 50477
 EXPIRES: 06-30-17

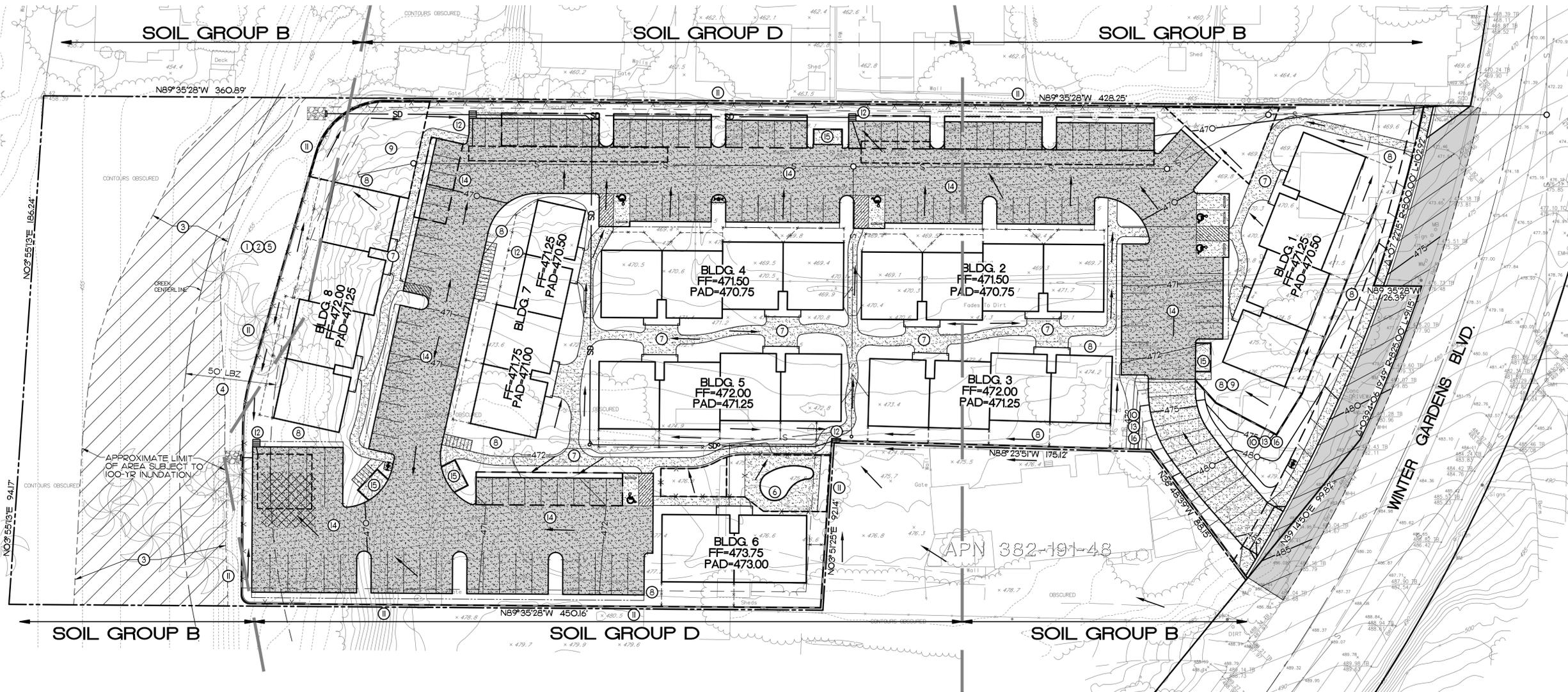


C2.0
 SHEET 2 OF 3 SHEETS
 LK0313 (A-4)

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 Author: PSM
 Date: 12/21/14
 12:25:30 PM

ATTACHMENT B

Source Control Exhibit

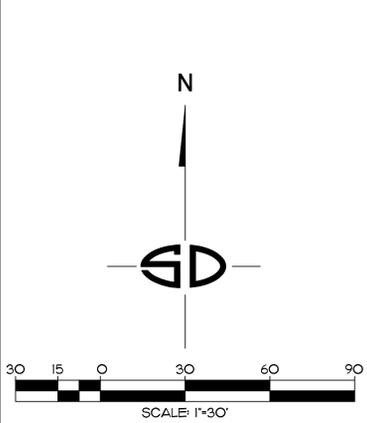


LEGEND

DIRECTION OF FLOW..... → →

SITE DESIGN LID

- ① PRESERVE WELL DRAINING SOIL.
- ② PRESERVE SIGNIFICANT TREES.
- ③ PRESERVE FLOODPLAIN.
- ④ SETBACK DEVELOPMENT FROM DRAINAGE CREEK.
- ⑤ RESTRICT HEAVY CONSTRUCTION EQUIPMENT OVER THE AREA.
- ⑥ POOL & SPA TO BE MAINTAINED IN ACCORDANCE TO SOURCE CONTROL BMP SC-72.
- ⑦ PITCH PAVEMENTS TOWARD LANDSCAPING.
- ⑧ SOIL AMENDMENTS.
- ⑨ REUSE OF NATIVE SOILS.
- ⑩ SMART IRRIGATION SYSTEM.
- ⑪ INSTALL RETAINING WALL TO MINIMIZE CUT/FILL SLOPE LENGTHS.
- ⑫ STORM DRAIN STENCILS ON ALL STORM DRAIN INLETS. (TYPICAL)
- ⑬ LANDSCAPE DESIGN TO MINIMIZE USE OF FERTILIZER & PESTICIDES.
- ⑭ PERMEABLE PAVEMENT.
- ⑮ TRASH ENCLOSURE AREAS.



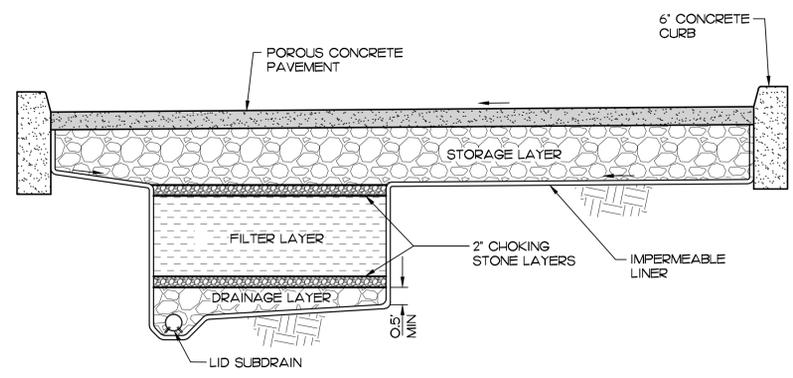
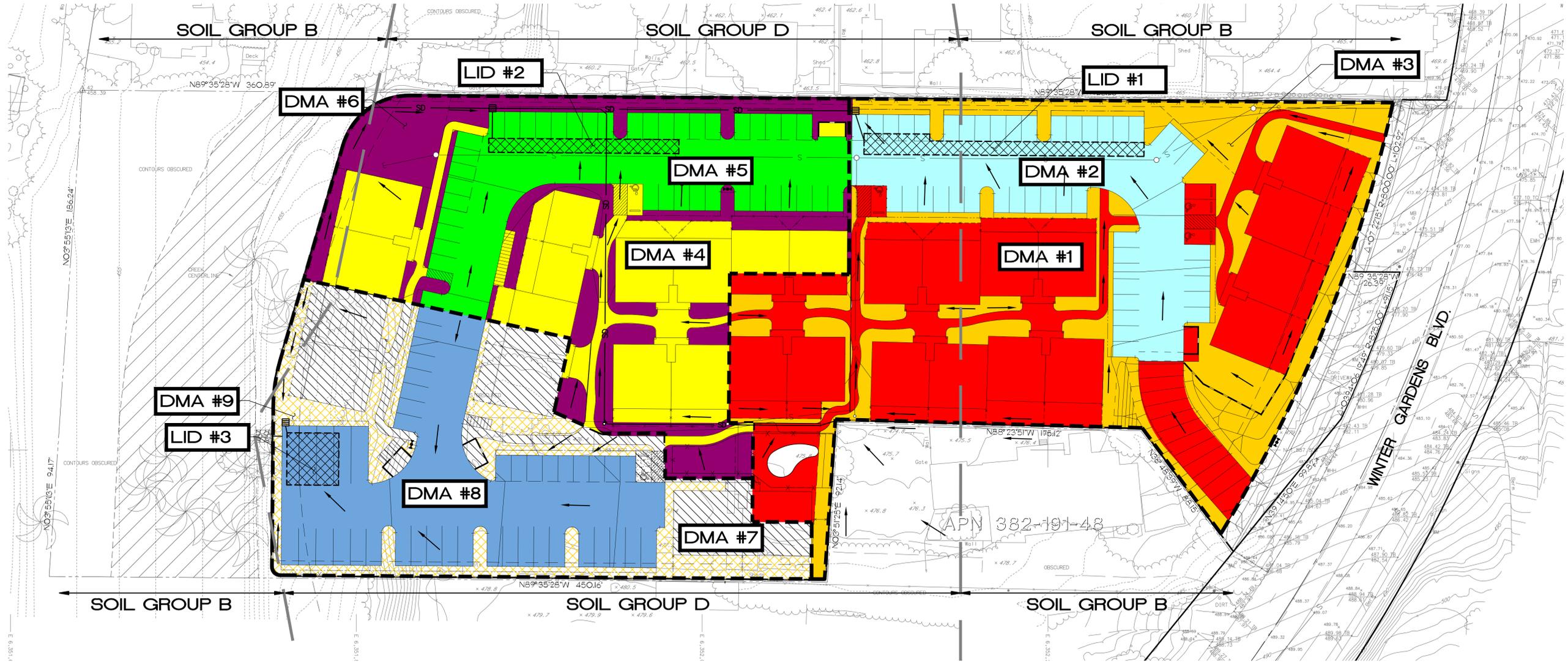
SHEET	NO.	DATE	REVISION	DESCRIPTION	BY	NO.	DATE	DESIGNER	WAS	PSM	WAS	DATE	SHEET TITLE
1	OF 1 SHEETS												SOURCE CONTROL EXHIBIT WINTER GARDENS APARTMENTS
													JOB NO. LKO313 (A-4)
													SNIPES-DYE ASSOCIATES 8348 CENTER DRIVE, SUITE G, LA MESA, CA 91942-2910 (619) 697-9234, FAX (619) 460-2033

ATTACHMENT C

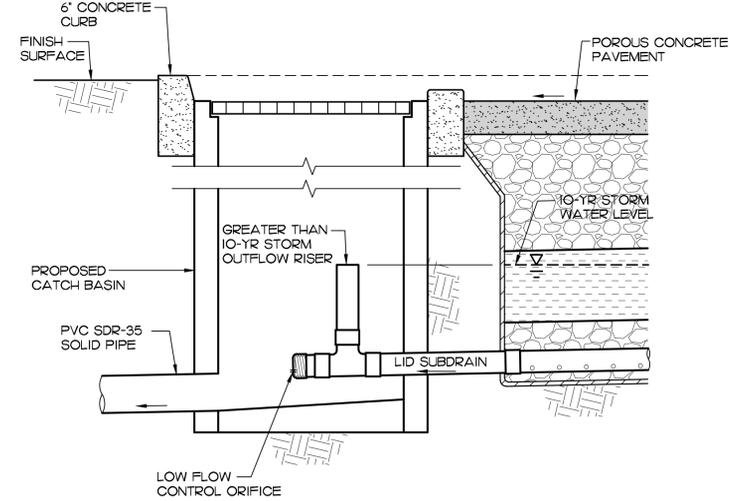
Drainage Management Area (DMA) Exhibit



- DMA #1** - TRIBUTARY TO LID #1
(32,980 S.F. IMPERVIOUS SURFACE), SOIL TYPES B & D
- DMA #4** - TRIBUTARY TO LID #2
(17,968 S.F. IMPERVIOUS SURFACE), SOIL TYPES B & D
- DMA #7** - TRIBUTARY TO LID #3
(9,821 S.F. IMPERVIOUS SURFACE), SOIL TYPES B & D
- LID #1** - SAND FILTRATION TRENCH
AREA = 1,448 S.F.
V_i = 2,350 C.F.
- DMA #2** - TRIBUTARY TO LID #1
(12,403 S.F. PERVIOUS SURFACE), SOIL TYPES B & D
- DMA #5** - TRIBUTARY TO LID #2
(12,089 S.F. PERVIOUS SURFACE), SOIL TYPES B & D
- DMA #8** - TRIBUTARY TO LID #3
(15,792 S.F. PERVIOUS SURFACE), SOIL TYPES B & D
- LID #2** - SAND FILTRATION TRENCH
AREA = 880 S.F.
V_i = 3,360 C.F.
- DMA #3** - TRIBUTARY TO LID #1
(17,727 S.F. LANDSCAPE), SOIL TYPES B & D
- DMA #6** - TRIBUTARY TO LID #2
(13,241 S.F. LANDSCAPE), SOIL TYPES B & D
- DMA #9** - TRIBUTARY TO LID #3
(8,350 S.F. LANDSCAPE), SOIL TYPES B & D
- LID #3** - SAND FILTRATION TRENCH
AREA = 900 S.F.
V_i = 2,182 C.F.



TYPICAL: SUBSURFACE INFILTRATION TRENCH
NO SCALE



TYPICAL DETAIL - BMP OUTLET STRUCTURE
NO SCALE

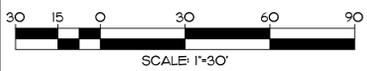
LEGEND

- DRAINAGE MANAGEMENT AREA BOUNDARY.....
- DIRECTION OF FLOW.....

NOTES

1. SITE IS LOCATED WITHIN OCEANSIDE RAIN GAUGE BASIN.
2. HYDROLOGIC SOIL GROUP B & D.
3. SITE HAS MODERATE SLOPE.
4. CHANNEL ASSESSMENT WAS NOT CONDUCTED. LOW FLOW THRESHOLD ASSUMED 10% OF Q₂ (O.I.Q₂).
5. PROPOSED LIDS ARE SAND FILTRATION TRENCH FACILITIES.
6. COUNTY OF SAN DIEGO'S 85TH PERCENTILE ISOPLUVIAL MAP WAS UTILIZED FOR SIZING LID WHICH WOULD COMPLY TO VOLUME UNIT RUNOFF TREATMENT.

S:\SNIPES\VA0314 Winter Gardens-Winter Gardens\Conceptual\Grading\Drainage Maps\DMA Exhibit\Title Plate.dwg, September 15, 2015 1:08pm by rmon



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ATTACHMENT D

Sizing Design Calculations and TCBMP/LID Design Details/HMP Study

**(Provide BMP Sizing Calculator results and/or continuous simulation
modeling results, if applicable)**

LID SIZING CALCULATIONS

PROJECT: WINTER GARDENS
DATE: 9/8/2015

PURPOSES: DETERMINE THE MINIMUM VOLUME FOR STORM WATER QUALITY TREATMENT & FLOW CONTROL

DESIGN CRITERIA:

- 1) HYDROLOGIC SOIL GROUPS: B & D
- 2) SITE IS LOCATED WITHIN OCEANSIDE RAIN GAUGE BASIN.
- 3) SITE'S SLOPE IS "LOW"
- 4) LOS COCHES CREEK AS THE RECEIVING WATER
- 5) SAN DIEGO RIVER HYDROLOGIC UNIT
- 6) SAN DIEGO COUNTY 85TH PERCENTILE RAINFALL IS 0.51 INCH

SUMMARY:

DESCRIPTION	REQUIRED WATER QUALITY VOLUME, C.F. (V_{85TH})	REQUIRED FLOW CONTROL VOLUME WITH ORIFICE SIZED TO $0.1Q_2$, C.F. (V_{10-YR})	PROPOSED LID CAPACITY, C.F. (V_{85TH})
LID NO. 1	1,530	1,000	2,350
LID NO. 2	871	628	3,360
LID NO. 3	520	550	2,182

2010 Integrated Report

Map

303(d) List

Admin. Record

Data Download

Past Reports

Contact Us

2010 INTEGRATED REPORT — ALL ASSESSED WATERS

Zoom to county:

All

Zoom to Regional Board:

All

Show county

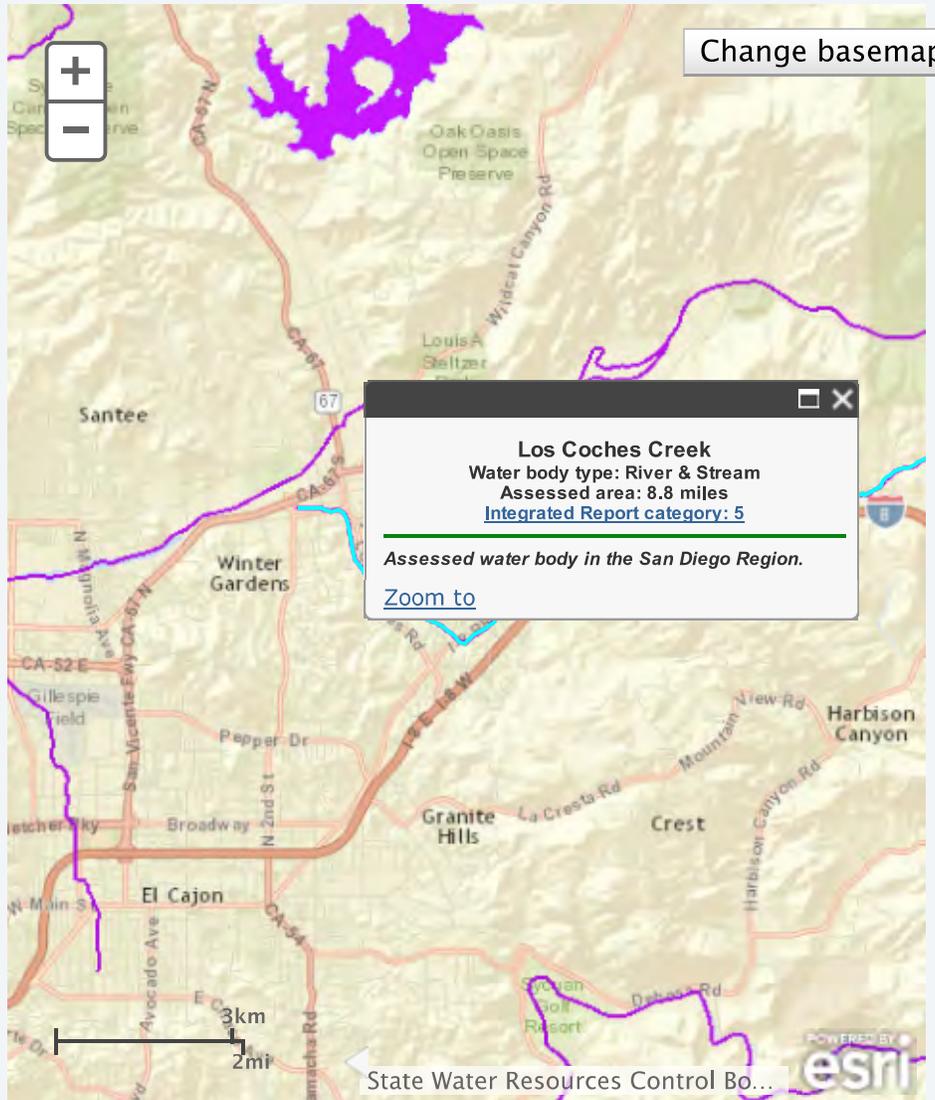
Show Regional Board

Map Help

Zoom to water body: (Filter: All)

Filter list by:

Reset list



Los Coches Creek [Close](#) Pollutant assessments

	Listing Decision
▼ Pollutants	Report Link
	Potential Sources
Selenium	List on 303(d) list (TMDL required list)
	16566
	Source Unknown
Phosphorus	Est. TMDL completion: 2019
	Do Not List on 303(d) list (TMDL required list)
	16698
	n/a

This [Webinar](#) walks the user through the Integrated Report and its geospatial

- **Geographical Information Systems (GIS) Files**

Update 12/23/11: The information presented on this map reflects the final USEPA-approved 2010 303(d) list. If you have any questions regarding the Integrated Report data and information, please email [Lisa Holmes](#) or call 916-341-5557. For any GIS-related questions, please email [Stephanie Bucknam](#) or call 916-558-1708.

► **STEP 6: CALCULATE MINIMUM AREA AND VOLUME OF EACH IMP**

A. FOR “WATER QUALITY TREATMENT ONLY”

The minimum area of bioretention facilities and flow-through planters is found by summing up the contributions of each tributary DMA and multiplying by the adjusted sizing factor for the IMP. Note that if the IMP is designed to provide hydromodification flow control, then sizing factors from Tables 4-8 through 4-12 should be used in lieu of the “water quality only” sizing factors presented in Table 4-6.

Equation 4-7

$$\text{Min. IMP Area} = \sum \left(\frac{\text{DMA Area} \times \text{DMA Runoff}}{\text{Footage} \times \text{Factor}} \right) \times \left(\frac{\text{IMP Sizing}}{\text{Factor}} \right)$$

DMA = Drainage Management Area

IMP = Integrated Management Practice

Use the format of Table 4-7 to present the calculations of the required minimum area and volumes for **bioretention areas** and **planter boxes**:

TABLE 4-7. Format for presenting calculations of minimum IMP Areas for bioretention areas and planter boxes.

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	Soil Type:		IMP Name	
					IMP Sizing factor		Minimum Area	Proposed Area
Total					0.04			IMP Area

To size **dry wells, infiltration basins, or infiltration trenches** for the “water quality treatment only” option, use the following procedure:

1. Use the County of San Diego's 85th Percentile Isopleth Map to determine the minimum unit volume.
2. Determine the weighted runoff factor ("C" factor) for the area tributary to the facility. The factors in Table 4-2 may be used.
3. Multiply the weighted runoff factor times the tributary area times the minimum unit volume.

Equation 4-8

$$\text{Volume} = [\text{Tributary Area}] \times [\text{weighted runoff factor}] \times [\text{unit volume}]$$

4. Select a facility depth.
5. Determine the required facility area. Dry wells may be designed as an open vault or with rock fill. If rock fill is used, assume a porosity of 40%.
6. Ensure the facility can infiltrate the entire volume within 96 hours.

To size a **cistern or vault in series with a bioretention facility**:

1. Use Equation 4-8 to calculate the required cistern or vault volume.
2. Design a discharge orifice for a drawdown time of 24 hours.
3. Determine the maximum discharge from the orifice.
4. The minimum area of the bioretention facility must treat this flow based on a percolation rate of 5" per hour through the engineered soil.

B. FOR "WATER QUALITY TREATMENT AND HYDROMODIFICATION"

Tables 4-8 through 4-12 summarize sizing factors that may be used to provide minimum sizing criteria for IMP facilities. Sizing factors detailed in the tables represent minimum surface area and volumetric sizing factors which would be required to meet both the 85th percentile water quality treatment and hydromodification flow control criteria.

To use the sizing factor approach, Drainage Management Area (DMAs) are initially delineated to quantify all areas draining to an IMP. DMAs are defined as areas with a unique combination of soil type and slope type and multiple DMAs can drain to an IMP facility. Post-project surface cover conditions are quantified for each DMA using the surface cover coefficient in Table 4-2. Often times, impervious DMAs (with a high runoff coefficient) and pervious DMAs (with a low runoff coefficient) both drain to the same IMP. In addition, alternate surface cover conditions such as porous pavement require definition with a separate surface cover coefficient.

The minimum area of the IMP facility is determined by summing the products of each DMA area and surface cover coefficient draining to the IMP and then multiplying by the applicable