501 West Route 66 and 532 Parker Drive Project

Initial Study/Proposed Mitigated Negative Declaration

Volume II: Appendices

Prepared for:

City of Glendora
116 East Foothill Boulevard
Glendora, CA 91741

Prepared by:

Sapphos Environmental, Inc.
430 North Halstead Street
Pasadena, California 91107

November 23, 2020

Appendix H

Preliminary Standard Urban Stormwater Mitigation Plan

PRELIMINARY
STANDARD URBAN STORMWATER MITIGATION PLAN (SUSMP)

For:
New 9-Unit Mix-use Condominium
501 W Route 66,
Glendora, CA 91740
APN: 8713-040-028

Submitted for:
501 W. Route 66 Partners, LLC
130 N. Glendora Ave
Glendora, CA 91741
(909) 839-7040

Owner:
Contact: Mr. Robert Artura
130 N. Glendora Ave,
Glendora, CA 91740
Phone: (626) 232-3251

Prepared by:
EGL ASSOCIATES, INC.
11819 Goldring Road
Arcadia, CA, 91006
(626) 263-3588
Contact: Hank Jong Engineer

Prepared Date:
December 6, 2019

SUSMP Notes:

1. Determine and provide the pre- and post-development pervious and impervious areas created by the proposed development.

Pre-Development

Impervious Area 0.50 Acres, Percent Impervious 69 %
Pervious Area 0.22 Acres, Percent Pervious 31 %

Post-Development

Impervious Area 0.54 Acres, Percent Impervious 75%
Pervious Area 0.18 Acres, Percent Pervious 25%

2. All structural BMP's shall be accessible for inspection and maintenance and shall bear a "No Dumping-Drains to Ocean" symbol in traffic rated paint per detail herein.

3. Prior to commencement of any work within the road right of way and/or connection to a City or County-maintained storm Drain, and encroachment permit from Construction Division is required. For more information call (626) 358-3218

4. Prior to commencement of any work and/or discharge of drainage to a watercourse, a permit from both the California Department of Fish and Game and U.S. Army Corps of Engineers may be required, if applicable.

5. A copy for the approved SUSMP must be in possession of a responsible person and available at the project site at all times.

6. Any modification to the approved SUSMP must be re-submitted to the permitting office of Building and Safety Division for approval.

7. STATEMENT OF UNDERSTANDING

As a Civil Engineer of the project, I have reviewed the Development Planning for Storm Water Management- A manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), and have proposed the implementation of the permanent Best Management Practices (BMP's) applicable to effectively minimize the negative impacts of the project's stormwater runoff. The selected BMP's will be installed per the approved plans and as recommended by the product manufacturer as applicable.

12/9/19

Signature Engineer | Date

REGISTERED PROFESSIONAL ENGINEER
HANK HSING-LIAN JONG
45846
Exp.
CIVIL
STATE OF CALIFORNIA

Table of Contents

Section			Page
SUSMP Notes			
1.	**SUSMP REQUIREMENTS AND PROJECT DESCRIPTION**		3
	1.1	SUSMP BACKGROUND	3
	1.2	PROJECT PRIORITY CATEGORIES	4
	1.3	PROJECT LOCATION	5
	1.4	PROJECT DEVELOPMENT	6
	1.5	DRAINAGE PATTERNS AND WATERSHED AREA	6
	1.6	PRE-EXISTING WATER QUALITY CONDITIONS	6
	1.7	GENERATED POLLUTANTS	6
		1.7.1 EXPECTED POLLUTANTS	7-8
		1.7.2 POTENTIAL POLLUTANTS	8
		1.7.3 POLLUTANTS OF CONCERN	8
2.	**BEST MANAGEMENT PRACTICES (BMPs)**		9
	2.1	GENERATED POLLUTANTS	9
		2.1.1 EXISTING CONDITION	9
		2.1.2 DEVELOPED CONDITION	9
	2.2	CONSERVE NATURAL AREAS	9-10
	2.3	MINIMIZE STORMWATER POLLUTANTS OF CONCERN	10
	2.4	PROTECT SLOPES AND CHANNELS	10
	2.5	PROVIDE STORM DRAIN STENCILING AND SIGNAGE	10
	2.6	PROPERLY DESIGN OUTDOOR MATERIAL STORAGE AREAS	10
	2.7	PROPERLY DESIGN TRASH STORAGE AREAS	10
	2.8	PROVIDE PROOF ON ONGOING BMP MAINTENANCE	10-11
	2.9	DESIGN STANDARDS FOR STRUCTURAL OR TREATMENT CONTROL BMPs	11
3.	**INSPECTION AND MAINTENANCE RESPONSIBILITIES FOR BMPs**		12-13

ATTACHMENTS

A. STANDARD CONDITIONS

B. COUNTY OF LOS ANGELES WATER QUALITY ORDINANCE

C. THOMAS GUIDE PAGE 680 GRID C5

D. GRADING PLAN

E. BMP FACT SHEETS

F. COUNTY OF LOS ANGELES PUBLIC EDUCATIONAL INFORMATION

G. CITY OF GLENDORA WORKSHEETS

H. VOLUME AND FLOW RATE CALCULATIONS & HYDROLOGY ANALYSIS

I. MAINTENANCE COVENANT FOR STANDARD URBAN STORMWATER MITIGATION (SUSMP) REQUIREMENTS

J. O & M PLAN STRUCTURAL BMP INPECTIONS AND MAINTENANCE RESPOSIBILITY/FREQUENCY MATRIX

K. BMP INSPECTION MAINTENANCE RECORDS

1. SUSMP REQUIREMENTS AND PROJECT DESCRIPTIONS

1.1 SUSMP Background

In 1987, The federal Water Pollution Control Act (also referred to as the Clean Water Act [CWA] was amended to provide that the discharge of pollutants to waters of the United States from stormwater is effectively prohibited, unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) Permit. The 1987 amendments to the CWA added section 402 (p), which established a framework for regulating municipal, industrial and construction stormwater discharges under the NPDES program. In California, these permits are issued through the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards.

On December 13, 2001, the Regional Water Quality Control Board, Los Angeles Region (RWQCB), adopted Order No. 01-182. This Order is the NPDES Permit (NPDES No. CAS004001) for municipal stromwater and urban runoff discharges within the County of Los Angeles.

As adopted in December 2001, the requirements of Order No. 01-182 (the "Permit") covers 84 cities and the unincorporated areas of the Los Angeles County. Under the Permit, the Los Angeles County Flood Control District is designated as the Principal Permittee; the County of Los Angeles along with the 84 incorporated cities are designated as Permittees.

In compliance with the Permit, the permittees have implemented a stormwater quality management program (SQMP) with the ultimate goal of accomplishing the requirements of the Permit and reducing the amount of pollutants in stormwater and urban runoff wherein, new development/ redevelopment projects are required to prepare a Standard Urban Stormwater Mitigation Plan (SUSMP).

As a Permittee of the County of Los Angeles, Best Management Practices (BMPs) are enforceable by the City of Glendora pursuant to the County of Los Angeles Stormwater ordinance Chapter 12.80 is located in Attachment B of this SUSMP.

1.2 Project Priority Categories

	1. All significant re-development projects. Significant re-development is defined as the addition or creation of 5,000 or more square feet of impervious surface on an already developed site. This includes, but is not limited to, additional buildings and/or structures, extension of existing footprint of a building, construction of parking lots, etc. Where redevelopment results in an increase of less than fifty percent of the impervious surfaces of a previously existing development, and the existing development was not subject to SUSMPs, the design standards apply only to the addition, and not the entire development. When the redevelopment results in an increase of more than fifty percent of the impervious surfaces, then a WQMP is required for the entire development (new and existing).
	2. Home subdivisions of 10 units or more. This includes single family residences, multi-family residence, condominiums, apartments, etc.
	3. Industrial/commercial developments of 100,000 square feet or more. Commercial developments include non-residential developments such as hospitals, educational institutions, recreational facilities, mini-malls, hotels, office buildings, warehouses, and light industrial facilities.
	4. Automotive repair shops (with SIC codes 5013, 5014, 5541, 7532- 7534, 7536-7539).
	5. Restaurants where the land area of development is 5,000 square feet or more.
	6. Hillside developments of 10,000 square feet or more which are located on areas with known erosive soil conditions or where the natural slope is twenty-five percent or more.
	7. Developments of 2,500 square feet of impervious surface or more adjacent to (within 200 feet) or discharging directly into environmentally sensitive areas such as areas designated in the Ocean Plan as areas of special biological significance or waterbodies listed on the CWA Section 303(d) list of impaired waters.
	8. Parking lots of 5,000 square feet or more exposed to storm water. Parking lot is defined as land area or facility for the temporary storage of motor vehicles.

1.3 Project Location

This SUSMP has been prepared for NEW 9-UNIT MIX-USE CONDOMINIUM, TM 82949, APN: 8639-027-900, 901 & 902. The Project entails development of approximately, Total: 0.72 acres 0.72 acres resulting in 1 commercial building and 8 unit condominium houses. The Project is located North of W. Route 66 and east of Parker Dr with both street as nearest intersection and is bounded by commercial building to the southeast, and residential houses on the north, east and west. The project is located within the City of Glendora, County of Los Angeles. Major transportation corridors nearby include the Foothill 210 freeway to the south and the Orange 57 freeway to the east. Figure 1, Vicinity Map shown below identifies the general Project location. Additional reference is shown on the Thomas Guide, Page 680, Grid C5 Located in Attachment C of this SUSMP.

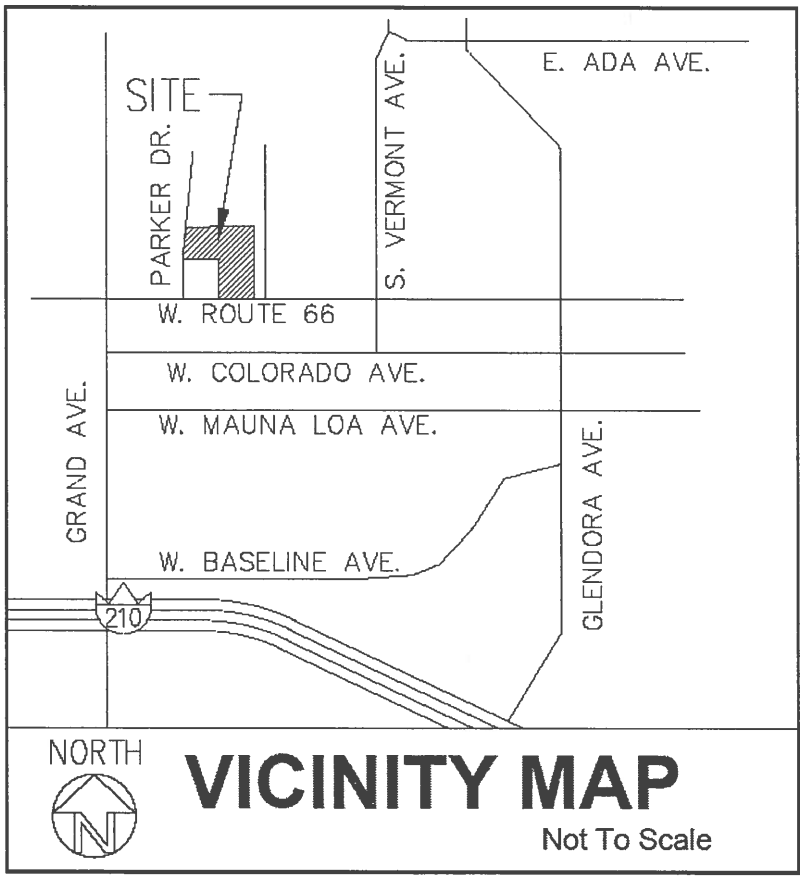


Figure 1
SINGLE FAMILY HOUSE -Tract 23483, Lot 62
Vicinity Map

1.4 Project Development

The Project area is mostly vacant but paved with asphalt concrete, and can be accessed from either W. Route 66 or Parker Dr. Project development includes construction activities, including, but not limited to, clearing and grubbing, rough grading, construction of paved areas, and storm drain inlet, new building, and attached garages.

A site Plan showing the existing and proposed development is located in Attachment D of this SUSMP.

1.5 Drainage Patterns and Watershed Area

The existing drainage pattern flows from Northeast corner to West towards Parker Dr. and South towards W Route 66. The developed drainage will drain into the proposed catch basins, which will direct flow to the proposed parkway drain on both side of the project site. The Project presides within the San Gabriel River Watershed area. The projects receiving waters have been identified as Walnut Creek Wash.

1.6 Pre-existing Water Quality Conditions

There are no known pre-existing water quality conditions associated with the project site.

1.7 Generated Pollutants

Natural grass will be used to provide peak runoff treatment of stormwater runoff. It will mitigate the runoff that flows to the catch basins. The proximate receiving water for this discharge point is Walnut Creek Wash. The downstream receiving water for this discharge point has been identified as San Gabriel River Reach 3, Reach 2, Reach 1 and San Gabriel River Estuary. Urban stormwater run-off in both the dry and rainy season contains pollutants that can be carried through the storm drain networks to lakes, streams and beaches.

Receiving waters listed in 2006 CWA section 303 (d) list have been identified as:

1) Walnut Creek Wash – Benthic-Macroinvertebrate Bioassessments, Indicator Bacteria, pH, Toxicity,

   Zinc.

2) San Gabriel River Reach 3- indicator Bacteria, Toxicity
3) San Gabriel River Reach 2 – Coliform Bacteria, Cyanide, Lead
4) San Gabriel River Reach 1 – Coliform Bacteria, pH
5) San Gabriel River Estuary – Copper, Dioxin, Nickel, DO

The potential Stormwater or urban runoff pollutants reasonably expected to be associated with this Project are as follows:

1.7.1 Expected Pollutants

- *Bacteria and Viruses* – Bacteria and Viruses are ubiquitous microorganisms that thrive under certain environmental conditions. Their proliferation is typically cause by the transport of animal or human fecal wastes from the watershed. Water, containing excessive bacteria and viruses, can alter the aquatic habitat and create a harmful environment for humans and aquatic life. Also, the decomposition of excess organic waste causes increased growth of undesirable organisms in the water.

- *Nutrients* – Nutrients are inorganic substances, such as nitrogen and phosphorus. Excessive discharge of nutrients to water bodies and streams causes eutrophication, where aquatic plants and algae growth can lead to excessive decay of organic matter in the water body, loss of oxygen in the water, release of toxins in sediment, and the eventual death of aquatic organisms. Primary sources of nutrients in urban runoff are fertilizers and eroded soils.

- *Pesticides* -- Pesticides (including herbicides) are chemical compounds commonly used to control nuisance growth or prevalence of organisms. Relatively low levels of the active component of pesticides can result in conditions of aquatic toxicity. Excessive or improper application of a pesticide may result in runoff containing toxic levels of its active ingredient (OC 2003).

- *Sediments* – Sediments are solid materials that are eroded from the land surface. Sediments can increase turbidity, clog fish gills, reduce spawning habitat, lower young aquatic organisms survival rates, smother bottom dwelling organisms, and suppress aquatic vegetation growth.

- *Trash and Debris* – Trash (such as paper, plastic, polystyrene packing foam, and aluminum materials) and biodegradable organic matter (such as leaves, grass cuttings, and food waste) are general waste products on the landscape. The presence of trash and debris may have a significant impact on the recreational value of a water body and aquatic habitat. Trash impacts water quality by increasing biochemical oxygen demand.

- *Oil and Grease* – Oil and grease in water bodies decreases the aesthetic value of the water body, as well as the water quality. Primary sources of oil and grease are petroleum hydrocarbon products, motor products from leaking vehicles, esters, oils, fats, waxes, and high molecular-weight fatty acids.

- *Oxygen-Demanding Substances* – This category includes biodegradable organic material as well as chemicals that react with dissolved oxygen in water to form other compounds. Proteins, carbohydrates, and fats are examples of biodegradable organic compounds. Compounds such as ammonia and hydrogen sulfide are examples of oxygen-demanding compounds. The oxygen demand of a substance can lead to depletion of dissolved

oxygen in a water body and possibly the development of septic conditions. A reduction of dissolved oxygen is detrimental to aquatic life and can generate hazardous compounds such as hydrogen sulfides.

1.7.2 Potential Pollutants

There are no Potential Pollutants.

1.7.3 Pollutants of Concern

There are no Pollutants of Concern.

2. BEST MANAGEMENT PRACTICES (BMPs)

Best Management Practices(BMPs) are construction devices, procedures, rules or methods which when implemented and followed, should reduce and/or eliminate the specific source of pollution of which the BMPs is targeted. The Project will employ Site Design Source Control (Structural/ Non-Structural), and Treatment Control BMPs as described herein, and shall be maintained in good and effective condition.

Sections 2.1 through 2.9 below list SUSMP requirements and provisions applicable to all SUSMP development categories. The following requirements are shown followed by specific Project information:

2.1 Peak Stormwater Runoff Discharge Rates

Post development peak stormwater runoff discharge rates shall not exceed the estimated pre-development rate for developments where the increased peak stormwater discharge rate will result in increased potential for downstream erosion.

2.1.1 Existing Condition

Existing drainage flows from northeast corner toward west towards Parker Dr and South toward w Route 66. The existing project area of 0.72 acres produces a total 50-year runoff of 2.85 cfs.

2.1.2 Developed Condition

Developed Conditional the 0.72 acres site will consist of a commercial use building and 8-unit condominium. The rest of the property will remain the same existing drainage condition. Therefore we just discuss the 0.72 acres of developed area as post-development. The post-developed project area of 0.72 acres produces a 50-year runoff of 2.85 cfs. As a result of development, drainage patterns will be converted to the existing natural drainage pattern through a velocity reducer. The water will first enter the catch basins then the flow will drain to velocity reducer located at the east of the property.

2.2 Conserve Natural Areas

The project site will consist of the following:

- Promote natural vegetation by only developing less than half of the project site and by using landscaped areas.
- Maximize trees and other vegetation and each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.
- Limit clearing and grading of native vegetation at a site to the minimum amount needed to build lots, allowing access, and providing fire protection.

More site will be remaining in a natural, undisturbed condition. Due to the low existing amount of native trees and shrubs, drought tolerant trees, and large shrubs will be planted to maximize canopy interception and water conservation. Owner shall be encouraged to employ water conservation practices.

2.3 Minimize Stormwater Pollutants of Concern

The following BMPs will be utilized as post-construction measures that would most effectively reduce stormwater pollutants.

SD-10	Site Design & Landscape Planning
SD-11	Roof Runoff Controls
SD-12	Efficient Irrigation
SD-13	Storm Drain Signage
MP-52	Drain Insert

Fact sheets for these BMPs can be found in Attachment E.

In addition, natural grass will be used to treat flow prior to discharging to velocity reducers that will capture and treat generated pollutants of concern. Flow will drain into the natural grass and mitigated prior to discharging to the catch basins.

2.4 Protect Slopes and Channels

The project area is highly urbanized and is located on a slope ranging from 2 to 5 % all drainage from developed impervious areas will be reduced with velocity reducer located at the east part of the property. Landscaping will be installed to protect slopes.

2.5 Provide Storm Drain Stenciling and Signage

Storm stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets. The project shall install storm drain stenciling and signage on all catch basins located on Concrete Driveways and Walkways throughout the project site. Legibility of stencils must be maintained.

2.6 Properly Design Outdoor Material Storage Areas

The project consists of a single-family house. There are no outdoor storage areas.

2.7 Properly Design Trash Storage Areas

The project consists of a 9 unit mix-use condominium that will contain a trash enclosed area. Trash bin is located Southwest corner of the project site and it will be covered by lid therefore it will not be exposed to any drainage from the outside. Trash storage will be properly disposed of with contracted trash disposal service.

2.8 Provide Proof of Ongoing BMP Maintenance

For residential properties where the Structural or Treatment Control BMPs will be maintained by a homeowner, language regarding the responsibility for maintenance is needed, how the necessary maintenance can be performed, and assistance what the Permitted can provide. The transfer of this information shall also be required with any subsequent sale of the property.

Ongoing BMP Maintenance will be provided by the Owner. A copy of the site's Maintenance Covenant for Standard Urban Stormwater Mitigation (SUSMP) Requirements is located in Attachment I.

2.9 Design Standards for Structural or Treatment Control BMPs

Structural or Treatment Control BMPs selected for use at any of the following categories of planning development project shall meet the design standards of this Section unless specifically exempted:

- Identify proposed treatment control and ensure that it is designed to adequately mitigate for generated pollutants.
- Describe how this system works per manufacturer information.
- Identify locations of devices and reference on Site Plan.
- Identify O&M activities, responsible party, and frequency for maintenance.
- Identify how proposed facility will mitigate for generated pollutants, including but not limited to, "Pollutants of Concern" identified as bacterial and pathogens.

In order to comply with the County of Los Angeles and the City of Glendora SUSMP, natural grass will be used for treatment of pollutants. The Methology used for the calculations is derived from the Los Angeles Department of Public Works Hydrology/ Sedimentation Manual. The volume and flow rate calculations are located in Attachment H of this SUSMP. See Attachment J for Operation and Maintenance Plan Structural and Non-Structural BMP inspection and Maintenance Responsibility/ Frequency Matrix, for specific BMP maintenance.

3. INSPECTION AND MAINTENANCE RESPONSIBILITY FOR BMPs

1. Maintenance and Inspection activities for the identified BMPs will be performed as indicated on the enclosed BMP Maintenance and Responsibility/ Frequency Matrix. The maintenance and inspection responsibilities will become the responsibility of the Owner, Charles Chow.

2. The established owner shall employ self-inspections and record keeping for BMPs, as applicable. The established Owner shall retain all maintenance records for a period of three (3) years after the recorded inspection date for the lifetime of the Project.

3. The Owner shall be responsible for management/ implementation of BMPs with the following contact information of the person responsible for inspecting and maintaining each BMP during operation hours:

   Owner:
   501 W. Route 66 Partners, LLC
   130 N. Glendora Ave
   Glendora, CA 91740
   (626) 500-8024

   Resposibilities include, but are not limited to, the following activities:

   - Ensuring full compliance with stormwater regulations.
   - Implementing all non-stormwater management and materials, and waste management activities such as: monitoring discharges, general clean-up, vehicle and equipment cleaning, spill control; ensuring that no materials other than stormwater are discharged in quantities which will have an adverse effect on receiving waters or storm drain systems etc.
   - Pre-and post-storm event inspections.
   - Routine inspections.
   - Coordinate and assure all of the necessary correction/ repairs are made immediately.
   - Submitting Notices of Discharge and reports of Illicit Connections or Illegal Dischages.

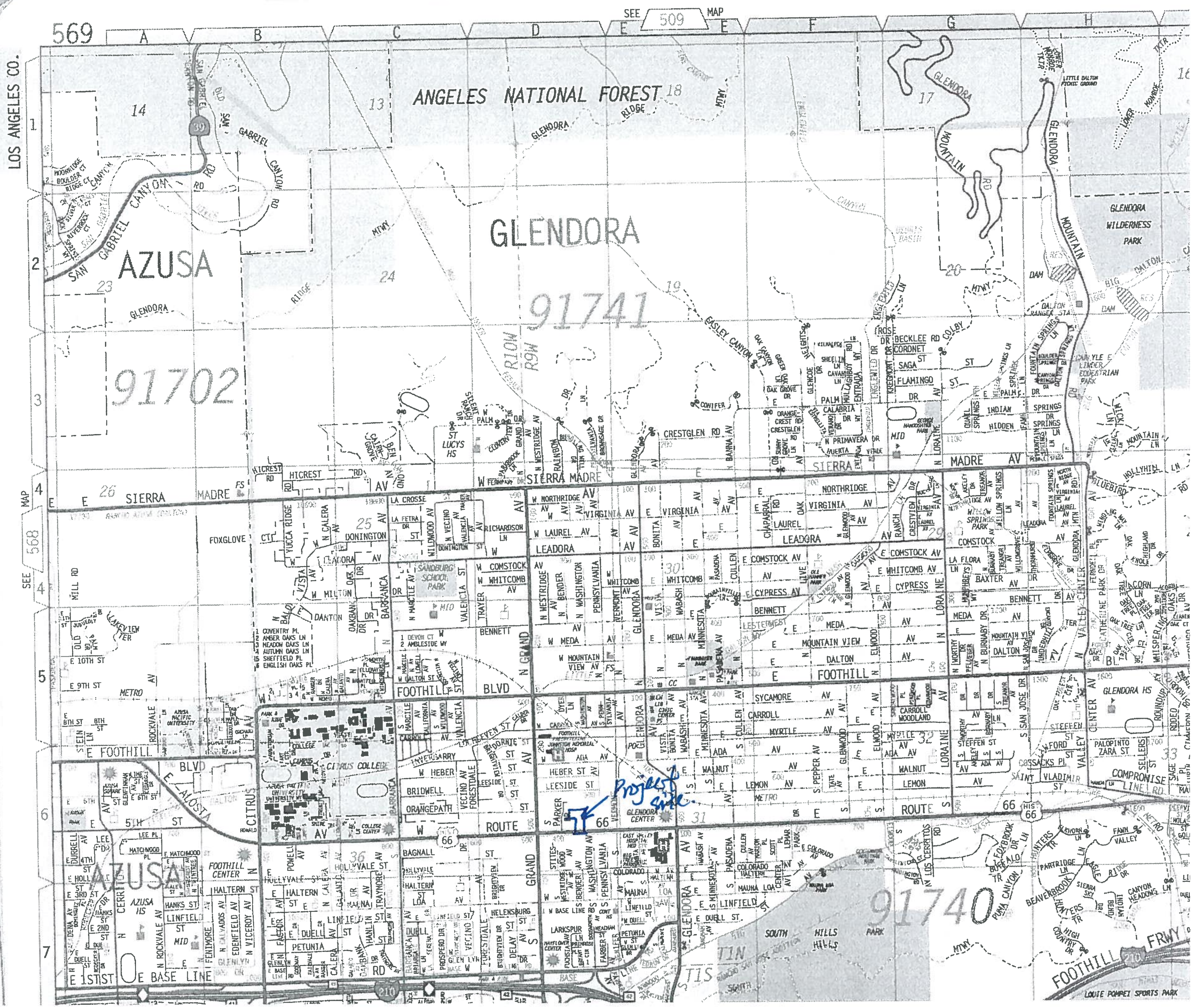
4. A copy of the Maintenance Covenant For Standard Urban Stormwater Mitigation (SUSMP) Requirements to be or as recorded at the County of Los Angeles is provided in Attachment I. This maintenance covenant has been devised by the City of Glendora to legally assign responsibilities for maintenance of proposed BMP facilities such that they run with the land. In order to comply with item A of the SUSMP (provide proof of ongoing BMP maintenance), responsibilities have been listed as as encumbrances on the property (per the maintenance covenant), and shall be signed by the owners, and shall be recorded in the City of Glendora.

5. Should a transfer of ownership occur; appropriate notification shall be filed with the City of Glendora confirming the change in responsibility and continued implementation of stormwater management requirements.

Attachment A
Standard Conditions

Attachment B
County of Los Angeles Water Quality Ordinance

Attachment C
Thomas Guide Page 569 Grid D6


569
SEE 509 MAP
SEE 568 MAP
LOS ANGELES CO.
ANGELES NATIONAL FOREST
GLENDORA
AZUSA
91741
91702
91740
GLENDORA WILDERNESS PARK
SAN GABRIEL CANYON RD
GLENDORA MOUNTAIN RD
E SIERRA MADRE AV
E FOOTHILL BLVD
E ALOSTA AV
ROUTE 66
CITRUS COLLEGE
GLENDORA HS
GLENDORA CENTER
SANDBURG SCHOOL PARK
FOOTHILL FRWY
LOUIE POMPEI SPORTS PARK
SOUTH HILLS PARK
Project site

Attachment E
BMP Fact Sheets

SD-10 Site Design & Landscape Planning

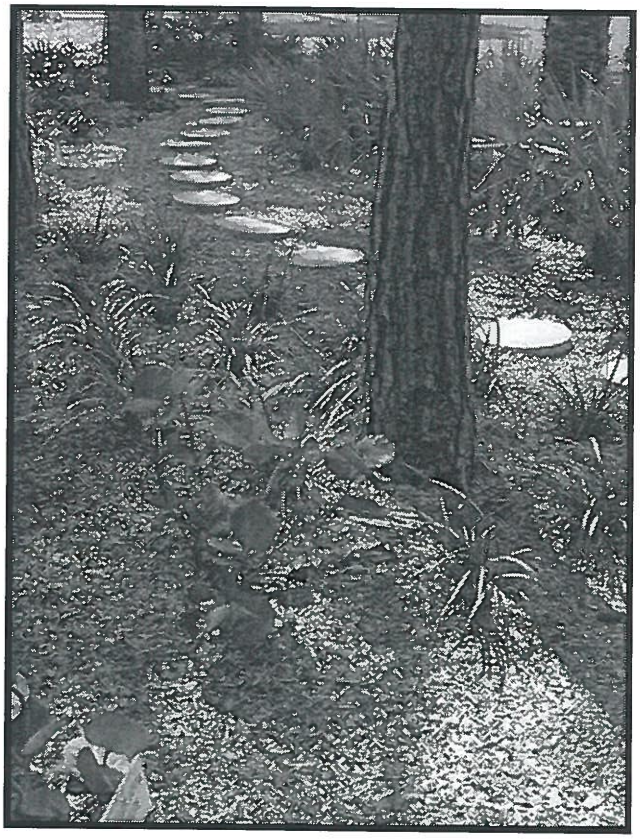
SD-11 Roof Runoff Controls

SD-12 Efficient Irrigation

SD-13 Storm Drain Signage

MP- 52 Drain Insert

Site Design & Landscape Planning SD-10



Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- ☑ Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Integrating and incorporating appropriate landscape planning methodologies into the project design is the most effective action that can be done to minimize surface and groundwater contamination from stormwater.

Approach

Landscape planning should couple consideration of land suitability for urban uses with consideration of community goals and projected growth. Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Design requirements for site design and landscapes planning should conform to applicable standards and specifications of agencies with jurisdiction and be consistent with applicable General Plan and Local Area Plan policies.

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

Designing New Installations

Begin the development of a plan for the landscape unit with attention to the following general principles:

- Formulate the plan on the basis of clearly articulated community goals. Carefully identify conflicts and choices between retaining and protecting desired resources and community growth.
- Map and assess land suitability for urban uses. Include the following landscape features in the assessment: wooded land, open unwooded land, steep slopes, erosion-prone soils, foundation suitability, soil suitability for waste disposal, aquifers, aquifer recharge areas, wetlands, floodplains, surface waters, agricultural lands, and various categories of urban land use. When appropriate, the assessment can highlight outstanding local or regional resources that the community determines should be protected (e.g., a scenic area, recreational area, threatened species habitat, farmland, fish run). Mapping and assessment should recognize not only these resources but also additional areas needed for their sustenance.

Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Conserve Natural Areas during Landscape Planning

If applicable, the following items are required and must be implemented in the site layout during the subdivision design and approval process, consistent with applicable General Plan and Local Area Plan policies:

- Cluster development on least-sensitive portions of a site while leaving the remaining land in a natural undisturbed condition.
- Limit clearing and grading of native vegetation at a site to the minimum amount needed to build lots, allow access, and provide fire protection.
- Maximize trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.
- Promote natural vegetation by using parking lot islands and other landscaped areas.
- Preserve riparian areas and wetlands.

Maximize Natural Water Storage and Infiltration Opportunities Within the Landscape Unit

- Promote the conservation of forest cover. Building on land that is already deforested affects basin hydrology to a lesser extent than converting forested land. Loss of forest cover reduces interception storage, detention in the organic forest floor layer, and water losses by evapotranspiration, resulting in large peak runoff increases and either their negative effects or the expense of countering them with structural solutions.
- Maintain natural storage reservoirs and drainage corridors, including depressions, areas of permeable soils, swales, and intermittent streams. Develop and implement policies and

regulations to discourage the clearing, filling, and channelization of these features. Utilize them in drainage networks in preference to pipes, culverts, and engineered ditches.

- Evaluating infiltration opportunities by referring to the stormwater management manual for the jurisdiction and pay particular attention to the selection criteria for avoiding groundwater contamination, poor soils, and hydrogeological conditions that cause these facilities to fail. If necessary, locate developments with large amounts of impervious surfaces or a potential to produce relatively contaminated runoff away from groundwater recharge areas.

Protection of Slopes and Channels during Landscape Design

- Convey runoff safely from the tops of slopes.
- Avoid disturbing steep or unstable slopes.
- Avoid disturbing natural channels.
- Stabilize disturbed slopes as quickly as possible.
- Vegetate slopes with native or drought tolerant vegetation.
- Control and treat flows in landscaping and/or other controls prior to reaching existing natural drainage systems.
- Stabilize temporary and permanent channel crossings as quickly as possible, and ensure that increases in run-off velocity and frequency caused by the project do not erode the channel.
- Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion. Energy dissipaters shall be installed in such a way as to minimize impacts to receiving waters.
- Line on-site conveyance channels where appropriate, to reduce erosion caused by increased flow velocity due to increases in tributary impervious area. The first choice for linings should be grass or some other vegetative surface, since these materials not only reduce runoff velocities, but also provide water quality benefits from filtration and infiltration. If velocities in the channel are high enough to erode grass or other vegetative linings, riprap, concrete, soil cement, or geo-grid stabilization are other alternatives.
- Consider other design principles that are comparable and equally effective.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Redevelopment may present significant opportunity to add features which had not previously been implemented. Examples include incorporation of depressions, areas of permeable soils, and swales in newly redeveloped areas. While some site constraints may exist due to the status of already existing infrastructure, opportunities should not be missed to maximize infiltration, slow runoff, reduce impervious areas, disconnect directly connected impervious areas.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Stormwater Management Manual for Western Washington, Washington State Department of Ecology, August 2001.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Roof Runoff Controls SD-11

Rain Garden

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Description

Various roof runoff controls are available to address stormwater that drains off rooftops. The objective is to reduce the total volume and rate of runoff from individual lots, and retain the pollutants on site that may be picked up from roofing materials and atmospheric deposition. Roof runoff controls consist of directing the roof runoff away from paved areas and mitigating flow to the storm drain system through one of several general approaches: cisterns or rain barrels; dry wells or infiltration trenches; pop-up emitters, and foundation planting. The first three approaches require the roof runoff to be contained in a gutter and downspout system. Foundation planting provides a vegetated strip under the drip line of the roof.

Approach

Design of individual lots for single-family homes as well as lots for higher density residential and commercial structures should consider site design provisions for containing and infiltrating roof runoff or directing roof runoff to vegetative swales or buffer areas. Retained water can be reused for watering gardens, lawns, and trees. Benefits to the environment include reduced demand for potable water used for irrigation, improved stormwater quality, increased groundwater recharge, decreased runoff volume and peak flows, and decreased flooding potential.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Designing New Installations

Cisterns or Rain Barrels

One method of addressing roof runoff is to direct roof downspouts to cisterns or rain barrels. A cistern is an above ground storage vessel with either a manually operated valve or a permanently open outlet. Roof runoff is temporarily stored and then released for irrigation or infiltration between storms. The number of rain

barrels needed is a function of the rooftop area. Some low impact developers recommend that every house have at least 2 rain barrels, with a minimum storage capacity of 1000 liters. Roof barrels serve several purposes including mitigating the first flush from the roof which has a high volume, amount of contaminants, and thermal load. Several types of rain barrels are commercially available. Consideration must be given to selecting rain barrels that are vector proof and childproof. In addition, some barrels are designed with a bypass valve that filters out grit and other contaminants and routes overflow to a soak-away pit or rain garden.

If the cistern has an operable valve, the valve can be closed to store stormwater for irrigation or infiltration between storms. This system requires continual monitoring by the resident or grounds crews, but provides greater flexibility in water storage and metering. If a cistern is provided with an operable valve and water is stored inside for long periods, the cistern must be covered to prevent mosquitoes from breeding.

A cistern system with a permanently open outlet can also provide for metering stormwater runoff. If the cistern outlet is significantly smaller than the size of the downspout inlet (say ¼ to ½ inch diameter), runoff will build up inside the cistern during storms, and will empty out slowly after peak intensities subside. This is a feasible way to mitigate the peak flow increases caused by rooftop impervious land coverage, especially for the frequent, small storms.

Dry wells and Infiltration Trenches

Roof downspouts can be directed to dry wells or infiltration trenches. A dry well is constructed by excavating a hole in the ground and filling it with an open graded aggregate, and allowing the water to fill the dry well and infiltrate after the storm event. An underground connection from the downspout conveys water into the dry well, allowing it to be stored in the voids. To minimize sedimentation from lateral soil movement, the sides and top of the stone storage matrix can be wrapped in a permeable filter fabric, though the bottom may remain open. A perforated observation pipe can be inserted vertically into the dry well to allow for inspection and maintenance.

In practice, dry wells receiving runoff from single roof downspouts have been successful over long periods because they contain very little sediment. They must be sized according to the amount of rooftop runoff received, but are typically 4 to 5 feet square, and 2 to 3 feet deep, with a minimum of 1-foot soil cover over the top (maximum depth of 10 feet).

To protect the foundation, dry wells must be set away from the building at least 10 feet. They must be installed in solids that accommodate infiltration. In poorly drained soils, dry wells have very limited feasibility.

Infiltration trenches function in a similar manner and would be particularly effective for larger roof areas. An infiltration trench is a long, narrow, rock-filled trench with no outlet that receives stormwater runoff. These are described under Treatment Controls.

Pop-up Drainage Emitter

Roof downspouts can be directed to an underground pipe that daylights some distance from the building foundation, releasing the roof runoff through a pop-up emitter. Similar to a pop-up irrigation head, the emitter only opens when there is flow from the roof. The emitter remains flush to the ground during dry periods, for ease of lawn or landscape maintenance.

Foundation Planting

Landscape planting can be provided around the base to allow increased opportunities for stormwater infiltration and protect the soil from erosion caused by concentrated sheet flow coming off the roof. Foundation plantings can reduce the physical impact of water on the soil and provide a subsurface matrix of roots that encourage infiltration. These plantings must be sturdy enough to tolerate the heavy runoff sheet flows, and periodic soil saturation.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Supplemental Information

Examples

- City of Ottawa's Water Links Surface –Water Quality Protection Program
- City of Toronto Downspout Disconnection Program
- City of Boston, MA, Rain Barrel Demonstration Program

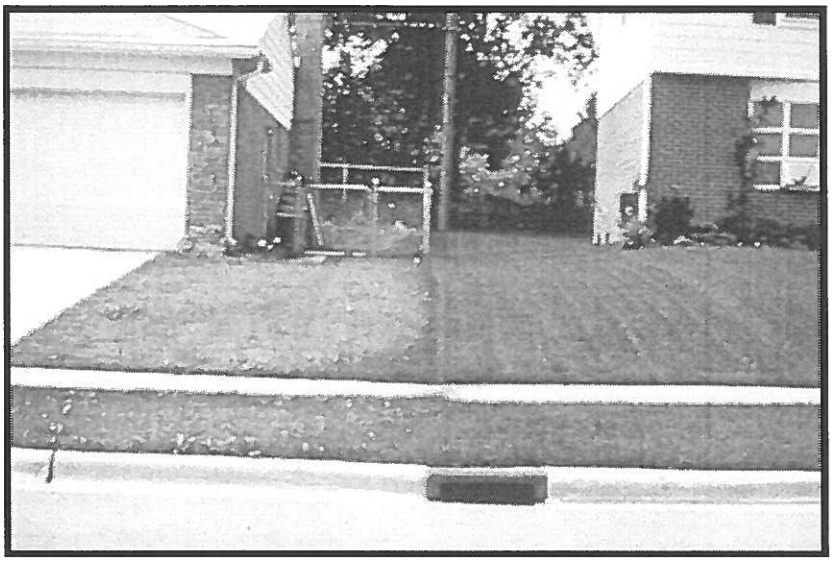
Other Resources

Hager, Marty Catherine, Stormwater, "Low-Impact Development", January/February 2003. www.stormh2o.com

Low Impact Urban Design Tools, Low Impact Development Design Center, Beltsville, MD. www.lid-stormwater.net

Start at the Source, Bay Area Stormwater Management Agencies Association, 1999 Edition

Efficient Irrigation SD-12



Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Irrigation water provided to landscaped areas may result in excess irrigation water being conveyed into stormwater drainage systems.

Approach

Project plan designs for development and redevelopment should include application methods of irrigation water that minimize runoff of excess irrigation water into the stormwater conveyance system.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Designing New Installations

The following methods to reduce excessive irrigation runoff should be considered, and incorporated and implemented where determined applicable and feasible by the Permittee:

- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Design irrigation systems to each landscape area's specific water requirements.
- Include design featuring flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
- Implement landscape plans consistent with County or City water conservation resolutions, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

- Design timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the storm water drainage system.
- Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider design features such as:
  - Using mulches (such as wood chips or bar) in planter areas without ground cover to minimize sediment in runoff
  - Installing appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant materials where possible and/or as recommended by the landscape architect
  - Leaving a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible
  - Choosing plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth
- Employ other comparable, equally effective methods to reduce irrigation water runoff.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Storm Drain Signage SD-13

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include "NO DUMPING

– DRAINS TO OCEAN" and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of "redevelopment", then the requirements stated under " designing new installations" above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner's association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.

- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Attachment F
Educational Information

Water Conservation

Household Hazardous Waste and Electronics Waste Management Program

Dog Owner Tips

Yard Tips

Painting Tips

Recycling tips

Water Conservation
Water Conservation Tips
Rebate Program
Cash for Grass
Xeriscape Education
Native Plant List
Media Gallery
Events

Water Conservation Tips

With unpredictable water resources and a state mandate to reduce water use by 20 percent by the year 2020, water conservation should be a high priority for all residents. Even in years of normal rainfall, every drop counts! Try these easy and effective ways to save water throughout your home and garden:

- Set your sprinkler system to water only at night.
- Fix indoor faucets and toilet leaks. Just a drip can waste more than 10,000 gallons per month.
- Plant native and drought-tolerant landscapes. Visit your local home and garden store or nursery to find the appropriate low-water use plants suited for your local climate.
- Adjust your sprinklers to ensure they water the yard and not the sidewalk or driveway and try taking a minute or two off the timer.
- Check your system. Do a weekly check for broken or clogged sprinkler heads and replace them right away.
- Use a broom instead of a hose. Sweeping rather than hosing off leaves or grass clippings not only saves water, it also reduces runoff.
- Get an adjustable hose nozzle for outdoor use. It will allow you to adjust the spray to meet your needs.
- Prevent water runoff. Set your sprinklers to run for two short cycles and aerate your lawn to give the water somewhere to go besides down the storm drain.
- Take shorter showers and install a water efficient showerhead.
- Turn off the water while you brush your teeth or shave.
- Wash only full loads in the dishwasher and washing machine.

For water conservation tips for kids, click here.
For water conservation tips for businesses, click here

Water Savings

The following table illustrates the amount of water you can save by making a few small changes to your daily activities. By adjusting your daily routine and installing water-wise devices you can save thousands of gallons every month!

Toilet		Shower	
Regular Toilet:	Ultra-Low Flush Toilet:	Regular Shower:	Low-Flow Shower Head:
5-7 gallons	1.6 gallons	8 gallons/minute	2.5 gallons/minute
Bath		Shaving	
Full:	Half Full:	Open Tap:	Full Basin:
20 gallons	10 gallons	5-10 gallons	1 gallon
Brushing Teeth		Washing Hands	
Open Tap:	Brush & Rinse:	Open Tap:	Full Basin:
2-3 gallons	1/4-1/2 gallon	1-2 gallons	1 gallon
Washing Produce		Auto Dishwasher	
Open Tap:	Full Sink:	Standard Cycle:	Short Cycle:
5-10 gallons	1-2 gallon	10-15 gallons	8-13 gallon
Manual Dishwashing		Lawn	
Open Tap:	Full Basin Wash & Rinse:	Everyday:	
30 gallons	5 gallon	67-140 gallons	
Pool (20' x 40')		Car Washing	

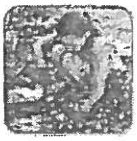
One

Set your sprinkler system to water only at night. You'll save hundreds of gallons of water each month!

Two

Fix indoor faucets and toilet leaks and save thousands of gallons each month.

Three



Plant native and drought-tolerant landscapes and save tens of thousands of gallons each month.

Uncovered:	Covered:	Open Tap:	Shut-Off Nozzle:
900-3000 gallons/month	300-11000 gallons/month	100-200 gallons	50 gallons

To find more ways you can save water throughout your home, visit the California Urban Water Conservation Council's interactive home tour at www.h2ouse.org.

The following sites offer even more easy ways to save water indoors:

- www.wateraware.org
- www.epa.gov/watersense
- www.bewaterwise.com

What is
HHW
E-Waste
Universal Waste
Sharps Waste
Dangers
Improper Disposal
Safe Use & Disposal
No Drugs Down the Drain
Disposal
Collection Events
Motor Oil Drop-off
Sharps Disposal
Batteries Disposal
Fluorescent Tubes
City Programs
Reduce
How to Reduce Use
Alternative Products
Resources
Contacts & Links
Flyers & Tipsheets
Factsheets
Free Clip Art

(En Español)

What is Household Hazardous Waste (HHW)?

HHW Collection Event Schedule

Your guide to household hazardous waste

HHW is any product labeled: toxic, poison, combustible, corrosive, flammable or irritant that is disposed of.

A typical home can contain an array of household hazardous products for cleaning, painting, beautifying, lubricating and disinfecting the house, yard, workshop and garage. The health and safety of our families, neighborhoods and environment is threatened when household hazardous waste is stored or disposed of improperly.

The chemical-based household products from a single home may seem insignificant; but when millions of homes across Los Angeles County use similar products — handling, storing and disposing of them improperly — the combined effect becomes a major problem. Our communities and the environment is endangered when these products are discarded in household garbage, sinks or storm drains.

If you have electronics, latex paint or other reusable items, consider posting on LACoMAX. It's easy and beneficial.

E-mail Notification System (eNotify): Sign up with eNotify to be e-mailed regarding our HHW/E-Waste collection events based on locations and criteria you select. From the **calendar**, you can also view driving directions, location map or receive a reminder e-mail days before the event takes place. Please provide us your **feedback** on this program so that we can enhance our service to you.

Safely Manage Sharps Waste: State law makes it illegal for residents to dispose of sharps waste in the trash. To learn more and find out how to properly dispose of sharps waste, click **here**.

Keep Universal Waste (u-waste) Out of the Trash: Items such as household batteries, flourescent light bulbs, electronic devices, and mercury thermostats should not be placed in your trash. Bring them to a **collection event** or a **permanent center**. It is illegal to dispose of batteries in the trash. To learn more and find out how to properly dispose of household batteries, click **here**. For more information on u-waste regulations, visit the Department of Toxic Substance Control **website**.

No Drugs Down the Drain: If you have a medicine cabinet full of expired or unused medications, don't discard them down the sink or toilet, because their chemical components may contaminate the water supply or soil. To learn how to dispose of unused pharmaceutical drugs, click **here**.

Recycle Used Motor Oil and Filters: For proper disposal and available outlets, click **here**.

Donate that phone! Keep California Beautiful: Public Works and Keep California Beautiful have made cell phone recycling very easy for you. Find out **how**.

The following are examples of household hazardous products that may be found in and around your home:

Lawn and Garden Products

- Bug spray
- Fertilizer
- Pesticide/insecticide
- Fungicide
- Herbicide
- Weed killer

Paint and Related Products

- Latex paint
- Water-based paint
- Oil-based paint
- Turpentine paint stripper
- Rust remover
- Paint thinner
- Varnish

Automotive Fluids and Batteries

- Used motor oil and filters
- Gasoline and diesel fuel
- Kerosene
- Auto body repair products
- Windshield washer solution
- Antifreeze
- Brake and transmission fluid
- Lead acid batteries
- Metal polish with solvent

Beauty Products and Medicines

- Alcohol-based lotions
- Isopropyl alcohol
- Medicine
- Nail polish and nail polish remover
- Hair relaxers and permanents
- Dyes
- Products in aerosol cans
- Sharps

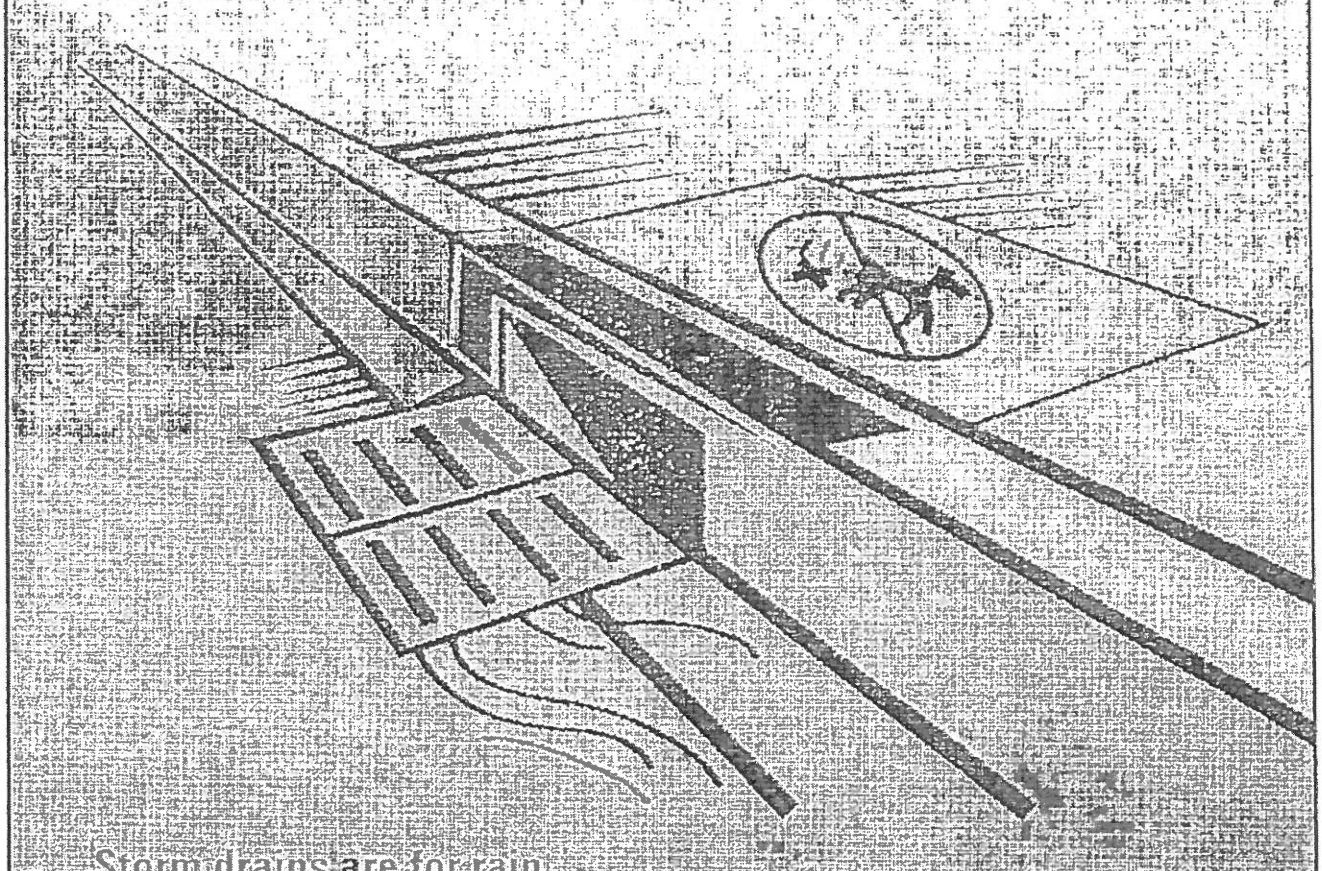
Household Cleaners

- Ammonia-based cleaners
- Oven cleaners
- Drain cleaners
- Floor care products
- Aerosol cleaners
- Window cleaners
- Furniture polish
- Metal polishes and cleaners
- Tub, tile and toilet cleaners

Miscellaneous

- Fluorescent lights
- Mercury thermometers
- Photographic chemicals
- Lighter fluid
- Shoe polish
- Swimming pool chemicals
- Moth balls
- Rat poison
- Glue
- Fiberglass epoxy
- Mercury batteries

Pick Up After Your Pooch!



Storm drains are for rain
they're not pooper scoopers

L.A. County residents walk a dog without picking up the droppings more than **62,000** times per month.

Disease-causing dog waste washes from the ground and streets into storm drains and flows straight to the ocean — untreated.

Remember to bring a bag and clean up after your dog.

1 (888) CLEANLA
www.888CleanLA.com

Tips for Dog Owners:

Dog owners can help solve the stormwater pollution problem by taking these easy steps...

- Clean up after your dog every single time.
- Take advantage of the complimentary waste bags offered in dispensers at local parks.
- Ensure you always have extra bags in your car so you are prepared when you travel with your dog.
- Carry extra bags when walking your dog and make them available to other pet owners who are without.
- Teach children how to properly clean up after a pet. Encourage them to throw the used bags in the nearest trash receptacle if they are away from home.
- Put a friendly message on the bulletin board at the local dog park to remind pet owners to clean up after their dogs.
- Tell friends and neighbors about the ill effects of animal waste on the environment. Encourage them to clean up after their pets as well.

PROJECT Pollution PREVENTION

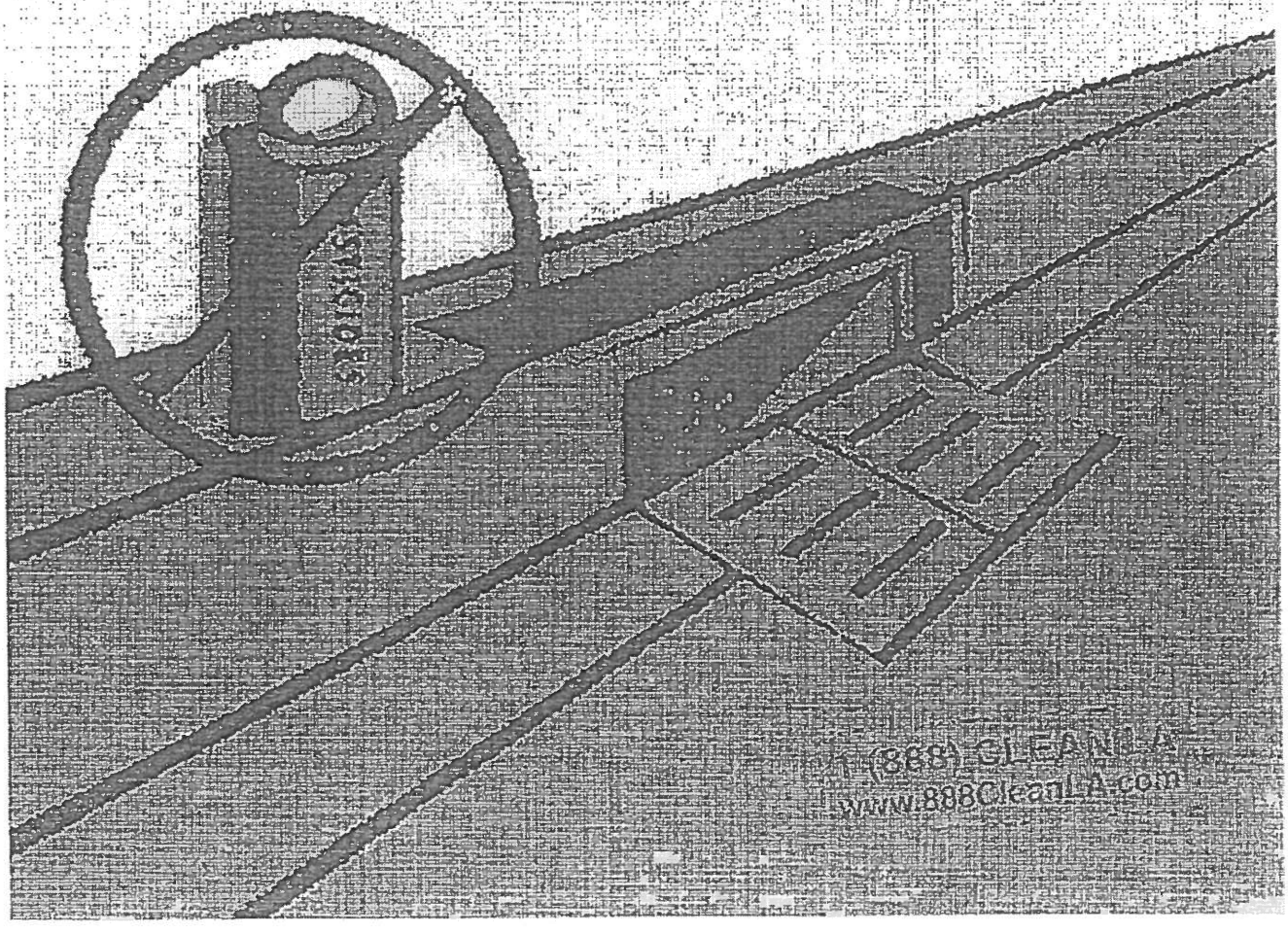
A Yard is a Terrible Thing to Waste!

Storm drains are for rain...**not yard waste.**

Residential yard waste represents about **13 percent** of the total waste generated in L.A. County.

Pesticides, fertilizer and yard waste such as leaves and mowed grass wash from the ground and streets into storm drains and flow straight to the ocean — **untreated.**

Remember to use pesticides and fertilizer wisely and pick-up yard waste.



Tips For Yard Care:

L.A. County residents can help solve the stormwater pollution problem by taking these easy steps...

- Do not over-fertilize and do not use fertilizer or pesticides near ditches, gutters or storm drains.
- Do not use fertilizer or pesticides before a rain.
- Follow the directions on the label carefully.
- Use pesticides sparingly — more is not better. "Spot" apply, rather than "blanket" apply.
- When watering your lawn, use the least amount of water possible so it doesn't run into the street carrying pesticides and other chemicals with it.
- Use non-toxic products for your garden and lawn whenever possible.
- If you must store pesticides or fertilizer, make sure they are in a sealed, water-proof container in a covered area to prevent runoff.
- Do not blow, sweep, hose or rake leaves or other yard trimmings into the street, gutter or storm drain.

PROJECT Pollution PREVENTION

A message from the County of Los Angeles Department of Public Works.
Printed on recycled paper.

Don't Paint the Town Red!

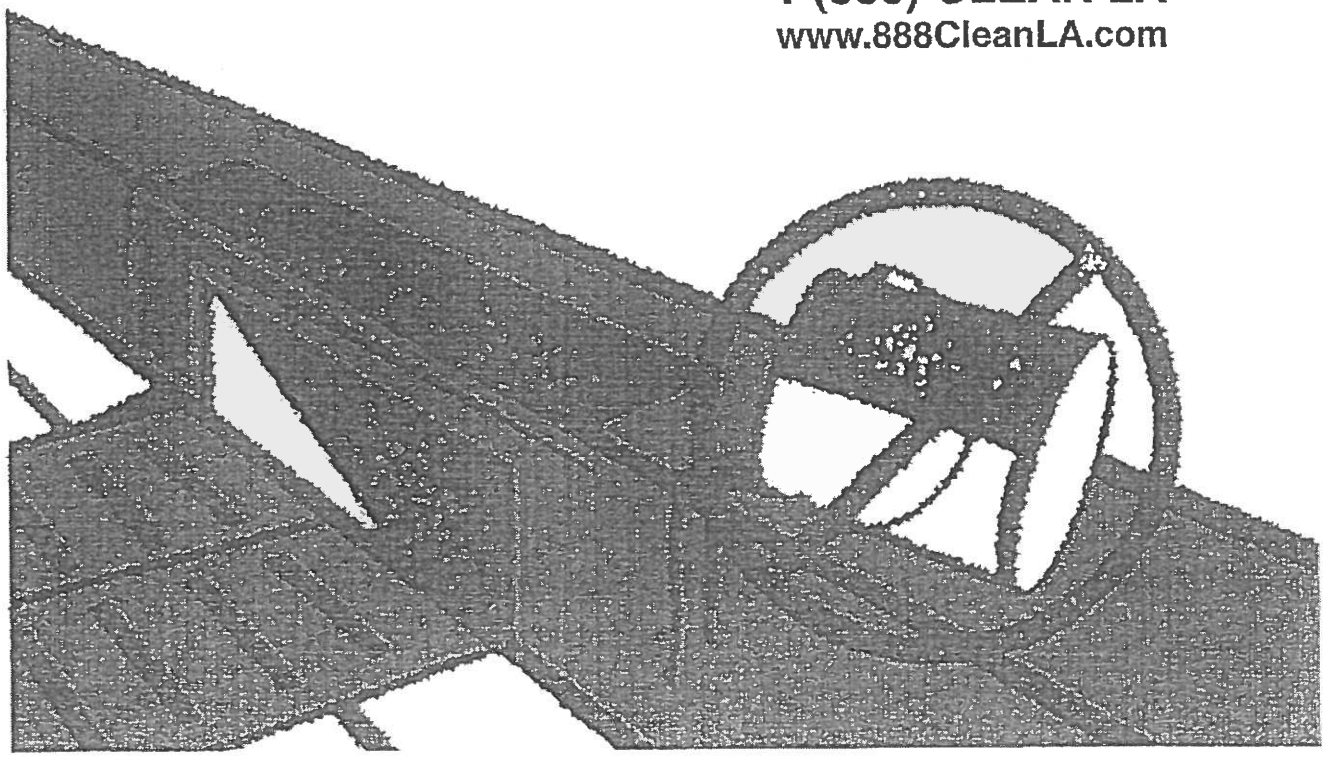
Storm drains are for rain...
they're not for paint disposal.

More than **197,000** times each month, L.A. County residents wash their dirty paint brushes under an outdoor faucet.

This dirty rinse water flows into the street, down the storm drain and straight to the ocean — **untreated.**

Remember to clean water-based paint brushes in the sink, rinse oil-based paint brushes with paint thinner, and take old paint and paint-related products to a Household Hazardous Waste/E-Waste collection event.

1 (888) CLEAN LA
www.888CleanLA.com



Tips for Paint Clean-Up:

L.A. County residents can help solve the stormwater pollution problem by taking these easy steps when working with paint and paint-related products...

- Never dispose of paint or paint-related products in the gutters or storm drains. This is called illegal dumping. Take them to a Household Hazardous Waste/E-Waste collection event. Call 1 (888) CLEAN LA or visit www.888CleanLA.com to locate an event near you.

- Buy only what you need. Reuse leftover paint for touch-ups or donate it to a local graffiti abatement program. Recycle or use excess paint.

- Clean water-based paint brushes in the sink.

- Oil-based paints should be cleaned with paint thinner. Filter and reuse paint thinner. Set the used thinner aside in a closed jar to settle-out paint particles.

- Store paints and paint-related products in rigid, durable and watertight containers with tight-fitting covers.

PROJECT Pollution PREVENTION

A message from the County of Los Angeles Department of Public Works.
Printed on recycled paper.

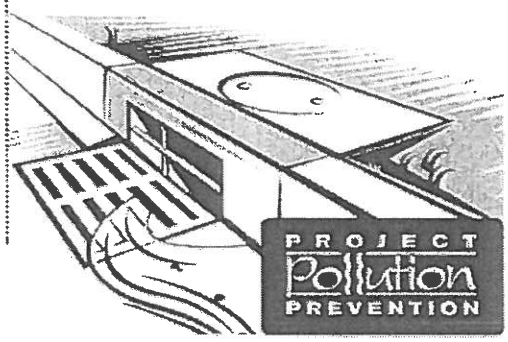
Storm Drains are for Rain...

More than 50% of the automotive oil sold to do-it-yourself oil changers is not recycled. There are more than 600 State-certified used oil collection centers within Los Angeles County.

Never dispose of automotive fluids, recyclable products, or household hazardous wastes into the street or gutter. Take them to your local auto repair station, recycling center or a household hazardous waste roundup.

...they're not recycling centers.

1(888)CLEAN LA
www.888CleanLA.com



Recycling Tips:

You can help keep your community clean, protect our area waterways and make the beaches safe for ocean swimmers by putting recyclable materials where they belong — at a recycling center or household hazardous waste roundup. Never throw or pour anything into the streets or gutters...

- When changing vehicle fluids – transmission, hydraulic and motor oil, brake and radiator fluid – drain them into a drip pan to avoid spills. Do not combine these fluids. Do not dispose of them in the street, gutter or in the garbage. It is illegal.
- Recycle all used vehicle fluids. Call 1(888)CLEAN LA or visit www.888CleanLA.com for the location of a center that recycles these fluids, or for the location of a local household hazardous waste Roundup.
- Other materials that should be taken to a household hazardous waste Roundup are: paint and paint-related materials, household cleaners, batteries, pesticides and fertilizers, pool chemicals, and aerosol products.
- Aluminum, glass, plastic and newspapers should be placed in your curbside recycling bin or taken to a local recycling center.

Printed on recycled paper

PROJECT Pollution PREVENTION

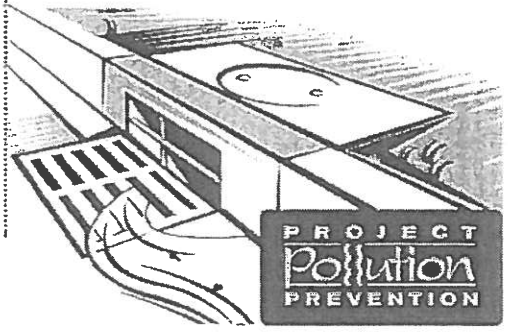
Storm Drains are for Rain...

More than 50% of the automotive oil sold to do-it-yourself oil changers is not recycled. There are more than 600 State-certified used oil collection centers within Los Angeles County.

Never dispose of automotive fluids, recyclable products, or household hazardous wastes into the street or gutter. Take them to your local auto repair station, recycling center or a household hazardous waste roundup.

...they're not recycling centers.

1(888)CLEAN LA
www.888CleanLA.com



Recycling Tips:

You can help keep your community clean, protect our area waterways and make the beaches safe for ocean swimmers by putting recyclable materials where they belong — at a recycling center or household hazardous waste roundup. Never throw or pour anything into the streets or gutters...

- When changing vehicle fluids – transmission, hydraulic and motor oil, brake and radiator fluid – drain them into a drip pan to avoid spills. Do not combine these fluids. Do not dispose of them in the street, gutter or in the garbage. It is illegal.
- Recycle all used vehicle fluids. Call 1(888)CLEAN LA or visit www.888CleanLA.com for the location of a center that recycles these fluids, or for the location of a local household hazardous waste Roundup.
- Other materials that should be taken to a household hazardous waste Roundup are: paint and paint-related materials, household cleaners, batteries, pesticides and fertilizers, pool chemicals, and aerosol products.
- Aluminum, glass, plastic and newspapers should be placed in your curbside recycling bin or taken to a local recycling center.

Printed on recycled paper

PROJECT Pollution PREVENTION

Attachment G
City of Glendora Worksheets

Attachment H
Volume and Flow Rate Calculations & Hydrology Analysis

EGL ASSOCIATES
11819 Goldring Road, Unit A, Arcadia, CA 91006
Tel.: 626-263-3588; Fax: 626-263-3599; E-mail: mail@egl88.com

Preliminary Hydrology Analysis

Building Address: 501 W. Route 66 Ave.,
Glendora, CA 91006

EGL JOB NO. 19-128-004
DATE: 12/05/19

DATA:

1. Maximum flow in a 50 yr period (PRE DEVELOPMENT- Subarea A)

AREA (ACRES)	IMP. (%)	FREQUENCY	SOIL TYPE	LENGTH	SLOPE	Isohyet
0.34	59	50	006	203	0.024	7.4

$Q_{50\text{-Pre Sub A}}$ = 1.34 CFS

2. Maximum flow in a 50 yr period (PRE DEVELOPMENT- Subarea B)

AREA (ACRES)	IMP. (%)	FREQUENCY	SOIL TYPE	LENGTH	SLOPE	Isohyet
0.38	79	50	006	271	0.017	7.4

$Q_{50\text{-Pre Sub B}}$ = 1.51 CFS

3. Maximum flow in a 50 yr period (POST DEVELOPMENT- Subarea A)

AREA (ACRES)	IMP. (%)	FREQUENCY	SOIL TYPE	LENGTH	SLOPE	Isohyet
0.34	73	50	006	243	0.020	7.4

$Q_{50\text{-Pre}}$ = 1.35 CFS

4. Maximum flow in a 50 yr period (POST DEVELOPMENT- Subarea B)

AREA (ACRES)	IMP. (%)	FREQUENCY	SOIL TYPE	LENGTH	SLOPE	Isohyet
0.38	76	50	006	262	0.015	7.4

$Q_{50\text{-Post}}$ = 1.51 CFS

Based on the results of HydroCalc, there is a 0.01 cfs increase at the post development from subarea A and no increase in peak flow from subarea B. All existing drainage pattern will be maintained at the post development.
The Impervious area has changed from 59% to 73% in subarea A and 79% to 76% in subarea B; therefore two of the mitigation measures from the LA County LID (Low Impact Development) Manual 2009 requirements will be taken into action to mitigate the storm runoff:

1. Downspout routing:
   All the roof drain downspouts shall be connected to the nearby catch basins/ drainage pipes. When over flow occurs, the run-off will slowly discharge to the public street.

2. Disconnect Impervious surfaces:
   Direct the runoff from the impervious surfaces to landscaping areas by designed flow lines. The runoff will infiltrate as much as possible when it flows on the natural grass areas. When overflow occurs, the run-off will slowly discharge to the public street.

The existing drainage pattern of this project is draining from the most northeast point to southwest in subarea A and toward south of the property in subarea B. At post development the drainage pattern will be maintain the same and drain through catch basins and pipes, and it will be delivered to the street through underground Curb-O-Let. Runoff in Subarea A will be drained and discharge to Parker Dr., while Subarea B will drain to W Route 66.

Pipe Capacity Calculation

Subarea A

1. AREA = A1 = 0.16 AC

   Q = 1.35 x (0.16/0.34) = 0.63 cfs

   Use 1-6" PVC Pipe

   D = 0.50' S = 0.75%
   Q = 0.63 cfs $\geq$ 0.63 cfs (OK)

2. AREA = A2 = 0.22 AC

   Q = 1.35 x (0.22/0.34) = 0.87 cfs

   Use 1-6" PVC Pipe

   D = 0.50' S = 1.50%
   Q = 0.89 cfs > 0.87 cfs (OK)

Subarea A Curb-O-Let Capacity Check
Q= 1.35 cfs
Use Curb-O-Let Model TCD-317

Size = 3" x 17"
Q = 1.39 cfs > 1.35 cfs (OK)

Subarea B

3. AREA = A3 = 0.10 AC

   Q = 1.51 x (0.10/0.38) = 0.40 cfs

   Use 1-6" PVC Pipe

   D = 0.50' S = 0.50%
   Q = 0.52 cfs > 0.40 cfs (OK)

Subarea B Curb-O-Let Capacity Check
Q= 1.51 cfs
Use Curb-O-Let Model TCD-414

Size = 4" x 14"
Q = 1.72 cfs > 1.51 cfs (OK)

Peak Flow Hydrologic Analysis

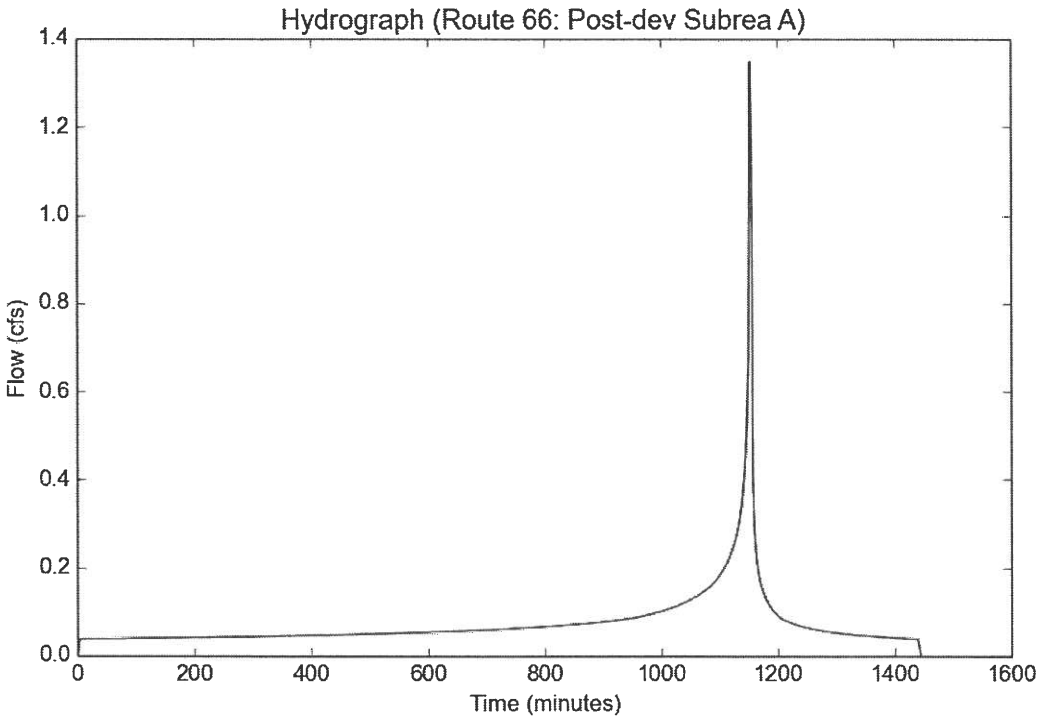
File location: Z:/Hank/ACAD/Mursol (128)/2019/19128004/Conceptual Grading/Route 66 - Post-dev Subrea A.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Route 66
Subarea ID	Post-dev Subrea A
Area (ac)	0.34
Flow Path Length (ft)	243.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	7.4
Percent Impervious	0.73
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	7.4
Peak Intensity (in/hr)	4.415
Undeveloped Runoff Coefficient (Cu)	0.8924
Developed Runoff Coefficient (Cd)	0.8979
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.3479
Burned Peak Flow Rate (cfs)	1.3479
24-Hr Clear Runoff Volume (ac-ft)	0.1505
24-Hr Clear Runoff Volume (cu-ft)	6557.8664



Peak Flow Hydrologic Analysis

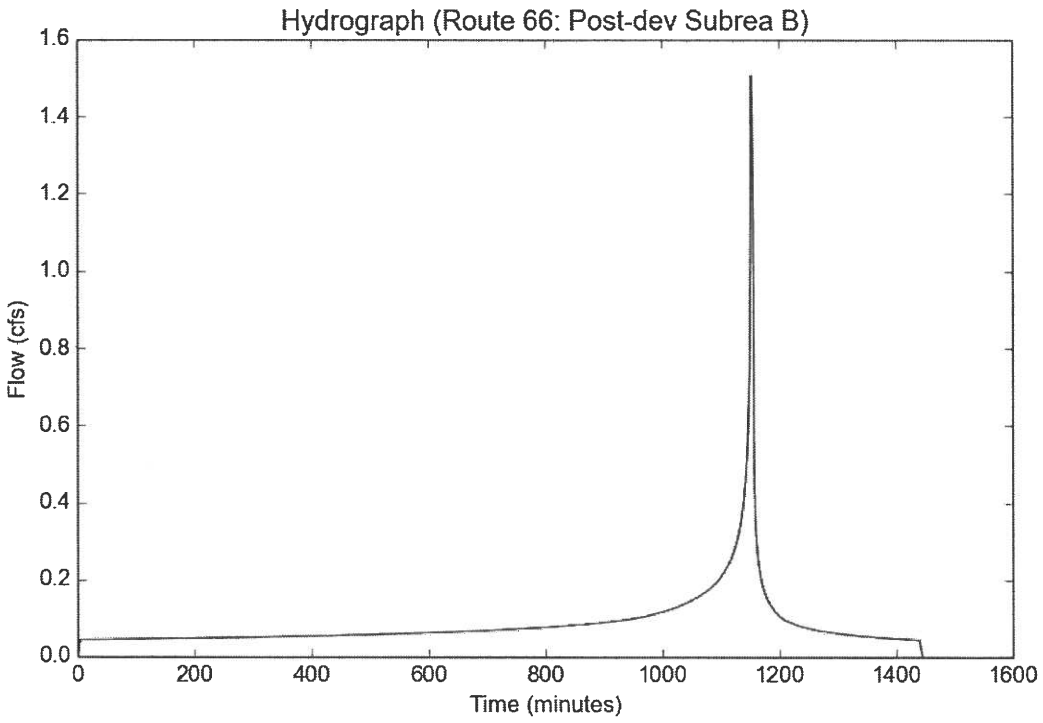
File location: Z:/Hank/ACAD/Mursol (128)/2019/19128004/Conceptual Grading/Route 66 - Post-dev Subrea B.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Route 66
Subarea ID	Post-dev Subrea B
Area (ac)	0.38
Flow Path Length (ft)	262.0
Flow Path Slope (vft/hft)	0.015
50-yr Rainfall Depth (in)	7.4
Percent Impervious	0.76
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	7.4
Peak Intensity (in/hr)	4.415
Undeveloped Runoff Coefficient (Cu)	0.8924
Developed Runoff Coefficient (Cd)	0.8982
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.5069
Burned Peak Flow Rate (cfs)	1.5069
24-Hr Clear Runoff Volume (ac-ft)	0.1728
24-Hr Clear Runoff Volume (cu-ft)	7527.3249



Peak Flow Hydrologic Analysis

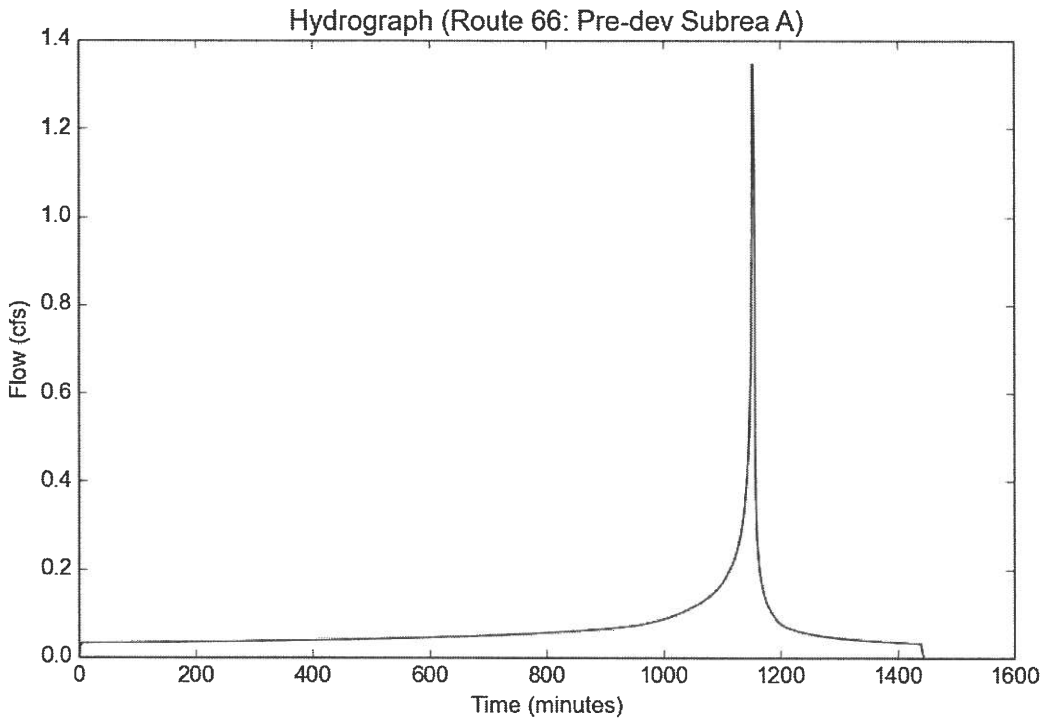
File location: Z:/Hank/ACAD/Mursol (128)/2019/19128004/Conceptual Grading/Route 66 - Pre-dev Subrea A.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Route 66
Subarea ID	Pre-dev Subrea A
Area (ac)	0.34
Flow Path Length (ft)	203.0
Flow Path Slope (vft/hft)	0.024
50-yr Rainfall Depth (in)	7.4
Percent Impervious	0.59
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	7.4
Peak Intensity (in/hr)	4.415
Undeveloped Runoff Coefficient (Cu)	0.8924
Developed Runoff Coefficient (Cd)	0.8969
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.3463
Burned Peak Flow Rate (cfs)	1.3463
24-Hr Clear Runoff Volume (ac-ft)	0.1316
24-Hr Clear Runoff Volume (cu-ft)	5731.3603



Peak Flow Hydrologic Analysis

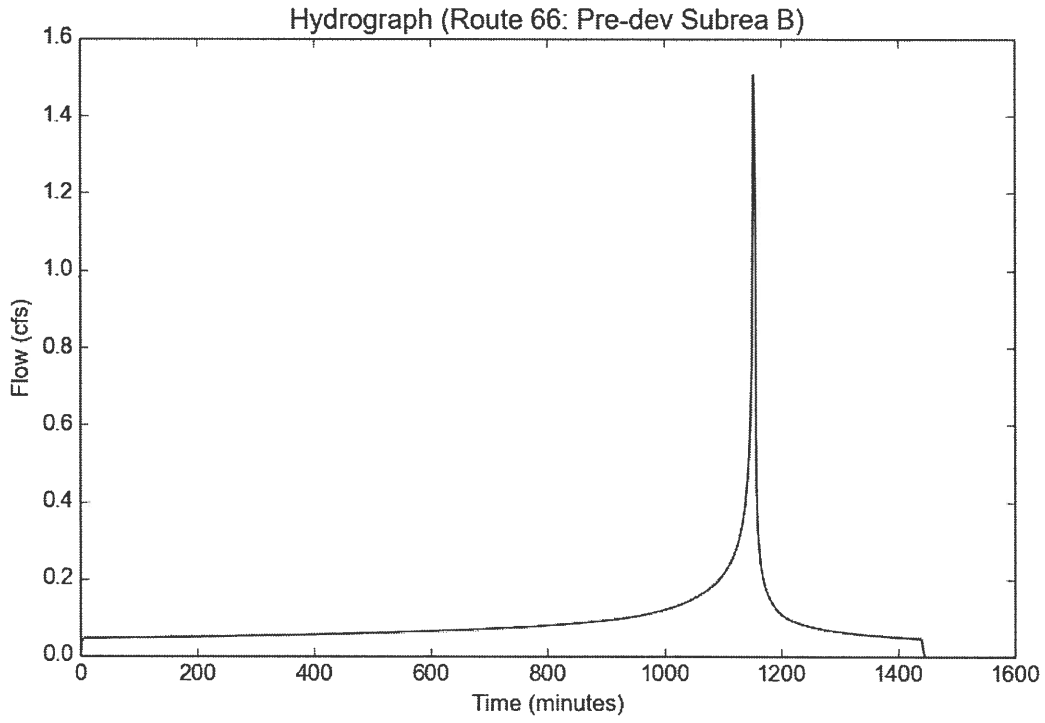
File location: Z:/Hank/ACAD/Mursol (128)/2019/19128004/Conceptual Grading/Route 66 - Pre-dev Subrea B.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Route 66
Subarea ID	Pre-dev Subrea B
Area (ac)	0.38
Flow Path Length (ft)	271.0
Flow Path Slope (vft/hft)	0.017
50-yr Rainfall Depth (in)	7.4
Percent Impervious	0.79
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	7.4
Peak Intensity (in/hr)	4.415
Undeveloped Runoff Coefficient (Cu)	0.8924
Developed Runoff Coefficient (Cd)	0.8984
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.5073
Burned Peak Flow Rate (cfs)	1.5073
24-Hr Clear Runoff Volume (ac-ft)	0.1773
24-Hr Clear Runoff Volume (cu-ft)	7725.2696



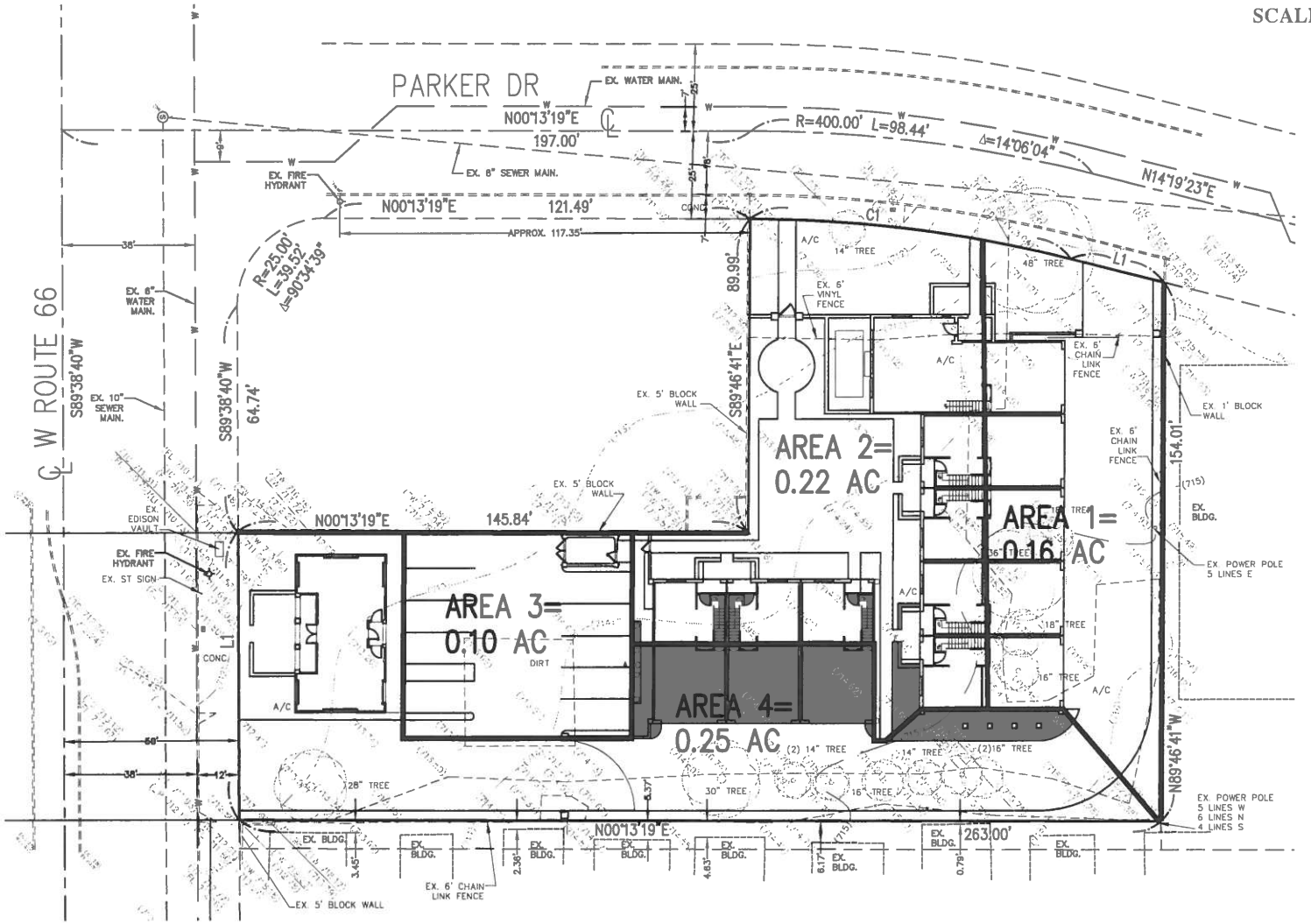
HYDROLOGY MAP

PIPE CALCULATION

TOTAL AREA=0.73 AC

NORTH

SCALE : 1"=30'-0"



HYDROLOGY MAP

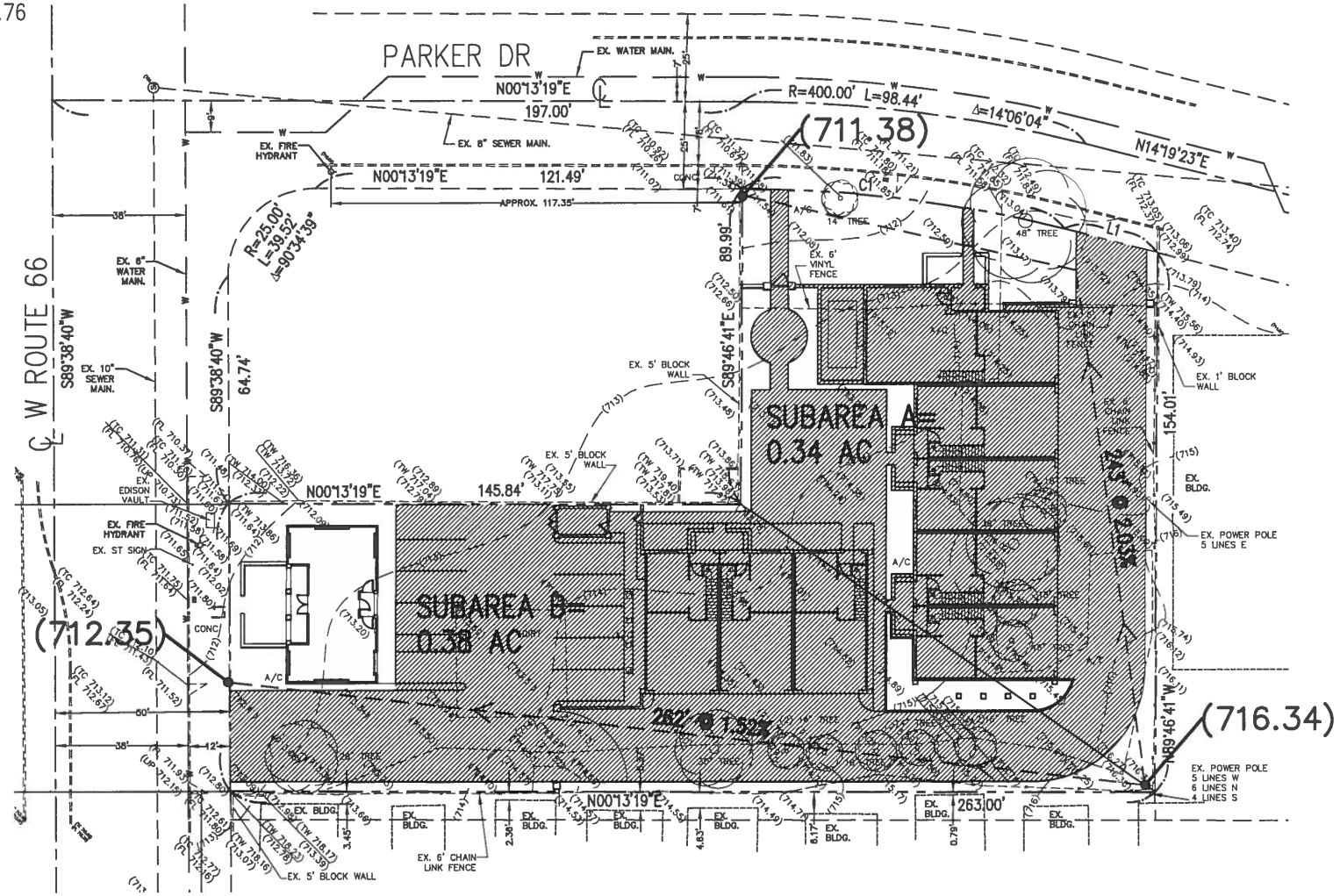
POST-DEVELOPMENT

TOTAL AREA=0.72 AC
IMPERVIOUS SUBAREA A =0.25 AC
IMPERVIOUS RATIO= 0.20/0.34=0.73

IMPERVIOUS SUBAREA B =0.29 AC
IMPERVIOUS RATIO= 0.29/0.38=0.76

NORTH

SCALE : 1"=30'-0"



HYDROLOGY MAP

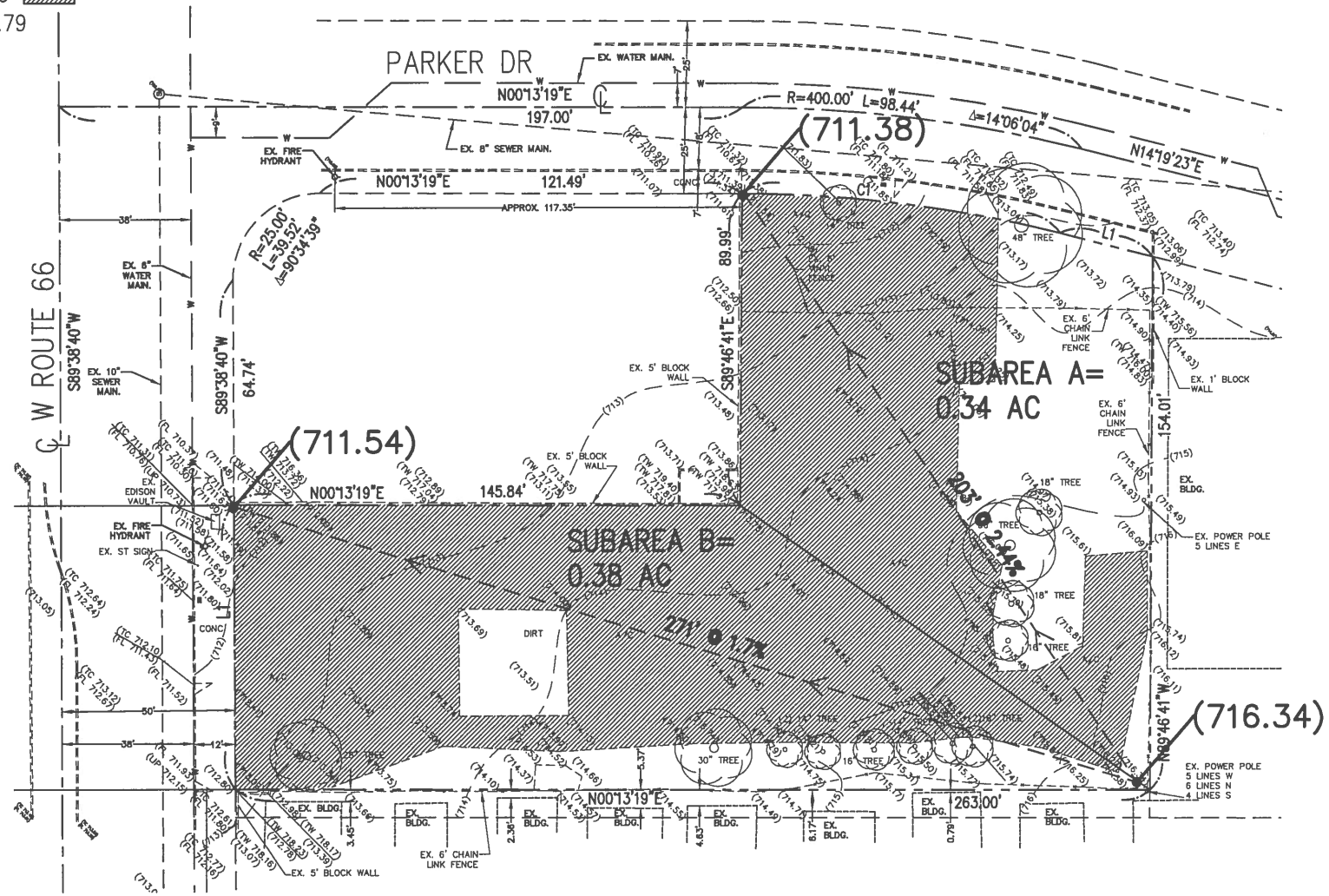
PRE-DEVELOPMENT

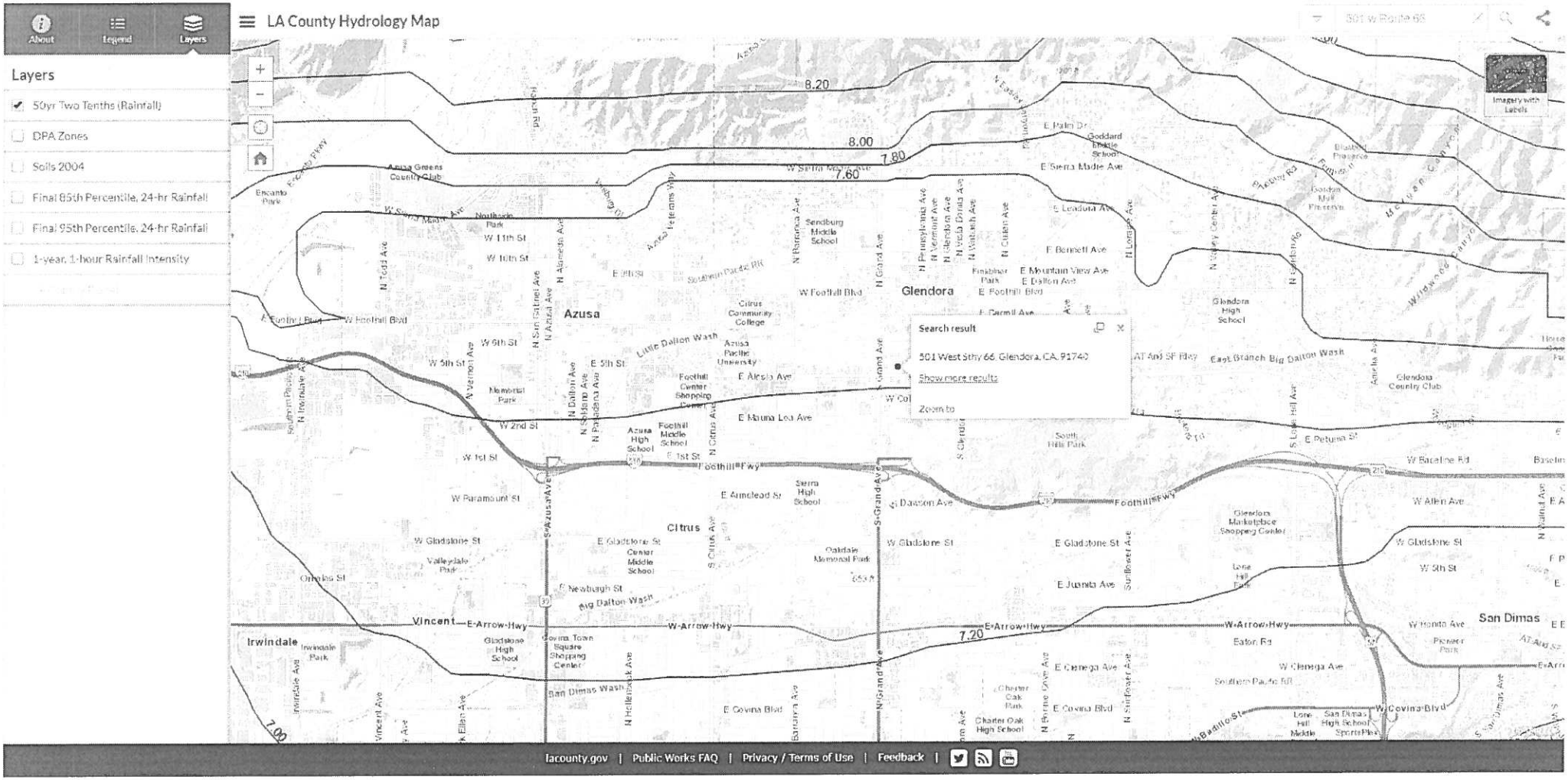
TOTAL AREA=0.72 AC
IMPERVIOUS SUBAREA A =0.20 AC
IMPERVIOUS RATIO= 0.20/0.34=0.59

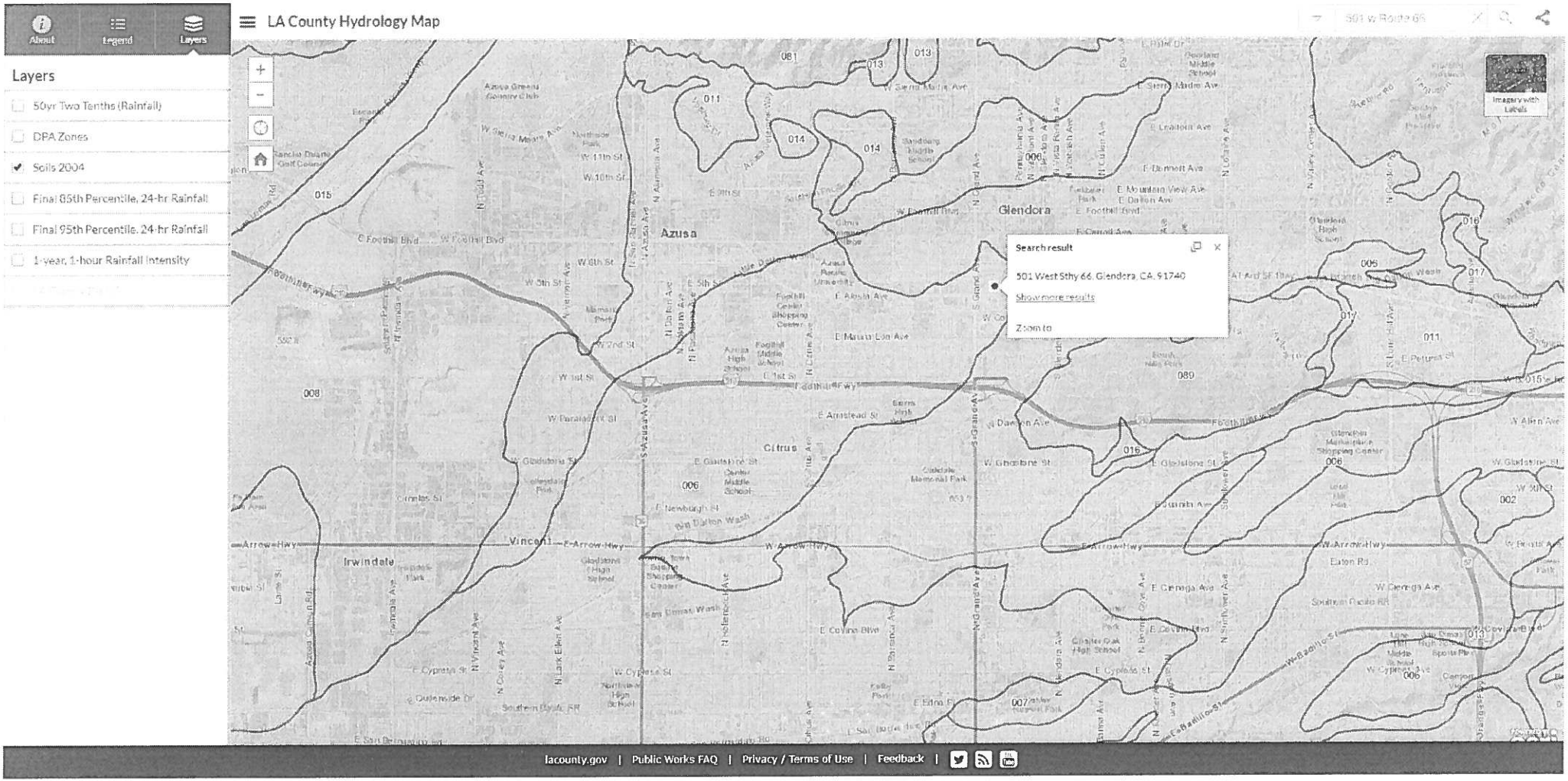
IMPERVIOUS SUBAREA B =0.30 AC
IMPERVIOUS RATIO= 0.30/0.38=0.79

NORTH

SCALE : 1"=30'-0"




About
Legend
Layers
LA County Hydrology Map
Layers
50yr Two Tenths (Rainfall)
DPA Zones
Soils 2004
Final 85th Percentile, 24-hr Rainfall
Final 95th Percentile, 24-hr Rainfall
1-year, 1-hour Rainfall Intensity
Search result
301 West Sthy 66, Glendora, CA, 91740
Show more results
Zoom to
Azusa
Glendora
Citrus
Irwindale
Vincent
San Dimas
8.20
8.00
7.80
7.60
7.20
7.00
Foothill Fwy
E Arrow Hwy
W Arrow Hwy
Little Dalton Wash
Big Dalton Wash
San Dimas Wash
East Branch Big Dalton Wash
lacounty.gov | Public Works FAQ | Privacy / Terms of Use | Feedback


About
Legend
Layers
LA County Hydrology Map
Layers
50yr Two Tenths (Rainfall)
DPA Zones
Soils 2004
Final 85th Percentile, 24-hr Rainfall
Final 95th Percentile, 24-hr Rainfall
1-year, 1-hour Rainfall Intensity
Search result
501 West Sthy 66, Glendora, CA, 91740
Show more results
Zoom to
Imagery with Labels
Azusa
Glendora
Citrus
Vincent
Irwindale
Arrow Hwy
Foothill Blvd
lacounty.gov | Public Works FAQ | Privacy / Terms of Use | Feedback

Cross Section for Circular Pipe - 1

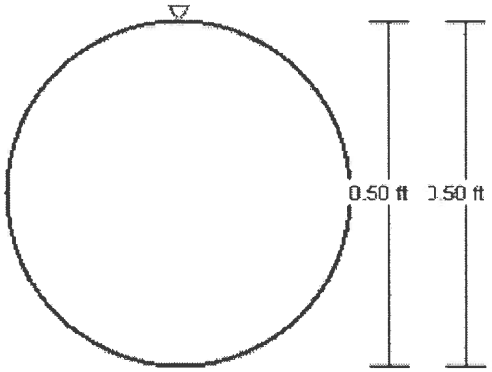
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.00750	ft/ft
Normal Depth	0.50	ft
Diameter	0.50	ft
Discharge	0.63	ft³/s

Cross Section Image



V: 1
H: 1

6" @0.5%

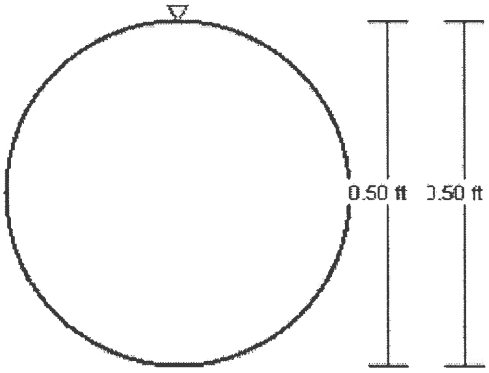
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.00500	ft/ft
Normal Depth	0.50	ft
Diameter	0.50	ft
Discharge	0.52	ft³/s

Cross Section Image



V: 1
H: 1

curb-o-let 3x17

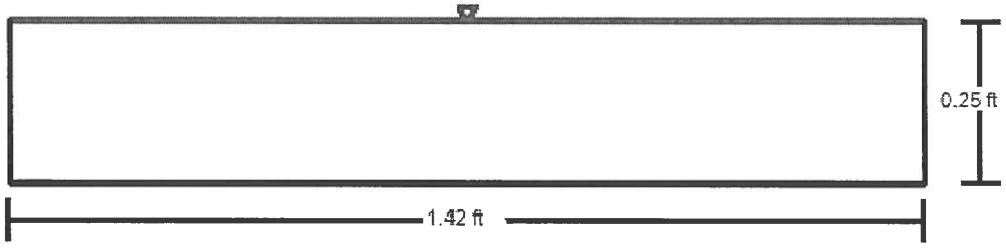
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.012	
Channel Slope	0.02000	ft/ft
Normal Depth	0.25	ft
Height	0.25	ft
Bottom Width	1.42	ft
Discharge	1.39	ft³/s

Cross Section Image



V: 1
H: 1

Cross Section for Box Pipe - 4"x14"

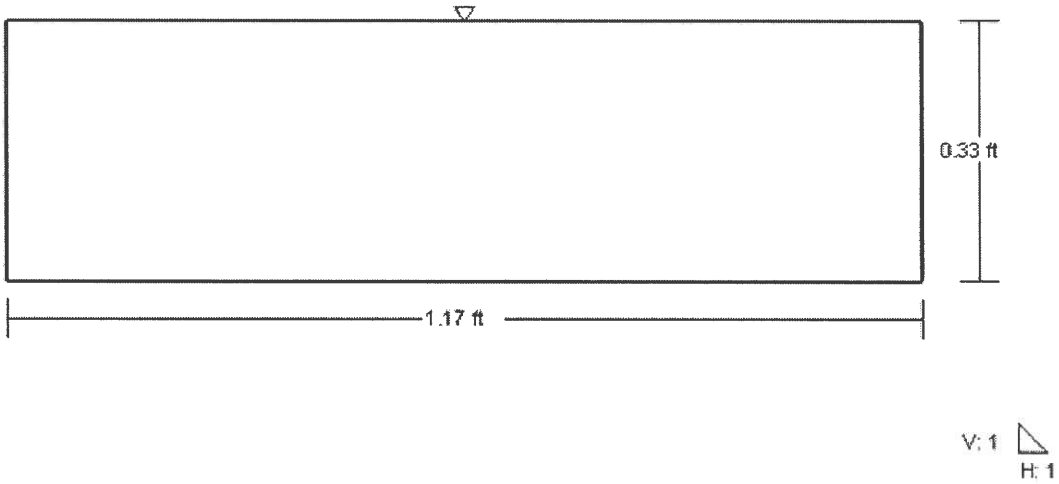
Project Description

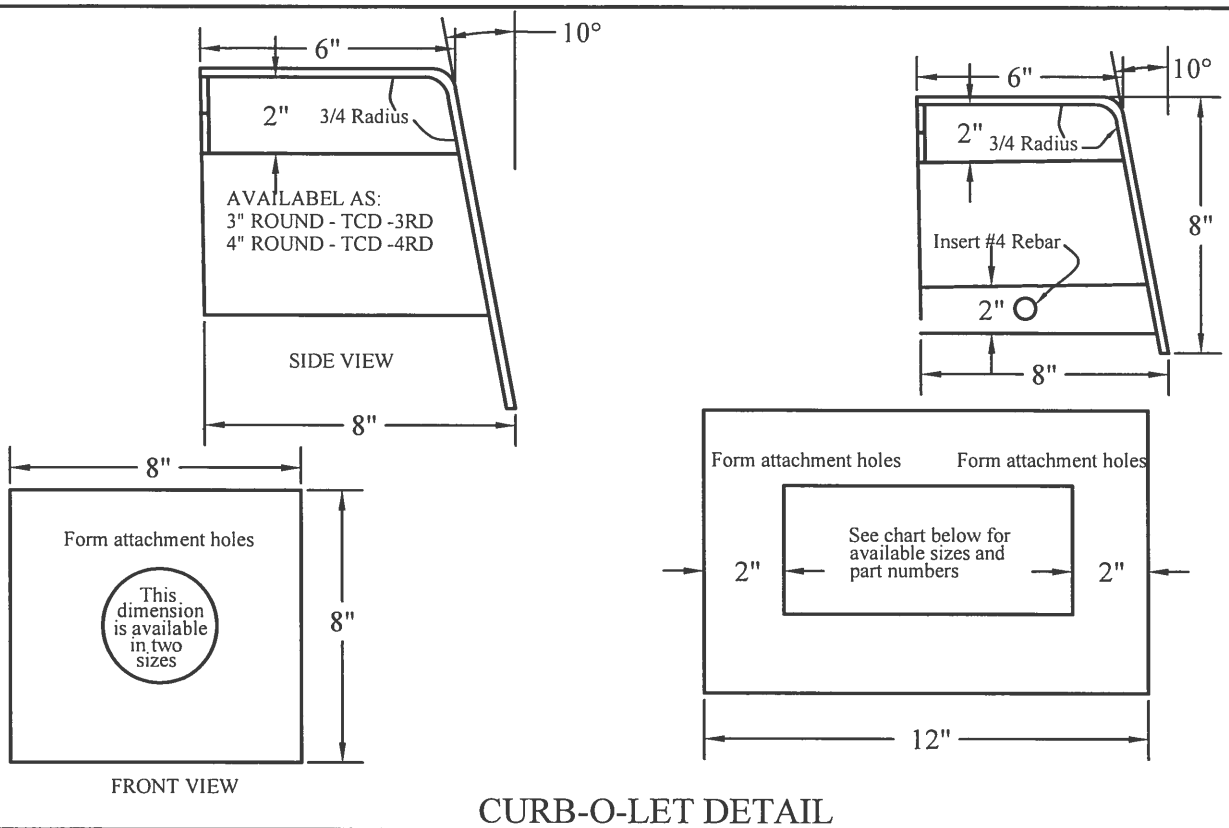
Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.012	
Channel Slope	0.02000	ft/ft
Normal Depth	0.33	ft
Height	0.33	ft
Bottom Width	1.17	ft
Discharge	1.72	ft³/s

Cross Section Image





CURB-O-LET DETAIL

PRODUCT SPECIFICATION - CURB-O-LET

PRODUCT LIST

MODEL	SIZE	ROUND EQUIV.	(ROOF DRAIN) LABEL MODEL NUMBER	(OVERFLOW DRAIN) LABEL MODEL NUMBER	REMARKS
TCD-3RD	3" ROUND	3"	TCD-3RD-RFD	TCD-3RD-OFD	
TCD-4RD	4" ROUND	4"	TCD-4RD-RFD	TCD-4RD-OFD	
TCD-35	3"x5"	4"	TCD-35-RFD	TCD-35-OFD	
TCD-38	3"x8"	5"	TCD-38-RFD	TCD-38-OFD	
TCD-312	3"x12"	6"	TCD-312-RFD	TCD-312-OFD	
TCD-414	4"x14"	8"	TCD-414-RFD	TCD-414-OFD	
TCD-317	3"x17"	8"	TCD-317-RFD	TCD-317-OFD	
TCD-327	3"x27"	10"	TCD-327-RFD	TCD-327-OFD	
TCD-422	4"x22"	10"	TCD-422-RFD	TCD-422-OFD	

ALL CURB-O-LET PRODUCTS ARE MANUFACTURED TO CLOSE TOLERANCES. VERY SLIGHT VARIATIONS IN SIZE ARE POSSIBLE. CURB-O-LET FITS STANDARD 6" AND 8" CURB FACE. EPOXY COATING FINISHES AVAILABLE ON REQUEST.

REV	ZONE	DATE	REVISION DESCRIPTION	BY	CK'D

RECTANGULAR STEEL PIPE AND FITTINGS.
CURB-O-LET

Curb-O-Let™
Thru The Curb Drain

9421 Monterey Ave. Bellflower, CA. 90706 - Office (714)903-2468

SCALE:	DRAWN BY	DATE	CHECKED BY	APPROVED BY
NONE	JB	08/18/16	JB	JB

Attachment I
Maintenance Covenant For Standard Urban Stormwater Mitigation (SUSMP) Requirements

Attachment J
O & M Plan Structural and Non-Structural BMP Inspections and Maintenance Responsibility / Frequency Matrix

Operation and Maintenance Plan Structural and Non-Structural BMP inspection and Maintenance Responsibility/ Frequency Matrix

BMP DESCRIPTION	RESPOSIBILITY	INSPECTION/ MAINTENANCE
SD-10 Site Design and Landscape Planning Inspect and Maintain Landscape areas Remove liter and debris.	501 W. Route 66 Partners, LLC (owner)	It is the property owner's responsibility to contract a landscaping firm or company to inspect and maintain landscape at least once a year.
SD-11 Roof Runoff Controls Inspect and Maintain Roof Runoff pipes Remove debris from pipes to prevent clogging.	501 W. Route 66 Partners, LLC (owner)	It is the property owner's responsibility to contract a company to inspect and maintain Roof Runoff Controls at least once a year.
SD-12 Efficient Irrigation Inspect and Maintain Irrigation systems Repair any broken sprinkler heads or lines.	501 W. Route 66 Partners, LLC (owner)	It is the property owner's responsibility to contract a company to inspect and maintain irrigation systems once a year.
SD-13 Storm Drain Signage Inspect and Maintain Storm Drain Signage Repaint storm Drain Signage if signage is damaged or if fading occurs	501 W. Route 66 Partners, LLC (owner)	It is the property owner's responsibility to contract a company to inspect and maintain storm drain signage Controls at least once a year.
MP-52 Drain Insert Inspect and Maintain Drain Insert Remove liter and debris to prevent clogging	501 W. Route 66 Partners, LLC (owner)	It is the property owner's responsibility to contract a company to inspect and replace the Catch Basin Filter at least once a year once prior to rainy season (October1 through April 30).

Attachment K
BMP Inspection Maintenance Records