LANDSCAPE ARCHITECTURE

February 13, 2019

Pico Canyon, LLC
1435 Reynolds Court
Thousand Oaks, CA 91362

Attention: **Mr. Jonathan Friedman**

Subject: **Trail Photo-Simulation of the proposed Canyon View Estates Project**

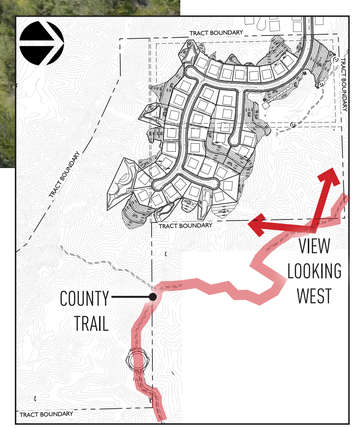
Dear Mr. Friedman,

Per County of Los Angeles Department of Regional Planning staff's request, MJS Design Group has prepared a photo-simulation of the Canyon View Estates Project (Project) from a trail in the Project vicinity. The enclosed view is from the closest point on the public trail to the Project development. The building blocks are 60 feet wide by 60 feet long and are 30 feet high. As shown, there are no obstructions of ridgelines or distant mountain views from the trail as a result of the proposed development.

Sincerely,

Mark Schattinger, PLA
President
MJS Design Group, Inc.
507 30th Street, Newport Beach, CA 92663





KEYMAP

VIEW SIMULATION LOOKING WEST
FROM COUNTY TRAIL TO PROPOSED CANYON VIEW ESTATES PROJECT

February 6, 2019

Pico Canyon, LLC
1435 Reynolds Court
Thousand Oaks, CA. 91362

Attn: Mr. Jonathan Friedman

Subj: Canyon View Estates: Analysis to Evaluate Visibility from Interstate 5

Dear Mr. Friedman:

Per your request, Envicom Corporation (Envicom) has prepared an analysis to evaluate the potential visibility of the Canyon View Estates Project (Project) from Interstate 5, or I-5. The following evaluation provides a description of our methodology and the results of the analysis.

METHODOLOGY

The analysis was performed using GlobalMapper software, v.19.1 (Blue Marble Geographics).

Datasets:

The Digital Elevation Model data was obtained from the United States Geological Survey (USGS) [National Elevation Data (NED), 10m resolution], Vector data (shapefile) of the I-5 [Los Angeles County Geographic Information System (GIS) Data Portal, extracted from Roads data], Vector data (shapefile) of the Project Parcels (Los Angeles County GIS Data Portal, extracted from Parcel data), Vector data (CAD) of the proposed Grading Plan (Civil Design and Drafting, 2017).

Analysis:

Viewshed

Using GlobalMapper's Viewshed Analysis tool, a series of 12 'transmitter' points (or View Points) along the I-5 (6 southbound, or SB, and 6 northbound, NB) were selected. The average spacing of these transmitter points was 1,100 feet (ft) (ranging from 900 to 1,300 ft, depending on road elevation). Each transmitter point was assigned the average height of a passenger traveling by vehicle (3 ft) and set to a maximum view distance of 2 miles before running the Viewshed tool. The results produced a polygon associated with each point that illustrates what can be viewed from that location within a 2-mile radius. Ultimately the analysis produced 12 such polygons, which were then merged into a singular polygon. This output illustrates a comprehensive viewshed for the stretch of the I-5 in the Project vicinity (i.e. between NB1 and SB1), which is provided in the enclosed figure.

Sightline

Using GlobalMapper's Sightline Analysis tool, the same 12 transmitter points were used as a starting point for drawing sightlines to the Project Site. The lowest elevations around the Project Site were bisected in order to determine the worst-case scenario for visibility. The same tool

parameters as for the Viewshed tool (vehicle passenger height of 3 ft) were used. The output for each sightline analysis is an elevation profile that shows the angle of the sightline (red line), illustrating where the terrain is 'blocking' a direct view to the Project Site (the little black circles indicate the cross section of CAD lines on the Project Site).

RESULTS

The Project site is located in a region with undulating terrain and has significant peaks and ridgelines. The I-5 runs through the lowest north-south valley within this landscape. The Project site sits at a higher elevation than the I-5 and lies in a depression within the terrain that is surrounded on all sides by ridgelines. The results of both the viewshed and the sightline analysis illustrate that the Project Site is not visible from the 12 View Points (and is therefore not visible from the entire segment of the I-5 between View Points NB1 and SB1). It is evident that the ridgelines that surround the Project's development footprint are blocking direct lines of sight from the I-5 Freeway to the Project Site.

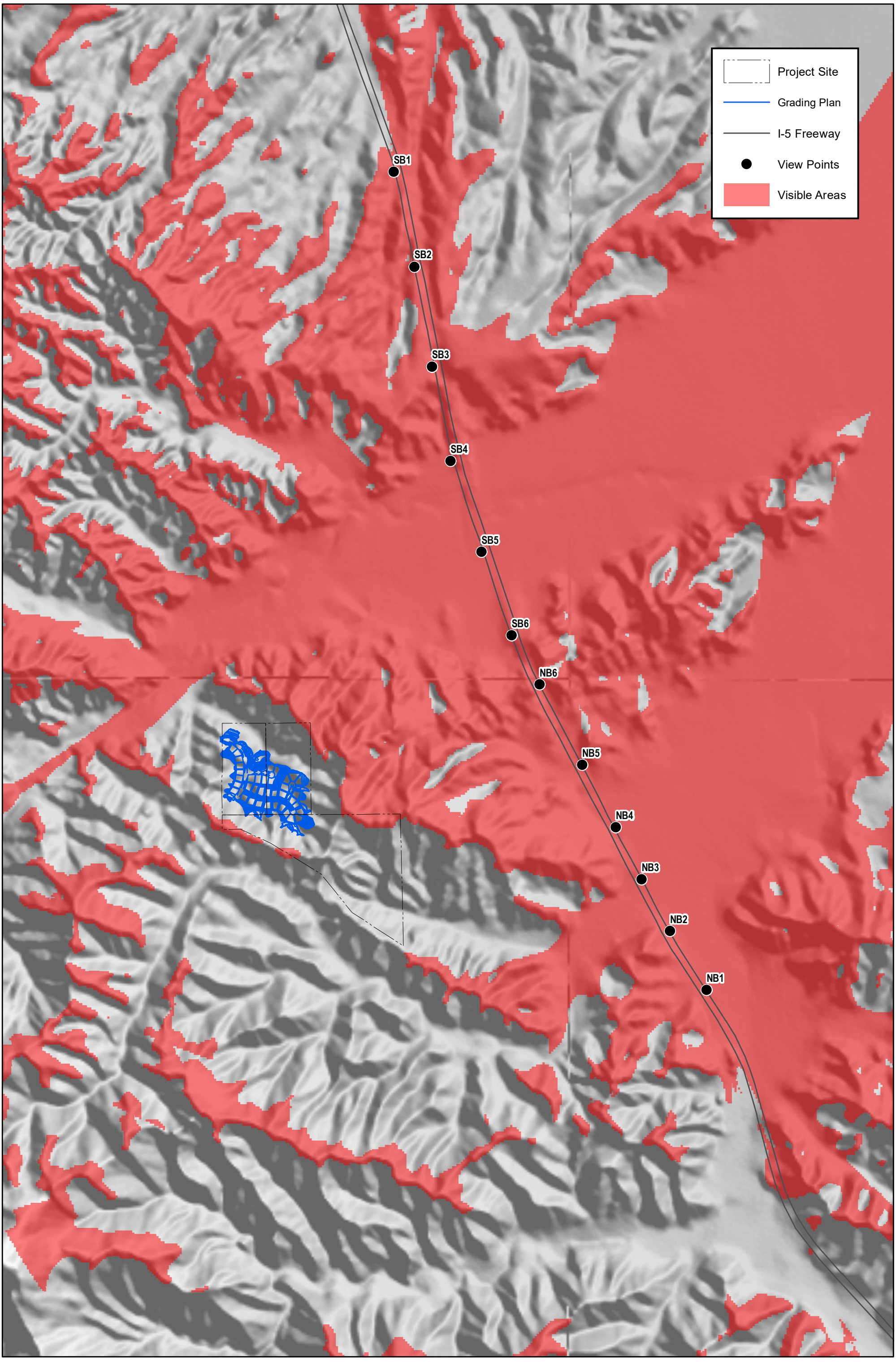
Data Limitations

The NED dataset from the USGS is a 'bare earth' digital elevation model (DEM), and thus does not account for the elevations and subsequent view-blockage of any vegetation present on the ground. As such, it provides a 'worst case scenario' in terms of visibility.

Sincerely,



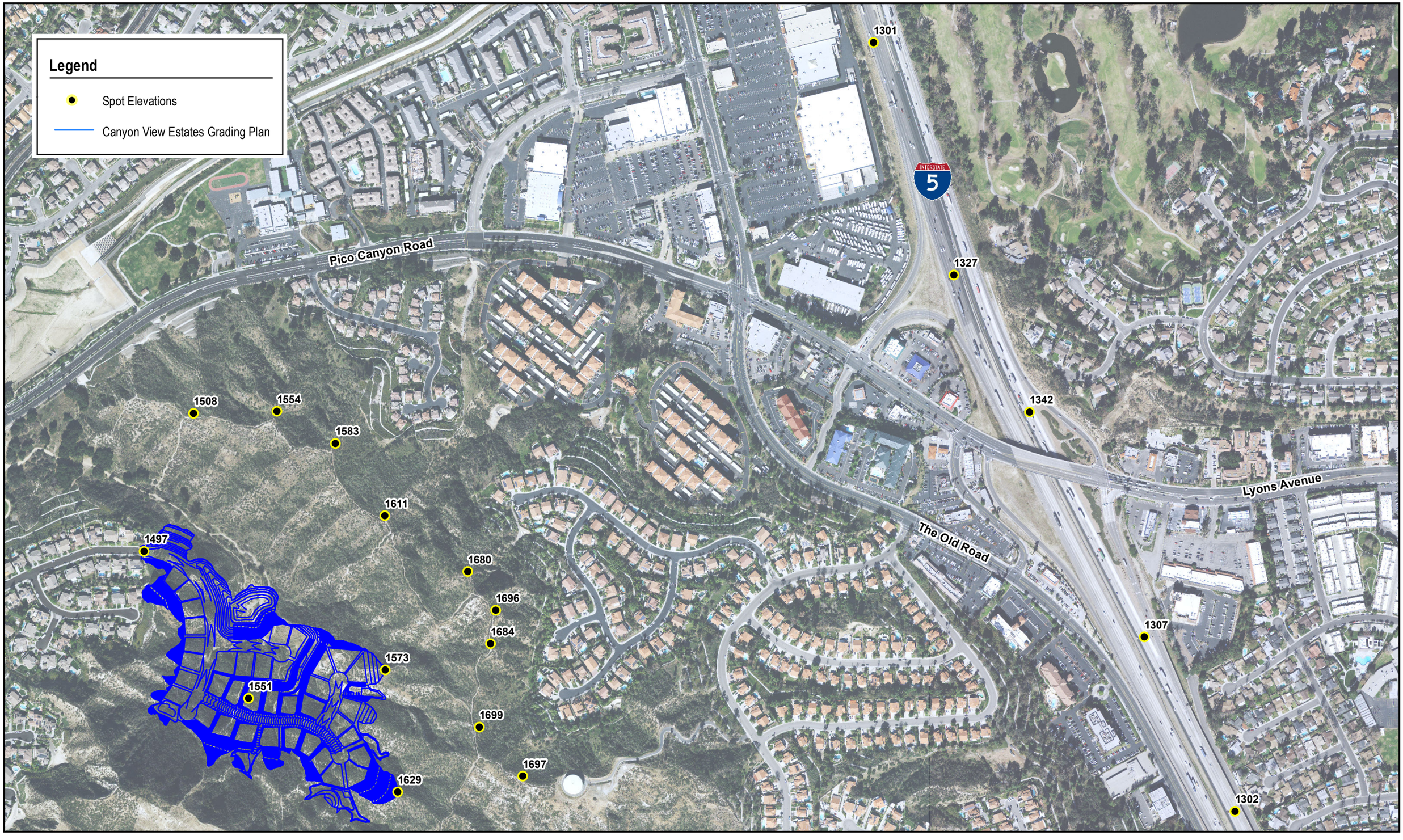
Amanda Miner
Environmental/GIS Analyst



CANYON VIEW ESTATES: VISIBILITY FROM INTERSTATE 5

1 inch = 1,250 feet

0 630 1,260 Feet



CANYON VIEW ESTATES VISIBILITY ANALYSIS

envicom

Spot Elevations Along I-5, Ridgeline, and Project Site

0 250 500 Feet

September 28, 2017

Pico Canyon, LLC
1435 Reynolds Court
Thousand Oaks, CA 91362

Attn: Mr. Jonathan Friedman

Subj: Visibility Analysis for Canyon View Estates

Dear Mr. Friedman

Per your request, Envicom has prepared an analysis to evaluate the potential visibility of the Canyon View Estates project from Pico Canyon Road. The following provides a description of our methodology and the results of the analysis.

Methodology

The analysis was performed using ESRI ArcGIS software. A CAD dataset of the proposed grading plan including the "z" or elevation values was imported into ArcGIS. As the exact location and configuration of the residences on the pad is not known at this time, 28 feet of additional elevation was added to each of the housing pads to emulate the worst case or maximum allowable height of the structures for all potential locations within the proposed pads. From this, a three-dimensional layer was created for the housing pads, which was then merged with a USGS surface elevation layer (Digital Elevation Model, or DEM). This created one continuous elevation surface, integrating the pads (with their height addition) into the surrounding topography. A series of sixteen observation points were then placed along Pico Canyon Road, including one at the intersection of Stevenson Ranch Parkway. These observations and the continuous elevation surface were used as inputs for the Visibility Analysis tools in ArcGIS. The product of the Visibility analysis tools is the attached Figure 1, which illustrates (in red) a combined overlay of all areas that are visible from the sixteen observation points. This result is based on the terrain included in the USGS DEM and does not take into consideration vegetation, which may provide additional obstructions to visibility.

Results

The results of our analysis illustrate that only a corner of one pad (#23) is visible from one observation point (highlighted in yellow of Figure 1). The pad is 2,041 feet from the observation point, and has an elevation increase of 170 feet. The visible area of the pad is 2,864 sq. ft., and comprises one corner. Pad 23 has a stretch of visibility along Pico Canyon Road that is approximately 130 feet in length. When traveling in a northeasterly direction on Pico Canyon

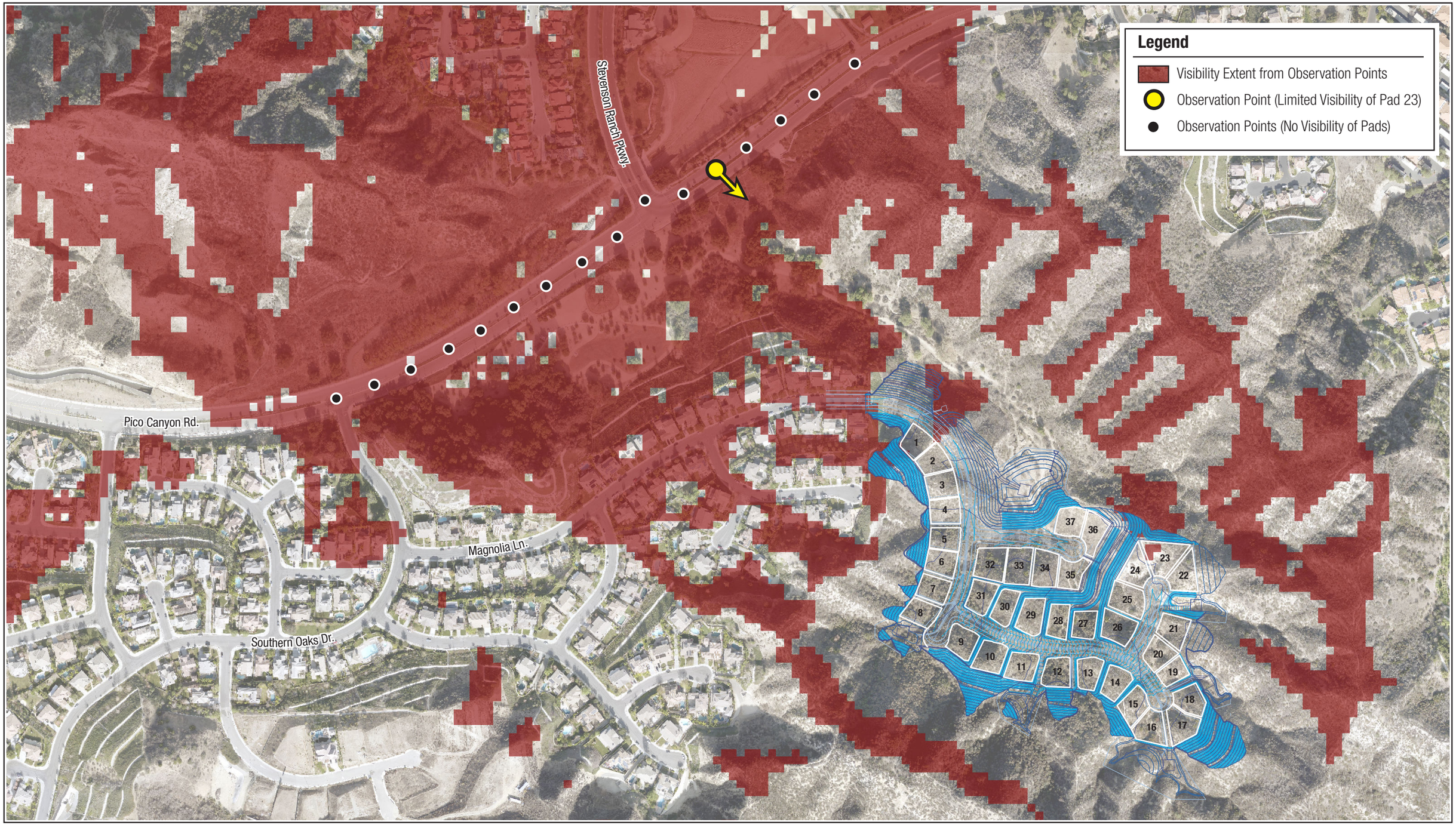
Road, the line of sight to the pad would approximate a right angle to the path of travel on the driver's right. Traveling at a speed of 40 miles per hour, the corner of the pad would be visible for less than 3 seconds if viewed from the optimum angle (i.e. looking at it directly). When traveling southwest, a driver would have to look back over his or her shoulder for a line of sight to the pad due to the positioning of the canyon.

The visibility of Pad 23 is based on a worst-case scenario. Though the entirety of the pad was elevated by 28ft to emulate a two-story home, in reality, only a portion of the pad will be filled by the structure. Given the usual placement of new homes on their lots, the house on pad 23 will likely be positioned closer to the road (in this case a cul-de-sac) and the piece of the pad that is visible will most likely be used as back yard space. Depending on the location of the home on Lot 23, it may not be visible. Initially, there may be some limited visibility of grade slopes from Pico Canyon Road, but these will be revegetated and will blend with the landscape once plants mature.

Based upon these results, our conclusion is that the Canyon View Estates project will have a less than significant impact on views from Pico Canyon Road including the intersection with Stevenson Ranch Parkway.

Sincerely,

Amanda Miner
Environmental/GIS Analyst



Source: USGS High Resolution Orthoimagery: http://viewer.nationalmap.gov/basic, 2013.

Graphic Revised: Sept. 28, 2017.

CANYON VIEW ESTATES

envicom

Visibility Analysis Results

FEET 0 160 320

FIGURE 1

AIR QUALITY IMPACT ANALYSIS

Canyon View Estates Project
County of Los Angeles

Project # 17-757-101

Prepared for:

PICO CANYON, LLC
1435 Reynolds Court
Thousand Oaks, CA 91362

Prepared by:

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4165 E. Thousand Oaks Boulevard, Suite 290
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May 10, 2017
Revised September 8, 2017

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APPENDIX

Appendix A	CalEEMod2016.3.1 Computer Model Output

1.0 INTRODUCTION

The purpose of this Air Quality Impact Analysis is to identify, describe, and evaluate the significance of potential air quality impacts resulting from the construction and operation of a proposed 37-lot single-family residential tract in the County of Los Angeles. This analysis also includes a discussion and evaluation of potential greenhouse gas (GHG) emissions.

2.0 ATMOSPHERIC SETTING

The project site is located in unincorporated Los Angeles County, just west of the City of Santa Clarita, within the South Coast Air Basin (air basin). The air basin is bounded by the Pacific Ocean to the west, the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east, and San Diego County to the south.

In addition to being a metropolitan area with a high level of human activity, the topography and climate of Southern California combine to produce unhealthful air quality in the air basin. Low temperature inversions, light winds, shallow vertical mixing, and extensive sunlight, in combination with topographical features such as adjacent mountain ranges that hinder dispersion of air pollutants, can result in degraded air quality within the basin.

3.0 PROPOSED DEVELOPMENT

The proposed project would develop a housing tract with 37 single-family home lots, associated access roadways and utilities, and stormwater desilting basins within a 90-acre property to be accessed by extending Magnolia Lane from its existing terminus. The proposed development would be clustered within approximately 21 acres of the site, while the remainder of the site would remain undeveloped open space. Existing land uses in the surrounding vicinity includes adjacent residential development to the west, and residential developments and open spaces to the east and north of the site, with open space bordering the site to the south. The Interstate 5 Freeway and commercial development are located approximately 0.75 miles due east of the project site.

Construction of the project would require grading to provide level building pads for the proposed lots and roads, and to create stormwater desilting basins. Cut and fill grading quantities are estimated to be 375,000 cubic yards each. All grading quantities of cut and fill would be balanced onsite.

4.0 AIR QUALITY SETTING

Ambient Air Quality Standards

National and State ambient air quality standards (AAQS) are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those people most susceptible to respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise, called "sensitive receptors." Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed. Recent research has shown, however, that chronic exposure to ozone (the primary ingredient in photochemical smog) may lead to adverse respiratory health even at concentrations close to the ambient standard. National and State AAQS currently in effect in California are shown in **Table 1**. Sources and health effects of various pollutants are shown in **Table 2**.

Table 1
Ambient Air Quality Standards

Ambient Air Quality Standards						
Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)[8]	1 Hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m³)		0.070 ppm (137 µg/m³)		
Respirable Particulate Matter (PM10)[8]	24 Hour	50 µg/m³	Gravimetric or Beta Attenuation	150 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m³		—		
Fine Particulate Matter (PM2.5)[8]	24 Hour	—	—	35 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m³	Gravimetric or Beta Attenuation	12.0 µg/m³	15 µg/m³	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m³)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m³)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m³)		9 ppm (10 mg/m³)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m³)		—	—	
Nitrogen Dioxide (NO_2)[10]	1 Hour	0.18 ppm (339 µg/m³)	Gas Phase Chemiluminescence	100 ppb (188 µg/m³)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m³)		0.053 ppm (100 µg/m³)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 µg/m³)	Ultraviolet Fluorescence	75 ppb (196 µg/m³)	—	Ultraviolet Flouresecence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m³)	
	24 Hour	0.04 ppm (105 µg/m³)		0.14 ppm (for certain areas)[11]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[11]	—	
Lead[12,13]	30 Day Average	1.5 µg/m³	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m³ (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m³		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m³	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m³)	Gas Chromatography			

See footnotes on next page ...

For more information please call ARB-PIO at (916) 322-2990 **California Air Resources Board (5/4/16)**

Table 1
Table 1 (Continued)

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.

8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM10 standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

11. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

12. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

14. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

For more information please call ARB-PIO at (916) 322-2990 **California Air Resources Board (5/4/16)**

Table 2
Health Effects of Major Criteria Pollutants

Pollutants	Examples of Sources	Health Effects
Particulate Matter (PM-2.5, PM-10)	• Cars and trucks (especially diesels) • Fireplaces, woodstoves • Windblown dust from roadways, agriculture and construction	• Hospitalizations for worsened heart diseases • Emergency room visits for asthma • Premature death
Ozone (O_3)	• Precursor sources*: motor vehicles, industrial emissions, and consumer products	• Cough, chest tightness • Difficulty taking a deep breath • Worsened asthma symptoms • Lung inflammation
Carbon Monoxide (CO)	• Any source that burns fuel such as cars, trucks, construction and farming equipment, and residential heaters and stoves	• Chest pain in heart patients ** • Headaches, nausea ** • Reduced mental alertness ** • Death at very high levels **
Nitrogen Dioxide (NO_2)	• See carbon monoxide sources	• Increased response to allergens

Source: California Air Resources Board, ARB Fact Sheet: Air Pollution and Health, webpage (reviewed December 2, 2009), accessed at https://www.arb.ca.gov/research/health/fs/fs1/fs1.htm March 1, 2017.
* Ozone is not generated directly by these sources. Rather chemicals emitted by these precursor sources react with sunlight to form ozone in the atmosphere.
** Health effects from CO exposures occur at levels considerably higher than ambient.

Baseline Air Quality

In the air basin, the agencies designated to develop the regional Air Quality Management Plan (AQMP) are the SCAQMD and the Southern California Association of Governments (SCAG). The most recent 2016 AQMP, approved on March 3, 2017, demonstrates attainment of the 1-hr and 8-hr ozone NAAQS as well as the latest 24-hr and annual PM2.5 standards.

Primary pollutants are those pollutants that are emitted in their already unhealthful form, the effects of which can generally be more closely linked to the specific location where they are emitted. Many particulates, especially fugitive dust emissions, are also primary pollutants. Because of the non-attainment status of the air basin for PM-10, an aggressive dust control program is required for construction projects to control fugitive dust. Secondary pollutants require time to transform from a more benign form to a more unhealthful contaminant, and their impact is more regional and may be far from the source.

Existing levels of ambient air quality and historical trends and projections in the project area are best documented from measurements made by the SCAQMD. The geographically closest SCAQMD air quality monitoring station to the project is in Santa Clarita, providing monitoring data for regional air pollutants such as ozone, carbon monoxide (CO), nitrogen oxides (NOx), and particulate matter (PM-10). **Table 3** provides the last five years of data from this monitoring station. Table 3 provides available data from the last five years for fine particulate matter of 2.5-microns or less (PM-2.5) recorded in the West San Fernando Valley as no data for PM-2.5 was recorded for the Santa Clarita Valley monitoring station.

Ozone, the primary ingredient in photochemical smog, is an important pollution problem in the air basin. As shown in Table 3, in 2015 air samples at the Santa Clarita Valley SCAQMD monitoring station have exceeded the federal 8-hour standard on 15 days, and the California 8-hour standard and one-hour standard on 55 and 23 days, respectively.

Primary pollutants such as CO and NO_X are low near the project site because there is substantial excess dispersive capacity to accommodate localized emissions of those pollutants. As shown in Table 3, allowable levels of these criteria pollutants have not been exceeded in the past five years. Likewise, inhalable particulates (PM-10) concentrations measured at the Santa Clarita Valley monitoring station have not exceeded State or Federal standards in the past five years. No data on PM-2.5 concentrations are available from the Santa Clarita Valley monitoring station; however, as shown in Table 3, PM-2.5 concentrations measured in the West San Fernando Valley SCAQMD monitoring station to the south of the Santa Clarita Valley indicate that the Federal standard was exceeded from zero to two days per year for the days monitored over the past five years in that area, or approximately zero to two percent of the days monitored.

Table 3
Project Area Air Quality Monitoring Summary 2011-2015
(Days Standards Were Exceeded and Maximum Observed Levels)

Pollutant/Standard	2011	2012	2013	2014	2015
Ozone					
1-Hour > 0.09 ppm (S)	31	45	30	32	23
8-Hour > 0.07 ppm (S)	52	81	58	65	55
8- Hour > 0.075 ppm (F)	30	57	40	16	15
Max. 1-Hour Conc. (ppm)	0.144	0.134	0.134	0.137	0.126
Max. 8-Hour Conc. (ppm)	0.122	0.112	0.104	0.110	0.108
Carbon Monoxide					
8-Hour > 9. ppm (S, F)	0	0	0	0	0
Max 8-Hour Conc. (ppm)	0.8	1.1	0.8	1.2	0.9
Nitrogen Dioxide					
1-Hour > 0.18 ppm (S)	0	0	0	0	0
Max. 1-Hour Conc. (ppm)	0.060	0.066	0.065	0.057	0.065
Inhalable Particulates (PM-10)					
24-Hour > 50 $\mu g/m^3$ (S)	0/58	0/55	0/60	0/59	0/52
24-Hour > 150 $\mu g/m^3$ (F)	0/58	0/55	0/60	0/59	0/52
Max. 24-Hr. Conc. ($\mu g/m^3$)	45	37	43	47	41
Ultra-Fine Particulates (PM-2.5)					
24-Hour > 35 $\mu g/m^3$ (F)	1/117	2/110	1/118	0/109	1/113
Max. 24-Hr. Conc. ($\mu g/m^3$)	39.8	41.6	41.8	27.2	36.8

Source: SCAQMD Monitoring Reports from the Santa Clarita Valley Station (West San Fernando Valley Station for PM-2.5)
S=State Standard F=Federal Standard

5.0 AIR QUALITY IMPACT

Significance Criteria

Air quality impacts are considered significant if they cause clean air standards to be violated where they are currently met, or if they substantially contribute to an existing violation of standards. Any substantial emissions of air contaminants for which there is no safe exposure, or nuisance emissions such as dust or odors, would also be considered a significant impact.

Based on Appendix G of the California CEQA Guidelines, a project would have a potentially significant impact if it:

a. Conflicts with or obstructs implementation of the applicable air quality plan.
b. Violates any air quality standard or contributes substantially to an existing or projected air quality violation.
c. Results in a cumulatively considerable net increase of any criteria pollutants for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
d. Exposes sensitive receptors to substantial pollutant concentrations.
e. Creates objectionable odors affecting a substantial number of people.

Air Quality Planning

While conformity with adopted plans, forecasts and programs relative to population, housing, employment and land use designations could indicate conformance with the current AQMP, the air quality impact significance for this proposed project has been analyzed on a project-specific basis to determine consistency with SCAQMD project impact evaluation thresholds. For determining project significance under CEQA, the SCAQMD has designated emissions level thresholds for evaluating regional air quality impact significance. Projects in the SCAQMD with daily emissions that exceed emission thresholds shown in **Table 4** could result in significant impacts.

Table 4
Daily Emissions Thresholds

Pollutant	Construction	Operations
ROG	75	55
NO_X	100	55
CO	550	550
PM-10	150	150
PM-2.5	55	55
SO_X	150	150
Source: SCAQMD CEQA Air Quality Handbook, November 1993 Rev.		

Additional Indicators

In its CEQA Handbook, the SCAQMD also states that additional indicators should be used as screening criteria to determine the need for further analysis with respect to air quality. The additional indicators are as follows:

- Project could interfere with the attainment of the federal or state ambient air quality standards by either violating or contributing to an existing or projected air quality violation.
- Project could result in population increases within the regional statistical area which would be in excess of that projected in the AQMP and in other than planned locations for the project's build-out year.
- Project could generate vehicle trips that cause a CO hot spot.

For the proposed project, diesel exhaust toxic air contaminants (TAC's) emitted from construction equipment would occur over a relatively brief period while construction is occurring. Health effects of TAC's are evaluated based on an accumulation over an assumed 70-year lifespan. Any measurable diesel TAC exposure from the project would occur for only the brief portion of this project's lifetime during construction, estimated to be less than two years.

The SCAQMD's resolution activity for odor compliance is mandated under California Health & Safety Code Section 41700, and falls under SCAQMD Rule 402. This rule on Public Nuisance Regulation states: "A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. The provisions of this rule shall not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals."

Sensitive Receptors

Air quality impacts are analyzed relative to those persons with the greatest sensitivity to air pollution exposure. Such persons are called "sensitive receptors." Sensitive population groups include young children, the elderly and the acutely and chronically ill (e.g., those with cardio-respiratory disease, including asthma). For this project, nearby residences are considered to be sensitive uses because they may be occupied for extended periods, and residents may be outdoors when exposure is highest.

Construction Activity Impacts

Dust is typically the primary concern during construction of residential tracts where land clearing and grading are proposed. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions." Emission rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). Because of the inherent uncertainty in the predictive factors for estimating fugitive dust generation, regulatory agencies typically use one universal "default" factor based on the area disturbed assuming that all other input parameters into emission rate prediction fall into midrange average values.

CalEEMod was developed by the SCAQMD to provide a model by which to estimate both construction emissions and operational emissions from a variety of land use projects. It calculates both the daily maximum and annual average emissions for criteria pollutants as well as total or annual greenhouse gas (GHG) emissions.

Estimated construction emissions were modeled using CalEEMod2016.3.1 to identify maximum daily emissions for each pollutant during project construction. The output reports from CalEEMod are included as **Appendix A** to this report. Construction emissions were modeled based on the default construction equipment fleet list and duration of each construction phase determined by CalEEMod as adjusted for site specific conditions. The construction equipment list and construction phases modeled are shown in **Table 5**. Based on the indicated equipment fleet shown in Table 5, the project's maximum daily construction

emissions as calculated by CalEEMod are listed in **Table 6**.

As seen in Table 6, peak daily construction activity emissions of criteria air pollutants are estimated to be far below thresholds for determining significance under CEQA per the SCAQMD CEQA Air Quality Handbook. Therefore, the project's impacts on regional air quality during construction would be less than significant and no mitigation measures would be required.

Table 5
Conceptual Construction Equipment Fleet

Phase Name and Duration	Equipment [a]
Site Preparation (10 days)	2 Rubber-tired Dozers
	4 Loader/Backhoes
Grading (35 days)	2 Excavators
	1 Grader
	2 Scrapers
	1 Rubber-tired Dozer
	2Loader/Backhoes
Construction (370 days)	3 Forklifts
	1 Generator set
	3 Loader/Backhoes
	1 Welder
Paving (20 days)	2 Pavers
	2 Paving equipment
	2 Rollers
Architectural Coating (20 days)	1 Air Compressor
[a] CalEEMod output, September 8, 2017	

Table 6
Maximum Daily Construction Emissions (pounds/day)

	ROG	NO_X	CO	SO_2	PM-10	PM-2.5
Maximum Daily Construction Emissions						
Unmitigated	37.9	59.6	36.1	0.06	14.2	8.5
Mitigated *	37.9	59.6	36.1	0.06	7.6	4.8
SCAQMD Thresholds	75	100	550	150	150	55
Significant Impact? Y/N	No	No	No	No	No	No

Source: CalEEMod output, September 8, 2017.
* The only model-based mitigation applied for this project was watering exposed dirt surfaces at least twice per day as required per SCAQMD Rule 403 (Fugitive Dust), to minimize the generation of fugitive dust.

Localized Significance Thresholds Analysis

The SCAQMD has developed analysis parameters to evaluate ambient air quality on a local level in addition to the more regional emissions-based thresholds of significance. These analysis elements are called Localized Significance Thresholds (LSTs), and relate to a project's potential to expose sensitive receptors to substantial pollutant concentrations. LSTs were developed in response to Governing Board's Environmental Justice Enhancement Initiative 1-4 and the LST methodology was provisionally adopted in October 2003 and formally approved by SCAQMD's Mobile Source Committee in February 2005.

Use of an LST analysis for a project is optional. For development of a residential tract such as the proposed

project, the potential for onsite emissions to exceed an applicable LST would primarily be during construction. LSTs are applicable for a sensitive receptor where it is possible that an individual could remain for 24 hours such as a residence, hospital or convalescent facility.

LSTs are only applicable to the following criteria pollutants: NO_X, CO, PM-10, and PM-2.5. LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard, and are developed based on the ambient concentrations of that pollutant for each source receptor area and distance to the nearest sensitive receptor.

LST screening tables provided by SCAQMD list thresholds for projects that are 1, 2, or 5 acres in size, based on source-receptor distances of 25, 50, 100, 200 and 500 meters. The project's construction would occur over approximately 21 acres of a 95-acre site, therefore screening criteria for a 5-acre site was used. Existing residences located at the terminus of Magnolia Lane would be the nearest sensitive receptors to the site. Due to the existing residences that are within 25 meters of the western project boundary, the 25-meter screening criteria were considered for this project. Using these criteria provides a very conservative evaluation as the largest project size for which screening criteria are provided (5 acres) is considerably smaller than the approximately 21-acre project development area, and as project equipment would generally be operating at much greater distances from existing residences than 25 meters, and in a less concentrated area. This evaluation is based on estimated daily construction emissions for the phase and year representing the highest daily emissions. Daily averages would be lower than the reported maximum amounts.

Table 7 shows the relevant LST screening criteria and the estimated peak daily onsite emissions that would be generated during the construction phases. The emissions reported in Table 7 show emissions estimated with implementation of watering of exposed surfaces during construction, as all construction projects in the Air Basin must comply with the requirements of SCAQMD Rule 403, Fugitive Dust, which requires the implementation of Reasonably Available Control Measures (RACM) for all fugitive dust sources. SCAQMD Rule 403, Control Measure 08-2 states that during earth moving activities, projects are required to "Re-apply water as necessary to maintain soils in a damp condition and to ensure that visible emissions do not exceed 100 feet in any direction". Therefore, peak onsite emissions during construction would not exceed LST screening criteria by compliance with applicable regulations, and as such, potential LST impacts would be less than significant, and no mitigation measures would be required.

Table 7
Local Significance Thresholds (LST)
and Peak Daily Onsite Emissions (pounds/day)

LST 5.0 acre/25 meters Santa Clarita Valley	**NO_X**	**CO**	**PM-10**	**PM-2.5**
LST Threshold	246	1,644	12	6
Peak Onsite Daily Emissions [a]	**59.6**	**36.1**	**7.6**	**4.8**
Significant Impact? Y/N	No	No	No	No

Source: CalEEMod output, September 8, 2017.
[a] Emissions estimates include compliance with SCAQMD Rule 403 requirements of water application for fugitive dust suppression.

Operational Impacts

During operations, the proposed residences would result in air quality emissions of criteria pollutants from

area sources, energy sources, and mobile sources. The SCAQMD thresholds for air quality impacts from operations are shown above in Table 4. Operations of the proposed residential development would not be anticipated to exceed SCAQMD significance thresholds for criteria pollutants, as shown in **Table 8**. As seen in Table 8, the project's operational emissions would be far below SCAQMD thresholds; therefore, operational impacts would be less than significant.

Table 8
Maximum Daily Operations Emissions (pounds/day)

Daily Emissions	ROG	NO_X	CO	SO_2	PM-10	PM-2.5
Area	12.38	0.80	21.88	0.05	2.84	2.84
Energy	0.04	0.31	0.13	0.00	0.03	0.03
Mobile	0.74	3.75	10.00	0.03	2.70	0.74
Total	13.15	4.87	32.01	0.08	5.57	3.61
SCAQMD Thresholds	55	55	550	150	150	55
Significant Impact? Y/N	No	No	No	No	No	No
Source: CalEEMod output, September 8, 2017.						

Conclusion

Construction activities would be subject to applicable code requirements and permit conditions, some of which would reduce air pollutant emissions to even lower levels than estimated above. As such, the proposed project would not result in significant air quality impacts during construction or operations and no mitigation measures would be required under CEQA.

6.0 GREENHOUSE GAS EMISSIONS (GHG) IMPACT

Greenhouse gas emissions (GHG) emitted by human activity are implicated in global climate change. These GHGs contribute to an increase in the temperature of the earth's atmosphere by preventing long wavelength heat radiation in some parts of the infrared spectrum from leaving the atmosphere. For purposes of planning and regulation, Section 15364.5 of the California Code of Regulations defines GHGs to include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. Fossil fuel combustion in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of GHG emissions, accounting for approximately half of GHG emissions globally. Industrial and commercial sources are the second largest contributors of GHG emissions with about one-fourth of total emissions. Residential uses in California contribute 7 percent to the GHG statewide burden plus a proportionate share of in-and out-of-state electrical generation emissions (ARM, 2014).

AB 32 is one of the most significant pieces of environmental legislation regarding greenhouse gas emissions that California has adopted. Major components of the AB 32 include:

- Require the monitoring and reporting of GHG emissions beginning with sources or categories of sources that contribute the most to statewide emissions.
- Requires immediate "early action" control programs on the most readily controlled GHG sources.
- Mandates that by 2020, California's GHG emissions be reduced to 1990 levels.
- Must complement efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminants.

GHG sources are categorized into direct sources (i.e. company owned) and indirect sources (i.e. not company owned). Direct sources include combustion emissions from on-and off-road mobile sources, and fugitive emissions. Indirect sources include off-site electricity generation and non-company owned mobile sources.

Thresholds of Significance

Based on the CEQA Appendix G guidelines, a project would have a potentially significant GHG impact if it:

- Generates GHG emissions, directly or indirectly, that may have a significant impact on the environment, or,
- Conflicts with an applicable plan, policy or regulation adopted to reduce GHG emissions.

Section 15064.4 of the Code specifies how significance of GHG emissions is to be evaluated. The process is broken down into quantification of project-related GHG emissions, making a determination of significance, and specification of any appropriate mitigation if impacts are found to be potentially significant. At each of these steps, the new GHG guidelines afford the lead agency with substantial flexibility. Emissions identification may be quantitative, qualitative or based on performance standards. This analysis relies on the quantified GHG emissions estimated for this project using CalEEMod.

To determine a significance threshold for GHG emissions, in September 2010 the SCAQMD CEQA Significance Thresholds GHG Working Group recommended a threshold of 3,000 Metric Tons (MT) Carbon Dioxide equivalent (CO_2e) for all non-industrial projects. This 3,000 MT/year recommendation has been used as a guideline for this analysis.

Construction Activity GHG Emissions

During project construction, the CalEEMod computer model estimates that the construction activities would generate a total of 279.9 MT CO_2e emissions. SCAQMD GHG emissions evaluation guidance is to amortize construction emissions over a 30-year lifetime, which results in a project amortized annual emissions of approximately 9.3 MT CO_2e emissions.

Project Operational GHG Emissions

Based on the CalEEMod output files found in the appendix of this report, the project's annual operational GHG emissions from a combination of area sources, energy use, water use, and waste disposal would be 750.0 MT CO_2e. With the addition of the amortized construction GHG emissions discussed above, the project would result in annual emissions of approximately 759.3 MT CO_2e, which is well below the threshold guideline, and therefore the project's operational GHG emissions impact would not be significant.

GHG Conclusions

The project would not result in significant impacts regarding GHG emissions during construction or operations, and no mitigation measures would be required.

Appendix A

CalEEMod2016.3.1
Computer Model Output

Canyon View Estates V.2

South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	37.00	Dwelling Unit	21.00	120,250.00	110

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 21 acres graded. 120,250 sq ft res. space. 110 population per Initial Study.

Construction Phase - No demolition

Off-road Equipment -

Off-road Equipment - no cranes

Off-road Equipment - No demolition

Off-road Equipment - two rubber tired dozers

Construction Off-road Equipment Mitigation -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Canyon View Estates V.2 - South Coast AQMD Air District, Summer

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblConstructionPhase	NumDays	20.00	0.00
tblLandUse	BuildingSpaceSquareFeet	66,600.00	120,250.00
tblLandUse	LandUseSquareFeet	66,600.00	120,250.00
tblLandUse	LotAcreage	12.01	21.00
tblLandUse	Population	106.00	110.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	OperationalYear	2018	2020
tblTripsAndVMT	WorkerTripNumber	0.00	15.00
tblTripsAndVMT	WorkerTripNumber	15.00	18.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	5.1979	59.5991	36.0929	0.0645	12.2454	2.6355	14.2133	6.6738	2.4247	8.4843	0.0000	6,488.2987	6,488.2987	1.9523	0.0000	6,537.1060
2019	1.9992	16.3247	15.8521	0.0246	0.1709	1.0712	1.2421	0.0459	1.0117	1.0576	0.0000	2,434.1508	2,434.1508	0.7196	0.0000	2,452.1416
2020	37.8775	14.1112	15.2653	0.0245	0.1677	0.7541	0.9217	0.0445	0.6937	0.7382	0.0000	2,379.3961	2,379.3961	0.7190	0.0000	2,397.3701
Maximum	**37.8775**	**59.5991**	**36.0929**	**0.0645**	**12.2454**	**2.6355**	**14.2133**	**6.6738**	**2.4247**	**8.4843**	**0.0000**	**6,488.2987**	**6,488.2987**	**1.9523**	**0.0000**	**6,537.1060**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	5.1979	59.5991	36.0929	0.0645	5.6211	2.6355	7.5890	3.0326	2.4247	4.8431	0.0000	6,488.2987	6,488.2987	1.9523	0.0000	6,537.1060
2019	1.9992	16.3247	15.8521	0.0246	0.1709	1.0712	1.2421	0.0459	1.0117	1.0576	0.0000	2,434.1508	2,434.1508	0.7196	0.0000	2,452.1416
2020	37.8775	14.1112	15.2653	0.0245	0.1677	0.7541	0.9217	0.0445	0.6937	0.7382	0.0000	2,379.3961	2,379.3961	0.7190	0.0000	2,397.3701
Maximum	**37.8775**	**59.5991**	**36.0929**	**0.0645**	**5.6211**	**2.6355**	**7.5890**	**3.0326**	**2.4247**	**4.8431**	**0.0000**	**6,488.2987**	**6,488.2987**	**1.9523**	**0.0000**	**6,537.1060**

Canyon View Estates V.2 - South Coast AQMD Air District, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	52.64	0.00	40.45	53.83	0.00	35.42	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	12.3757	0.8031	21.8791	0.0482		2.8432	2.8432		2.8432	2.8432	346.5760	671.4964	1,018.0724	1.0389	0.0235	1,051.0552
Energy	0.0362	0.3090	0.1315	1.9700e-003		0.0250	0.0250		0.0250	0.0250		394.5190	394.5190	7.5600e-003	7.2300e-003	396.8634
Mobile	0.7431	3.7549	10.0039	0.0342	2.6642	0.0334	2.6976	0.7129	0.0314	0.7442		3,477.5227	3,477.5227	0.1720		3,481.8229
Total	**13.1549**	**4.8671**	**32.0145**	**0.0844**	**2.6642**	**2.9016**	**5.5658**	**0.7129**	**2.8996**	**3.6124**	**346.5760**	**4,543.5381**	**4,890.1141**	**1.2185**	**0.0308**	**4,929.7415**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	12.3757	0.8031	21.8791	0.0482		2.8432	2.8432		2.8432	2.8432	346.5760	671.4964	1,018.0724	1.0389	0.0235	1,051.0552
Energy	0.0362	0.3090	0.1315	1.9700e-003		0.0250	0.0250		0.0250	0.0250		394.5190	394.5190	7.5600e-003	7.2300e-003	396.8634
Mobile	0.7431	3.7549	10.0039	0.0342	2.6642	0.0334	2.6976	0.7129	0.0314	0.7442		3,477.5227	3,477.5227	0.1720		3,481.8229
Total	**13.1549**	**4.8671**	**32.0145**	**0.0844**	**2.6642**	**2.9016**	**5.5658**	**0.7129**	**2.8996**	**3.6124**	**346.5760**	**4,543.5381**	**4,890.1141**	**1.2185**	**0.0308**	**4,929.7415**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/7/2018	5/6/2018	5	0	
2	Site Preparation	Site Preparation	5/7/2018	5/18/2018	5	10	
3	Grading	Grading	5/19/2018	7/6/2018	5	35	
4	Building Construction	Building Construction	7/7/2018	12/6/2019	5	370	
5	Paving	Paving	12/7/2019	1/3/2020	5	20	
6	Architectural Coating	Architectural Coating	1/4/2020	1/31/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 87.5

Acres of Paving: 0

Residential Indoor: 243,506; Residential Outdoor: 81,169; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Canyon View Estates V.2 - South Coast AQMD Air District, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	0.00	81	0.73
Demolition	Excavators	0	0.00	158	0.38
Demolition	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	0	0.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	0	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	6	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	13.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Demolition - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Demolition - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					12.0442	0.0000	12.0442	6.6205	0.0000	6.6205			0.0000			0.0000
Off-Road	3.3966	35.6388	18.0998	0.0295		1.9663	1.9663		1.8090	1.8090		2,971.4505	2,971.4505	0.9251		2,994.5768
Total	**3.3966**	**35.6388**	**18.0998**	**0.0295**	**12.0442**	**1.9663**	**14.0105**	**6.6205**	**1.8090**	**8.4295**		**2,971.4505**	**2,971.4505**	**0.9251**		**2,994.5768**

3.3 Site Preparation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0970	0.0695	0.9032	2.2100e-003	0.2012	1.6000e-003	0.2028	0.0534	1.4800e-003	0.0548		219.4833	219.4833	7.4800e-003		219.6704
Total	**0.0970**	**0.0695**	**0.9032**	**2.2100e-003**	**0.2012**	**1.6000e-003**	**0.2028**	**0.0534**	**1.4800e-003**	**0.0548**		**219.4833**	**219.4833**	**7.4800e-003**		**219.6704**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.4199	0.0000	5.4199	2.9792	0.0000	2.9792			0.0000			0.0000
Off-Road	3.3966	35.6388	18.0998	0.0295		1.9663	1.9663		1.8090	1.8090	0.0000	2,971.4505	2,971.4505	0.9251		2,994.5768
Total	**3.3966**	**35.6388**	**18.0998**	**0.0295**	**5.4199**	**1.9663**	**7.3862**	**2.9792**	**1.8090**	**4.7882**	**0.0000**	**2,971.4505**	**2,971.4505**	**0.9251**		**2,994.5768**

3.3 Site Preparation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0970	0.0695	0.9032	2.2100e-003	0.2012	1.6000e-003	0.2028	0.0534	1.4800e-003	0.0548		219.4833	219.4833	7.4800e-003		219.6704
Total	**0.0970**	**0.0695**	**0.9032**	**2.2100e-003**	**0.2012**	**1.6000e-003**	**0.2028**	**0.0534**	**1.4800e-003**	**0.0548**		**219.4833**	**219.4833**	**7.4800e-003**		**219.6704**

3.4 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	5.0901	59.5218	35.0894	0.0620		2.6337	2.6337		2.4230	2.4230		6,244.4284	6,244.4284	1.9440		6,293.0278
Total	**5.0901**	**59.5218**	**35.0894**	**0.0620**	**8.6733**	**2.6337**	**11.3071**	**3.5965**	**2.4230**	**6.0195**		**6,244.4284**	**6,244.4284**	**1.9440**		**6,293.0278**

3.4 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1078	0.0773	1.0035	2.4500e-003	0.2236	1.7800e-003	0.2253	0.0593	1.6400e-003	0.0609		243.8703	243.8703	8.3200e-003		244.0782
Total	**0.1078**	**0.0773**	**1.0035**	**2.4500e-003**	**0.2236**	**1.7800e-003**	**0.2253**	**0.0593**	**1.6400e-003**	**0.0609**		**243.8703**	**243.8703**	**8.3200e-003**		**244.0782**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	5.0901	59.5218	35.0894	0.0620		2.6337	2.6337		2.4230	2.4230	0.0000	6,244.4284	6,244.4284	1.9440		6,293.0278
Total	**5.0901**	**59.5218**	**35.0894**	**0.0620**	**3.9030**	**2.6337**	**6.5367**	**1.6184**	**2.4230**	**4.0415**	**0.0000**	**6,244.4284**	**6,244.4284**	**1.9440**		**6,293.0278**

3.4 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1078	0.0773	1.0035	2.4500e-003	0.2236	1.7800e-003	0.2253	0.0593	1.6400e-003	0.0609		243.8703	243.8703	8.3200e-003		244.0782
Total	**0.1078**	**0.0773**	**1.0035**	**2.4500e-003**	**0.2236**	**1.7800e-003**	**0.2253**	**0.0593**	**1.6400e-003**	**0.0609**		**243.8703**	**243.8703**	**8.3200e-003**		**244.0782**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1801	17.4218	15.3738	0.0219		1.2416	1.2416		1.1723	1.1723		2,112.9119	2,112.9119	0.4840		2,125.0112
Total	**2.1801**	**17.4218**	**15.3738**	**0.0219**		**1.2416**	**1.2416**		**1.1723**	**1.1723**		**2,112.9119**	**2,112.9119**	**0.4840**		**2,125.0112**

3.5 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0170	0.4847	0.1207	1.0500e-003	0.0256	3.5400e-003	0.0291	7.3700e-003	3.3900e-003	0.0108		111.4632	111.4632	7.5900e-003		111.6529
Worker	0.0701	0.0502	0.6523	1.5900e-003	0.1453	1.1600e-003	0.1465	0.0385	1.0700e-003	0.0396		158.5157	158.5157	5.4100e-003		158.6508
Total	**0.0871**	**0.5350**	**0.7730**	**2.6400e-003**	**0.1709**	**4.7000e-003**	**0.1756**	**0.0459**	**4.4600e-003**	**0.0504**		**269.9789**	**269.9789**	**0.0130**		**270.3037**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1801	17.4218	15.3738	0.0219		1.2416	1.2416		1.1723	1.1723	0.0000	2,112.9119	2,112.9119	0.4840		2,125.0112
Total	**2.1801**	**17.4218**	**15.3738**	**0.0219**		**1.2416**	**1.2416**		**1.1723**	**1.1723**	**0.0000**	**2,112.9119**	**2,112.9119**	**0.4840**		**2,125.0112**

3.5 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0170	0.4847	0.1207	1.0500e-003	0.0256	3.5400e-003	0.0291	7.3700e-003	3.3900e-003	0.0108		111.4632	111.4632	7.5900e-003		111.6529
Worker	0.0701	0.0502	0.6523	1.5900e-003	0.1453	1.1600e-003	0.1465	0.0385	1.0700e-003	0.0396		158.5157	158.5157	5.4100e-003		158.6508
Total	**0.0871**	**0.5350**	**0.7730**	**2.6400e-003**	**0.1709**	**4.7000e-003**	**0.1756**	**0.0459**	**4.4600e-003**	**0.0504**		**269.9789**	**269.9789**	**0.0130**		**270.3037**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9201	15.8227	15.1574	0.0219		1.0671	1.0671		1.0077	1.0077		2,091.7709	2,091.7709	0.4732		2,103.6009
Total	**1.9201**	**15.8227**	**15.1574**	**0.0219**		**1.0671**	**1.0671**		**1.0077**	**1.0077**		**2,091.7709**	**2,091.7709**	**0.4732**		**2,103.6009**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0154	0.4577	0.1106	1.0400e-003	0.0256	3.0300e-003	0.0286	7.3700e-003	2.9000e-003	0.0103		110.4879	110.4879	7.3100e-003		110.6707
Worker	0.0637	0.0443	0.5841	1.5400e-003	0.1453	1.1300e-003	0.1464	0.0385	1.0400e-003	0.0396		153.5286	153.5286	4.8000e-003		153.6486
Total	**0.0791**	**0.5020**	**0.6948**	**2.5800e-003**	**0.1709**	**4.1600e-003**	**0.1751**	**0.0459**	**3.9400e-003**	**0.0499**		**264.0165**	**264.0165**	**0.0121**		**264.3193**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9201	15.8227	15.1574	0.0219		1.0671	1.0671		1.0077	1.0077	0.0000	2,091.7709	2,091.7709	0.4732		2,103.6009
Total	**1.9201**	**15.8227**	**15.1574**	**0.0219**		**1.0671**	**1.0671**		**1.0077**	**1.0077**	**0.0000**	**2,091.7709**	**2,091.7709**	**0.4732**		**2,103.6009**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0154	0.4577	0.1106	1.0400e-003	0.0256	3.0300e-003	0.0286	7.3700e-003	2.9000e-003	0.0103		110.4879	110.4879	7.3100e-003		110.6707
Worker	0.0637	0.0443	0.5841	1.5400e-003	0.1453	1.1300e-003	0.1464	0.0385	1.0400e-003	0.0396		153.5286	153.5286	4.8000e-003		153.6486
Total	**0.0791**	**0.5020**	**0.6948**	**2.5800e-003**	**0.1709**	**4.1600e-003**	**0.1751**	**0.0459**	**3.9400e-003**	**0.0499**		**264.0165**	**264.0165**	**0.0121**		**264.3193**

3.6 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4544	15.2441	14.6648	0.0228		0.8246	0.8246		0.7586	0.7586		2,257.0025	2,257.0025	0.7141		2,274.8548
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4544**	**15.2441**	**14.6648**	**0.0228**		**0.8246**	**0.8246**		**0.7586**	**0.7586**		**2,257.0025**	**2,257.0025**	**0.7141**		**2,274.8548**

3.6 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0735	0.0511	0.6740	1.7800e-003	0.1677	1.3000e-003	0.1690	0.0445	1.2000e-003	0.0457		177.1484	177.1484	5.5400e-003		177.2869
Total	**0.0735**	**0.0511**	**0.6740**	**1.7800e-003**	**0.1677**	**1.3000e-003**	**0.1690**	**0.0445**	**1.2000e-003**	**0.0457**		**177.1484**	**177.1484**	**5.5400e-003**		**177.2869**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4544	15.2441	14.6648	0.0228		0.8246	0.8246		0.7586	0.7586	0.0000	2,257.0025	2,257.0025	0.7141		2,274.8548
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4544**	**15.2441**	**14.6648**	**0.0228**		**0.8246**	**0.8246**		**0.7586**	**0.7586**	**0.0000**	**2,257.0025**	**2,257.0025**	**0.7141**		**2,274.8548**

3.6 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0735	0.0511	0.6740	1.7800e-003	0.1677	1.3000e-003	0.1690	0.0445	1.2000e-003	0.0457		177.1484	177.1484	5.5400e-003		177.2869
Total	**0.0735**	**0.0511**	**0.6740**	**1.7800e-003**	**0.1677**	**1.3000e-003**	**0.1690**	**0.0445**	**1.2000e-003**	**0.0457**		**177.1484**	**177.1484**	**5.5400e-003**		**177.2869**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3566	14.0656	14.6521	0.0228		0.7528	0.7528		0.6926	0.6926		2,207.7334	2,207.7334	0.7140		2,225.5841
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3566**	**14.0656**	**14.6521**	**0.0228**		**0.7528**	**0.7528**		**0.6926**	**0.6926**		**2,207.7334**	**2,207.7334**	**0.7140**		**2,225.5841**

3.6 Paving - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0679	0.0456	0.6132	1.7200e-003	0.1677	1.2700e-003	0.1689	0.0445	1.1700e-003	0.0456		171.6626	171.6626	4.9400e-003		171.7860
Total	**0.0679**	**0.0456**	**0.6132**	**1.7200e-003**	**0.1677**	**1.2700e-003**	**0.1689**	**0.0445**	**1.1700e-003**	**0.0456**		**171.6626**	**171.6626**	**4.9400e-003**		**171.7860**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3566	14.0656	14.6521	0.0228		0.7528	0.7528		0.6926	0.6926	0.0000	2,207.7334	2,207.7334	0.7140		2,225.5841
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3566**	**14.0656**	**14.6521**	**0.0228**		**0.7528**	**0.7528**		**0.6926**	**0.6926**	**0.0000**	**2,207.7334**	**2,207.7334**	**0.7140**		**2,225.5841**

3.6 Paving - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0679	0.0456	0.6132	1.7200e-003	0.1677	1.2700e-003	0.1689	0.0445	1.1700e-003	0.0456		171.6626	171.6626	4.9400e-003		171.7860
Total	**0.0679**	**0.0456**	**0.6132**	**1.7200e-003**	**0.1677**	**1.2700e-003**	**0.1689**	**0.0445**	**1.1700e-003**	**0.0456**		**171.6626**	**171.6626**	**4.9400e-003**		**171.7860**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	37.6217					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109		281.4481	281.4481	0.0218		281.9928
Total	**37.8639**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**		**281.4481**	**281.4481**	**0.0218**		**281.9928**

3.7 Architectural Coating - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0136	9.1200e-003	0.1227	3.4000e-004	0.0335	2.5000e-004	0.0338	8.8900e-003	2.3000e-004	9.1300e-003		34.3325	34.3325	9.9000e-004		34.3572
Total	**0.0136**	**9.1200e-003**	**0.1227**	**3.4000e-004**	**0.0335**	**2.5000e-004**	**0.0338**	**8.8900e-003**	**2.3000e-004**	**9.1300e-003**		**34.3325**	**34.3325**	**9.9000e-004**		**34.3572**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	37.6217					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109	0.0000	281.4481	281.4481	0.0218		281.9928
Total	**37.8639**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**	**0.0000**	**281.4481**	**281.4481**	**0.0218**		**281.9928**

3.7 Architectural Coating - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0136	9.1200e-003	0.1227	3.4000e-004	0.0335	2.5000e-004	0.0338	8.8900e-003	2.3000e-004	9.1300e-003		34.3325	34.3325	9.9000e-004		34.3572
Total	**0.0136**	**9.1200e-003**	**0.1227**	**3.4000e-004**	**0.0335**	**2.5000e-004**	**0.0338**	**8.8900e-003**	**2.3000e-004**	**9.1300e-003**		**34.3325**	**34.3325**	**9.9000e-004**		**34.3572**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.7431	3.7549	10.0039	0.0342	2.6642	0.0334	2.6976	0.7129	0.0314	0.7442		3,477.5227	3,477.5227	0.1720		3,481.8229
Unmitigated	0.7431	3.7549	10.0039	0.0342	2.6642	0.0334	2.6976	0.7129	0.0314	0.7442		3,477.5227	3,477.5227	0.1720		3,481.8229

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	352.24	366.67	318.94	1,194,446	1,194,446
Total	352.24	366.67	318.94	1,194,446	1,194,446

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0362	0.3090	0.1315	1.9700e-003		0.0250	0.0250		0.0250	0.0250		394.5190	394.5190	7.5600e-003	7.2300e-003	396.8634
NaturalGas Unmitigated	0.0362	0.3090	0.1315	1.9700e-003		0.0250	0.0250		0.0250	0.0250		394.5190	394.5190	7.5600e-003	7.2300e-003	396.8634

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	3353.41	0.0362	0.3090	0.1315	1.9700e-003		0.0250	0.0250		0.0250	0.0250		394.5190	394.5190	7.5600e-003	7.2300e-003	396.8634
Total		**0.0362**	**0.3090**	**0.1315**	**1.9700e-003**		**0.0250**	**0.0250**		**0.0250**	**0.0250**		**394.5190**	**394.5190**	**7.5600e-003**	**7.2300e-003**	**396.8634**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	3.35341	0.0362	0.3090	0.1315	1.9700e-003		0.0250	0.0250		0.0250	0.0250		394.5190	394.5190	7.5600e-003	7.2300e-003	396.8634
Total		**0.0362**	**0.3090**	**0.1315**	**1.9700e-003**		**0.0250**	**0.0250**		**0.0250**	**0.0250**		**394.5190**	**394.5190**	**7.5600e-003**	**7.2300e-003**	**396.8634**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	12.3757	0.8031	21.8791	0.0482		2.8432	2.8432		2.8432	2.8432	346.5760	671.4964	1,018.0724	1.0389	0.0235	1,051.0552
Unmitigated	12.3757	0.8031	21.8791	0.0482		2.8432	2.8432		2.8432	2.8432	346.5760	671.4964	1,018.0724	1.0389	0.0235	1,051.0552

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2062					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.3810					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	9.6953	0.7677	18.8164	0.0480		2.8264	2.8264		2.8264	2.8264	346.5760	666.0000	1,012.5760	1.0336	0.0235	1,045.4248
Landscaping	0.0933	0.0354	3.0627	1.6000e-004		0.0168	0.0168		0.0168	0.0168		5.4964	5.4964	5.3600e-003		5.6304
Total	**12.3757**	**0.8031**	**21.8791**	**0.0482**		**2.8432**	**2.8432**		**2.8432**	**2.8432**	**346.5760**	**671.4964**	**1,018.0724**	**1.0389**	**0.0235**	**1,051.0552**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2062					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.3810					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	9.6953	0.7677	18.8164	0.0480		2.8264	2.8264		2.8264	2.8264	346.5760	666.0000	1,012.5760	1.0336	0.0235	1,045.4248
Landscaping	0.0933	0.0354	3.0627	1.6000e-004		0.0168	0.0168		0.0168	0.0168		5.4964	5.4964	5.3600e-003		5.6304
Total	**12.3757**	**0.8031**	**21.8791**	**0.0482**		**2.8432**	**2.8432**		**2.8432**	**2.8432**	**346.5760**	**671.4964**	**1,018.0724**	**1.0389**	**0.0235**	**1,051.0552**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Canyon View Estates V.2

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	37.00	Dwelling Unit	21.00	120,250.00	110

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 21 acres graded. 120,250 sq ft res. space. 110 population per Initial Study.

Construction Phase - No demolition

Off-road Equipment -

Off-road Equipment - no cranes

Off-road Equipment - No demolition

Off-road Equipment - two rubber tired dozers

Construction Off-road Equipment Mitigation -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Canyon View Estates V.2 - South Coast AQMD Air District, Annual

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblConstructionPhase	NumDays	20.00	0.00
tblLandUse	BuildingSpaceSquareFeet	66,600.00	120,250.00
tblLandUse	LandUseSquareFeet	66,600.00	120,250.00
tblLandUse	LotAcreage	12.01	21.00
tblLandUse	Population	106.00	110.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	OperationalYear	2018	2020
tblTripsAndVMT	WorkerTripNumber	0.00	15.00
tblTripsAndVMT	WorkerTripNumber	15.00	18.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.2512	2.3540	1.7399	2.8200e-003	0.2274	0.1345	0.3619	0.1002	0.1256	0.2258	0.0000	252.9172	252.9172	0.0636	0.0000	254.5077
2019	0.2568	2.1234	2.0596	3.1800e-003	0.0219	0.1377	0.1596	5.8800e-003	0.1299	0.1358	0.0000	278.4609	278.4609	0.0593	0.0000	279.9424
2020	0.3809	0.0381	0.0423	7.0000e-005	5.8000e-004	2.2400e-003	2.8200e-003	1.5000e-004	2.1500e-003	2.3100e-003	0.0000	6.0760	6.0760	1.1800e-003	0.0000	6.1056
Maximum	**0.3809**	**2.3540**	**2.0596**	**3.1800e-003**	**0.2274**	**0.1377**	**0.3619**	**0.1002**	**0.1299**	**0.2258**	**0.0000**	**278.4609**	**278.4609**	**0.0636**	**0.0000**	**279.9424**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.2512	2.3540	1.7399	2.8200e-003	0.1108	0.1345	0.2453	0.0474	0.1256	0.1730	0.0000	252.9169	252.9169	0.0636	0.0000	254.5074
2019	0.2568	2.1234	2.0596	3.1800e-003	0.0219	0.1377	0.1596	5.8800e-003	0.1299	0.1358	0.0000	278.4606	278.4606	0.0593	0.0000	279.9421
2020	0.3809	0.0381	0.0423	7.0000e-005	5.8000e-004	2.2400e-003	2.8200e-003	1.5000e-004	2.1500e-003	2.3100e-003	0.0000	6.0760	6.0760	1.1800e-003	0.0000	6.1056
Maximum	**0.3809**	**2.3540**	**2.0596**	**3.1800e-003**	**0.1108**	**0.1377**	**0.2453**	**0.0474**	**0.1299**	**0.1730**	**0.0000**	**278.4606**	**278.4606**	**0.0636**	**0.0000**	**279.9421**

Canyon View Estates V.2 - South Coast AQMD Air District, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**46.67**	**0.00**	**22.24**	**49.74**	**0.00**	**14.52**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**5-7-2018**	**8-6-2018**	1.5259	1.5259
2	**8-7-2018**	**11-6-2018**	0.6647	0.6647
3	**11-7-2018**	**2-6-2019**	0.6398	0.6398
4	**2-7-2019**	**5-6-2019**	0.5826	0.5826
5	**5-7-2019**	**8-6-2019**	0.6021	0.6021
6	**8-7-2019**	**11-6-2019**	0.6022	0.6022
7	**11-7-2019**	**2-6-2020**	0.7591	0.7591
		Highest	1.5259	1.5259

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.6050	0.0140	0.6180	6.2000e-004		0.0374	0.0374		0.0374	0.0374	3.9301	8.1756	12.1057	0.0123	2.7000e-004	12.4934
Energy	6.6000e-003	0.0564	0.0240	3.6000e-004		4.5600e-003	4.5600e-003		4.5600e-003	4.5600e-003	0.0000	168.9599	168.9599	5.5300e-003	2.0800e-003	169.7188
Mobile	0.1203	0.6789	1.6515	5.7000e-003	0.4539	5.8000e-003	0.4597	0.1216	5.4500e-003	0.1271	0.0000	525.7438	525.7438	0.0268	0.0000	526.4146
Waste						0.0000	0.0000		0.0000	0.0000	9.1549	0.0000	9.1549	0.5410	0.0000	22.6809
Water						0.0000	0.0000		0.0000	0.0000	0.7648	15.3813	16.1461	0.0792	1.9900e-003	18.7177
Total	**0.7319**	**0.7493**	**2.2935**	**6.6800e-003**	**0.4539**	**0.0478**	**0.5016**	**0.1216**	**0.0474**	**0.1691**	**13.8498**	**718.2605**	**732.1103**	**0.6649**	**4.3400e-003**	**750.0254**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.6050	0.0140	0.6180	6.2000e-004		0.0374	0.0374		0.0374	0.0374	3.9301	8.1756	12.1057	0.0123	2.7000e-004	12.4934
Energy	6.6000e-003	0.0564	0.0240	3.6000e-004		4.5600e-003	4.5600e-003		4.5600e-003	4.5600e-003	0.0000	168.9599	168.9599	5.5300e-003	2.0800e-003	169.7188
Mobile	0.1203	0.6789	1.6515	5.7000e-003	0.4539	5.8000e-003	0.4597	0.1216	5.4500e-003	0.1271	0.0000	525.7438	525.7438	0.0268	0.0000	526.4146
Waste						0.0000	0.0000		0.0000	0.0000	9.1549	0.0000	9.1549	0.5410	0.0000	22.6809
Water						0.0000	0.0000		0.0000	0.0000	0.7648	15.3813	16.1461	0.0792	1.9900e-003	18.7177
Total	**0.7319**	**0.7493**	**2.2935**	**6.6800e-003**	**0.4539**	**0.0478**	**0.5016**	**0.1216**	**0.0474**	**0.1691**	**13.8498**	**718.2605**	**732.1103**	**0.6649**	**4.3400e-003**	**750.0254**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/7/2018	5/6/2018	5	0	
2	Site Preparation	Site Preparation	5/7/2018	5/18/2018	5	10	
3	Grading	Grading	5/19/2018	7/6/2018	5	35	
4	Building Construction	Building Construction	7/7/2018	12/6/2019	5	370	
5	Paving	Paving	12/7/2019	1/3/2020	5	20	
6	Architectural Coating	Architectural Coating	1/4/2020	1/31/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 87.5

Acres of Paving: 0

Residential Indoor: 243,506; Residential Outdoor: 81,169; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	0.00	81	0.73
Demolition	Excavators	0	0.00	158	0.38
Demolition	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	0	0.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	0	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	6	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	13.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Demolition - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Demolition - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0602	0.0000	0.0602	0.0331	0.0000	0.0331	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0170	0.1782	0.0905	1.5000e-004		9.8300e-003	9.8300e-003		9.0500e-003	9.0500e-003	0.0000	13.4783	13.4783	4.2000e-003	0.0000	13.5832
Total	**0.0170**	**0.1782**	**0.0905**	**1.5000e-004**	**0.0602**	**9.8300e-003**	**0.0701**	**0.0331**	**9.0500e-003**	**0.0422**	**0.0000**	**13.4783**	**13.4783**	**4.2000e-003**	**0.0000**	**13.5832**

3.3 Site Preparation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	3.9000e-004	4.2000e-003	1.0000e-005	9.9000e-004	1.0000e-005	1.0000e-003	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.9473	0.9473	3.0000e-005	0.0000	0.9481
Total	**4.8000e-004**	**3.9000e-004**	**4.2000e-003**	**1.0000e-005**	**9.9000e-004**	**1.0000e-005**	**1.0000e-003**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.9473**	**0.9473**	**3.0000e-005**	**0.0000**	**0.9481**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0271	0.0000	0.0271	0.0149	0.0000	0.0149	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0170	0.1782	0.0905	1.5000e-004		9.8300e-003	9.8300e-003		9.0500e-003	9.0500e-003	0.0000	13.4783	13.4783	4.2000e-003	0.0000	13.5832
Total	**0.0170**	**0.1782**	**0.0905**	**1.5000e-004**	**0.0271**	**9.8300e-003**	**0.0369**	**0.0149**	**9.0500e-003**	**0.0240**	**0.0000**	**13.4783**	**13.4783**	**4.2000e-003**	**0.0000**	**13.5832**

3.3 Site Preparation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	3.9000e-004	4.2000e-003	1.0000e-005	9.9000e-004	1.0000e-005	1.0000e-003	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.9473	0.9473	3.0000e-005	0.0000	0.9481
Total	**4.8000e-004**	**3.9000e-004**	**4.2000e-003**	**1.0000e-005**	**9.9000e-004**	**1.0000e-005**	**1.0000e-003**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.9473**	**0.9473**	**3.0000e-005**	**0.0000**	**0.9481**

3.4 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1518	0.0000	0.1518	0.0629	0.0000	0.0629	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0891	1.0416	0.6141	1.0900e-003		0.0461	0.0461		0.0424	0.0424	0.0000	99.1349	99.1349	0.0309	0.0000	99.9064
Total	**0.0891**	**1.0416**	**0.6141**	**1.0900e-003**	**0.1518**	**0.0461**	**0.1979**	**0.0629**	**0.0424**	**0.1053**	**0.0000**	**99.1349**	**99.1349**	**0.0309**	**0.0000**	**99.9064**

3.4 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8600e-003	1.5200e-003	0.0163	4.0000e-005	3.8400e-003	3.0000e-005	3.8700e-003	1.0200e-003	3.0000e-005	1.0500e-003	0.0000	3.6838	3.6838	1.3000e-004	0.0000	3.6869
Total	**1.8600e-003**	**1.5200e-003**	**0.0163**	**4.0000e-005**	**3.8400e-003**	**3.0000e-005**	**3.8700e-003**	**1.0200e-003**	**3.0000e-005**	**1.0500e-003**	**0.0000**	**3.6838**	**3.6838**	**1.3000e-004**	**0.0000**	**3.6869**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0683	0.0000	0.0683	0.0283	0.0000	0.0283	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0891	1.0416	0.6141	1.0900e-003		0.0461	0.0461		0.0424	0.0424	0.0000	99.1348	99.1348	0.0309	0.0000	99.9063
Total	**0.0891**	**1.0416**	**0.6141**	**1.0900e-003**	**0.0683**	**0.0461**	**0.1144**	**0.0283**	**0.0424**	**0.0707**	**0.0000**	**99.1348**	**99.1348**	**0.0309**	**0.0000**	**99.9063**

3.4 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8600e-003	1.5200e-003	0.0163	4.0000e-005	3.8400e-003	3.0000e-005	3.8700e-003	1.0200e-003	3.0000e-005	1.0500e-003	0.0000	3.6838	3.6838	1.3000e-004	0.0000	3.6869
Total	**1.8600e-003**	**1.5200e-003**	**0.0163**	**4.0000e-005**	**3.8400e-003**	**3.0000e-005**	**3.8700e-003**	**1.0200e-003**	**3.0000e-005**	**1.0500e-003**	**0.0000**	**3.6838**	**3.6838**	**1.3000e-004**	**0.0000**	**3.6869**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1374	1.0976	0.9686	1.3800e-003		0.0782	0.0782		0.0739	0.0739	0.0000	120.7585	120.7585	0.0277	0.0000	121.4500
Total	**0.1374**	**1.0976**	**0.9686**	**1.3800e-003**		**0.0782**	**0.0782**		**0.0739**	**0.0739**	**0.0000**	**120.7585**	**120.7585**	**0.0277**	**0.0000**	**121.4500**

3.5 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0900e-003	0.0312	8.0300e-003	7.0000e-005	1.5900e-003	2.2000e-004	1.8100e-003	4.6000e-004	2.1000e-004	6.7000e-004	0.0000	6.2946	6.2946	4.5000e-004	0.0000	6.3058
Worker	4.3500e-003	3.5600e-003	0.0382	1.0000e-004	8.9900e-003	7.0000e-005	9.0600e-003	2.3900e-003	7.0000e-005	2.4500e-003	0.0000	8.6200	8.6200	2.9000e-004	0.0000	8.6274
Total	**5.4400e-003**	**0.0347**	**0.0463**	**1.7000e-004**	**0.0106**	**2.9000e-004**	**0.0109**	**2.8500e-003**	**2.8000e-004**	**3.1200e-003**	**0.0000**	**14.9146**	**14.9146**	**7.4000e-004**	**0.0000**	**14.9331**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1374	1.0976	0.9686	1.3800e-003		0.0782	0.0782		0.0739	0.0739	0.0000	120.7584	120.7584	0.0277	0.0000	121.4499
Total	**0.1374**	**1.0976**	**0.9686**	**1.3800e-003**		**0.0782**	**0.0782**		**0.0739**	**0.0739**	**0.0000**	**120.7584**	**120.7584**	**0.0277**	**0.0000**	**121.4499**

3.5 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0900e-003	0.0312	8.0300e-003	7.0000e-005	1.5900e-003	2.2000e-004	1.8100e-003	4.6000e-004	2.1000e-004	6.7000e-004	0.0000	6.2946	6.2946	4.5000e-004	0.0000	6.3058
Worker	4.3500e-003	3.5600e-003	0.0382	1.0000e-004	8.9900e-003	7.0000e-005	9.0600e-003	2.3900e-003	7.0000e-005	2.4500e-003	0.0000	8.6200	8.6200	2.9000e-004	0.0000	8.6274
Total	**5.4400e-003**	**0.0347**	**0.0463**	**1.7000e-004**	**0.0106**	**2.9000e-004**	**0.0109**	**2.8500e-003**	**2.8000e-004**	**3.1200e-003**	**0.0000**	**14.9146**	**14.9146**	**7.4000e-004**	**0.0000**	**14.9331**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2343	1.9304	1.8492	2.6700e-003		0.1302	0.1302		0.1229	0.1229	0.0000	231.5100	231.5100	0.0524	0.0000	232.8193
Total	**0.2343**	**1.9304**	**1.8492**	**2.6700e-003**		**0.1302**	**0.1302**		**0.1229**	**0.1229**	**0.0000**	**231.5100**	**231.5100**	**0.0524**	**0.0000**	**232.8193**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.9200e-003	0.0569	0.0143	1.2000e-004	3.0800e-003	3.7000e-004	3.4500e-003	8.9000e-004	3.6000e-004	1.2400e-003	0.0000	12.0815	12.0815	8.4000e-004	0.0000	12.1024
Worker	7.6600e-003	6.0800e-003	0.0661	1.8000e-004	0.0174	1.4000e-004	0.0175	4.6200e-003	1.3000e-004	4.7500e-003	0.0000	16.1660	16.1660	5.1000e-004	0.0000	16.1786
Total	**9.5800e-003**	**0.0630**	**0.0804**	**3.0000e-004**	**0.0205**	**5.1000e-004**	**0.0210**	**5.5100e-003**	**4.9000e-004**	**5.9900e-003**	**0.0000**	**28.2474**	**28.2474**	**1.3500e-003**	**0.0000**	**28.2810**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2343	1.9304	1.8492	2.6700e-003		0.1302	0.1302		0.1229	0.1229	0.0000	231.5097	231.5097	0.0524	0.0000	232.8190
Total	**0.2343**	**1.9304**	**1.8492**	**2.6700e-003**		**0.1302**	**0.1302**		**0.1229**	**0.1229**	**0.0000**	**231.5097**	**231.5097**	**0.0524**	**0.0000**	**232.8190**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.9200e-003	0.0569	0.0143	1.2000e-004	3.0800e-003	3.7000e-004	3.4500e-003	8.9000e-004	3.6000e-004	1.2400e-003	0.0000	12.0815	12.0815	8.4000e-004	0.0000	12.1024
Worker	7.6600e-003	6.0800e-003	0.0661	1.8000e-004	0.0174	1.4000e-004	0.0175	4.6200e-003	1.3000e-004	4.7500e-003	0.0000	16.1660	16.1660	5.1000e-004	0.0000	16.1786
Total	**9.5800e-003**	**0.0630**	**0.0804**	**3.0000e-004**	**0.0205**	**5.1000e-004**	**0.0210**	**5.5100e-003**	**4.9000e-004**	**5.9900e-003**	**0.0000**	**28.2474**	**28.2474**	**1.3500e-003**	**0.0000**	**28.2810**

3.6 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0124	0.1296	0.1247	1.9000e-004		7.0100e-003	7.0100e-003		6.4500e-003	6.4500e-003	0.0000	17.4039	17.4039	5.5100e-003	0.0000	17.5416
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0124**	**0.1296**	**0.1247**	**1.9000e-004**		**7.0100e-003**	**7.0100e-003**		**6.4500e-003**	**6.4500e-003**	**0.0000**	**17.4039**	**17.4039**	**5.5100e-003**	**0.0000**	**17.5416**

3.6 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2000e-004	4.9000e-004	5.3200e-003	1.0000e-005	1.4000e-003	1.0000e-005	1.4100e-003	3.7000e-004	1.0000e-005	3.8000e-004	0.0000	1.2996	1.2996	4.0000e-005	0.0000	1.3006
Total	**6.2000e-004**	**4.9000e-004**	**5.3200e-003**	**1.0000e-005**	**1.4000e-003**	**1.0000e-005**	**1.4100e-003**	**3.7000e-004**	**1.0000e-005**	**3.8000e-004**	**0.0000**	**1.2996**	**1.2996**	**4.0000e-005**	**0.0000**	**1.3006**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0124	0.1296	0.1247	1.9000e-004		7.0100e-003	7.0100e-003		6.4500e-003	6.4500e-003	0.0000	17.4039	17.4039	5.5100e-003	0.0000	17.5415
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0124**	**0.1296**	**0.1247**	**1.9000e-004**		**7.0100e-003**	**7.0100e-003**		**6.4500e-003**	**6.4500e-003**	**0.0000**	**17.4039**	**17.4039**	**5.5100e-003**	**0.0000**	**17.5415**

3.6 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2000e-004	4.9000e-004	5.3200e-003	1.0000e-005	1.4000e-003	1.0000e-005	1.4100e-003	3.7000e-004	1.0000e-005	3.8000e-004	0.0000	1.2996	1.2996	4.0000e-005	0.0000	1.3006
Total	**6.2000e-004**	**4.9000e-004**	**5.3200e-003**	**1.0000e-005**	**1.4000e-003**	**1.0000e-005**	**1.4100e-003**	**3.7000e-004**	**1.0000e-005**	**3.8000e-004**	**0.0000**	**1.2996**	**1.2996**	**4.0000e-005**	**0.0000**	**1.3006**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.0300e-003	0.0211	0.0220	3.0000e-005		1.1300e-003	1.1300e-003		1.0400e-003	1.0400e-003	0.0000	3.0042	3.0042	9.7000e-004	0.0000	3.0285
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.0300e-003**	**0.0211**	**0.0220**	**3.0000e-005**		**1.1300e-003**	**1.1300e-003**		**1.0400e-003**	**1.0400e-003**	**0.0000**	**3.0042**	**3.0042**	**9.7000e-004**	**0.0000**	**3.0285**

3.6 Paving - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	8.0000e-005	8.5000e-004	0.0000	2.5000e-004	0.0000	2.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2222	0.2222	1.0000e-005	0.0000	0.2224
Total	**1.0000e-004**	**8.0000e-005**	**8.5000e-004**	**0.0000**	**2.5000e-004**	**0.0000**	**2.5000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2222**	**0.2222**	**1.0000e-005**	**0.0000**	**0.2224**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.0300e-003	0.0211	0.0220	3.0000e-005		1.1300e-003	1.1300e-003		1.0400e-003	1.0400e-003	0.0000	3.0042	3.0042	9.7000e-004	0.0000	3.0285
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.0300e-003**	**0.0211**	**0.0220**	**3.0000e-005**		**1.1300e-003**	**1.1300e-003**		**1.0400e-003**	**1.0400e-003**	**0.0000**	**3.0042**	**3.0042**	**9.7000e-004**	**0.0000**	**3.0285**

3.6 Paving - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	8.0000e-005	8.5000e-004	0.0000	2.5000e-004	0.0000	2.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2222	0.2222	1.0000e-005	0.0000	0.2224
Total	**1.0000e-004**	**8.0000e-005**	**8.5000e-004**	**0.0000**	**2.5000e-004**	**0.0000**	**2.5000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2222**	**0.2222**	**1.0000e-005**	**0.0000**	**0.2224**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3762					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**0.3786**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

3.7 Architectural Coating - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-004	1.0000e-004	1.1400e-003	0.0000	3.3000e-004	0.0000	3.3000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.2963	0.2963	1.0000e-005	0.0000	0.2965
Total	**1.3000e-004**	**1.0000e-004**	**1.1400e-003**	**0.0000**	**3.3000e-004**	**0.0000**	**3.3000e-004**	**9.0000e-005**	**0.0000**	**9.0000e-005**	**0.0000**	**0.2963**	**0.2963**	**1.0000e-005**	**0.0000**	**0.2965**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3762					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**0.3786**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

3.7 Architectural Coating - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-004	1.0000e-004	1.1400e-003	0.0000	3.3000e-004	0.0000	3.3000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.2963	0.2963	1.0000e-005	0.0000	0.2965
Total	**1.3000e-004**	**1.0000e-004**	**1.1400e-003**	**0.0000**	**3.3000e-004**	**0.0000**	**3.3000e-004**	**9.0000e-005**	**0.0000**	**9.0000e-005**	**0.0000**	**0.2963**	**0.2963**	**1.0000e-005**	**0.0000**	**0.2965**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1203	0.6789	1.6515	5.7000e-003	0.4539	5.8000e-003	0.4597	0.1216	5.4500e-003	0.1271	0.0000	525.7438	525.7438	0.0268	0.0000	526.4146
Unmitigated	0.1203	0.6789	1.6515	5.7000e-003	0.4539	5.8000e-003	0.4597	0.1216	5.4500e-003	0.1271	0.0000	525.7438	525.7438	0.0268	0.0000	526.4146

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	352.24	366.67	318.94	1,194,446	1,194,446
Total	352.24	366.67	318.94	1,194,446	1,194,446

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	103.6428	103.6428	4.2800e-003	8.9000e-004	104.0136
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	103.6428	103.6428	4.2800e-003	8.9000e-004	104.0136
NaturalGas Mitigated	6.6000e-003	0.0564	0.0240	3.6000e-004		4.5600e-003	4.5600e-003		4.5600e-003	4.5600e-003	0.0000	65.3170	65.3170	1.2500e-003	1.2000e-003	65.7052
NaturalGas Unmitigated	6.6000e-003	0.0564	0.0240	3.6000e-004		4.5600e-003	4.5600e-003		4.5600e-003	4.5600e-003	0.0000	65.3170	65.3170	1.2500e-003	1.2000e-003	65.7052

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	1.224e+006	6.6000e-003	0.0564	0.0240	3.6000e-004		4.5600e-003	4.5600e-003		4.5600e-003	4.5600e-003	0.0000	65.3170	65.3170	1.2500e-003	1.2000e-003	65.7052
Total		**6.6000e-003**	**0.0564**	**0.0240**	**3.6000e-004**		**4.5600e-003**	**4.5600e-003**		**4.5600e-003**	**4.5600e-003**	**0.0000**	**65.3170**	**65.3170**	**1.2500e-003**	**1.2000e-003**	**65.7052**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	1.224e+006	6.6000e-003	0.0564	0.0240	3.6000e-004		4.5600e-003	4.5600e-003		4.5600e-003	4.5600e-003	0.0000	65.3170	65.3170	1.2500e-003	1.2000e-003	65.7052
Total		**6.6000e-003**	**0.0564**	**0.0240**	**3.6000e-004**		**4.5600e-003**	**4.5600e-003**		**4.5600e-003**	**4.5600e-003**	**0.0000**	**65.3170**	**65.3170**	**1.2500e-003**	**1.2000e-003**	**65.7052**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	325285	103.6428	4.2800e-003	8.9000e-004	104.0136
Total		**103.6428**	**4.2800e-003**	**8.9000e-004**	**104.0136**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	325285	103.6428	4.2800e-003	8.9000e-004	104.0136
Total		**103.6428**	**4.2800e-003**	**8.9000e-004**	**104.0136**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.6050	0.0140	0.6180	6.2000e-004		0.0374	0.0374		0.0374	0.0374	3.9301	8.1756	12.1057	0.0123	2.7000e-004	12.4934
Unmitigated	0.6050	0.0140	0.6180	6.2000e-004		0.0374	0.0374		0.0374	0.0374	3.9301	8.1756	12.1057	0.0123	2.7000e-004	12.4934

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0376					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4345					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.1212	9.6000e-003	0.2352	6.0000e-004		0.0353	0.0353		0.0353	0.0353	3.9301	7.5523	11.4824	0.0117	2.7000e-004	11.8549
Landscaping	0.0117	4.4300e-003	0.3828	2.0000e-005		2.1100e-003	2.1100e-003		2.1100e-003	2.1100e-003	0.0000	0.6233	0.6233	6.1000e-004	0.0000	0.6385
Total	**0.6050**	**0.0140**	**0.6181**	**6.2000e-004**		**0.0374**	**0.0374**		**0.0374**	**0.0374**	**3.9301**	**8.1756**	**12.1057**	**0.0123**	**2.7000e-004**	**12.4934**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0376					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4345					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.1212	9.6000e-003	0.2352	6.0000e-004		0.0353	0.0353		0.0353	0.0353	3.9301	7.5523	11.4824	0.0117	2.7000e-004	11.8549
Landscaping	0.0117	4.4300e-003	0.3828	2.0000e-005		2.1100e-003	2.1100e-003		2.1100e-003	2.1100e-003	0.0000	0.6233	0.6233	6.1000e-004	0.0000	0.6385
Total	**0.6050**	**0.0140**	**0.6181**	**6.2000e-004**		**0.0374**	**0.0374**		**0.0374**	**0.0374**	**3.9301**	**8.1756**	**12.1057**	**0.0123**	**2.7000e-004**	**12.4934**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	16.1461	0.0792	1.9900e-003	18.7177
Unmitigated	16.1461	0.0792	1.9900e-003	18.7177

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	2.4107 / 1.51979	16.1461	0.0792	1.9900e-003	18.7177
Total		**16.1461**	**0.0792**	**1.9900e-003**	**18.7177**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	2.4107 / 1.51979	16.1461	0.0792	1.9900e-003	18.7177
Total		**16.1461**	**0.0792**	**1.9900e-003**	**18.7177**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	9.1549	0.5410	0.0000	22.6809
Unmitigated	9.1549	0.5410	0.0000	22.6809

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	45.1	9.1549	0.5410	0.0000	22.6809
Total		**9.1549**	**0.5410**	**0.0000**	**22.6809**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	45.1	9.1549	0.5410	0.0000	22.6809
Total		**9.1549**	**0.5410**	**0.0000**	**22.6809**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CANYON VIEW ESTATES (TENTATIVE TRACT MAP 74650) (APNS 2826-020-012, 2826-020-013 AND 2826-020-061)

Oak Tree Survey Report

Prepared for
Jemstreet Properties
1435 Reynolds Court
Thousand Oaks, California 91362
Contact: Mr. Rick Coop

September 2017

ESA

CANYON VIEW ESTATES (TENTATIVE TRACT MAP 74650) (APNS 2826-020-012, 2826-020-013 AND 2826-020-061)

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September 2017

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CANYON VIEW ESTATES (APNS: 2826 020 012, 2826 020 013 AND 2826 020 061) OA TREE SURVEY REPORT

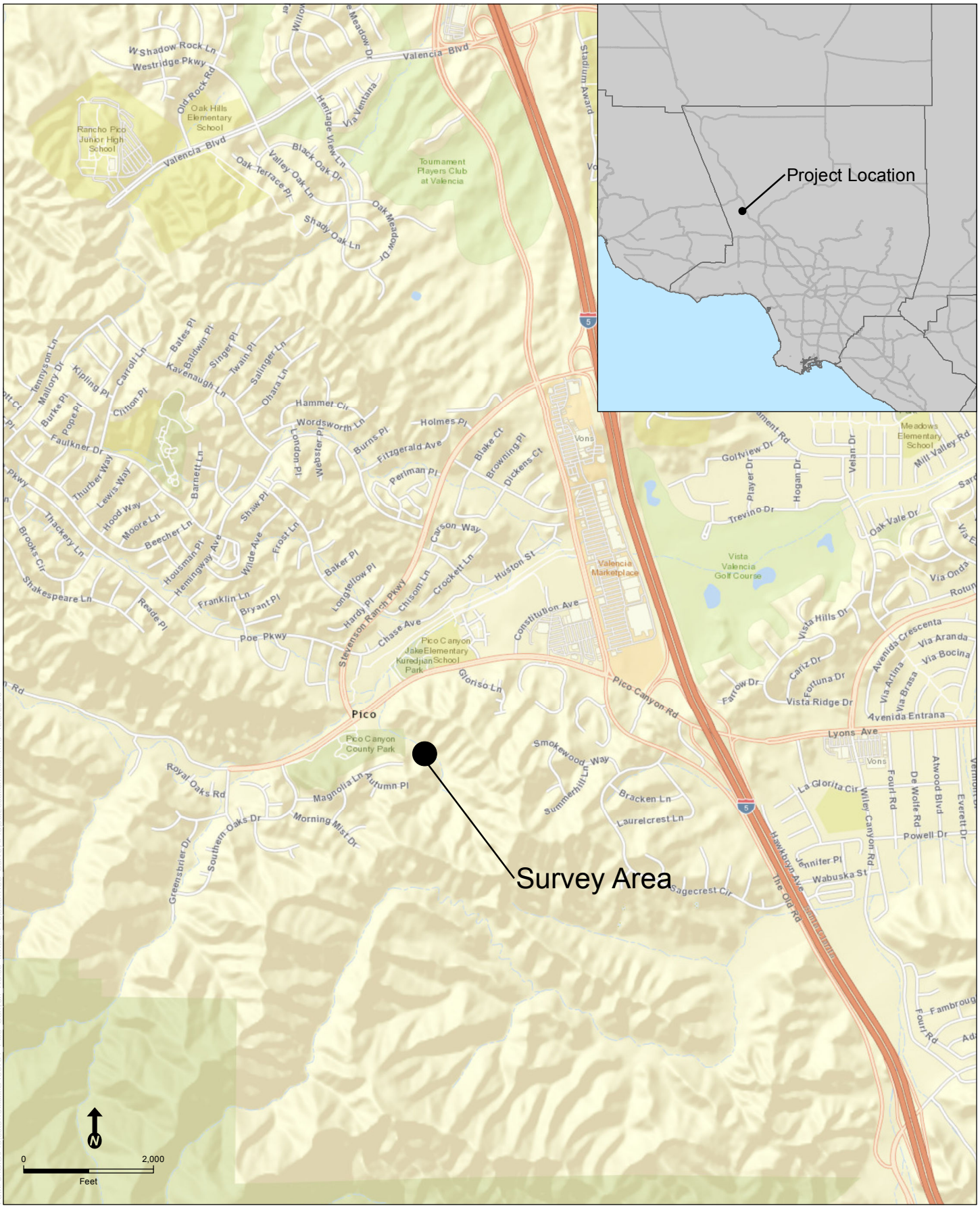
Int o t on

A survey of oak trees was conducted at several parcels along Pico Canyon Road, Los Angeles County (County), California (APNs: 2826-020-012, 2826-020-013 and 2826-020-061). This report includes the results of the oak tree survey and has been prepared in accordance with the County of Los Angeles Oak Tree Ordinance (Ordinance), Section 22.56.2050 – 22.56.2260 of the Los Angeles County Municipal Code. The Ordinance stipulates that "unless otherwise provided in Section 22.56.2070, a person shall not cut, destroy, remove, relocate, inflict damage or encroach into a protected zone of any tree of the oak genus which is (a) 25 inches or more in circumference (eight inches in diameter) as measured four and one-half feet above mean natural grade, on any lot or parcel of land within the unincorporated area of Los Angeles County, or (b) any tree that has been provided as a replacement tree, pursuant to Section 22.56.2180, on any lot or parcel of land within the unincorporated area of Los Angeles County, unless an oak tree permit is first obtained as provided by this part 16" (Section 22.56.2060). For the purposes of this report, any oak tree of the appropriate size, as defined in the Ordinance, will be referred to as an oak tree.

This report indicates the location, size, type and condition of all oak trees surveyed within and immediately adjacent to the property, and identifies which trees will be avoided, encroached and removed as a result of the proposed Canyon View Estates Project (Project). Mitigation measures are identified, including a plan that contains recommended measures for replacing the trees that would be removed and the preservation of trees that would be avoided and/or encroached during Project activities.

P o e t Des t on an Lo at on

The approximately 95-acre Canyon View Estates Project is a proposed 37-lot residential subdivision to propose on APN 2826-020-012, 2826-020-013 and 2826-020-061 on Pico Canyon Road. The proposed Project will include the construction of single-family residences within a currently undeveloped property. The property is located within an unincorporated portion of Los Angeles County within the Santa Susana Mountains; it is bound immediately to the north, east and west by residential development and a public park; and south of the project site is undeveloped open space. Land use in the general vicinity consists primarily of open space, heavily fragmented by residential development and roadways. Pico Canyon Road is located approximately 1,000 feet to the north of the property (**Figure 1**).



SOURCE: ESRI 2016

Pico Canyon Road Tree Survey . 160731

Figure 1

Project Location

ESA

Site Conditions

The southwest portion of the Project site has been previously burned but has recovered with a variety of chaparral plant species. The northern portion of the Project site is characterized as disturbed coastal sage scrub/chaparral vegetation and supports two small clusters of coast live oak trees (*Quercus agrifolia*) and a few scattered scrub oak plants (*Quercus berberidifolia*). Topography slopes downward from south to north from approximately 1550 feet above mean sea level (amsl) to approximately 1450 feet amsl.

Methods

Oak Tree Survey

The oak tree survey evaluated the avoidance, encroachment and removal of oak trees protected in accordance with 22.56.2050 – 22.56.2260 of the of the Los Angeles County Municipal Code as a result of the proposed development, which includes all oak trees (*Quercus* species) with a trunk diameter of 8-inches or greater; or the combined diameter of the two (2) largest trunks of 12-inches or greater.

Certified Arborist Greg Ainsworth (ISA Cert # WE_7473A) and biologist Robert Sweet conducted the oak tree survey of all oak trees located within the property on November 11, 2016 and on February 9, 2017. The survey was conducted under the supervision of Mr. Ainsworth and Daryl Koutnik, the latter as project manager. The trunk of each tree was recorded with a Trimble Geo XH 6000 Series Global Positioning System (GPS) equipped with a data dictionary used to record the tree's attributes. Oak trees located within the property were tagged with a one-inch round metal identification tag, generally affixed to the north side of the trunk. Trees located offsite, within adjacent residential properties were not tagged; physical data and tree ratings for these trees were estimated. The following data was collected for each tree:

Physical Characteristics

- DBH – measured from the base of the tree using a forester's diameter-equivalent tape.
- Canopy spread: The distance of the lowest living branch to the ground and the canopy spread from the trunk to the dripline in eight (8) directions (N, NE, E, SE, S, SW, W, NW).
- Height – estimated at appropriate distance from the tree.
- Balance and symmetry of the tree based on the crown radius measurements and whether or not the tree leans or is unstable.

Physical Condition

- Identification of damage caused by pathogens or insect pests, by natural causes such as lightning, or by human activity.
- Evaluation of vigor based on such parameters as amount of new growth, leaf color, abnormal bark, dead wood, evidence of wilt, excessive necrosis or leaf chlorosis, thinning of crown, etc.

- Assessment of the overall health of the tree based on the evaluation of vigor, presence of damage, and comparison to the typical archetype tree of the same species.

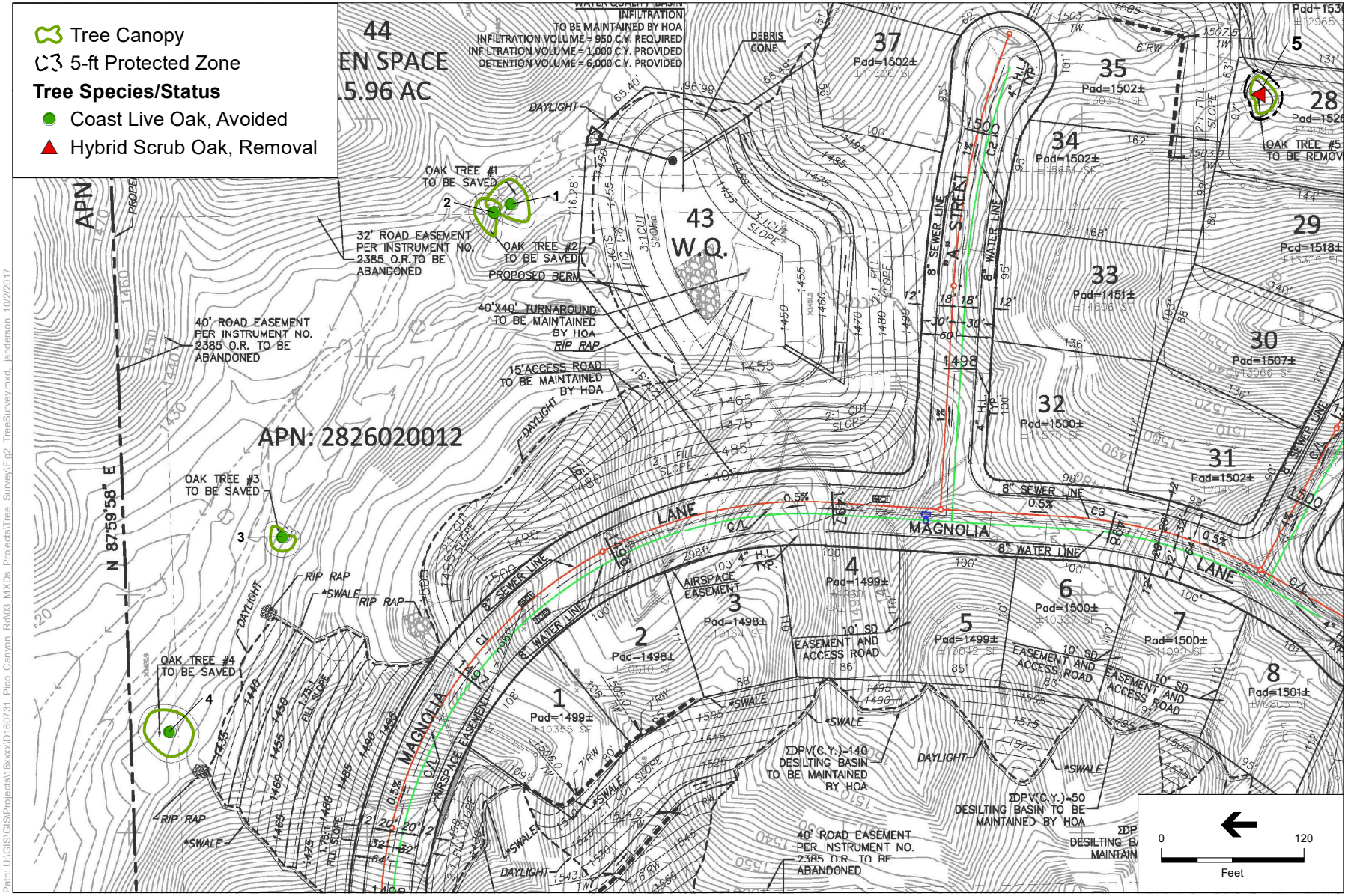
Rat n

For each tree, a subjective alphabetical rank of "A" through "F" was assigned for each of four (4) categories: vigor, overall health, aesthetic value, and balance. Ranks were based on the criteria described below:

- "A" = Very Healthy/Excellent: A healthy and vigorous tree characteristic of its species and reasonably free of any visible signs of stress, disease, or pest infestation. With regards to balance and aesthetics, trunks are straight and canopies well balanced and the tree exemplifies the ideal archetype for the species.
- "B" = Healthy/Good: A healthy and vigorous tree with minor visible signs of stress, disease, and/or pest infestation. Some maintenance measures may need to be implemented, such as pruning of dead wood or broken branches. Tree may lean slightly, canopies may not be evenly balanced, or the tree may otherwise be marginally challenged aesthetically.
- "C" = Average Health/Fair: Although healthy in overall appearance, there is abnormal amount of stress or disease/insect infestation, and a substantial amount of maintenance may be needed. The trunk may be growing at a more substantial angle or the canopy may have "holes" or be further out of balance.
- "D" = Dying/Poor: A tree that may be exhibiting a substantial amount of stress, disease, or insect damage than what the amount that is expected for the species. The tree may be in a state of rapid decline, and may show various signs of dieback, necrosis, or other symptoms caused by pathogens or insect pests. The tree may lean significantly and the canopy is far out of balance.
- "F" = Dead/Very Poor: This tree has no foliage and exhibits no sign of life or vigor. Tree may be prone on the ground or otherwise severely aesthetically compromised.

Mapping

All surveyed trees were mapped in Arc GIS over the provided site plan to determine whether each would be avoided, encroached or removed as a result of Project activities; mapped trees are provided in **Figure 2**. The trunk location within the figure is based on the GPS waypoint location that was recorded from one (1) side of the tree's trunk by the arborist. Canopy spreads were based on approximated measurements in the field, which have been digitized based on the field measurements. Encroachment is defined as construction taking place within the protected zone (area within and at least five feet outside of the dripline) of an oak tree, and the protected zone is also displayed around each tree canopy in Figure 2.



SOURCE: ESRI

Pico Canyon Road Tree Survey . 160731

Figure 2

Tree Survey

Res lts

Four (4) coast live oak trees and one hybrid scrub oak[1] were surveyed within the property as being protected under the County's oak tree ordinance, and the location of each is shown in Figure 2 (trees 1-5). Based on review of the provided grading plan, it has been determined that all four of the coast live oak trees will be avoided by construction but the one hybrid scrub oak (Tree #5) will be removed as part of the construction activities. **Table 1** lists the trees surveyed and the data collected for each tree (e.g., trunk diameter, height, canopy spread, health grades, etc.) and a photograph of each one are below the table.

TABLE 1
OA TREE SURVEY DATA

	T ee 1	T ee 2	T ee 3	T ee 4	T ee 5
S e es	Coast Live Oak	Coast Live Oak	Coast Live Oak	Coast Live Oak	Hybrid Scrub Oak
P o e t Im a ts	Avoided	Avoided	Avoided	Avoided	Removed
T n D amete (DBH)	13.8, 12.9, 8.0	8.3, 5.4	15.5	18.7, 13.5	6.1, 5.9
He ht	35	20	25	40	18
Cano S ea (N)	12	16	10	21	16
D stan e to G o n (N)	1	3	6	3	9
Cano S ea (NW)	12	15	12	18	9
D stan e to G o n (NW)	2	1	3	3	9
Cano S ea (W)	12	20	12	21	6
D stan e to G o n (W)	1	1	2	1	8
Cano S ea (SW)	20	4	12	21	5
D stan e to G o n (SW)	1	2	1	1	8
Cano S ea (S)	15	4	10	20	15
D stan e to G o n (S)	6	2	1	1	5
Cano S ea (SE)	16	8	2	18	16
D stan e to G o n (SE)	3	6	4	1	2
Cano S ea (E)	21	10	5	18	15
D stan e to G o n (E)	4	3	3	1	5
Cano S ea (NE)	19	16	12	22	13
D stan e to G o n (NE)	2	1	5	1	3
A lments	weak crotch, exfoliating bark, leaf chlorosis	leaf chlorosis, insect damage	fire scar, exfoliating bark, excessive leaf drop, leaf chlorosis, broken/dead limbs	excessive leaf drop, leaf chlorosis, broken/dead limbs	fruiting bodies, insect damage
Health	C	B	C	C	B
V o	B	B	D	C	B
Aesthet s	C	C	D	C	B
Balan e	C	C	C	B	C

[1] The scrub oak has been identified as a hybrid of *Quercus john-tuckeri* by Andrew Sanders at the University of California at Riverside. The other parent is speculated to be *Q. berberidifolia.*

Comments	trunks separate low		heavy chlorosis, leaf drop throughout	horizontal boring insect hole rows



Photograph 1 (NW): Depicts Oak Tree #1 (right) and Oak Tree #2 (left) in the northeastern portion of APN 282-602-0012.



Photograph 2 (NW): Depicts Oak Tree #3 in the northern portion of APN 282-602-0012.



Photograph 3 (W): Depicts Oak Tree #4 in the northern boundary of APN 282-602-0012.



Photograph 4 (SW): Depicts Oak Tree #5 in the southern boundary of APN 282-602-0012.

T ee Mana ement an P ese at on P o am

Project construction activities will result in the removal of one hybrid scrub oak tree. The construction also has the potential to negatively affect all four of the coast live oak trees that would be preserved on the property. Project related activities that may negatively affect the root system of preserved trees includes excavation, trenching, soil compaction, change of grade and site drainage, pruning, mechanical damage from construction equipment, landscaping, and irrigation. The protection measures outlined below shall be implemented to ensure that all preserved trees within or adjacent to the property will be protected and preserved during construction activities, as well as in perpetuity following completion of construction activities.

Protective Fencing

Equipment damage to limbs, trunks, and roots of all remaining trees should be avoided during Project construction and development. Even slight trunk injuries can result in susceptibility to long-term pathogenic maladies.

- Protective fencing not less than four (4) feet in height should be placed at the limits of the protective zone of all trees within or extending into the property. The protective fencing should be inspected by a biologist prior to grading or ground disturbing activities, and should be maintained and remain in place until construction is completed. Oak trees to the north of Tree 4 are located entirely within the adjacent property; therefore, installation of fencing will not be required for those oak trees.
- Fencing should remain intact until a certified arborist verifies that it can be removed.

Grading Restrictions Near Trees

Care must be taken to limit grade changes near the protective zone of a tree. Grade changes near the protective zone can lead to plant stress from oxygen deprivation or result in root fungus at the root collar of the tree. Minor grade changes further from the trunk are not as critical but can negatively affect the health of the tree if not carefully monitored by a qualified biologist.

- The grade should not be lowered or raised within the protective zone of an oak tree without the approval from the County. A certified arborist should supervise all excavation or grading approved within the protective zone of an oak tree.

Trenching and Excavation

- Trenching, excavation, or clearance of vegetation within the protective zone of an oak tree should be accomplished by the use of hand tools or small hand-held power tools, and should be monitored by a certified arborist. If major roots are encountered during grading activities (including trenching, excavation, and other related ground disturbance activities) a certified arborist should be notified to provide recommendations for pruning or avoidance measures. Any major roots encountered should be conserved to the greatest extent possible and treated as recommended by the arborist.

- No utility trenches should be routed within the protective zone of an oak tree unless no feasible alternative locations are available, and should be determined in coordination with the County.

Equipment Storage

- No storage of equipment, supplies, vehicles, or debris should be allowed within the protective zone of an oak tree to avoid soil compaction.
- No dumping of construction wastewater, paint, stucco, concrete, or any other clean-up waste should occur within the protective zone of an oak tree.
- No temporary structures should be placed within the protective zone of an oak tree.

Pruning

Healthy trees, if not maintained, often grow beyond their ability to support themselves and fail at their most naturally occurring weak point. This is typically at a branch union at or near the main crotch of the tree. Weight-reduction pruning and/or cabling is often important to preserve the aesthetics and overall longevity of these trees.

- Pruning of oak trees should be accomplished in accordance with the guidelines published by the National Arborist Association. In no case should more than 20 percent of the tree canopy be removed. After pruning, installation of support cables to prevent future main crotch failures may be necessary based on the determination of a certified arborist.
- Branches that could be injured by vehicles or that interfere with construction should be pruned to the satisfaction of a certified arborist.

Frequency of Watering Around Oak Trees

Care should be taken to avoid placing any irrigation devices within watering distance of the protective zone of oak trees. Too much moisture near the base of an oak tree is generally believed to be the leading cause of death of these trees in urban settings, and oak root fungus can occur as a result of over watering. Oak trees survive and thrive on annual rainfall alone and generally do not require supplemental irrigation except during periods of extreme drought or for establishment of newly planted trees (i.e., replacement trees).

- Irrigation water should not reach within 15 feet of any oak trunk.
- Neither grass nor ground covers should be planted under the canopy of oak trees.

Construction Monitoring

- A certified arborist should be present for on-site construction and grading activities occurring within 10 feet of the protected zone of all oak trees. If any major roots larger than one (1) inch in diameter are encountered during construction activities, the arborist should be notified to provide recommendations to avoid damaging roots, so that the health of the tree will not be compromised.

Post-Construction Monitoring and Reporting

- A certified arborist should assess the health and overall condition of all oak trees that have been encroached by the Project annually for two (2) years following the completion of the Project. The condition of the trees should be compared with the data provided in this report to determine if the Project may have had a negative effect on the health or physical structure of the tree. A monitoring report shall be prepared by a certified arborist and submitted to the County within one (1) month following the completion of each annual post-construction monitoring event.

CANYON VIEW ESTATES (TENTATIVE TRACT MAP 74650)

Biological Constraints Analysis

Prepared for
Jemstreet Properties
1435 Reynolds Court
Thousand Oaks, California 91362
Contact: Mr. Rick Coop

October 2017



CANYON VIEW ESTATES (TENTATIVE TRACT MAP 74650)

Biological Constraints Analysis

Prepared for
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Contact: Mr. Rick Coop

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B olo al Const a nts Assessment

Canyon View Estates
Stevenson Ranch Community, Unincorporated Los Angeles County, California
County Project R2016-002179
Vesting Tentative Tract Map TR074650
Conditional Use Permit 2016004409
Environmental Assessment 2016004410

Project Location:

APNs 2826-020-012, 2826-020-013 and 2826-020-061 (Unincorporated Los Angeles County)
U.S. Geological Survey (USGS) 7.5-minute Newhall, Oat Mountain topographic quadrangle maps
Section (S) 5, Township (T) 3 North (N), Range (R) 16 West (W); S5, T3N, R16W

Prepared For:

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1435 Reynolds Court
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Report Date:
October 2017

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CHAPTER 1
Introduction

1.1 Background and Purpose

This report presents the findings of this Biological Constraints Analysis (BCA) conducted by **ESA** for the approximately 94-acre proposed residential development project (project site) located within the Stevenson Ranch Community, Unincorporated Los Angeles County, California (Los Angeles County Project R2016-002179, Vesting Tentative Tract Map No. TR074650, Conditional Use Permit 2016004409, and Environmental Assessment 2016004410). The southern portion of the project site, is located within the Los Angeles County Santa Susana Mountains/Simi Hills Significant Ecological Area, and thus the project is required to process a Significant Ecological Area Conditional Use Permit (CUP), which requires review by the Significant Ecological Area Technical Advisory Committee (SEATAC), if development is to be permitted within the SEA boundary (Los Angeles County Planning and Zoning Code Section 22.56.215.A). This report provides an inventory of biological resources, including a preliminary jurisdictional analysis, consistent with the requirements of the Biological Constraints Analysis (BCA) Checklist and Recommendations of Los Angeles County.

Contact information for the project Applicant and the Biologists are as follows:

Applicant

Jemstreet Properties
1435 Reynolds Court
Thousand Oaks, California 91362
Contact: Mr. Rick Coop

Biologist

ESA
2121 Alton Parkway, Suite 100
Irvine, CA 92606
Contact: Dr. Daryl Koutnik

1.2 Project Site Location

The approximately 94-acre project site is generally situated west of Interstate 5 (I-5), north of California State Route 118 (SR-118), south of California State Route 126 (SR-126), and east of the Los Angeles-Ventura County boundary, as shown in **Figure 1**, *Regional Map*. Specifically, the project site is located south of the intersection of Pico Canyon Road and Stevenson Ranch

Parkway. The project site is depicted on the U.S. Geological Survey (USGS) 7.5' Newhall and Oat Mountain topographic quadrangle maps, Section (S) 5, Township (T) 3 North (N), Range (R) 16 West (W), as shown in **Figure 2**, *Vicinity Map*.

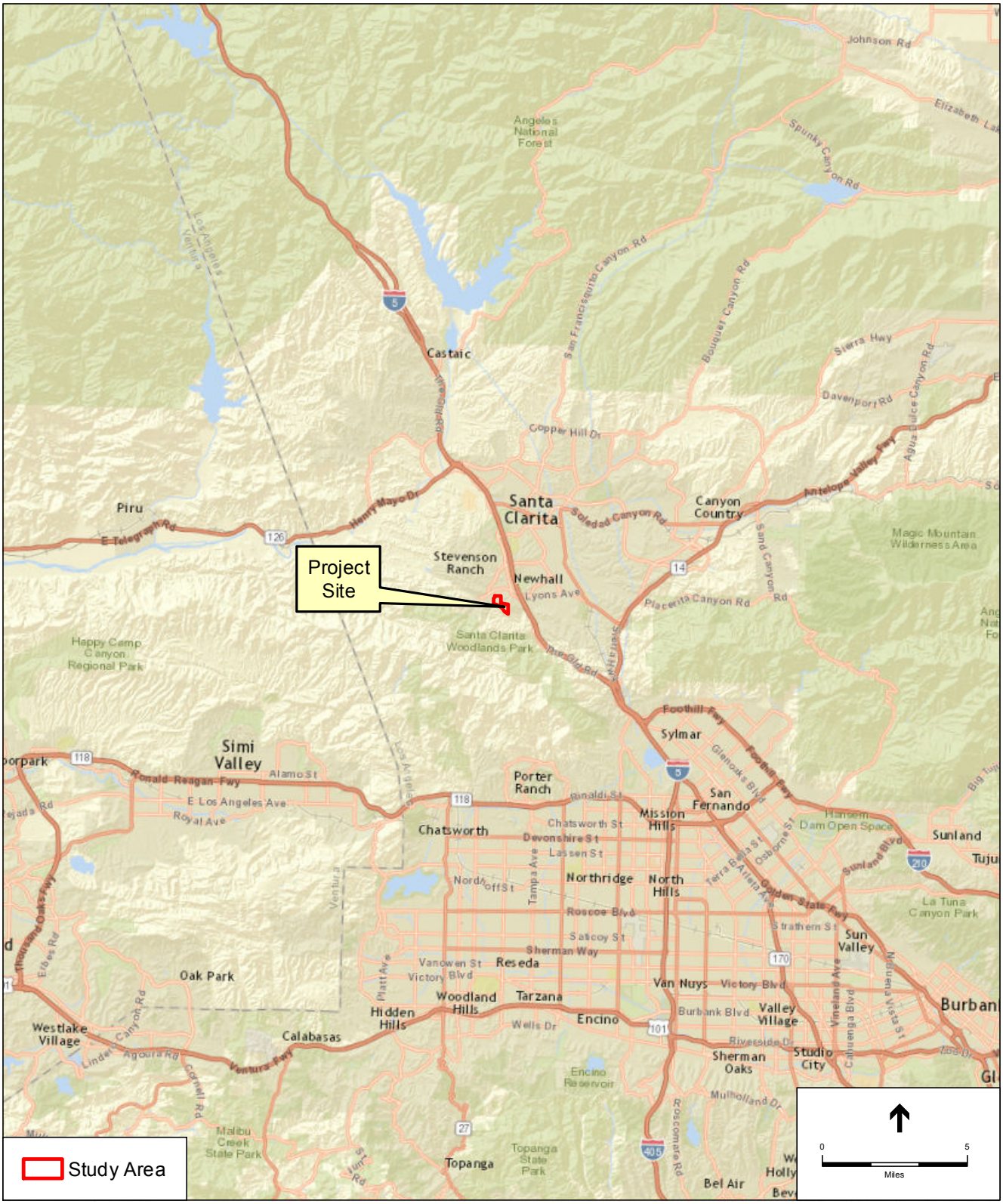
The project site is located within three parcels; APNs 2826-020-012, 2826-020-013 and 2826-020-061 which are located within the Stevenson Ranch Area, Unincorporated Los Angeles County. **Table 1**, *Project APNs and Acreages*, provides the APN with the on-site acreages.

TABLE 1
PROJECT APNS AND ACREAGES

APN	Area
2826-020-012	19.75
2826-020-013	19.99
2826-020-061	54.64
Total	94.38

Source: ESA, 2016

The topography of the project site ranges from moderate to steep. Elevations on the project site range from the lowest of approximately 1,320 feet above mean sea level (MSL) in the northern portion of the project site, to a high of approximately 1,700 feet above MSL in the eastern side of the central portion of the project site.



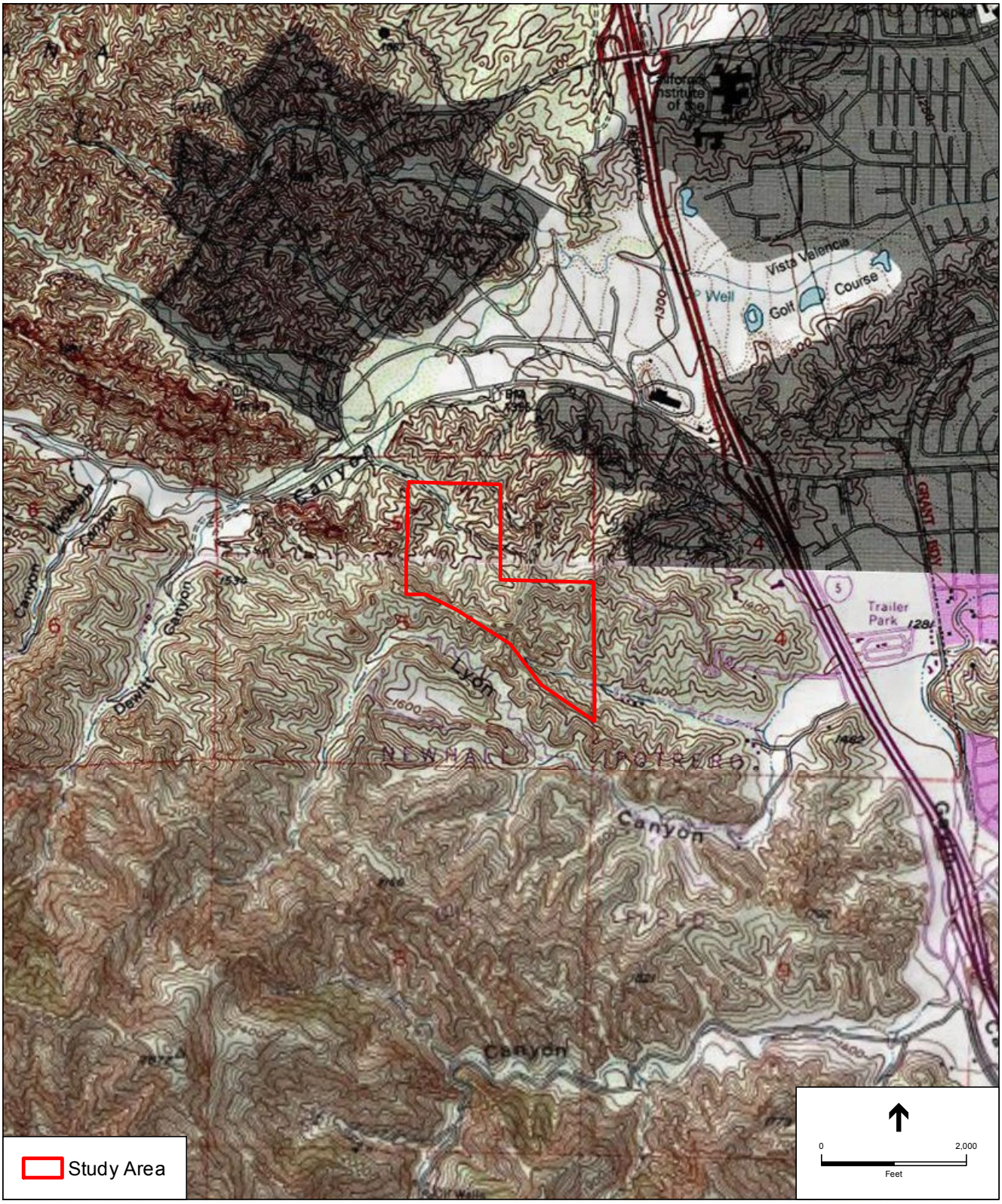
SOURCE: ESRI StreetMap, 2009.

Canyon View Estates

Figure 1

Regional Map

ESA PCR



SOURCE: USGS Topographic Series (Newhall, Oat Mountain, CA).

Canyon View Estates

Figure 2

Vicinity Map

ESA PCR

CHAPTER 2
Methodology

2.1 Approach

This BCA is based on information compiled through field reconnaissance and appropriate reference materials. A general biological survey, vegetation mapping, and cursory review of jurisdictional waters was conducted (see **Table 2**, *Summary of Field Investigations*). Focused surveys for sensitive plants were conducted in June 2016 during the appropriate blooming periods for species with the potential to occur on the project site.

TABLE 2
SUMMARY OF FIELD INVESTIGATIONS

Survey	Dates	Surveyors
General Biological Survey, Vegetation Mapping, Preliminary Jurisdictional Waters Investigation, Focused Plant Surveys	June 16 and 17, 2016	E. Cooley, A. Lee
Oak Tree Mapping	November 11, 2016 and February 9, 2017	G. Ainsworth, R. Sweet

Source: ESA, 2016

2.2 Literature Review

Assessment of the project site and off-site areas began with a review of relevant literature on the biological resources of the project site and surrounding vicinity. The California Natural Diversity Database (CNDDB), a California Department of Fish and Wildlife (CDFW) species account database, was reviewed for all pertinent information regarding the localities of known observations of sensitive species and habitats in the vicinity of the project site (CDFW, 2016). The vicinity of the project site included the following USGS topographic quadrangles: Calabasas, Canoga Park, Mint Canyon, Newhall, Oat Mountain, San Fernando, Simi, Val Verde, Van Nuys, Whitaker Peak, Warm Springs Mountain, and Green Valley. Federal register listings, protocols, and species data provided by the United States Fish and Wildlife Service (USFWS) (USFWS, 2016a), CDFW and the California Native Plant Society (CNPS, 2016) were reviewed in conjunction with anticipated Federally and State listed species potentially occurring within the vicinity. Other data sources reviewed include USFWS critical habitat maps (USFWS, 2016b) and

United States Department of Agriculture Natural Resources Conservation Service (NRCS) soils mapping (NRCS, 2016).

In addition, numerous regional flora and fauna field guides were utilized to assist in the identification of species and suitable habitats. A list of all relevant references reviewed is included in Section 9.0, *References*.

2.3 Field Investigations

A general biological survey, vegetation mapping, focused plant survey and preliminary jurisdictional waters investigation was conducted by ESA biologists Ezekiel Cooley and Amy Lee on June 16 and 17, 2016 for the project site. During the site visit, an inventory of plant and wildlife species observed was compiled. The observed plant communities, potential jurisdictional features, and other biological features or species observations of interest were noted and/or mapped on aerial photographs. The methods for these field investigations are described in detail below. ESA biologists Greg Ainsworth and Robert Sweet conducted the oak tree surveys of all oak trees located within the property on November 11, 2016 and on February 9, 2017.

Appendix A, *Biologist Resumes*, includes the resumes of the biologists participating in the preparation of this report.

2.3.1 Plant Community Mapping

Plant communities were mapped directly in the field utilizing a 250-scale (1"=250') aerial photograph focusing on dominant plant species. Plant community names, codes, and descriptions follow *A Manual of California Vegetation, Second Edition* (Sawyer, Keeler-Wolf, and Evens, 2009). Herein the codes are referred to as MCV codes. After completing the fieldwork, the plant community polygons were digitized using Geographic Information System (GIS) technology to calculate acreages.

2.3.2 General Plant Inventory

All plant species observed during the general biological survey were either identified in the field or collected and later identified using taxonomic keys. Plant taxonomy follows Baldwin (2012). Common plant names, when not available from Baldwin, were taken from Munz (1974) and/or Clarke (2007). Since common names vary significantly between references, scientific names are included upon initial mention of each species; common names consistent throughout the report are employed thereafter. A list of all floral species observed in the project site is provided in **Appendix B,** *Floral and Faunal Compendium*.

2.3.3 Special-Status Plant Species

The potential for special-status plant species was assessed based upon the known occurrence of species in the area as identified from CDFW, USFWS and CNPS databases (see Section 2.2, *Literature Review*), and the presence or absence of suitable habitat within the project site based on plant community mapping (see section 5.1, *Plant Communities*). Suitable habitat was defined as areas with appropriate vegetation communities, soils and/or topography (elevation at MSL) to

support the species based on known occurrences in those habitats and/or CDFW and CNPS documented habitat descriptions for the species.

The definitions of suitable habitat were then compared against the vegetation mapping conducted for the project site and local knowledge. A table of special-status plant species for which potentially suitable habitat occurs within the project site was prepared, and the potential for occurrence for each species was determined following completion of the vegetation mapping conducted during the field survey.

2.3.4 General Wildlife Inventory

All wildlife species observed within the project site, as well as any diagnostic sign (call, tracks, nests, scat, remains, or other sign), were recorded in field notes. Binoculars and regional field guides were utilized for the identification of wildlife, as necessary. Wildlife taxonomy follows Stebbins (2003) for amphibians and reptiles, the American Ornithologists' Union (1998) for birds, and Jameson and Peeters (1988) for mammals. Since common names vary significantly between references, scientific names are included upon initial mention of each species; common names consistent throughout the report are employed thereafter. All wildlife species detected were recorded in field notes. A list of all faunal species observed in the project site is provided in Appendix B.

2.3.5 Preliminary Jurisdictional Delineation

Although a formal jurisdictional delineation was not performed, a preliminary investigation of jurisdictional waters was conducted on-site during the June 16 and 17, 2016 site visits. The purpose of the preliminary delineation was to locate any potential "waters of the U.S." and/or wetlands under the jurisdiction of the U.S. Army Corps of Engineers (USACE), "waters of the State" and/or wetlands under the jurisdiction of the Regional Water Quality Control Board (RWQCB), and/or streambed and associated riparian habitat under the jurisdiction of the CDFW.

CHAPTER 3
Description of Natural Geographic Features

3.1 Landforms and Geomorphology

The project site is located in the northern foothills of the Santa Susana Mountains of the transverse ranges. The entire project site lies on Pilo-Pleistocene and Pliocene loosely consolidated deposits (Miocene to Pleistocene). The primarily rock type is sandstone, with a secondary rock type of conglomerate, and includes other rocks types such as claystone, shale, siltstone, limestone, evaporate, coal, and sedimentary breccia (USGS, 2016a; USGS, 2016b).

3.2 Drainage and Wetland Features

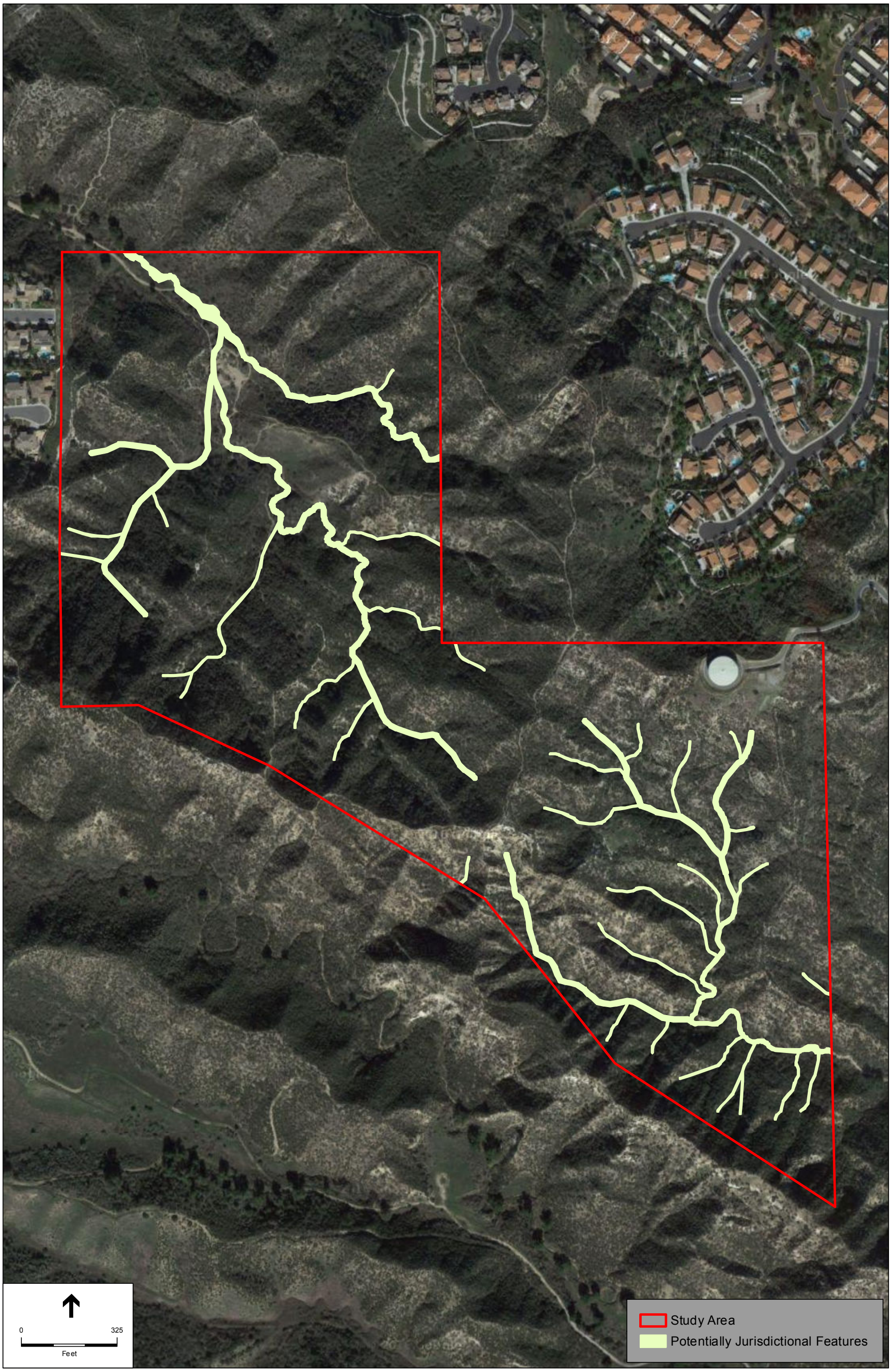
A formal jurisdictional delineation was not performed during the June 2016 field investigation. However, a preliminary jurisdictional determination was conducted to identify any drainage features and boundaries potentially subject to the jurisdiction of the USACE, RWQCB, and/or CDFW referencing information from a Jurisdictional Delineation performed by Envicom (Envicom 2006). A number of potentially jurisdictional features occur along the deep canyons throughout the project site, as mapped on **Figure 3**, *Potentially Jurisdictional Features*. A potential drainage begins near the center of the project site at the base of multiple hillsides with several tributaries connecting to it. This potential drainage located in the northern portion of the project site connects to the Wickham Canyon Creek blueline stream approximately 0.25 mile north of the northern boundary of the project site. The southern portion of the project site contains two potential drainages which begin on the project site, one beginning near water tower site and the other adjacent to the southern boundary of the project site, and meet in the southern portion and connect to the Lyon Canyon blueline drainage located approximately 0.46 miles east of the project boundary. The Wickham Canyon Creek and Lyon Canyon drainages are tributaries to the Santa Clara River which drains into the Pacific Ocean approximately 40 miles to the west.

3.3 Soils

Mapped soils in the project site are shown on **Figure 4**, *Soils Map,* and include the following two soil types (NRCS, 2016):

- Saugus loam, 30 to 50 percent slopes
- Castaic and Saugus soils, 30 to 65 percent slopes, severely eroded

The Saugus series consists of deep, well drained soils that formed from weakly consolidated sediments. Saugus soils are dissected terraces and foothills and have slopes of 9 to 50 percent. Castaic soils are well drained, moderately slowly permeable that are strongly sloping to very steep. Castaic soils are formed in residuum weathered from shale, sandstone, and mudstone.



SOURCE: Google Maps, 2015.

Canyon View Estates

Figure 3

Potentially Jurisdictional Features

ESA PCR

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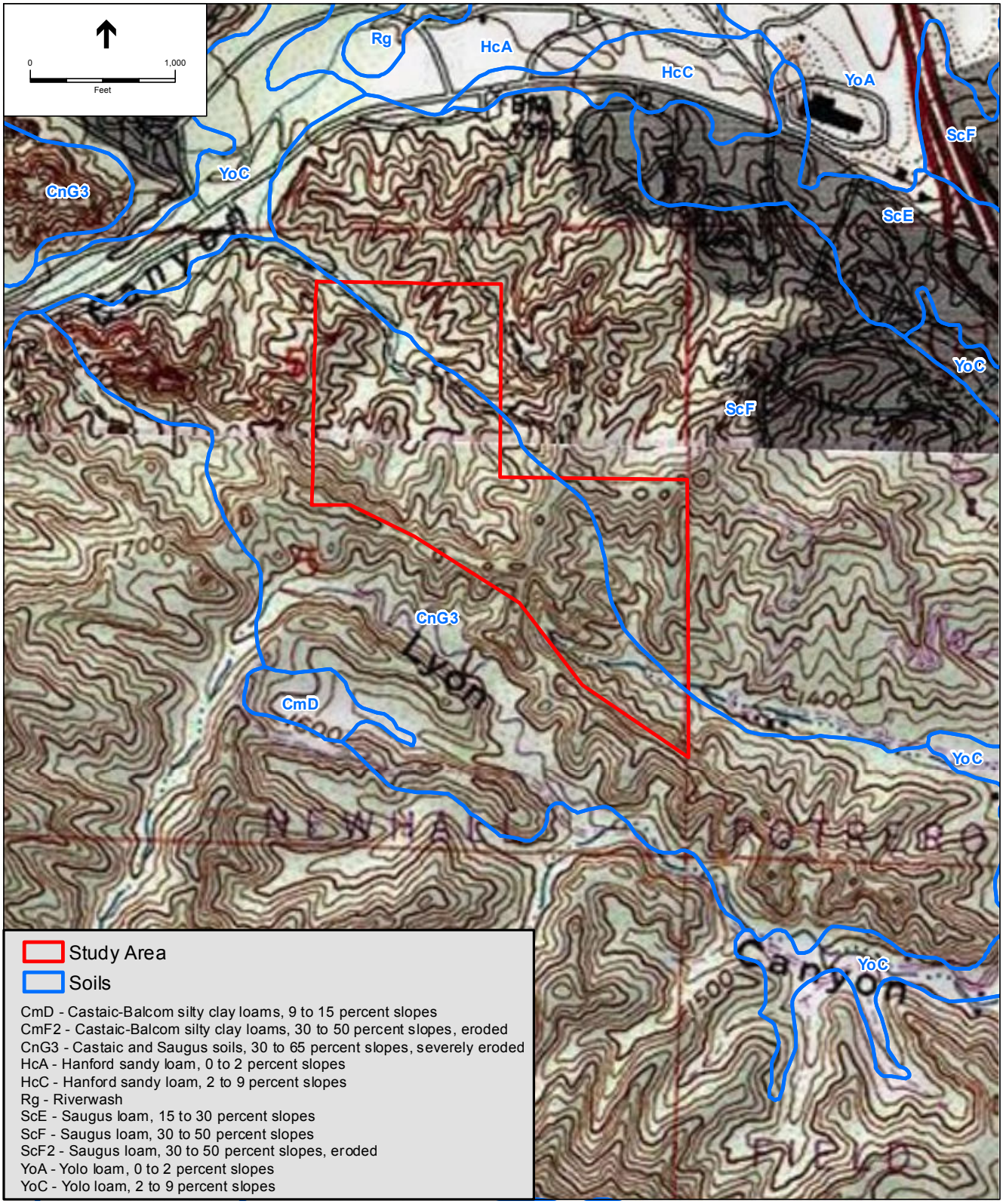


SOURCE: USGS Topographic Series (Calabasas, CA).

Canyon View Estates
Figure 4
Soils Map

ESA PCR

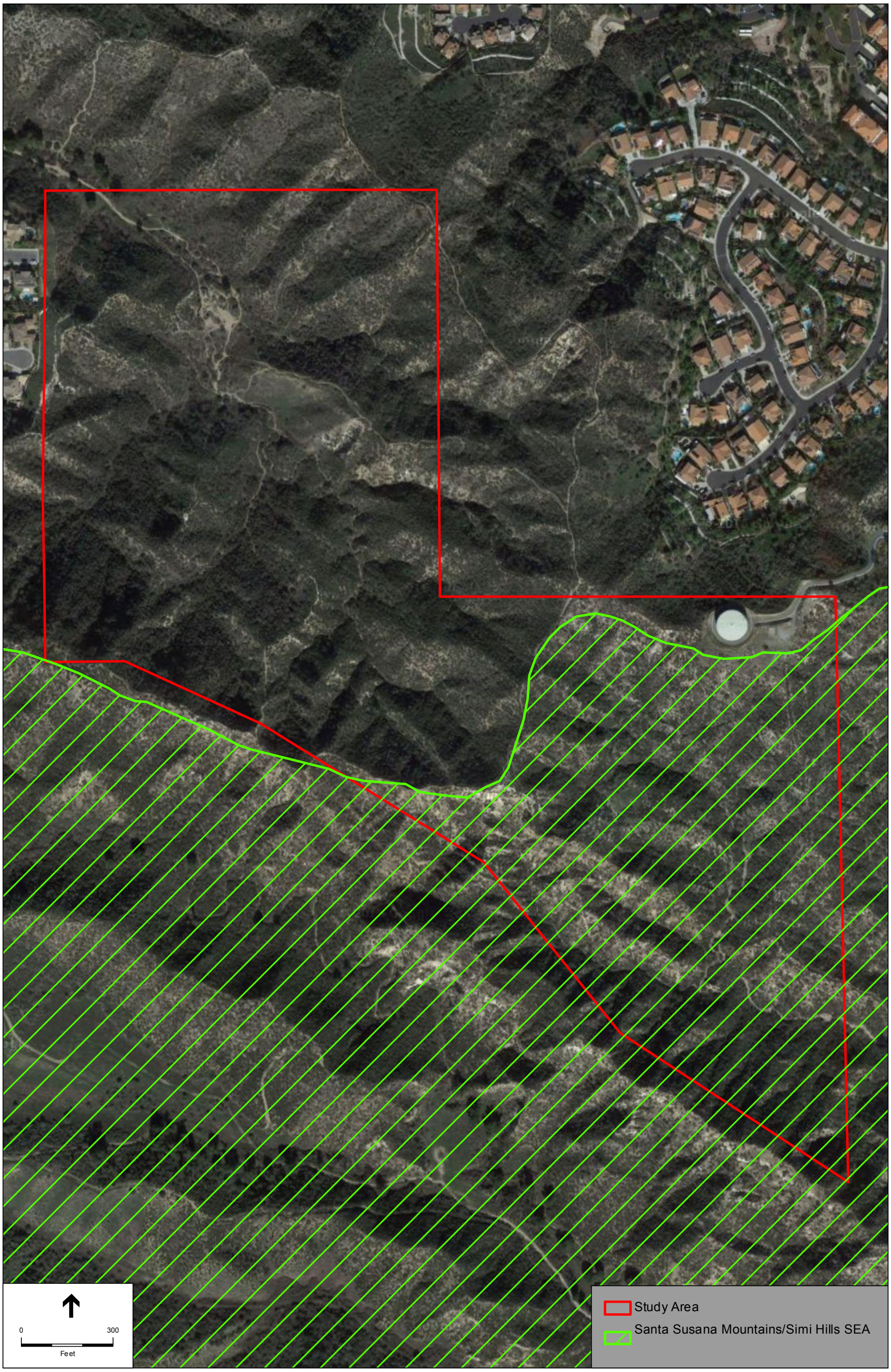
CHAPTER 4
Significant Ecological Area Criteria and Resources

4 1 Santa S sana Mo nta ns/S m H lls SEA

The southern half of the project site is located in the Santa Susana Mountains/Simi Hills, as shown on **Figure 5**, *Relationship to SEA*. In 2000, PCR Services Corporation completed the Los Angeles County Significant Ecological Area Update Study 2000. The six selection criteria used in determining which areas qualify for SEA designation are:

1. The habitat of core populations of Endangered or Threatened plant of animal species;
2. Biotic communities, vegetative associations, and habitat of plant and animal species that are either unique or are restricted in distribution on a regional basis;
3. Biotic communities, vegetative associations, and habitat of plant and animal species that are either unique or are restricted in distribution within Los Angeles County;
4. Habitat that at some point in the life cycle of a species or group of species serves as concentrated breeding, feeding, resting, or migrating grounds, and is limited in availability either regionally or in Los Angeles County;
5. Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations, or represent unusual variation in a population or community;
6. Areas that would provide for the preservation of relatively undisturbed examples of the original natural biotic communities in Los Angeles County.

The Santa Susana Mountains/Simi Hills SEA meets four of the above six selection criteria (criteria 2, 3, 4, and 6). The basis for the areas designation as an SEA is based upon 1) biotic communities, vegetative associations, and habitat of plant and animal species that are restricted in distribution in Los Angeles County and regionally; 2) concentrated breeding, feeding, resting or migrating grounds which are limited in availability to Los Angeles County; 3) areas that provide for the preservation of relatively undisturbed examples of original biotic communities in Los Angeles County. Coastal sage scrub, alluvial scrub, valley oak woodland, valley oak savannah, mainland cherry woodland, native grassland, southern willow scrub, and cottonwood-willow riparian forest are plant communities found in the SEA considered highest inventory priority communities by CDFW. The topographic complexity and coastal and desert influences within the SEA supports a wide diversity of plants, including the rare Santa Susana tarplant (*Deinandra minthornii*). The relatively undisturbed nature and large size of the plant communities within the Santa Susana Mountains and Simi Hills provides many undisturbed examples of native, natural communities within Los Angeles County.



SOURCE: Google Maps, 2015.

Canyon View Estates
Figure 5
Relationship to SEA

ESA PCR

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CHAPTER 5
Biological Characteristics of the Site

5 1 Plant Comm n t es

Descriptions of each of the plant communities found within the project site with MCV codes are provided below, and locations of each of the plant communities are shown in **Figure 6**, *Plant Communities.* **Table 3**, *Plant Communities,* lists each of the plant communities observed, as well as the acreage within the project site. CDFW considers any plant alliance with a State rank of S1-S3 to be considered a sensitive community. There is one sensitive plant communities on the project site, Thickleaf Yerba Santa Scrub/Red Brome Semi-natural Stands. Representative photographs of plant communities found within the project site are included in **Figure 7a** and **7b**, *Site Photographs.*

TABLE 3
PLANT COMMUNITIES

Plant Comm n t es	Total (a es)
Chamise Chaparral	52.23
Bush Mallow Scrub	15.30
Hoary Leaf Ceanothus Chaparral	18.07
Mule Fat Thickets	0.30
Chamise Chaparral/Hoary Leaf Ceanothus Chaparral	1.88
Bush Mallow Scrub/Chamise Chaparral	1.45
Red Brome Semi-natural Stands	0.25
Red Brome Semi-natural Stands/Chamise Chaparral	1.32
Red Brome Semi-natural Stands/Hoary Leaf Ceanothus Chaparral	1.31
Thickleaf Yerba Santa Scrub/Red Brome Semi-natural Stands	0.35
Disturbed	1.49
Total	**93 95**

SOURCE: ESA, 2016

5.1.1 Chamise Chaparral (37.101.16)

Chamise Chaparral is dominated by chamise (*Adenostoma fasciculatum*) with black sage (*Salvia mellifera*) as a subdominat species in the community. Additional native species observed within this community include Califonia buckwheat (*Eriogonum fasciculatum*), cudweed aster (*Corethrogyne filaginifolia*), soap plant (*Chlorogalum pomeridianum*), deerweed (*Acmispon glaber*), coast live oak (*Quercus agrifolia*), telegrapgh weed (*Heterotheca grandiflora*), sacapellote (*Acourtia microcephala*), slender aster (*Aster subulatus*), thickleaf yerba santa

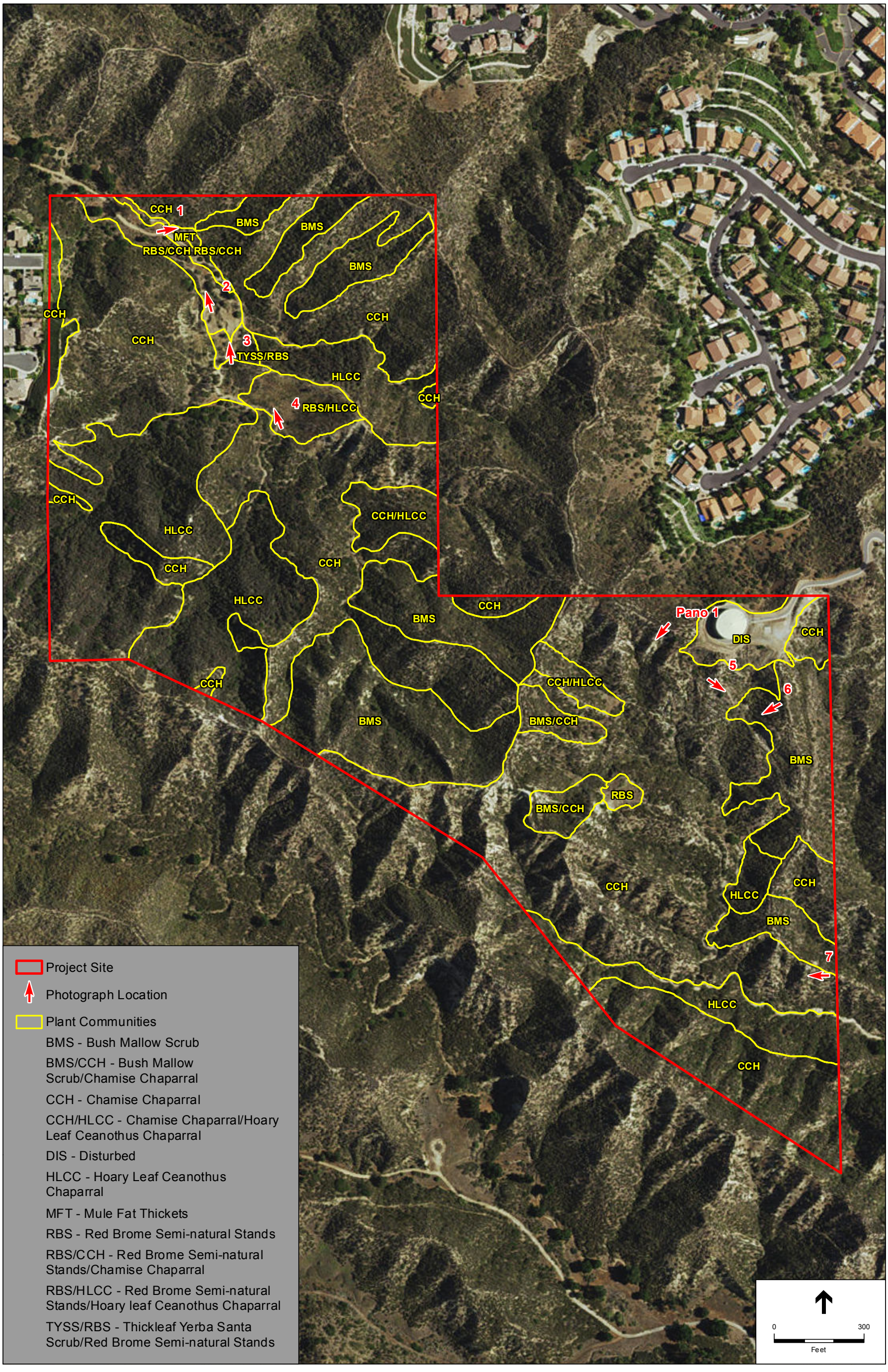
(*Eriodictyon crassifolium*), bush mallow (*Malacothamnus fasciculatus*), pinebush (*Ericameria pinifolia*), blue dicks (*Dichelostemma capitatum*), sqawbush (*Rhus aromatica*), slender mariposa lily (*Calochotus clavatus* var. *gracilis*), sugar bush (*Rhus ovata*), wild cucumber (*Marah macrocarpus*), golden yarrow (*Eriophyllum confertiflorum*), hoary leaf ceanothus (*Ceanothus crassifolius*), elegent clarkia (*Clarkia unguiculata*), woolly bluecurls (*Trichostema lanatum*), mountain mahogany (*Cercocarpus betuloides*), chaparral yucca (*Hesperoyucca whipplei*), common sunflower (*Helianthus annuus*), ladies' tobacco (*Pseudognaphalium californicum*), fiddleneck (*Amsinckia* sp.), spiny redberry (*Rhamnus crocea*), coyote brush (*Baccharis pilularis*), laurel sumac (*Malosma laurina*), mule fat (*Baccharis salicifolia*), cliff malacothrix (*Malacothrix saxatilis*), scrub oak (*Quercus berberidifolia*), California suncup (*Camissonia californica*), beardless wild rye (*Elymus triticoides*), and toyon (*Heteromeles arbutifolia*). Non-native species oberserved within the community include red brome (*Bromus madritensis* ssp. *rubens*), ripgut grass (*Bromus diandrus*), red gum eucalyptus (*Eucalyptus camaldulensis*), Italian ryegrass (*Festuca perennis*), and tocalote (*Centaurea melitensis*). Chamise Chaparral is the domiannt plant community on the project site and is located throughout the site, with the largest area occurring south of the water tank in the southern portion of the project site. The majority of the project site is comprised of Chamise Chaparral with 52.23 acres.

5.1.2 Bush Mallow Scrub (45.450.01)

Bush Mallow Scrub is a community characterized by a strong, almost monotypic, dominance of bush mallow. Within the Bush Mallow Scrub community, chamise is a subdominant species. The Bush Mallow Scrub community is comprised of the same native species found in Chamise Chaparral. One additional species observed within the Bush Mallow Scrub includes Plummer's mariposa lily (*Calochortus plummerae*). Bush Mallow Scrub is found throughout the project site. Bush Mallow Scrub occupies 15.30 acres of the project site.

5.1.3 Hoary Leaf Ceanothus Chaparral (37.208.01)

Hoary Leaf Ceanothus Chaparral is dominated by hoary leaf ceanothus. Additional native species observed within the community include chamise, ladies' tobacco, wild cucumber, hairy yerba santa, lemonade berry (*Rhus integrifolia*), coyote brush, California buckwheat, blue elderberry (*Sambucus nigra* ssp. *caerulea*), sacapellote, Turkish rugging (*Chorizanthe staticoides*), California sagebrush (*Artemisia californica*), and whispering bells (*Emmenanthe penduliflora*). Non-native species observed within this community include red brome and ripgut brome. Hoary Leaf Ceanothus Chaparral is located adjacent to or along the western, southwestern, eastern, and southern boundaries of the project site. Hoary Leaf Ceanothus Chaparral occupies 18.07 acres of the project site.



SOURCE: Google Maps, 2015.

Canyon View Estates
Figure 6
Plant Communities

ESA PCR

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PHOTOGRAPH 1. Photograph of Mule Fat Thickets in the foreground and Bush Mallow Scrub in the background, looking northeast.



PHOTOGRAPH 2. Photograph of Red Brome Semi-natural Stands/Chamise Chaparral community, looking north.



PHOTOGRAPH 3. Photograph of Red Brome Semi-natural Stands/Thickleaf Yerba Santa Scrub, looking north.



PHOTOGRAPH 4. Photograph of Red-Brome Semi-natural Stands/Hoary Leaf Ceanothus Chaparral with Chamise Chaparral in the background, looking north.

NOTE: See Figure 6 for photograph station locations.

SOURCE: ESA PCR, 2016

Canyon View Estates

Figure 7a

Site Photographs

ESA PCR



PHOTOGRAPH 5. Photograph of Chamise Chaparral in the foreground and Bush Mallow Scrub in the background, looking southeast.



PHOTOGRAPH 6. Photograph of Bush Mallow Scrub in foreground with Red Brome Semi-natural Stands in the middle, and Bush Mallow Scrub/Chamise Chaparral in the background, looking southwest.



PHOTOGRAPH 7. Photograph of Chamise Chaparral in the foreground, Hoary Leaf Ceanothus Chaparral in the middle, and Chamise Chaparral in the background, looking southwest.



PHOTOGRAPH 8. Panoramic view of Chamise Chaparral, Chamise Chaparral/Hoary Leaf Ceanothus Chaparral, and Red Brome Semi-natural Stands in the background, looking southwest.

NOTE: See Figure 6 for photograph station locations.

SOURCE: ESA PCR, 2016

Canyon View Estates

Figure 7b

Site Photographs

ESA PCR

5.1.4 Mule Fat Thickets (63.510.01)

Mule fat Thickets is a community strongly dominated by mule fat (*Baccharis salicifolia*). This community is considered riparian or associated with surface water or a persistent, moderately shallow water table and is often maintained by frequent flooding. Additional native species observed within the community include thickleaf yerba santa, squawbush, California ash, , and blue elderberry. Non-native species observed within this community include red brome, ripgut brome, and shortpod mustard (*Hirshfeldia incana*). Mule Fat Thickets is located in the northern portion of the project site, adjacent to the trail which enters the project site from the northwest. Mule Fat Thickets occupy 0.30 acre of the project site.

5.1.5 Chamise Chaparral/Hoary Leaf Ceanothus Chaparral (37.101.16/37.208.01)

Chamise Chaparral/Hoary Leaf Ceanothus Chaparral is dominated by chamise with a subdominance of hoary leaf ceanothus. This community is comprised of the species from the Chamise Chaparral and Hoary Leaf Ceanothus communities with an understory comprised of red brome. Additional native species observed within the community includes filago (*Filago* sp.) and Nevin's brickellia (*Brickellia nevinii*). Two pockets of this community are located on the project site, one in the northern portion of the project site adjacent to the eastern boundary and another in the southern portion of the project site southwest of the water tank. Chamise Chaparral/Hoary Leaf Ceanothus Chaparral occupies 1.88 acres of the project site.

5.1.6 Bush Mallow Scrub/Chamise Chaparral (45.450.01/37.101.16)

Bush Mallow Scrub/Chamise Chaparral is dominated by bush mallow with a subdominance of chamise. This community is comprised of species from the Bush Mallow Scrub and Chamise Chaparral community. One additional native species was observed in this community includes Plummer's mariposa lily (*Calochortus plummerae*). Two pockets of Bush Mallow Scrub/Chamise Chaparral are located in the southern portion of the project site west of the water tank. The Bush Mallow Scrub/Chamise Chaparral occupies 1.45 acres of the project site.

5.1.7 Red Brome Semi-natural Stands (42.024.01)

Red Brome Semi-natural Stands is a community dominated by non-native red brome. One small area of Red Brome Semi-natural Stands is located in the southern portion of the project site, south of the water tank. Red Brome Semi-natural Stands occupies 0.25 acre of the project site.

5.1.8 Red Brome Semi-natural Stands/Chamise Chaparral (42.024.01/37.101.16)

Red Brome Semi-natural Stands/Chamise Chaparral is dominated by red brome with a subdominance of chamise. Additional native species observed within this community include coyote brush, mule fat, cliff malacothrix (*Malacothrix saxatilis*), pinebush, western verbena (*Verbena lasiostachys*), narrowlead milkweed (*Asclepias fascicularis*), blue elderberry, coast live oak, slender sunflower (*Helianthus gracilentus*), fascicled tarplant (*Deinandra fasciculata*), and foothill needlegrass (*Stipa lepida*). Non-native species observed within this community include shortpod mustard, tocalote, yellow star-thistle (*Centaurea solstitialis*), ripgut brome, and nettle-leaved goosefoot (*Chenopodium murale*). This community is found adjacent to the trail loacted in the northwestern portion of the project site. Red Brome Semi-natural Stands/Chamise Chaparral occupies 1.55 acres of the project site.

5.1.9 Red Brome Semi-natural Stands/Hoary Leaf Ceanothus Chaparral (42.024.01/37.208.00)

Red Brome Semi-natural Stands/Hoary Leaf Ceanothus is dominated by red brome with a subdominance of hoary leaf ceanothus. One small area of this community is located centrally in the northern portion of the project site. Red Brome Semi-natural Stands/Hoary Leaf Ceanothus Chaparral occupies 1.31 acres of the project site.

5.1.10 Thickleaf Yerba Santa Scrub/Red Brome Semi-natural Stands (37.090.00/42.024.01)

Thickleaf Yerba Santa Scrub/Red Brome Semi-natural Stands is dominated by thickleaf yerba santa with a subdominant understory of red brome. Additional native species within this community includes mule fat, blue elderberry, common fiddleneck (*Amsinckia intermedia*), coyote brush, bush mallow, and sacapellote. Non-native species found within this community includes tocalote, shortpod mustard, and ripgut brome. One small area of this community occurs in the northern portion of the project site adjacent to the southern end of the trail. Thickleaf Yerba Santa Scrub/Red Brome Semi-natural Stands occupies 0.35 acre of the project site.

5.1.11 Disturbed (N/A)

Disturbed areas consist of areas heavily disturbed by human activities with little to no vegetation. Disturbed areas within the project site are comprised of the fuel modification area adjacent to the water tank. Non-native species observed within the disturbed community include slender wild oat (*Avena barbata*), Russian thistle (*Salsola tragus*), shortpod mustard, and prickly lettuce (*Lactuca serriola*). A small number of native species were also observed in the disturbed community, which include, thickleaf yerba santa, laurel sumac, California buckwheat, and bush mallow. The disturbed area occupies 1.49 acres of the project site.

5.2 Special Status Plant Species

The potential for special-status plant species was assessed based upon the known occurrence of species in the area as identified from CDFW, USFWS and CNPS databases, and the presence or absence of suitable habitat within the project site based on plant community mapping.

Suitable habitat was defined as areas with appropriate plant communities, soils and/or topography (elevation at MSL) to support the species based on known occurrences in those habitats and/or CDFW and CNPS documented habitat descriptions for the species. The definitions of suitable habitat were then compared against the plant community mapping conducted for the project site and local knowledge. A table of sensitive plant species for which potentially suitable habitat occurs within the project site was prepared, and the potential for occurrence for each species was determined following completion of the vegetation mapping conducted during the field survey, included as **Appendix C**, *Special-Status Plant Species*.

Due to the presence of potentially suitable habitat on-site, a focused sensitive plant survey was conducted on June 16 and 17, 2016 during the appropriate blooming period for the following species: Nevin's Barberry (*Berberis nevinii*), slender mariposa lily (*Calochortus clavatus* var. *gracilis*), late-flowered mariposa lily (*Calochortus fimbriatus*), Plummer's mariposa lily (*Calochortus plummerae*), Pierson's morning-glory (*Calystegia peirsonii*), San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*), Parry's spineflower (*Chorizanthe parryi var. parryi*), Santa Susana tarplant, Palmer's grapplinghook (*Harpagonella palmeri*), southern California black walnut (*Juglans californica*), Robinson's peppergrass (*Lepidium virginicum* var. *robinsonii*), Ojai Navarretia (*Navarretia ojaiensis*), chaparral ragwort (*Senecio aphanactis*), and Greta's aster (*Symphyotrichum greatae*).

Two sensitive plant species were observed on the project site, as shown on **Figure 8**, *Special-Status Plant Species Locations*. These species include slender mariposa lily and Plummer's mariposa lily. The distinctive dried seed pods of both species were observed in various locations throughout the project site.

5.3 Special Status Wildlife Species

A habitat analysis for sensitive wildlife species was conducted during the general biological site visit. Sensitive wildlife species include those species listed as endangered or threatened under the FESA or CESA, candidates for listing by the USFWS or CDFW, species of special concern to the CDFW (SSC), and species considered sensitive by the USDA Forest Service (USFS) (FSS). Two sensitive wildlife species, Swainson's hawk (*Buteo swainsoni*) and Crotch bumblebee (*Bombus crotchii*) were reported in the CNDDB within the vicinity, as shown on **Figure 9**, *CNDDB Sensitive Species*. All wildlife species observed on-site, or the evidence of their presence, were recorded during the field investigation and provided as **Appendix D**, *Special-Status Wildlife Species*.

Sensitive wildlife species with the potential to occur within the project site due to suitable habitat include crotch bumble bee, western spadefoot (*Spea hammondii*) [California Species of Special

Concern (SSC)], silvery legless lizard (*Anniella pulchra pulchra*) [SSC], coast horned lizard (*Phrynosoma coronatum*) [SSC], coastal whiptail (*Aspidoscelis tigris stejnegeri*) [CDFW Special Animals], American peregrine falcon (*Falco peregrinus anatum*) [Fully Protected (FP)], southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*) [Watch List (WL)], Bell's sage sparrow (*Artemisiospiza belli belli*) [WL], San Diego desert woodrat (*Neotoma lepida intermedia*) [SSC], southern grasshopper mouse (*Onychomys torridus ramona*) [SSC], western mastiff bat (*Eumops perotis californicus*) [SSC], and pallid bat (*Antrozous pallidus*) [SSC].

The project site does not provide nesting opportunities for species (due to lack of suitable nesting habitat), but does provide foraging habitat for several species, including Cooper's hawk (*Accipiter cooperi*) [WL], golden eagle (*Aquila chrysaetos*) [FP], Swainson's hawk (*Buteo swainsoni*) [State Threatened (ST)], white-tailed kite (*Elanus leucurus*) [FP], turkey vulture (*Cathartes aura*) [Los Angeles Audubon (LAA)], loggerhead shrike (*Lanius ludovicianus*) [SSC], burrowing owl (*Athene cunicularia*) [SSC], oak titmouse (*Baeolophus inornatus*) [Audubon Watch List (AWL)], coastal California gnatcatcher (*Polioptila californica californica*) [FT, SSC], Townsend's big-eared bat (*Corynorhinus townsendii*) [SCT, SSC], and hoary bat (*Lasiurus cinereus*) [Western Bat Working Group (WBWG) Medium].

These species, in addition to others with the potential to occur within the study area, are discussed in Appendix D.

No Federal or State listed wildlife species were observed within the project site during the general biological survey.

5 4 Sens t e Plant Comm n t es

Natural community elements or vegetation types are considered of special concern when their State rarity rank is listed as S1-S3. These communities are designated by an asterisk as high priority in the CDFW List of California Terrestrial Natural Communities (CDFW 2010). These communities may be perceived as declining but are not officially regarded as "sensitive" yet. Only Thickleaf Yerba Santa Scrub/Red Brome Semi-natural Stands is considered a sensitive plant community on the project site, pursuant to State or Federal regulations. However, the understory of this plant community on-site is disturbed with a dominant component of non-native species and consequently is of lower biological value than undisturbed representations elsewhere in southern California.

5 5 Oa Woo lan s

In 2011, the County of Los Angeles adopted the Los Angeles County Oak Woodlands Conservation Management Plan to encourage the preservation of oak woodlands through the County. It is the intent of the County to maintain and expand the oak woodland habitat by requiring development designs to avoid impacts to oak woodlands and require appropriate compensatory mitigation where oak woodland impacts remove such habitat. In addition, the County has prepared the March 18, 2014 Los Angeles County Oak Woodlands Conservation Management Plan Guide (Guide) for the consideration of the preservation of oak woodlands. A stand of coast live oak trees occur to the immediate north of the project site and comprises about

0.34 acre of coast live oak woodland, when using the 10% canopy cover methodology of the Guide. The understory of this woodland consists primarily of non-native species and the habitat may be described as moderately degraded as a consequence of the past and current disturbances. The most northerly coast live oak tree (*Quercus agrifolia*) occurring on the project site may qualify as being a component of the off-site oak woodland habitat to the north, when using the 10% canopy cover methodology of the Guide.

5 6 W l l e Mo ement/Hab tat L n a e

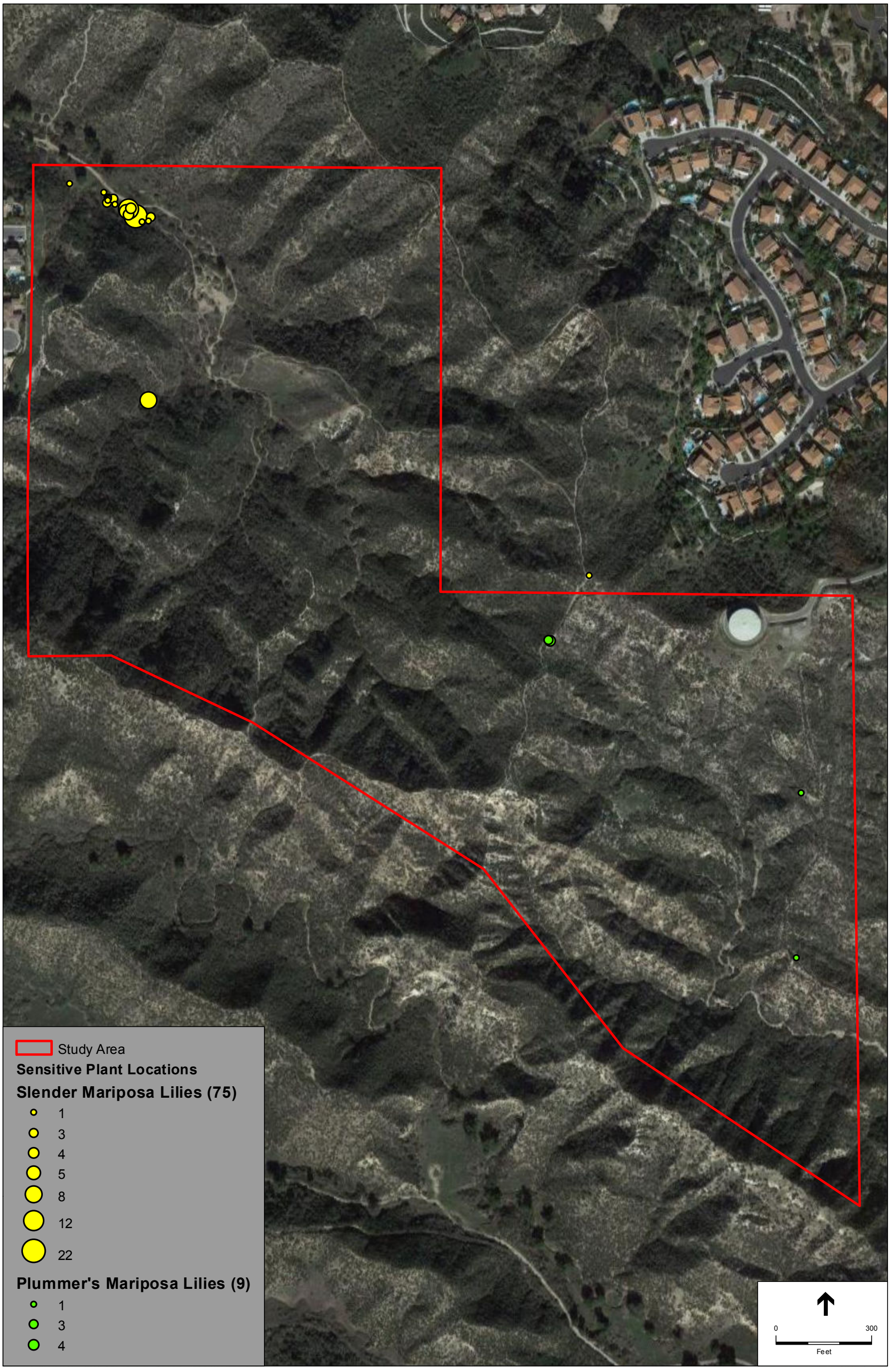
The analysis of wildlife movement corridors/habitat linkage associated with the project site and its immediate vicinity is based on information compiled from the literature and analysis of aerial photographs and topographic maps. The relationship of the project site to large open space areas in the immediate vicinity was also evaluated in terms of connectivity and habitat linkages (refer to **Figure 10**, *Wildlife Movement/Habitat Linkage*). Relative to corridor issues, the discussions in this report are intended to focus on wildlife movement associated with the project and the immediate vicinity.

5.6.1 Overview

Wildlife corridors link together areas of suitable habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The fragmentation of open space areas by urbanization creates isolated "islands" of wildlife habitat. In the absence of habitat linkages that allow movement to adjoining open space areas, various studies have concluded that some wildlife species, especially the larger and more mobile mammals, will not likely persist over time in fragmented or isolated habitat areas because they prohibit the infusion of new individuals and genetic material (MacArthur and Wilson, 1967; Soulé, 1987; Harris and Gallagher, 1989; Bennet, 1990). Corridors effectively act as links between different populations of a species.

A group of smaller populations (termed "demes") linked together via a system of corridors is termed a "metapopulation." The long-term health of each deme within the metapopulation is dependent upon its size and the frequency of interchange of individuals (immigration vs. emigration). The smaller the deme, the more important immigration becomes, because prolonged inbreeding with the same individuals can reduce genetic variability. Immigrant individuals that move into the deme from adjoining demes mate with individuals and supply that deme with new genes and gene combinations that increases overall genetic diversity. An increase in a population's genetic variability is generally associated with an increase in a population's health.

Corridors mitigate the effects of habitat fragmentation by: (1) allowing animals to move between remaining habitats, which allows depleted populations to be replenished and promotes genetic diversity; (2) providing escape routes from fire, predators, and human disturbances, thus reducing the risk that catastrophic events (such as fires or disease) will result in population or local species extinction; and (3) serving as travel routes for individual animals as they move within their home ranges in search of food, water, mates, and other needs (Noss, 1983; Fahrig and Merriam, 1985; Simberloff and Cox, 1987).



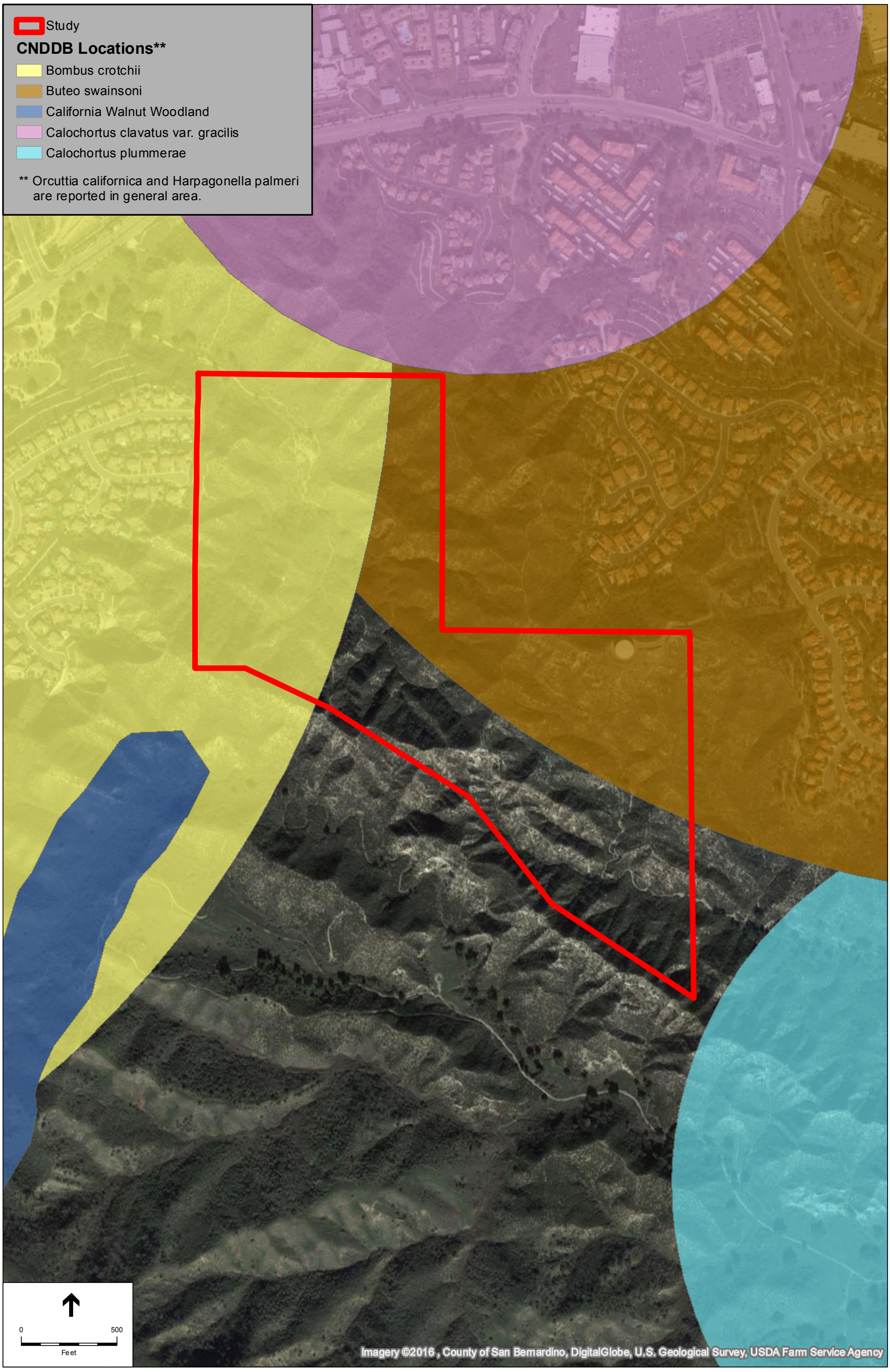
SOURCE: Google Maps, 2015; ESA PCR 2016.

Canyon View Estates

Figure 8

Sensitive Plant Species Location

ESA PCR



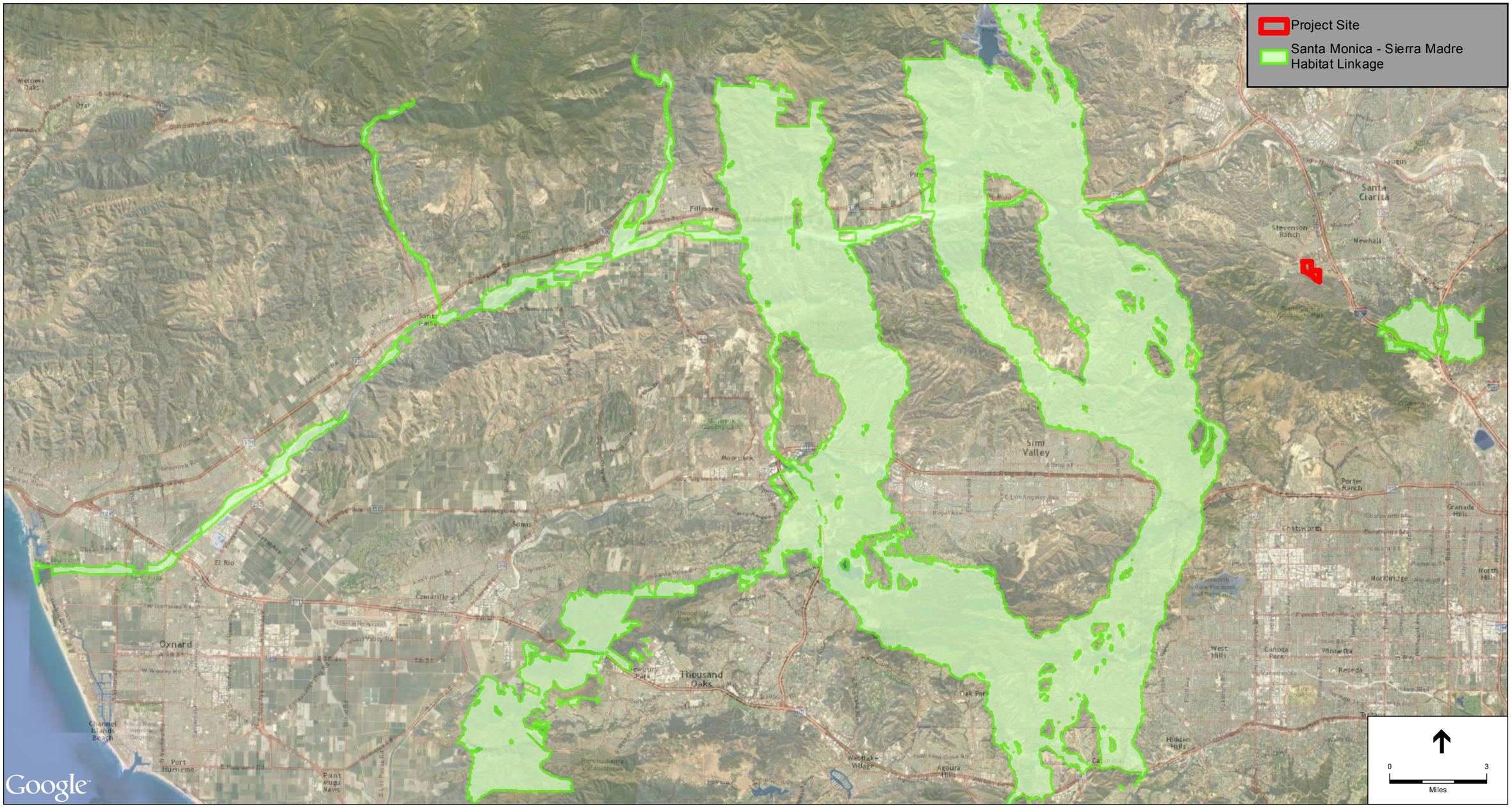
SOURCE: Google Maps, 2015.

Canyon View Estates

Figure 9

CNDDB Sensitive Species

ESA PCR



SOURCE: Google Maps, 2015.

Canyon View Estates

Figure 10

Wildlife Movement / Habitat Linkage

ESA PCR

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Wildlife movement activities usually fall into one of three movement categories: (1) dispersal (e.g., juvenile animals from natal areas, individuals extending range distributions); (2) seasonal migration; and, (3) movements related to home range activities (foraging for food or water, defending territories, searching for mates, breeding areas, or cover). A number of terms have been used in various wildlife movement studies, such as "wildlife corridor," "travel route," and "wildlife crossing" to refer to areas in which wildlife move from one area to another. To clarify the meaning of these terms and facilitate the discussion on wildlife movement in this study, these terms are defined as follows:

Travel Route: A landscape feature (such as a ridgeline, drainage, canyon, or riparian strip) within a larger natural habitat area that is used frequently by animals to facilitate movement and provide access to necessary resources (e.g., water, food, cover, den sites). The travel route is generally preferred because it provides the least amount of topographic resistance in moving from one area to another; it contains adequate food, water, and/or cover while moving between habitat areas; and provides a relatively direct link between target habitat areas.

Wildlife Corridor: A piece of habitat, usually linear in nature, that connects two or more habitat patches that would otherwise be fragmented or isolated from one another. Wildlife corridors are usually bounded by urban land areas or other areas unsuitable for wildlife. The corridor generally contains suitable cover, food, and/or water to support species and facilitate movement while in the corridor. Larger, landscape-level corridors (often referred to as "habitat or landscape linkages") can provide both transitory and resident habitat for a variety of species.

Wildlife Crossing: A small, narrow area, relatively short in length and generally constricted in nature, that allows wildlife to pass under or through an obstacle or barrier that otherwise hinders or prevents movement. Crossings typically are manmade and include culverts, underpasses, drainage pipes, and tunnels to provide access across or under roads, highways, pipelines, or other physical obstacles.

It is important to note that, within a large open space area in which there are few or no man-made or naturally occurring physical constraints to wildlife movement, wildlife corridors as defined above may not yet exist. Given an open space area that is both large enough to maintain viable populations of species and provide a variety of travel routes (canyons, ridgelines, trails, riverbeds, and others), wildlife will use these "local" routes while searching for food, water, shelter, and mates, and will not need to cross into other large open space areas. Based on their size, location, vegetative composition, and availability of food, some of these movement areas (e.g., large drainages and canyons) are used for longer lengths of time and serve as source areas for food, water, and cover, particularly for small- and medium-sized mammals. This is especially true if the travel route is within a larger open space area. However, once open space areas become constrained and/or fragmented as a result of urban development or construction of physical obstacles such as roads and highways, remaining landscape features or travel routes that connect the larger open space areas can "become" corridors as long as they provide adequate space, cover, food, and water, and do not contain obstacles or distractions (man-made noise, lighting) that would generally hinder wildlife movement.

5.6.2 Wildlife Movement/Habitat Linkage within the Project Site

Movement on a smaller or "local" scale occurs throughout the surrounding vicinity as well as the project site. Data gathered from biological surveys indicate that the study area contains habitat that supports a variety of species of invertebrates, amphibians, reptiles, birds, and mammals. The home range and average dispersal distance of many of these species may be entirely contained within the project site and immediate vicinity. Populations of animals such as insects, amphibians, reptiles, small mammals, and a few bird species may find all their resource requirements without moving far or outside of the project site at all. Occasionally, individuals expanding their home range or dispersing from their parental range will attempt to move outside of the project site. Additionally, the ridgelines, canyons, and dirt roads within the study area all facilitate wildlife movement in the form of travel routes (as defined above).

Although the northern portion of the project site is surrounded by urban development, movement on a larger, "regional" scale is likely to occur to and from the project site from the southern portion of the project site where the area is undeveloped within the Santa Susana Mountains. The Santa Susana Mountains connect the Simi Hills on the south with the San Gabriel Mountains to the east. The dense natural habitat associated with the majority of the area to the south of the project site provides concealment and an abundance of prey.

The project site does not fall within any of the potential linkage areas described in the South Coast Missing Linkages (SCML; South Coast Wildlands, 2008). The project site is located adjacent to the Santa Monica-Sierra Madre Connection, which is one of the few coastal to inland connections remaining in the south coast ecoregion. The Santa Monica-Sierra Madre Connection stretches from Santa Monica Mountains at the coast to the peaks of the Santa Susana Mountains and the Sierra Madre Ranges of Los Padres National Forest. From the project site, faunal movement to the Santa Monica-Sierra Madre Connection would be possible via the Santa Susana Mountains. Avoidance of the SCML linkage may still effect wildlife movement; however, the project would not directly interfere with movement between core habitat areas of the Santa Monica, Santa Susana, and San Gabriel Mountains, which would likely remain open. The effects of a project at this location on the chain of conserved open space parcels lying to the south of the project site that connect a portion of the SCML linkage of the Santa Susana Mountains northwest through the Newhall Ranch Specific Plan open space areas would be incremental to that caused by other residential development in the region. However, a clustered project design would not cause a barrier to movement but would cause interference of existing movement patterns.

Project development should be clustered adjacent to existing development (e.g., Pico Canyon Road to the north and nearby residences to the west) and should minimize impacts to the southern portion of the study area. Pico Canyon Road and residential development to the west, north and east currently impede local wildlife movement and additional development would further compound this impediment. Clustering adjacent to existing development, while maintaining a native vegetation passage, would allow local wildlife to continue any existing north-south movement. Thus, wildlife movement through the study area after project implementation would still continue current east-west movement but potentially constrain north-south movement. A clustered project design is not expected to substantially alter movement through the study area especially in the southern portion of the project site.

The study area has the potential to support both raptor and songbird nests due to the presence of trees, shrubs, and ground cover. Nesting activity typically occurs from February 15 to August 31 for songbirds and January 15 to August 31 for raptors. Disturbing or destroying active nests is a violation of the Migratory Bird Treaty Act (16 U.S.C. 703 *et seq*.). In addition, nests and eggs are protected under Fish and Wildlife Code Section 3503. The removal of vegetation during the breeding season must be in compliance with the MBTA and Fish and Game Code regulations.

CHAPTER 6
Characteristics of the Surrounding Area

6.1 Existing Land Uses of Surrounding Area

The land uses surrounding the project site is a mixture of undeveloped areas to the south and developed residential areas primarily to the north. South of the project site is undeveloped land including the Santa Clarita Woodlands Park. Approximately 1,100 feet north of the northern boundary of the project site is Pico Canyon Road. Adjacent to the northwest corner of the project site is Pico Canyon Park. To the west and east of the project site is residential development. Santa Clarita Woodlands Park is located south of the project site (refer to **Figure 11**, *Surrounding Land Use Map*).

6.2 Open Space Reserves

The Santa Clarita Woodlands Park is a 4,000-acre public parkland that is a critical component of a cross-mountain range wildlife habitat corridor that links the Santa Monica Mountains to the Angeles and Los Padres National Forests. Santa Clarita Woodlands Park contains unique combinations of tree species, perennial streams, spring wildflower displays, and abundant wildlife. Mentryville is the open space reserve to the project site. Mentryville is a state historic landmark operated by the Santa Monica Mountains Conservancy. Mentryville is located approximately 1.70 miles to the west of the project site, south of Pico Canyon Road. The City of Santa Clarita Open Space District recently purchased more than 100 acres for open space immediately to the south of the project site.

6.3 Habitat Conservation Plans of Surrounding Area

The project site is not within a Habitat Conservation Plan (HCP) area. The closest HCP to the project site is the Town of Apple Valley Multi-Species Conservation Plan located approximately 25 miles northeast of the project site.

6.4 Vegetation Communities of Surrounding Area

The information pertaining to the vegetation communities of the surrounding area adjacent to the project site was derived from the National Park Service Vegetation Inventory (NPS, 2016), which extracts vegetation data from photographic signatures. The surrounding vegetation is similar and contiguous to the chaparral communities mapped on the project site, mainly Bush Mallow Scrub, Mule fat Thickets, and communities with thickleaf yerba santa as a floral component. In addition, coastal sage scrub communities dominated by California buckwheat, coyote brush, and California sagebrush are found in the surrounding area. A degraded coast live oak woodland occurs

immediately north of the project site, to which the most northerly coast live oak tree on-site may be considered as a component, contributing approximately 0.14 acre of oak woodland habitat. The surrounding area also includes vegetated urban communities.

6.5 Overall Biological Value of the Area

The natural vegetation occurring on the project site and the surrounding areas provide a high biological value, providing valuable nesting, foraging, roosting and nursery resources for a diversity of plants and wildlife. The biological value of the project site is exemplified in the inclusion of the southern portion of the project site within the Santa Susana Mountains/Simi Hills SEA.

The project site also contains several special-status plant species, including slender mariposa lily and Plummer's mariposa lily, in addition to several other native plants and habitats, such as Bush Mallow Scrub, Bush Mallow Chamise Chaparral, Chamise Chaparral, Chamise Chaparral/Hoary Leaf Ceanothus Chaparral, and Mule Fat Thickets, which provide an abundance of biological value.

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SOURCE: Google Maps, 2015.

Canyon View Estates
Figure 11
Surrounding Land Use Map

ESA PCR

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CHAPTER 7
Regulatory Framework

7.1 Federal Sensitive Resource Protection and Classifications

7.1.1 Federal Endangered Species Act (FESA)

The FESA of 1973 defines an endangered species as "any species which is in danger of extinction throughout all or a significant portion of its range." A threatened species is defined as "any species which is likely to become an Endangered species within the foreseeable future throughout all or a significant portion of its range." Under provisions of Section 9(a)(1)(B) of the FESA, unless properly permitted, it is unlawful to "take" any listed species. "Take" is defined in Section 3(18) of FESA: "...harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Further, the USFWS, through regulation, has interpreted the terms "harm" and "harass" to include certain types of habitat modification as forms of "take." These interpretations, however, are generally considered and applied on a case-by-case basis and often vary from species to species. In a case where a property owner seeks permission from a federal agency for an action which could affect a federally listed plant or animal species, the property owner and agency are required to consult with USFWS pursuant to Section 7 of the ESA if there is a federal nexus, or pursuant to Section 10 of the ESA. Section 9(a)(2)(b) of the FESA addresses the protections afforded to listed plants.

All references to Federally-protected species in this BRA include the most current published status or candidate category to which each species has been assigned by USFWS. For purposes of this assessment the following acronyms are used for Federal status species, as applicable:

FE Federally-listed as Endangered

FT Federally-listed as Threatened

FPE Federally proposed for listing as Endangered

FPT Federally proposed for listing as Threatened

FPD Federally proposed for delisting

FC Federal candidate species (former C1 species)

Some of the USFWS offices maintain a database of listed species within their jurisdiction, for example the Sacramento[1] and Carlsbad[2] offices. The Carlsbad USFWS Office jurisdiction

1 http://www.fws.gov/sacramento/ES_Species/Lists/es_species_lists-overview.htm
2 http://www.fws.gov/carlsbad/SpeciesStatusList/CFWO_Species_Status_List.htm

encompasses the counties of Los Angeles, Orange, Riverside, San Bernardino, Imperial, and San Diego.

7.1.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) protects individuals as well as any part, nest, or eggs of any bird listed as migratory. In practice, Federal permits issued for activities that potentially impact migratory birds typically have conditions that require pre-disturbance surveys for nesting birds. In the event nesting is observed, a buffer area with a specified radius must be established, within which no disturbance or intrusion is allowed until the young have fledged and left the nest, or it has been determined that the nest has failed. If not otherwise specified in the permit, the size of the buffer area varies with species and local circumstances (e.g., presence of busy roads, intervening topography, etc.), and is based on the professional judgment of a monitoring biologist. A list of migratory bird species protected under the MBTA is published by USFWS.

7.1.3 Federal Clean Water Act, Section 404

The federal Water Pollution Control Act Amendments of 1972 (33 United States Code [USC] 1251–1376), as amended by the Water Quality Act of 1987, and better known as the federal Clean Water Act (CWA), is the major federal legislation governing water quality. The purpose of the federal CWA is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." Discharges into waters of the U. S. are regulated under CWA Section 404. Waters of the U.S include: 1) all navigable waters (including all waters subject to the ebb and flow of the tide); 2) all interstate waters and wetlands; 3) all other waters, such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sand flats, wetlands, sloughs, or natural ponds; 4) all impoundments of waters mentioned above; 5) all tributaries to waters mentioned above; 6) the territorial seas; and 7) all wetlands adjacent to waters mentioned above.

Section 404 provides for issuance of dredge/fill permits by the USACE. Permits typically include conditions to minimize impacts on water quality. Common conditions include: 1) USACE review and approval of sediment quality analysis before dredging, 2) a detailed pre- and post-construction monitoring plan that includes disposal site monitoring, and 3) requiring compensation for loss of waters of the U. S. The areas of the project site that occur below mean higher high water (MHHW) would be subject to regulation under Section 404.

7.1.4 Federal Clean Water Act, Section 401

The mission of the RWQCB is to develop and enforce water quality objectives and implement plans that will best protect the beneficial uses of the state's waters, recognizing local differences in climate, topography, geology, and hydrology. The California RWQCB is responsible for implementing compliance not only with state codes such as the California Water Code, but also some federal acts such as Section 401 of the CWA. Section 401 of the CWA requires that any applicant for a federal permit for activities that involve a discharge to waters of the state shall provide the federal permitting agency with a certification from the state in which the discharge is proposed that states that the discharge will comply with the applicable provisions under the

federal CWA.[3] As such, before the USACE will issue a CWA Section 404 permit, applicants must apply for and receive a Section 401 water quality certification (WQC) from the RWQCB. The RWQCB regulates "discharging waste, or proposing to discharge waste, within any region that could affect "waters of the state" (Water Code § 13260 (a)), pursuant to provisions of the Porter-Cologne Water Quality Control Act which defines RWQCB jurisdictional "waters of the state" as "any surface water or groundwater, including saline waters, within the boundaries of the state" (Water Code § 13050 (e)).

With the exception of isolated waters and wetlands, most discharges of fill to waters of the state are also subject to a CWA Section 404 permit. If a CWA Section 404 permit is not required for the project, the RWQCB may still require issuance of Waste Discharge Requirements (WDR) under the Porter-Cologne Water Quality Control Act. The RWQCB may regulate isolated waters that are not under jurisdiction of the USACE through issuance of WDR's. However, projects that obtain a Section 401 WQC are simultaneously enrolled in a statewide general WDR.

Processing of Section 401 WQC's generally requires submittal of 1) a construction storm water pollution prevention plan (SWPPP), 2) a final water quality technical report that demonstrates that post-construction storm water Best Management Practices (BMPs) comply with the local design standards for municipal storm drain permits (MS4 permits) implemented by the State Water Resources Control Board effective January 1, 2011, and 3) a conceptual Habitat Mitigation and Monitoring Plan (HMMP) to compensate for permanent impacts to RWQCB waters, if any. In addition to submittal of a draft CEQA document, a WQC application typically requires a discussion of avoidance and minimization of impacts to RWQCB jurisdictional resources, and efforts to protect beneficial uses as defined by the local RWQCB basin plan for the project. The RWQCB cannot issue a Section 401 WQC until the project CEQA document is certified by the lead agency.

7.2 State of California Sensitive Resource Protection and Classifications

7.2.1 California Endangered Species Act (CESA)

California's Endangered Species Act (CESA) defines an endangered species as:

> *a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease.*

The State defines a threatened species as:

> *a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter. Any animal*

[3] 33 USC 1341 *(a) (1).*

> *determined by the commission as rare on or before January 1, 1985 is a threatened species.*

Candidate species are defined as:

> *a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the commission has formally noticed as being under review by the department for addition to either the list of endangered species or the list of threatened species, or a species for which the commission has published a notice of proposed regulation to add the species to either list.*

Candidate species may be afforded temporary protection as though they were already listed as threatened or endangered at the discretion of the Fish and Wildlife Commission. Unlike the FESA, CESA does not include listing provisions for invertebrate species.

Article 3, Sections 2080 through 2085, of the CESA addresses the taking of threatened or endangered species by stating:

> *no person shall import into this State, export out of this State, or take, possess, purchase, or sell within this State, any species, or any part or product thereof, that the commission determines to be an endangered species or a threatened species, or attempt any of those acts, except as otherwise provided.*

Under the CESA, "take" is defined as, "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

Additionally, some sensitive mammals and birds are protected by the State as Fully Protected Mammals or Fully Protected Birds, as described in the California Fish and Wildlife Code, Sections 4700 and 3511, respectively.

California Species of Special Concern are species designated as vulnerable to extinction due to declining population levels, limited ranges, and/or continuing threats. Informally listed species are not protected per se, but warrant consideration in the preparation of biological assessments. For some species, the CNDDB is only concerned with specific portions of the life history, such as roosts, rookeries, or nest areas.

For the purposes of this BRA, the following acronyms are used for State status species, as applicable:

SE State-listed as Endangered

ST State-listed as Threatened

SR State-listed as Rare

SCE State candidate for listing as Endangered

SCT State candidate for listing as Threatened

SFP State Fully Protected

SSC California Species of Special Concern

7.2.2 Protection of Birds

Section 3503.5 of the California Fish and Game Code states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Activities that result in the abandonment of an active bird of prey nest may also be considered in violation of this code. In addition, California Fish and Game Code, Section 3511 prohibits the taking of any bird listed as fully protected, and California Fish and Game Code, Section 3515 states that is it unlawful to take any non-game migratory bird protected under the MBTA.

7.2.3 State of California Fish and Game Code, Section 1602

Section 1602 of the California Fish and Game Code requires any entity (e.g., person, state or local government agency, or public utility) who proposes a project that will substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake to notify the CDFW of the proposed project. In the course of this notification process, the CDFW will review the proposed project as it affects streambed habitats within the project area. The CDFW may then place conditions in the Section 1602 Streambed Alteration Agreement to avoid, minimize, and mitigate any potentially significant adverse impacts within CDFW jurisdictional limits.

7.2.4 California Native Plant Society

The CNPS is a private plant conservation organization dedicated to the monitoring and protection of sensitive species in California. CNPS has compiled an inventory comprised of the information focusing on geographic distribution and qualitative characterization of Rare, Threatened, or Endangered vascular plant species of California (CNPS 2012). The list serves as the candidate list for listing as Threatened and Endangered by CDFW. CNPS has developed six categories of rarity, of which Ranks 1A, 1B, 2A, and 2B are particularly considered sensitive:

Rank 1A Presumed Extirpated in California and either Rare or Extinct elsewhere.

Rank 1B Plants Rare, Threatened, or Endangered in California and elsewhere.

Rank 2A Presumed Extirpated in California, but more common elsewhere.

Rank 2B Plants Rare, Threatened, or Endangered in California, but more common elsewhere.

Rank 3 Plants about which we need more information – a review list.

Rank 4 Plants of limited distribution – a watch list.

The CNPS recently added "threat ranks" which parallel the ranks used by the CNDDB. These ranks are added as a decimal code after the CNPS List (e.g., Rank 1B.1). The threat codes are as follows:

.1 Seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat);

.2 Fairly endangered in California (20-80% occurrences threatened);

.3 Not very endangered in California (<20% of occurrences threatened or no current threats known).

Sensitive species that occur or potentially could occur within the project site are based on one or more of the following: (1) the direct observation of the species within the project site during any field surveys; (2) a record reported in the CNDDB; and (3) the project site is within known distribution of a species and contains appropriate habitat.

7 3 Lo al Sens t e Reso e P ote t on an Class at ons

7.3.1 County of Los Angeles Oak Tree Ordinance

The County of Los Angeles Oak Tree Ordinance (Ord. 88-0157 § 2, 1988: Ord. 82-0168 § 2 (part), 1982) as outlined in Chapter 22.56.2050 *et seq*. of the Los Angeles County Code (referred to in this report as "the Oak Tree Ordinance") protects all tree species of the oak genus that measure 25 inches or more in circumference (eight inches in diameter) for trees with a single trunk and 38 inches of combined circumference (12 inches in diameter) for any two trunks of trees with multiple stems, as measured at breast height, or 4.5 feet above natural grade (diameter at breast height, or "DBH"). The Oak Tree Ordinance also covers the "protected zone" of the oak trees, which extends to five feet outside of the dripline of the oak tree, or 15 feet from the trunk(s) of a tree, whichever distance is greater. Additionally, the Oak Tree Ordinance protects all tree species of the oak genus (*Quercus*) that fall within 200-feet of project construction. A total of seven (7) oak trees were identified within the project site during a 2005 oak tree survey conducted by Envicom (Envicom, 2005).[4] ESA performed an updated oak tree survey for the oak trees within the impact area (northern half of the project site) and found four coast live oak trees and one hybrid scrub oak[5] to be of ordinance size.

7.3.2 County of Los Angeles General Plan Significant Ecological Areas Ordinance

The project site is located within the Santa Susana Mountains/Simi Hills SEA. SEAs are areas that the County has designated due to their irreplaceable biological resources. These areas contain resources that are considered rare or unique, critical to the maintenance of wildlife species, are relatively undisturbed habitats, and/or serve as habitat or corridors that promote species movement. Part of the SEA process is the review of a proposed project by SEATAC. This committee is made up of people specializing in various areas of biology. Unless the project is exempt from permit requirements, activities within the SEA require application and approval of a Conditional Use Permit prior to the issuance of any building or grading permits. An SEA Conditional Use Permit is required only when the property contains an area that, on or after January 1, 2012, was designated in the General Plan as an SEA, and if the proposed project includes development on the portion of that property that is located in the SEA.

4 One of the seven trees did not survive the 2003 fires. In addition, at the time of the report, only five of the remaining six coast live oak trees were large enough to meet the size requirement for the Oak Tree Ordinance.

5 The scrub oak has been identified as a hybrid of *Quercus john-tuckeri* by Andrew Sanders at the University of California at Riverside. The other parent is speculated to be *Q. berberidifolia*.

CHAPTER 8
Conclusion

8.1 Summary of Biological Constraints

The following discussion outlines the biological resources which could potentially pose constraints to future development (e.g., the development of residences and any associated driveways, roads, infrastructure, fuel modification, and/or landscaping) within the project site. These constraints are depicted in Figures 3, Potentially Jurisdictional Features; 5, Relationship to SEA; 8, Special-Status Plant Species Locations; and the separately prepared oak tree report.

8.1.1 County of Los Angeles Oak Tree Ordinance

A total of seven coast live oak trees were identified on the project site in 2005, of which six are remaining post the 2003 fires. Four coast live oak trees and one hybrid scrub oak are located in the northern portion of the project site where development is proposed. A formal oak tree survey was separately conducted by ESA and found that all four coast live oak trees will be avoided along the edge of the development area but the one hybrid scrub oak occurs within the grading footprint. An oak tree permit will be processed in accordance with the County's Oak Tree Ordinance. Replacement trees are usually planted at a ratio of 2:1.

8.1.2 Jurisdictional Drainage Courses

A preliminary jurisdictional determination identified potentially jurisdictional features on the project site as documented on Figure 3. Any development on-site, including fuel modification impacts, should try to avoid or minimize impacts to the potentially jurisdictional features, and concentrate development within areas that exhibit disturbance. If avoidance and/or minimization is not feasible and it is determined that impacts to jurisdictional features will occur as a result of the proposed project, the appropriate permits will be obtained from the regulatory agencies (e.g., 404 permit from the USACE, 401 permit from the RWQCB, and Streambed Alteration Agreement from the CDFW) and mitigation will be required at a minimum 1:1 mitigation ratio.

8.1.3 Special-Status Plant Species

The project site supports two special-status plant species, Plummer's mariposa lily (CNPS 4) and slender mariposa lily (CNPS 1B.2). If these species cannot be avoided in the construction of the project, mitigation may be required, at a minimum of 1:1 ratio for the impacted CNPS 4 species and at 2:1 ratio for the impacted CNPS 1 (or 2) species.

8.1.4 Project Impacts to SEA

The Santa Susana Mountains/Simi Hills SEA is designated in the southern portion of the project site. The intent of project proponent is to avoid all impacts within the SEA by confining development in the northern portion of the project site outside of the SEA and where past disturbance is greater.

8.1.5 Sensitive Plant Communities

The project site supports Thickleaf Yerba Santa Scrub/Red Brome Semi-natural Stands, a State Rank of S3 in an undisturbed condition and therefore potentially considered a sensitive community. Although the thickleaf yerba santa component within this community appears to comprise up to 50% relative cover, the non-native grass species within the understory on the project site contribute roughly an equal amount of cover, reducing the overall biological value of the community. If the plant community cannot be avoided in the construction of the project, mitigation may be required, recommended at no greater than 1:1 ratio because of the disturbed condition of the on-site habitat.

CHAPTER 9
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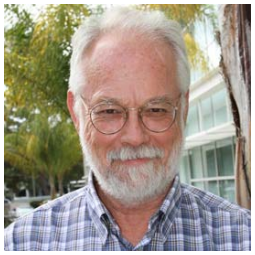
Appendix A
Biologist Resumes

ESA



Daryl Koutnik, PhD

Principal, Biological & Regulatory Compliance

EDUCATION

Ph.D., Botany, University of California, Davis

M.S., Botany, University of California, Davis

B.A., Mathematics and Biology, California State University, Northridge

25 YEARS EXPERIENCE

Daryl Koutnik has more than 25 years of experience managing and conducting biological resources field studies for environmental compliance and planning. Fourteen years of which he worked in and managed the environmental review section of the Los Angeles County Department of Regional Planning.

Dr. Koutnik has directed, managed, and performed biological resources inventories, special-status species surveys and identification, environmental impact assessments, biological constraints analyses, plant and wildlife studies, habitat restoration plans, and mitigation and monitoring plans for a wide variety of private and public sector clients. These analyses have been related to residential, commercial, industrial, infrastructure, and educational developments.

He is an expert in the application of federal and State Endangered Species Acts, the California Environmental Quality Act (CEQA), and other regulations relevant to biological resources, as well as processing and acquisition of Coastal Development Permits within the California Coastal Zone.

Relevant Experience

Selected Project Experience – Biology. Dr. Koutnik has managed, reviewed, or prepared hundreds of biological reports. These have been prepared in compliance and/or coordination with CEQA, NEPA, USACE, USFWS, CDFW, and RWQCB. These projects include the Jurisdictional Delineation for the 28,000-acre Tejon Mountain Village Project to address 800 acres of waters and drainages; the biological assessment for the 5,130-acre Travertine Point Specific Plan in Riverside and Imperial counties; and the Hidden Creeks Estates EIR biological resources section for the City of Los Angeles.

Selected Project Experience – EIRs. Dr. Koutnik is experienced in leading the preparation of EIRs throughout Southern California. His projects include the 544-unit Shores Apartment residential development in Marina del Rey, the 216-unit Millennium-Playa Del Mar Apartments in Playa Vista, the 500-acre Transit Mix Surface Mining project in Soledad Canyon, and the 3,600-unit Northlake Residential development in Castaic.

Expert Testimony. Daryl testified before the California Coastal Commission (CCC) on the determination of environmentally sensitive habitat areas within the Coastal Zone of the Santa Monica Mountains for unincorporated Los Angeles County. He also provided expert testimony before the CCC on the revegetation of streamside banks within the California Coastal Zone.



Ezekiel Cooley

Senior Biologist / Regulatory Scientist

EDUCATION

B.S., Natural Resources, (Emphasis: Wildlife), Central Michigan University, Mt. Pleasant, Michigan

17 YEARS EXPERIENCE

PERMITS / CERTIFICATIONS

Qualified California Rapid Assessment Method (CRAM) Practitioner, 2012

CDFW Scientific Collecting Permit #SCP-013181

CDFW Rare, Threatened, and Endangered Plant Voucher Collecting Permit #2081(a)-10-08-V

SPECIALIZED TRAINING

Desert Tortoise Council, Desert Tortoise Field Techniques Workshop, 2014

AEP, CEQA Essentials Workshop, 2014

Wetland Delineation Course, Wetland Training Institute, 2011

Learning California Bird Sounds, Sea & Sage Audubon Society, 2010

Section 404 and State Permits: Regulating Activities Affecting Wetlands, Streams, and Other Waters, UCLA Extension, 2008

PROFESSIONAL AFFILIATIONS

Desert Tortoise Council

Ezekiel Cooley is a biologist with 17 years of hands on experience. He has performed field work involving wildlife and habitat evaluations, avian and invertebrate trapping, jurisdictional delineations, habitat management plans, construction/mitigation monitoring, and map creation. Zeke specializes in floral and faunal surveys and performs Geographic Information Systems (GIS) impact analysis, cartographic production, Global Positioning System (GPS) data collection, and data input and manipulation to map project-related sensitive plants and animals, and vegetation communities. He has also prepared regulatory permitting packages, compliance packages, and coordinated with regulatory agencies and clients.

Relevant Experience

Wildlife Surveys. Zeke has performed burrowing owl surveys for residential development projects in Riverside, Orange, San Bernardino and Los Angeles counties, and participated in a passive relocation project for burrowing owls. He also conducted a regional alluvial fan sage scrub survey that spanned throughout Southern California. Zeke has performed oak tree surveys in the Santa Monica Mountains and Newhall, as well as native tree surveys in Santa Barbara, and Orange counties. He has performed raptor and nesting bird surveys, least Bell's vireo surveys, and assisted with multiple fairy shrimp, and multiple coastal California gnatcatcher, and western spadefoot toad surveys throughout Southern California. In related work, Zeke performed brown-headed cowbird trapping and control on sensitive habitat areas for the coastal California gnatcatcher and least Bell's vireo. He has monitored riparian habitat and nesting birds for multiple construction and restoration projects in Riverside and Los Angeles counties. He has also participated in an osprey relocation program for the Michigan Department of Natural Resources and hazed and trapped migratory birds at the Detroit Metropolitan Airport.

Geographic Information Systems. Zeke has experience digitizing vegetation maps, jurisdictional delineations, and tree surveys throughout Southern California, as well as running impact analyses for development projects. Additionally, he served as a GIS Technician for Central Michigan University where he created multiple thematic maps and information layers for graduate students. Zeke also managed the Avian Influenza database at the U.S. Department of Agriculture (USDA) Animal Plant Health Inspection Service – Wildlife Services (APHIS) and mapped sample locations with ArcGIS.

Wetland Ecology. Zeke has assisted with jurisdictional waters and wetland delineations in San Bernardino, Riverside, Kern, Los Angeles, San Diego, and Orange counties. He completed the Significant Nexus/Jurisdictional determination section of Jurisdictional Delineations, including digitizing drainages, jurisdictional areas, watersheds, and the significant nexus for the associated drainage.



Amy Lee

Biologist

EDUCATION

B.A., Environmental Studies, University of California, Santa Barbara

B.A., History of Art and Architecture with an Emphasis on the Environment, University of California, Santa Barbara

7 YEARS EXPERIENCE

PERMITS / CERTIFICATIONS

CDFW Scientific Collecting Permit #SCP-013181

CDFW Rare, Threatened, and Endangered Plant Voucher Collecting Permit #2081(a)-15-046-V

PROFESSIONAL AFFILIATIONS

Desert Tortoise Council

Sea and Sage Audubon Society

Amy Lee has over seven years of experience as a consulting biologist. She is experienced in managing, performing, and assisting with biological services including wildlife and plant surveys, mitigation and restoration planning and monitoring, and assisting in regulatory permitting throughout Southern California.

Relevant Experience

Wildlife Surveys. Amy has performed pre-construction nesting bird surveys for numerous projects in Riverside, Orange, San Bernardino, San Diego, and Los Angeles counties. She has also provided the subsequent nest monitoring during project construction. Amy has conducted presence/absence surveys for least Bell's vireo, desert tortoise, and burrowing owl and assisted in those for California gnatcatcher.

Mitigation and Restoration Monitoring. Amy has overseen the implementation, multi-year monitoring, and sign-off of several habitat mitigation and restoration sites. She regularly performs qualitative and quantitative data collection, preparation of progress and annual reports, and coordination with clients and landscape contractors. Amy is proactive in her management approach and poised to recognize and thwart project challenges in their infancy. Her proactive solutions and diligent monitoring have been so integral to project success that she has been actively involved in resource agency approval and release of dozens of mitigation sites. Amy has performed mitigation monitoring for the cities of Lake Forest, Murrieta, West Covina, and Goleta, as well as the Las Virgenes and Murrieta Valley unified school districts, and countless residential developments throughout Southern California.

Regulatory Compliance and Environmental Documentation. Amy has prepared CEQA-level biological resources assessments and sensitive floral and faunal surveys to support technical reports. Document preparation tasks have included CNDDB database searches, impact analyses, and MSHCP consistency analyses. Her regulatory permitting experience includes assisting project teams with California Department of Fish and Wildlife Section 1602 Streambed Alteration Agreements, Army Corps of Engineers Section 404 permits, Regional Water Quality Control Board 401 permits.

Botany. Amy has performed botanical surveys which have included the identification of plants and plant communities, sensitive plant surveys, tree surveys, and vegetation mapping in Los Angeles, Orange, Riverside, San Diego, and San Bernardino counties.



Gregory C. Ainsworth

Director, Senior Managing Biologist

EDUCATION

M.C.R.P., Environmental Planning, California Polytechnic State University, San Luis Obispo

B.S., Environmental Horticulture Science, California Polytechnic State University, San Luis Obispo

11 YEARS EXPERIENCE

CERTIFICATIONS/ REGISTRATION

International Certified Arborist (Cert# WE 7473A)

California Department of Fish and Game Scientific Collection Permit

Southwestern Willow Flycatcher Section 10(a)(1)(A) Recovery Permit (Pending)

Certified wetland delineator, Wetland Delineation & Management (ACOE, #2128), 2003

SPECIALIZED TRAINING

Desert Tortoise Workshop, The Desert Tortoise Council, 2006

Snowy plover nesting and roosting surveys, Los Angeles Audubon, 2004–present

Mohave Ground Squirrel Workshop, The Wildlife Society, 2005

California Native Plant Society Plant Survey Techniques, 2004 and 2006

Gregory Ainsworth directs the Southern California Biological Resources Group. Greg has provided biological resource consulting on numerous community development projects, solar and wind development, infrastructure, and water agency projects. He is a certified arborist and wetland delineator and an approved biologist on several city and county approved lists. Greg technical strengths include biological resource and fatal flaw assessments, rare plant surveys and vegetation mapping, special-status wildlife surveys, avian risk assessments, native plant restoration, wetland delineations, and permitting. He has worked on numerous projects involving CEQA and the Endangered Species Act and has extensive knowledge of habitats found between the California deserts and the coastal shoreline.

Relevant Experience

Grossmont High School Tree Survey, San Diego, CA. *Arborist*. Greg conducted a tree survey for a proposed high school alternative location for the Grossmont Union High School District. The locations of oak trees and mature riparian woodland species located on the alternative high school site were assessed and mapped by Greg, our certified arborist. A subsequent tree report was prepared and all attribute data (e.g., tree number, size, health, balance) collected were provided in the report. The report identified the number of trees that were removed, encroached, and preserved by the proposed alternative high school location.

Helix Water District, El Monte Groundwater Recharge, Mining and Reclamation Project EIR, San Diego, CA. *Arborist*. Greg conducted a tree survey and identify trees that should be removed based on poor health conditions and which should be preserved based on overall value and aesthetics. He collected specific information during the assessment such as: type of species, trunk diameter, estimated height and radius of canopy, physical conditional and overall health rating. A subsequent tree report was prepared and all attribute data collected were provided in the report. The report identified the number of trees that were removed, encroached, and preserved.

Western Wind Energy Corporation, Aero Windswept Lower Resource Energy Project Biota Surveys, Tehachapi, CA. *Project Manager.* Greg is the project director and daily manager of all data collection, reporting, and permitting service being provided on this project. Biota surveys have included rare plant surveys, wildlife surveys including burrowing owl, desert tortoise, Mojave ground squirrel, bats, bird use counts, and raptor surveys (in accordance with CEC Guidelines for Reducing Impacts to Birds and Bats from Wind Development). Greg is the primary author of the biological technical report and avian risk assessment being prepared to support the project's EIR.

San Diego Gas and Electric, Manzanita Wind Generation Project, San Diego County, CA. *Project Manager of Biological Resources*. Greg is managing all focused surveys for the proposed gen-tie line, substation locations, switchyard, and other ancillary features. Focused studies under the management of Greg include: avian studies (bird use counts, small bird counts and migration counts), Quino checkerspot butterfly and Hermes copper butterfly, rare plant surveys, wetland delineation, vegetation mapping, and biological constraints analysis. Greg will be managing the preparation of the PEA for the proposed project and participating in Section 7 consultation related to potential impacts to the Golden Eagle.

Sunshine Canyon Landfill Arborist Support and Revegetation Plan, Los Angeles, CA. *Biological Resources Task Leader.* Greg is conducting annual monitoring for several mitigation requirements that include City of Los Angeles oak tree mitigation, PM10 tree buffer mitigation, big cone Douglas fir mitigation, coastal sage scrub restoration, coastal sage scrub and chaparral revegetation required by the Air Quality Control Management District. Greg prepared a restoration and revegetation plan introducing native coastal sage scrub and chaparral vegetation between the landfill and adjacent neighborhoods. Greg is monitoring the implementation of the plan for the next five years. Greg is providing on-call services that include: preconstruction bird surveys, protected tree surveys for proposed grading activities, and identification of suitable native revegetation sites throughout the landfill property.

City of Calabasas, On-Call Services, Calabasas, CA. *Arborist.* Greg is the City of Calabasas' on-call arborist. His services include providing oak tree damage assessments for the Code Enforcement Department, review of oak tree reports prepared by city-approved arborists, and preparation of oak tree damage and appraisal reports.

Department of Water Resources, Piru Creek Special Use Permit Renewal, Los Angeles and Ventura Counties, CA. *Senior Biologist.* Greg is providing environmental compliance and permitting for the Department of Water Resources (DWR) for the renewal of a Special Use Permit to operate and maintain access to an existing stream gauging station to measure flows into Pyramid Lake. The permit would also include necessary improvements at the gauging station. Greg conducted a habitat assessment for potentially occurring special-status species, a focused plant survey, protocol survey for the federally endangered arroyo toad, wetland delineation, and wildlife migration corridor analysis. Greg managed the preparation of a Biological Assessment and Environment Assessment in accordance with the Endangered Species Act and the NEPA, respectively. Greg will be engaging in Section 7 consultation with the USFWS for potential impacts on the arroyo toad.

Department of Water Resources, Templin HWY Culvert Repair, Los Angeles County, CA. *Senior Biologist.* ESA is providing environmental compliance and permitting for the Department of Water Resources for their installation of a new culvert below Templin Highway. The proposed culvert is within a blue line stream that falls under the jurisdiction of the USACE, RWQCB and the CDFG. Greg conducted a wetland delineation for Waters of the U.S. and State jurisdictional

waters and is preparing permits in accordance to the Clean Water Act (401/404) and California Department of Fish and Game Code (1602), Streambed Alteration Agreement.

Metropolitan Water District City of La Verne Tree Ordinance Compliance and Breeding Bird Surveys, La Verne, CA. *Senior Biologist.* Greg conducted a significant tree survey, prepared a tree report, and submitted a tree permit to the City of La Verne for the Metropolitan Water District Weymouth Treatment Plan Main Line Project. Greg conducted a preconstruction breeding bird and nest survey for the proposed project and identified appropriate buffers to avoid impacts to breeding birds.

California Public Utilities Commission, SCE Presidential Substation EIR, Ventura County, CA. *Biological Resources Task Leader.* Greg is co-managing the preparation of an EIR for the SCE Presidential Substation Project located in Ventura County. The proposed project would involve construction of a substation and associated subtransmission source lines. The proposed subtransmission line route passes through a rural residential area and is being met with organized opposition. ESA has implemented a rigorous public and agency outreach program to engage the stakeholders in the CEQA process. Key biological resource issues to be addressed in the EIR include state- and federally-endangered fairy shrimp species, the federally threatened coastal California gnatcatcher, and the federally-listed plant: Lyon's pentachaeta.

California Department of Water Resources (DWR), Arroyo Toad Monitoring Plan, Los Padres National Forest, CA. *Biological Technician and Technical Analyst.* Greg is providing three consecutive years' of biological monitoring and technical analysis for DWR's monitoring program for the federally endangered arroyo toad and other special-status species including California red-legged frog, southwestern pond turtle, and two-striped garter snake in middle Piru Creek in the Los Padres National Forest. Greg managed the implementation of the U.S. Fish and Wildlife Service-approved monitoring plan, and is conducting field surveys to monitor arroyo toad reproductive success, habitat quality, and hydrological features on middle Piru Creek.

Private Wind Developers, Los Angeles County, CA. *Biological Resources Task Leader.* Greg has managed and conducted several confidential biological resource fatal flaw assessments for potential wind development projects in the Mojave desert and rural areas of Los Angeles County. Tasks included reconnaissance-level biological field assessments, identification of adjacent land uses and zoning, and preparation of technical biological constraints reports. Greg has provided consultation to wind developers on the local, state, and federal permitting requirements associated with biological resources and wind development.

Red Mountain Ridge Wind Project, San Diego, CA. *Biological Resources Task Leader.* Greg managed a 30-day fatal flaw analysis for biological, cultural, and paleo resources on a proposed 7.5 sqaure mile wind development project known as the Red Mountain Ridge Wind Project, which includes approximately 8 miles of transmission line. The results of the fatal flaw assessment was used to develop a

detailed scope and budget for conducting baseline biology and cultural assessments that will support the preparation of an EIR by Kern County's CEQA consultant for a zone change, Wind Energy overlay, CUP for the solar portion, and a variance.

Bureau of Land Management, Ocotillo Wind Farm Express, El Centro, CA.
Biological Resources Task Leader. The Ocotillo Express Wind Energy Project is a 15,000-acre, 561 megawatt wind energy project including a substation, transmission facilities, administration facilities, operations and maintenance facilities, and temporary construction lay-down areas. The project would be located almost entirely on BLM administered lands in the Imperial Valley, approximately 5 miles west of Ocotillo, Imperial County, California. Greg is serving as a third-party biological consultant under the direction of the BLM El Centro Field Office. Specifically, Greg and ESA are contracted to assist with implementation of the BLM NEPA process including review and support for the project's Plan of Development, Notice of Intent, formal scoping meetings, Plan Amendment to the BLM California Desert Conservation Area Plan, EIS/EIR, required technical studies, Notice of Availability, and ultimately the Record of Decision. Greg is providing field verification to the BLM on data collection efforts being conducted by the applicants biological consultants.

Solar Millennium Blythe and Palen Solar Power Projects, Blythe, CA.
Biological Resources Task Leader. The Blythe Solar Power Project will be a concentrated STE generating facility with two adjacent, independent, and identical solar plants of 250 MW nominal capacity each for a total capacity of 500 MW nominal. The project site is located approximately two miles north of Interstate 10 and eight miles west of the City of Blythe in an unincorporated area of Riverside County. Greg served as a third-party biological consultant under the direction of the BLM Palm Springs Field Office. Greg assisted with implementation of the BLM NEPA process including review and support for the project's Plan of Development, Notice of Intent, formal scoping meetings, Plan Amendment to the BLM California Desert Conservation Area Plan, EIS/EIR, required technical studies, Notice of Availability, and ultimately the Record of Decision. Greg provided field verification to the BLM on data collection efforts being conducted by the applicants biological consultants.

Desert Sunlight Solar Project BLM Support Services, Desert Center, CA.
Biological Resources Task Leader. The Desert Sunlight Solar project will be a solar PV energy generating facility with a total capacity of 550 MW. The project is proposed to be located on federal lands managed by the BLM approximately six miles north of the community of Desert Center, in Riverside County. Greg is serving as a third-party biological consultant under the direction of the BLM Palm Springs Field Office. Specifically, Greg and ESA are contracted to assist with implementation of the BLM NEPA process including review and support for the project's Plan of Development, Notice of Intent, formal scoping meetings, Plan Amendment to the BLM California Desert Conservation Area Plan, EIS/EIR, required technical studies, Notice of Availability, and ultimately the Record of Decision. Greg is providing field verification to the BLM on data collection efforts being conducted by the applicants biological consultants.

NextEra Genesis Solar Energy Project, BLM Support Services, Palm Springs, CA. *Senior Biologist.* Greg and ESA provided regulatory review for the California South Coast BLM for the Genesis Solar project application. Greg's role in this project included review of the biological resources technical reports that accompanied the permit applications. He determined appropriate mitigation strategies in consultation with project managers to help facilitate compliance with the Endangered Species Act and BLM Wildlife Management Areas.

Sun Peak Chuckwalla and Superstition Solar, Riverside County, CA. *Biological Resources Task Leader.* The Chuckwalla Solar I project is a 200 megawatt photovoltaic power plant located in Riverside County. All components of the proposed facility would be located on public lands managed by the BLM, under the jurisdiction of the Palm Springs Field Office. Specifically, Greg and ESA are contracted to assist with implementation of the BLM NEPA process including review and support for the project's Plan of Development, Notice of Intent, formal scoping meetings, Plan Amendment to the BLM California Desert Conservation Area Plan, EIS/EIR, required technical studies, Notice of Availability, and ultimately the Record of Decision. Greg is providing field verification to the BLM on data collection efforts being conducted by the applicants biological consultants.

Hollywood Heights Biological Resource Assessment, Los Angeles, CA. *Project Manager*. Greg prepared a biological resource assessment for a proposed residential development in the Hollywood Heights area of Los Angeles County. Following a literature and database review of the project area, Greg prepared a technical biological assessment report documenting the methods and results of the database and field assessment and provided mitigation measures and recommendations, where applicable, to reduce potential impacts to biological resources to levels of less than significant (per CEQA thresholds).

Department of Water Resources, East Branch Enlargement Project, Los Angeles and San Bernardino Counties, CA. *Senior Biologist.* Greg conducted habitat assessments for special-status plant and animal species in proposed construction areas, as well as, presence/absence surveys for burrowing owls. He is currently conducting a floristic inventory and rare plant survey within the Department's easement areas. ESA has conducted technical studies to complete the EIR and has begun negotiating permit requirements and restoration planning with resource agencies including the USACE, RWQCB, and USFWS.

Las Virgenes Municipal Water District, April Road Reservoir Environmental Constraints Analysis, Agoura Hills, CA. *Senior Biologist.* Greg is preparing a Biological Constraints Analysis for the proposed April Road Recycled Water Reservoir Site for the Las Virgenes Municipal Water District. The purpose of the assessment is to identify fatal flaws of the site and to characterize key biological resource hurdles. His analysis includes an assessment of potential incompatibilities with Los Angeles County's Sensitive Ecological Areas, impacts to wildlife migration corridors and sensitive plants and wildlife, and potential mitigation options. Greg prepared a draft oak tree appraisal to assessment the potential cost of impacting approximately 200 coast live oak trees and conducted a rare plant survey of the proposed project site.

County of Los Angeles Department of Public Works (LADPW), Sorensen Community Park Phase III MND, Los Angeles, CA. *Senior Biologist.* Greg prepared the biological resource section of the EIR/EA for the LADPW for Phase III of the Stephen Sorensen County Park Project. Greg conducted and managed special-status wildlife surveys including protocol-level surveys for burrowing owl (*Athene cunicularia*) and southern grasshopper mouse (*Onychomys torridus Ramona*), terrestrial mammal trapping and relocation, and implementing an employee education and awareness training.

Orange County Sanitation District, Newport Trunk Sewer Biological Mitigation Monitoring and Reporting Program, Newport, CA. *Senior Biologist.* Greg provided construction monitoring efforts for sensitive biological resources in the area of the Santa Ana River Marsh. Greg assisted in the demarcation of boundaries for construction through the marsh area and conducted breeding surveys for the federally and state listed Belding's savannah sparrow. He also provided training for the construction workers to ensure they are aware of their responsibilities with regard to protecting sensitive species and habitats in the area.

Irvine Ranch Water District (IRWD), Baker Regional Water Treatment Plant MND. Irvine, CA. *Senior Biologist.* Greg prepared the biological resource section of this Initial Study and MND for the IRWD Baker Regional Water Treatment Plant project. The goal of the proposed project is to increase water supply reliability in southern Orange County by creating redundancy of treatment system capacity and distribution infrastructure for potable water in the event of facility outages due to routine maintenance or unforeseen emergencies. Greg conducted a rare plant survey, habitat assessment for potentially occurring special-status species, mapped plant communities and sensitive habitats, and assessment potential mitigation options.

City of San Juan Capistrano, Terminal Reservoir MND, San Juan Capistrano, CA. *Senior Biologist.* Greg conducted a biological resource assessment, floristic inventory and rare plat survey, and prepared the biological resource section of the MND.



Robert Sweet

Biologist

EDUCATION

B.S., Environmental Science and Resource Management, California State University, Channel Islands

6 YEARS EXPERIENCE

PERMITS AND CERTIFICATIONS

Collecting Permit for State-Designated Endangered, Threatened and Rare Plants (2081(a)-12-29-V)

Califorinia Fish and Wildlife Scientific Collecting Permit (SC - 11807)

SPECIALIZED TRAINING

California Native Plant Society Rare Plant Surveys Workshop, 2012

Blunt-Nosed Leopard Lizard Identification Workshop, 2009. Level 1 Surveyor (additional 10 survey days with a Level II surveyor)

Desert Tortoise Surveying, Monitoring, and Handling Workshop, 2009

PROFESSIONAL AFFILIATIONS

California Native Plant Society Member

Robert (Robbie) has variety of experience in habitat assessments, ecology of wildlife, plants and vegetation communities. He conducts surveys in a variety of locations throughout California that contain diverse habitats. These projects have included focused rare plant surveys in the Coachella Valley, coastal southern California, and northern California. He has conducted surveys for a diverse range of wildlife, documented the results in a variety of technical documents, and conducted monitoring on both small and large projects. His wildlife experience has been related to avian and reptile species, including least tern, western snowy plover, burrowing owl, blunt-nosed leopard lizard, and giant garter snake.

Relevant Experience

Department of Water Resources On-Call Environmental Services for Upgrades to the California Aqueduct East Branch, San Bernardino and Riverside Counties, CA. *Biologist.* The East Branch Extension (EBX) Phase II involves constructing a pipeline across the Santa Ana River and excavating 1.8 million cubic yards of material to create a new storage reservoir. ESA is managing environmental services for the EBX including preparation of an EIR, agency consultation, and conducting biological and cultural surveys to support permit mitigation requirements. ESA prepared an EIR with DWR staff that analyzed several pipeline alignments across the Santa Ana River. Robbie conducted biological surveys of the proposed alignments sufficient to support the impact analysis. ESA has developed a construction monitoring plan in coordination with DWR staff to implement permit and EIR measures and is monitoring construction.

California Department of Water Resources, Perris Dam Remediation Project, Riverside County, CA. *Biologist.* Robbie assisted in the preparation of an EIR for the project that included the drawdown of Perris Reservoir, excavation of over 2 million cubic yards of soil, and the construction of a new stability berm. Impacts included temporary and permanent impacts to least Bell's vireo habitat along the reservoir shoreline and at the base of the dam. ESA is conducting biological surveys and preparing permit applications for coverage through the Western Riverside County MSHCP.

Los Angeles County Department of Regional Planning, Biological Constraints Analysis (SEATAC), Los Angeles County, CA. *Biologist.* Mr. Sweet conducted a biological assessment including focused rare plant surveys and breeding bird surveys to characterize a project site located partly within a Significant Ecological Area (SEA). SEA's are parcels located within the county of Los Angeles, determined by the Department of Regional Planning (DRP) to be ecologically important. Following surveys, a BCA (Biological Constraints Analysis) was drafted for submission to the Significant Ecological Area Technical Advisory Committee (SEATAC) board for review.

Los Angeles Department of Water Resources, Arroyo Toad Surveys, Los Angeles County, CA. *Biologist.* The Department of Water Resources (DWR) manages hydrological output between the Lake Pyramid and Lake Piru reservoirs, which historically has introduced pressures on the federally listed Arroyo toad populations. Based on this knowledge, output of water is currently regulated in an effort to reduce impacts to the species during periods of increased sensitivity (Breeding). As part of a five year monitoring plan established for the toads, ESA conducted surveys throughout the breeding season in order to determined long term reproductive success. Following surveys, the collected data is analyzed and compiled into an annual report for submission to DWR and pertinent agencies.

Metropolitan Water District, Environmental Compliance and Biological Monitoring, La Verne, CA. *Environmental Inspector and Biologist.* The Metropolitan Water District is currently in the process of upgrading a water treatment plant located in Los Angeles County. ESA has been contracted to conduct routine monitoring of the active construction site to ensure that all guidelines outlined in the project Storm Water Pollution Prevention Plan (SWPPP) are followed. In addition, breeding bird surveys are conducted on an as-needed basis to ensure that nesting birds are not impacted by construction activities.

First Solar Burrowing Owl and Breeding Bird Surveys, Luna County, NM. *Biologist.* Robbie conducted protocol burrowing owl surveys and breeding bird surveys of a proposed photovoltaic solar site on state land in Luna County, New Mexico. During surveys, an active Swainson's hawk nest was observed and guidelines were established through coordination with the client to protect the resource during proposed construction activities. Following the completion of surveys, a report of the findings was drafted and submitted to the client and the New Mexico State Land Office.

Los Angeles Department of Water and Power, Avian Point Counts, Kern County, CA. *Biologist.* ESA was contracted by the Los Angeles Department of Water and Power (LADWP) to study presence of avian species within an active wind farm located in the Tehachapi Mountains. In an effort to determine the risk of avian collisions with current and proposed wind turbines, routine point counts are being conducted over a five year period. All species observed and their proximity to existing and proposed turbines is recorded and entered into a database. All data will ultimately be analyzed and compiled into a report at the conclusion of the study period.

Las Virgenes Municipal Water District, Habitat Restoration Monitoring, Los Angeles County, CA. *Principal Biologist.* In 2011, As a result of facilitating replacement of check valves along an established ROW, The Las Virgenes Municipal Water District (LVMWD) impacted native coastal sage scrub and riparian habitat. Per recommendations from the California Department of Fish and Wildlife (CDFW) and the Santa Monica Mountain Restoration Trust (MRT), the LVMWD facilitated a restoration of disturbed areas along the ROW. ESA was contracted to monitor the restoration over a five year period. Annual quadrat sampling of the restored area is currently being conducted to determined quantitative success of the restoration. Success criteria will be determined based on the overall percentage of native and non-native species density. Reports

documenting progress are required each year to monitor success of the restoration.

Los Angeles Department of Water and Power, Least Bell's Vireo and Southwestern Willow Flycatcher Surveys, Los Angeles County, CA. *Biologist.* Robbie conducted protocol least Bell's vireo surveys of a willow/cottonwood riparian corridor within a Los Angeles Department of Water Resources (LADWP) property. Concurrently, Mr. Sweet shadowed a permitted biologist during surveys for the Southwestern willow flycatcher. Reports documenting the presence of both species onsite will NWDbe drafted and submitted to the pertinent agencies.

City of Claremont, Western Burrowing Owl Survey and Biological Assessment, Los Angeles County, CA. *Biologist.* Mr. Sweet conducted a biological assessment and concurrent Western burrowing owl survey at a property located in Los Angeles County in order to reveal any potential constraints associated with future site development. Following surveys, Mr. Sweet drafted a technical report outlining survey methods and results which was submitted to the client for review.

PG&E, Rare Plant Surveys, Sonoma County, CA. *Biologist.* Robbie conducted rare plant surveys along two segments of an existing electrical transmission line totaling over 15 miles long. Two sets of surveys were conducted for each segment in April, May and June of 2012. While surveying, multiple occurrences of the Western dog violet; host plant for the federally listed Myrtle's silverspot butterfly were observed along both segments. Upon completion of surveys, a report was drafted for both segments outlining avoidance measures and recommendations to the client.

Nextera Rare Plant Survey and Protocol Western Burrowing Owl Survey (Phase II Burrow Survey), Riverside County, CA. *Biologist*. As part of the decommissioning of multiple wind turbine towers, Robbie conducted protocol owl and rare plants surveys within the access routes and direct impact areas of the project site. While conducting surveys, multiple individuals, thought to be Coachella Valley milk-vetch were observed throughout the project vicinity. All individuals were flagged and recorded with a hand-held GPS unit. Although the plants were not flowering or fruiting, comparison to a local reference population resulted in designating all individuals as the listed species.

BP Pre-Project Due Diligence and Construction Monitoring, Santa Barbara County, CA. *Principal Field Biologist*. Mr. Sweet conducted a preliminary project site characterization was conducted in order to establish guidelines for proposed environmental drilling activities regarding potential impact to biological resources. During soil boring procedures onsite, construction was monitored to ensure minimized impact to native coastal sage scrub vegetation. In addition, a small population of Southern tarplant (List 1B.1) onsite was delineated to be avoided and was also monitored during drilling activities**.**

Nextera Monitoring of Artificial Western Burrowing Owl Burrows, Riverside County, CA. *Biologist.* As part of a burrowing owl mitigation plan, Mr. Sweet assisted in temporarily closing active burrows located within proposed project

footprint and replacing them with artificial burrows within the general project vicinity. A total of 33 artificial burrows were continuously monitored (over 40 total monitoring hours) throughout the duration of project activities to determine the presence/absence of burrowing owls and other wildlife. While monitoring, numerous owls were observed utilizing the artificial burrows.

Confidential Client Protocol Western Burrowing Owl Survey (Phase III Breeding Survey), Calexico, CA. *Biologist.* Mr. Sweet participated in the second round of breeding surveys for a proposed solar project in Calexico. Surveys involved the recording of new suitable burrows as well as checking on previously recorded burrows. All owl individuals, pellets, whitewash, tracks and other sign was observed and recorded with a GPS unit.

Liberty Energy Protocol Western Burrowing Owl Survey (Phase II Burrow Survey), Lost Hills, CA. *Biologist.* Mr. Sweet conducted a Phase II burrow survey for the expansion of an active mulching facility to determine suitability for owls to occur onsite. In addition to protocol surveys, cameras and diatomatious earth were utilized to verify positive owl activity within the vicinity. Survey activities resulted in the video capture of a burrowing owl utilizing the project site as foraging territory. Mitigation measures and recommendations for proposed construction activities were subsequently provided to the client.

Kern County, Roads Blunt-Nosed Leopard Lizard (BNLL) protocol level surveys, Kern County, CA. *Biologist.* Robbie accompanied a Level II surveyor while conducting surveys along Midway Road near Taft. Mr. Sweet participated in six of the 12 adult surveys during the breeding season in order to determine presence/absence of the species. During surveys, multiple antelope ground squirrels were observed throughout the project area. A known reference population of BNLL within five miles of the project site was surveyed twice prior to conducting protocol surveys where two adult BNLL were observed.

Trans Canada, MBTA Breeding Bird Surveys, MT. *GPS Tech.* Mr. Sweet provided GPS support for wetland/water body delineation and Migratory Bird Treaty Act surveys along a proposed pipeline right-of-way. Duties included the mapping and characterizing of features using a 2008 Trimble Geo XT equipped with a mapping utility designed by AECOM programmers. Due to the fact that construction on the project had begun during avian surveys, many of the surveys conducted doubled as pre-construction as well as clearance. Communication with surveyors and pipeline construction crews occurred throughout the project.

PG&E, Biologist and Environmental Inspector, Gridley, CA. *Construction monitor*. Robbie monitored the replacement of a two mile segment of a natural gas pipeline in the Sacramento valley. Construction activities occurred within the known range of the state and federally threatened giant garter snake. Mitigation measures were established and implemented throughout the duration of the project to avoid impact to said species.

Geokinetics Construction Monitoring, Colusa County, CA. *Lead Field Biologist.* Robbie lead biological field crews in the monitoring of seismic exploratory activities. All drilling activities occurred in known range of the giant garter snake as well as a suite of other sensitive species. In addition, Mr. Sweet conducted

breeding bird surveys prior to commencement of construction activities to ensure nesting birds were not impacted. During monitoring activities, multiple Western pond turtles were observed along creeks traversing the project site. The project proponent was notified of the observation and impact to the resources was avoided.

California Department of Fish and Wildlife (CDFW), Western snowy plover and California least tern breeding surveys, Ormond beach and Point Mugu Naval Base, CA. *Volunteer.* Mr. Sweet assisted survey crews in conducting meandering pedestrian surveys throughout a section of coastal dune habitat during the 2012 breeding season. Robbie logged over 15 hours surveying the beach under the supervision of a permitted individual. While conducting surveys, multiple adult plovers, chicks and active nests were observed.

Naval Base Ventura County Western snowy plover and California least tern breeding surveys, Point Mugu Naval Base, Ventura County, CA. *Biologist.* Robbie assisted in conducting intensive monitoring of populations of the California least tern and Western snowy plover during the 2007 breeding season. Monitoring included but was not limited to conducting over 33.5 hours of survey transects for active nests and over 150 hours of observing nesting pairs through observation blinds. In addition, Mr. Sweet conducted routine point counts for avian, marine mammal, reptile and amphibian species throughout the base property and assisted in the maintenance of a database.

Appendix B
Floral and Faunal Compendia

ESA

APPENDIX B FLORAL AND FAUNAL COMPENDIUM

FERNS

S ent	Name	Common Name
	Pteridaceae	Maidenhair Fern Family
	Pellaea mucronata	bird's foot fern

ANGIOSPERMS (DICOTYLEDONS)

S ent	Name	Common Name
	Adoxaceae	Muskroot Family
	Sambucus nigra ssp. *caerulea*	blue elderberry
	Anacardiaceae	Sumac or Cashew Family
	Malosma laurina	laurel sumac
	Rhus aromatica	squawbush
	Rhus integrifolia	lemonade berry
	Rhus ovata	sugar bush
	Toxicodendron diversilobum	poison oak
	Asclepiadaceae	Milkweed Family
	Asclepias fascicularis	narrowleaf milkweed
	Asteraceae	Sunflower Family
	Acourtia microcephala	sacapellote
	Ambrosia acanthicarpa	annual bur ragweed
	Artemisia californica	California sagebrush
	Aster subulatus	slender aster
	Baccharis pilularis	coyote brush
	Baccharis salicifolia	mule fat
	Brickellia nevinii	Nevin's brickellbush
*	*Carduus pycnocephalus*	Italian thistle
*	*Centaurea melitensis*	tocalote
*	*Centaurea solstitialis*	yellow star-thistle
	Cirsium occidentale var. *occidentale*	cobweb thistle
	Corethrogyne filaginifolia	cudweed aster
	Deinandra fasciculata	fascicled tarplant
	Ericameria pinifolia	pinebush
	Eriophyllum confertiflorum	golden yarrow
	Filago sp.	filago
	Helianthus annuus	common sunflower

** non-native*

ANGIOSPERMS (DICOTYLEDONS)

S	ent Name	Common Name
	Helianthus gracilentus	slender sunflower
	Heterotheca grandiflora	telegraph weed
*	*Lactuca serriola*	prickly lettuce
	Malacothrix saxatilis	cliff malacothrix
	Pseudognaphalium californicum	ladies' tobacco
	Rafinesquia californica	California chicory
	Stephanomeria exigua	small wirelettuce
	Boraginaceae	Borage Family
	Amsinckia intermedia	common fiddleneck
	Cryptantha sp.	cryptantha
	Emmenanthe penduliflora	whispering bells
	Eriodictyon crassifolium	thickleaf yerba santa
	Eucrypta chrysanthemifolia	common eucrypta
	Pectocarya penicillata	winged pectocarya
	Phacelia cicutaria	caterpillar phacelia
	Brassicaceae	Mustard Family
*	*Hirschfeldia incana*	shortpod mustard
	Chenopodiaceae	Goosefoot Family
*	*Chenopodium murale*	nettle-leaved goosefoot
*	*Salsola tragus*	Russian thistle
	Cucurbitaceae	Gourd Family
	Marah macrocarpus	wild cucumber
	Fabaceae	Legume Family
	Acmispon glaber	deerweed
	Fagaceae	Oak Family
	Quercus agrifolia	coast live oak
	Quercus berberidifolia	scrub oak
	Quercus X john-tuckeri	Tucker's scrub oak
	Lamiaceae	Mint Family
	Salvia columbariae	chia
	Salvia mellifera	black sage
	Trichostema lanatum	woolly bluecurls
	Malvaceae	Mallow Family
	Malacothamnus fasciculatus	bush mallow
	Myrtaceae	Myrtle Family
*	*Eucalyptus camaldulensis*	red gum eucalyptus
	Oleaceae	Olive Family
	Fraxinus dipetala	California ash

** non-native*

ANGIOSPERMS (DICOTYLEDONS)

S ent Name	Common Name
Onagraceae	Evening Primrose Family
Camissonia californica	California suncup
Camissoniopsis micrantha	miniature suncup
Clarkia purpurea	purple clarkia
Clarkia unguiculata	elegant clarkia
Paeoniaceae	Peony Family
Paeonia californica	California peony
Plantaginaceae	Plantain Family
Antirrhinum multiflorum	chaparral snapdragon
Polygonaceae	Buckwheat Family
Chorizanthe staticoides	turkish rugging
Eriogonum fasciculatum	California buckwheat
Rhamnaceae	Buckthorn Family
Ceanothus crassifolius	hoary leaf ceanothus
Rhamnus crocea	spiny redberry
Rosaceae	Rose Family
Adenostoma fasciculatum	chamise
Cercocarpus betuloides	mountain mahogany
Heteromeles arbutifolia	toyon
Prunus ilicifolia	holly-leaved cherry
Solanaceae	Nightshade Family
Solanum douglasii	Douglas' nightshade
Solanum xant	chaparral nightshade
Verbenaceae	Verbain Family
Verbena lasiostachys	western verbena

ANGIOSPERMS (MONOCOTYLEDONS)

S ent Name	Common Name
Agavaceae	Agave Family
Chlorogalum pomeridianum	soap plant
Hesperoyucca whipplei	chaparral yucca
Liliaceae	Lily Family
Calochortus clavatus var. gracilis	slender mariposa lily
Calochortus plummerae	Plummer’s mariposa lily
Dichelostemma capitatum	blue dicks

** non-native*

ANGIOSPERMS (MONOCOTYLEDONS)

S ent	Name	Common Name
	Poaceae	Grass Family
*	*Avena barbata*	slender wild oat
*	*Bromus diandrus*	ripgut grass
*	*Bromus madritensis* ssp. *rubens*	red brome
	Elymus triticoides	beardless wild rye
*	*Festuca myuros*	rattail fescue
*	*Festuca perennis*	Italian ryegrass
*	*Schismus barbatus*	Mediterranean schismus
	Stipa lepida	foothill needlegrass

** non-native*

APPENDIX B FLORAL AND FAUNAL COMPENDIUM

REPTILES

S ent Name	Common Name
Col b ae	**Col b sna es**
Lampropeltis getula californiae	California kingsnake - E
Anguidae	Alligator Lizards
Elgaria multicarinata webbi	San Diego alligator lizard
Phrynosomatidae	Zebratail, Earless, Horned, Spiny, Fringe-Toed Lizards
Sceloporus occidentalis	western fence lizard
Uta stansburiana	side-blotched lizard

BIRDS

S ent Name	Common Name
Odontophoridae	Quails
Callipepla californica	California quail
Accipitridae	Hawks
Buteo jamaicensis	red-tailed hawk - E
Cathartidae	New World Vultures
Cathartes aura	turkey vulture
Columbidae	Pigeons and Doves
Zenaida macroura	mourning dove
Cuculidae	Cuckoos and Roadrunners
Geococcyx californianus	greater roadrunner
Trochilidae	Hummingbirds
Calypte anna	Anna's hummingbird
Picidae	Woodpeckers
Picoides nuttallii	Nuttall's woodpecker
Tyrannidae	Tyrant Flycatchers
Myiarchus cinerascens	ash-throated flycatcher
Sayornis saya	Say's phoebe
Tyrannus verticalis	western kingbird

E – Expected but not observed

BIRDS

S ent Name	Common Name
Corvidae	Jays and Crows
Aphelocoma californica	California scrub-jay
Corvus brachyrhynchos	American crow
Corvus corax	common raven - E
Hirundinidae	Swallows
Petrochelidon pyrrhonota	cliff swallow
Stelgidopteryx serripennis	northern rough-winged swallow
Polioptilidae	Gnatcatchers
Polioptila melanura	black-tailed gnatcatcher - E
Aegithalidae	Bushtits
Psaltriparus minimus	bushtit
Troglodytidae	Wrens
Thryomanes bewickii	Bewick's wren
Sylviidae	Wrentits
Chamaea fasciata	wrentit
Turdidae	Thrushes
Turdus migratorius	American robin
Mimidae	Thrashers
Toxostoma redivivum	California thrasher
Emberizidae	Emberizine Sparrows and Allies
Melozone crissalis	California towhee
Melospiza melodia	song sparrow
Pipilo maculatus	spotted towhee
Cardinalidae	Buntings, Grosbeaks, and Tanagers
Pheucticus melanocephalus	black-headed grosbeak
Fringillidae	Finches
Haemorhous mexicanus	house finch
Spinus psaltria	lesser goldfinch
Spinus tristis	American goldfinch

MAMMALS

S ent Name	Common Name
Ce ae	**Dee**
Odocoileus hemionus	mule deer - E

E – Expected but not observed

Canidae	Canines
Canis latrans	coyote - E
Geomyidae	Pocket Gophers
Thomomys bottae	Botta's pocket gopher - E
Leporidae	Hares and Rabbits
Sylvilagus audubonii sanctidiegi	Audubon’s cottontail -E
Sciuridae	Squirrels and Chipmunks
Spermophilus beecheyi	California ground squirrel -E

** non-native*

Appendix C
Special-Status Plant Species

ESA

APPENDIX C: SPECIAL STATUS PLANT SPECIES

S ent Name	Common Name	Bloom n Pe o	Fe e al	State	CNPS	P e e e Hab tat	Potent al Fo O en e
ANGIOSPERMS (DICOTS)							
Asteraceae	Sunflower Family						
Deinandra minthornii	Santa Susana tarplant	Jul.-Nov.	NONE	NONE	1B.2	Chaparral, coastal scrub; typically found growing on sandstone outcrops and crevices or within shrublands. 280-760 meters.	**NOT EXPECTED** Suitable chaparral habitat is present on the project site but no sandstone outcrops are present. The closest known occurrence is approximately 6 miles south in Deer lake Highlands. However, no individuals were observed during the June focused survey.
Centromadia parryi ssp. *australis*	southern tarplant	May-Nov.	None	None	1B.1	Margins of marshes and swamps, valley and foothill grassland (vernally mesic), and vernal pools. 0-425 meters	**NONE** Suitable vernal wetland habitat is not present.
Helianthus inexpectatus	Newhall sunflower	Aug,-Oct.	NONE	NONE	1B.1	Freshwater, seeps; marshes and swamps; riparian woodland. 305 meters.	**NONE** Suitable habitat is not present.
Helianthus nuttallii ssp. *parishii*	Los Angeles sunflower	Aug.-Oct.	None	None	1A	Freshwater marsh, salt marsh. 10-1675 meters.	**NONE** Suitable habitat is not present.
Lasthenia glabrata ssp. coulteri	Coulter's goldfields	Feb.-Jun.	NONE	NONE	1B.1	Marshes and swamps (coastal salt), playas, vernal pools. 1-1220 meters.	**NONE** Suitable vernal wetland habitat is not present.

NONE = species not expected to occur due to the lack of suitable habitat, or the site's location outside of the species' range; **NOT EXPECTED** = preferred habitat was considered present based on the literature review and observed habitat on the Project site, however no individuals were observed during the focused special-status plant survey; **POTENTIAL** = preferred habitat was considered present based on the literature review and habitat observed on the project site; **OBSERVED** = species was observed on the project site.

S ent Name	Common Name	Bloom n Pe o	Fe e al	State	CNPS	P e e e Hab tat	Potent al Fo O en e
Pentachaeta lyonii	Lyon's pentachaeta	Mar.-Aug.	FE	SE	1B.1	Chaparral, valley and foothill grassland, and coastal scrub; typically found between grassland and chaparral habitats. 30-630 meters.	**NONE** Although suitable chaparral and grassland habitats are present on the project site, all occurrences of the species are located near the coast. The closest known occurrence near the project site is in the Upper Las Virgenes Canyon Open Space approximately 15 miles southwest of the project site.
Pseudognaphalium leucocephalum	white rabbit-tobacco	Jul.-Dec.	NONE	NONE	2B.2	sandy, gravelly, Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland. 0-2100 meters.	**NONE** **SUITABLE SANDY AND GRAVELLY SUBSTRATE IS NOT PRESENT ON THE PROJECT SITE**
Senecio aphanactis	chaparral ragwort	Jan.-Apr.	None	None	2B.2	Chaparral, cismontane woodland, coastal scrub; sometimes alkaline soil. 15-8000 meters.	**POTENTIAL NOT OBSERVED** Suitable chaparral habitat is present on the project site. The closest known occurrence is approximately 4 miles northeast in Saugus.
Symphyotrichum greatae	Greata's aster	Jun.-Oct.	None	None	1B.3	Chaparral, cismontane woodland, broadleaved upland forest, lower montane coniferous forest, riparian woodland; often found within mesic canyons. 300-2010 meters.	**NOT EXPECTED** Suitable habitat (chaparral) with canyons is found on the project site. However, the closest known occurrence is approximately 16 miles north in the Cienaga campground However, no individuals were observed during the June focused survey.

NONE = species not expected to occur due to the lack of suitable habitat, or the site's location outside of the species' range; **NOT EXPECTED** = preferred habitat was considered present based on the literature review and observed habitat on the Project site, however no individuals were observed during the focused special-status plant survey; **POTENTIAL** = preferred habitat was considered present based on the literature review and habitat observed on the project site; **OBSERVED** = species was observed on the project site.

*Species does not come up on CNDDB because there is an occurrence but no observations recorded.

S ent Name	Common Name	Bloom n Pe o	Fe e al	State	CNPS	P e e e Hab tat	Potent al Fo O en e
Be be a eae	**Ba be Fam l**						
Berberis nevinii	Nevin's barberry	Mar.-June	FE	CE	1B.1	Sandy soils in low-gradient washes, alluvial terraces, and canyon bottoms, along gravelly wash margins, or on coarse soils on steep, generally north-facing slopes in alluvial scrub, cismontane (e.g., chamise) chaparral, coastal sage scrub, oak woodland, and/or riparian scrub or woodland. 274-825 meters,	**NOT EXPECTED** Suitable chaparral habitat is present on the project site. The closest known occurrence is approximately 3.5 miles north of the project site in San Francisquito Canyon. however, no individuals were observed during the June focused survey.
Boraginaceae	Borage Family						
Harpagonella palmeri	Palmer's grapplinghook	Mar.-May	NONE	NONE	4.2	Chaparral, coastal scrub, valley and foothill grassland; open grassy areas within shrubland; clay soils. 20-955 meters	**NOT EXPECTED** Suitable chaparral and grassland habitats are present on the project site. The closet known occurrence is approximately 3 miles east in Santa Clarita. However, no individuals were observed during the June focused survey.
Brassicaceae	Mustard Family						
Lepidium virginicum var. *robinsonii*	Robinson's pepper-grass	Jan.-Jul.	None	None	4.3	Chaparral and coastal scrub.	**NOT EXPECTED** Suitable chaparral habitat is present on the project site. The closest known occurrence is approximately 10 miles southeast of the project site. However, no individuals were observed during the June focused survey.

NONE = species not expected to occur due to the lack of suitable habitat, or the site's location outside of the species' range; **NOT EXPECTED** = preferred habitat was considered present based on the literature review and observed habitat on the Project site, however no individuals were observed during the focused special-status plant survey; **POTENTIAL** = preferred habitat was considered present based on the literature review and habitat observed on the project site; **OBSERVED** = species was observed on the project site.

*Species does not come up on CNDDB because there is an occurrence but no observations recorded.

S ent Name	Common Name	Bloom n Pe o	Fe e al	State	CNPS	P e e e Hab tat	Potent al Fo O en e
Ca ta eae	**Ca t s Fam l**						
Opuntia basilaris var. *brachyclada*	short-joint beavertail	Apr.-Jun. (Aug.)	None	None	1B.2	Chaparral, Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland; found in sandy soil or granitic loam. 425 to 1800 meters.	**NONE** Although chaparral habitat is present on the project site, this species occurs at higher elevations. The closest known occurrence is approximately 8.5 miles northeast of the project site.
Crassulaceae	Stonecrop Family						
Dudleya blochmaniae ssp. blochmaniae	Blochman's dudleya	Apr.-Jun.	NONE	NONE	1B.1	Coastal bluff scrub, coastal scrub, and valley and foothill grasslands; rocky slopes or in shallow clay soils over serpentine. 5-450 meters.	**NONE** Suitable coastal scrub and grassland habitats are not present. The closest recorded location is near the Chatsworth Reservoir which is approximately 10 miles southwest of the project site.
Dudleya cymosa ssp. agourensis	Agoura Hills dudleya	May-Jun.	FT	NONE	1B.2	Chaparral, cismontane woodland; rocky, volcanic breccia. 200-500 meters.	**NONE** Suitable chaparral habitat is present on the project site. However, no occurrences near the vicinity of the project site.
Dudleya multicaulis	many-stemmed dudleya	Apr.-Jul.	NONE	NONE	1B.2	Chaparral, coastal scrub, and valley and foothill grassland; often on clay soils. 15-790 meters.	**NONE** This species is not known to occur north of the San Gabriel Mountains. Moreover, this species occurs in coastal locations.

NONE = species not expected to occur due to the lack of suitable habitat, or the site's location outside of the species' range; **NOT EXPECTED** = preferred habitat was considered present based on the literature review and observed habitat on the Project site, however no individuals were observed during the focused special-status plant survey; **POTENTIAL** = preferred habitat was considered present based on the literature review and habitat observed on the project site; **OBSERVED** = species was observed on the project site.

*Species does not come up on CNDDB because there is an occurrence but no observations recorded.

S ent Name	Common Name	Bloom n Pe o	Fe e al	State	CNPS	P e e e Hab tat	Potent al Fo O en e
Dudleya parva	Conejo dudleya	May-Jun.	FT	NONE	1B.2	Coastal scrub, valley and foothill grassland; In clay or volcanic soils on rocky slopes and grassy hillsides. 60-450 meters.	**NONE** The project site only has marginally suitable grassland habitat. The closest known occurrence is approximately 15 miles southwest adjacent to the Regan Presidential Library.
Convolvulaceae	Morning-glory Family						
Calystegia peirsonii	Peirson's morning-glory	Apr.-Jun.	None	None	4.2	Chaparral, coastal scrub, chenopod scrub, cismontane woodland, lower montane coniferous forest, valley and foothill grassland; typically found in disturbed, such as along roadsides, or in grassy open areas. 30-1500 meters.	**NOT EXPECTED** Suitable chaparral habitat is present on the project site. The closest known occurrence is less than 0.50 mile southeast from the project site. However, no individuals were observed during the June focused survey.
Fabaceae	Pea Family						
Astragalus brauntonii	Braunton's milk-vetch	Jan.-Aug.	FE	None	1B.1	Closed-cone coniferous forest, chaparral, coastal scrub, valley and foothill grassland; found in burned or disturbed areas in shallow soils on hilltops, saddles, bowls between hills; prefers saline and somewhat alkaline soil (soil specialist). 200-650 meters.	**NONE** Although suitable habitat is present (chaparral), suitable substrate is not present. Closest known occurrence is approximately 11 miles southwest of the project site.

NONE = species not expected to occur due to the lack of suitable habitat, or the site's location outside of the species' range; **NOT EXPECTED** = preferred habitat was considered present based on the literature review and observed habitat on the Project site, however no individuals were observed during the focused special-status plant survey; **POTENTIAL** = preferred habitat was considered present based on the literature review and habitat observed on the project site; **OBSERVED** = species was observed on the project site.

*Species does not come up on CNDDB because there is an occurrence but no observations recorded.

S ent Name	Common Name	Bloom n Pe o	Fe e al	State	CNPS	P e e e Hab tat	Potent al Fo O en e
Geraniaceae	Geranium Family						
California macrophylla	round-leaved filaree	Mar.-May	NONE	NONE	1B.1	Cismontane woodland, valley and foothill grassland, clay soils. 15-1200 meters.	**NONE** Marginal grassland habitat is present on the project site, but the project site lacks clay soils.
Juglandaceae	Walnut Family						
Juglans californica[*]	Southern California black walnut	Mar.-Aug.	None	None	4.2	Chaparral, cismontane woodland, coastal scrub, riparian woodland; alluvial. 50-900 meters.	**Not Obse e** Suitable chaparral is present on the project site. However, no individuals were observed during the June focused survey.
Lamiaceae	Mint Family						
Lepechinia rossii	Ross' pitcher sage	May-Sept.	None	None	1B.2	Chaparral. Prefers soil derived from fine-grained, reddish sedimentary rock. 305-790 meters.	**None** Although chaparral habitat is present on the project site, species is found mainly in Liebre Mountains (Los Angeles County) and in the Topatopa Mountains (Ventura County).
Monardella hypoleuca ssp. hypoleuca	white-veined monardella	Jun.-Aug.	None	None	1B.3	Chaparral and cismontane woodland; dry slopes. 50-1525 meters.	**None** Although suitable chaparral habitat is present on the project site, the species is known only from Santa Monica, Santa Ynez, and Sierra Madre Mountains.

NONE = species not expected to occur due to the lack of suitable habitat, or the site's location outside of the species' range; **NOT EXPECTED** = preferred habitat was considered present based on the literature review and observed habitat on the Project site, however no individuals were observed during the focused special-status plant survey; **POTENTIAL** = preferred habitat was considered present based on the literature review and habitat observed on the project site; **OBSERVED** = species was observed on the project site.

*Species does not come up on CNDDB because there is an occurrence but no observations recorded.

S ent Name	Common Name	Bloom n Pe o	Fe e al	State	CNPS	P e e e Hab tat	Potent al Fo O en e
Mal a eae	**Mallo Fam l**						
Malacothamnus davidsonii	Davidson's bush-mallow	Jun.-Jan.	None	None	1B.2	Coastal scrub, riparian woodland, chaparral, cismontane woodland; commonly found within sandy washes. 185-855 meters.	**NONE** Chaparral habitat is present on the project site. However, this species is only found on the coastal side of the Santa Monica Mountains.
Polemoniaceae	Phlox Family						
Navarretia fossalis	spreading navarretia	Apr.-Jun.	None	None	1B.1	Coastal sage scrub, wetland-riparian; occurs almost always under natural conditions in wetlands.	**NONE** No suitable wetland habitat present on the project site.
Navarretia ojaiensis	Ojai navarretia	May-Jun.	NONE	NONE	1B.1	Chaparral, coastal scrub, and valley and foothill grassland; openings in shrublands or grasslands. 275-620 meters.	**NOT EXPECTED** Suitable chaparral habitat is present on the project site. However, no individuals were observed during the June focused survey.
Navarretia setiloba	Piute Mountains navarretia	Apr.-Jul	None	None	1B.1	Cismontane woodland; pinyon and juniper woodland; valley and foothill grasslands. Clay or gravelly loam. 285-2100 meters.	**NONE** No occurrence of the species within the vicinity of the project site.

NONE = species not expected to occur due to the lack of suitable habitat, or the site's location outside of the species' range; **NOT EXPECTED** = preferred habitat was considered present based on the literature review and observed habitat on the Project site, however no individuals were observed during the focused special-status plant survey; **POTENTIAL** = preferred habitat was considered present based on the literature review and habitat observed on the project site; **OBSERVED** = species was observed on the project site.

*Species does not come up on CNDDB because there is an occurrence but no observations recorded.

S ent Name	Common Name	Bloom n Pe o	Fe e al	State	CNPS	P e e e Hab tat	Potent al Fo O en e
Polygonaceae	Buckwheat Family						
Chorizanthe parryi var. fernandina	San Fernando Valley spineflower	Apr.-Jul.	FC	FE	1B.1	Coastal scrub (sandy), valley and foothill grassland. 150-1220 meters.	**NOT OBSERVED** Although suitable grassland habitat is found on the project site, the habitat is very marginal. The closest known occurrence is approximately 2.5 miles north of the project site. However no individuals were observed during the June focused survey.
Chorizanthe parryi var. *parryi***	Parry's spineflower	Apr.-Jun.	None	None	1B.1	Openings/clearings in coastal or desert sage scrub, chaparral or interface; dry slopes or flat ground; sandy soils. 275-1220 meters.	**NOT EXPECTED** Suitable chaparral habitat with openings and clearings are present on the project site. However, no individuals were observed during the June focused survey.
Rosaceae	Rose Family						
Dodecahema leptoceras	slender-horned spineflower	Apr.-Jun.	FE	SE	1B.1	Scrub and chaparral in sandy soils and alluvial fans. 200-760 meters.	**NONE** Suitable substrate is not present on the project site. Closest known occurrences for the species is approximately 4 miles east in Santa Clarita.
Horkelia cuneata var. puberula	mesa horkelia	Feb.-Jul. (uncommonly Sep.)	NONE	NONE	1B.1	Chaparral (maritime), cismontane woodland, coastal scrub/sandy or gravelly. 70-810 meters.	**NONE** Suitable substrate is not present on the project site.

NONE = species not expected to occur due to the lack of suitable habitat, or the site's location outside of the species' range; **NOT EXPECTED** = preferred habitat was considered present based on the literature review and observed habitat on the Project site, however no individuals were observed during the focused special-status plant survey; **POTENTIAL** = preferred habitat was considered present based on the literature review and habitat observed on the project site; **OBSERVED** = species was observed on the project site.

*Species does not come up on CNDDB because there is an occurrence but no observations recorded.

S ent Name	Common Name	Bloom n Pe o	Fe e al	State	CNPS	P e e e Hab tat	Potent al Fo O en e
R b a eae	**Co ee Fam l**						
Galium grande	San Gabriel bedstraw	Jan.-Jul.	None	None	1B.2	Cismontane woodland, chaparral, broadleafed upland forest, lower montane coniferous forest; grows on rocky slopes within open chaparral oak woodland. 425-1500 meters.	**NONE** Suitable habitat is not present on the project site. Additionally, there are no records of the species within the project site vicinity.
ANGIOSPERMS (MONOCOTS)							
Alliaceae	Onion Family						
Allium howellii var. clokeyi	Mt. Pinos onion	Apr.-Jun.	NONE	NONE	1B.3	Great basin scrub, meadows and seeps (edges), and Pinyon and juniper woodland. 1300-1850 meters.	**NONE** Suitable substrate is not present on the project site. Moreover, project site is outside of preferred elevation range.
Liliaceae	Lily Family						
Calochortus clavatus var. gracilis	slender mariposa lily	Mar.-Jun.	NONE	NONE	1B.2	Chaparral, coastal scrub, valley and foothill grassland; found on the valley floor within shaded canyons typically on grassy slopes. 320-1000 meters.	**OBSERVED** Suitable chaparral habitat with valley floors within canyons on grassy slopes present on project site. Species was observed throughout the project site, mainly in the northern portion of the site.

NONE = species not expected to occur due to the lack of suitable habitat, or the site's location outside of the species' range; **NOT EXPECTED** = preferred habitat was considered present based on the literature review and observed habitat on the Project site, however no individuals were observed during the focused special-status plant survey; **POTENTIAL** = preferred habitat was considered present based on the literature review and habitat observed on the project site; **OBSERVED** = species was observed on the project site.

*Species does not come up on CNDDB because there is an occurrence but no observations recorded.

S ent Name	Common Name	Bloom n Pe o	Fe e al	State	CNPS	P e e e Hab tat	Potent al Fo O en e
Calochortus fimbriatus	late-flowered mariposa lily	Jun.-Aug.	None	None	1B.2	Chaparral, cismontane woodland, riparian woodland; grows on serpentine within dry coastal woodland and chaparral habitats. 275-1905 meters.	**NOT EXPECTED** Suitable chaparral habitat is present on the project site. However, no individuals were observed during the June focused survey.
Calochortus plummerae	Plummer's mariposa lily	May-Jul.	None	None	1B.2	Chaparral (openings), cismontane woodland, coastal scrub, valley and foothill grassland, granitic/rocky. 100-1700 meters.	**OBSERVED** Suitable chaparral (openings), coastal scrub, and grassland habitats with rocky soils are present on the project site. Individuals were observed throughout the project site, mainly in the southern portion.
Poaceae	Grass Family						
Hordeum intercedens	vernal barley	Mar.-Jun.	NONE	NONE	3.2	Coastal dunes, coastal scrub, valley and foothill grassland (saline flats and depressions), and vernal pools; typically found in vernal pools, dry saline streambeds, or alkaline flats. 5-1000 meters.	**NONE** Suitable habitat (vernal pools) is not present on the project site.
Orcuttia californica	California Orcutt grass	Apr.-Aug.	FE	SE	1B.1	Vernal pools. 15-660 meters.	**NONE** Suitable vernal pool habitat is not present on the project site.

NONE = species not expected to occur due to the lack of suitable habitat, or the site's location outside of the species' range; **NOT EXPECTED** = preferred habitat was considered present based on the literature review and observed habitat on the Project site, however no individuals were observed during the focused special-status plant survey; **POTENTIAL** = preferred habitat was considered present based on the literature review and habitat observed on the project site; **OBSERVED** = species was observed on the project site.

*Species does not come up on CNDDB because there is an occurrence but no observations recorded.

S ent Name	Common Name	Bloom n Pe o	Fe e al	State	CNPS	P e e e Hab tat	Potent al Fo O en e
Ruscaceae	Ruscus Family						
Nolina cismontana	chaparral nolina	May-Jul.	None	None	1B.2	Xeric Diegan sage scrub, chaparral, coastal scrub open chaparral; primarily grows on sandstone and shale, occasionally on gabbro. 140-1275 meters.	**NONE** This species is found in cismontane habitats. The closest known occurrence is approximately 40 miles away near Oak Park.

Key to Species Listing Status Codes

fe	*Federally Endangered*	*se*	*State Listed as Endangered*
ft	*Federally Threatened*	*st*	*State Listed as Threatened*
fc	*Federal Candidate*	*sce*	*State Candidate for Endangered*
fpe	*Federally Proposed as Endangered*	*sct*	*State Candidate for Threatened*
fpt	*Federally Proposed as Threatened*	*sfp*	*State Fully Protected*
fpd	*Federally Proposed for Delisting*	*ssc*	*California Species of Special Concern*

SOURCE: ESA PCR, 2016

NONE = species not expected to occur due to the lack of suitable habitat, or the site's location outside of the species' range; **NOT EXPECTED** = preferred habitat was considered present based on the literature review and observed habitat on the Project site, however no individuals were observed during the focused special-status plant survey; **POTENTIAL** = preferred habitat was considered present based on the literature review and habitat observed on the project site; **OBSERVED** = species was observed on the project site.

*Species does not come up on CNDDB because there is an occurrence but no observations recorded.

Appendix D
Special-Status Wildlife Species

ESA

APPENDIX D: SPECIAL STATUS WILDLIFE SPECIES

S ent Name	Common Name	Fe e al	State	P e e e Hab tat	Potent al Fo O en e
Crustaceans					
Anostraca	Fairy Shrimp				
Branchinecta lynchi	vernal pool fairy shrimp	FT	NONE	Valley and foothill grassland, vernal pool, wetland.	**NONE** Suitable vernal pool habitat is not present on the project site.
Streptocephalus woottoni	Riverside fairy shrimp	FE	NONE	Endemic to western Riverside, Orange and San Diego Counties in areas of tectonic swales and slump basins in grassland and coastal scrub. Inhabit seasonal pools filled by winter/spring rains. Hatch in warm water later in the season.	**NONE** Suitable vernal pool habitat is not present on the project site.
Arachnids					
Tengellidae	Tengellid Spiders				
Socalchemmis gertschi	Gertsch's socalchemmis spider	None	CDFW Special Animals List	Known only from Brentwood and Topanga Canyon; apparently occurring within oak woodland habitat.	**NONE** This species is known only in two locations in Los Angeles County, Brentwood and Topanga Canyon. Moreover, project site lacks oak woodland habitat.
Insects					
Nymphalidae	Brushfooted Butterflies				
Danaus plexippus	monarch butterfly (wintering sites)	FSS	CDFW Special Animals List	Winter roosts located in wind-protected tree groves (especially eucalyptus and Monterey cypress), with nectar and water sources nearby. Winter Roost sites extend along the coast from	**NONE** There are no suitable wind-protected tree groves suitable for wintering monarch butterflies present on the project site. Project site has few trees of each

NONE = Species not expected to occur due to the lack of suitable habitat, or the site's location is outside of the species' range.

NONE (N) = Species not expected to nest or roost due to the lack of suitable habitat, or the site's location is outside of the species' range.

NONE (F) = Species not expected to forage due to lack of food sources, or the site's location is outside of the species' range.

NOT EXPECTED = Preferred habitat was considered potentially present based on the literature review and anticipated habitat in the study area, however no individuals were observed and/or suitable habitat was absent based on the general field survey or focused surveys.

POTENTIAL = Preferred habitat was considered potentially present based on the literature review and observed habitat in the Project site.

POTENTIAL (N) Preferred nesting or roosting habitat was considered potentially present based on the literature review and observed habitat in the Project site.

POTENTIAL (F) Preferred foraging habitat was considered potentially present based on the literature review and observed habitat in the Project site.

OBSERVED = Species was observed during surveys conducted on the site.

S ent Name	Common Name	Fe e al	State	P e e e Hab tat	Potent al Fo O en e
				northern Mendocino County to Baja California, Mexico.	species (oak and eucalyptus) throughout the entire project site.
Apidae	Bees				
Bombus crotchii	Crotch bumble bee	None	None	Coastal California east to the Sierra-Cascade crest and south into Mexico; prefers to feed nectar from plants in the following genera: Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia, and Eriogonum.	**POTENTIAL LOW** The potential for this species on the project site is low. Two plants within the plant genera for the nectar from plants the species feeds on, *Eriogonum* and *Clarkia*, are present on the project site.
Fish					
Cyprinidae	Ray-finned Fish				
Catostomus santaanae	Santa Ana sucker	FT	SSC	Habitat generalists, but prefer sand-rubble-boulder bottoms, cool, clear water, & algae.	**NONE** There is no suitable habitat present on the project site.
Gasterosteus aculeatus williamsoni	unarmored threespine stickleback	FE	SE, FP	Coastal waters or freshwater bodies well connected (or once well connected) to the coasts.	**NONE** There is no suitable habitat (coastal waters or freshwater) present on the project site.
Cyprinidae	Carps and Minnows				
Gila orcutti	arroyo chub	None	SSC	Aquatic and south coast flowing waters; slow water stream sections with mud or sand bottoms; feeds heavily on aquatic vegetation and associated invertebrates.	**NONE** Suitable habitat (perennial water) is not preset on the project site.

NONE = Species not expected to occur due to the lack of suitable habitat, or the site's location is outside of the species' range.

NONE (N) = Species not expected to nest or roost due to the lack of suitable habitat, or the site's location is outside of the species' range.

NONE (F) = Species not expected to forage due to lack of food sources, or the site's location is outside of the species' range.

NOT EXPECTED = Preferred habitat was considered potentially present based on the literature review and anticipated habitat in the study area, however no individuals were observed and/or suitable habitat was absent based on the general field survey or focused surveys.

POTENTIAL = Preferred habitat was considered potentially present based on the literature review and observed habitat in the Project site.

POTENTIAL (N) Preferred nesting or roosting habitat was considered potentially present based on the literature review and observed habitat in the Project site.

POTENTIAL (F) Preferred foraging habitat was considered potentially present based on the literature review and observed habitat in the Project site.

OBSERVED = Species was observed during surveys conducted on the site.

S ent Name	Common Name	Fe e al	State	P e e e Hab tat	Potent al Fo O en e
Amphibians					
Bufonidae	True Toads				
Anaxyrus californicus	arroyo toad	FE	SSC	Rivers, washes or intermittent streams with sandy banks, willows, cottonwoods and sycamores within valley-foothill, desert riparian and desert wash communities in semi-arid regions; loose gravelly areas of streams in drier parts of range.	**NONE** No suitable habitat in the form of streams with sandy banks on the project site.
Ranidae	True Frogs				
Rana draytonii	California red-legged frog	FT	SSC	Aquatic, flowing and standing waters, marsh and swamps, riparian areas, wetlands. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	**NONE** Suitable perennial water is not present on the project site.
Rana muscosa	southern mountain yellow-legged frog	FE	SE	Prefers rocky stream courses in the mountains of southern California. Inhabits mid- to upper-elevation, perennial streams, often in locations with bedrock pools. Always encountered within a few feet of water.	**NONE** No suitable habitat in the form of rocky stream courses or perennial streams are present on the project site.
Salamandridae	Newts				
Taricha torosa	Coast Range newt	NONE	SSC	Terrestrial habitats and will migrate over 1 kilometer to breed in ponds, reservoirs and slow-moving streams.	**NONE** No suitable habitat is present on the project site. No ponds, reservoirs, or slow-moving streams are present within 1 km of the project site.

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Scaphiopodidae	North American Spadefoots				
Spea hammondii	western spadefoot	None	SSC	Primary habitat is vernal pools or other standing water free of exotic species below 1500 meters. Secondary habitats include adjacent chaparral, sage scrub, grassland and alluvial scrub.	**POTENTIAL LOW** No suitable primary habitat found on the project site. However, secondary habitat (chaparral and grassland) are present on the project site.
Reptiles					
Emydidae	Box and Water Turtles				
Emys marmorata	western pond turtle	None	SSC	Requires basking sites, such as partially submerged logs, vegetation mats, open mud banks, or grassy open fields within 0.5 km of permanent water. Suitable nesting sites are within or near permanent or near permanent bodies of water below 2,000 meters.	**NONE** No suitable basking and nesting habitats are present on the project site.
Anniellidae	Legless Lizards				
Anniella pulchra pulchra	silvery legless lizard	None	SSC	Frequents sparse vegetation of beaches, chaparral, pine-oak woodland, and streamside growth of sycamores, cottonwoods, and oaks. Needs loose soil for burrowing, moisture, warmth, and plant cover. Moisture is essential.	**POTENTIAL** Suitable habitat (chaparral) is present on the project site, although moisture does not appear prevalent.
Boidae	Boas				
Charina trivirgata	Rosy boa	None	None	Chaparral, Mojavean desert scrub, and Sonoran desert scrub. Prefers moderate to dense vegetation and rocky cover.	**NONE** Project site is outside of species preferred elevation.

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Colubridae	Colubrid Snakes				
Thamnophis hammondii	two-striped garter snake	None	SSC	Riparian and freshwater marshes with perennial water.	**NONE** Suitable perennial water is not present on the project site.
Phrynosomatidae	Zebratail, Earless, Horned, Spiny, Fringe-Toed Lizards				
Phrynosoma blainvillii	coast horned lizard	None	SSC	Chaparral; cismontane woodland; coastal bluff scrub; coastal scrub; desert wash; pinyon and juniper woodlands; riparian scrub; riparian woodland; valley and foothill grassland.	**POTENTIAL** The majority of the project site supports suitable habitat for this species. The closest known occurrence is approximately 4 miles east of the project site.
Teiidae	Whiptail Lizards				
Aspidoscelis tigris stejnegeri	coastal whiptail	None	CDFW Special Animals List	Various habitats in firm, sandy or rocky soils within sparse vegetation, open areas, woodlands and riparian communities of deserts and semi-arid areas.	**POTENTIAL** Suitable woodland habitat is present on the project site. The closest known occurrence is approximately 4.25 miles to the northwest of the project site.
Birds					
Accipitridae	Hawks				
Accipiter cooperi	Cooper's hawk	NONE	WL	Fairly common winter visitor in California, but breeding populations have declined due to loss of habitat and human disturbance. Nests primarily in fairly dense oak and riparian woodlands and forages over open lands.	**NONE N POTENTIAL F** The project site contains suitable open lands for foraging, but does not have suitable nesting habitat.

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Aquila chrysaetos	golden eagle	None	SFP	Open terrain in deserts, mountains, slopes, and valleys. Nest mainly on cliffs, also in large trees (such as oaks), and rarely on artificial structures or the ground.	**NONE N POTENTIAL F** The project site contains (marginal) grassland habitat that could support a food source and thus has foraging potential. However, the site lacks suitable nesting habitat for the species. This species was recorded approximately 22.5 miles south of the project site in Malibu Canyon.
Buteo swainsoni	Swainson's hawk	None	ST	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires suitable foraging areas adjacent to breading areas such as grasslands that support rodent populations.	**NONE N POTENTIAL F** This species may be observed flying over the site or foraging, however, there is no suitable nesting habitat.
Elanus leucurus	white-tailed kite	None	SFP	Cismontane woodland; marsh and swamp; riparian woodland; valley and foothill grassland; wetland.	**NONE N POTENTIAL F** This species may be observed flying over the site or foraging on the marginal grassland habitat, however, there is no suitable nesting habitat.
Cathartidae	New World Vultures				
Cathartes aura	turkey vulture	None	LAA	For western populations, nesting birds require remote, rocky locations with caves, cliff ledges, and piles of large boulders. Breeding birds are highly sensitive to disturbance. The species now breeds (if at all in Los Angeles County) in only the most remote portions of the San Gabriel and	**NONE N POTENTIAL F** Suitable remote, rocky habitat required for nesting is not present. There is low potential for foraging within the open disturbed areas on the project site.

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				northwestern county mountains, with perhaps one pair remaining in the Santa Monica Mountains (Atlas data) and possibly in the Whittier Hills. Forages in almost any open habitat.	
Gymnogyps californianus	California condor	FE	SE	Require vast expanses of open savannah, grasslands, and foothill chaparral in mountain ranges of moderate altitude. Nesting habitat includes canyons containing clefts in the rocky walls provide nesting sites. Forages up to 100 miles from roost/nest.	**NONE F,N** Project site does not contain suitable foraging or nesting habitat. The site lacks vast expanses of open area. Moreover, site lacks clefts in rocky walls.
Cuculidae	Cuckoos and Roadrunners				
Coccyzus americanus occidentalis	western yellow-billed cuckoo	FC	SE	Southwestern cottonwood-willow riparian, mixed broadleaf riparian forest.	**NONE F, N** The project site lacks suitable nesting and foraging habitat for the species.
Falconidae	Falcons				
Falco peregrinus anatum	American peregrine falcon	None	SFP	Found in a variety of habitats including mixed conifer, pinyon-juniper, sagebrush, riparian, grassland habitats, agricultural, and urban areas.	**POTENTIAL F, N** Project site has a low potential for the species to forage and nest within the grassland habitats.
Laniidae	Shrike Family				
Lanius ludovicianus	loggerhead shrike	NONE	SSC	Open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches.	**NONE N POTENTIAL F** The project site contains marginal habitat for foraging in the non-native grass dominated areas, however, the site lacks nesting habitat. The closest known occurrence is approximately 7.5 miles north of the project site off Tapia Canyon Road.

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Parulidae	Wood Warblers				
Icteria virens	yellow-breasted chat	NONE	SSC	In southern California, nest in dense willow woodlands and thickets or other riparian areas with a developed understory.	**NONE F NONE N** There is no suitable nesting or foraging habitat present on the project site.
Dendroica petechia brewsteri	yellow warbler	NONE	SSC	Riparian woodlands, montane chaparral, open ponderosa pine and mixed coniferous habitat with significant brush.	**NONE F NONE N** There is no suitable nesting or foraging habitat present on the project site.
Strigidae	True Owls				
Athene cunicularia	burrowing owl	None	SSC	Disturbed; low-growing vegetation within coastal prairie, coastal scrub, Great Basin scrub, Mojavean desert scrub, Sonoran desert scrub, valley and foothill grassland; bare ground, disturbed.	**NONE N LOW F** Marginally suitable habitat for foraging is found within the grasslands on the project site. However, the site does not have suitable nesting habitat. The species was recorded 5 miles north of the project site off Cooper Hill Drive in 2007.
Vireonidae	Vireos				
Vireo bellii pusillus	least Bell's vireo	FE	SE	Riparian forest; riparian scrub; riparian woodland.	**NONE N NONE F** No suitable habitat on-site. The project site lacks willow thickets typically preferred by this species.
Hirundinidae	Swallows				
Riparia riparia	bank swallow	None	ST	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	**NONE N NONE F** Suitable riparian habitat is not present. The project site does not support suitable fine-textured/sandy soils required for nesting.

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Paridae	Tits, Chickadees and Titmice				
Baeolophus inornatus	oak titmouse	None	AWL	Primarily associated with oaks. Occurs in montane hardwood-conifer, montane hardwood, blue, valley, and coastal oak woodlands, and montane and valley foothill riparian habitats in cismontane California, from the Mexican border to Humboldt County.	**Low N, F** Project site contains singular oak trees but lacks stands of oaks.
Polioptilidae	Gnatcatchers				
Polioptila californica californica	coastal California gnatcatcher	FT	SSC	Coastal bluff scrub; coastal scrub.	**None N Potential F** The project site lacks suitable nesting habitat. However, there is a potential for the species to forage on the project site as there is coastal scrub in the vicinity of the project site. Critical habitat is located less than a mile south of the project site south of Towsley Canyon Road.
Icteridae	Blackbirds				
Agelaius tricolor	tricolored blackbird	None	SSC	Highly colonial species. Requires open water, protected nesting substrate, and foraging area with insect prey within a few kilometers of the colony.	**None N None F** Suitable open water habitat is not present on the project site.
Emberizidae	Buntings, Juncos and Sparrows				
Aimophila ruficeps canescens	southern California rufous-crowned sparrow	None	CDFW Watch List	Frequents relatively steep, often rocky hillsides with grass and forb patches. Resident in southern California coastal sage scrub and mixed chaparral.	**Potential N, F** Project site contains suitable chaparral habitat. The species was recorded approximately 8 miles south of the project site near Corriganville Park.

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Artemisiospiza belli belli	Bell's sage sparrow	NONE	CDFW Watch List	Nests on the ground beneath shrubs or in shrubs 6 to 18 inches above the ground within chaparral communities dominated by fairly dense stands of chamise or in coastal scrub.	**POTENTIAL N, F** Project site contains suitable chaparral habitat for nesting and foraging.
Mammals					
Leporidae	Hares and Rabbit Family				
Lepus californicus bennettii	San Diego black-tailed jackrabbit	NONE	SSC	Open brushlands and scrub habitats between sea level and 1,219 meters in elevation.	**NONE** Project site lacks open brushland and scrub habitats, as the project site is comprised mainly of dense chaparral.
Muridae	Mice, Rats, and Voles				
Neotoma lepida intermedia	San Diego desert woodrat	None	SSC	Coastal scrub and chaparral. Prefer areas with moderate to dense vegetation cover and are commonly found in rock outcrops and cliffs.	**POTENTIAL** The project site contains suitable chaparral habitat for the species.
Onychomys torridus ramona	southern grasshopper mouse	NONE	SSC	Prefers alkali desert scrub and desert scrub habitats, although also found in succulent shrub, wash, riparian, coastal scrub, mixed chaparral, sagebrush, low sage, and bitterbrush habitats. Friable soil for digging burrows within habitats with low to moderate shrub cover is preferred. Food source is arthropods, especially scorpions and grasshoppers.	**POTENTIAL** This species has a very low potential to occur on the project site.

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Molossidae	Free-Tailed Bats				
Eumops perotis californicus	western mastiff bat	None	SSC	Chaparral; cismontane woodland; coastal scrub; valley and foothill grassland. Roosts in crevices in cliff faces, high buildings, trees, and tunnels. Preys on insects.	**LOW N, F** The project site contains chaparral habitat with trees and cliff faces, providing suitable nesting and foraging habitat.
Phyllostomidae	Leaf-Nosed Bats				
Macrotus californicus	California leaf-nosed bat	None	SSC	Roosts in rocky, rugged terrain with mines or caves in riparian, wash, succulent scrub, alkali scrub and palm oasis habitats of deserts.	**NONE N,F** There is no suitable roosting habitat on the project site (mines or caves).
Sciuridae					
Neotamias speciosus speciosus	Lodgepole chipmunk	None	None	Species is found in chaparral, and upper montane coniferous forest. Summits of isolated Piute, San Bernardino, & San Jacinto mountains. Usually found in open-canopy forests at elevations ranging from 1,500 to 3,000 meters.	**NONE N,F** Suitable habitat is not present on the project site. Moreover, the project site is outside of the species preferred elevation range.
Vespertilionidae	Evening Bats				
Antrozous pallidus	pallid bat	None	SSC	Chaparral, coastal scrub, desert wash, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, riparian woodland, Sonoran desert scrub, upper montane coniferous forest, and valley and foothill grassland. Prefers rocky outcrops, cliffs, and crevices with access to open habitats for foraging. Very sensitive to disturbance of roosting sites.	**LOW N,F** The project site has potential roosting and foraging habitat.

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Corynorhinus townsendii	Townsend's big-eared bat	NONE	SCT, SSC	Throughout California in a wide variety of habitats (e.g., broadleaved upland forest, chaparral, chenopod scrub, Great Basin grassland, Great Basin scrub, Joshua tree woodland, lower montane coniferous forest, meadow & seep, Mojavean desert scrub, riparian forest, riparian woodland, Sonoran desert scrub, Sonoran thorn woodland, upper montane coniferous forest, valley & foothill grassland). Most common in mesic sites. Roosts in the open, hanging from walls and ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.	**NONE N LOW F** This species is not expected to occur within the study area as there are no recent records of this species for Los Angeles County. However, suitable foraging habitat is present although the species is not expected to roost on-site.
Euderma maculatum	spotted bat	None	SSC	Habitats occupied include arid deserts, grasslands and mixed conifer forests from below sea level in California to above 3,000 m (10,000 ft) in New Mexico. Prefers to roost in rock crevices. Occasionally found in caves and buildings. Cliffs provide optimal roosting habitat. Forages over water and along washes.	**NONE N, F** Suitable habitat is not present on the project site.
Lasionycteris noctivagans	silver-haired bat	None	WBWG Medium	Species is primarily a forest bat, associated primarily with north temperate zone conifer and mixed conifer/hardwood forests. It has been found in winter and during seasonal migrations in low elevation, more xeric habitats.	**NONE N, F** Suitable habitat is not present on the project site. Moreover, there are no records of the species north of the coast range mountains in Los Angeles County.

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Lasiurus cinereus	hoary bat	None	WBWG Medium	Habitats suitable for bearing young include all woodlands and forests with medium to large-size trees and dense foliage. Generally roosts in dense foliage of medium to large trees and requires water.	**NONE N LOW F** Marginal suitable habitat for foraging is present on the project site. However, the project site lacks water required for roosting.

Key to Species Listing Status Codes

FE	*Federally Endangered*	SE	*State Listed as Endangered*
FT	*Federally Threatened*	ST	*State Listed as Threatened*
FC	*Federal Candidate*	SCE	*State Candidate for Endangered*
FPE	*Federally Proposed as Endangered*	SCT	*State Candidate for Threatened*
FPT	*Federally Proposed as Threatened*	SFP	*State Fully Protected*
FPD	*Federally Proposed for Delisting*	SSC	*California Species of Special Concern*
FSS	*USDA Forest Service Sensitive Species*	AWL	*Audubon Watch List*
WBWG	*Western Bat Working Group*	LAA	*Los Angeles Audubon list of Los Angeles County's Sensitive Bird Species*

SOURCE: ESA PCR, 2016

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September 14, 2017

Jemstreet Properties
1435 Reynolds Court
Thousand Oaks, California 91362

Attn: Mr. Jon Friedman

Subj: **Paleontological Resources Assessment of the Canyon View Estates Residential Development Project, Santa Clarita, California (*Envicom Project #17-796-101)***

Dear Mr. Friedman:

On September 14, 2017, Envicom Corporation (Envicom) completed a Phase I paleontological resource assessment of the Canyon View Estates project, Santa Clarita, California. The Project is fully contained on the Newhall and Oat Mountain USGS quads (**Figure 1**). The general location is as follows:

Section - 5
Township - 3N
Range - 16W
USGS Quads - Newhall and Oat Mountain, CA
Lat - 34°22'30.66"N
Long - 118°34'36.75"W

A paleontological resource assessment includes a paleontological resource record search conducted by the Natural History Museum of Los Angeles (NHM) and a review of Dibblee geological maps. The purpose of the record search is to identify any previous paleontological resources that have been recorded within the proposed project area, to provide paleontological resource context for the project, and to assess the overall paleontological resource sensitivity of the project region. Paleontological resources can be actual fossils, but can also include fossil imprints, micro-fossils, ancient botanical samples (such as pollen or seeds), or other geological information that is important to our understanding of the history of life on earth.

A paleontological resource assessment also often includes a physical inspection of the project area to determine if previously unrecorded paleontological resources or exposed potentially fossil-bearing rock units can be identified from surface observation of the project area landscape. For this project, the location is entirely within the Newhall and Oat Mountain area of Santa Clarita, which has a long history of containing important terrestrial and marine fossil resources.

Often, a pedestrian survey includes the entire project property. Since the proposed project involves only the development of the northern portion of the project property (roughly 20 acres, next to existing residential areas and paved roads), with the remainder being conserved as

undeveloped open space (roughly 75 acres), the field survey concentrated more intensively on the northern area that is planned to be developed **(Figure 2)**.

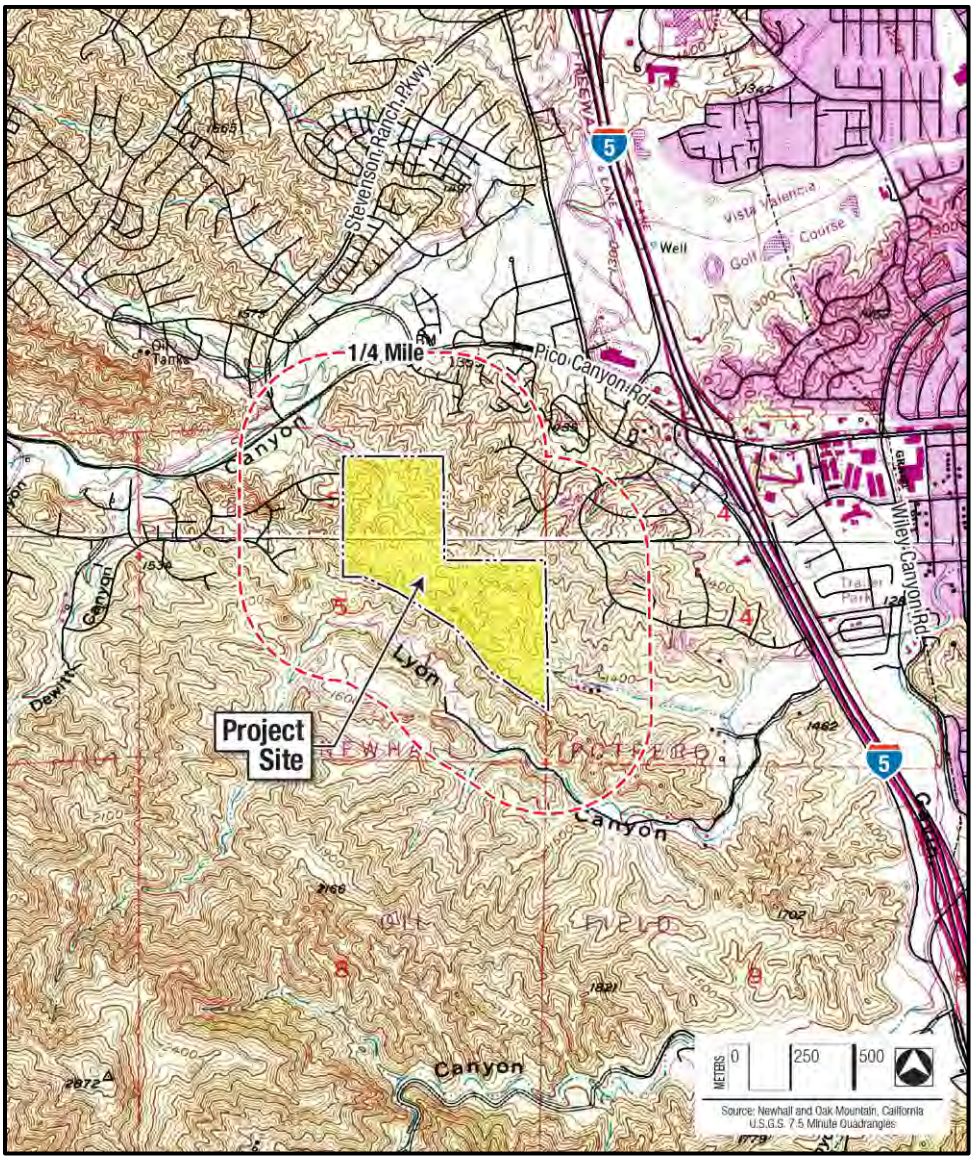


Figure 1: Project property south of Pico Canyon Road, Santa Clarita, California (USGS Map).

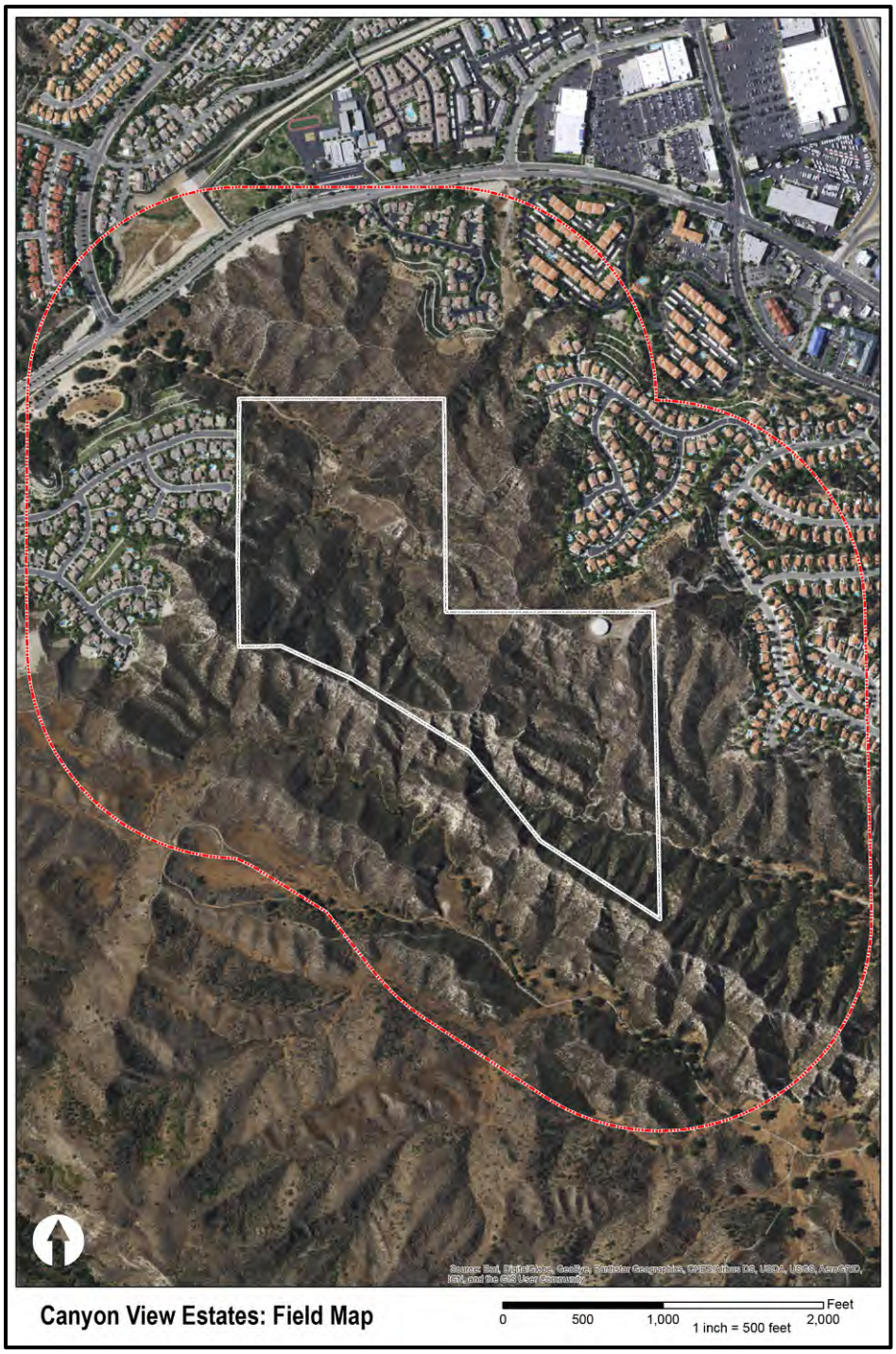


Figure 2: Project property south of Pico Canyon Road, Santa Clarita, California (2017 Google Earth Image).

RECORD SEARCH RESULTS

On August 30, 2017, Envicom contacted the NHM with a request to search their database for paleontological resources within the project property, plus a 0.25-mile study area for regional context (see Figure 1). The record search included a request for all known localities of paleontological resources within the project property, as well as an assessment of the sensitivity of the project area for paleontological resources. The request also included a request for known fossil localities within the 0.25-mile study area to develop paleontological context for the project.

Envicom received a response from the NHM on September 14, 2017, which is provided in **Appendix A** of this report. The response letter indicated that the findings were negative for paleontological resources within the project property, however localities of previously discovered significant fossils were located nearby within the same sedimentary deposits that occur within the project area. The NHM indicated that both the terrestrial-originating Saugus Formation and the marine-originating Pico Formation have yielded significant fossils, and should, therefore, be considered sensitive for paleontological resources.

The NHM identified that fossils previously discovered in the Saugus Formation included species of Pliocene/Pleistocene camel and horse, as well as smaller animal fossils, such as alligator lizard, rabbit, pocket gopher, and pocket mouse. Fossils recovered nearby from the Pico Formation included sea lion, bat ray, guitarfish, requiem shark, basking shark, and sheephead fish.

The NHM recommended monitoring of excavation within either the Saugus or Pico Formations, as well as sediment samples being taken to determine the small fossil potential in the project area (this task normally occurs during monitoring). Finally, they recommended that any recovered fossils be curated in an accredited scientific institution.

Dibblee geological maps were examined for the project area, concentrating on the northern residential development portion of the property. The primary rock units for the project area are the Saugus Formation and the Pico Formation, with possibly the Towsley Formation extending into the southern open space portion of the project property. Both the Pico and Towsley Formations are marine-originating sandstone, siltstones, and claystones, while the Saugus Formation is terrestrial-originating compacted conglomerate stone formation.

The Towsley Formation dates to the Miocene Epoch (23 to 5.3 million years ago), and the Pico Formation dates to the later Pliocene Epoch (5.3 to 2.6 million years ago). The Saugus Formation is a newer, non-marine late Pliocene and Pleistocene (2.6 million to 11,700 years ago) conglomerate sandstone formation, which is made up of weathered, conglomerate pebbles and cobbles in a sandy matrix. This formation is very unstable, due to the poor compactness of the rock, and is subject to rock slides and earth movement. Also in the region are Late Pleistocene older alluvial materials, and Holocene recent alluvial materials, both of which are found on the slope areas of nearby Pico Creek and its tributaries. This material dates from 11,700 years in age to present.

The Pico Formation is the most prominent visible local rock formation that will be encountered in the residential development portion of the project property, and is clearly visible on the north side of Pico Road (**Figure 3**). Since this formation has been moved from the horizontal to vertical and near-vertical positions through fault pressure, many of the visible hills and mountains of the area are actually land forms that have been upended through earth movement, then subject to later weathering. The Pico Formation consists of a harder, light colored variant, a less intact conglomerate variant, and a siltstone variant that is between the two in hardness (see Figure 3).

North of the Pico Formation and located within the northern part of the project property is the Saugus Formation, which will also be encountered by the proposed residential development. The later non-marine Saugus Formation material has been mostly weathered from earlier formations, then compacted into a conglomerate stone. South of the Pico Formation is the Towsley Formation, which is an earlier marine-origin sandstone, and which probably extends into the southern open space part of the project. This formation is very similar in appearance to the Pico Formation, with lighter colored hard sandstone, siltstones, and claystones, but is from an earlier geologic age. The Towsley Formation is also subject to rock falls, landslides, and slope failures due to less compacted rock variants of the formation.



Figure 3: The prominent rock formation visible north of Pico Road is from the Pico Formation (light colored stone is the harder variant; darker colored stone is the less organized variant).

At the base of these primary rock formations are Pleistocene and newer alluvial material, which is the product of more recent water and wind weathering processes (**Figure 4**). This alluvial material consists of volcanic cobbles and pebbles, such as quartz, quartzite, granite, and other volcanic and meta-volcanic (re-fused) material, and sand. All of this material was once embedded in the earlier, older sandstone and conglomerate rock formations of the area, which natural processes have broken down into matrix (usually sand) and aggregate components.



Figure 4: Recent Holocene alluvial material at the base of the Pico Creek tributary in the center of the property.

Since the Pico and Towsley Formations are of marine origin, the representative fossils expected to be encountered are related to a coastal salt-water environment, including crustaceans, marine shells, and other invertebrates. Fish and sharks could also be present, including the prehistoric Megalodon shark that weighed upwards of 50-tons. Since mammals were a dominant animal class during the Miocene and Pliocene Epochs, possible fossil finds include Pinnipeds (early seals and walruses), prehistoric whales, and Eurhinodelphis, which was an early dolphin species, as well as other marine mammals.

The Saugus Formation, which dates to the Pliocene, and the older Pliocene and Pleistocene alluvial deposits, are terrestrial in origin and dominated by land species. Possible fossil species encountered in these rock formations include mastodon, Mammoths, saber-toothed cats, short-faced bears, ground sloths, giant beaver, three-toed horses, and extinct camels. Also present would have been numerous rodents, lizards, snakes, and birds. Modern species would be found within the recent alluvial areas, and would not be considered paleontological resources.

PEDESTRIAN SURVEY RESULTS

Dr. Wayne Bischoff surveyed the property area on September 7, 2017. Large portions of the property has had minor modern impacts from vehicular earth moving, trail construction, and trash fires. Some raised berming, grubbing, and clearing has also taken place along the ravine bottoms, and numerous shallow foot holds have been excavated into trail paths.

Ground visibility was quite good, with large portions of the bedrock soil being exposed due to water erosion, wind deflation, and modern trail building activity. The terrain was moderately sloped, with higher sloping to the west and south. The landscape consisted of numerous uplift hills, surrounded by narrow valleys that concentrated seasonal rain flow into an unnamed southwest-to-northwest tributary of Pico Creek. This tributary valley dominated the center of the northern project area and contained the most alluvial material (see Figure 2). Proposed project access to the property is from Magnolia Lane in the residential subdivision to the west, which was where the survey began.

Modern trail construction provided good visibility of the underlying bedrock from the tributary channel up the surrounding hill sides to the north and south (**Figure 5**). Several of these cut trails existed throughout the property, but none revealed actual fossil-bearing rock units; most exposing less intact small aggregate conglomerate sandstone of either the Saugus or Pico Formations.

North of the tributary valley, the rocks appear to be poorly compacted representatives of the Saugus Formation. Weathering has converted the entire hill area into soil for vegetation, and no outcrops of harder rock could be seen. South of the tributary is the Pico Formation, which is higher in elevation, and has larger sections of exposed rock on steeper slopes due to the harder compactness of the rock unit material. Again, no fossil-bearing rock units were identified.

Bedrock is quite near the surface throughout the area. Modern cuts related to the existing residential subdivision west of the project property show the shallowness of the covering loam and later alluvial material (**Figure 6**). Visible is the vertical uplift of the Pico Formation, as well as the variations in the Formation between harder and less intact materials.

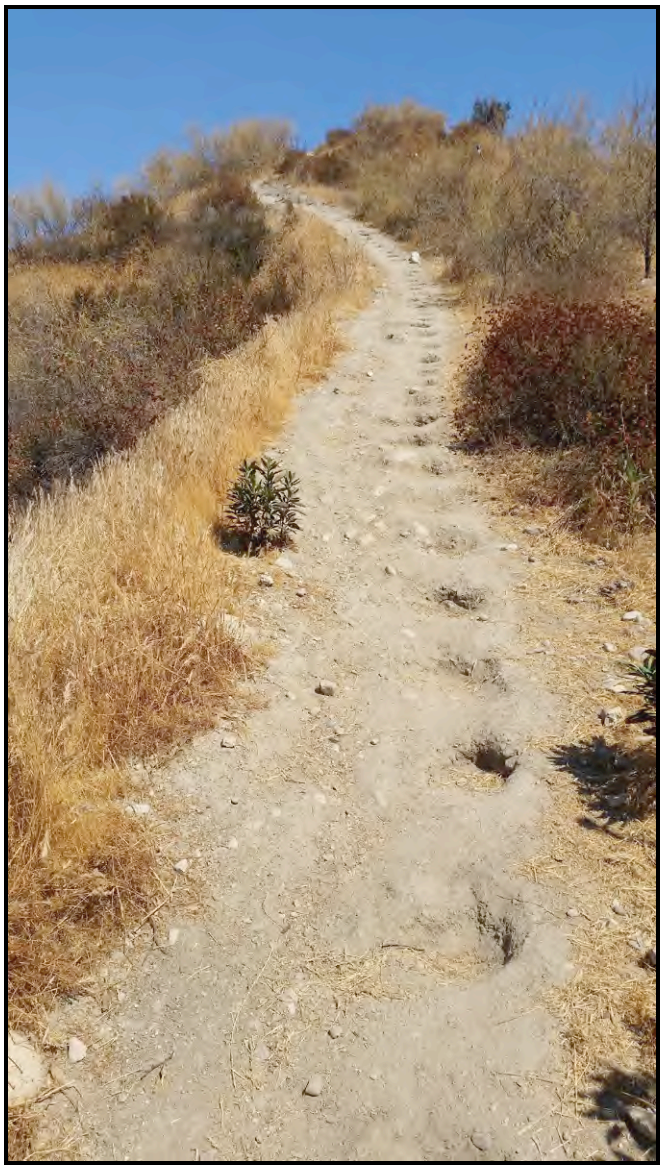


Figure 5: Modern trail construction provided an observable cross section of the underlying bedrock material up the slope sides to the north and south of the main tributary channel.

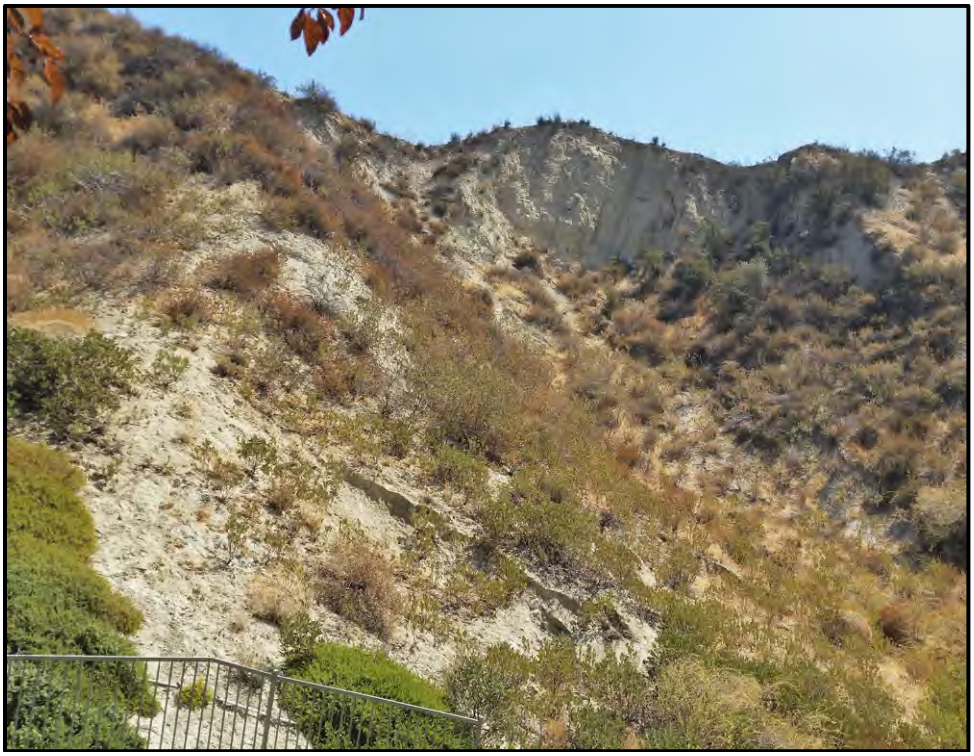


Figure 6: Pico Formation samples revealed by excavations for the residential subdivisions to the west (the near-surface vertical sandstone bedrock is seen near the slope top).

In conclusion, the northern half of the project property was examined in detail, with good coverage of the landscape and examination of exposed areas in trail cuts and erosional locations. No fossil-bearing outcrops were encountered during surface observation of the proposed development portion of the property, though bedrock was confirmed to be near the surface. This determination was based on exposed sections of conglomerate stone within trail cuts and from earth removal immediately outside the project area.

South of the proposed residential development portion of the project property is the project open space area. Here, the Pico Formation gives way to ridges of older harder stone, which also has large amounts of alluvial material that have eroded downward from the area ridges and peaks. This material is visibly quite similar to the Pico Formation, with no true differentiation between the Pico and the Towsley Formations on the landscape, making the transition between the two Formations difficult to identify on the landscape.

The southern open space portion of the project property was examined from available vantage points around the property. The southern landscape was determined to be similar in landscape organization to the northern half (**Figure 7**). No exposed outcrops could be seen on the surface in this area either. Dr. Bischoff concluded that the probability is also low of being able to see exposed fossil resources and sensitive rock units within the open space portion of the property.



Figure 7: Southern open space area, showing similarity of landscape to the northern portion of the project property (Towsley Formation is in the far ground).

RECOMMENDATIONS

The results of the NHM record searches was negative for paleontological resources within the project property, but was positive for paleontological resources within the surrounding region. The NHM identified the region as being "sensitive for paleontological resources." Examination of the Dibblee maps supported the conclusion that the project area was sensitive for paleontological resources, as numerous fossil-bearing sandstone formations of terrestrial and marine origin exist within the project property.

No fossils or fossil-bearing rock units were identified during the pedestrian paleontological survey of the proposed development project area. Surface observation did, however, indicate that local representative segments of the fossil-bearing Saugus and Pico Formations, and possibly the Towsley Formation, are in the project area, and at depths near surface. This field observation supports the conclusion that the proposed residential project is located within an area that is "sensitive for paleontological resources."

Due to the sensitivity for paleontological resources of the project area, based on the record search and the field survey, the chance of encountering significant fossil resources during project grading is moderate to high. Envicom, therefore, recommend the following project compliance measures:

Paleontological Monitoring:

Prior to issuance of grading permits, a qualified Paleontologist shall be retained to develop and implement a paleontological monitoring program (PRMP) approved by the County for project construction excavations that would encounter older Quaternary alluvium or deposits associated with the Saugus Formation, Pico Formation, or Towsley Formation. The Paleontologist shall attend a pre-grading/excavation meeting to discuss a paleontological monitoring program. A qualified paleontologist is defined as a paleontologist meeting the criteria established by the Society for Vertebrate Paleontology. The qualified Paleontologist shall supervise a paleontological monitor who shall be present at such times as required by the Paleontologist during construction excavations into older Quaternary alluvium, or deposits associated with the Saugus Formation, the Pico Formation, or the Towsley Formation.

Initially, due to the shallowness of the rock units in the project area, a paleontological monitor will need to be present for all initial earth moving activity of native soils. After initial grading of the surface, it is the Paleontologist's responsibility to determine monitoring needs, based on the encountered rock units. Monitoring shall consist of visually inspecting fresh exposures of rock for larger fossil remains and, where appropriate, collecting wet or dry screened sediment samples of promising horizons for smaller fossil remains. The frequency of monitoring inspections shall be determined by the Paleontologist and shall be based on the rate of excavation and grading activities, the materials being excavated, and the depth of excavation, and if found, the abundance and type of fossils encountered. It is the Applicant's responsibility to provide the Paleontologist with a daily and/or weekly grading schedule.

Paleontological Discovery Compliance Measure:

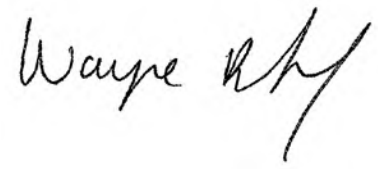
If a potentially-significant fossil is found, the paleontological monitor shall be allowed to temporarily divert or redirect grading and excavation activities in the area of the exposed fossil to facilitate evaluation and, if necessary, salvage. A buffer area of at least 30 feet shall be established around the find where construction activities shall not be allowed to continue. Work shall be allowed to continue outside of the buffer area as long as such work can be appropriately monitored. A communication plan (part of the project PRMP) will then be followed to inform the County, the Lead Agency, and any additional individuals outlined in the PRMP.

After consultation with the County and the Applicant, and if the find is determined to be significant, then the fossil discovery will be recovered following developed scientific excavation practices. All excavation and data recovery efforts will be agreed upon in writing prior to commencement of the activity between all primary parties outlined in the PRMP. At the Paleontologist's discretion, and to reduce any construction delay, the grading and excavation contractor may assist in removing rock samples for initial processing. Any fossils encountered and recovered shall be prepared to the point of identification and catalogued before they are donated to their final repository. Any fossils collected shall be donated to a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County. Accompanying notes, maps, and photographs shall also be filed at the repository. All costs related to the salvage of significant fossil finds shall be assumed by the Applicant.

Paleontological Compliance Report:

The Paleontologist shall prepare a report summarizing the results of the paleontological monitoring and any salvage efforts that take place in response to discovery. This report will include all daily monitoring logs, the methodology used in any salvage efforts, as well as a description of the fossils collected from the wet and dry screen sampling and their significance. The report shall be submitted by the Paleontologist to the County to signify the satisfactory completion of the Project and required mitigation measures. Any cost associated with processing, analyzing, and describing recovered fossils during monitoring, as well as the cost of the compliance report, will also be assumed by the Applicant.

Sincerely,



Dr. Wayne Bischoff
Director of Cultural and Paleontological Resources

ATTACHMENT:
Appendix A: Letter to NHM and NHM Response Letters

August 30, 2017

Dr. Samuel A. McLeod
Natural History Museum of Los Angeles
900 Exposition Blvd,
Los Angeles, CA 90007

Attn: Dr. McLeod

Subj: **Phase I Paleontological Resources Assessment of the Canyon View Estates Development Project, Santa Clarita, California (*Envicom Project #17-796-101*)**

Dear Dr. McLeod:

Envicom is requesting a record search of the Natural History Museum database for paleontological sensitivity for the project area, and a map/listing of all paleontological resources previously identified within the attached project area, plus a 0.25-mile study area to further assess local sensitivity.

The project is located at:

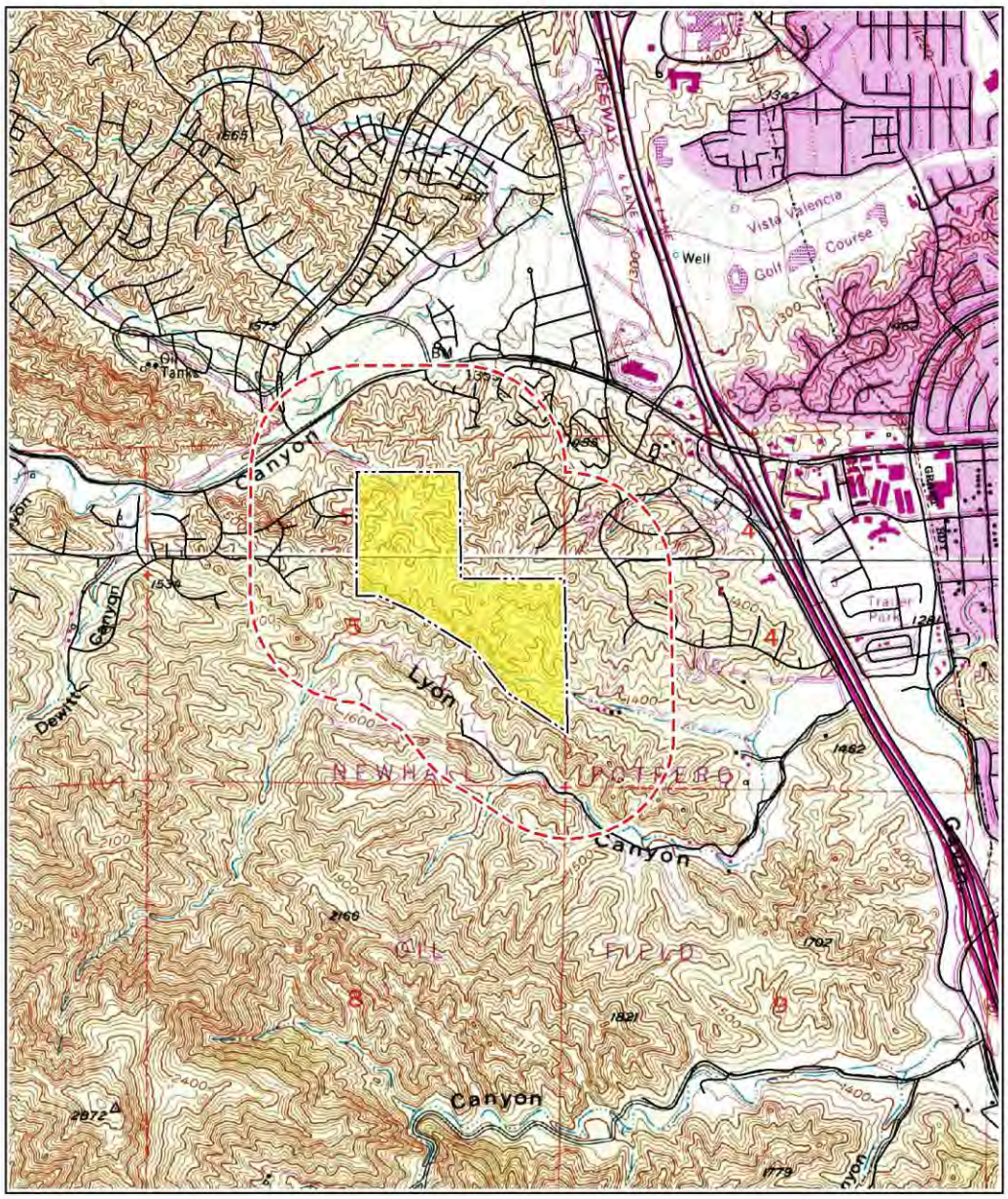
Section - 5
Township - 3N
Range - 16W
USGS Quads - Newhall and Oat Mountain, CA
Lat - 34°22'30.66"N
Long - 118°34'36.75"W

Envicom appreciates the Natural History Museum's help with this request. For correspondence or questions regarding this Project, please contact Wayne Bischoff at 818-879-4700 (wbischoff@envicomcorporation.com).

Sincerely,

Dr. Wayne Bischoff
Director of Cultural Resources

Attachment:
Project vicinity map on 1:24,000 topographic map


Vista Valencia
Golf Course
Well
Oil Tanks
Lyon Canyon
Dewitt Canyon
Lyon Canyon
Canyon
NEWHALL
POTRERO
OIL FIELD
Trailer Park
1665
1538
1462
1342
2168
1821
1702
2872
1779
0 250 500
Meters

Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

tel 213.763.DINO
www.nhm.org

NATURAL HISTORY MUSEUM
LOS ANGELES COUNTY

Vertebrate Paleontology Section
Telephone: (213) 763-3325

e-mail: smcleod@nhm.org

14 September 2017

Envicom Corporation
4165 East Thousand Oaks Boulevard, Suite 290
Westlake Village, CA 91362

Attn: Wayne Bischoff, Ph.D., Director of Cultural Resources

re: Paleontological resources for the proposed Canyon View Estates Development Project, Envicom Project #17-796-101, near Santa Clarita, Los Angeles County, project area

Dear Wayne:

I have conducted a thorough check of our paleontology collection records for the locality and specimen data for the proposed Canyon View Estates Development Project, Envicom Project #17-796-101, near Santa Clarita, Los Angeles County, project area as outlined on the portions of the Newhall and Oat Mountain USGS topographic quadrangle maps that you sent to me via e-mail on 30 August 2017. We do not have any vertebrate fossil localities that lie directly within the proposed project area boundaries, but we do have localities nearby from the same sedimentary deposits that occur in the proposed project area.

In almost all of the proposed project area there are exposures of the Plio-Pleistocene Saugus Formation, with the slightly older marine Plio-Pleistocene Pico Formation having interfingering exposures in the southwestern portion of the proposed project area.

Our closest vertebrate fossil locality from the Saugus Formation is LACM 1293, northwest of the proposed project area on the north side of Potrero Canyon, that produced a fossil specimen of camel, Camelidae. Northeast of the proposed project area, in Saugus just southeast of the junction of Bouquet Canyon Road and Soledad Canyon Road, our Saugus Formation localities LACM 6803-6804, produced fossil specimens of camel, Camelidae, and horse, *Equus*.

Slightly further northwest of the proposed project area, up the small canyon on the west side of Castaic Creek between Hasley Canyon and the Saugus - Ventura Road (Highway 126), our Saugus Formation locality LACM 6063 produced a fossil specimen of horse, *Equus*. Slightly farther north in Hasley Canyon our Saugus Formation locality LACM 6062 produced fossil specimens of alligator lizard, *Gerrhonotus*, rabbit, Leporidae, pocket mouse, *Perognathus*, and pocket gopher, *Thomomys*.

Our closest vertebrate fossil locality from the Pico Formation is LACM 6365, just west of the northern-most portion of the proposed project area on the north side of Pico Canyon, that produced a skull of an undetermined sea lion, Otariidae. Southeast of the proposed project area, west of The Old Road west of the Golden State Freeway (I-5) and north of Calgrove Boulevard, our localities LACM 6145-6146 occur in an area geologically mapped as having exposures of the Saugus Formation, but they are probably from the underlying Pico Formation. Localities LACM 6145-6146 produced fossil specimens of bat ray, *Myliobatis*, guitarfish, *Rhinobatos*, requiem shark, *Carcharhinus*, basking shark, *Cetorhinus*, and sheephead, *Semicossyphus*.

Any excavations in the Saugus Formation or the Pico Formation exposed throughout the proposed project area may well encounter significant vertebrate fossils. Any substantial excavations in the proposed project area, therefore, should be closely monitored to quickly and professionally recover any potential vertebrate fossils without impeding development. Also, sediment samples should be collected and processed to determine the small fossil potential in the proposed project area. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

This records search covers only the vertebrate paleontology records of the Natural History Museum of Los Angeles County. It is not intended to be a thorough paleontological survey of the proposed project area covering other institutional records, a literature survey, or any potential on-site survey.

Sincerely,

Samuel A. McLeod

Samuel A. McLeod, Ph.D.
Vertebrate Paleontology

enclosure: invoice

NATIVE AMERICAN HERITAGE COMMISSION
Environmental and Cultural Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710

August 29, 2017

Marie Pavlovic
Los Angeles County Department of Regional Planning

Sent by E-mail: mpavlovic@planning.lacounty.gov

RE: Proposed Canyon View Estates Project, Community of Stevenson Ranch; Oat Mountain and Newhall USGS Quadrangles, Los Angeles County, California

Dear Ms. Pavlovic:

Attached is a consultation list of tribes with traditional lands or cultural places located within the boundaries of the above referenced counties. Please note that the intent of the reference codes below is to avoid or mitigate impacts to tribal cultural resources, as defined, for California Environmental Quality Act (CEQA) projects under AB-52.

As of July 1, 2015, Public Resources Code Sections 21080.3.1 and 21080.3.2 **require public agencies** to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose mitigating impacts to tribal cultural resources:

> **Within 14 days** of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section. (Public Resources Code Section 21080.3.1(d))

The law does not preclude agencies from initiating consultation with the tribes that are culturally and traditionally affiliated with their jurisdictions. The NAHC believes that in fact that this is the best practice to ensure that tribes are consulted commensurate with the intent of the law.

In accordance with Public Resources Code Section 21080.3.1(d), formal notification must include a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation. The NAHC believes that agencies should also include with their notification letters information regarding any cultural resources assessment that has been completed on the APE, such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

   - A listing of any and all known cultural resources have already been recorded on or adjacent to the APE;
   - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
   - If the probability is low, moderate, or high that cultural resources are located in the APE.
   - Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the potential APE; and
   - If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

   - Any report that may contain site forms, site significance, and suggested mitigation measurers.

     All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure in accordance with Government Code Section 6254.10.

3. The results of any Sacred Lands File (SFL) check conducted through Native American Heritage Commission. A search of the SFL was completed for the project with negative results.

4. Any ethnographic studies conducted for any area including all or part of the potential APE; and

5. Any geotechnical reports regarding all or part of the potential APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS is not exhaustive, and a negative response to these searches does not preclude the existence of a cultural place. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the case that they do, having the information beforehand well help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance we are able to assure that our consultation list contains current information.

If you have any questions, please contact me at my email address: gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton, M.A., PhD.
Associate Governmental Program Analyst

Native American Heritage Commission
Tribal Consultation List
Los Angeles County
8/29/2017

Fernandeno Tataviam Band of Mission Indians
Rudy Ortega, Tribal President
1019Second Street, Suite 1
San Fernando, CA, 91340
Phone: (818) 837 - 0794
Fax: (818) 837-0796
Tataviam

San Fernando Band of Mission Indians
John Valenzuela, Chairperson
P.O. Box 221838
Newhall, CA, 91322
Phone: (760) 885 - 0955
tsen2u@hotmail.com
Kitanemuk
Serrano
Tataviam

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas, Chariperson
P.O. Box 393
Covina, CA, 91723
Phone: (626) 926 - 4131
gabrielenoindians@yahoo.com
Gabrieleno

Gabrieleno/Tongva San Gabriel Band of Mission Indians
Anthony Morales, Chairperson
P.O. Box 693
San Gabriel, CA, 91778
Phone: (626) 483 - 3564
Fax: (626) 286-1262
GTTribalcouncil@aol.com
Gabrieleno

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St., #231
Los Angeles, CA, 90012
Phone: (951) 807 - 0479
sgoad@gabrielino-tongva.com
Gabrielino

Gabrielino Tongva Indians of California Tribal Council
Robert Dorame, Chairperson
P.O. Box 490
Bellflower, CA, 90707
Phone: (562) 761 - 6417
Fax: (562) 761-6417
gtongva@gmail.com
Gabrielino

Gabrielino-Tongva Tribe
Charles Alvarez,
23454 Vanowen Street
West Hills, CA, 91307
Phone: (310) 403 - 6048
roadkingcharles@aol.com
Gabrielino

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 6097.98 of the Public Resources Code and section 5097.98 of the Public Resources Code.

This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed Canyon View Estates Project, Los Angeles County.

REVISED PHASE I ARCHAEOLOGICAL SURVEY OF THE CANYON VIEW ESTATES PROJECT LOS ANGELES COUNTY, CALIFORNIA

Prepared For:

Mr. Jon Friedman
Pico Canyon LLC
1435 Reynolds Ct.
Thousand Oaks, CA 91362

Prepared By:

W & S Consultants
2242 Stinson Street
Simi Valley, California 93065
805-581-3577

30 November 2017

MANAGEMENT SUMMARY

An intensive Phase I archaeological survey was conducted for the 94.38 acres Canyon View Estates study area, northern Los Angeles County, California. This involved an archival records search, a review of existing published and unpublished references on local prehistory and history, and an intensive, on-foot survey of the subject property. Archival records indicated that the study area had been previously surveyed and that no recorded cultural resources are present within the subject property. In addition, no cultural resources of any kind were found during the Phase I archaeological survey of the Canyon View Estates project area. Lastly, recommendations for this project are provided.

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REVISED PHASE I ARCHAEOLOGICAL SURVEY OF THE CANYON VIEW ESTATES PROJECT, LOS ANGELES COUNTY, CALIFORNIA

1.0 INTRODUCTION

Pursuant to a request from Mr. Jon Friedman, Pico Canyon LLC, an intensive Phase I archaeological survey was conducted by W & S Consultants for the Canyon View Estates study area, a 94.38 acres parcel located in northern Los Angeles County, California (Figure 1). This survey of the study area was conducted on June 1 and 2, 2017. It was intended to identify all cultural resources (prehistoric and historical archaeological sites) within the study area. Project staff for the field survey included Joseph M. Simon, Terry Simon and Robert Snibley. This report was written by David S. Whitley, Ph.D. and Joseph M. Simon.

This document summarizes the background research conducted as part of the study; outlines the field techniques employed to intensively survey the parcel; describes the results of the survey; and makes final recommendations for the Canyon View Estates study area. We begin with a discussion of the background studies, before considering these additional topics in turn.

2.0 BACKGROUND STUDIES

2.1 Project Location and Environment

The Canyon View Estates study area is located between Lyon Canyon and Pico Canyon in unincorporated, northern Los Angeles County, California (Figure 1). Specifically it includes two large ephemeral drainages in both the northern and southern portions of the property with narrow, highly dissected slopes and ridgelines in the central part of the study area. Elevations within the study area range from approximately 1400 feet a.s.l. along the southern end, to about 1600 feet in the central portion of the property.

Vegetation within the study area is predominantly chaparral along the slopes and ridgelines with scattered oaks in the lower portions of the property. The built-environment around the Canyon View Estates project site consists of modern residential developments to the west, north and east.

2.2 Ethnographic Background

The Upper Santa Clara Valley region, including the study area, appears to have been inhabited during the ethnographic past by an ethnolinguistic group known as the Tataviam. Based on a few existing word lists, descriptions provided by early travelers, mission placenames, and the recollections of other aboriginal informants, the Tataviam are generally accepted as the aboriginal inhabitants of this region. Their language is believed to represent a member of the Takic branch of the Uto-Aztecan linguistic family (King and Blackburn 1976). In this sense, it was related to other Takic languages in the Los Angeles County region, such as Gabrielino and Fernandeño of the Los Angeles Basin proper, and Kitanemuk of the Antelope Valley.

The Tataviam are thought to have inhabited the upper Santa Clara River drainage from about Piru eastwards to just beyond the Vasquez Rocks/Agua Dulce area; southwards as far as Newhall and the crests of the San Gabriel and Santa Susana Mountains; and northwards to include the middle reaches of Piru Creek, the Liebre Mountains and the southwesternmost fringe of the Antelope Valley (ibid; Kroeber 1925; Earle 1990; Johnson and Earle 1990). Their northern boundary most likely ran along the northern foothills of the Liebre Mountains (i.e., the edge of the Antelope Valley), and then crossed to the southern slopes of the Sawmill Mountains and the Sierra Pelona, extending as far east as Soledad Pass (Earle 1990:94). Ethnographically, at least, the Tataviam do not appear to have controlled the Leona Valley or areas to the north, with the Elizabeth Lake area proper a zone of uncertainty.

Known Tataviam villages during the historic period include: pi?irukung and ?akavaya, both near modern Piru; tsavayu(?u)ng, San Francisquito; etseng, kuvung and huyung, on Piru Creek above Piru; tochonanga, near Newhall; kwarung, Elizabeth Lake; and tsawayung, near Castaic Junction. At kamulus, near modern Rancho Camulos, a mixed Chumash-Tataviam

population lived (King and Blackburn 1976:535-6). Because the name kamulus is unquestionably Chumash and not Tataviam, however, the toponym has been viewed as problematical (Johnson and Earle 1990:197); that is, as not reflecting the original (Tataviam) name for this village. Regardless of original name, however, the Spanish missionary Señan, writing in 1804, indicated that the Chumash inhabitants of the village of sécpey had migrated to kamulos, accounting for this admixture (Señan 1962:15). Sécpey is of course now known as Sespe, near the modern town of Fillmore.

The putative historical Tataviam village of tsawayung, also known as chaguayabit or tacuyamam, has generated interest, due to its reported location at Castaic Junction and its association with Asistencia de San Francisco (cf. Henshaw 1955:196; King and Blackburn 1976:536; Johnson 1978; Johnson and Earle 1990). This Tataviam placename is controversial (or at least ambiguous) on two counts. First, the exact location of it was never precisely identified in the historical records. Although it has been widely presumed to be at or immediately adjacent to the Asistencia, no archaeological or other evidence of such has yet been forthcoming. Second, and moreover, Henshaw (1955:196) argued that it was not the site of a major village where ceremonies were conducted, as many later authors have also assumed. However, John Johnson (personal communication, 1993) has mentioned that there are a significant number of entries in the San Fernando Mission registrar, noting births, baptism, marriages and deaths from persons originally inhabiting this locale, and suggesting that it was once a village of some size. Thus, it remains somewhat enigmatic. Our best interpretation of its original location, based on a variety of lines of evidence, places it in approximately one-half mile east of the intersection of Rye Canyon Road and Interstate-5.

Culturally-speaking, the Tataviam were in most respects similar to their Fernandeño and Chumash neighbors, to the south and west, respectively (King and Blackburn 1976). In this sense, they were hunters-gatherers, with subsistence emphasizing yucca, acorns, juniper berries, sage seeds and islay. Game was also hunted, with small animals, such as rabbits/hares and rodents, probably representing more significant contributions of meat protein than larger game, such as deer.

Almost nothing is known of Tataviam social and political organization.

Based on analogies with surrounding groups, however, it can be suggested that they were organized in a series of tribelets, similar to the naciones described by Earle (1990) for the Antelope Valley, and found to be characteristic of much of California aboriginal socio-political organization (cf. Kroeber 1925). The tribelet represented an autonomous land-holding unit, minimally controlled by a head-chief or big-man. They usually included one large, 'capital' village, sometimes occupied year-around, and a series of smaller, seasonally inhabited hamlets. Whether the Tataviam may have had exogamous clans and moieties, like the Cahuilla and Serrano to the east, is unknown. However, it is estimated that the Tataviam population was less than 1000 people at the time of Euro-American contact, and that only two or three of the largest villages throughout their territory were inhabited at any given time (King and Blackburn 1976).

It is also likely that Tataviam religion followed the patterns of their surrounding neighbors. In this case, shamanism would have functioned as the central element. This posits a direct and personal relationship between each individual and the supernatural world, with this relationship enacted by entering a trance or hallucinatory state (usually based on the ingestion of psychoto-mimetic plants, such as jimsonweed or native tobacco). Shamans, per se, who were considered individuals with an unusual degree of supernatural power, served as ritual specialists: ceremonies and rites were infrequent in occasion and limited in type. Perhaps most importantly, shamans served as healers or curers, with the etiology of disease as well as its cure held to lie in the supernatural world. Shamans are also known to have produced the rock art of this region (Whitley 1992), which depicted the hallucinations and spirits they observed in their vision quests.

Although the Tataviam were one of the earliest groups contacted by Spanish missionaries, with a number of their villages described by members of the Portolá expedition of 1769, a general lack of information on this group exists because, by 1810, all Tataviam had been baptized at Mission San Fernando and were quickly absorbed by other groups through intermarriage. The last speaker of Tataviam died in 1916 (King and Blackburn 1976).

2.3 Archaeological Background

Archaeologically speaking, more information is available on the Upper Santa Clara River area, although here, too, less is known than for many of the surrounding regions of southern California. In general terms, the prehistory of this inland area appears to parallel that of the Santa Barbara Channel/southern California coastal zone (cf. McIntyre 1990), with William Wallace's (1955) cultural historical framework appropriate as a chronological system of reference.

Correspondingly, the earliest evidence for human occupation of this region corresponds to Wallace's Early Millingstone Period (or, alternatively, the Early Horizon), dated from about 7000 to 4000 years before present (B.P.). This represents a period during which subsistence and adaptation are said to have emphasized the collecting and processing of hard seeds, with inland artifact assemblages, correspondingly, dominated by mullers and millingstones known as manos and metates. Evidence for an Early Millingstone occupation of the Upper Santa Clara Valley region is, admittedly, very limited, and has been found at only two sites. Both of these are located near Vasquez Rocks, with temporal attribution based on the presence of a small number of Olivella barrel beads (McIntyre 1990). Such bead types have subsequently proven unreliable temporal indicators, throwing doubt on human inhabitation of this region before about 4000 years ago. Further, recent excavations at one of these putative early locales, the Escondido Canyon Site, failed to uncover evidence for occupation prior to about 2700 years B.P. (Love 1990).

The second temporal unit in Wallace's chronology is the Intermediate Period (or Middle Horizon), dated from 3500 to 1500 years B.P. It is marked by a shift to the mortar and pestle, with an increased emphasis on hunting and hunting tools in artifact assemblages. Population appears to have increased during this period, with more temporary camps founded. Evidence for Intermediate Period occupation of the Upper Santa Clara Valley region is substantial, in that it has been found at a number of sites and has been based on radiocarbon, obsidian hydration and typological dating (McIntyre 1990). The Agua Dulce village complex, for example, includes occupation extending back to the Intermediate Period, at which time population of the village may have been 50 or more people (King et al n.d.). Furthermore, the Intermediate Period appears to represent a time

during which a substantial exploitation of mid-altitude environments first began, with considerable use, for example, of portions of the nearby Hathaway Ranch (located to northwest of the study area) beginning at this time.

Assuming that the Upper Santa Clara River region was first significantly occupied during the Intermediate Period, as existing evidence now suggests, a parallel can be drawn with the inland Ventura County region, where a similar pattern has been identified (Whitley and Beaudry 1991), as well as possibly the Antelope Valley and western Mojave Desert (Sutton 1988a, 1988b). In all of these areas a major expansion in settlement, the establishment of large site complexes, and an increase in the range of environments exploited, appear to have occurred sometime roughly around 3000 years ago. Although most efforts to explain this expansion have focused on very local circumstances and events, it is increasingly clear that this was a major southern California-wide occurrence, and therefore that explanation of it must be sought at a larger level of analysis.

There is a continuity in the inland regions between the Intermediate Period and subsequent times, labeled the Late Prehistoric Period, lasting from 1500 years B.P. to historic contact, at about 200 years B.P. Site complexes first occupied in the Intermediate Period continued to be inhabited, although they increased in size, with more specialized and diversified sites added to the kinds of sites present. In fact, the principal distinction between Intermediate and Late Prehistoric sites in the inland regions is a change in certain diagnostic artifact types (notably, projectile points, with a shift from spear points to bow and arrow points). This change in fact may not signify consequential changes in culture, adaptation or subsistence, although the trends begun in the Intermediate accelerate over time during the Late Prehistoric. For example, a large number of Late Prehistoric Period sites are known from the Upper Santa Clara River/Agua Dulce region (cf. McIntyre 1990), with the Agua Dulce village complex estimated to have grown to a population of 200 to 300 people around A.D. 1500 - 1600 (King et al n.d.). Sometime during this period the Tataviam can be hypothesized to have occupied this region, although it is possible that they may have appeared somewhat earlier. However, the important point is that, during the Late Prehistoric Period, the patterns of lifeways recorded for the ethnographic period were fully

in operation.

During the Historic Period, the aboriginal population appears to have dropped considerably. This, without doubt, can be attributed to the effects of missionization and its attendant relocation of the aboriginal population to centralized locales, along with the depredations of introduced Old World diseases. The Upper Santa Clara River region appears to be one of those inland zones, like the Antelope Valley to the north, that quickly and completely lost its aboriginal population. In particular, the aboriginal population from the Upper Santa Clara Valley was moved into Mission San Fernando, in the San Fernando Valley, and the area was effectively depopulated.

2.4 Historical Background

As noted previously, Euro-American mention of the upper Santa Clara River Valley region first occurred in the chronicles of the Portolá expedition of 1769, which passed through the San Fernando Valley to Newhall, then to the Castaic Junction area, and then down the Santa Clara River, to Ventura, on its way to Monterey (Bolton 1971; Boneau Companys 1983; Brandes 1970; Cleland 1940). Portolá, in fact, camped at the confluence of the Santa Clara and Castaic Creeks - modern Castaic Junction - and suggested this locale as an appropriate spot for a mission. Portolá described Castaic Junction as follows:

> The country...is delightful and beautiful in the plain, although the mountains that surround it are bare and rough. In the plain we saw many tall and thick cottonwoods and oaks; the watering place [Castaic Junction] consists of an arroyo with a great deal of water which runs in a moderately wide valley, well grown with willows and cottonwoods. We stopped on the bank of the arroyo, where we found a populous village in which people lived without any cover, for they had no more than a light shelter fenced in like a corral...As soon as we arrived they gave us many baskets of different kinds of seeds, and a sort of sweet preserve like little raisins, and another resembling honeycomb, very sweet and purging, and made of the dew which sticks to the reed grass. It is a very suitable site for a mission, with much good land, many palisades, two very large arroyos of water, and five large villages

close by.

(Bolton 1971:153)

This description, which bears the ledger entry of Tuesday, August 8, 1769, apparently describes a temporary, late summer encampment of Tataviam, judging from the description of the corral-like huts of the village's inhabitants.

Although the Upper Santa Clara Valley region was traversed by a number of Spanish explorers in subsequent years, it initially remained isolated due to rugged topography, even though Portolá had suggested it as a locale for a mission. With the establishment of Missions San Buenaventura, in 1782, and San Fernando, in 1797, late-18th century historical events largely occurred in areas to the west and south of the Upper Santa Clara Valley proper, particularly inasmuch as the Camino Real - the Spanish Royal Road - was eventually established through the Conejo Corridor rather than down the Santa Clara Valley.

However, as the missions increased in size and their herds grew, it became necessary for many of them to establish mission ranchos, or estancias, to allow their cattle to graze some distance from the mission vineyards and fields, per se. With this geographical expansion of mission influence and activities, the Upper Santa Clara Valley region became important, if not pivotal, in a number of events central to the development of southern California. San Francisco Xavier served as the estancia for Mission San Fernando. It comprised the upper reaches of the Santa Clara Valley down to Piru (Cleland 1940; Perkins 1957; Smith 1977) - essentially what would become the Newhall Ranch - and was established in 1804, a few years after the founding of the mission itself. The headquarters of Estancia San Francisco Xavier was constructed at Castaic Junction, on a bluff overlooking the confluence of the Santa Clara and Castaic Creeks from the south. Also, mission records suggest that it was never raised from the status of estancia to asistencia, or sub-mission.

The Estancia/Asistencia de San Francisco Xavier represents the first European settlement of the Castaic Junction region. During this period, its primary function was as a ranching and perhaps agricultural out-station, although it undoubtedly served as a religious outpost as well. Placed at the location suggested for a mission earlier by Father Crespi of

the Portolá expedition, it consisted of two rectangular adobe buildings, measuring 105 by 17 feet and 107 by 22 feet, respectively, in size, one of which included a tiled sacristy (Reynolds 1992:17). Eventually a third adobe structure, referred to as the "Old Milk House", was constructed downhill from the main structures, an undated photo of which was published by Perkins (1957:112).

William Lewis Manly, for reasons discussed below, provided a description of the Estancia/Asistencia in 1849. At that time it was no longer an adjunct to Mission San Fernando but had transferred in ownership to Antonio del Valle when the Estancia/Asistencia's land was granted as Rancho San Francisco to del Valle by Governor Alvarado in 1839. Notably, Antonio del Valle had served as majordomo and later administrator of Mission San Fernando and its lands from 1834 to 1837, and the family had made supplications to the governor in 1835 and 1837 to obtain a grant in the Santa Clara Valley (Newhall 1958:36; Perkins 1957). When finally awarded, the rancho contained slightly more than 46,000 acres which, as Smith (1977) acknowledges, was just under the maximum of 11 square leagues then legally allowed.

Manly's description pertains to the period when the Estancia/Asistencia buildings served as a ranch headquarters for one of a number of del Valle's properties, while he and his family continued to live in Los Angeles. Manly described the Estancia/Asistencia, his first sighting of California mission architecture, as follows:

> A house on higher ground soon appeared in sight. It was low, of one story with a flat roof, gray in color, and of a different style of architecture from any we had ever seen before. There was no fence around it, and there were no animals or wagons or persons to be seen...but a mule tied to a post told us there was some one about...The house...was built of sun-dried bricks about one by two feet in size, and one end was used as a storehouse...down the hill...[was a]...small, poorly, fenced field which was sometimes cultivated.
>
> (Manly 1924:178-179)

In 1845 the rancho passed to Antonio del Valle's son, Ygnacio. Ygnacio del Valle ultimately became a prominent politician in southern California,

serving as Alcalde (mayor) of Los Angeles during the Mexican period, as a member of the Territorial Deputation when California was admitted into the Union in 1850, and in the State Legislature. Forced to fight off efforts by Pedro Carrillo to obtain the western portions of Rancho San Francisco, Ygnacio built a corral at Camulos (the approximate site of the Chumash-Tataviam village of kamulus) in 1841, and finally the Camulos Adobe in 1864, as well as one of the first commercial wineries in the state in 1867 (Smith 1977). The Camulos Adobe, which then became the del Valle family home, was visited by Helen Hunt Jackson in 1882, and served as the setting for her famous early California novel Ramona. (The D.W. Griffith film "Ramona", starring Mary Pickford, was also filmed at the adobe in 1911).

However, prior to the development of Camulos, the Del Valle ranch headquarters remained at the old site of the Asistencia de San Francisco, above Castaic Junction. Furthermore, it was to the Asistencia that the lead group of the Manly-Walker party - the "Death Valley '49ers" - first emerged out of the wilderness from their efforts to cross the Mojave Desert (Manly 1924:178-179). Manly's description of the Estancia/Asistencia's buildings, quoted above, represent not only his first sighting of California mission architecture, but his first encounter with civilization, after his harrowing escape from Death Valley.

Following established California agrarian practices, Rancho San Francisco was employed by the del Valles primarily for raising cattle, although Mexican law also required the establishment of an orchard and other agricultural endeavors to validate a land grant (Smith 1977). Perkins (1957:107), for example, recorded that del Valle raised 600 head of cattle on the ranch and planted wheat in a marshy area below Camulos. Notably, however, the original diseño or land grant map for Rancho San Francisco, drawn in 1843, labels the Santa Susana Mountains and hills, south of the Santa Clara River and west of Castaic Junction, as lomas esterilas, "sterile hills" (Smith 1977: frontispiece; Johnson and Earle 1990: Figure 2) which, presumably, was of marginal use to them.

Rancho San Francisco is, ultimately, the origin for the Newhall Ranch and the Newhall Land and Farming Company. Because the history of this ranch is very well documented, with complete published accounts provided by Newhall (1958), Perkins (1957), Reynolds (1992), Rolle (1991) and Smith

(1977), we provide only a brief summary here.

As is discussed below, del Valle sold the majority of Rancho San Francisco in 1865 for $1.25/acre, retaining only 1500 acres around Rancho Camulos. This 1865 sale was precipitated by the discovery of tar seeps in Pico Canyon, immediately to the south of the original land grant, where oil had been discovered in 1859. The purchasers of the ranch were Thomas A. Scott and Thomas Bard, representing the Philadelphia and California Petroleum Company. Because they believed that ranching and oil were incompatible activities, Scott and Bard subsequently sold 39,503 acres of the ranch to Henry Mayo Newhall, a San Francisco financier, in January, 1875, for $2.20/acre (Newhall 1958; Rolle 1991; Smith 1977). According to Thompson and West (1880:104), shortly thereafter Newhall placed 7000 acres of the ranch under cultivation for wheat and barley, and raised 700 head of cattle and 10,000 sheep. Headquarters for the ranch was adjacent to the Asistencia, in the area of the modern Magic Mountain parking lot. Note that this is adjacent to but outside of the current study area.

The town of Newhall was created the following year, as a result of the Southern Pacific Railroad Company's move to place a rail line down the Santa Clara Valley to the coast at Ventura. Although the original development was unsuccessful - due to frequent sandstorms the town's six buildings and name of Newhall were moved three miles to the south in 1878, with the original townsite becoming known as Saugus – ultimately the rail line provided an outlet for the agricultural and ranching products of the ranch, and greatly stimulated oil production in the immediate area (Franks and Lambert 1985:7). For obvious reasons, both circumstances stimulated the commercial development of the Newhall Ranch.

Henry Mayo Newhall was thrown from his horse on the ranch and died, in San Francisco, in 1883. The ranch then passed to his heirs. According to Rolle (1991:145), the Newhall financial empire subsequently went into decline, coming close to liquidation in 1930. At that point Athol McBean, son-in-law of William Mayo Newhall, was appointed chairman. McBean reorganized the Newhall Land and Farming Company and, aided by a restitution award of three-quarters of a million dollars resulting from the Saint Francis Dam catastrophe (see below), moved the ranch and company back onto sound financial footing. The company has continued

as the major agricultural/ranching and land development concern in the region to the present time.

The Rancho San Francisco/Newhall Ranch and the upper reaches of the Santa Clara Valley also figured in three other important episodes in southern California history, two of which are landmarks in the economic history of the state. The first of these is the discovery of gold. Although the history of gold discovery and exploitation in California is often linked with James Marshall's 1848 discovery of gold in John Sutter's Coloma mill-race, it is a well-known fact that gold was found earlier in California 1842, in Placerita Canyon, by Francisco Lopez, Manuel Cota and Domingo Bermudez (Smith 1977; Outland 1986; Reynolds 1992). But it is by no means clear that even this well-documented incident represents the first true discovery of gold in the state. Instead, a variety of lines of historical evidence suggest that gold may have been mined in the Santa Clara Valley region one to three decades earlier (e.g., see Clark 1970:176).

According to an account published by Outland (1986), a local tale indicates that a group of about 20 men, led by one Santiago Feliciano, left Mission San Fernando in 1820 to explore the Castaic region. After reaching the Castaic Junction area, they headed up Hasley Canyon (through the study area), and traveled up it about 10 miles. There they discovered gold, and a mining camp, "San Feliciano" (from which San Feliciano Canyon apparently gets its name), was born. The region from San Feliciano to Soledad Canyon was subsequently prospected and mined (mostly for placer deposits) for a number of years, with little record of these efforts presumably resulting because of the legal complications involved in recording gold claims in Mexican California: while the granting of land for agricultural purposes could be effected by the Governor of California, the recording of a gold claim under Mexican law required a trip to Mexico City, an effort none were apparently willing to gamble.

Although, as Outland notes, there is no clear verification for this tale (which ultimately derives from the prominent early settler and local historian S.P. Guiberson), there is nonetheless fairly strong evidence that the Placeritas discovery in 1842 was by no means the first in this region (Smith 1977; Outland 1986; Clark 1970). In 1832, for example, Ewing Young discovered an old ore smelting oven in San Emigdio Canyon (Outland 1986), suggesting that gold mining in the area had occurred for

one or two decades prior to the 1842 event, and a number of other sources indicate that the presence of gold in the area was known at least a few years prior to the famous 1842 Placeritas Canyon incident (Smith 1977:32-33), in which gold was discovered by Francisco Lopez.

Lopez's discovery is often trivialized as accidental: a fortuitous event resulting from digging up a wild onion. In fact, Lopez had been educated at a mining college in Mexico City, and was known to have been systematically prospecting the region prior to the 1842 discovery. As the uncle of Antonio del Valle's widow, he had leased portions of Rancho San Francisco for cattle, and was headquartered at the old Asistencia. There is every reason to assume, thus, that this "official" discovery of gold resulted from intentional prospecting activities, carried out by the then-resident of the Asistencia.

Be this as it may, the 1842 discovery did have one important repercussion: it caused Lopez to continue to look further afield for gold, resulting in his second gold discovery of the state in San Feliciano Canyon (Perkins 1958). In turn, this led to the granting of Rancho Temescal to Lopez and Jose Arellanes, in 1843. This grant included most of Piru Creek, as well as Placerita and San Feliciano Canyons, and totaled over 13,000 acres. Apparently, the legality of this grant under Mexican law has always been a point of some question for, as noted previously, the Governor of California only held the right to award agricultural but not mining grants. However, Thompson and West (1886:74) record that the area was worked by miners from Sonora, Mexico, between 1842 and 1846, at which time they returned to Mexico, and that they extracted between six and eight thousand dollars of gold per year during that period. Nonetheless, about a dozen years later, Rancho Temescal was acquired by Ygnacio del Valle and added to his Rancho San Francisco holdings.

Thus, not only was this region the first in California in which gold was discovered, it was also the first where true oil drilling occurred (Smith 1977), which was the second historical event of statewide importance in the region. This led to discoveries of oil on Rancho San Francisco and, ultimately, throughout the Santa Clara Valley region. This first major discovery of oil resulted when Ygnacio del Valle sold the majority of his Rancho San Francisco holdings to Thomas Bard, representing Senator Thomas A. Scott, in 1865. Seven weeks later, the first oil well came in on

the south side of the Santa Clara River, on property acquired by Bard, near the del Valle adobe (Smith 1977). This discovery was instrumental in the regional oil boom that ensued.

Following the discovery of oil in the valley, and with the depletion of the (relatively small) placer gold deposits in the region by the 1880s, the Upper Santa Clara Valley region became renowned both for its oil and (ultimately) for its citrus crops.

The third local event of historical importance was the collapse of Los Angeles Department of Water and Power's St. Francis Dam and the resulting flood of the Santa Clara River Valley on March 12 and 13, 1928. With the failure of dam close to midnight on March 12, water raged down San Francisquito Canyon to Castaic Junction, which it effectively leveled, and then on to Fillmore, Santa Paula and ultimately to the Pacific, causing great loss of life and destruction along the way. At Castaic Junction, the only survivor of the flood was George MacIntyre, son of the owner of McIntyre's motel and gas station. George was washed northwards by a great arc of the floodwaters, towards Castaic Canyon, where he was able to grab hold of a power pole and avoid drowning; the bodies of his father and one brother were found in Santa Paula; another brother's body was never recovered. All told, at least 336 known deaths were caused by the flood, 101 individuals were missing and can now be presumed dead, 909 homes were destroyed, and countless acres of orchards were flattened (Outland 1963).

Within the larger Newhall Ranch at Blue Cut in Ventura County the flood waters rose to the level of the highway. The restriction of the Santa Clara River stream course at this spot momentarily bottled the flood, resulting in a temporary upsurge of waters against the flood current, creating a whirlpool. An Edison Company work camp of tents housing 150 men had been established at the railroad siding of Kemp, immediately east of Blue Cut, which was inundated by the upsurge. When the flood waters receded, 84 of these men had been drowned by the catastrophe (Outland 1963:106-107).

In retrospect, it is interesting to note that the Newhall Land and Farming Company had independently hired Harmon Bonte, a consulting engineer, to review the suitability of the Saint Francis Dam in 1924, prior to its

construction. Arguing against LADWP's William Mulholland, Bonte contended on the part of his clients that the conglomerate bedrock at the proposed dam site was unfit for dam anchorage. His report was widely published after the disaster, as an indictment of Mulholland's engineering studies (Outland 1963:43), and no doubt contributed to Mulholland's subsequent decision to retire from professional and public life.

3.0 ARCHIVAL RECORDS SEARCH

An archival records search of the 94.38 acres Canyon View Estates study area was completed by the California State University, Fullerton, Archaeological Information Center (AIC) staff to determine whether any prehistoric or historical sites were known on the property, and/or whether all or portions of it had been previously systematically surveyed by archaeologists.

A complete copy of the records search is included as Appendix A to this report. In summary, eighteen previous archaeological studies have been conducted within a 1/2 mile radius of the Canyon View Estates study area. Of these, two (LA-10511; LA-12631) are located within the project site. Archival records indicated that the study area had been previously surveyed in its entirety. One prehistoric site, two isolated artifacts and one above-ground historic resource had been recorded within a 1/2 mile radius of the study area. None of these are located within the Canyon View Estates property. The three resources and above-ground historic resource that have been identified within a 1/2 mile radius of the project site are as follows:

19-001020 - This site was originally recorded by T. Banks in 1979 as being located north of Pico Canyon Road approximately 1000 feet north of the Canyon View Estates project site. The site was described as being located on a creek bank and only one artifact, a diorite metate fragment, was observed at that time. Other cultural indicators observed included fire cracked rock and pismo clam shell fragments. Subsequently, the status of the site was evaluated by Murray and Brown in 1984 and by White and White in 1991. Both survey teams concluded that either the site was originally a non-site or that the site had been destroyed. Lastly, the recorded location of site 19-001020 is now a large subgrade storm-water retention basin.

19-101350 - Recorded in July 2015 as a single isolated granitic hammerstone, this artifact was found along the margin of a narrow arroyo

approximately 1500 feet southeast of the Canyon View Estates study area.

19-10135 - This resource consists of a single isolated bottle neck that included a cork-lined glass stopper. The bottle fragment was a crown top 3-piece mold type and it was located approximately 1800 feet southeast of the Canyon View Estates project.

19-192297 - Originally recorded in 2004 and re-recorded in July 2015, this above ground historic resource consists of a concrete and rebar check dam in a ravine. In 2004 the dam was determined ineligible for listing in the National Register of Historic Places (NRHP).

Also identified in the records search were two additional resources listed in the Historic Properties Directory that lack specific locational information. These are both located outside of the 1/2 mile records search radius and are as follows:

The Old Road Bridge (19-190315) over the Santa Clara River was constructed in 1928 to replace the bridge that was washed out by the Saint Francis Dam disaster. The bridge measures approximately 412 feet in length by 49 feet in width. It consists of five steel spans with reinforced concrete. Cal Trans determined the bridge was not eligible for the National Register in 2011.

The San Fernando Railroad Tunnel (Tunnel 25) was completed on July 14, 1876 and at 6,940 feet in length it was the third longest tunnel in the United States at that time. The tunnel, along the Southern Pacific Railroad's San Joaquin Line, linked the San Fernando Valley (at the Newhall Pass) with the Santa Clarita Valley (in Railroad Canyon), facilitating the connection in September 1876 of northern California with southern California at Lang in present-day Canyon Country. Today, Metrolink's Antelope Valley Line and the Union Pacific Railroad (formerly Southern Pacific Railroad) go through the pass via the San Fernando Tunnel. This tunnel has been determined eligible for listing in the National Register.

Lastly, examination of the 1903 and 1941 Santa Susana, CA 15' topographic quadrangles did not reveal the presence of any historic sites or structures within the project site.

In summary, the records search indicates that the study area has a low sensitivity for archaeological resources and that no previously recorded cultural resources are present within the subject property.

4.0 SURVEY METHODS

The intensive Phase I survey of the 94.38 acres Canyon View Estates study area study area was conducted on June 1 and 2, 2017. Project staff included Joseph M. Simon, Terry Simon and Robert Snibley.

Field procedures involved spacing the crew at approximately 10 - 15 meter intervals and then walking the property in transects following natural topography. Steep slopes exceeding the angle of repose were either inspected from below or above. The groundsurface was examined during these transects to identify evidence of prehistoric sites. Such evidence might include surface artifacts, dark organically rich midden soils, fire-cracked rock resulting from earth ovens and roasting pits, and shell and bone that might represent remnants of dietary remains. Alternatively historical remains in the form of metal, glass and ceramic were also considered possible finds within the study area.

During the survey special attention was paid to geomorphological conditions that affect the preservation of archaeological remains. Road or bank-cuts that expose subsurface stratigraphy, for example, along with stable geomorphic and depositional environments were carefully examined for evidence of cultural remains. Furthermore, rodent backdirt piles were carefully examined inasmuch as they can reveal the presence of buried archaeological deposits. Lastly, no unanticipated conditions were encountered during the field survey of the subject property. As a result, no changes in survey strategy were made during the field study.

5.0 FIELD RESULTS

Field conditions for the intensive Phase I survey of the 94.38 acres Canyon View Estates study area were good. Winter rains had resulted in the development of a moderate to light density of groundcover over much of the study area which can be characterized as steeply sloped with knife-like ridgelines that mostly preclude the presence of archaeological sites, especially sites of any size. Lastly, no cultural resources of any kind were found during the Phase I archaeological survey of the Canyon View Estates project area.

6.0 SUMMARY AND RECOMMENDATIONS

An intensive Phase I archaeological survey was conducted for the 94.38 acres Canyon View Estates study area, northern Los Angeles County, California. This involved an on-foot survey of the property and a review of written and unpublished documents on the archaeology, history and ethnography of the region. Two previous surveys had occurred within the study area and no cultural resources have been recorded within it. Lastly, the field survey confirmed the results of the previous studies that covered the project site.

6.1 Recommendations

An archival records search, background studies, and an intensive, on-foot surface reconnaissance of the Canyon View Estates study area (94.38 ac.), northern Los Angeles County, California, were conducted as part of an intensive Phase I archaeological survey and no cultural resources of any kind were found to be present within this study area.

Development of the Canyon View Estates study area does not have the potential to result in adverse effects to cultural resources. Accordingly, no additional archaeological work is recommended for this property. However, in the unlikely event that historic properties are uncovered during grading or construction, construction should cease and it is recommended that an archaeologist be contacted to evaluate any such resources.

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8.0 Figures

List of Figures

1 - The Canyon View Estates study area , northwestern Los Angeles County, California.

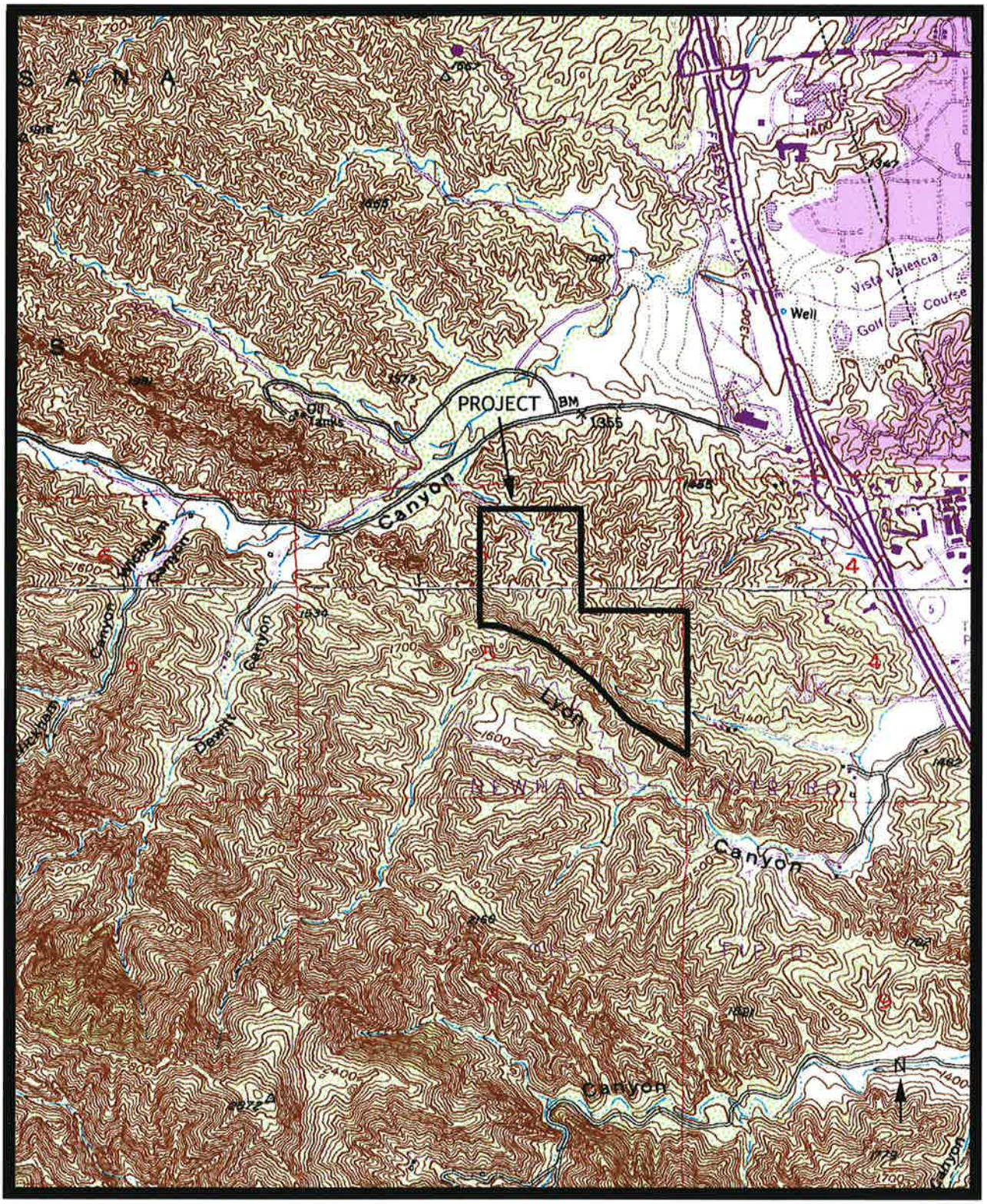


Figure 1: Project location on Newhall, CA & Oat Mountain, CA 1:24 000 USGS quadrangles (p.rev. 1988).

9.0 APPENDIX A:
ARCHIVAL RECORDS SEARCH

South Central Coastal Information Center
California State University, Fullerton
Department of Anthropology MH-426
800 North State College Boulevard
Fullerton, CA 92834-6846
657.278.5395 / FAX 657.278.5542
sccic@fullerton.edu
California Historical Resources Information System
Orange, Los Angeles, and Ventura Counties

11/15/2017 Records Search File No.: 18263.4281

Joseph M. Simon
W and S Consultants
2242 Stinson Street
Simi Valley, CA 93065

Re: Record Search Results for a Phase I archaeological resource survey of a 94.38 acre parcel in Los Angeles County, California

The South Central Coastal Information Center received your records search request for the project area referenced above, located on the Newhall and Oat Mountain, CA USGS 7.5' quadrangles. The following reflects the results of the records search for the project area and a ½-mile radius:

As indicated on the data request form, the locations of resources and reports are provided in the following format: ☒ custom GIS maps ☐ shape files ☐ hand-drawn maps

Resources within project area: 0	None
Resources within ½-mile radius: 4	SEE ATTACHED MAP or LIST
Resources listed in the OHP Historic Properties Directory within project area: 0	None
Resources listed in the OHP Historic Properties Directory within ½-mile radius: 0	None
Resources listed in the Historic Properties Directory that lack specific locational information: 2	SEE ATTACHED LIST FOR INDIVIDUAL PROPERTY STATUS CODES - These properties may or may not be in your project area or in the search radius.
Reports within project area: 2	LA-10511, LA-12631
Reports within ½-mile radius: 18	SEE ATTACHED MAP or LIST

Resource Database Printout (list):	☒ enclosed	☐ not requested	☐ nothing listed
Resource Database Printout (details):	☒ enclosed	☐ not requested	☐ nothing listed
Resource Digital Database (spreadsheet):	☐ enclosed	☒ not requested	☐ nothing listed
Report Database Printout (list):	☒ enclosed	☐ not requested	☐ nothing listed
Report Database Printout (details):	☒ enclosed	☐ not requested	☐ nothing listed

Report Digital Database (spreadsheet):	☐ enclosed	☒ not requested	☐ nothing listed
Resource Record Copies:	☒ enclosed	☐ not requested	☐ nothing listed
Report Copies:	☐ enclosed	☒ not requested	☐ nothing listed
OHP Historic Properties Directory:	☒ enclosed	☐ not requested	☐ nothing listed
Archaeological Determinations of Eligibility:	☐ enclosed	☐ not requested	☒ nothing listed
Los Angeles Historic-Cultural Monuments	☐ enclosed	☐ not requested	☒ nothing listed
Historical Maps:	☒ enclosed	☐ not requested	☐ nothing listed
Ethnographic Information:	☒ not available at SCCIC		
Historical Literature:	☒ not available at SCCIC		
GLO and/or Rancho Plat Maps:	☒ not available at SCCIC		
Caltrans Bridge Survey:	☒ not available at SCCIC; please go to http://www.dot.ca.gov/hq/structur/strmaint/historic.htm		
Shipwreck Inventory:	☒ not available at SCCIC; please go to http://shipwrecks.slc.ca.gov/ShipwrecksDatabase/Shipwrecks_Database.asp		
Soil Survey Maps: (see below)	☒ not available at SCCIC; please go to http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx		

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Thank you for using the California Historical Resources Information System,

Isabela Kott Digitally signed by Isabela Kott
Date: 2017.11.15 13:52:34 -08'00'

Isabela Kott
GIS Technician/Staff Researcher

Enclosures:

(X) Custom Maps – 2 pages

(X) Resource Database Printout (list) – 1 page

(X) Resource Database Printout (details) – 5 pages

(X) Report Database Printout (list) – 3 pages

(X) Report Database Printout (details) – 23 pages

(X) Resource Record Copies – (all) 13 pages

(X) OHP Historic Properties Directory – 2 pages

(X) National Register Status Codes – 1 page

(X) Historical Maps – 4 pages

(X) Invoice #18263.4281

California Historical Resource Status Codes

1 Properties listed in the National Register (NR) or the California Register (CR)

1D Contributor to a district or multiple resource property listed in NR by the Keeper. Listed in the CR.
1S Individual property listed in NR by the Keeper. Listed in the CR.

1CD Listed in the CR as a contributor to a district or multiple resource property by the SHRC
1CS Listed in the CR as individual property by the SHRC.
1CL Automatically listed in the California Register – Includes State Historical Landmarks 770 and above and Points of Historical Interest nominated after December 1997 and recommended for listing by the SHRC.

2 Properties determined eligible for listing in the National Register (NR) or the California Register (CR)

2B Determined eligible for NR as an individual property and as a contributor to an eligible district in a federal regulatory process. Listed in the CR.
2D *Contributor to a district determined eligible for NR by the Keeper. Listed in the CR.*
2D2 Contributor to a district determined eligible for NR by consensus through Section 106 process. Listed in the CR.
2D3 Contributor to a district determined eligible for NR by Part I Tax Certification. Listed in the CR.
2D4 Contributor to a district determined eligible for NR pursuant to Section 106 without review by SHPO. Listed in the CR.
2S Individual property determined eligible for NR by the Keeper. Listed in the CR.
2S2 Individual property determined eligible for NR by a consensus through Section 106 process. Listed in the CR.
2S3 *Individual property determined eligible for NR by Part I Tax Certification. Listed in the CR.*
2S4 Individual property determined eligible for NR pursuant to Section 106 without review by SHPO. Listed in the CR.

2CB Determined eligible for CR as an individual property and as a contributor to an eligible district by the SHRC.
2CD Contributor to a district determined eligible for listing in the CR by the SHRC.
2CS Individual property determined eligible for listing in the CR by the SHRC.

3 Appears eligible for National Register (NR) or California Register (CR) through Survey Evaluation

3B Appears eligible for NR both individually and as a contributor to a NR eligible district through survey evaluation.
3D Appears eligible for NR as a contributor to a NR eligible district through survey evaluation.
3S Appears eligible for NR as an individual property through survey evaluation.

3CB Appears eligible for CR both individually and as a contributor to a CR eligible district through a survey evaluation.
3CD Appears eligible for CR as a contributor to a CR eligible district through a survey evaluation.
3CS Appears eligible for CR as an individual property through survey evaluation.

4 Appears eligible for National Register (NR) or California Register (CR) through other evaluation

4CM Master List - State Owned Properties – PRC §5024.

5 Properties Recognized as Historically Significant by Local Government

5D1 Contributor to a district that is listed or designated locally.
5D2 *Contributor to a district that is eligible for local listing or designation.*
5D3 Appears to be a contributor to a district that appears eligible for local listing or designation through survey evaluation.

5S1 Individual property that is listed or designated locally.
5S2 Individual property that is eligible for local listing or designation.
5S3 Appears to be individually eligible for local listing or designation through survey evaluation.

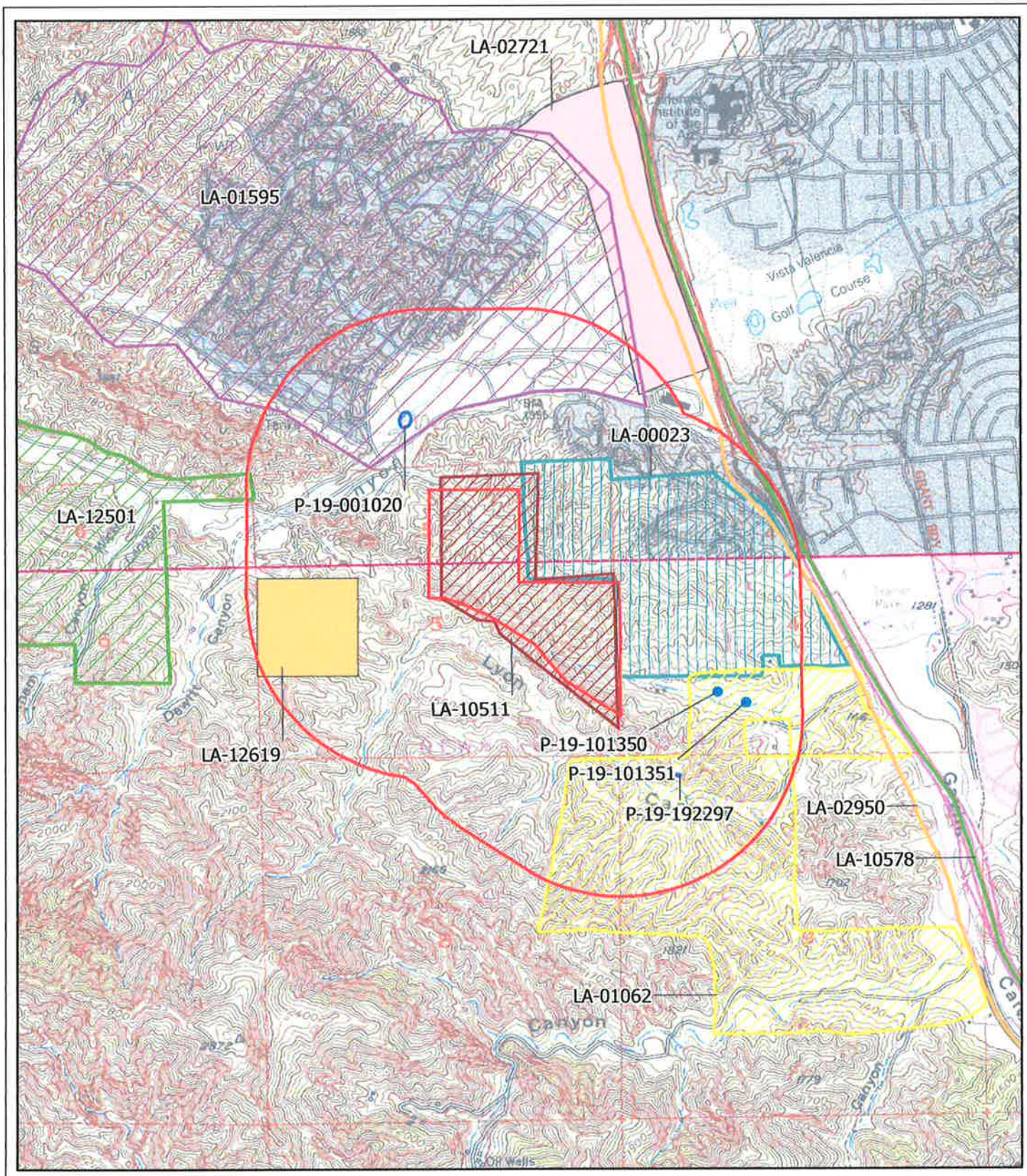
5B Locally significant both individually (listed, eligible, or appears eligible) and as a contributor to a district that is locally listed, designated, determined eligible or appears eligible through survey evaluation.

6 Not Eligible for Listing or Designation as specified

6C Determined ineligible for or removed from California Register by SHRC.
6J Landmarks or Points of Interest found ineligible for designation by SHRC.
6L Determined ineligible for local listing or designation through local government review process; may warrant special consideration in local planning.
6T Determined ineligible for NR through Part I Tax Certification process.
6U Determined ineligible for NR pursuant to Section 106 without review by SHPO.
6W Removed from NR by the Keeper.
6X Determined ineligible for the NR by SHRC or Keeper.
6Y Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing.
6Z Found ineligible for NR, CR or Local designation through survey evaluation.

7 Not Evaluated for National Register (NR) or California Register (CR) or Needs Revaluation

7J Received by OHP for evaluation or action but not yet evaluated.
7K Resubmitted to OHP for action but not reevaluated.
7L State Historical Landmarks 1-769 and Points of Historical Interest designated prior to January 1998 – Needs to be reevaluated using current standards.
7M Submitted to OHP but not evaluated - referred to NPS.
7N Needs to be reevaluated (Formerly NR Status Code 4)
7N1 Needs to be reevaluated (Formerly NR SC4) – may become eligible for NR w/restoration or when meets other specific conditions.
7R Identified in Reconnaissance Level Survey: Not evaluated.
7W Submitted to OHP for action – withdrawn.



N
W E
S

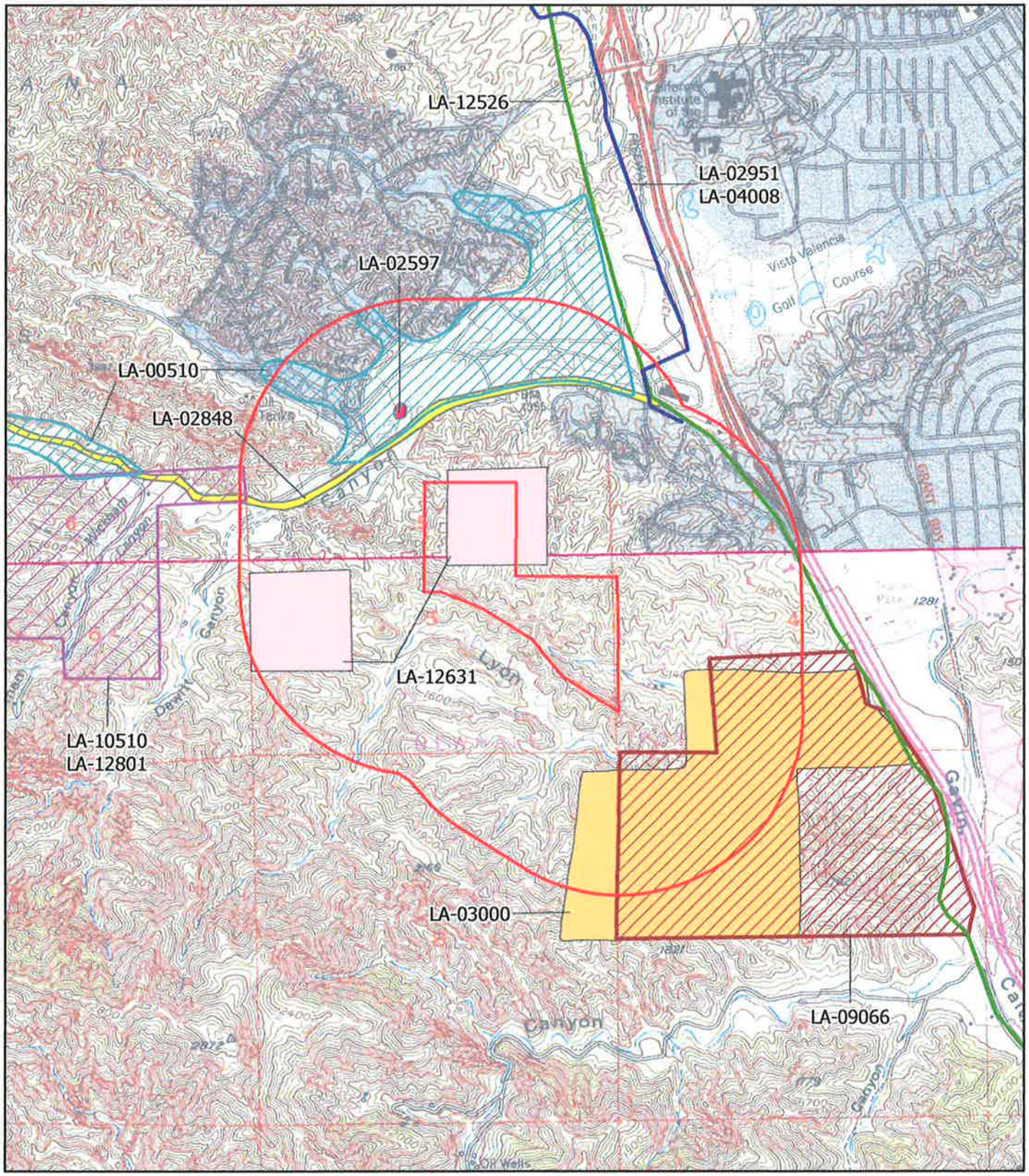
Miles
0 0.125 0.25 0.5

Resources within project area: None
4 resources within a 1/2-mile radius
Reports within project area: LA-10511
8 additional reports within a 1/2-mile radius

Newhall, CA PR: 1988
Oat Mountain, CA PR: 1969
USGS 7.5' 1:24,000
INV17685
May 2017

South Central Coastal Information Center

May depict confidential cultural resource locations. Do not distribute.



N
W E
S
Miles
0 0.125 0.25 0.5

Reports within project area: LA-12631
10 additional reports within a 1/2-mile radius

Newhall, CA PR: 1988
Oat Mountain, CA PR: 1969
USGS 7.5' 1:24,000
INV17685
May 2017

South Central Coastal Information Center

May depict confidential cultural resource locations. Do not distribute.

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
LA-00023		1974	Leonard, Nelson N. III	Archaeological Reconnaissance of Tentative Tract # 31399, a Residential Development Near Newhall California	University of California, Los Angeles Archaeological Survey	
LA-00510		1979	Van Horn, David M.	Preliminary Archaeological Overview: a 3,000+/- Acre Parcel Bordering Portrero Canyon Near Newhall, Ca.	Archaeological Associates, Ltd.	19-001020
LA-01062		1981	Schilz, Allen J.	Archaeological Survey of the Sylmar Development Project Site, Los Angeles County, California	Westec Services, Inc.	
LA-01595		1984	Brown, Robert S. and David M. Van Horn	Archaeological Survey Report: a 400+ Acre Tract Located in the Santa Susana Mountains West of Newhall, California	Archaeological Associates, Ltd.	19-001020
LA-02597		1991	White, Laura S.	Disposition of Archaeological Site LAN-1020 Located Adjacent to Pico Canyon Road West of Newhall, Los Angeles County.	Archaeological Associates, Ltd.	19-001020
LA-02721		1992	Weber, Carmen A. and Dave Ferraro	Cultural Resources Survey 82.7 Acre Parcel Near Newhall Tentative Parcel Map No. 8576	Chambers Group, Inc.	
LA-02848		1992	Peak and Associates, Inc.	Cultural Resource Assessment of the Proposed Newhall Alternate Alignment, Ventura and Los Angeles Counties, California	Peak & Associates, Inc.	19-000036, 19-000961, 19-000962, 19-001020
LA-02950		1992	Anonymous	Consolidated Report: Cultural Resource Studies for the Proposed Pacific Pipeline Project	Peak & Associates, Inc.	19-000007, 19-000021, 19-000034, 19-000089, 19-000251, 19-000357, 19-000385, 19-000389, 19-000390, 19-000407, 19-000409, 19-000668, 19-000781, 19-000830, 19-000887, 19-000901, 19-000963, 19-001097, 19-001112, 19-001124, 19-001575, 19-001620
LA-02951		1993	Gibson, Robert O.	Results of Archaeological Records Review for the Pacific Pipeline Project Emidio Lateral Pipeline Kern and Los Angeles Counties, Ca	Consulting Archaeologist	19-000823, 19-000903, 19-000922, 19-000925, 19-000926, 19-000927, 19-000961, 19-000990, 19-000991, 19-001141, 19-001277, 19-001305, 19-001672, 19-001834, 19-001835, 19-002058, 19-002117, 19-002118, 19-002119, 19-002120, 19-002126, 19-002848
LA-03000		1993	Simon, Joseph M. and David S. Whitley	Phase I Archaeological Survey and Cultural Resources Assessment for the 225 Acres Alternative Site 2 Study Area, Santa Clarita, Los Angeles County, California	W & S Consultants	

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
LA-04008		1996	Unknown	Cultural Resources Investigation Pacific Pipeline Emidio Route	Science Applications Internatinal Corporation	
LA-09066		2004	Shepard, Richard S.	Phase I Cultural Resource Assessment for Lyons Canyon Ranch Specific Plan, Tentative Tract Map 53653, Santa Clarita, Los Angeles County, California.	BonTerra Consulting	
LA-10510		2005	McKenna, Jeanette A.	A Phase I Cultural Reources investigation of Aidlin Wickham Tract No. 52796, Approximately 230 Acres in the Pico Canyon Area of Los Angeles County, California	McKenna et al.	
LA-10511		2005	McKenna, Jeanette A.	A Phase I Cultural Resources Investigation of Aidlin Casad Tract No. 52905, Approximately 95 Acres in the Lyon Canyon Area of Los Angeles County, California	McKenna et al.	
LA-10578		2009	Fortier, Jana	TEA21 Rural Roadside Inventory: Native American Consultation and Ethnographic Study Caltrans District 7, County of Los Angeles	ICF Jones & Stokes	
LA-12501		1999	Bissell, Ronald and Maxon, Patrick	Cultural Resources Reconnaissance and Evaluation of TT 52796 and the Lennar Parcel; Portions of the Aidlin Properties, City of Santa Clarita, Los Angeles County, California	RMW Paleo Associates	19-001020, 19-190691
LA-12501A		1999	Gregory, Tim	HISTORIC RESOURCES TECHNICAL REPORT: THE LARINAN APIARY (26300 PICO CANYON ROAD) SANTA CLARITA, CALIFORNIA		
LA-12526		2013	Ehringer, Candace, Ramirez, Katherine, and Vader, Michael	Santa Clarita Valley Sanitation District Chloride TMDL Facilities Plan Project, Phase I Cultural Resources Assessment	ESA	19-002150, 19-002233, 19-002234, 19-002681, 19-004321, 19-179645, 19-186112, 19-186541, 19-186567, 19-186859, 19-187055, 19-188007, 19-190312, 19-190313, 19-190314, 19-190315, 19-190316, 19-190317, 19-190318, 19-190319, 19-190320, 19-190321, 19-190322, 56-001262, 56-151768
LA-12619		2000	Maxon, Patrick O.	Cultural Resources Reconnaissance of the Edson (TT 52905) Parcel, a Portion of the Aidlin Properties, in the City of Santa Clarita, Los Angeles County, California	RMW Paleo Associates	

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
LA-12631		1999	Maxon, Patrick	Cultural Resources Reconnaissance of the Edson (TT 52905) Parcels; Portions of the Aidlin Properties, in the City of Santa Clarita, Los Angeles County, California	RMW Paleo Associates	
LA-12801		2014	Sackett, Jodie	Aidlin Hills Project, Project No 00-136 Case Nos VTTM 52796, CUP 00-136, OTP00-136	Los Angeles County	

Report Detail: LA-00023

Identifiers

Report No.: LA-00023
Other IDs:
Cross-refs:

Citation information

Author(s): Leonard, Nelson N. III
Year: 1974
Title: Archaeological Reconnaissance of Tentative Tract # 31399, a Residential Development Near Newhall California
Affliliation: University of California, Los Angeles Archaeological Survey
No. pages: 6
No. maps:
Attributes: Archaeological, Field study
Inventory size:
Disclosure: Not for publication
Collections:

General notes

Golden Knolls

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): NEWHALL, OAT MOUNTAIN
Address:
PLSS:

Database record metadata

	Date	*User*	
Entered:	5/5/2008	jay	
Last modified:	10/3/2016	rmoritz	
IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.

Record status: Verified

Report Detail: LA-00510

Identifiers

Report No.: LA-00510
Other IDs:
Cross-refs:

Citation information

Author(s): Van Horn, David M.
Year: 1979
Title: Preliminary Archaeological Overview: a 3,000+/- Acre Parcel Bordering Portrero Canyon Near Newhall, Ca.
Affliliation: Archaeological Associates, Ltd.
No. pages:
No. maps:
Attributes: Archaeological, Field study
Inventory size: 3000 ac
Disclosure:
Collections:

General notes

Associated resources

	Primary No.	*Trinomial*	*Name*
	P-19-001020	CA-LAN-001020	

No. resources: 1
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): NEWHALL, VAL VERDE
Address:
PLSS:

Database record metadata

	Date	*User*
Entered:	5/5/2008	jay
Last modified:		

IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.

Record status:

Report Detail: LA-01062

Identifiers

Report No.: LA-01062
Other IDs:
Cross-refs:

Citation information

Author(s): Schilz, Allen J.
Year: 1981
Title: Archaeological Survey of the Sylmar Development Project Site, Los Angeles County, California
Affiliation: Westec Services, Inc.
No. pages:
No. maps:
Attributes: Archaeological, Field study
Inventory size: 470 ac
Disclosure:
Collections:

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): OAT MOUNTAIN
Address:
PLSS:

Database record metadata

	Date	User
Entered:	5/5/2008	jay
Last modified:		

IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.

Record status:

Report Detail: LA-01595

Identifiers

Report No.: LA-01595
Other IDs:
Cross-refs:

Citation information

Author(s): Brown, Robert S. and David M. Van Horn
Year: 1984
Title: Archaeological Survey Report: a 400+ Acre Tract Located in the Santa Susana Mountains West of Newhall, California
Affiliation: Archaeological Associates, Ltd.
No. pages: 7
No. maps:
Attributes: Archaeological, Field study
Inventory size: 400 ac
Disclosure: Not for publication
Collections: No

General notes

Associated resources

Primary No.	*Trinomial*	*Name*
P-19-001020	CA-LAN-001020	

No. resources: 1
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): NEWHALL
Address:
PLSS:

Database record metadata

	Date	*User*	
Entered:	5/5/2008	jay	
Last modified:	2/6/2014	agarcia	
IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.
	2/6/2014	agarcia	Mapped, data updated.

Record status:

Report Detail: LA-02597

Identifiers

Report No.: LA-02597
Other IDs:
Cross-refs:

Citation information

Author(s): White, Laura S.
Year: 1991
Title: Disposition of Archaeological Site LAN-1020 Located Adjacent to Pico Canyon Road West of Newhall, Los Angeles County.
Affiliation: Archaeological Associates, Ltd.
No. pages: 2
No. maps:
Attributes: Field study, Other research
Inventory size:
Disclosure: Not for publication
Collections: No

General notes

Associated resources

Primary No.	*Trinomial*	*Name*
P-19-001020	CA-LAN-001020	

No. resources: 1
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): NEWHALL
Address:
PLSS:

Database record metadata

	Date	*User*
Entered:	5/5/2008	jay
Last modified:	2/3/2014	agarcia

IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.
	2/3/2014	agarcia	Mapped, data updated.

Record status:

Report Detail: LA-02721

Identifiers

Report No.: LA-02721
Other IDs:
Cross-refs:

Citation information

Author(s): Weber, Carmen A. and Dave Ferraro
Year: 1992
Title: Cultural Resources Survey 82.7 Acre Parcel Near Newhall Tentative Parcel Map No. 8576
Affiliation: Chambers Group, Inc.
No. pages: 13
No. maps:
Attributes: Archaeological, Field study
Inventory size:
Disclosure: Not for publication
Collections: No

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): NEWHALL
Address:
PLSS:

Database record metadata

	Date	*User*	
Entered:	5/5/2008	jay	
Last modified:	1/30/2014	agarcia	
IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.
	1/30/2014	agarcia	Mapped, data updated.

Record status:

Report Detail: LA-02848

Identifiers

Report No.: LA-02848
Other IDs:
Cross-refs:

Citation information

Author(s): Peak and Associates, Inc.
Year: 1992
Title: Cultural Resource Assessment of the Proposed Newhall Alternate Alignment, Ventura and Los Angeles Counties, California
Affiliation: Peak & Associates, Inc.
No. pages: 37
No. maps:
Attributes: Archaeological, Field study
Inventory size: 11 li mi
Disclosure:
Collections:

General notes

Associated resources

Primary No.	*Trinomial*	*Name*
P-19-000036	CA-LAN-000036/H	Bowers cave
P-19-000961	CA-LAN-000961H	Henry Newhall House; Newhall
P-19-000962	CA-LAN-000962H	Assistencia
P-19-001020	CA-LAN-001020	

No. resources: 4
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): NEWHALL, VAL VERDE
Address:
PLSS:

Database record metadata

	Date	*User*
Entered:	5/5/2008	jay
Last modified:	8/6/2014	agarcia

IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.

Record status:

Report Detail: LA-02950

Identifiers

Report No.: LA-02950
Other IDs:
Cross-refs:

Citation information

Author(s): Anonymous
Year: 1992
Title: Consolidated Report: Cultural Resource Studies for the Proposed Pacific Pipeline Project
Affiliation: Peak & Associates, Inc.
No. pages: 400
No. maps:
Attributes: Archaeological, Field study
Inventory size: 172 ac
Disclosure: Not for publication
Collections: No

General notes

Also VN-1265

Associated resources

Primary No.	*Trinomial*	*Name*
P-19-000007	CA-LAN-000007/H	UNION STATION; LA CHINATO
P-19-000021	CA-LAN-000021	Walker Cairn Site
P-19-000034	CA-LAN-000034	San Fernando Metate Site
P-19-000089	CA-LAN-000089	Stony Point
P-19-000251	CA-LAN-000251	
P-19-000357	CA-LAN-000357	VS-749
P-19-000385	CA-LAN-000385	
P-19-000389	CA-LAN-000389	DOMINGNEZ HILLS #2
P-19-000390	CA-LAN-000390	DOMINGNEZ HILLS #1
P-19-000407	CA-LAN-000407	Walker's San Fernando or Porter
P-19-000409	CA-LAN-000409	Walker's site C
P-19-000668	CA-LAN-000668	
P-19-000781	CA-LAN-000781	B.R. 3
P-19-000830	CA-LAN-000830	
P-19-000887	CA-LAN-000887H	Las Placitas, La Placita de Dolor
P-19-000901	CA-LAN-000901	
P-19-000963	CA-LAN-000963	
P-19-001097	CA-LAN-001097	IVERSION #1
P-19-001112	CA-LAN-001112H	OLD PLAZA CHURCH
P-19-001124	CA-LAN-001124H	How. San Fer. 1
P-19-001575	CA-LAN-001575/H	MR-1
P-19-001620	CA-LAN-001620	

No. resources: 22
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): BURBANK, CAMARILLO, CANOGA PARK, FILLMORE, HOLLYWOOD, INGLEWOOD, LONG BEACH, LOS ANGELES, MOORPARK, NEWHALL, OAT MOUNTAIN, OXNARD, PIRU, PITAS POINT, SAN FERNANDO, SANTA PAULA, SANTA PAULA PEAK, SANTA SUSANA, SATICOY, SIMI, SOUTH GATE, VAL VERDE, VAN NUYS, VENICE, VENTURA, WHITE LEDGE PEAK
Address:
PLSS:

Report Detail: LA-02950

Database record metadata

	Date	User	
Entered:	5/5/2008	jay	
Last modified:	8/6/2014	agarcia	
IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.
	7/27/2009	tshackford	Correcting resource data
Record status:			

Report Detail: LA-02951

Identifiers

Report No.: LA-02951
Other IDs:
Cross-refs:

Citation information

Author(s): Gibson, Robert O.
Year: 1993
Title: Results of Archaeological Records Review for the Pacific Pipeline Project Emidio Lateral Pipeline Kern and Los Angeles Counties, Ca
Affiliation: Consulting Archaeologist
No. pages:
No. maps:
Attributes: Literature search
Inventory size: 67 li mi
Disclosure:
Collections:

General notes

Associated resources

Primary No.	*Trinomial*	*Name*
P-19-000823	CA-LAN-000823	
P-19-000903	CA-LAN-000903	12A
P-19-000922	CA-LAN-000922	59A
P-19-000925	CA-LAN-000925	P-118-A
P-19-000926	CA-LAN-000926	P127 A
P-19-000927	CA-LAN-000927	P 112B
P-19-000961	CA-LAN-000961H	Henry Newhall House; Newhall
P-19-000990	CA-LAN-000990H	OLD RIDGE ROUTE
P-19-000991	CA-LAN-000991H	NATIONAL FOREST INN
P-19-001141	CA-LAN-001141	Upper West fork of Liebre Gulch
P-19-001277	CA-LAN-001277H	Halfway Inn
P-19-001305	CA-LAN-001305	Ridge Route Earth Oven Comple
P-19-001672	CA-LAN-001672H	W31
P-19-001834	CA-LAN-001834H	TW-1
P-19-001835	CA-LAN-001835	GD-1
P-19-002058	CA-LAN-002058	M-70 Prehistoric
P-19-002117	CA-LAN-002117	M70 PIPELINE
P-19-002118	CA-LAN-002118	BRS-1 BROOK'S SITE
P-19-002119	CA-LAN-002119	DAVE'S SITE
P-19-002120	CA-LAN-002120	LAURA'S SITE
P-19-002126	CA-LAN-002126	MAGIC EARTH OVEN
P-19-002848	CA-LAN-002848H	AE-AC-2018H

No. resources: 22
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): BLACK MTN, FRAZIER MOUNTAIN, LEBEC, LIEBRE MTN, NEWHALL, WARM SPRINGS MOUNTAIN, WHITAKER PEAK
Address:
PLSS:

Report Detail: LA-02951

Database record metadata

	Date	User	
Entered:	5/5/2008	jay	
Last modified:	10/4/2012	agarcia	
IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.
	2/24/2010	mgalaz	Listed as unmappable.
	10/4/2012	agarcia	Mapped to LA-04008
Record status:			

Report Detail: LA-03000

Identifiers

Report No.: LA-03000
Other IDs:
Cross-refs:

Citation information

Author(s): Simon, Joseph M. and David S. Whitley
Year: 1993
Title: Phase I Archaeological Survey and Cultural Resources Assessment for the 225 Acres Alternative Site 2 Study Area, Santa Clarita, Los Angeles County, California
Affiliation: W & S Consultants
No. pages:
No. maps:
Attributes: Archaeological, Field study
Inventory size: 225 ac
Disclosure:
Collections:

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): OAT MOUNTAIN
Address:
PLSS:

Database record metadata

	Date	*User*	
Entered:	5/5/2008	jay	
Last modified:			
IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.

Record status:

Report Detail: LA-04008

Identifiers

Report No.: LA-04008
Other IDs:
Cross-refs:

Citation information

Author(s): Unknown
Year: 1996
Title: Cultural Resources Investigation Pacific Pipeline Emidio Route
Affiliation: Science Applications Internatinal Corporation
No. pages: 87
No. maps:
Attributes: Archaeological, Field study
Inventory size: 70 li mi
Disclosure:
Collections:

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): ACTON, AGUA DULCE, BLACK MTN, FRAZIER MOUNTAIN, LANCASTER EAST, LANCASTER WEST, LEBEC, MINT CANYON, NEWHALL, OAT MOUNTAIN, PACIFICO MOUNTAIN, PALMDALE, RITTER RIDGE, ROSAMOND LAKE, SLEEPY VALLEY, VAL VERDE, WARM SPRINGS MOUNTAIN, WHITAKER PEAK
Address:
PLSS:

Database record metadata

	Date	*User*	
Entered:	5/5/2008	jay	
Last modified:	8/7/2014	agarcia	
IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.

Record status:

Report Detail: LA-09066

Identifiers

Report No.: LA-09066
Other IDs:
Cross-refs:

Citation information

Author(s): Shepard, Richard S.
Year: 2004
Title: Phase I Cultural Resource Assessment for Lyons Canyon Ranch Specific Plan, Tentative Tract Map 53653, Santa Clarita, Los Angeles County, California.
Affliliation: BonTerra Consulting
No. pages:
No. maps:
Attributes: Archaeological, Field study
Inventory size: 358 ac
Disclosure:
Collections:

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): OAT MOUNTAIN
Address:
PLSS:

Database record metadata

	Date	*User*	
Entered:	5/5/2008	jay	
Last modified:			
IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.
Record status:			

Report Detail: LA-10510

Identifiers

Report No.: LA-10510
Other IDs:
Cross-refs:

Citation information

Author(s): McKenna, Jeanette A.
Year: 2005
Title: A Phase I Cultural Reources investigation of Aidlin Wickham Tract No. 52796, Approximately 230 Acres in the Pico Canyon Area of Los Angeles County, California
Affliliation: McKenna et al.
No. pages: 77
No. maps:
Attributes: Archaeological, Field study
Inventory size:
Disclosure: Not for publication
Collections: No

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): NEWHALL, OAT MOUNTAIN
Address:
PLSS:

Database record metadata

	Date	*User*
Entered:	8/5/2010	agarcia
Last modified:	8/5/2010	agarcia

IC actions:
Record status:

Report Detail: LA-10511

Identifiers

Report No.: LA-10511
Other IDs:
Cross-refs:

Citation information

Author(s): McKenna, Jeanette A.
Year: 2005
Title: A Phase I Cultural Resources Investigation of Aidlin Casad Tract No. 52905, Approximately 95 Acres in the Lyon Canyon Area of Los Angeles County, California
Affiliation: McKenna et al.
No. pages: 44
No. maps:
Attributes: Archaeological, Field study
Inventory size:
Disclosure: Not for publication
Collections: No

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): NEWHALL, OAT MOUNTAIN
Address:
PLSS:

Database record metadata

	Date	*User*
Entered:	8/5/2010	agarcia
Last modified:	8/5/2010	agarcia

IC actions:
Record status:

Report Detail: LA-10578

Identifiers

Report No.: LA-10578
Other IDs:
Cross-refs:

Citation information

Author(s): Fortier, Jana
Year: 2009
Title: TEA21 Rural Roadside Inventory: Native American Consultation and Ethnographic Study Caltrans District 7, County of Los Angeles
Affliliation: ICF Jones & Stokes
No. pages: 94
No. maps:
Attributes: Management/planning
Inventory size: QC
Disclosure: Not for publication
Collections: Unknown

General notes

Mapped in GIS only.

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): ACTON, AGUA DULCE, AZUSA, BEVERLY HILLS, BLACK MTN, CALABASAS, CANOGA PARK, CHILAO FLAT, CONDOR PEAK, CRYSTAL LAKE, FAIRMONT BUTTE, FRAZIER MOUNTAIN, GLENDORA, LA LIEBRE RANCH, LANCASTER WEST, LEBEC, LIEBRE MTN, LITTLE BUTTES, LITTLEROCK, LOVEJOY BUTTES, MALIBU BEACH, MESCAL CREEK, MINT CANYON, MOUNT SAN ANTONIO, NEENACH SCHOOL, NEWHALL, OAT MOUNTAIN, PACIFICO MOUNTAIN, PALMDALE, PASADENA, POINT DUME, RITTER RIDGE, ROSAMOND, SAN FERNANDO, SANTA SUSANA, SLEEPY VALLEY, THOUSAND OAKS, TOPANGA, TRIUNFO PASS, VAL VERDE, VALYERMO, WATERMAN MTN, WHITAKER PEAK
Address:
PLSS:

Database record metadata

	Date	*User*
Entered:	9/20/2010	agarcia
Last modified:	2/5/2015	agarcia

IC actions:	*Date*	*User*	*Action taken*
	11/12/201	agarcia	GIS QC

Record status:

Report Detail: LA-12501

Identifiers

Report No.: LA-12501
Other IDs:
Cross-refs:

Citation information

Author(s): Bissell, Ronald and Maxon, Patrick
Year: 1999
Title: Cultural Resources Reconnaissance and Evaluation of TT 52796 and the Lennar Parcel; Portions of the Aidlin Properties, City of Santa Clarita, Los Angeles County, California
Affliliation: RMW Paleo Associates
No. pages: 75
No. maps:
Attributes: Archaeological, Field study
Inventory size:
Disclosure:
Collections:

Sub-desig.: A
Author(s): Gregory, Tim
Year: 1999 (May)
Title: HISTORIC RESOURCES TECHNICAL REPORT:
THE LARINAN APIARY (26300 PICO CANYON ROAD) SANTA CLARITA, CALIFORNIA
Affiliation:
Report type(s):
Inventory size:
No. pages:
Disclosure:
Collections:
PDF Pages: -

General notes

Associated resources

Primary No.	*Trinomial*	*Name*
P-19-001020	CA-LAN-001020	
P-19-190691		Larianan Apiary

No. resources: 2
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): NEWHALL, OAT MOUNTAIN
Address:
PLSS:

Database record metadata

	Date	*User*
Entered:	3/28/2014	lnoyes
Last modified:	8/21/2017	sstjames

IC actions:
Record status:

Report Detail: LA-12526

Identifiers

Report No.: LA-12526
Other IDs:
Cross-refs:

Citation information

Author(s): Ehringer, Candace, Ramirez, Katherine, and Vader, Michael
Year: 2013
Title: Santa Clarita Valley Sanitation District Chloride TMDL Facilities Plan Project, Phase I Cultural Resources Assessment
Affiliation: ESA
No. pages: 172
No. maps:
Attributes: Archaeological, Field study
Inventory size:
Disclosure:
Collections:

General notes

also recorded as VN3153

Associated resources

Primary No.	*Trinomial*	*Name*
P-19-002150	CA-LAN-002150H	PACIFIC COAST OIL ROAD
P-19-002233	CA-LAN-002233	Chiquito Cyn Camp #2
P-19-002234	CA-LAN-002234	Chiquito Cyn Camp #1
P-19-002681	CA-LAN-002681/H	Sylmar Site, Pasknga
P-19-004321	CA-LAN-004321H	SCVSD-1
P-19-179645		Arroyo Seco Parkway
P-19-186112		Union Pacific RR, Southern Paci
P-19-186541		Oak of the Golden Dream
P-19-186567		Rancho San Francisco
P-19-186859		Arroyo Secco Flood Control Cha
P-19-187055		Ramona Gardens/Ramona Villa
P-19-188007		Old San Fernando Rd
P-19-190312		San Fernando Road Bridge over
P-19-190313		San Fernando Road Bridge over
P-19-190314		San Fernando Road Bridge over
P-19-190315		The Old Road Bridge over Santa
P-19-190316		Lake St/Providencia Ave Bridge
P-19-190317		San Fernando Road Bridge over
P-19-190318		SCVSD-2
P-19-190319		SCVSD-3
P-19-190320		SCVSD-4
P-19-190321		Warehouse at Berth 155A
P-19-190322		John J. Johnson Ranch
P-56-001262	CA-VEN-001262H	Rancho Camulos Site
P-56-151768		Rancho Camulos - Del Valle Ra

No. resources: 25
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): BURBANK, FILLMORE, HOLLYWOOD, LOS ANGELES, NEWHALL, OAT MOUNTAIN, PIRU, SAN FERNANDO, VAL VERDE, VAN NUYS
Address:
PLSS:

Report Detail: LA-12526

Database record metadata

	Date	*User*
Entered:	4/14/2014	lnoyes
Last modified:	8/8/2014	agarcia
IC actions:		
Record status:		

Report Detail: LA-12619

Identifiers

Report No.: LA-12619
Other IDs:
Cross-refs:

Citation information

Author(s): Maxon, Patrick O.
Year: 2000
Title: Cultural Resources Reconnaissance of the Edson (TT 52905) Parcel, a Portion of the Aidlin Properties, in the City of Santa Clarita, Los Angeles County, California
Affiliation: RMW Paleo Associates
No. pages: 31
No. maps:
Attributes: Archaeological, Evaluation, Field study
Inventory size:
Disclosure: Not for publication
Collections:

General notes

Associated resources

No. resources: 0
Has informals: Yes

Location information

County(ies): Los Angeles
USGS quad(s): NEWHALL, OAT MOUNTAIN
Address:
PLSS:

Database record metadata

	Date	*User*
Entered:	10/3/2014	agarcia
Last modified:	10/6/2014	agarcia

IC actions:
Record status:

Report Detail: LA-12631

Identifiers

Report No.: LA-12631
Other IDs:
Cross-refs:

Citation information

Author(s): Maxon, Patrick
Year: 1999 (May)
Title: Cultural Resources Reconnaissance of the Edson (TT 52905) Parcels; Portions of the Aidlin Properties, in the City of Santa Clarita, Los Angeles County, California
Affiliation: RMW Paleo Associates
No. pages: 16
No. maps:
Attributes: Archaeological, Excavation, Field study, Literature search
Inventory size:
Disclosure: Not for publication
Collections:

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): NEWHALL, OAT MOUNTAIN

Address: Address	*City*	*Assessor's parcel no.*	*Zip code*
	Santa Clarita		

PLSS:

Database record metadata

	Date	*User*
Entered:	10/6/2014	agarcia
Last modified:	10/6/2014	agarcia

IC actions:
Record status:

Report Detail: LA-12801

Identifiers

Report No.: LA-12801
Other IDs:
Cross-refs:

Citation information

Author(s): Sackett, Jodie
Year: 2014 (8)
Title: Aidlin Hills Project, Project No 00-136 Case Nos VTTM 52796, CUP 00-136, OTP00-136
Affiliation: Los Angeles County
No. pages: 61
No. maps:
Attributes: Management/planning
Inventory size:
Disclosure: Unrestricted
Collections: No

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): NEWHALL, OAT MOUNTAIN
Address:
PLSS:

Database record metadata

	Date	*User*
Entered:	4/13/2015	lnoyes
Last modified:	4/13/2015	lnoyes

IC actions:
Record status:

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-19-001020	CA-LAN-001020		Site	Prehistoric	AP15 (Habitation debris)	1979 (Thomas Banks); 1991 (Laurie White, Archaeological Associates)	LA-00510, LA-01595, LA-02597, LA-02848, LA-12501
P-19-101350		Resource Name - ISO-1	Other	Prehistoric	AP02 (Lithic scatter)	2015 (K. Ross Way, Rincon Consultants)	LA-12882
P-19-101351		Resource Name - ISO-2	Other	Historic	AH04 (Privies/dumps/trash scatters)	2015 (K. Ross Way, Rincon Consultants)	LA-12882
P-19-192297		Resource Name - Check Dam	Structure	Historic	HP21 (Dam)	2015 (K. Ross Way, Rincon Consultants)	LA-12882

Resource Detail: P-19-001020

Identifying information

Primary No.: P-19-001020
Trinomial: CA-LAN-001020
Name:
Other IDs:
Cross-refs:

Attributes

Resource type: Site
Age: Prehistoric
Information base: Survey
Attribute codes: AP15 (Habitation debris)
Disclosure: Not for publication
Collections: No
Accession no(s):
Facility:

General notes

Recording events

Date	*Recorder(s)*	*Affiliation*	*Notes*
4/20/1979	Thomas Banks		
9/30/1991	Laurie White	Archaeological Associates	Update

Associated reports

Report No.	*Year*	*Title*	*Affiliation*
LA-00510	1979	Preliminary Archaeological Overview: a 3,000+/- Acre Parcel Bordering Portrero Canyon Near Newhall, Ca.	Archaeological Associates, Ltd.
LA-01595	1984	Archaeological Survey Report: a 400+ Acre Tract Located in the Santa Susana Mountains West of Newhall, California	Archaeological Associates, Ltd.
LA-02597	1991	Disposition of Archaeological Site LAN-1020 Located Adjacent to Pico Canyon Road West of Newhall, Los Angeles County.	Archaeological Associates, Ltd.
LA-02848	1992	Cultural Resource Assessment of the Proposed Newhall Alternate Alignment, Ventura and Los Angeles Counties, California	Peak & Associates, Inc.
LA-12501	1999	Cultural Resources Reconnaissance and Evaluation of TT 52796 and the Lennar Parcel; Portions of the Aidlin Properties, City of Santa Clarita, Los Angeles County, California	RMW Paleo Associates

Location information

County: Los Angeles
USGS quad(s): NEWHALL
Address:
PLSS:
UTMs:

Management status

Database record metadata

	Date	*User*	
Entered:	5/1/2008	jay	
Last modified:	7/14/2014	sstjames	
IC actions:	*Date*	*User*	*Action taken*
	5/1/2008	jay	Appended records from Encodent database.

Resource Detail: P-19-001020

Record status:

Resource Detail: P-19-101350

Identifying information

Primary No.: P-19-101350
Trinomial:
Name: ISO-1
Other IDs:

Type	Name
Resource Name	ISO-1

Cross-refs:

Attributes

Resource type: Other
Age: Prehistoric
Information base: Survey
Attribute codes: AP02 (Lithic scatter)
Disclosure: Not for publication
Collections: No
Accession no(s):
Facility:

General notes

Recording events

Date	Recorder(s)	Affiliation	Notes
7/12/2015	K. Ross Way	Rincon Consultants	

Associated reports

Report No.	Year	Title	Affiliation
LA-12882	2015	Lyons Canyon Ranch Project (TTN 53653) Cultural Resources Study	Rincon Consultants, Inc.

Location information

County: Los Angeles
USGS quad(s): OAT MOUNTAIN
Address:

Address	City	Assessor's parcel no.	Zip code
	Santa Clarita		

PLSS:
UTMs:

Management status

Database record metadata

	Date	User
Entered:	3/24/2016	mgalaz
Last modified:	3/24/2016	mgalaz

IC actions:
Record status: Verified

Resource Detail: P-19-101351

Identifying information

Primary No.: P-19-101351
Trinomial:
Name: ISO-2
Other IDs:

Type	Name
Resource Name	ISO-2

Cross-refs:

Attributes

Resource type: Other
Age: Historic
Information base: Survey
Attribute codes: AH04 (Privies/dumps/trash scatters)
Disclosure: Not for publication
Collections: No
Accession no(s):
Facility:

General notes

Recording events

Date	Recorder(s)	Affiliation	Notes
7/12/2015	K. Ross Way	Rincon Consultants	

Associated reports

Report No.	Year	Title	Affiliation
LA-12882	2015	Lyons Canyon Ranch Project (TTN 53653) Cultural Resources Study	Rincon Consultants, Inc.

Location information

County: Los Angeles
USGS quad(s): OAT MOUNTAIN
Address:
PLSS:
UTMs:

Management status

Database record metadata

	Date	User
Entered:	3/24/2016	mgalaz
Last modified:	3/24/2016	mgalaz

IC actions:
Record status: Verified

Resource Detail: P-19-192297

Identifying information

Primary No.: P-19-192297
Trinomial:
Name: Check Dam
Other IDs:

Type	Name
Resource Name	Check Dam

Cross-refs:

Attributes

Resource type: Structure
Age: Historic
Information base: Survey
Attribute codes: HP21 (Dam)
Disclosure: Not for publication
Collections: No
Accession no(s):
Facility:

General notes

Recording events

Date	Recorder(s)	Affiliation	Notes
7/12/2015	K. Ross Way	Rincon Consultants	

Associated reports

Report No.	Year	Title	Affiliation
LA-12882	2015	Lyons Canyon Ranch Project (TTN 53653) Cultural Resources Study	Rincon Consultants, Inc.

Location information

County: Los Angeles
USGS quad(s): OAT MOUNTAIN
Address:

Address	City	Assessor's parcel no.	Zip code
	Santa Clarita		

PLSS:
UTMs:

Management status

Database record metadata

	Date	User
Entered:	3/24/2016	mgalaz
Last modified:	3/24/2016	mgalaz

IC actions:
Record status: Verified

MAPPED

Santa Rosa, Ca 92527

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
ARCHEOLOGICAL SITE SURVEY RECORD

SITE No CA-LAN-001020

1. Previous Site Designation None 2. Investigator's Field No. None
3. USGS Quad Newhall 7½' 15' X Year 1969
4. UTM Coordinates
5. Twp. 4N Range 16W ¼ of ¼ of ¼ of Sec.
6. Location In Pico Canyon north of paved road where three drainages meet. West of Benchmark 1355. On San Francisco Rancho Boundary. 34° 22' 45" x 118° 25' 30"
7. Contour 1350ft. 8 Owner & Address
9. Prehistoric X Ethnographic Historic 10. Site Description Small midden area along creek bank edge.
11. Area 50 x 75 meters. square meters. 12. Depth of Midden Unknown
13. Site Vegetation Oak and grass Surrounding Vegetation Brush
14. Location & Proximity of Water Running creek through site
15. Site Soil dark brown & loamy Surrounding Soil Sandy
16. Previous Excavation none
17. Site Disturbance none
18. Destruction Possibility
19. Features none
20. Burials none
21. Artifacts metate fragment of diorite
fire cracked rock
22. Faunal Remains Pismo clam fragments
23. Comments
24. Accession No. 25. Sketch Map by Yes
26. Date Recorded 4-20-79 27. Recorded by Thomas Banks
28. Photo Roll No. Frame No. Film Type(s) Taken By

DPR 422 (Rev. 9/76)

LAN-1020

% Destroyed _____ Row _____ Test Excavated _____ % if known

National Register Status: Listed _____ Potential _____ No Determination __X__ Nominated _____ Indigenous _____

State Historical Landmark (No.) _____ Point of Historical Interest _____

SPECIAL ATTRIBUTES (Place an X in only those spaces which pertain to the site)

Midden/Habitation Debris __X__ Lithic and/or Ceramic Scatter _____

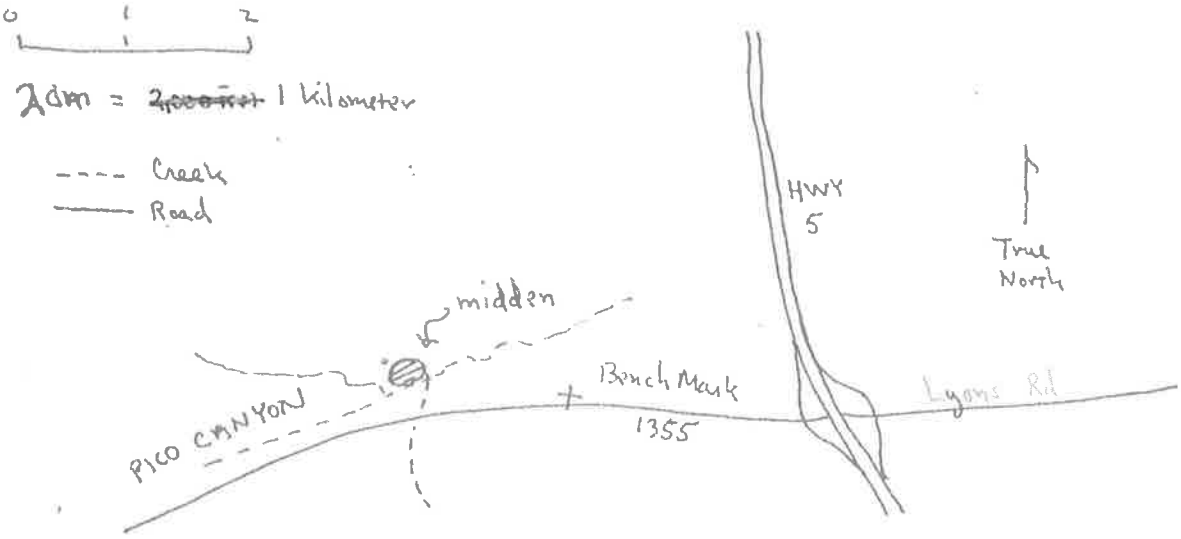
Bedrock Mortars/Milling Surfaces _____ Petroglyphs/Pictographs _____ Stone Features _____

Burials _____ Caches _____ Hearths/Roasting Pits _____ Hopscotch _____ Structure Remains _____

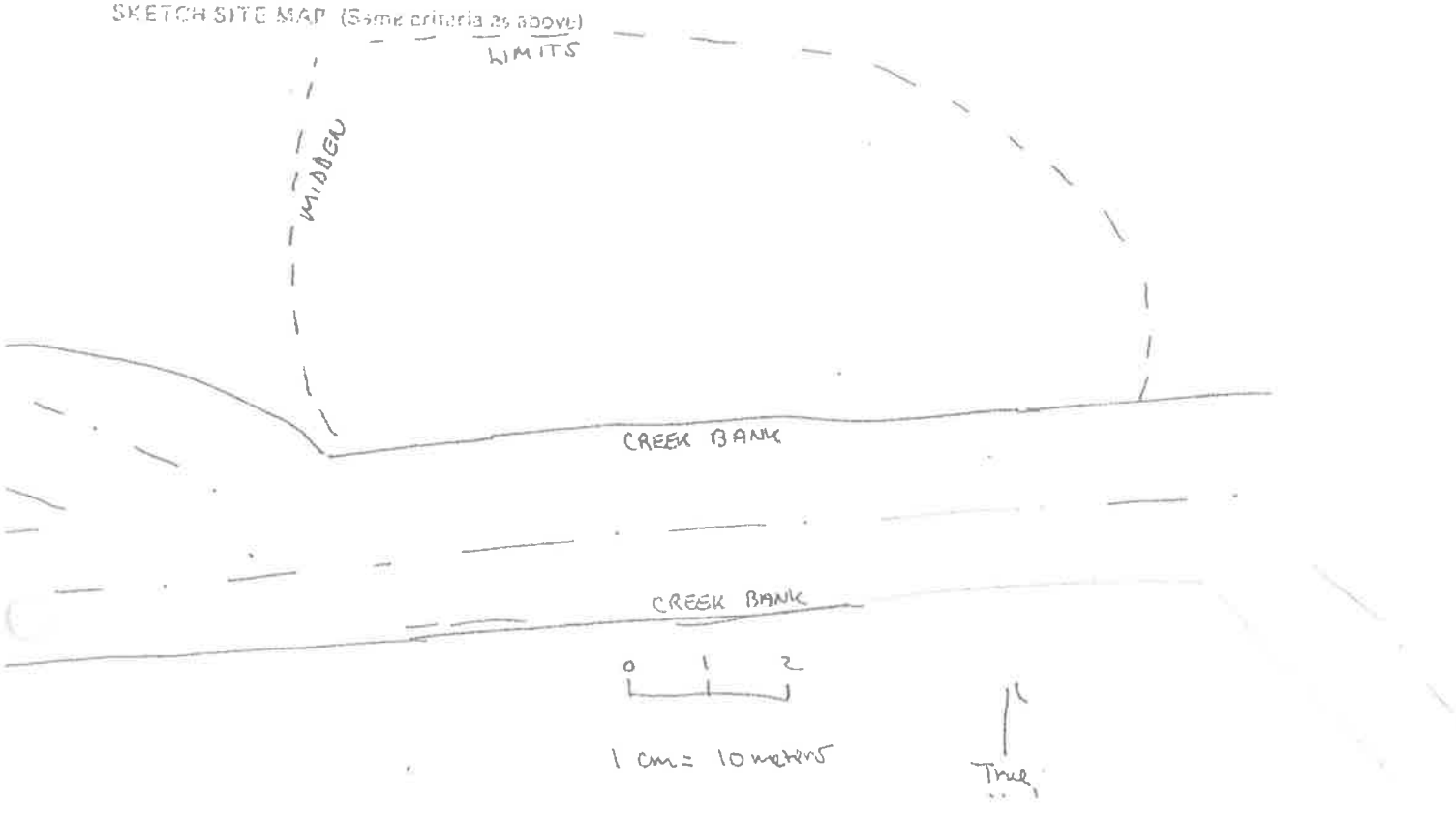
Underwater _____ Open Air _____ Rockshelter _____ Cave _____ Quarry _____ Trail _____

REMARKS Falls into Alliklik language area (Kroeber 1953:613-614).

SKETCH LOCATION MAP (Include permanent reference markers, North Arrow, and Scale)



SKETCH SITE MAP (Same criteria as above)



LAN-1020



Figure 1
Subject property plotted on the USGS 7.5' Val Verde and Newhall quadrangles. Shaded areas were examined in the field.

ARCHAEOLOGICAL ASSOCIATES, LTD

Permanent Trinomial: LAn-1020

Supplement: Update

ARCHAEOLOGICAL SITE RECORD

Page 1 of 3.

1. County: Los Angeles

2. USGS Quad: Newhall (7.5') 52 (15') Photorevised 1969

3. UTM Coordinates: Zone 11 / 354590 Easting / 3805300 Northing

4. Township 4N Range 16W ; -- 1/4 of -- 1/4 of -- 1/4 of -- 1/4 of Section (Unsectioned) Base (Mer) SBr .

5. Map Coordinates: 552 mmS 166 mmE (NW map corner) 6. Elevation 1350 ft.

7. Location: Site originally recorded by T. Banks in 1979 as being located in Pico Canyon, north of Pico Canyon Road and west of benchmark 1355. Site described as being situated at the confluence of 3 drainages on edge of creek bank. However, two visits to the location by Murray and Brown (1984) and White and White (1991) have concurred that either the site was originally a non-site or the site has been destroyed.

8. Prehistoric X Historic Protohistoric 9. Site Description: Originally described as a small midden with a single milling fragment and fire-cracked rock. However, no artifactual material was found in 1984 or 1991.

10. Area: N/A m(length) x N/A m(width) N/A m^2. Method of determination: Not Applicable.

11. Depth: N/A Method of Determination: N/A

12. Features: None observed.

13. Artifacts: None observed.

14. Non-Artifactual Constitutients: None observed.

15. Date Recorded: 9/3/91 16. Recorded By: Laurie S. White

17. Affiliation and Address: Archaeological Associates, P.O. Box 180, Sun City, California 92381.

ARCHAEOLOGICAL ASSOCIATES, LTD

Permanent Trinomial: LAn-1020

Supplement: Update

ARCHAEOLOGICAL SITE RECORD

18. Human Remains: None Observed.

19. Site Integrity: Visibility was excellent (approaching 100%) due to recent discing of the area for weed abatement.

20. Nearest Water: directly adjacent to confluence of three seasonal drainages.

21. Vegetation Community (site vicinity): Grasses and Streamside Woodland

22. Vegetation Community (on site): Grasses.

23. Site Soil: Sandy loam

24. Surrounding soil: Same

25. Geology: fluvial

26. Landform: Stream terrace

27. Slope: negligible 28. Exposure: Open

29. Landowner(s) (and/or tenants) and Address: unknown

30. Remarks: Site is either a non-site or the site has been inadvertantly destroyed.

31. References: See Banks 1979 (L-510) and Archaeological Assoc. (L-1595).

32. Name of Project: Stevenson Ranch

33. Type of Investigation: Field Inspection

34. Site Accession Number: None. 35. Curated At: N/A

36. Photos: None

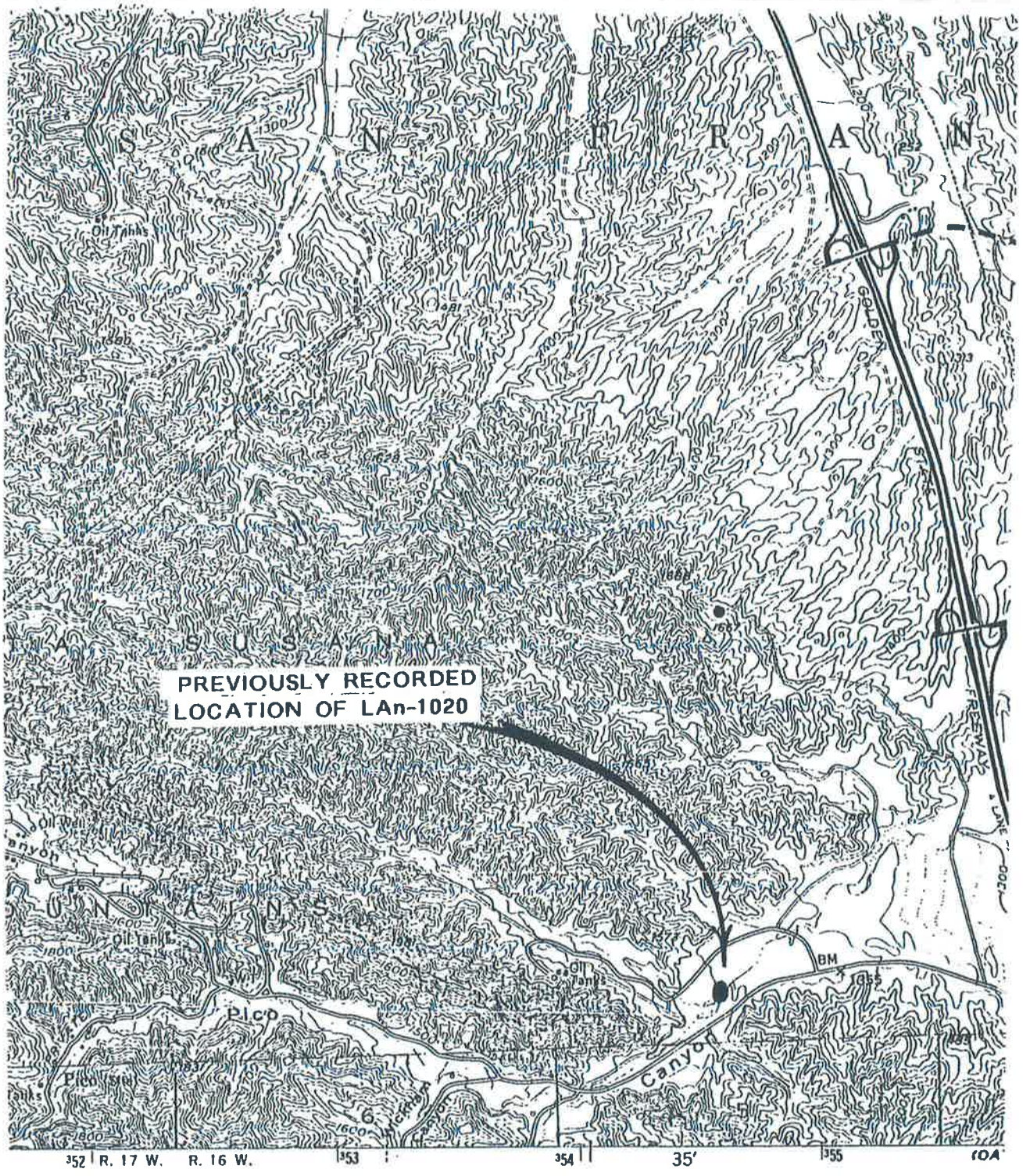
State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE LOCATION MAP

Permanent Trinomial: LAn - 1020

Mo. Yr.

Other Designations:



19-101350

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code | Reviewer | Date

 *Resource Name or #: Iso-1

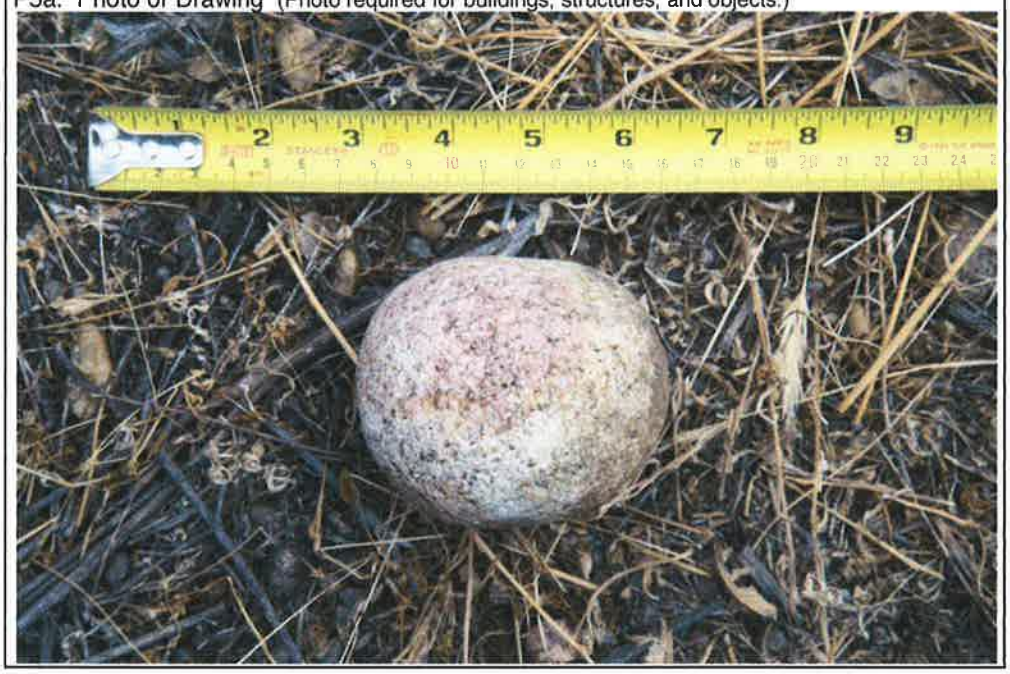
P1. Other Identifier:
***P2. Location:** ☒ **Not for Publication** ☐ **Unrestricted** ***a. County:** Los Angeles
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Oat Mountain **Date:** 2015 **T** 3N ; **R** 16W **Sec** 4; S.B.**B.M.**
c. Address: City: Santa Clarita Zip:
d. UTM: Zone: 11N; 355855.6mE/ 3804257.4mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The resource consists of a single isolated granitic hammerstone with a flat facet, and battering on the opposite end. It measures approximately 9cm in length by 5.5cm in width. The flattened facet is roughly 4cm long by 3cm wide. The artifact was found along the margin of a narrow arroyo at the foot of a finger ridge approximately 30m north of an unnamed creek bed. A sub-modern can dump was also located in the vicinity just west of the hammerstone.

***P3b. Resource Attributes:** (List attributes and codes)
***P4. Resources Present:** ☐Building ☐Structure ☐Object ☐Site ☐District ☐Element of District ☒Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



P5b. Description of Photo: (View, date, accession #) KRW_1933-Detail of hammerstone.

***P6. Date Constructed/Age and Sources:** ☐Historic ☒Prehistoric ☐Both

***P7. Owner and Address:**
Unknown

***P8. Recorded by:** (Name, affiliation, and address)
K. Ross Way
Rincon Consultants, Inc.
180 N. Ashwood
Ventura, CA 93003

***P9. Date Recorded:**
July 12, 2015

***P10. Survey Type:** (Describe)
Pedestrian

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.")
B. Campbell, H. Haas, and C. Duran. 2015. Phase I Cultural Resources Study for the Lyons Canyon Ranch Project, Los Angeles County, California. Rincon Consultants Project No. 14-01094. Report on file at the South Central Coastal Information Center, California State University, Fullerton.

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☐Continuation Sheet ☐Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

19-101350

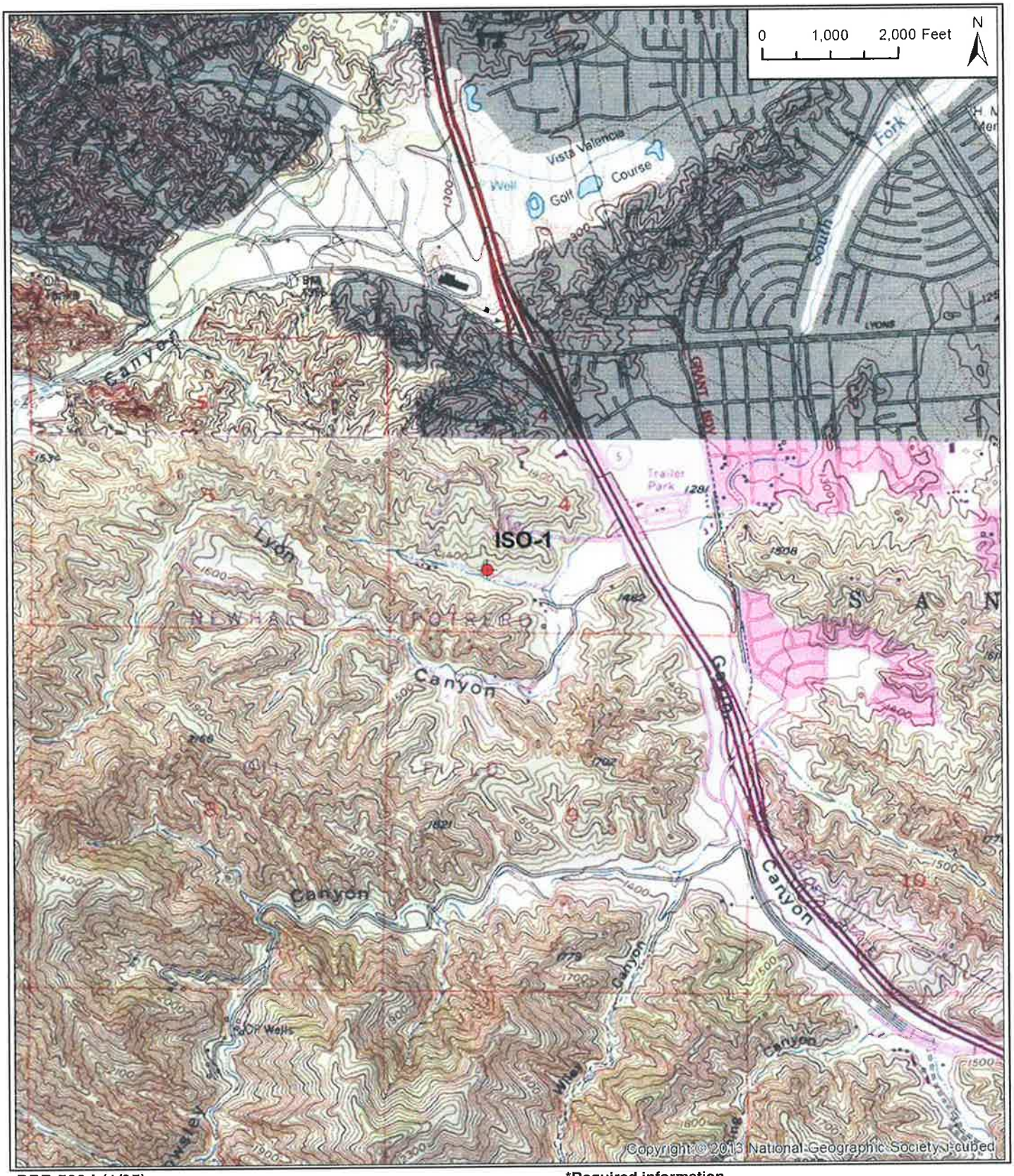
State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary #
HRI#
Trinomial

*Resource Name or #: Iso-1

*Map Name: Oat Mountain, CA

*Scale: 1:24,000 *Date of Map: 2015



*Required information

19-101351

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code | Reviewer | Date

Page 1 of 2 *Resource Name or #: Iso-2

P1. Other Identifier:
***P2. Location:** ☒ Not for Publication ☐ Unrestricted ***a. County:** Los Angeles
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Oat Mountain **Date:** 2015 **T** 3N ; **R** 16W; **Sec;** S.B.**B.M.**
c. Address: City: Zip:
d. UTM: Zone: 11N ; 355979.9mE/ 3804206.1mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The resource consists of a single isolated bottle neck finish that included a cork-lined glass stopper. The bottle design was a crown-top 3-piece mold and the length of the fragment measured approximately 12.5cm including the stopper. The artifact was found along an unnamed creek bed in what appears to have been an earthen dam.

***P3b. Resource Attributes:** (List attributes and codes)
***P4. Resources Present:** ☐Building ☐Structure ☐Object ☐Site ☐District ☐Element of District ☒Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



P5b. Description of Photo: (View, date, accession #) KRW_1934-Detail of bottle neck finish.

***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both

***P7. Owner and Address:**
Unknown

***P8. Recorded by:** (Name, affiliation, and address)
K. Ross Way
Rincon Consultants, Inc.
180 N. Ashwood
Ventura, CA 93003

***P9. Date Recorded:**
July 12, 2015
***P10. Survey Type:** (Describe)
Pedestrian transect.

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.")
B. Campbell, H. Haas, and C. Duran. 2015. Phase I Cultural Resources Study for the Lyons Canyon Ranch Project, Los Angeles County, California. Rincon Consultants Project No. 14-01094. Report on file at the South Central Coastal Information Center, California State University, Fullerton.

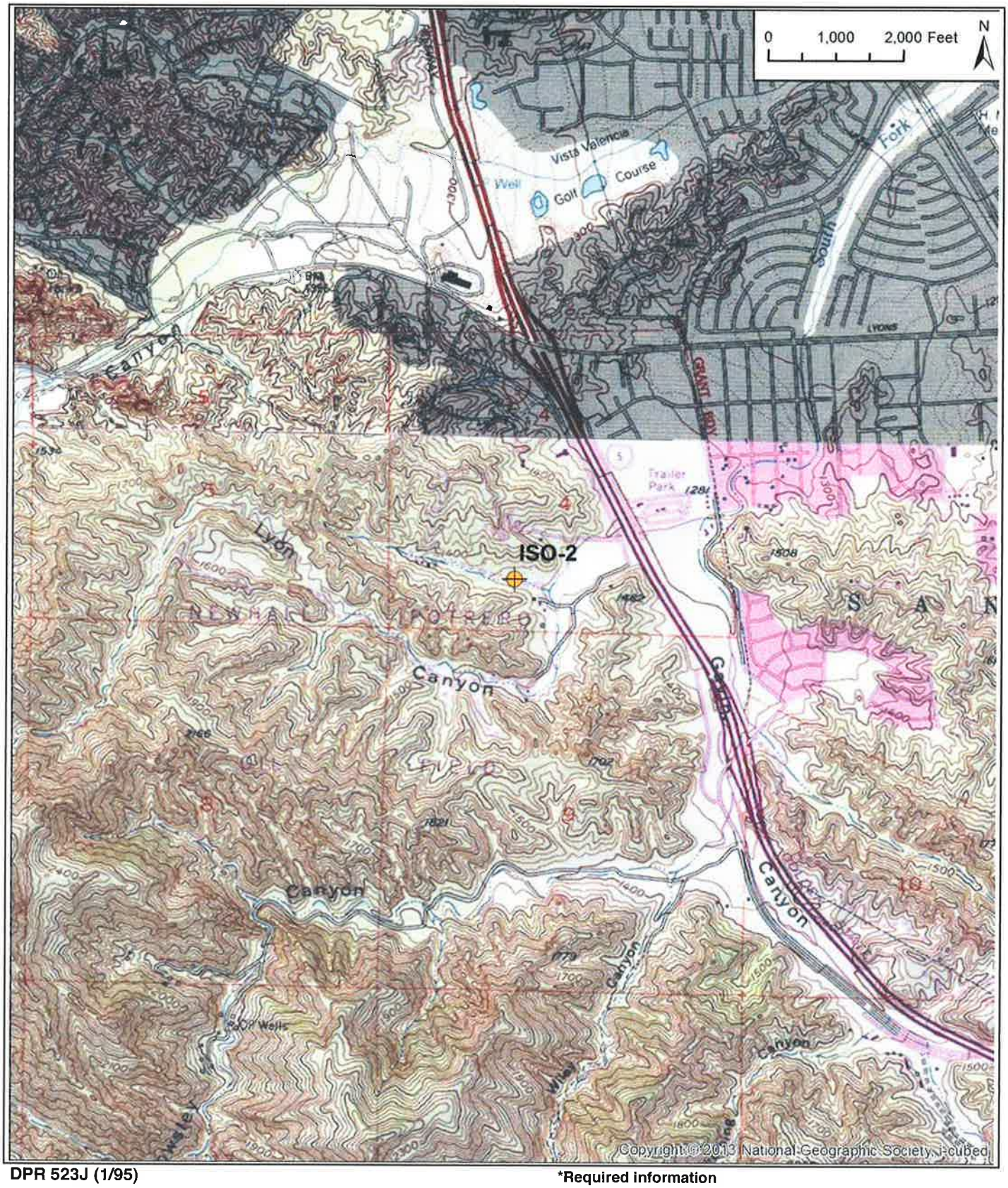
***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☐Continuation Sheet ☐Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary #
HRI#
Trinomial

Page 2 of 2 *Resource Name or #: Iso-2

*Map Name: Oat Mountain, CA *Scale: 1:24,000 *Date of Map: 2015



DPR 523J (1/95)

*Required information

19-192297

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: Check Dam

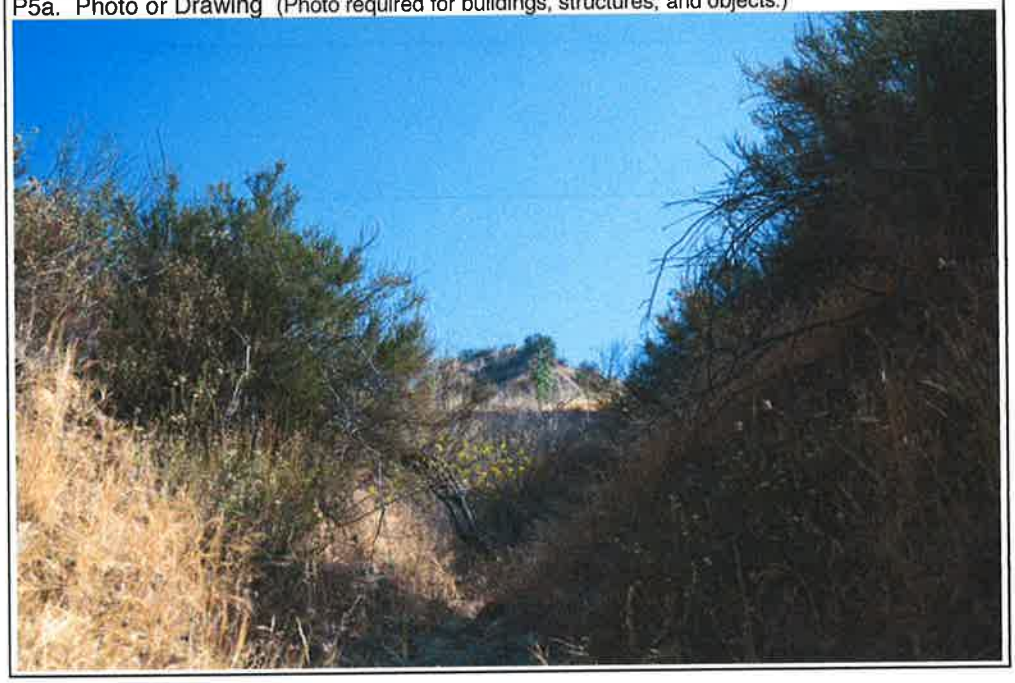
P1. Other Identifier:
*P2. Location: ☒ Not for Publication ☐ Unrestricted *a. County: Los Angeles
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
*b. USGS 7.5' Quad: Oat Mountain Date: 2015 T 3N ; R 16W; NE ¼ of NW ¼ of Sec 9; S.B.B.M.
c. Address: City: Santa Clarita Zip:
d. UTM: Zone: 11N ; 355670mE/ 3803890 mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The resource consists of a previously recorded check dam in a ravine. The dam was previously recorded by Richard Shepherd in 2004. No previous resource record or report could be identified for the resource. The dam is of concrete construction with rebar protruding from the top. The dam was previously recorded and determined as ineligible for the NRHP and CRHR.

*P3b. Resource Attributes: (List attributes and codes) HP 21: Dam
*P4. Resources Present: ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



P5b. Description of Photo: (View, date, accession #) KRW_2615- check dam overview.

*P6. Date Constructed/Age and Sources: ☐Historic ☒Prehistoric ☐Both

*P7. Owner and Address:
Unknown

*P8. Recorded by: (Name, affiliation, and address)
K. Ross Way
Rincon Consultants, Inc.
180 N. Ashwood
Ventura, CA 93003

*P9. Date Recorded:
July 12, 2015

*P10. Survey Type: (Describe)
Pedestrian

*P11. Report Citation: (Cite survey report and other sources, or enter "none.")
B. Campbell, H. Haas, and C. Duran. 2015. Phase I Cultural Resources Study for the Lyons Canyon Ranch Project, Los Angeles County, California. Rincon Consultants Project No. 14-01094. Report on file at the South Central Coastal Information Center, California State University, Fullerton.

*Attachments: ☐NONE ☒Location Map ☐Sketch Map ☐Continuation Sheet ☐Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
Primary #
HRI#

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status Code

*Resource Name or # (Assigned by recorder) Check Dam

B1. Historic Name: N/A
B2. Common Name: N/A
B3. Original Use: Check dam
B4. Present Use: none
*B5. Architectural Style: N/A
*B6. Construction History: (Construction date, alterations, and date of alterations) The check dam was constructed in the 1920s based on research of historic topographic maps. No other information is available.

*B7. Moved? ☒No ☐Yes ☐Unknown Date: Original Location:
*B8. Related Features: None

B9a. Architect: N/A
b. Builder: Unknown.
*B10. Significance: Theme:
Area: Santa Clarita CA
Period of Significance: 1920s
Property Type:
Applicable Criteria:
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The dam is of generic design and material. Rebar protruding from the top of the dam suggests that the dam is incomplete. No other structures are associated with the dam. A 2006 Environmental Impact Report (State Clearinghouse No. 2003031086) states that the dam was evaluated and determined ineligible for the NRHP and CRHR as an incomplete isolated feature.

B11. Additional Resource Attributes: (List attributes and codes) None

*B12. References:

B13. Remarks:

*B14. Evaluator: Richard Shepherd

*Date of Evaluation: 2004

(Sketch Map with north arrow required.)

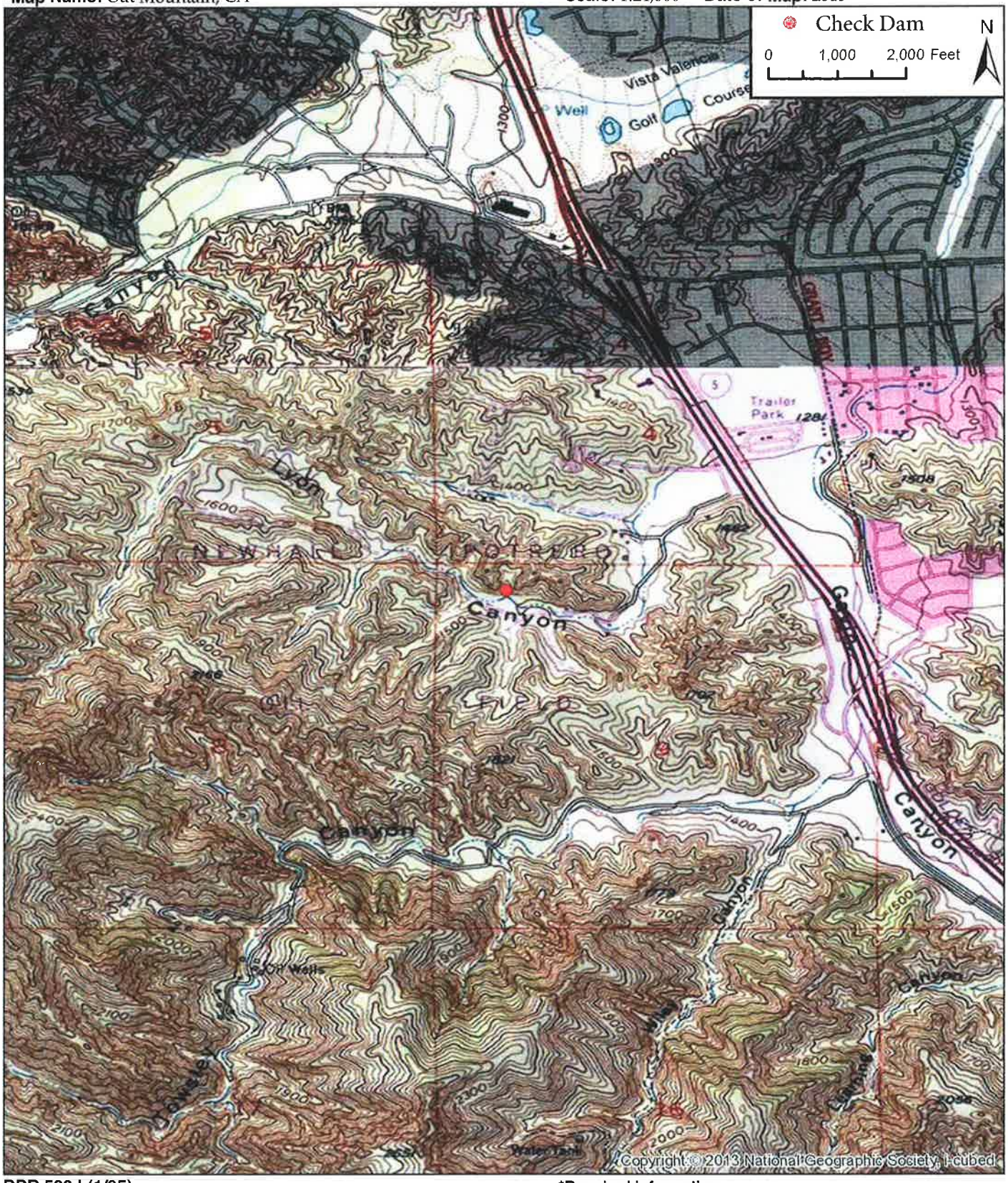


State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary #
HRI#
Trinomial

Page 3 of 3 *Resource Name or #: Check Dam

*Map Name: Oat Mountain, CA *Scale: 1:24,000 *Date of Map: 2015



DPR 523J (1/95) *Required information

ROPERTY-NUMBER	PRIMARY-#	STREET.ADDRESS.....	NAMES.....	CITY.NAME.....	OWN	YR-C	OHP-PROG..	PRG-REFERENCE-NUMBER	STAT-DAT	NRS	CRIT
145889		780 W ELBERON AVE		SAN PEDRO	P	1929	HIST.RES.	DOE-19-03-0337-0000	01/31/03	6U	
							PROJ.REVW.	HUD030103G	01/31/03	6U	
077834		340 W SEPULVEDA ST		SAN PEDRO	U	1910	PROJ.REVW.	HUD920908L	10/15/92	6Y	
081449		460 W SEPULVEDA ST		SAN PEDRO	U	1896	PROJ.REVW.	HUD921218I	01/04/93	6Y	
157043			SOUTHERN PACIFIC RAILROAD BRIDGE	SANTA CLARITA	M	1898	PROJ.REVW.	FHWA051205A	12/08/05	6Y	
033670		22502 5TH ST	ICE HOUSE / WILCOX SEWER CORPORATI	SANTA CLARITA	P	1922	HIST.SURV.	1350-0019-0000		7R	
							PROJ.REVW.	HUD8605010	06/04/86	6Y	
033671		22509 6TH ST	ALBERT SWALL RENTAL HOUSE, NEWHALL	SANTA CLARITA	P	1902	HIST.SURV.	1350-0020-0000		7R	
							PROJ.REVW.	HUD860501P	06/04/86	6Y	
033673		22614 8TH ST	EMILE M. CHAIX PROPERTY, COUNTRY C	SANTA CLARITA	P	1923	HIST.SURV.	1350-0022-0000		7R	
							PROJ.REVW.	HUD860501R	06/04/86	6Y	
033674		22616 9TH ST	RESIDENCE	SANTA CLARITA	P	1928	PROJ.REVW.	HUD860501S	06/04/86	6Y	
							HIST.SURV.	1350-0023-0000		7R	
074430		22410 ARCH ST		SANTA CLARITA	U	1940	PROJ.REVW.	HUD920204C	02/28/92	6Y	
074428		24154 ARCH ST		SANTA CLARITA	U	1928	PROJ.REVW.	HUD920204B	02/28/92	6Y	
083766		E NEWHALL AVE	EAST NEWHALL, SAN FERNANDO ROAD /	SANTA CLARITA	U		PROJ.REVW.	HUD910331Q	08/20/93	6Y	
183152		GOLDEN VALLEY RD	NL0211-01 (GOLDEN VALLEY RD-DWP TO	SANTA CLARITA	P		PROJ.REVW.	FCC100401D	05/18/10	6Y	
033672		22500 MARKET ST	PATRICK J. COYLE RESIDENCE	SANTA CLARITA	P	1922	HIST.SURV.	1350-0021-0000		7R	
							PROJ.REVW.	HUD860501Q	06/04/86	6Y	
083138		22908 MARKET ST		SANTA CLARITA	P	1910	PROJ.REVW.	HUD930219L	07/29/93	6Y	
090635		23287 N SIERRA SR	LYONS STATION STAGECOACH STOP	SANTA CLARITA	P		HIST.RES.	SHL-0688-0000	07/31/59	7L	
033650		24151 NEWHALL AVE	HORSESHOE RANCH, WILLIAM S. HART P	SANTA CLARITA	C	1910	HIST.SURV.	1350-0002-0000		3S	
							HIST.RES.	SPHI-LAN-032	03/13/81	7L	
097731		OLD RD	OLD ROAD BRIDGE	SANTA CLARITA	D		PROJ.REVW.	HRG940202Z	09/30/94	6Y	
							HIST.RES.	HRG-194	09/30/94	6Y	
033651		238 PINE ST	NEWHALL OIL REFINERY; PIONEER OIL	SANTA CLARITA	P	1876	HIST.SURV.	1350-0003-0000		3S	
							HIST.RES.	SHL-0172-0000	03/06/35	7L	
170705		24604 PINE ST	RVP INDUSTRIES, INC. BUILDING	SANTA CLARITA	P	1950	PROJ.REVW.	FCC080222A	03/26/08	6Y	
089596		PLACERITA CANYON RD	OAK OF THE GOLDEN DREAM	SANTA CLARITA	S		HIST.RES.	SHL-0168-0000	03/03/35	7L	
074425		25017 RACE ST		SANTA CLARITA	U	1924	PROJ.REVW.	HUD920204A	02/28/92	6Y	
033658		24307 RAILROAD AVE	SANTA CLARITA COURTHOUSE, YE OLD C	SANTA CLARITA	P	1932	HIST.SURV.	1350-0007-0000		7R	
							PROJ.REVW.	HUD860501C	06/04/86	6Y	
126429		14748 SAN FERNANDO RD		SANTA CLARITA	U	1932	HIST.RES.	DOE-19-00-0351-0000	07/14/00	6Y	
							PROJ.REVW.	FHWA000623E	07/14/00	6Y	
126427		22117 SAN FERNANDO RD		SANTA CLARITA	Y	1949	HIST.RES.	DOE-19-00-0349-0000	07/14/00	6Y	
							PROJ.REVW.	FHWA000623E	07/14/00	6Y	
126428		22117 SAN FERNANDO RD		SANTA CLARITA	Y	1930	HIST.RES.	DOE-19-00-0350-0000	07/14/00	6Y	
							PROJ.REVW.	FHWA000623E	07/14/00	6Y	
126425		22124 SAN FERNANDO RD		SANTA CLARITA	Y	1930	HIST.RES.	DOE-19-00-0348-0000	07/14/00	6Y	
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100262		24101 SAN FERNANDO RD	NEWHALL RANCH HOUSE	SANTA CLARITA	P	1860	HIST.RES.	DOE-19-95-0058-0000	06/01/95	6Y	
							PROJ.REVW.	HRG940202Z	06/01/95	6Y	
069861		24203 SAN FERNANDO RD	GAS STATION AND GARAGE	SANTA CLARITA	U		PROJ.REVW.	HUD860501T	06/04/86	6Y	
033675		24203 SAN FERNANDO RD	SPRING VALLEY TIRES	SANTA CLARITA	P	1927	HIST.SURV.	1350-0024-0000		7R	
033682		24206 SAN FERNANDO RD	CENTURY 21 REALTY / COUNSELING	SANTA CLARITA	P	1935	HIST.SURV.	1350-0031-0000		7R	
069855		24206 SAN FERNANDO RD	COMMERCIAL BUILDING	SANTA CLARITA	U		PROJ.REVW.	HUD860501Y	06/04/86	6Y	
033676		24229 SAN FERNANDO RD	HOWARD STOWITTS, DDS COMMERCIAL BU	SANTA CLARITA	P	1932	PROJ.REVW.	HUD860501U	06/04/86	6Y	
							HIST.SURV.	1350-0025-0000		7R	
033712		24238 SAN FERNANDO RD	SHERIFFS SUBSTATION	SANTA CLARITA	P	1926	HIST.SURV.	1530-0032-0000	05/22/91	7R	
							PROJ.REVW.	HUD860501Z	06/04/86	6Y	
033677		24247 SAN FERNANDO RD	THE NEEDLEWORKS COMMERCIAL BUILDIN	SANTA CLARITA	P	1922	PROJ.REVW.	HUD860501V	06/04/86	6Y	
							HIST.SURV.	1350-0026-0000		7R	
033678		24249 SAN FERNANDO RD		SANTA CLARITA	P	1922	HIST.SURV.	1350-0027-0000		7R	
033679		24251 SAN FERNANDO RD	ANTIQUES	SANTA CLARITA	P	1922	HIST.SURV.	1350-0028-0000		7R	
033683		24254 SAN FERNANDO RD	DOTY GARAGE	SANTA CLARITA	P	1926	HIST.SURV.	1350-0033-0000		7R	

PROPERTY-NUMBER	PRIMARY-#	STREET.ADDRESS.....	NAMES.....	CITY.NAME.....	OWN	YR-C	OHP-PROG..	PRG-REFERENCE-NUMBER	STAT-DAT	NRS	CRIT
097668		24151 N SAN FERNANDO RD	SUNDECK/TEA ROOM	NEWHALL	C	1930	HIST.RES.	DOE-19-94-0553-0006	09/30/94	2D2	BC
							PROJ.REVW.	HRG940202Z	09/30/94	2D2	BC
101672		24151 N SAN FERNANDO RD	FILM VAULT	NEWHALL	C	1922	HIST.RES.	DOE-19-94-0553-0013	09/30/94	2D2	BC
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101673		24151 N SAN FERNANDO RD	WATER PUMP/RESERVOIR	NEWHALL	C	1928	HIST.RES.	DOE-19-94-0553-0014	09/30/94	2D2	BC
							PROJ.REVW.	HRG940202Z	09/30/94	2D2	BC
101674		24151 N SAN FERNANDO RD	FRITZ' GRAVE MONUMENT	NEWHALL	C	1938	HIST.RES.	DOE-19-94-0553-0015	09/30/94	2D2	BC
							PROJ.REVW.	HRG940202Z	09/30/94	2D2	BC
101671		24151 N SAN FERNANDO RD	NAYLOR HOUSE	NEWHALL	C	1921	HIST.RES.	DOE-19-94-0553-0012	09/30/94	2D2	BC
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101670		24151 N SAN FERNANDO RD	MAINTENANCE SHOP	NEWHALL	C	1924	HIST.RES.	DOE-19-94-0553-0011	09/30/94	2D2	BC
							PROJ.REVW.	HRG940202Z	09/30/94	2D2	BC
101675		24151 N SAN FERNANDO RD	DOG CEMETERY	NEWHALL	C		HIST.RES.	DOE-19-94-0553-0016	09/30/94	2D2	BC
							PROJ.REVW.	HRG940202A	09/30/94	2D2	BC
101669		24151 N SAN FERNANDO RD	STORAGE SHED	NEWHALL	C	1921	HIST.RES.	DOE-19-94-0553-0010	09/30/94	2D2	BC
							PROJ.REVW.	HRG940202Z	09/30/94	2D2	BC
101668		24151 N SAN FERNANDO RD	BARN	NEWHALL	C	1921	HIST.RES.	DOE-19-94-0553-0009	09/30/94	2D2	BC
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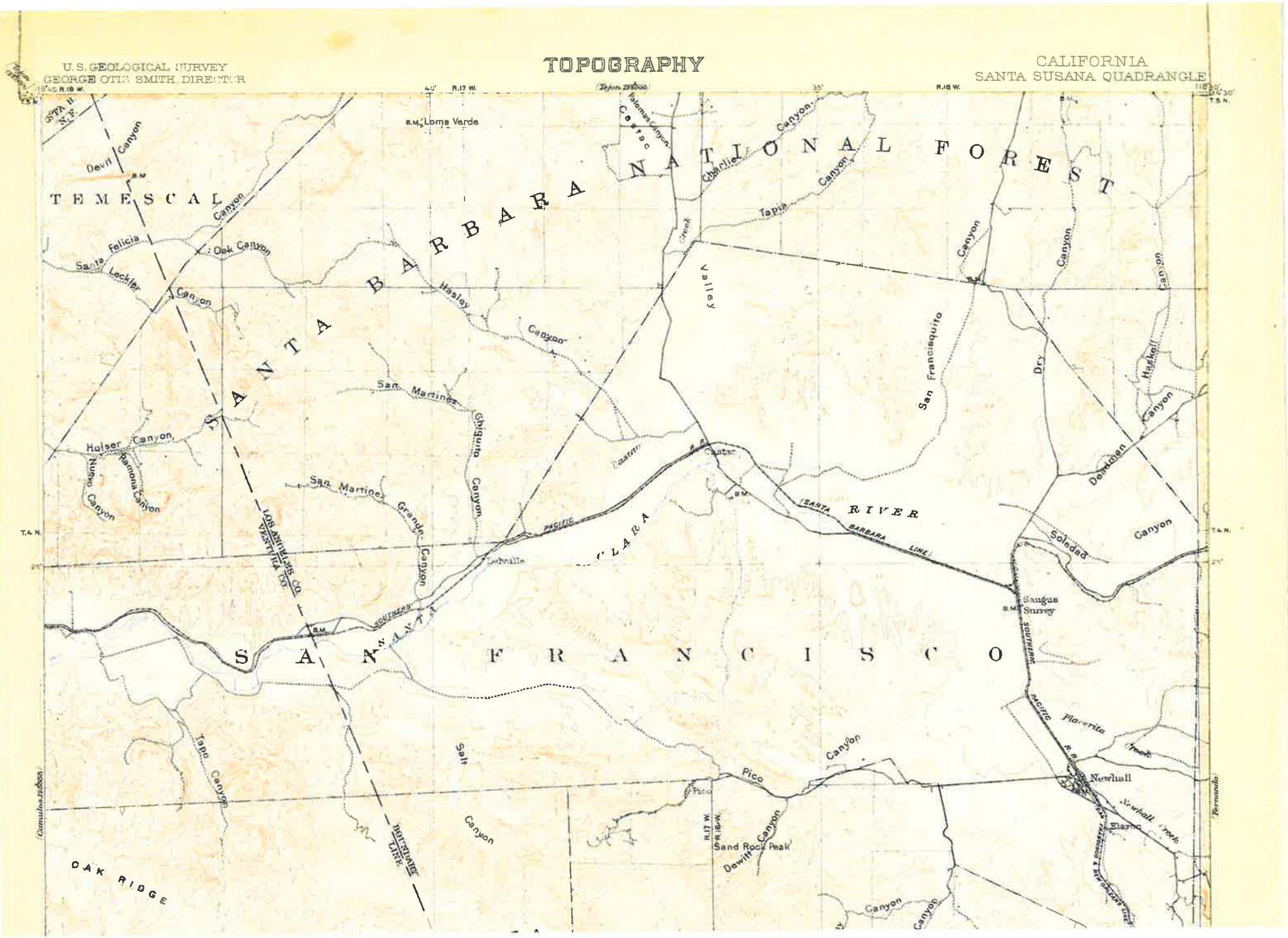
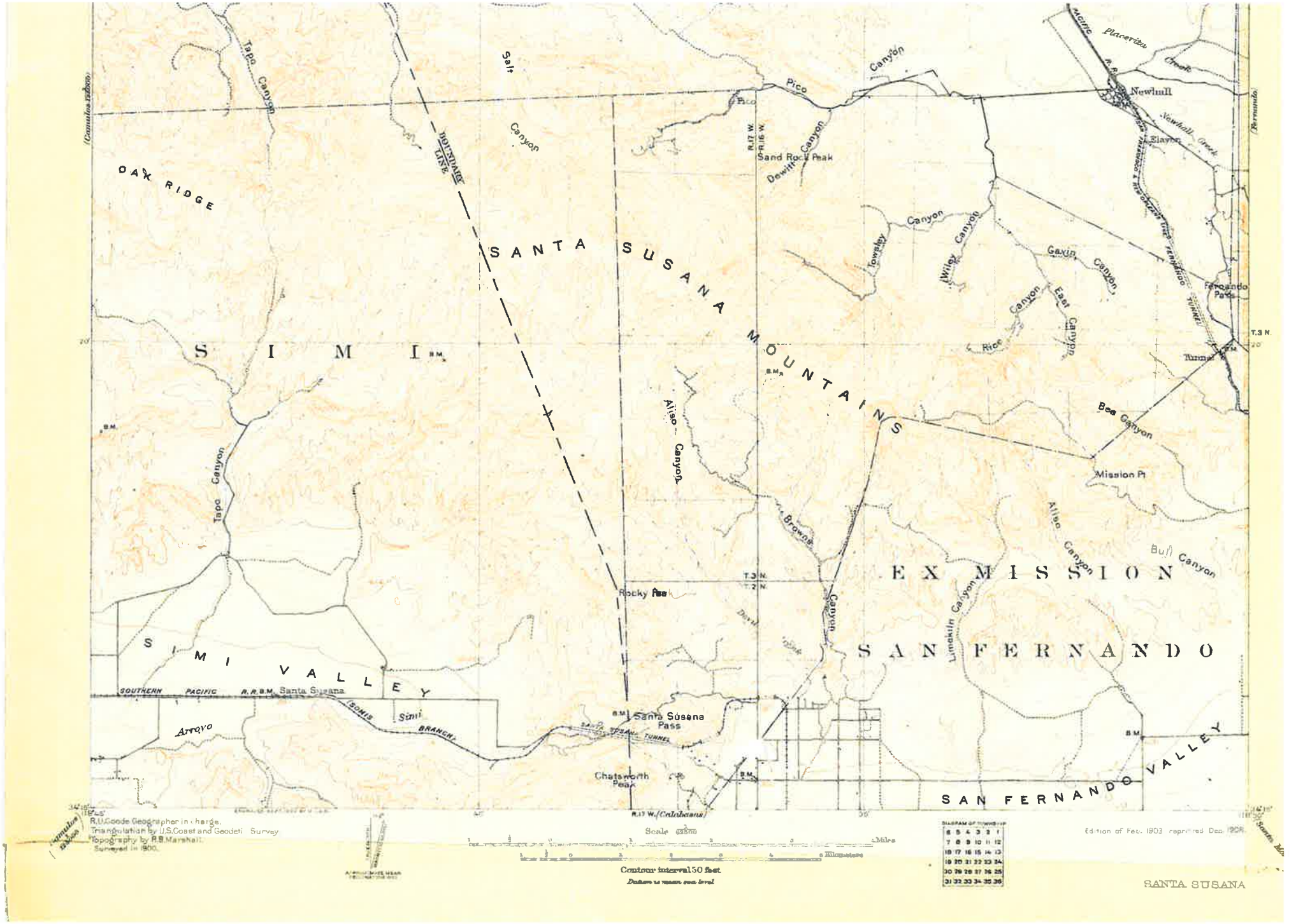
179154		22400 OLD RD		NEWHALL	P		PROJ.REVW.	FCC100315A	04/22/10	6Y	
033659		24107 SAN FERNANDO RD	SAUGUS SOUTHERN PACIFIC RAILROAD D	NEWHALL	P	1887	HIST.SURV.	1350-0008-0000		7N	
							PROJ.REVW.	HUD860501D	06/04/86	6Y	
							HIST.RES.	SPHI-LAN-031	03/13/81	7L	
033656		24522 SPRUCE ST	NEWHALL JAIL	NEWHALL	P	1909	HIST.SURV.	1350-0005-0000	05/22/91	3S	
							HIST.RES.	DOE-19-86-0034-0000	09/05/86	6Y	
							PROJ.REVW.	HUD860501A	06/04/86	6Y	
033657		24527 SPRUCE ST	AMERICAN THEATRE, AMERICAN LEGION,	NEWHALL	P	1941	HIST.SURV.	1350-0006-0000	05/22/91	7R	
							HIST.RES.	DOE-19-86-0033-0000	09/05/86	6Y	
							PROJ.REVW.	HUD860501B	06/04/86	6Y	
098275		23801 THE OLD RD		NEWHALL	D		HIST.RES.	DOE-19-94-0298-0000	08/08/94	6Y	
							PROJ.REVW.	HRG940202Z	08/08/94	6Y	
100858			TUNNEL 25	(VIC) NEWHALL	P	1876	HIST.RES.	DOE-19-94-0441-0000	02/27/94	2S2	A
							PROJ.REVW.	HRG940202Z	02/27/94	2S2	A
180327		9776 NATICK AVE		NORTH HILLS	P	1955	PROJ.REVW.	HUD101025I		6Y	
186657		15729 ROMAR ST		NORTH HILLS	P	1944	PROJ.REVW.	HUD111117D	11/30/11	6Y	
150953		16700 SCHOENBORN ST	SPRINT TELECOMMUNICATIONS-LAX55XC6	NORTH HILLS	P	1958	HIST.RES.	DOE-19-03-0366-0000	09/22/04	6Y	
							PROJ.REVW.	FCC030922A	09/22/04	6Y	
184833		14845 STASSEN ST		NORTH HILLS	P	1955	PROJ.REVW.	HUD101011A	10/29/10	6Y	
184404		9812 WILLIS AVE		NORTH HILLS	P	1955	PROJ.REVW.	HUD101215E	01/11/11	6Y	
122947			MAGNOLIA BLVD	NORTH HOLLYWOOD	M	1930	HIST.RES.	DOE-19-99-0290-0000	05/05/99	6Y	
							PROJ.REVW.	FHWA990422A	05/05/99	6Y	
125133		5713 AUCKLAND AVE		NORTH HOLLYWOOD	Y	1929	HIST.RES.	DOE-19-98-0325-0000	08/03/98	6Y	
							PROJ.REVW.	HUD980803I	08/03/98	6Y	
123805		6528 BABCOCK AVE		NORTH HOLLYWOOD	U	1942	HIST.RES.	DOE-19-00-0042-0000	02/01/00	6Y	
							PROJ.REVW.	HUD000201E	02/01/00	6Y	
127481		6601 BABCOCK AVE		NORTH HOLLYWOOD		1950	HIST.RES.	DOE-19-01-0027-0000	01/31/01	6Y	
							PROJ.REVW.	HUD010201B	01/31/01	6Y	
125075		6418 BECK AVE		NORTH HOLLYWOOD	Y	1940	HIST.RES.	DOE-19-98-0269-0000	02/02/98	6Y	
							PROJ.REVW.	HUD980202K	02/02/98	6Y	
123807		7801 BELLINGHAM AVE		NORTH HOLLYWOOD	U	1948	HIST.RES.	DOE-19-00-0044-0000	02/01/00	6Y	
							PROJ.REVW.	HUD000201E	02/01/00	6Y	
127484		5544 BONNER AVE		NORTH HOLLYWOOD		1932	HIST.RES.	DOE-19-01-0030-0000	01/31/01	6Y	
							PROJ.REVW.	HUD010201B	01/31/01	6Y	

U.S. GEOLOGICAL SURVEY
GEORGE OTIS SMITH, DIRECTOR

TOPOGRAPHY

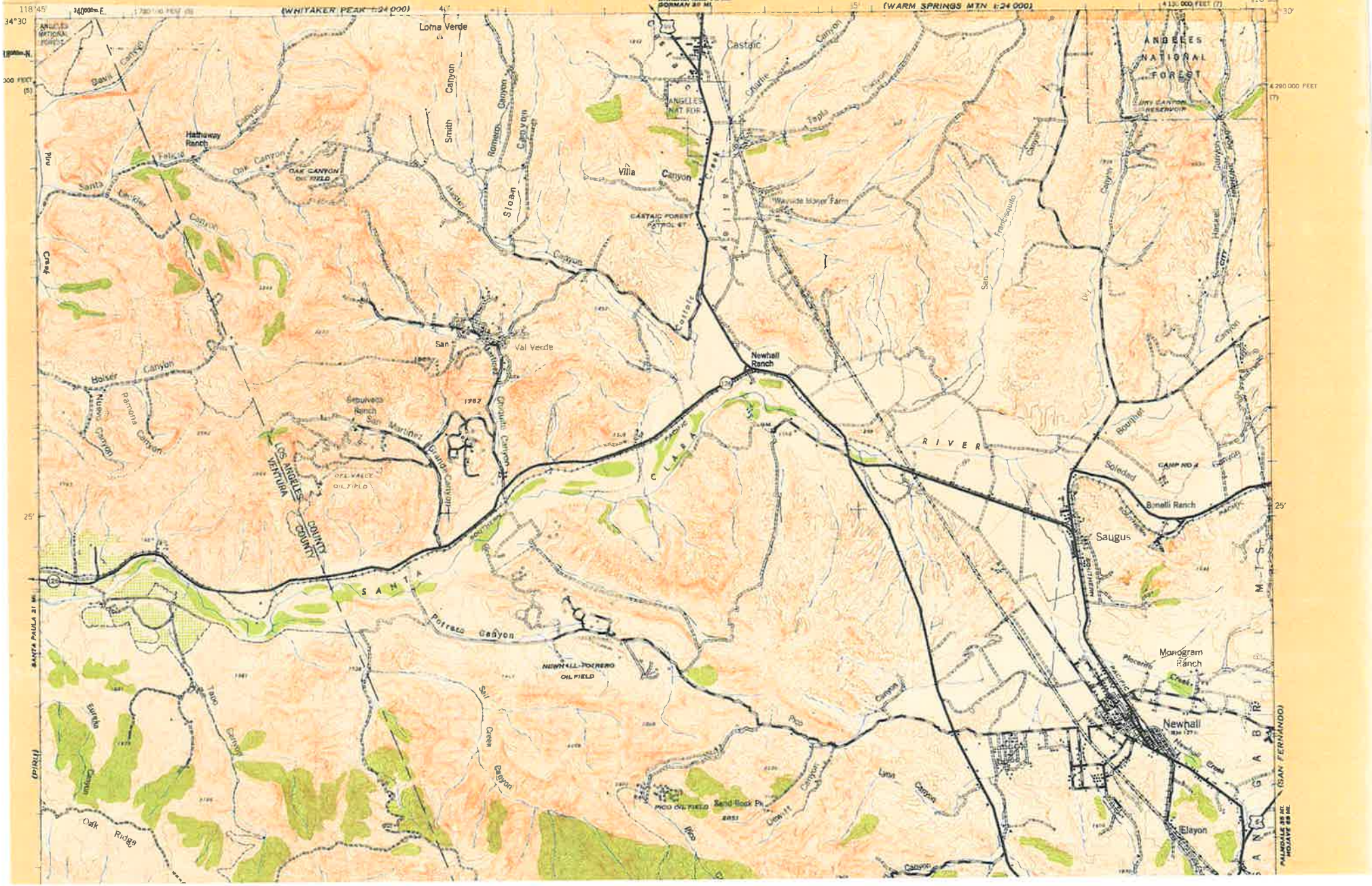
CALIFORNIA
SANTA SUSANA QUADRANGLE

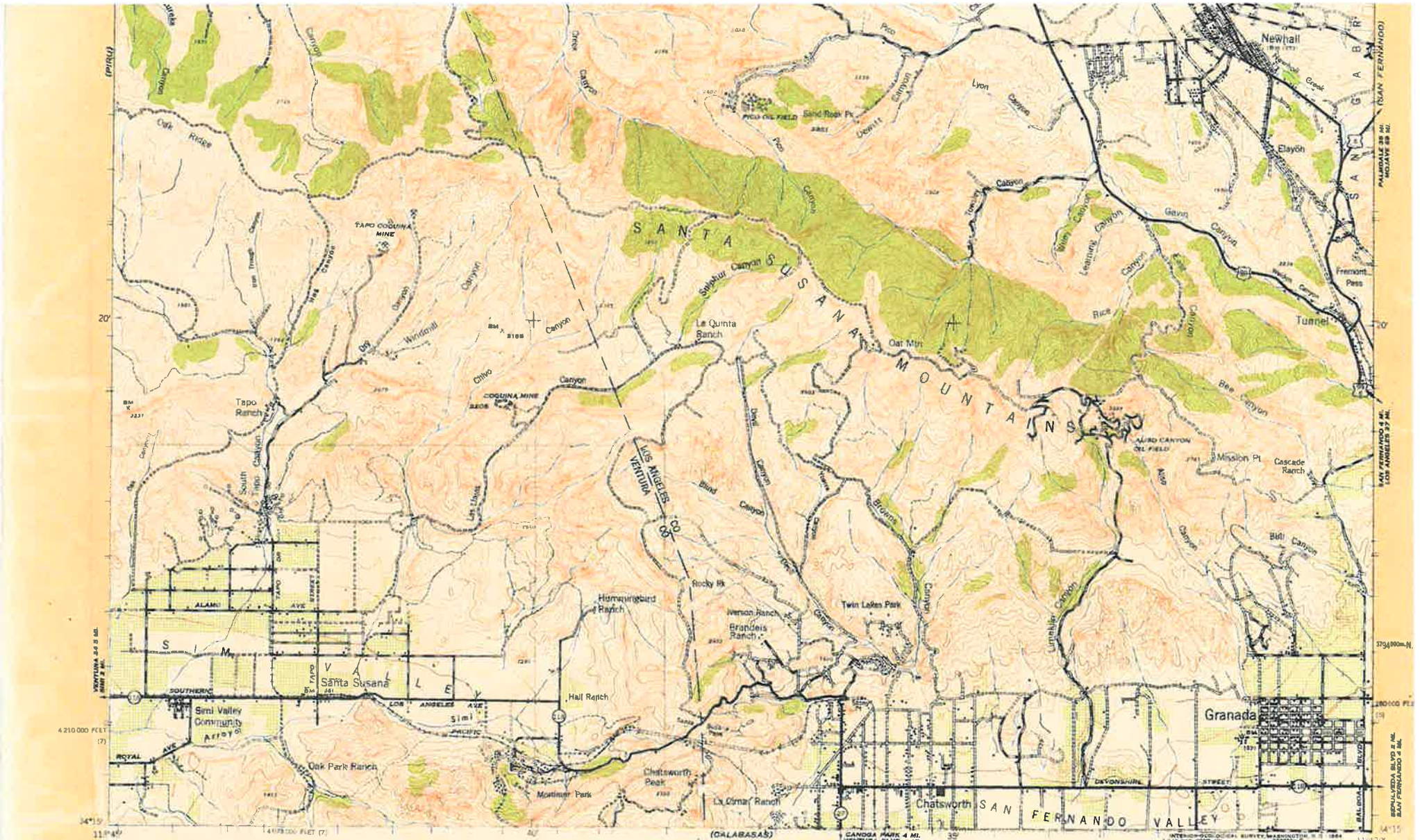



SANTA SUSANA MOUNTAINS
SIMI
OAK RIDGE
SIMI VALLEY
EX MISSION
SAN FERNANDO
SAN FERNANDO VALLEY
Salt Canyon
Tapo Canyon
Pico Canyon
Newhall
Placerita Creek
Newhall Creek
Elsmere
Sand Rock Peak
Dewitt Canyon
Towsley Canyon
Wiley Canyon
Gaxin Canyon
Rice Canyon
East Canyon
Ferndale Pass
Tunnel
Bee Canyon
Mission Pt
Aliso Canyon
Brown
Bull Canyon
Limekiln Canyon
Rocky Pass
Santa Susana Pass
Chatsworth Peak
Arroyo Simi
Loomis Branch
Southern Pacific R.R.
Santa Susana Tunnel
T.3 N.
T.2 N.
R.17 W.
R.16 W.
R.13 W. (Calabasas)
B.M.
Scale
Miles
Kilometers
Contour interval 50 feet.
Datum is mean sea level.
Edition of Feb. 1903 reprinted Dec. 1904.
SANTA SUSANA

WAR DEPARTMENT
CORPS OF ENGINEERS, U.S. ARMY

SANTA SUSANA QUADRANGLE
CALIFORNIA
15 MINUTE SERIES (TOPOGRAPHIC)





Prepared under the direction of the Chief of Engineers, U. S. Army, 1941.
Horizontal Control by U. S. Coast and Geodetic Survey.
Topography by U. S. Geological Survey, 1900.
Photography by Air Corps, U. S. Army, 1938.
Planimetric detail revised from K-38 (single lens) aerial photographs as a Federal W.P.A. project under the supervision of the 29th Engineers, U. S. Army, 1940-41.
Polyconic Projection, North American 1927 Datum

SCALE 1:62 500

CONTOUR INTERVAL 50 FEET
DATUM IS MEAN SEA LEVEL

1000-FOOT GRID TICKS CALIFORNIA PLANE COORDINATE SYSTEM, ZONES 6 AND 7, SHOWN IN BLACK
1000-METER GRID TICKS UNIVERSAL TRANSVERSE MERCATOR SYSTEM, ZONE 11 SHOWN IN BLUE

ROAD CLASSIFICATION

Heavy-duty — Light duty
Medium duty - - - Unimproved dirt
U.S. Route — State Route

This area also covered by 7.5 minute, 1:24 000 scale maps: Newhall 1952, Val Verde 1952, Santa Susana 1951, and Oat Mountain 1952

APPROXIMATE MEAN DECLINATION, 1941

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SANTA SUSANA, CALIF.

N3415—W11830/15

1941

10.0 APPENDIX B: STATEMENT OF QUALIFICATIONS FOR W AND S CONSULTANTS

STATEMENT OF QUALIFICATIONS
And Summary of Professional Experience

W & S Consultants was formed as a general partnership in 1982 by David S. Whitley, Ph.D., and Joseph M. Simon to provide cultural resources management (CRM) consulting services. The firm specializes in providing assistance to government agencies, land developers, mining and energy companies, law firms and environmental impact analysis firms in advance planning, development permitting and environmental regulatory compliance.

Major cultural resource management projects

Some of the major CRM projects successfully completed by W & S Consultants in southern California include the following:

- Phase I survey and Phase II archaeological test excavations on eight sites for the 12,000 acres Newhall Ranch project, Valencia, for the Newhall Land and Farming Company;
- Phase I survey and Phase II test excavations at 12 sites for the Soledad Mountain project, Rosamond, for the Golden Queen Mining Company;
- Phase I archaeological survey of the 750 acres Soledad Canyon study area, for the Valencia Company;
- Phase I archaeological survey and Phase II test excavations on six sites within the 4,200 acres Messenger Project (Hidden Creek Ranch), Ventura County, for the City of Moorpark and Michael Brandman Associates;
- Phase I archaeological survey and Phase II test excavations on five sites within the 2,400 acres Jordan Ranch, Ventura County, for Potomac Investment Association;

- Phase II archaeological test excavations on seven sites within the 5,400 acres Ahmanson Ranch, Ventura County, for Home Savings of America and Ahmanson Land Co.;
- Phase I, II and III archaeological survey, test excavations, data recovery and monitoring, on 18 sites within the 2,000 acres Lake Sherwood Ranch, Ventura County, for the David Murdock Development Corporation;
- Phase I archaeological survey of the 1,200 acres Toyowest/Pacton Specific Plan Area, Palmdale, for Impact Sciences;
- Phase I archaeological survey of the 1,300 acres Rio Dulce Ranch, Agua Dulce, for Rio Dulce Ranch;
- Phase I archaeological survey and Phase II test excavation of CA-LAN-2203H within the 540 acres College Park study area, Palmdale, for Mr. David Bushnell, Bushnell Optical Company;
- Phase I archaeological survey of the 8,800 acres Hathaway Ranch, Lake Piru, for Impact Sciences, Inc.;
- Phase I archaeological survey and Phase II test excavations on four sites for the Skyriver Ranch Wind Powerplant, Tehachapi, for Zond Systems, Inc.;
- Phase I archaeological survey of the 160 km Teleseismic Tomography Line and Los Angeles Regional Seismic Experiment, western Mojave Desert, for the US Geological Survey, Office of Earthquakes, Volcanoes and Engineering.
- Phase I, II and III archaeological survey, test excavations, data recovery and monitoring on 14 sites within the 500 acres Tract 2808, Thousand Oaks, Ventura County, for Standard Pacific-Ventura;
- Phase I, II and III archaeological survey, test excavations and data recoveries on six sites, Calabasas, Los Angeles County, for the Baldwin Co.;

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- Phase I, II and III archaeological survey, test excavations and data recovery on six sites within Tract 4119, Thousand Oaks, Ventura County, for Prudential Realty Division;
- Phase I and II archaeological survey and test excavations, Tract 4321, Thousand Oaks, Ventura County, for Watt Industries;
- Phase I and II archaeological surveys and test excavations, Coso Known Geothermal Resource Area (KGRA), Inyo County, for the Los Angeles Department of Water and Power;
- Phase I survey, 30 mile 115kV powerline transmission corridor, Coso KGRA, Inyo and Kern Counties, for the California Energy Company;
- Phase I, II and III survey, test and salvage excavations, Dos Vientos Ranch, Thousand Oaks, Ventura County, for the Haaland Group and Operating Engineers Local 12 Pension Trust;
- Phase I, II and III studies, Thousand Oaks Civic Center Plaza (Jungleland), Ventura County, for the City of Thousand Oaks;
- Class III archaeological inventory of five sites for the Radcliff Project, Panamint Mountains, Inyo County, for Echo Bay Exploration; and
- Phase II and III test and salvage excavations, Hitchock Ranch (CA-SBA-1661H), Santa Barbara, for Sequoia Realty, Penfield & Smith, and Investec.
- Phase I survey/Class III archaeological inventory, Rocketdyne Santa Susana Field Laboratory (SSFL), Area 4, for Rocketdyne and the Boeing Company.

Environmental Review & Expert Witness Experience

W & S Consultants has reviewed environmental documents specific to cultural resources management concerns for the Department of the Navy,

Federal Bureau of Land Management, National Park Service, the City of Thousand Oaks, and Los Angeles and Ventura Counties, as well as for various private developers and environmental impact analysis firms. Dr. Whitley also served as Chief Archaeologist for the UCLA Archaeological Information Center from 1983 to 1987, supervising the review of the cultural resource sections of all environmental documents for Los Angeles, Orange and Ventura Counties. As Prehistoric Archaeologist appointed by Governor George Deukmejian to the State of California Historical Resources Commission (appointed 1986), Dr. Whitley was responsible for the review of all nominations to the National Register of Historic Places, as well as for California Historical Landmarks designations, including both archaeological and historical properties. During previous Presidential administrations, Mr. Simon participated in Cabinet level briefings in Washington, D.C., attending five meetings at the White House with Presidents Ronald Reagan and George Bush, advising them and the Secretary of the Interior on environmental issues. Dr. Whitley has served as an expert legal witness for archaeological concerns before the State of Washington, Shorelines Hearings Board. W & S Consultants has also successfully appealed two cases to the Department of Interior, Interior Board of Land Appeals (IBLA), concerning permitting issues.

Educational Experience and Professional Certifications

Educational background and training of the principals and affiliate/supervisory staff of W & S Consultants includes graduate degrees in anthropology, archaeology and geography, with specialized expertise in prehistoric and historical archaeology, ethnohistory, rock art,

chronometric dating, soils science and geomorphology. Principals and supervisory staff are members of the Register of Professional Archaeologists (ROPA) and/or are certified/eligible for certification in prehistoric and historical archaeological fieldwork, archival and theoretical research, archaeometry, archaeological teaching, and cultural resource management. W and S Consultants' principal archaeologists include: Joseph M. Simon, Robert B. Rechtman, Ph.D., and Johannes (Jannie) H. N. Loubser, Ph.D., RPA.

Academic/Professional Research

The published professional writings of the W & S Consultants staff include over 75 articles and twelve books. These include the Amazon.com #4 bestseller The Art of the Shaman and publications in international journals such as Science, Nature, World Archaeology, American Antiquity, Journal of Anthropological Archaeology and American Anthropologist. Currently, the principals are conducting professional research projects in the California Desert and in Nevada, with previous research projects conducted in Guatemala, southern Africa, California, Nevada and Utah.
W and S Consultants has been responsible for the listing of over 450 prehistoric archaeological sites on the NATIONAL REGISTER OF HISTORIC PLACES, including the Black Mountain Rock Art District, whose nomination was cited by the Keeper of the National Register as one of the best nominations for prehistoric sites ever received.

Awards, Honors and Professional Appointments

W & S Consultants has received Special Appreciation Awards from the

Candelaria American Indian Tribal Council (1988), the Simi Valley Historical Society (1991), and the California Indian Council Foundation

(1993). Dr. Whitley has received post-doctoral research fellowships from the Association for Field Archaeology (1983) and the University of the Witwatersrand (1987). He was appointed U.S. Representative to the UNESCO International Committee on Monuments and Sites (ICOMOS), Comité International D'Art Rupestre (CAR), in 1992, and was elected to the Executive Committee in 1995. Dr. Whitley was made a Fellow of the American Anthropological Association in 1993, and has been listed in Who's Who in the West since 1992, and Who's Who among Hispanic Americans since 1994. In 1995 he was appointed to the International Research Advisory Committee for the recently discovered Chauvet Cave, France, by the Conservator General of the French Ministry of Education and Culture. Mr. Simon has been listed in Who's Who in Executives and Professionals since 1997. In 2001 Dr. Whitley received the Society For California Archaeology's Thomas F. King award for excellence in prehistoric rock art research. Lastly, Mr. Simon currently serves as the Archaeological and Anthropological Advisor to the Ventura County Cultural Heritage Board.

11.0 APPENDIX C:
CURRICULUM VITAE FOR
DAVID S. WHITLEY, Ph.D. AND JOSPEH M. SIMON

CURRICULUM VITAE OF
DAVID S. WHITLEY

24160 Woodbine Court, Tehachapi, CA 93561 (661) 821-0855

Personal Information

Citizenship: U.S.A. Birthdate: 3/5/53
Marital Status: Married, 1 child.
Foreign Languages: Spanish; French (reading and writing); Portuguese and Italian (reading).

Professional employment

1982 -2009: Principal, W & S Consultants, cultural resource management consultants (1982 - present). Instructor, Division of Social Sciences and Humanities, UCLA Extension (1983 - present).
1987 - 1989: Postdoctoral Research Fellow, Rock Art Research Unit, Archaeology Department, University of the Witwatersrand.
1983 - 1987: Chief Archaeologist, Institute of Archaeology, and Lecturer, Department of Anthropology, UCLA.

Education

Ph.D. in Anthropology, UCLA, 1982, with specialization in archaeology.
M.A. in Geography, UCLA, March 1979, with specialization in urban/quantitative studies.
A.B. in Anthropology, Magna Cum Laude, A.B. in Geography, Magna Cum Laude, UCLA, 1976.

Awards and Honors

1994-6 Listed in Who's Who among Hispanic Americans.
1996 Listed in Who's Who in Rock Art Research.
1992-6 Listed in Who's Who in the West.
1993 Special Appreciation Award, California Indian Foundation.
1993 FELLOW, American Anthropological Association.
1991 Special Appreciation Award, Simi Valley Historical Society.
1987-9 Postdoctoral Research Fellowship, Rock Art Research Unit, University of the Witwatersrand.
1983 Golden Eagle Award, CINE Film Festival, Washington, D.C.
1983 Silver Medal, New York Film and Television Festival, New York.
1983 Postdoctoral Research Fellowship, Association for Field Archaeology.
1976 A.B. degrees in Anthropology and Geography awarded Magna Cum Laude.
1976 Pi Gamma Mu.
1971-5 Honors at Entrance and Honors Program, College of Letters and Sciences, UCLA.

Professional Appointments

United States Representative, UNESCO International Council on Monuments and Sites (ICOMOS), Comité International d'Art Rupestre (CAR), 1992 - present; Executive Committee, 1995 - present.

Archaeological & Anthropological Advisor, Ventura County Cultural Heritage Board, 1996 - present.
Rock Art Archive Advisory Committee, UCLA Institute of Archaeology, 1991-1996.
Prehistoric Archaeologist, State of California, Historical Resources Commission, 1986-1987.
Chauvet Cave Research Advisory Committee, Ministere de la Culture et Educacion, France, 1996 - present.

Funded Research Projects

Chronometric dating of petroglyphs in the Mojave Desert, Association for Field Archaeology, 1983-1984, $3500.00. BLM and US Army, 1995 - 1996, $4300.00.

Sin Cabezas, Guatemala, Excavation Project, 1986-1987: Private funding, 1986-1987, $22,000.00; USIS Technical Specialists Grant, Guatemala, 1987, $3500.00; Seven Springs Foundation, 1987, $2000.00;

Coso Junction Ranch Excavation Project (CA-INY-2284), 1983-1987: Dean of Social Science, Discretionary Fund, UCLA, 1984, $2000.00; Coso Junction Ranch, Inc., 1983-1985, $2100.00; University Research Expeditions Program, 1984-1986 $18,000.00.

Research Specializations

Peopling of the Americas
Rock art
Cognitive and symbolic archaeology
Hunter-gatherer ethnohistory and prehistory
Method, theory and philosophy of science and archaeology
Western North American, Mesoamerican & African prehistory

Professional Publications: Books and Monographs

1998 Readings in Cognitive Archaeology: New World Approaches. London: Routledge.
1998 Gender and Archaeology: A Reader (with K Hays-Gilpin) London: Routledge.
1997 Ethnography and Western North American Rock Art, edited by D.S. Whitley. Albuquerque: University of New Mexico Press.
1997 L'Art des Chamanes: Art Rupestre en Californie. Paris: Le Seul (published in English as The Art of the Shaman: Native American Rock Art of California. Salt Lake City: The University of Utah Press).
1996 Guide to Rock Art Sites: Southern California and Southern Nevada. Missoula, MT: Mountain Press Publishing.
1994 New Light on Old Art: Recent Advances in Hunter-Gatherer Rock Art Research, edited by DS Whitley and LL Loendorf. UCLA Institute of Archaeology, Monograph 36.
1989 Investigaciones Arqueológicas en la Costa Sur de Guatemala, edited by DS Whitley and MP Beaudry. UCLA Institute of Archaeology, Monograph 31.

1982 Pictographs of the Coso Region: Analysis and Interpretation of the Coso Painted Style, edited by RASchiffman, DS Whitley et al. Bakersfield College Publications in Archaeology No. 2. (Second edition published 1986; Coyote Press, Salinas).
1980 Inland Chumash Archaeological Investigations, edited by DS Whitley, EL McCann and CW Clewlow, Jr. UCLA Institute of Archaeology, Monograph 15.
1979 Archaeological Investigations at the Ring Brothers Site Complex, Thousand Oaks, California, edited by CW Clewlow, Jr., D. S. Whitley and EL McCann. UCLA Institute of Archaeology, Monograph 13.
1979 The Archaeology of Oak Park, Ventura County, California, Volume III, edited by CW Clewlow, Jr. and DS Whitley. UCLA Institute of Archaeology, Monograph 11.

Professional Papers: Refereed Journals & Series
1994 By the Hunter, For the Gatherer: Art, Social Relations and Subsistence Change in the Great Basin. World Archaeology 25:356-373.
1993 New Perspectives on the Clovis vs. Pre-Clovis Controversy, by DS Whitley and RI Dorn. American Antiquity 58:626-647.
1992 Prehistory and Post-Positivist Science: A Prolegomenon to Cognitive Archaeology. Archaeological Method and Theory, Volume 4, edited by M Schiffer, pp. 57-100. Tucson: Univ. of Arizona Press.
1992 Shamanism and Rock Art in Far Western North America. Cambridge Archaeological Journal 2:89-113.
1992 New Approach to the Radiocarbon Dating of Rock Varnish, with Examples from Drylands, by RI Dorn et al, Annals, Association of American Geographers 82:136-151.
1989 Archaeology after the Revolution: The ideological use of the past in the development of Mexican nationalism. Latin American Reports 5(2):10-22.
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Professional Publications: Book and Monograph Chapters

In Press The Numic Vision Quest: Ritual and Rock Art in the Great Basin. In Ethnography and Western North American Rock Art, edited by D.S. Whitley. Albuquerque: University of New Mexico Press.

In Press Ethnohistory and South-Central California Rock Art. In Rock Art and Shamanism: New Perspectives, edited by K. Hedges. American Rock Art Research Association.

In Press Finding Rain in the Desert: Rock Art and Landscape in Far Western North America. In Rock Art, edited by C Chippindale and PSC Taçon. Cambridge: Cambridge University Press.

1996 Meaning and Metaphor in the Coso Petroglyphs: Understanding Great Basin Rock Art. In New Perspectives on the Coso Petroglyphs, edited by J Baird and E Younkin. Ridgecrest: Maturango Museum.

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1989 Introduccion del Volumen, by MP Beaudry and DS Whitley, pp. 1-3. In Investigaciones Arqueológicas en la Costa Sur de Guatemala, edited by DS Whitley and MP Beaudry. UCLA Institute of Archaeology, Monograph 31.

1989 Investigaciones en el Sitio Sin Cabezas 1986: Introduccion y Resumen de los Resultados, by DS Whitley and MP Beaudry, pp. 84-97. In Investigaciones Arqueológicas en la Costa Sur de Guatemala, edited by DS Whitley and MP Beaudry. UCLA Institute of Archaeology, Monograph 31.

1989 Artefactos de Sin Cabezas, pp. 163-180. In Investigaciones Arqueológicas en la Costa Sur de Guatemala, edited by DS Whitley and MP Beaudry. UCLA Institute of Archaeology, Monograph 31.

1988 Bears and Baskets: Aspects of Shamanism in North American Rock Art, pp. 34-45. In The State of the Art: Advances in World Rock Art, edited by TA Dowson. Johannesburg: Archaeology Department, University of the Witwatersrand.

1988 Obsidian Hydration Dates from the Coso Range, pp. 75-77. In Obsidian Dates IV, edited by CW Meighan and JL Scalise. UCLA Institute of Archaeology, Monograph 29.

1982 Practical Mapping for the Field Archaeologist, pp. 14-22. In Practical Archaeology: Field and Laboratory Techniques and Archaeological Logistics, edited by BD Dillon. UCLA Institute of Archaeology, Archaeological Research Tools No. 2. (Reprinted 1989, 1993).

1982 Introduction, by DS Whitley and RA Schiffman, pp. 1-4. In Pictographs of the Coso Region: Analysis and Interpretation of the Coso Painted Style, edited by RA Schiffman, DS Whitley et al. Bakersfield College Publications in Archaeology No. 2.

1982 Perspectives on the Painted Rock Art of the Coso Region, by DS Whitley et al, pp. 97-105. In Pictographs of the Coso Region: Analysis and Interpretation of the Coso Painted Style, edited by RA Schiffman, DS Whitley et al. Bakersfield College Publications in Archaeology No. 2.

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1980 Preliminary Investigations at a Site Complex on the North Ranch, Westlake, Ventura County, California, by DS Whitley et al, pp. 43-120. In Inland Chumash Archaeological Investigations, edited by DS Whitley, EL McCann and CW Clewlow, Jr. UCLA Institute ofArchaeology, Monograph 15.

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1980 Intra-Site Variability on Ven-261: A Test Case, by DS Whitley et al, pp. 167-186. In Inland Chumash Archaeological Investigations, edited by DS Whitley, EL McCann and CW Clewlow, Jr. UCLA Institute of Archaeology, Monograph 15.

1979 Introduction to Oak Park Prehistory, by CW Clewlow, Jr. and DS Whitley, pp.1-5. In The Archaeology of Oak Park, Ventura County, California, Volume III, edited by CW Clewlow, Jr. and DS Whitley. UCLA Institute of Archaeology, Monograph 11.

1979 A Historical Perspective on the Research at Oak Park, pp. 6-29. In The Archaeology of Oak Park, Ventura County, California, Volume III, edited by CW Clewlow, Jr. and DS Whitley. UCLA Institute of Archaeology, Monograph 11.

1979 Surface Archaeology at Oak Park, by DS Whitley et al, pp. 30-83. In The Archaeology of Oak Park, Ventura County, California, Volume III, edited by CW Clewlow, Jr. and DS Whitley. UCLA Institute of Archaeology, Monograph 11.

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1979 Subsurface Features, Tools Kits and a Sweathouse Pit at the Ring Brothers Complex, pp. 101-110. In Archaeological Investigations at the Ring Brothers Site Complex, Thousand Oaks, California, edited by CW Clewlow, Jr., DS Whitley and EL McCann. UCLA Institute of Archaeology, Monograph 13.

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Professional Publications: Reviews and Miscellaneous

In Press Native American Rock Art at Fort Irwin. Natural and Cultural Resources Series No. 2. Fort Irwin NTC: Directorate of Public Works (In Press, 1996).

1996 Invited comment on "Entering Alternative Realities: Cognition, Art and Architecture in Irish Passage-Tombs" by J Dronfield. Cambridge Archaeological Journal 6(1), 1996.

1994 Invited comment on "Australia's Ancient Warriors" by PSC Taçon and C Chippindale. Cambridge Archaeological Journal 4(2):237-238.

1994 Review of Representations in Archaeology, by J-C Gardin and CS Peebles. American Antiquity 59:375-376.

1993 The Raw and the Half-Baked: Structuralism and Archaeological Interpretation (review article of Material Culture and Text: The Art of Ambiguity, by C Tilley). Cambridge Archaeological Journal 3:118-121.

1992 Rock Art in California, USA. International Newsletter on Rock Art, No. 2:27-31.

1989 Review of Visions of the Sky, edited by R Schiffman. Journal of California and Great Basin Anthropology 11:121-124.

1988 Invited comment on "The signs of all times" by JD Lewis-Williams and TA Dowson. Current Anthropology 29:238.

1987 Invited comment. Rock Art Research 4(2):158-159.

1986 Archaeological Investigations at the Coso Junction Ranch Site, by DS Whitley and G Gumerman IV, Backdirt 1(1):4-6.

1985 Review of California Archaeology, by JL and KK Chartkoff. Masterkey 59(2):52.

1983 Review of Rock Art of the Spanish Levant, by A Beltran. UCLA Insitute of Archaeology Bibliographical Leaflet Series No. 30.
1982 Review of Hunters of the Northern Forest, by RK Nelson. UCLA Insitute of Archaeology Bibliographical Leaflet Series No. 20.
1977 Review of Soil Science and Archaeology, by Susan Limprey. UCLA Institute of Archaeology. Bibliographical Leaflet Series, No. 17.

Papers Presented at Professional Meetings

Landscape, Gender and Sacred Places in the Far West; Society for American Archaeology, New Orleans, 1996.
Foreign Materials Analysis of Petroglyphs, with RI Dorn; Society for American Archaeology, New Orleans, 1996.
The Vision Quest in Southern California; Eleventh Annual California Indian Conference, UCLA, 1995.
Art, Ideology and Gender: A Great Basin Case Study; Durango Conference on Southwest Archaeology, Ft. Lewis College, 1995
Art, Myth and Ritual in the Far West; Society for American Archaeology, Minneapolis, 1995.
The Long and the Short of It: California Archaeology, Varnish Dating and the Peopling of the Americas, with RI Dorn and JM Simon; Society for California Archaeology, Eureka, 1995.
Sacred Land, Mythic Country: Supernatural Landscape in Far Western North America; American Anthropological Association, Atlanta, 1994.
Migrations and Metaphors; Arizona Archaeological Council, Phoenix, 1994.
The Numic Spread Reconsidered, with J Francis and L Loendorf; Great Basin Anthropological Conference, Elko, 1994.
Rock Art and the Origin of Great Basin Political Systems; Southwest Symposium, Tempe, 1994.
Rock Art and the Peopling of the Americas, with RI Dorn; Southwest Symposium, Tempe, 1994.
Re-Thinking the Clovis/Pre-Clovis Debate, with RI Dorn and JM Simon; Society for California Archaeology, Ventura,
1994.
Ethnohistory and South-Central California Rock Art; Society for California Archaeology, Ventura, 1994.
The Origins of Numic Political Differentiation; Society for American Archaeology, Anaheim, 1994.
Rock Art and the Pre-Clovis Colonization of the Americas, with RI Dorn and JM Simon; Society for American Archaeology, Anaheim, 1994.
Shamanism, Ethnohistory and South-Central California Rock Art; American Rock Art Research Association/International Rock Art Conference, Flagstaff, 1994.
Dinwoody Rock Art in a Numic-Wide Perspective; with L Loendorf; First Rocky Mountain Archaeological Conference, Jackson, 1993.

Ethnography and rock art in the far west; Society for American Archaeology, Pittsburgh, 1992.
Cation-ratio dating of rock engravings from Klipfontein, South Africa; Society of Africanist Archaeologists, Los Angeles, 1992.
Clovis versus Pre-Clovis: Perspectives on the peopling of the New World, with RI Dorn; International Geographical Union, Washington, D.C., 1992.
The vision quest in the Great Basin; Great Basin Anthropological Conference, Boise, 1992.
"To Have Died": Shamanism and rock art in far western North America; American Anthropological Association, New Orleans, 1990.
Etiology and ideology in the Great Basin; Great Basin Anthropological Conference, Reno, 1990.
Rock art conservation in southern Africa; Society of Africanist Archaeologists, Gainesville, 1990.
Cation-ratio dating of petroglyphs with PIXE (Invited Address); Eighth International Conference on Ion Beam Analysis, International Union of Pure and Applied Physics, Johannesburg, 1988.
Chiefs on the Coast: the Tiquisate region in ethnographic perspective, with M Beaudry; American Anthropological Association, Philadelphia, 1988.
Bears and Baskets: aspects of aboriginal southern Sierra Nevada symbolism; Southern African Association of Archaeologists, Johannesburg, 1988.
Ethnography of communication and rock art study in the active voice; Society for American Archaeology, Toronto, 1987.
Cation-ratio dating and rock art chronology in the western Great Basin, with RI Dorn; Society for American Archaeology, Toronto, 1987.
The Late Prehistoric Period in the Coso Range and Environs, with G Gumerman, JM Simon and T Rose; Society for California Archaeology, Fresno, 1987.
Excavations at Sin Cabezas, Tiquisate, 1986, with M Beaudry; Society for American Archaeology, New Orleans, 1986.
Archaeology and geomorphology at the Coso Junction Ranch Site, with JM Simon; Great Basin Anthropological Conference, Las Vegas, 1986.
Pre-Clovis evidence from the Coso Range; Society for California Archaeology, San Diego, 1985.
Style, style areas and southern Sierra Nevada pictographs; Society for American Archaeology, Denver, 1985.
Rock art chronology in the western Great Basin; Great Basin Anthropological Conference, Boise, 1984.
Chronometric age-determination of surface artifacts from Lake Mohave, CA, with RI Dorn; Society for American Archaeology, Portland, 1984.
Cation-ratio dating of petroglyphs from the Coso Range; Society for California Archaeology, San Diego, 1983.
Notes on the etiological mythology of the Shoshone and the Coso petroglyphs; Great Basin Anthropological Conference, Reno, 1982.

Shell beads to glass bangles: the evolution of a chiefdom in southern California; Society for Historical Archaeology, Albuquerque, 1980.

Invited Lectures & Conferences

The Vision Quest in South-Central California. Santa Barbara Museum of Natural History, Keynote Address, Archaeology Week, Santa Barbara, 1996.

Shamans, Myths and Ritual Pilgrimages: Recent Research on Lower Colorado River Rock Art. Southern Nevada Rock Art Enthusiasts, Archaeology Week, Las Vegas, 1996.

Pre-Clovis Peopling of the Americas and the Buck Wheeler Site, Nevada. Friends of Calico, 31st Annual Meeting, 1995.

Shamanism and North American Rock Art. Oregon Museum of Science and Industry, Young Scholars Program, Fossil, OR, 1995.

Rock Art: A Global Perspective. Kern County Archaeological Society, Keynote Address, Archaeology Week, California State University, Bakersfield, 1995.

The Latest on the Oldest: Recent Research on the Peopling of the Americas. Archaeological Institute of America/ Minnesota Archaeology Week, Minneapolis, 1995.

Shamanism and Rock Art in Far Western North America. Oregon Archaeological Society, Portland, 1995.

Neuropsychology and the Origins of Art. Dept. of Anthropology, Northern Arizona University, Flagstaff, 1995.

With a Place in Mind: The Geography of Rock Art and the Invention of the Cultural Landscape. Dept. Geography, Arizona State University, Tempe, 1995.

Altered States of Consciousness, Neuropsychological Models and Shamanistic Iconography. Dept. Art History, University of Texas, Austin, 1994.

Art, Gender and Subsistence Change in the Coso Range. Dept. of Anthropology, California State University, San Bernardino, 1994.

The Latest on the Oldest: Pre-Clovis Rock Art in California. Friends of Calico, Thirtieth Annual Meeting, 1994.

Recent Advances in Coso Range Petroglyph Research. Maturango Museum, Ridgecrest, 1994.

Ethnography and Rock Art. University of Arizona, Rock Art recording and conservation field class, La Junta, CO, 1994.

Ethnography and Great Basin Rock Art. USFS PIT Program & Central Oregon Archaeological Society, Bend, OR, 1994.

Shamanism and Natural Modeling in Far Western North America. Second DJ Sibley Family Conference on World Traditions of Culture and Art: Cosmology and Natural Modeling Among Aboriginal American Peoples, University of Texas, Austin, 1993.

Rain Shamanism in the Coso Range. Trinity University/Witte Museum, San Antonio, 1993.

Recent developments in African rock art research. Dept. History, UCLA, 1993.

Cognitive Archaeology in the Coso Range. Dept. Anthropology, Occidental College, Los Angeles, 1993.
New Perspectives on the First Peopling of the Americas. Friends of Calico, 29th Annual Meeting, 1993.
Clovis versus Pre-Clovis in the Quincentenary year. Archaeological Society, UCLA, 1992.
The Early Horizon/Intermediate Period Transition. Antelope Valley Archaeological Society, 1991.
Archaeology and ideology in the southern Sierra Nevada. Dept. Anthropology, UC Santa Cruz, 1990.
Peopling of the New World; Southern African Archaeological Society Annual Symposium, Johannesburg, 1989.
New light on old art: recent advances in dating African rock art; UCLA Friends of Archaeology, 1989.
Shamanism and Rock Art in North America. University of the Witwatersrand, Johannesburg, 1988.
Prehistory of Mesoamerica. Johannesburg College, 1988.
Sitio Sin Cabezas y cultura de la Costa Sur; Asociation Tikal, Guatemala, 1987.
Recent advances in Mesoamerican archaeology. Southern African Archaeological Society, Transvaal Branch, 1987.
Recent advances in rock art research. Eastern Sierra Museum, Annual Meeting, 1986.
Recent advances in Coso Range petroglyph studies. Antelope Valley Archaeological Society, 1986.
Excavations at Tiquisate, Guatemala. UCLA Institute of Archaeology, 1986.
Hidratacion de obsidiana: un metodo chronometrico. Universidad de San Carlos, Guatemala, 1986.
Site types and site-environment relationships in inland Ventura County. Dept. Anthropology, UC Davis, 1985.
Cation-ratio dating and the peopling of the New World. Friends of Calico, Annual Meeting, 1985.
Prehistory of the Coso Range. UCLA Institute of Archaeology, 1983.
Rock art of California. American Association of University Women, Westchester, 1983.
Rock Art of the Coso Range. Maturango Museum, 1982.

Professional Memberships
American Anthropological Association (Fellow, 1993 - present)
Register of Professional Archaeologists
Society for American Archaeology
Society for California Archaeology

Teaching Experience
Eastern and Western Mesoamerica Prehistory
North American Ethnology & Archaeology
California Archaeology
World Rock Art

Archaeological Field Training

Manuscript Reviews
Antiquity
American Antiquity
Journal of Anthropological Archaeology
Cambridge Archaeological Journal
Geographical Analysis
Journal of Archaeological Science
Nuclear Instruments and Methods in Physics Research
Journal of California and Great Basin Anthropology
Studies in Conservation
Ancient Mesoamerica
Sage Publications
Stanford University Press

Proposal Reviews
John Simon Guggenheim Foundation
National Geographic Society
Schools of the Pacific Foundation
Lawrence Livermore Laboratory - Univ. California Program
LSB Leakey Foundation
McDonald Institute for Archaeological Research, Cambridge
National Park Service, National Center for Preservation Technology & Training - Grants Program

Professional & Public Service

Co-organizer and chair (with D. Myers and R. Clemmer), "Re-Reading Julian Steward: History, Theory and Subsistence in Great Basin Research", Fiftieth Biennual Great Basin Conference, Lake Tahoe, 1996.

Organizer, Society for American Archaeology, Rock Art Interest Group, 1996.

Organizer, "In Steward's Shadow: Iconography, Neuropsychology, Landscape and Gender in Rock Art", Society for American Archaeology meetings, New Orleans, 1996.

Public lecture, Rock Art at Fort Irwin, 11th Armored Cavalry, Scorpions Unit, Fort Irwin NTC, 1996.

Adult advisor, Fillmore-Piru 4H turtle and tortoise project, 1995-1996.

Classroom lecture, Chumash Indians, St. Sebastian School, Santa Paula, 1995.

Organizer and co-chair (with L Loendorf and J Keyser), "Time, Culture and Art I: Small Scale Societies"; and "Time, Culture and Art II: Large Scale Societies and Culture Contact and Change", Society for American Archaeology meetings, Minneapolis, 1995.

Public lecture, Recent Discoveries in Upper Paleolithic Rock Art, Optimist Club, Thousand Oaks, 1995.

Lecture for park docents, Rock Art of eastern California; Tomokhani State Park, Tehachapi, 1995.

Adult advisor, Fillmore-Piru 4H turtle and tortoise project, 1994-1995.

Co-organizer (with the Getty Conservation Institute), Rock Art Site Management Workshop, Society for American Archaeology meetings, Anaheim, 1994.

Organizer and co-chair (with L Loendorf), "Rock Art: Implications for Culture Process and Culture History", Society for American Archaeology meetings, Anaheim, 1994.

Classroom lecture, St. Sebastian School Honors Program, Gold mining and gold mining history in southern California, Santa Paula, 1994.

Participant, National Park Service, Petroglyph National Monument planning and management symposium, Albuquerque, 1993

Classroom lecture, "Mesoamerican archaeology", Crestview School, Simi Valley, 1993.

Organizer, Society of Africanist Archaeologists meetings, archaeological fieldtrip, Los Angeles, 1992.

Co-organizer and co-chair (with Lawrence Loendorf), "New Light on Old Art: Advances in Hunter-gatherer rock art studies"; Society for American Archaeology meetings, Pittsburgh, 1992.

Maturango Museum of the Indian Wells Valley, Exhibit Consultant, "From Rock Art to Rockets", 1992.

Classroom lecture, Peopling of the Americas, Our Lady of Lourdes School, Tujunga, 1992.

Co-organizer and co-chair (with C Chippindale), "Beyond Counts, Catalogs and Chronologies: New Directions in Rock Art Research"; Society for American Archaeology meetings, Toronto, 1987.

Organizer and instructor, lab course in obsidian hydration dating for the Instituto de Antropologia e Historia, Guatemala, and the Instituto de Antropologia e Historia, Honduras, IDEAH, Guatemala City, 1986.

Chair, "Recent research in the Coso Range"; Great Basin Anthropological Conference, Los Vegas, 1986.

Classroom lecture, Introduction to Archaeology, St. Matthews School, Santa Monica, 1985.

Film and Recording Credits

Co-executive Producer, Chris Ward, "One Step Beyond" compact disc, James Stroud, producer, Giant Records, 1996.

Anthropological consultant, "Blackfeather/Mystic" TV pilot, Hearst Entertainment/CBS, 1991-1992.

Senior script author, "Invitation to Adventure", Institute of Archaeology, UCLA, 1986.

Archaeological consultant, "Vibes" Columbia Pictures feature film, 1986.

Script author, "Rock Art Treasures of Ancient America: The California Collection", Dave Caldwell Productions, 1982.

Script consultant, "Rock Art from the Mountains of Fire", RUJAC Productions, 1982.

Professional References

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Professional employment

1982 - Present: Principal Archaeologist, W & S Consultants, cultural resources management consultants, 2242 Stinson Street, Simi Valley, CA 93065.
1977 - 1982: Field Director and Project Archaeologist, Ancient Enterprises, Inc.

Education

M.A. in Anthropology, UCLA, 1981.
A.B. in Anthropology, UCLA, 1979.
MSHA Certification, Surface Mining, 1998 - present.

Awards, Honors and Distinctions

Listed in Who's Who in Executives and Professionals.

1999	Special Appreciation Award, California Indian Council.
1993	Special Appreciation Award, California Indian Council.
1991	Special Appreciation Award, Simi Valley Historical Society.
1989	Special Appreciation Award, Candelaria Indian Council.

Professional Appointments

Archaeological & Anthropological Advisor, Ventura County Cultural Heritage Board, 1996 - present.
Environmental Advisor (for Presidents Ronald Reagan and George H. W. Bush), Congressional Leadership Council, Washington, DC. 1988 - 1991.

Research Specializations

Peopling of the New World
Hunter-gatherer ethnography and archaeology
Soil stratigrphy and geomorphology
Western North America and Mesoamerica
Method, theory and philosophy of science

Publications: Books and Monographs

2006 The Archaeology of Ayer's Rock, Inyo County, California, by DS Whitley, TK Whitley and JM Simon. Ridgecrest: Maturango Museum Publication #19.

Professional Papers: Refereed Journals

1999 Sally's Rockshelter and the Archaeology of the Vision Quest, by D.S. Whitley et al; Cambridge Archaeological Journal 9:221-246.

Publications: Book and Monograph Chapters

2007 The Carrizo Collapse: Art and Politics in the Past (w/ D Whitley and J Loubser). In A Festschrift Honoring the Contributions of California Archaeologist Jay von Werlhof, ed RL Kaldenberg, pp. 199-208. Ridgecrest: Maturango Museum Publication 20.

2007 High-Stand Shoreline Survey of the Christmas Canyon Sub-Basin of Searles

Lake, Inyo County, California (w/ D Whitley et al.). In A Festschrift Honoring the Contributions of California Archaeologist Jay von Werlhof, ed RL Kaldenberg, pp. 209-224. Ridgecrest : Maturango Museum Publication 20.

2006 A New Strategy for Analyzing the Chronometry of Constructed Rock Features in Deserts (w/ N Cerveny, R Dorn, R Kaldenberg, J Reed, D Whitley). In Geoarchaeology, vol. 21, No. 3, pp. 281 - 303.

1999 The vision quest in the Coso Range, (w/ D Whitley and R Dorn). American Indian Rock Art 25:1-32.

1988 The Late Prehistoric Period in the Coso Range and Environs (w/ D Whitley, G. Gummerman IV, E Rose). In Pacific Coast Archaeological Society Quarterly, Mojave Desert Volume. ed Mark Sutton.

1979 Artifacts from the Ring Brothers Site Complex, by DS Whitley et al, pp. 11-100. In Archaeological Investigations at the Ring Brothers Site Complex, Thousand Oaks, California, ed. CW Clewlow, Jr., DS Whitley and EL McCann. UCLA Institute of Archaeology, Monograph 13.

1979 Shell Beads and Ornaments from the Ring Brothers Site Site Complex: Appendix II, In Archaeological Investigations at the Ring Brothers Site Complex, Thousand Oaks, California, ed. CW Clewlow, Jr., DS Whitley and EL McCann. UCLA Institute of Archaeology, Monograph 13.

1979 Preliminary Excavations at CA-Ven-122, by DS Whitley et al, pp. 84-130. In The Archaeology of Oak Park, Ventura County, California, Volume III, ed. CW Clewlow, Jr. and DS Whitley. UCLA Institute of Archaeology, Monograph 11.

1979 The Excavation of the Oak Park Rockshelters, by CW Clewlow, Jr., et al, pp. 131-148. In The Archaeology of Oak Park, Ventura County, California, Volume III, ed. CW Clewlow, Jr. and DS Whitley. UCLA Institute of Archaeology, Monograph 11.

Papers Presented at Professional Meetings

The Carrizo Collapse: Art and Politics in the Past. w/ D Whitley and J Loubser. Society for California Archaeology, Riverside, 2004.

Sally's Rockshelter and the Archaeology of the Mojave Desert Vision Quest, w/ RI Dorn and D Whitley. Society for California Archaeology, San Diego, 1998.

The Long and the Short of It: California Archaeology, Varnish Dating and the Peopling of the Americas, with RI Dorn and D Whitley; Society for California Archaeology, Eureka, 1995.

Re-Thinking the Clovis/Pre-Clovis Debate, with RI Dorn and D Whitley; Society for California Archaeology, Ventura, 1994.

Rock Art and the Pre-Clovis Colonization of the Americas, with RI Dorn and D Whitley;

Society for American Archaeology, Anaheim, 1994.

Archaeology and geomorphology at the Coso Junction Ranch Site, with D Whitley; Great Basin Anthropological Conference, Las Vegas, NV,1986.

Shell Beads and Ornaments from the Ring Brothers Site Complex; Society for California Archaeology, Long Beach, CA, 1979

Invited Lectures

Soil stratigraphy and landform analysis as an aid to interpreting archaeological deposits, Antelope Valley Archaeological Society, Palmdale, CA,1987.

Geomorphic processes and how they effect archaeological sites, Antelope Valley Archaeological Society, Palmdale, CA,1986.

Teaching Experience (for the University of California Research Expeditions Program, The Coso Junction Site, Rose Valley, Inyo County, CA, 1985 and 1986):
North American Prehistory
California Prehistory
Archaeological Field Training

Field Experience

California: 1977 - present. Hundreds of research and cultural resources management projects throughout the state and island California. Some of the major cultural resources management projects successfully completed in California include the following:

2012 Phase I archaeological survey of the Hummingbird Nest Ranch, Simi Valley, Ventura County, for the Hummingbird Nest Ranch and Five S Properties, Ltd.;

2011 Phase I survey/Class III archaeological inventory of the Groundwater Interim Measures study area, Rocketdyne Santa Susana Field Laboratory (SSFL), Ventura County, for the Boeing Company;

2010 Phase I survey/Class III archaeological inventory of the Northern Drainage study area, Rocketdyne Santa Susana Field Laboratory (SSFL), Ventura County, for the Boeing Company;

2007 Phase I survey and Phase II archaeological test excavations at 12 sites for the 14,00(acres Centennial project, Tejon Ranch, Los Angeles County, for the Tejon Ranch Company;

2006 Phase I survey and Phase II archaeological test excavations at 9 sites for the 1,000 acres McAllister Ranch project, Bakersfield, Kern County, for the Suncal Company

2005 Phase I survey and Phase II archaeological test excavations at thirty-eight sites for the 35,000 acres Mountain Village project, Tejon Ranch, Kern County, for the Tejon Ranch Company;

2004 Phase I, II and III archaeological survey, test excavations, and data recovery on 10 sites within the 2,500 acres US Borax Life of Mine project area, Kern County, for US Borax and Rio Tinto, Inc.;

2001 Phase I survey/Class III archaeological inventory of Area 4, Rocketdyne Santa Susana Field Laboratory (SSFL), Ventura County, for Rocketdyne and the Boeing Company;

2000 Phase I archaeological survey of the 2,000 acres Tejon Industrial Complex East (TIC East), Tejon Ranch, Kern County, for the Tejon Ranch Company;

1999 Phase I archaeological survey of the 1,300 acres Rio Dulce Ranch, Agua Dulce, for Rio Dulce Ranch;

1997 Phase I archaeological survey and Phase II test excavations on six sites within the 4,200 acres Messenger Project (Hidden Creek Ranch), Ventura County, for the City of Moorpark and Michael Brandman Associates;

1996 Phase I survey and Phase II test excavations at 12 sites for the Soledad Mountain project, Rosamond, Kern County, for the Golden Queen Mining Company;

1996 Phase I archaeological survey and Phase II test excavation of CA-LAN-2203H within the 540 acres College Park study area, Palmdale, for Mr. David Bushnell, Bushnell Optical Company;

1995 Phase I, II and III archaeological survey, test excavations and data recoveries on si sites, Calabasas, Los Angeles County, for The Baldwin Company;

1995 Phase I archaeological survey and Phase II test excavations on four sites for the Skyriver Ranch Wind Powerplant, Tehachapi, Kern County, for Zond Systems, Inc.

1994 Phase I archaeological survey of the 160 km Teleseismic Tomography Line and Los Angeles Regional Seismic Experiment, western Mojave Desert, for the US Geological Survey, Office of Earthquakes, Volcanoes and Engineering;

1994 Class III archaeological inventory of five sites for the Radcliff Project, Panamint Mountains, Inyo County, for Echo Bay Exploration;

1993 Phase II and III test and salvage excavations, Hitchock Ranch (CA-SBA-1661H), Santa Barbara, for Sequoia Realty, Penfield & Smith, and Investec and;

1993 Phase I archaeological survey of the 1,200 acres Toyowest/Pacton Specific Plan Area, Palmdale, for Impact Sciences, Inc.;

1992 Phase I survey and Phase II archaeological test excavations on eight sites for the 12,000 acres Newhall Ranch project, Valencia, Los Angeles County, for the Newha Land and Farming Company;

1991 Phase I, II and III studies, Thousand Oaks Civic Center Plaza (Jungleland), Ventura County, for the City of Thousand Oaks;

1989 Phase I and II archaeological survey and test excavations, Tract 4321, Thousand Oaks, Ventura County, for Watt Industries;

1988 Phase I archaeological survey of the 8,800 acres Hathaway Ranch, Lake Piru, Los Angeles County, for Impact Sciences, Inc.;

1988 Phase I, II and III survey, test and salvage excavations, Dos Vientos Ranch, Thousand Oaks, Ventura County, for the Haaland Group and Operating Engineers Local 12 Pension Trust;

1987 Phase II archaeological test excavations on seven sites within the 5,400 acres Ahmanson Ranch, Ventura County, for Home Savings of America and Ahmanson Land Company;

1987 Phase I, II and III archaeological survey, test excavations and data recovery on six sites within Tract 4119, Thousand Oaks, Ventura County, for Prudential Realty Division;

1986 Phase I, II and III archaeological survey, test excavations, data recovery and monitoring, on 18 sites within the 2,000 acres Lake Sherwood Ranch, Ventura County, for the David Murdock Development Corporation;

1986 Phase I archaeological survey and Phase II test excavations on five sites within the 2,400 acres Jordan Ranch, Ventura County, for Potomac Investment Association;

1985 Phase I survey, 30 mile 115kV powerline transmission corridor, Coso KGRA, China Lake NWTC, Inyo and Kern Counties, for the California Energy Company;

1985 Phase I, II and III archaeological survey, test excavations, data recovery and monitoring on 14 sites within the 500 acres Tract 2808, Thousand Oaks, Ventura County, for Standard Pacific-Ventura;

1982 Phase I and II archaeological surveys and test excavations, Coso Known Geothermal Resource Area (KGRA), China Lake NWTC, Inyo County, for the Los Angeles Department of Water and Power.

Guatemala:

1979 Finca El Balsamo Archaeological Research Project, South Coast, Esquintla, Guatemala, Central America. C. William Clewlow, Jr., Principal Investigator.

Hawaii:

2004 - present. More than 20 cultural resources management projects on the island of Hawaii. For Rechtman Consulting, Hilo, Hawaii.

Nevada:

1980 Twin Summit Spring Archaeological Project, Black Rock Mountains. For the Bureau of Land Management, US Dept. of Interior, Winnemucca, NV;

1979 Grass Valley Archaeological Research Project, Grass Valley, NV. Dissertation project of Helen Wells, University of California, Los Angeles.

Oregon:

2012 Petroglyph Documentation and Excavations at site 35ML1019, The Watson Petroglyph Complex, Owyhee Reservoir, Malheur County, OR. For the US Bureau of Reclamation, Boise, Idaho.

Venezuela, S.A.
1988 Rio Caironi Archaeological Research Project, Rio Caironi and Rio Orinoco, Venezuela, South America. Jacob Elias (Venezuela), Principal Investigator.

Wyoming:
1980 Petiray Petroleum Pipeline Project from Evanston to Rawlins, WY. For the Wyoming Dept. of Parks and Recreation, Rock Springs, WY.

Professional & Public Service
Intensive Coso Range rock art study workshop, Maturango Museum, 2001.
Educational fieldtrip to Black Mountain petroglyph sites, California Indian Council Foundation, 2001.
Classroom lecture, California gold mining history, Crestview School, 1998.
Classroom lecture, "Introduction to Archaeology", Crestview School, 1997.
Public lecture, Rock Art at Fort Irwin, 11th Armored Cavalry, Fort Irwin NTC, 1996,

Published Professional/Research Profiles and Summaries
Brian Fagan, 2000, Focus: Exploring Intangibles. Discovering Archaeology 2(4)18-21.

Film & Recording Credits
Archaeological consultant, "A Light in the Darkness" feature film, Bearsmouth Entertainment, 2006.
Executive producer, Giant Records artist Chris Ward, "Angels Fly" CD, 1998.
Executive producer, Giant Records artist Chris Ward, "Faith 'Aint Faith" CD, 1992.
Anthropological consultant, "Blackfeather/Mystic" TV pilot, Hearst Entertainment/CBS, 1991-1992.

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Simi Valley, CA 93065
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Geologic and Geotechnical Engineering Review
Vesting Tentative Tract Map 52905
APN: 2826-020-012 & 2826-020-013
City of Santa Clarita, Los Angeles County, California

for

Jemstreet Properties

April 17, 2017 W.O. 6946

MDN 19085

GeoSoils Consultants Inc.

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GEOTECHNICAL GEOLOGIC ENVIRONMENTAL

April 17, 2017
W.O. 6946

JEMTREET PROPERTIES
1435 Reynolds Court
Thousand Oaks, California 91362

Subject: **Geologic and Geotechnical Engineering Investigation Report, Proposed 43-Lot Residential Development, Tentative Tract 52905, APN: 2826-020-012 and 2826-020-013, Santa Clarita, Los Angeles County, California**

1.0 INTRODUCTION

As requested, GeoSoils Consultants, Inc. (GSC) has prepared this geologic and geotechnical engineering report for the subject property. The purpose of this report is to evaluate the geologic and geotechnical engineering characteristics of the underlying earth materials in order to evaluate their suitability to relative the planned improvements.

This report has been prepared for exclusive use of JemStreet Properties and their consultants, and is non-transferable. This report has been prepared in accordance with generally accepted geotechnical engineering practices in the County of Los Angeles at the time it was prepared.

The site was explored by drilling three borings with an 8-inch diameter hollow-stem limited access rig on January 31, 2017, and by excavating eight backhoe test pits on February 15 2017. The field exploration procedures, boring logs, and test pit logs are attached as Appendix A. Laboratory test procedures and results are enclosed in Appendix B. Stability Analyses are included as Appendix C. The geologic site conditions are shown on the Geologic Map, Plate 1. The Geologic Cross-Sections are included as Plates 2A and 2B.

MDN 19085

2.0 SITE DESCRIPTION AND PROPOSED DEVELOPMENT

2.1 Site Description

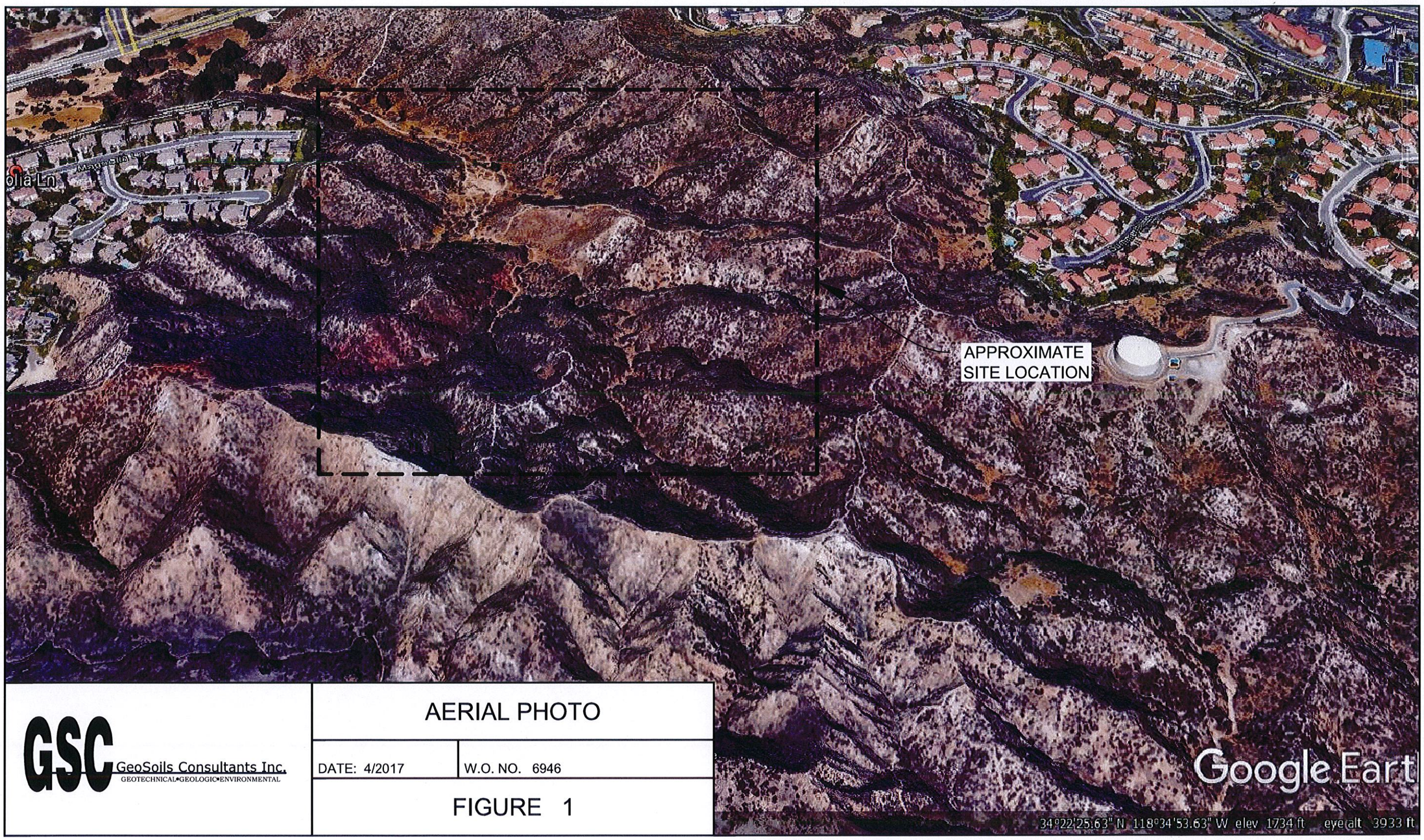
The subject site is located in the Santa Clarita Valley and is bounded by Tract No. 43896 (previously graded under the observation and testing by GeoSoils, Inc.) and Pico Canyon Road. The Legal descriptions include Tentative Tract 52905 and APN: 2826-020-012 and 2826-020-013. The currently vacant site occupies approximately 94.83 acres of hillside terrain. The site is accessible from Pico Canyon Park property and a permit was required to gain access for exploratory equipment. An aerial photograph showing the approximate location of the site is included as Figure 1.

2.2 Proposed Development

According to the conceptual grading plans prepared by Civil Design and Drafting, Inc. dated April 2017, proposed development consists of a cut/fill grading operation to create 37 lots for residential construction (Lots 1 through 37), 5 lots used as desilting basins (Lots 38 through 42), and the final lot will be used as an infiltration/retention basin (Lot 43). Each of the basins will be provided with stand pipe and drainage pipes, and will outlet into the infiltration/retention basin on Lot 43. In addition, the basin on Lot 43 will be provided with a stand pipe, which will allow water to overflow the basin and enter the natural drainage course. The Geologic Map is included as Plate 1 and Geologic Cross Sections are included as Plate 2A and 2B.

3.0 GRADING

Grading of the site will consist of a cut/fill operation to create level building sites and associated streets and basins. The grading will consist of a balanced cut and fill operation of several thousand cubic yards. The main cut areas are located near the steeper regions of the tract and the major fill areas are located in the regions of lower elevation, which include the drainages located in the tract. The grading will involve the removal and recompaction of artificial fill, alluvium, and weathered bedrock material, in addition to the mass-excavation.



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AERIAL PHOTO

DATE: 4/2017 W.O. NO. 6946

FIGURE 1

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Site grading will create cut and fill slopes to a maximum height of approximately 80 feet. The highest cut slope is shown on Section 5-5' and the highest fill slope is shown on Section 2-2'. All slopes are designed at gradients of 2:1 or flatter with terrace benches at approximately 25-foot intervals. Drainage swales are located at the top of all cut slopes located at the base of natural slopes.

4.0 GEOLOGIC CONDITIONS

Geologic conditions of Tentative Tract 52905 were determined through research, field mapping, and subsurface exploration, and the results were superimposed on the Geologic Map, Plate 1. During grading, a geologist should be present to confirm the geologic conditions encountered on the site are consistent with those presented herein. The following sections present our findings concerning subsurface soil conditions, groundwater conditions, and expansion potential and sulfate content of surficial site soils.

4.1 Regional Geologic Setting

The subject property is located within the Transverse Ranges of Geomorphic Provinces of California. The Transverse Ranges consist of generally east-west trending mountains and valleys, which are in contrast to the north-northwest regional trend elsewhere in the state. The structure of the Transverse Ranges is controlled by the effects of north-south compressive deformation (crustal shortening), which is attributed to the convergence between the big bend of the San Andreas Fault north of the San Gabriel Mountains and the motion of the Pacific Plate. The valleys and mountains of the Transverse Ranges are typically bounded by a series of east-west trending, generally north dipping reverse faults with left-lateral oblique movement.

The Transverse Ranges are characterized by a very thick, nearly continuous sequence of Upper Cretaceous through Quaternary sediementary rocks that have been deformed into a series of east-west trending folds associated with thrust and reverse faults. This documentation has created interbasin highlands, and intervening lowlands.

4.2 Local Regional Setting

The property is located within the southern part of the Newhall USGS 7.5-minute quadrangle, and the northern part of the Oat Mountain USGS 7.5-minute quadrangle. Bedrock of the Saugus Formation, Pico Formation, alluvium, and artificial fill underlie the site. The distributions of these materials are shown on Plate 1 and are discussed in greater detail below. A Regional Geologic Map is included as Figure 2.

4.3 Geologic Structure

Bedding on the site strikes northwest and dips steeply to the north at angles ranging from approximately 60 to 85 degrees. The backhoe test pits excavated on the site encountered mostly massive sandstone. Bedding attitudes were obtained from field mapping; however, most natural outcrops on the site also expose massive sandstone.

4.4 Subsurface Soil and Rock Conditions

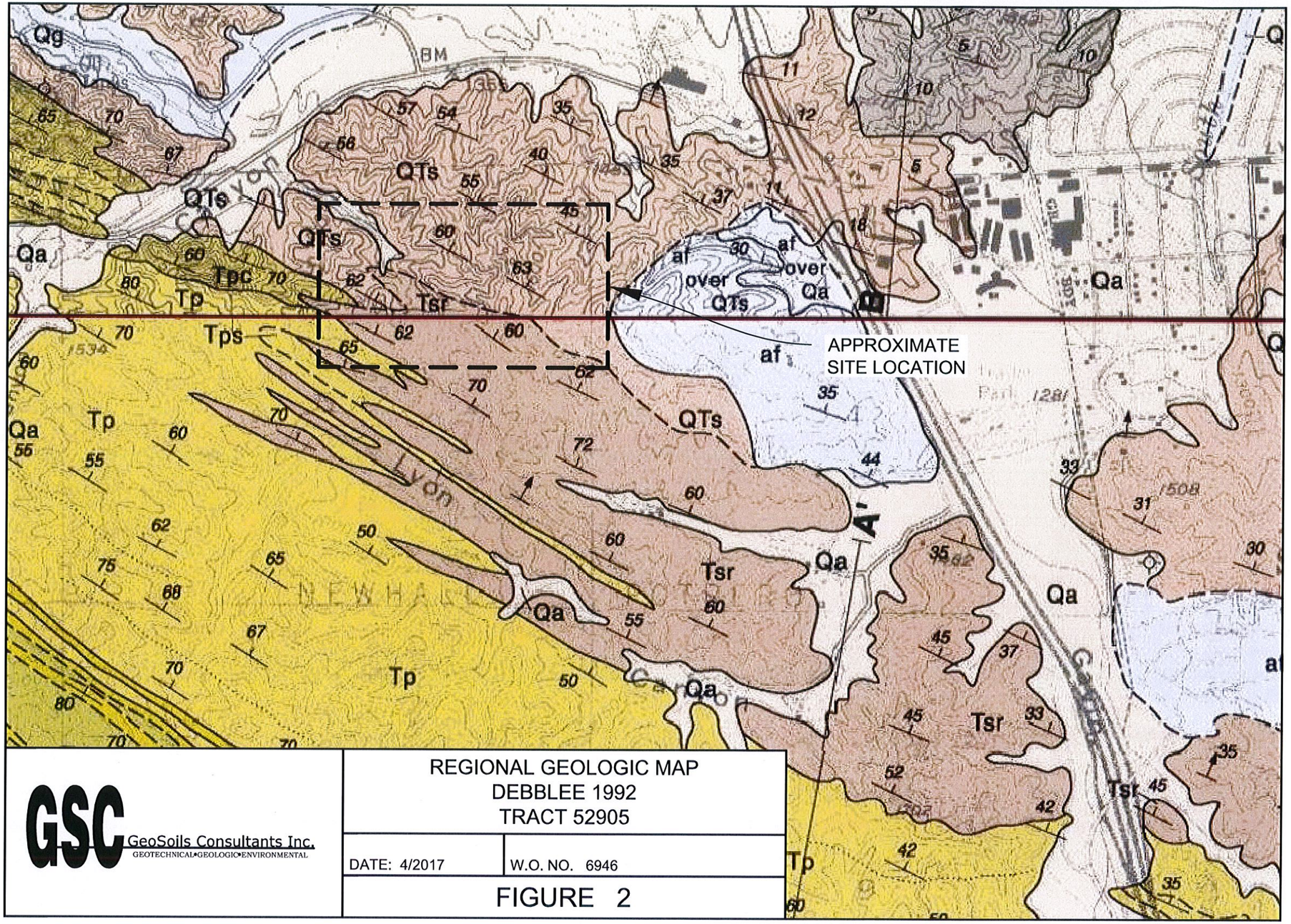
We offer the following general description of materials encountered during our subsurface explorations.

Artificial Fill (af):

The artificial fill on site was observed in two borings (B-1 through B-2) and in only three of the test pits (TP-1 through TP-3). The fill on site had a maximum thickness of approximately 10 feet and is anticipated to span the entire paved dirt access road and the flat component of the site due to past grading activities from the surrounding area. The artificial fill is mainly comprised of dark brown to medium yellow brown, silty fine to medium sand. It is loose and moderately moist. It contains roots, rock fragments and minimal trash. All fill on the site should be removed and if deemed suitable by the geotechnical engineer, re-compacted in areas of proposed development.

Alluvium (Qal):

Alluvium is located within the active drainage areas of Lyons Canyon and its tributaries.



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REGIONAL GEOLOGIC MAP
DEBBLEE 1992
TRACT 52905

DATE: 4/2017 | W.O. NO. 6946

FIGURE 2

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It also underlies the artificial fill on site and was observed in all three borings (B-1 through B-3), as well as all eight test pits (TP-1 through TP-8). The alluvium on site had a maximum thickness of approximately 14 feet. The alluvium consists of medium brown, silty fine sand to silty medium to coarse sand. It contains coarse pebble to cobble sized rock fragments. It is moderately moist and slightly to moderately dense. As such, at depth the alluvial sediments are not suitable for structural support or placement of compacted fill.

Saugus Formation (QTs):

Review of regional geologic maps (Figure 2) indicate bedrock of the Saugus Formation, Sunshine Ranch (member of the Saugus Formation), and possibly Pico Formation at the southern part of the site underline the tract. For the purposes of this report, we have assigned all bedrock to the non-marine Saugus Formation of Pleistocene and Pliocene age. The Saugus Formation generally consists of sandstone and conglomerate with occasional zones of siltstone.

According to the field exploration data, the bedrock underlying the site mainly comprises of light to medium gray, fine grained sandstone to siltstone and conglomerate comprised of a coarse to fine grained sandy matrix with coarse pebble size clasts. The bedrock is non-porous, dense, very hard, and slightly moist to dry.

The enclosed exploration logs in Appendix B provide a detailed description of the soil strata encountered in our subsurface explorations.

4.5 Surface and Subsurface Water Conditions

Surface water on the site is limited to landscape irrigation and natural precipitation falling directly on the site. Springs or seeps were not observed on the site.

At the time of our explorations (January 31, 2017 and February 15, 2017), groundwater was not encountered in any of our borings or test pits. The groundwater maps from the Seismic Hazards Zone Report for the Oat Mountain 7.5 minute quadrangle and the Newhall 7.5 minute quadrangle published by the California Geological Survey indicate that the

historically high groundwater level does not exceed approximately 75 feet below the existing ground surface. Groundwater is not anticipated to be a factor for the proposed development.

4.6 Slope Stability

Slope stability analyses have been performed and the results are presented in Appendix C. Analyses were performed on the highest natural slope and highest proposed cut and fill slopes. Analyses were performed on Sections 2-2' (highest fill slope), 5-5' (highest cut slope), and 9-9' (highest natural slope above areas of proposed development). In addition, rapid drawdown analyses were performed on Section 1-1', which passes through the proposed infiltration/retention basin on Lot 43. Surficial stability analyses are also included in Appendix C.

The results of the analyses indicate factors of safety above minimum code values, with the exception of portions of the steeper natural slopes. Restricted Use Areas are therefore recommended for the natural slopes and are shown on Plate 1. Additional discussion regarding natural slopes is provided in Sections 5.1.2 and 6.4.

4.6.1 Shear Strengths

The shear strengths used throughout our analyses were based on data obtained during our investigation of the site. A total of 4 shear tests were performed for the various on-site materials. In addition, summaries of shear tests were performed and are included in Appendix C.

4.7 Expansion Potential and Sulfate Content of Surficial Site Soils

Due to the variability of surficial soil throughout the site and the extensive grading that will be performed, the final foundation design for the proposed structures should be based on expansion index and sulfate tests performed at the completion of grading. Surficial soil samples for testing should be obtained from various locations within the actual finished building pad and the results will be presented in a final compaction report.

Preliminary testing indicates that on site soils are sandy and have a low expansion index. Chemical tests were performed on samples obtained from Boring B-1 at 15 to 20 feet and B-2 at 20 to 23 feet. The results are presented in Appendix B.

5.0 FAULTING AND SEISMICITY

The project site is not within an Alquist-Priolo Earthquake Fault Zone and there are no active faults on or adjacent to the property. However, this site has experienced earthquake-induced ground shaking in the past and can be expected to experience further shaking in the future.

Earthquake Characterization: Earthquakes are characterized by magnitude, which is a quantitative measure of the earthquake strength, based on strain energy released during a seismic event. The magnitude of an earthquake is constant for any given site and is independent of the site in question.

Earthquake Intensity: The intensity of an earthquake at a random site is not constant and is subject to variations. The intensity is an indirect measurement of ground motion at a particular site and is affected by the earthquake magnitude, the distance between the site and the hypocenter (the location on the fault at depth where the energy is released), and the geologic conditions between the site and the hypocenter. Intensity, which is often measured by the Mercalli scale, generally increases with increasing magnitude and decreases with increasing distance from the hypocenter. Topography may also affect the intensity of an earthquake from one site to another. Topographic effects such as steep sided ridges or slopes may result in a higher intensity than sites located in relatively flat-lying areas.

Seismic Design Criteria

The 2016 CBC (California Building Code) seismic coefficient criteria are provided here for structural design consideration.

Under the Earthquake Design Regulations of Chapter 16, Section 1613 of the CBC 2016, and based on the mapped values, the following coefficients and factors apply to the lateral-force design for the proposed improvements at the site.

2016 CBC Section 1613, Earthquake Loads	
Site Class Definition	D
Mapped Spectral Response Acceleration Parameter, S_s (Table 1613.3.1 for 0.2 second)	3.089
Mapped Spectral Response Acceleration Parameter, S_1 (Table 1613.3.1 for 1.0 second)	0.980
Site Coefficient, F_a (Table 1613.3.3(1) short period)	1.0
Site Coefficient, F_v (Table 1613.3.3(2) 1-second period)	1.5
Adjusted Maximum Considered Earthquake Spectral Response Acceleration Parameter S_{MS} (Eq. 16-37)	3.089
Adjusted Maximum Considered Earthquake Spectral Response Acceleration Parameter S_{M1} (Eq. 16-38)	1.470
Design Spectral Response Acceleration Parameter, S_{DS} (Eq. 16-39)	2.060
Design Spectral Response Acceleration Parameter, S_{D1} (Eq. 16-40)	0.980
Notes: Location: Longitude: -118.57934, Latitude: 34.37667 1. Site Class Designation: Class D is recommended based on subsurface condition. 2. Ss, SMs, and SDs are spectral response accelerations for the period of 0.2 second. 3. S1, SM1, and SD1 are spectral response accelerations for the period of 1.0 second.	

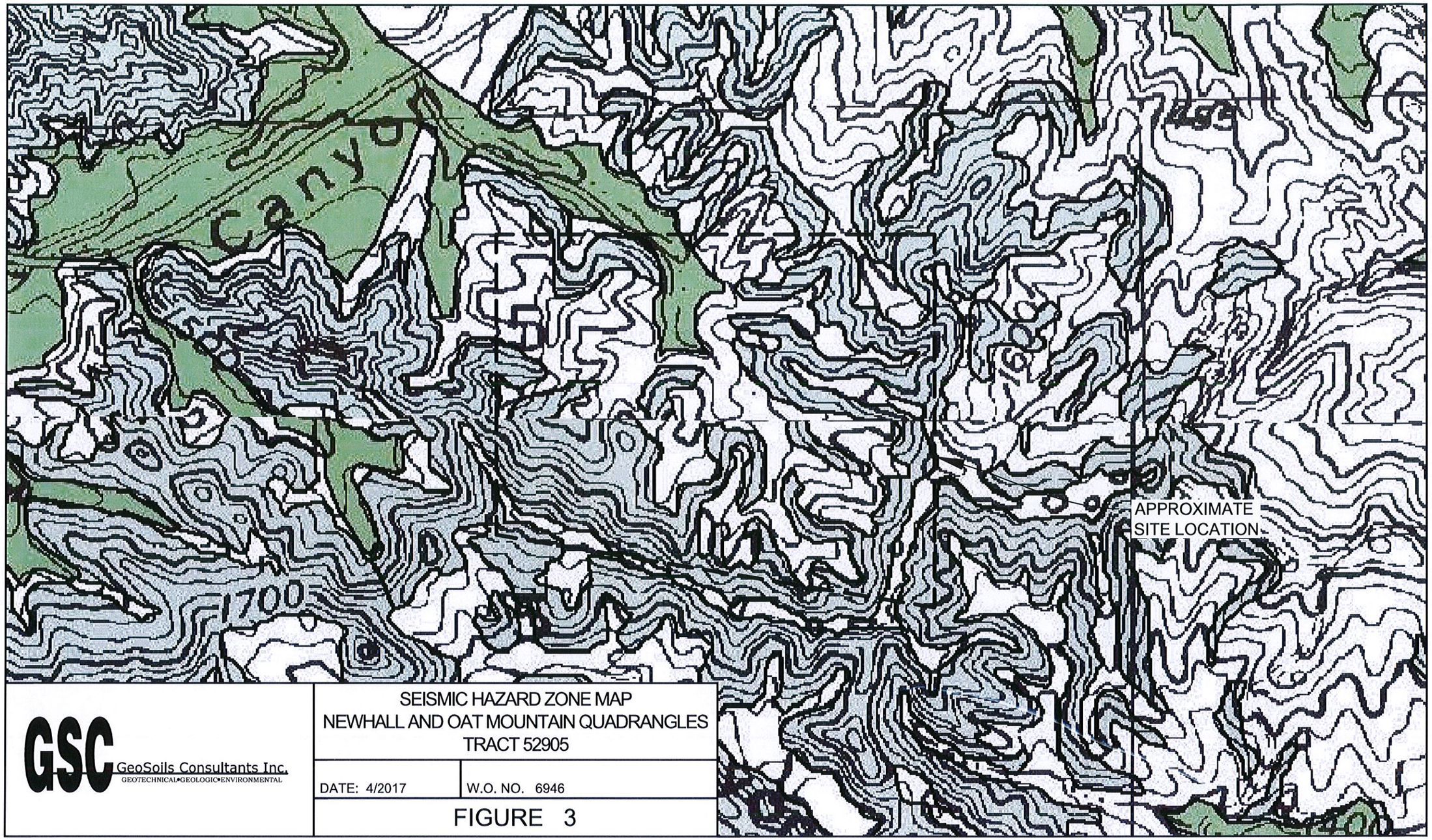
Conformance to the above criteria for seismic excitation does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not occur if a maximum level earthquake occurs. The primary goal of seismic design is to protect life and not to avoid all damage, since such design may be economically prohibitive. Following a major earthquake, a building may be damaged beyond repair, yet not collapse.

5.1 Secondary Earthquake Effects

Ground shaking produced during an earthquake can result in a number of potentially damaging phenomena classified as secondary earthquake effects. These secondary effects include ground rupture, landslides, seiches and tsunamis, seismically-induced settlement, and liquefaction. Review of the State Seismic Hazard Zone maps for the Newhall and Oat Mountain Quadrangles indicate the canyon bottoms are mostly within zone of potential liquefaction and the slopes are in areas of potential seismic instability (Figure 3). The site is not located within a Fault Hazard Zone. Descriptions of each of these phenomenon and how it could potentially affect the proposed site are described below:

5.1.1 Ground Rupture

Ground rupture occurs when movement on a fault breaks the ground surface and usually occurs along pre-existing fault traces where zones of weakness already exist. The State has established Earthquake Fault Zones for the purpose of mitigating the hazard of fault rupture by prohibiting the location of most human



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SEISMIC HAZARD ZONE MAP
NEWHALL AND OAT MOUNTAIN QUADRANGLES
TRACT 52905

DATE: 4/2017 | W.O. NO. 6946

FIGURE 3

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occupancy structures across the traces of active faults. Earthquake fault zones are regulatory zones that encompass surface traces of active faults with a potential for future surface fault rupture. The site is not located within a State established Earthquake Fault Zone and there are no know active faults within the limits of the property; therefore, the ground rupture hazard potential for the site is considered remote.

5.1.2 Landsliding

Earthquake-induced landsliding often occurs in areas where previous landslides have moved and in areas where the topographic, geologic, geotechnical and subsurface groundwater conditions are conducive to permanent ground displacements. The natural slopes on the site are located mostly within zones of potential seismic instability. Slope stability analyses have been performed and the results are included in Appendix C. The results of the analyses indicate that portions of the steeper natural slopes above the site have factors of safety less than the required values. As a result, Restricted Use Areas are recommended for these slopes and are shown on Plate 1.

5.1.3 Seiches and Tsunamis

A seiche is the resonant oscillation of a body of water, typically a lake or swimming pool caused by earthquake shaking (waves). The hazard exists where water can be splashed out of the body of water and impact nearby structures. No bodies of constant water are near the site, therefore, the hazards associated with seiches are considered low.

Tsunamis are seismic sea waves generated by undersea earthquakes or landslides. When the ocean floor is offset or tilted during an earthquake, a set of waves are generated similar to the concentric waves caused by an object dropped in water. Tsunamis can have wavelengths of up to 120 miles and travel as fast as 500 miles per hour across hundreds of miles of deep Ocean. Upon reaching shallow coastal waters, the once two-foot high wave can become up to

50 feet in height causing great devastation to structures within reach. Tsunamis can generate seiches as well. Due to the proximity of the site relative to the ocean, seiches and tsunamis are not considered a hazard to the site.

5.1.4 Seismic Settlement

Seismically-induced settlement in unsaturated (dry) and saturated soils generally occur due to the dissipation of pore pressure.

The potential for seismically-induced settlement is greatest in loose granular soils (i.e., sands, silty sands, sandy silts), whereas cohesive soils (i.e., clays and silts) are generally not prone to settlement. It should be realized that granular soils are susceptible to settlement during a seismic event whether the soils liquefy or not.

All alluvium will be removed and recompacted in areas of proposed grading. The resulting fill will be underlying by shallow bedrock composed of hard sandstone and siltstone. Therefore, seismic settlement is not considered to be a hazard to the site.

5.1.5 Liquefaction

Liquefaction describes a phenomenon where cyclic stresses, which are produced by earthquake-induced ground motions, create excess pore pressures in cohesionless soils. As a result, the soils may acquire a high degree of mobility, which can lead to lateral spreading, consolidation and settlement of loose sediments, ground oscillation, flow failure, loss of bearing strength, ground fissuring, and sand boils, and other damaging deformations. This phenomenon occurs only below the water table, but after liquefaction has developed, it can propagate upward into overlying, non-saturated soil as excess pore water escapes. The canyon areas on the site are located within zones of potential liquefaction; however all alluvium will be removed to firm bedrock and replaced as compacted fill; therefore, the liquefaction hazard is considered to be low.

6.0 CONCLUSIONS AND RECOMMENDATIONS

"111" STATEMENT

Provided that the recommendations in this report are implemented, it is GSC's opinion that the proposed development will be safe from the hazards of landslide, settlement or slippage. Furthermore, the completed development will not adversely affect the stability of the adjacent properties nor be adversely affected by adjacent properties.

The recommendations provided in this report are applicable for development on the proposed lots provided the structures are constructed with roof gutters and downspouts and the yards has positive drainage that is maintained away from structures. Therefore, it is important that information regarding drainage and site maintenance be passed on to future homeowners. Geologic constraints associated with the proposed lots, as well as recommended mitigation, are presented below.

As in most of Southern California, the site lies within a seismically-active area, therefore earthquake resistant structural design is recommended.

The following geotechnical recommendations for site preparation, foundation design, slabs-on-grade, and drainage should be incorporated into final design and construction. All such work and design shall be in conformance with local governmental regulations or the recommendations contained herein, whichever is more restrictive.

6.1 Removals

Based on the results of the subsurface exploration, laboratory testing, and engineering analyses, removals of artificial fill, alluvium and weathered bedrock material will be required in areas of proposed grading. Removals should extend into hard/dense bedrock of the Saugus Formation (QTs). Removals at the toe of fill slopes should extend laterally beyond the toe at a distance equal to the depth of removal.

The laboratory testing results indicate that the Saugus Formation bedrock is suitable for structural support, provided that the loose surficial soils and upper section of the weathered

bedrock are removed. Recommendations for processing, subgrade preparation, fill placement, and grading are presented in the *Grading* section of this report (6.8).

6.2 Cut Slopes

All cut slopes should be planned at a gradient of 2:1 or less and slope stability analyses indicate factors of safety above minimum requirements. Bedrock materials should perform well at this gradient where geologic structure is favorable. Stabilization of cut slopes may be required during grading if adverse geologic structure is exposed; however, bedding on the site is poorly defined and steeply dipping; therefore, the potential for cut slope instability is low.

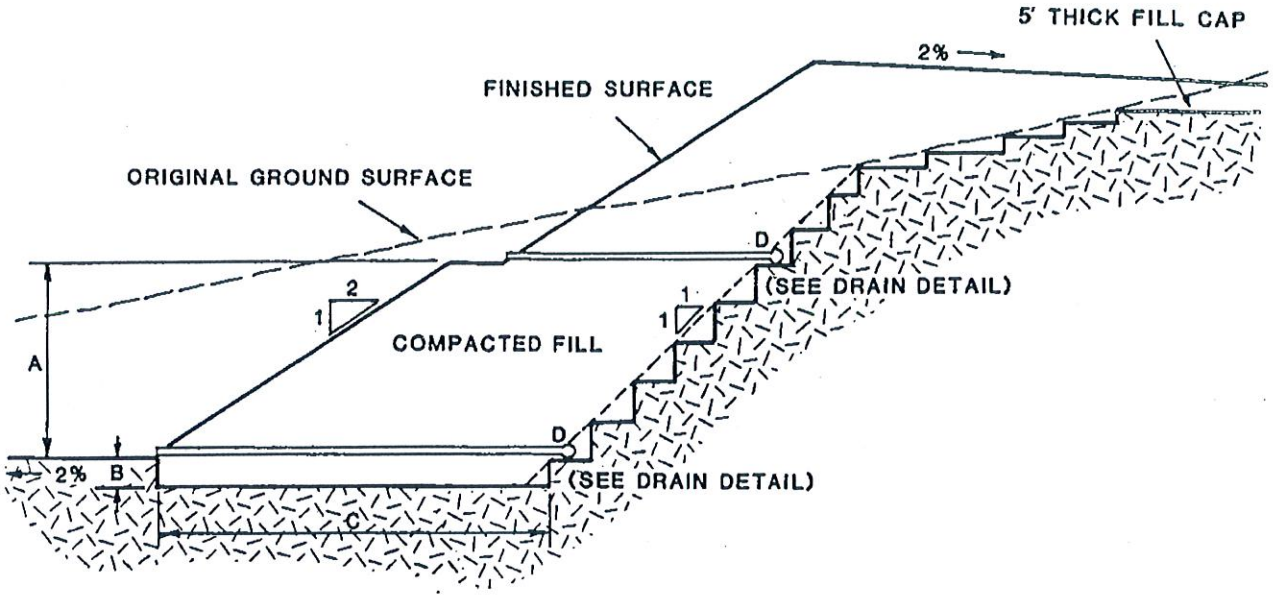
During grading, detailed mapping will be performed on all cut slopes. If conditions differ from those anticipated, or if weak bedding planes are exposed, additional recommendations will be provided. Adequate area exists on the site to stabilize or buttress any slope with adverse geology. Details for stabilization and buttress fills are presented on the *Typical Buttress Section Design* figure (Figure 4) and *Typical Stabilization Fill Design* (Figure 5).

6.3 Fill Slopes

Fill slopes should be constructed at slope ratios of 2:1 (Horizontal: Vertical) between benches or flatter. Slope stability analyses were performed on Section 2-2' and the results indicate factors of safety above minimum requirements. Surficial stability analyses are included in Appendix C. Confirmatory shear testing shall be performed during grading to ensure fill slopes are constructed with material that meets the shear test result used in the slope stability analyses. The results of the testing shall be submitted in monthly progress reports.

The infiltration/retention basin on Lot 43 shall be constructed with fill slopes at a gradient of 3:1 up to the high water level. Rapid drawdown analyses indicate factors of safety above minimum requirements at these gradients (Appendix C).

To maintain safety factors for surficial stability, intermediate drainage terraces are recommended for all fill slopes steeper than 5:1 with slope height greater than 30 feet. Fill



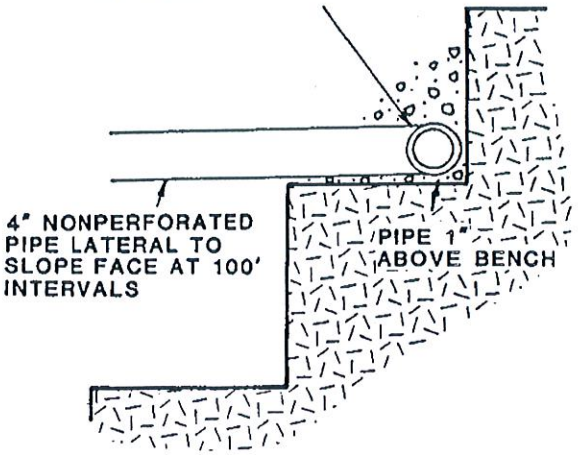
A. BUTTRESS SLOPE TO HAVE A BENCH AT LEAST EVERY 25' IN ELEVATION

B. BUTTRESS KEY DEPTH VARIES, SEE REPORT

C. BUTTRESS KEY WIDTH VARIES, SEE REPORT

D. BACKDRAINS & LATERAL DRAINS LOCATED AT ELEVATION OF EVERY BENCH DRAIN. FIRST DRAIN AT ELEVATION JUST ABOVE LOWER LOT GRADE. ADDITIONAL DRAINS MAY BE REQUIRED AT DISCRETION OF GEOSOILS, INC. (SEE DRAIN DETAIL)

4" PERFORATED PIPE (SCHEDULE 40 OR SDR 35 P.V.C.) OR EQUIVALENT PLACED IN 1 CUBIC FOOT PER LINEAR FOOT OF GRADED FILTER MATERIAL*. PIPE TO EXTEND FULL LENGTH OF BUTTRESS.



* GRADED FILTER MATERIAL TO CONFORM TO STATE OF CALIFORNIA DEPT. OF PUBLIC WORKS STANDARD SPECIFICATIONS FOR CLASS 2 PERMEABLE MATERIAL

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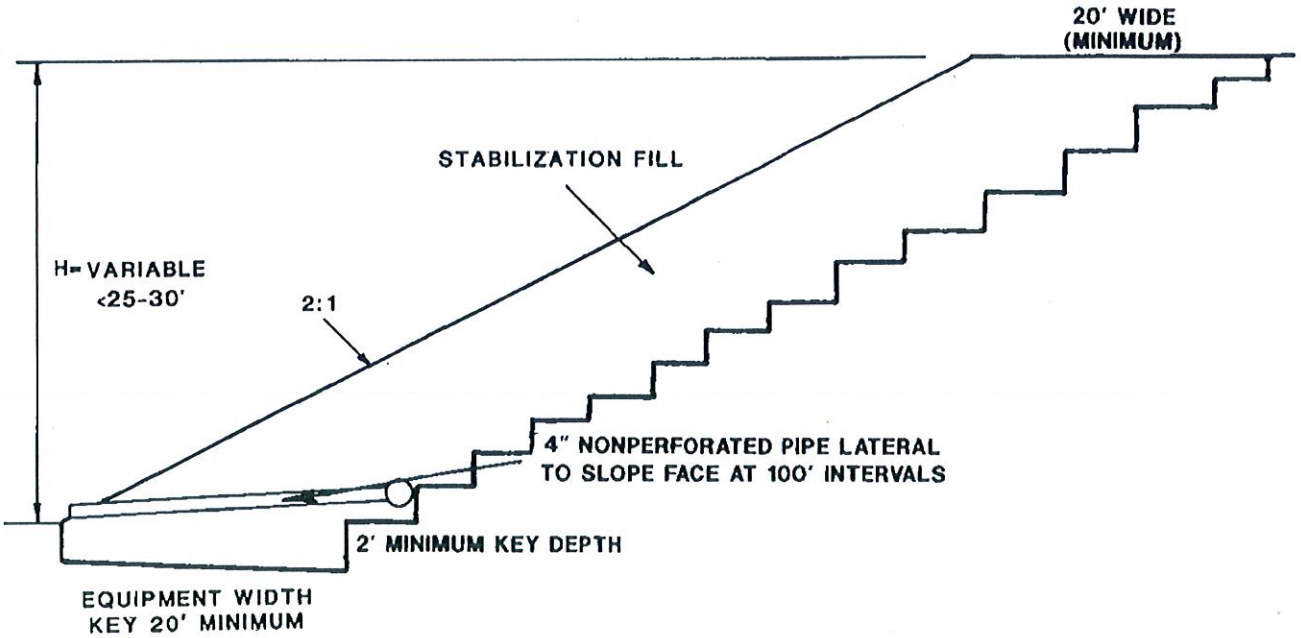
TYPICAL BUTTRESS SECTION DESIGN

DATE 4/2017 | W.O. NO. 6946

Geotechnical • Geologic • Environmental

FIGURE 4



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TYPICAL STABILIZATION FILL DESIGN

DATE 4/2017 W.O. NO. 6946

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FIGURE 5

FORM 87/6-8

slopes should be built in accordance with recommendations included herein. Fill over cut slopes should be constructed in accordance with the *Typical Fill Over Cut Slope Design* detail (Figure 6) and fill over natural slopes should be in accordance with the *Typical Fill Over Natural Slope Design* detail (Figure 7).

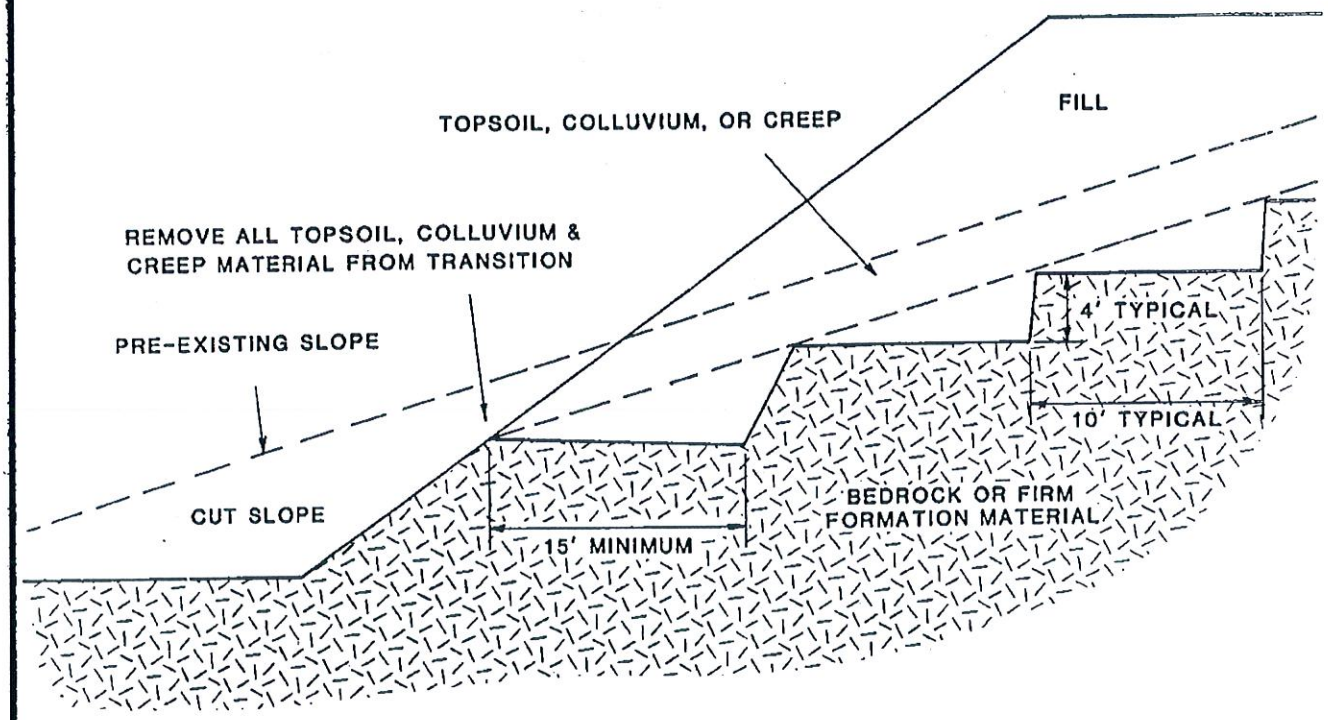
Fill slopes to the maximum height proposed are considered to be stable based on the shear strengths for fill material and the 2:1 gradients proposed. Additional remolded shear testing may be required to verify proposed fill material meets the minimum criteria.

6.4 Natural Slopes

Natural slopes ascend above the western, southern, and eastern portions of the tract. The steepest natural slopes are located above Lots 9 and 10. Slope stability analyses were performed on Cross-Section 9-9'. Portions of the natural slopes have factors of safety slightly below 1.5; therefore, the natural slopes above the development shall be located within Restricted Use Areas as shown on Plate 1. As shown on Section 8-8', a natural drainage swale will remain between the top of the proposed cut slope and the toe of the natural slope. This swale is approximately 10 to 20 lower than the top of the proposed cut slope.

With the exception of a portion of natural slope above Lot 19, no other natural slopes descend directly onto building pads. Due to the configuration of the natural slopes, the toes of the slope are all located within designated desilting basins. The slope above Lot 19 is at a gradient of approximately 3:1 or flatter, and is considered surficially stable.

The project civil engineer had determined design volumes for the basins and all basins are designed to exceed the minimum requirements. The basins will be provided with large-diameter pipes to transport water and minor debris to the main basin on Lot 43 at the northern part of the site.



TYPICAL FILL OVER CUT SLOPE DESIGN

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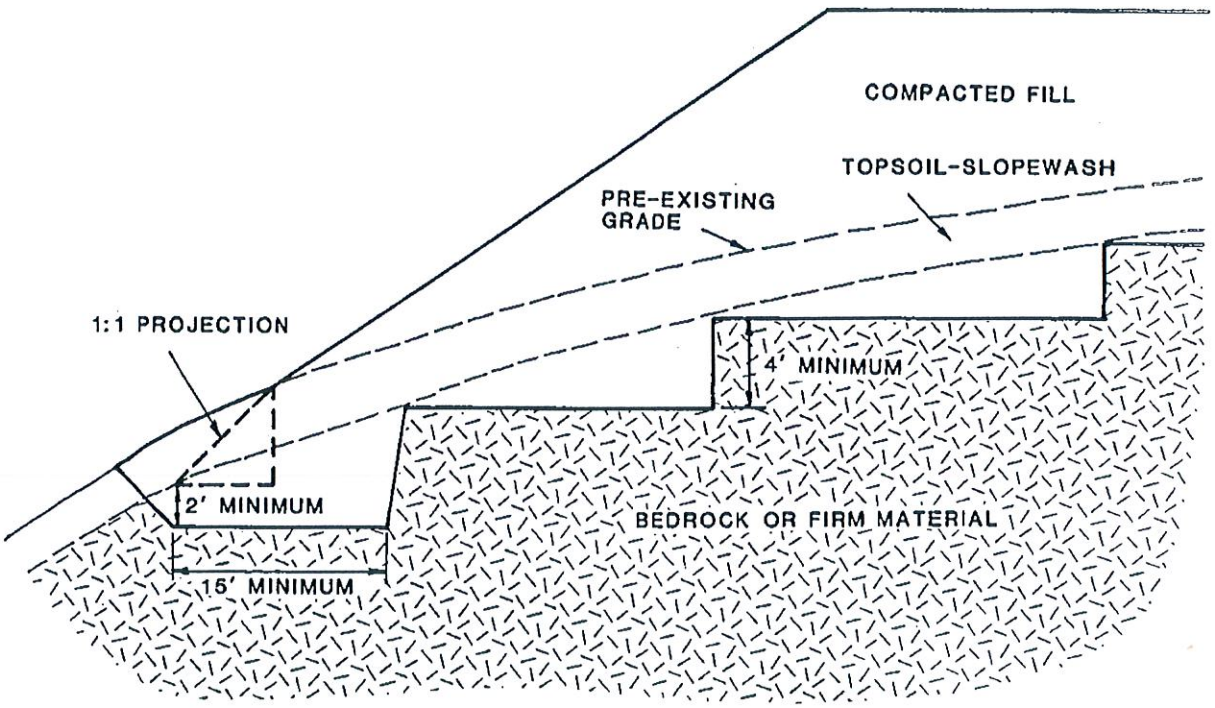
FIGURE 6

FORM 87/6-4



TYPICAL FILL OVER NATURAL SLOPE DESIGN

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FIGURE 7

FORM 87/6-3

6.5 Subdrains

Subdrain systems should be provided in all canyon bottoms, stabilization fills, and shear keys prior to fill placement, (see Figure 8), *Canyon Subdrain Design and Construction Methods*).

Filter material should be Class 2 permeable filter, or No. 2 and No. 3 concrete aggregate gradations per standard specifications for Public Works Construction, or approved equivalent, inspected and tested to verify its suitability. The filter should be clean with a wide range of sizes.

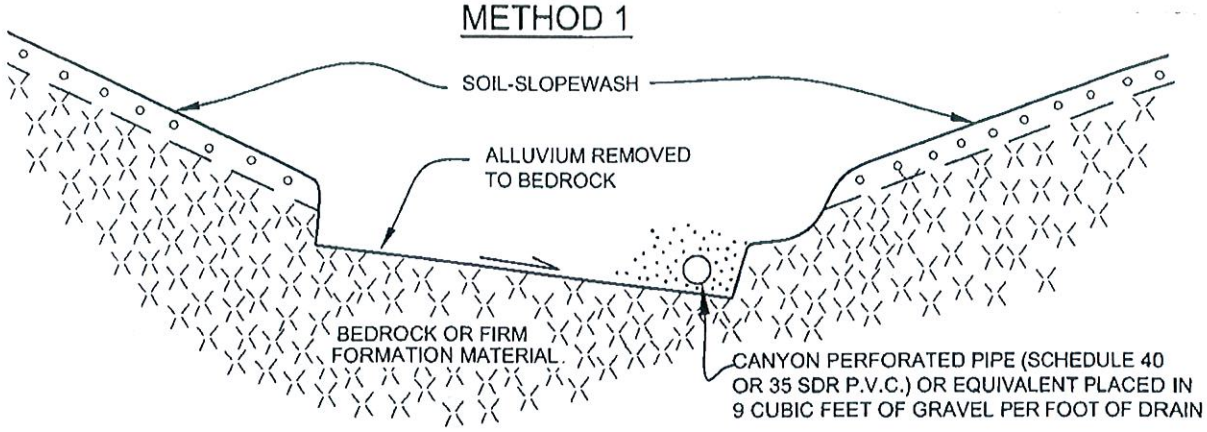
Subdrain pipe should consist of Schedule 40 or equivalent and should be a minimum of 6 inches in diameter for lengths up to 500 feet. For lengths over 500, 8-inch diameter pipe should be used and for lengths over 1,000 feet, and two, 8-inch pipes should be used.

During grading, the Engineering Geologist should evaluate the necessity of placing additional subdrains. The Engineering Geologist and Geotechnical Engineer should inspect all subdrain systems prior to cover with compacted fill.

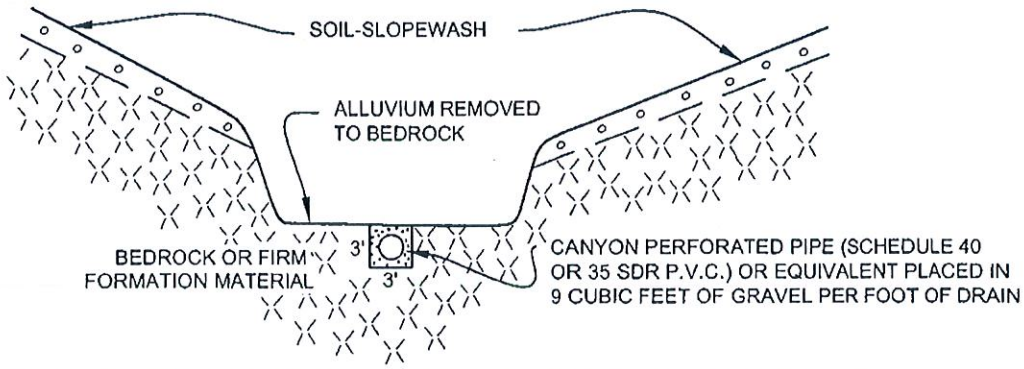
6.6 Lot Fill Caps

All cut and transition lots on the site should be over-excavated a minimum of five feet and provided with a compacted fill blanket. The project surveyors should verify the fill cap. The purpose of the cap is to provide a uniform bearing material for foundation support and to mitigate potential differential expansion. Deeper fill caps may be recommended if higher expansive materials are exposed. In addition, deeper fill caps may be recommended to mitigation large differential fill thicknesses across lots. The final fill cap thicknesses will be determined during the 40-scale review stage and confirmed grading. Recommendations for processing, subgrade preparation, fill placement, and grading are presented in the *Grading* section of this report.

METHOD 1

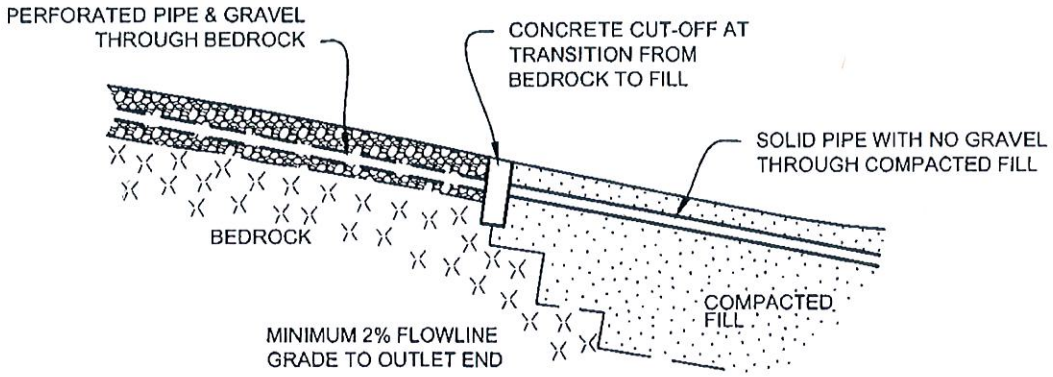


METHOD 2



GRAVEL TO CONFORM TO STATE OF CALIFORNIA DEPT. OF PUBLIC WORKS STANDARD SPECIFICATIONS FOR CLASS 2 PERMEABLE MATERIAL AS ALTERNATE 3/4" GRAVEL MAY BE USED SURROUNDED WITH GEOTEXTILE FILTER FABRIC APPROVED BY THE GEOTECHNICAL ENGINEER.
(NOTE: CITY OF LOS ANGELES DOES NOT ALLOW GEOTEXTILE FABRIS WRAP AROUND SUBDRAIN SYSTEMS.)

LONGITUDINAL SECTION



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CANYON SUBDRAIN DESIGN & CONSTRUCTION METHODS

DATE 4/2017 | W.O. NO. 6946

Geotechnical•Geologic•Environmental FIGURE 8

FORM 87/7-1

6.7 Rock Hardness

The results of the exploratory borings and test pits indicate that the bedrock material is rippable with heavy duty grading equipment. Deeper cuts within the bedrock material may encounter hard bedrock that may be difficult to rip. The grading contractor should consider performing additional studies on the deeper cut areas to verify rippability, as hard rock layer may exist. GeoSoils Consultants, Inc. is not responsible for variations in rock hardness during grading.

6.8 Grading

Grading of the site will consist of a cut/fill operation to create level building sites and associated streets and parks. The grading will consist of a balanced cut and fill. The main cut areas are located at the northern part of the tract. The major fill is located in the central and southern areas. The grading will involve the removal and recompaction of artificial fill, alluvium and weathered bedrock material, in addition to the mass-excavation. Site grading will create cut and fill slopes to a maximum height on the order of 82 and 50 feet, respectively. We offer the following recommendations and construction considerations concerning earthwork grading at the site.

6.8.1 General

Monitoring: We recommend that all earthwork (i.e., clearing, site preparation, fill placement, etc.) should be conducted with engineering control under observation and testing by the Geotechnical Engineer and in accordance with the requirements within the *Grading* section of this report.

Job Site Safety: At all times, safety should have precedence over production work. If an unsafe job condition is observed, it should be brought to the attention of the grading contractor or the developer's representative. Once this condition is noted, it should be corrected as soon as possible, or work related to the unsafe condition should be terminated.

The contractor for the project should realize that services provided by GSC do not include supervision or direction of the actual work performed by the contractor, his

employees, or agents. GSC will use accepted geotechnical engineering and testing procedures; however, our testing and observations will not relieve the contractor of his primary responsibility to produce a completed project conforming to the project plans and specifications. Furthermore, our firm will not be responsible for job or site safety on this project, as this is the responsibility of the contractor.

6.8.2 Site Preparation

Existing Structure Location: The General Contractor should locate all surface and subsurface structures on the site or on the approved grading plan prior to preparing the ground surface.

Existing Structure Removal: Any underground structures (e.g., septic tanks, wells, pipelines, foundations, utilities, etc.) that have not been located prior to grading, should be removed or treated in a manner recommended by the Geotechnical Engineer.

Clearing and Stripping: The construction areas should be cleared and stripped of all vegetation, trees, bushes, sod, topsoil, artificial fill, debris, asphalt, concrete and other deleterious material prior to fill placement.

Lot Fill Caps: Please refer to the *Lot Fill Caps* section of this report for specific recommendations for fill caps.

Removals: Please refer to the *Removals* section of this report for specific recommendations for removals.

Subgrade Preparation: We recommend that the subgrade for foundations, pavement areas, over-excavations, and for those areas receiving any additional fill be prepared by scarifying the upper 12 inches and moisture conditioning, as required to obtain at least optimum moisture, but not greater than 120 percent of optimum. The scarified areas shall be compacted to at least 90 percent of the maximum laboratory density, as determined by ASTM D-1557-12 compaction method. All areas to receive fill should be observed by the Geotechnical Engineer prior to fill placement.

Subgrade Inspection: Prior to placing fill, the ground surface to receive fill should be observed, tested, and approved by the Geotechnical Engineer.

6.8.3 Fill Placement

Laboratory Testing: Representative samples of materials to be utilized as compacted fill should be analyzed in a laboratory to determine their physical properties. If any material other than that previously tested is encountered during grading, the appropriate analysis of this material should be conducted.

On-Site Fill Material: The on-site soils, in our opinion, are adequate for re-use in controlled fills provided the soils do not contain any organic matter, debris, or any individual particles greater than six inches in diameter.

Import Fill Material: All imported fill shall not contain any organic matter, debris, nor any individual particles greater than six inches in diameter. The imported fill shall consist of a granular material with a non-expansive or a low expansive potential (plasticity index less than 15 percent). All imported fill materials shall be approved by the Geotechnical Engineer prior to use in controlled areas.

Rock Fragments: Rock fragments less than six inches in diameter may be utilized in the fill, provided they are not placed in concentrated pockets, surrounded with fine grained material, and the distribution of the rocks is supervised by the Geotechnical Engineer. Rocks greater than six inches in diameter should be taken off-site, placed in fill areas designated as suitable for rock disposal, or placed in accordance with the recommendations of the Geotechnical Engineer.

Subgrade Verification and Compaction Testing: Regardless of material or location, all fill material should be placed over properly compacted subgrades in accordance with the *Site Preparation* section of this report. The condition of all subgrades shall be verified by the Geotechnical Engineer before fill placement or earthwork grading begins. Earthwork monitoring and field density testing shall be performed during grading to provide a basis for opinions concerning the degree of soil compaction attained.

Fill Placement: Approved on-site or imported fill material shall be evenly placed, watered, processed, and compacted in controlled horizontal layers not exceeding eight inches in loose thickness, and each layer should be thoroughly compacted with approved equipment. All fill material should be moisture conditioned, as required to obtain at least optimum moisture, but not greater than 120 percent of optimum moisture content. The fill should be placed and compacted in horizontal layers, unless otherwise recommended by the Geotechnical Engineer.

Compaction Criteria - Shallow Fills: For fills less than 40 feet in vertical thickness, each layer shall be compacted to at least 90 percent of the maximum laboratory density for material used as determined by ASTM D-1557-12. The field density shall be determined by the ASTM D-1556-07 method or equivalent. Where moisture content of the fill or density testing yields compaction results less than 90 percent, additional compaction effort and/or moisture conditioning, as necessary, shall be performed, until the fill material is in accordance with the requirements of the Geotechnical Engineer.

Compaction Criteria - Deep Fills: For all fills greater than 40 feet in vertical thickness, the portion of the fill below a depth of 40 feet should be placed at a minimum relative compaction of at least 95 percent. Where moisture content of the fill or density testing yields compaction results less than 95 percent, additional compaction effort and/or moisture conditioning, as necessary, shall be performed, until the fill material is in accordance with the requirements of the Geotechnical Engineer.

Fill Material - Moisture Content: All fill material placed must be moisture conditioned, as required to obtain at least optimum moisture, but not greater than 120 percent. If excessive moisture in the fill results in failing results or an unacceptable "pumping" condition, then the fill should be allowed to dry until the moisture content is within the necessary range to meet the required compaction requirements or reworked until acceptable conditions are obtained.

Keying and Benching: All fills should be keyed and benched through all topsoil, slopewash, alluvium or creep material, into sound bedrock or firm material where the

slope receiving fill is steeper than 5:1 (Horizontal:Vertical) or as determined by Geotechnical Engineer. The standard acceptable bench height is four feet into suitable material. The key for side hill fills should be a minimum of 15 feet within bedrock or firm materials, with a minimum toe embedment of 2 feet into bedrock, unless otherwise specified by the Geotechnical Engineer. The recommended design is shown on the *Typical Fill Over Natural Slope Design* plan (Figure 7).

Drainage Devices: Drainage terraces and subdrain devices should be constructed in compliance with the ordinances of the controlling governmental agency, or with the recommendations of the Geotechnical Engineer and Engineering Geologist.

Slope Face - Compaction Criteria: The Contractor should be required to obtain a minimum relative compaction of 90 percent out to the finish slope face of fill slopes, buttresses and stabilization fills. This may be achieved by either overbuilding the slope a minimum of five feet, or cutting back to the compacted core, or by direct compaction of the slope face with suitable equipment, or by any other procedure which produces the required compaction. If the method of achieving the required slope compaction selected by the Contractor fails to produce the necessary results, the Contractor should rework or rebuild such slopes until the required degree of compaction is obtained, at no additional cost to the Owner or Geotechnical Engineer. Slope testing will include testing the outer six inches to three feet of the slopeface during and after placement of the fill. In addition, during grading, density tests will be taken periodically on the flat surface of the fill three to five feet horizontally from the face of the slope.

Cut-Fill Transition: Where a cut-fill transition is present beneath planned structures, the cut area should be over-excavated three feet below the bottom of proposed footings and the excavated material should be replaced as compacted fill to reduce the transition condition. These guidelines should also be followed in areas where lots are underlain by soils or rock with differential expansion potential and also for lots located above descending buttress and stabilization fills. In addition, where the sloped natural contact between the bedrock and the fill is steep, the upper portion of the natural slope may

need to be laid back to further soften transition condition, or the fill cap thickness increased.

Slope Face - Contractor's Responsibility: The Contractor should prepare a written detailed description of the method or methods he would employ to obtain the required slope compaction. Such documents should be submitted to the Geotechnical Engineer for review and comments prior to the start of grading.

Slope Face - Vegetation: All fill slopes should be planted or protected from erosion by methods specified in the geotechnical report, or required by the controlling governmental agency.

6.8.4 Grading Control

Grading Inspection: Earthwork monitoring and field density testing shall be performed by the Geotechnical Engineer during grading to provide a basis for opinions concerning the degree of soil compaction attained. The Contractor should receive a copy of the Geotechnical Engineer's *Daily Field Engineering Report* which will indicate the results of field density tests for that day. Where failing tests occur or other field problems arise, the Contractor shall be notified of such conditions by written communication from the Geotechnical Engineer in the form of a conference memorandum, to avoid any misunderstanding arising from oral communication.

Subgrade Inspection: All processed ground to receive fill and over-excavations should be inspected and approved by the Geotechnical Engineer prior to placing any fill. The Contractor should be responsible for notifying the Geotechnical Engineer when such areas are ready for inspection. Inspection of the subgrade may also be required by the controlling governmental agency within the respective jurisdictions.

Subgrade Testing: Density tests should also be made on the prepared subgrade to receive fill, as required by the Geotechnical Engineer.

Density Testing Intervals: In general, density tests should be conducted at minimum intervals of 2 feet of fill height or every 500 cubic yards. Due to the variability that can

occur in fill placement and different fill material characteristics, a higher number of density tests may be warranted to verify that the required compaction is being achieved.

6.8.5 Cut Slopes

Observation: The Engineering Geologist should observe all cut slopes. Additional recommendations may be provided at the 40-scale grading plan review stage.

Change of Conditions: If any conditions not anticipated in the preliminary report such as perched water, seepage, lenticular or confined strata of a potentially adverse nature, unfavorably inclined bedding, joints or faults planes, or areas of unstable material are encountered during grading, these conditions should be analyzed by the Engineering Geologist and Geotechnical Engineer; and recommendations should be made to treat these problems.

Protection: Cut slopes that face in the same direction as the prevailing drainage should be protected from slopewash by a non-erosive interceptor swale placed at the top of the slope.

Criteria: Unless otherwise specified in the geotechnical and geological report, no cut slopes should be excavated higher or steeper than that allowed by the ordinances of controlling governmental agencies.

Drainage Devices: Drainage terraces should be constructed in compliance with the ordinances of controlling governmental agencies, or with the recommendations of the Geotechnical Engineer or Engineering Geologist.

6.8.6 Utility Trenching and Backfill

Utility Trenching: Open excavations and excavations that are shored shall conform to all applicable Federal, State and local regulations.

Backfill Placement: Approved on-site or imported fill material shall be evenly placed, watered, processed, and compacted in controlled horizontal layers not exceeding eight inches in loose thickness, and each layer should be thoroughly compacted with

approved equipment. All fill material should be moisture conditioned, as required to obtain at least optimum moisture, but not greater than 120 percent of optimum moisture content. The fill should be placed and compacted on a horizontal plane, unless otherwise recommended by the Geotechnical Engineer.

Backfill Compaction Criteria: Each layer of utility trench backfill shall be compacted to at least 90 percent of the maximum laboratory density determined by ASTM D-1557-12. The field density shall be determined by the ASTM D-1556-07 method or equivalent. Where moisture content of the fill or density testing yields compaction results less than 90 percent, additional compaction effort and/or moisture conditioning, as necessary, shall be performed, until the compaction criteria is reached.

Exterior Trenches Adjacent to Footings: Exterior trenches, paralleling a footing and extending below a 1H: 1V plane projected from the outside bottom edge of the footing should be compacted to 90 percent of the laboratory standard. Sand backfill, unless it is similar to the in-place fill, should not be allowed in these trench backfill areas. Density testing, along with probing, should be accomplished to verify the desired results.

Pipe Bedding: We recommend that a minimum of 6 inches of bedding material should be placed in the bottom of the utility trench. All bedding materials shall extend at least 4 inches above the bottom of utilities which require protection during subsequent trench backfilling. All trenches shall be wide enough to allow for compaction around the haunches of the pipe or materials, such as pea gravel, or controlled density fill (CDF) shall be used below the spring line of the pipes to eliminate the need for mechanical compaction in this portion of the trenches.

Groundwater Migration: Backfilled utility trenches may act as French drains to some extent, and considerable groundwater flow along utility bedding and backfill should be expected. Wherever buried utilities, or structures which they may intersect, could be adversely affected by such drainage, provisions shall be made to collect groundwater migrating along the trench lines. These situations include where buried utilities enter buildings, particularly where they enter below grade mechanical rooms, and where

buried utilities enter junction boxes or switching stations that are intended to remain dry. Mitigation measures include, but are not limited to, placement of perforated drain pipes below and continuous with bedding materials, and placement of seepage barriers such as lean mix concrete or controlled density fill (CDF).

6.8.7 Construction Considerations

Erosion Control: Erosion control measures, when necessary, should be provided by the Contractor during grading and prior to the completion and construction of permanent drainage controls.

Compaction Equipment: It is also the Contractor's responsibility to have suitable and sufficient compaction equipment on the project site to handle the amount of fill being placed and the type of fill material to be compacted. If necessary, excavation equipment should be shut down to permit completion of compaction in accordance with the recommendations contained herein. Sufficient watering devices/equipment should also be provided by the Contractor to achieve optimum moisture content in the fill material.

Final Grading Considerations: Care should be taken by the Contractor during final grading to preserve any berms, drainage terraces, interceptor swales, or other devices of a permanent nature on or adjacent to the property.

6.9 Foundation Design Recommendations

In order to minimize the potential effects of seismic activity, expansive soils, and/or hydroconsolidation, we recommend either a post-tensioned slab foundation and/or mat foundation system be utilized for the proposed structures. Conventional foundation system consisting of spread footings and slab-on-grade floors are also provided as an alternative. We offer the following recommendations and comments for post-tension slab foundation, mat foundation, conventional spread footings, and conventional slab-on-grade floors.

6.9.1 Post-Tension Slab Foundation

These post-tensioned slabs should be designed in accordance with the recommendations of either the California Foundation Slab Method or Post-Tensioning Institute. Based on review of laboratory data for the on-site materials, the average soil modulus of subgrade reaction, K, to be used for design is 100 pounds per cubic inch. Specific recommendations for the design of California Foundation Slab and Post Tension Institute methods are presented below. A surface bearing value of 1,000 pounds per square foot can also be used in design.

1. **California Foundation Slab (Spanability) Method**

It is recommended that slabs be designed for a free span of 15 feet regardless of the expansion index of the soil. From a soil expansion/shrinkage standpoint, a common contributing factor to distress of structures using post-tensioned slabs is fluctuation of moisture in soils underlying the perimeter of the slab, compared to the center, causing a "dishing" or "arching" of the slabs. To mitigate this possibility, a combination of soil presaturation and construction of a perimeter "cut off" wall should be employed.

All slab foundation areas should be moisture conditioned to at least optimum moisture, but no more than 5 percent above optimum moisture for a depth of at least 12 inches below subgrade low EI soil, 18 inches for medium EI soil, and 24 inches for high EI soil. A continuous perimeter curtain wall should extend to a depth of at least 12 inches below exterior grade for low EI soil, 18 inches for medium EI soil, and 24 inches for high EI soil to preserve this moisture. The cut-off walls may be integrated into the slab design or independent of the slab and should be a minimum of 6 (six) inches wide.

2. **Post-Tensioning Institute Method**

Post-tensioned slabs should have sufficient stiffness to resist excessive bending due to non-uniform swell and shrinkage of subgrade soils. The differential movement can

occur at the corner, edge, or center of slab. The potential for differential uplift can be evaluated using design specifications of the Post-Tensioning Institute. The following table presents suggested minimum coefficients to be used in the Post-Tensioning Institute design method.

Suggested Coefficients	
Thornthwaite Moisture Index	-20 in/yr
Thornthwaite Moisture Index	9 (feet)
Constant Soil Suction: (pf)	3.8

The coefficients are considered minimums and may not be adequate to represent worst case conditions such as adverse drainage, excess watering, and/or improper landscaping and maintenance. The above parameters are applicable provided structures have gutters and downspouts, yard drains, and positive drainage is maintained away from structure perimeters. Also, the values may not be adequate if the soils below the foundation become saturated or dry such that shrinkage occurs. The parameters are provided with the expectation that subgrade soils below the foundations are maintained in a relatively uniform moisture condition. Responsible irrigation of landscaping adjacent to the foundation must be practiced since over-irrigation of landscaping can cause problems. Therefore, it is important that information regarding drainage, site maintenance, settlements and affects of expansive soils be passed on to future homeowners.

Based on the above parameters, the following values were obtained from the Post Tensioning Institute Design manual. If a stiffer slab is desired, higher values of ym may be warranted.

Expansion Index of Soil Subgrade	Low EI	Medium EI	High EI
em center lift	9.0 feet	8.5 feet	6.5 feet
em edge lift	4.7 feet	4.5 feet	3.5 feet
Ym center lift	0.34 inch	0.56 inch	0.58 inch
Ym edge lift	0.48 inch	0.77 inch	1.23 inch

Deepened footings/edges around the slab perimeter must be used as indicated above to minimize non-uniform surface moisture migration (from an outside source) beneath the slab. An edge depth of at least 12 inches should be considered for low EI soil, 18 inches for medium EI soil, and 24 inches for high EI soil. The bottom of the deepened footing/edge should be designed to resist tension, using cable or reinforcement per the Structural Engineer. Other applicable recommendations in the referenced reports should be adhered to during the design and construction phase of the project.

3. Mat Foundation

Mat foundation could either be designed as a beam on an elastic foundation or using the method of static equilibrium. The static equilibrium method assumes the mat moves as a rigid body when the loads are applied and that the reaction pressures are distributed linearly across the bottom of the mat. For mat foundation, the criteria under post-tensioned slab may be used for design.

The aforementioned parameters are applicable provided that the recommendations in the *Drainage* section of this report are followed.

6.9.2 Conventional Spread Footings

We offer the following alternate foundation recommendations and comments for purposes of footing design and construction.

Bearing Subgrades: All footings should be constructed on firm, unyielding compacted fill. All compacted fill should be compacted to at least 90 percent of the Modified Proctor maximum laboratory density, as determined by ASTM D-1557-12 compaction method.

Subgrade Preparation: Pre-moistening of all areas to receive concrete is recommended. The moisture content of the subgrade soils should be equal to or greater than optimum moisture, and verified by the Geotechnical Engineer to a maximum depth of 18 inches below adjacent grade in the footing areas within 48

hours of concrete placement. Footings subgrades shall be prepared in accordance with the *Grading* section of this report.

Subgrade Verification: All footing subgrades should consist of firm, unyielding compacted fill. Under no circumstances should footings be cast atop loose, soft, or slough, debris, existing artificial fill, unprocessed alluvium, or surfaces covered by standing water. We recommend that the condition of all subgrades be verified by the Geotechnical Engineer before any concrete is placed.

Footing Depth and Width: Footings should be continuous and be founded at a minimum depth of 12 inches and 18 inches below the lowest adjacent ground surface for one- and two-story structures, respectively, and should have a minimum width of 15 inches. Footings should be reinforced according to structural design.

Bearing Pressures: The allowable bearing capacity values shown in Table 7 include dead and live loads and may be used for design of footings and foundations. All foundations should be founded in firm, unyielding certified compacted fill and should be reinforced according to structural design. The bearing values may be increased by one-third when considering short duration loading conditions, such as seismic or wind loads.

TABLE 7
BEARING CAPACITY VALUES

Bearing Subgrade	Minimum Embedment Depth (inches)	Allowable Bearing Capacity (psf)	Bearing Capacity Increase per Foot Deeper (%)	Bearing Capacity Increase per Foot Wider (%)	Maximum Allowable Bearing Capacity (psf)
Compacted Fill	12	1,500	20	10	3,000

Lateral Capacity: To resist lateral loads, the allowable passive earth pressures shown in Table 8, expressed as an equivalent fluid pressure, may be used on that portion of shallow foundations which have a minimum embedment as previously recommended. When combining passive pressure and frictional resistance, the passive pressure component should be reduced by one-third.

TABLE 8 LATERAL BEARING PRESSURE VALUES			
Soil Type	Allowable Passive Pressure(pcf)	Maximum Allowable Passive Pressure(psf)	Coefficient of Friction (Concrete/Soil)
Compacted Fill	250	2,500	0.4

6.10.3 Conventional Slab-On-Grade Floor

We offer the following alternate floor slab recommendations and comments for purposes of slab-on-grade floor design and construction:

Reinforcement: Concrete slabs should be reinforced with at least No. 4 rebar at 16 inches on-center in both directions. All slab reinforcement should be properly positioned at mid-height in the slab during placement of concrete.

Thickness: The design engineer should determine the actual thickness of the slabs based on proposed loadings and use. However, minimum slab thickness of four inches is recommended.

Moisture Barrier: Concrete slabs should be underlain with a minimum 6 mil polyvinyl chloride membrane vapor barrier with a minimum overlap of 12 inches in all directions. This membrane should be sandwiched between two, two-inch layers of sand.

Slab Sectioning: To minimize transgression of shrinkage cracks, slabs must not exceed 20-foot sections. Sectioning can be performed by expansion joints, plastic joints, saw cutting, or proper tooling during concrete placement. It is suggested that slabs not be tied structurally to heavily loaded walls or columns, until most of the dead loads are in place to permit minor differential settlement.

Subgrade Preparation: All areas to receive concrete should be presaturated to a depth of 18 inches, such that the soil within this zone is approximately at optimum moisture to not more than 5 percent above optimum moisture content. The Geotechnical Engineer should verify all subgrades that are pre-soaked within 24 hours of concrete placement.

6.9.4 Settlement

Assuming the foundation elements are founded in the recommended bearing soils, we estimate that total static settlement will not exceed ¾ inch, with differential settlements on the order of one-half the total settlement. The majority of the settlement will most likely occur during the initial loading of the foundation; however, if any disturbed, loose, yielding, or soft soils are left within the footing area prior to concrete placement, settlements greater than predicted herein may be realized.

Additional foundation settlement can also occur due to leakage from any appurtenant plumbing; therefore, it is imperative that all underground plumbing fixtures be *absolutely* leak-free.

Once foundation plans, are available which include loading details of total dead and real live loads, they should be reviewed by the Geotechnical Engineer to ensure that total and/or differential settlements are within tolerable limits.

6.10 Backfilled Retaining Walls

Footing Depths: The retaining walls should have a minimum embedment depth of 18 inches and a minimum width of 15 inches.

Foundation Subgrade: All retaining wall foundation subgrades should consist of firm, unyielding certified fill material or competent bedrock. Under no circumstances should footings be cast atop loose or soft soil, slough, debris, existing uncontrolled fill, or surfaces covered by standing water. We recommend that the condition of all subgrades be verified by the Geotechnical Engineer prior to concrete placement.

Wall Drainage: To preclude the build-up of hydrostatic pressure, we recommend that a four-inch-diameter perforated drain pipe be installed behind the heel of the wall and that a curtain drain be placed behind the entire wall. This curtain drain should consist of pea gravel, washed rock, or a mixture of these materials wrapped in approved filter material, extending outward at least one foot from the wall and extending from the footing drain

upward to within about three feet of the ground surface. The enclosed *Retaining Wall Backfill and Subdrain Detail* (Figure 9) illustrates the recommended drainage detail behind backfilled retaining walls. In areas where the foundation is founded in undisturbed bedrock, a subdrain should be provided. The backside of all subterranean walls should be waterproofed.

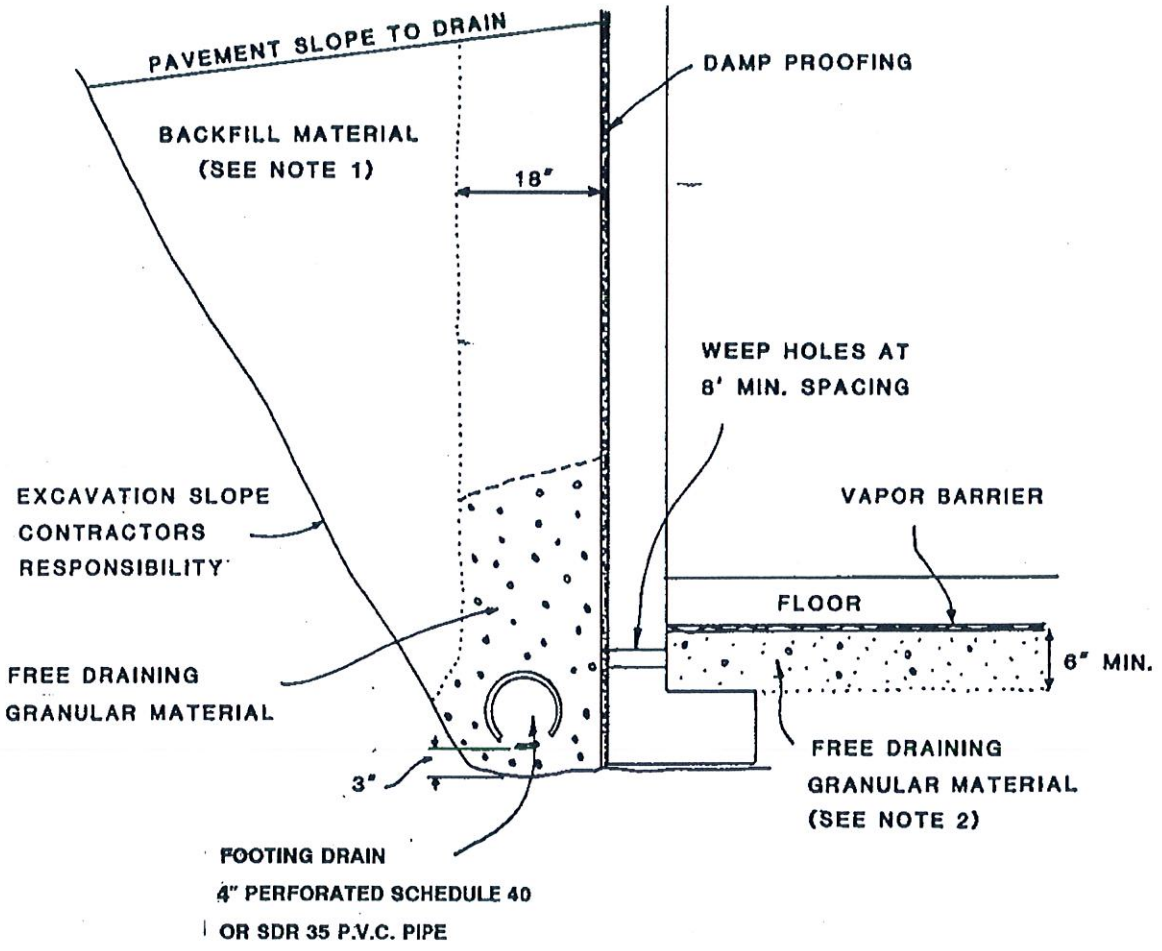
Backfill Soil: To allow the dissipation of potential hydrostatic pressure behind the retaining wall, we recommend that all retaining wall backfill placed behind the curtain drain should consist of clean, free-draining, granular material. On-site granular soils can be used for this purpose provided their moisture content is near optimum. In the latter case, a geotextile should be placed between the curtain drain and backfill to prevent fines infiltration into the drainage rock.

Backfill Compaction: To prevent the build-up of lateral soil pressures in excess of the recommended design pressures, overcompaction of the fill behind the wall should be avoided; however, a lesser degree of compaction may permit excessive post-construction settlements. Backfill above a 45-degree plane projected upward from the base should be placed in horizontal lifts not exceeding 8 inches in loose depth and compacted by small, hand-operated compaction equipment. Remaining backfill should be compacted in accordance with the compaction recommendations provided in the *Fill Placement* section of this report.

Grading and Capping: To retard the infiltration of surface water into the wall backfill soils, the backfill surface of exterior walls should be adequately sloped to drain away from the wall. We also recommend that the backfill surface directly behind the wall be capped with asphalt, concrete, or three feet of low-permeability soil.

Applied Loads: Overturning and sliding loads applied to retaining walls can be classified as active, at-rest, surcharge, and hydrostatic pressures.

- *Active and At-Rest Pressures*: Yielding (cantilever) retaining walls should be designed to withstand an appropriate *active* lateral earth pressure, whereas non-yielding (restrained) walls should be designed to withstand an appropriate *at-rest*



BACKFILLED WALL

NOTE NO.1 – IF WET CONDITIONS RENDER ON-SITE SOIL UNSUITABLE FOR REQUIRED DEGREE OF COMPACTION , BACKFILL THE ZONE SHOWN ABOVE WITH FREE DRAINING GRANULAR SOIL WITH NOT MORE THAN 5% (BY WEIGHT BASED ON MINUS 3/4" PORTION PASSING NO.200 SIEVE (BY WET SIEVING) WITH NO PLASTIC FINES.

NOTE NO.2 – FREE DRAINING GRANULAR MATERIAL BENEATH FLOOR SLAB SHOULD BE HYDRAULICALLY CONNECTED TO THE FOOTING DRAIN.

GeoSoils Consultants Inc.
GEOTECHNICAL · GEOLOGIC · ENVIRONMENTAL

BACKFILLED WALL DETAIL

DATE 4/2017 | W.O. NO. 6946

Geotechnical • Geologic • Environmental

FIGURE 9

lateral earth pressure. These pressures act over the entire back of the wall and vary with the backslope inclination. For retaining walls up to 15 feet in height with various backslope angles, we recommend using the active and at-rest pressures (given as equivalent fluid unit weights) provided in Table 9.

TABLE 9
RETAINING PRESSURE
UP TO 15 FEET IN HEIGHT

Backslope Angle	Static Active Pressure (pcf)	Static At-Rest Pressure (pcf)
Level	30	45
5H:1V	33	50
4H:1V	35	55
3H:1V	38	60
2H:1V	43	67
1.5H:1V	55	85

- Seismic Pressures For Retaining Walls

  The following seismic design criteria must be incorporated in to the design of the retaining walls:

  $\Delta P_{AE}=3/8\gamma H^2 k_h$

  H = Height of wall

  $K_h = 0.83=0.4S_{DS}$

  γ = 120 pcf

  ΔP_{AE} + 3/8 (120 pcf)(0.83)H^2 = 37.1H^2

  ΔP_{AE} acts at 0.6H above the wall base.

- *Surcharge Pressures*: Any anticipated, superimposed loading (i.e., upper retaining walls, traffic surcharge or other structures, etc.) within a 45-degree plane projected upward from the wall bottom, except retained earth, shall be considered as surcharge and provided for in the design. For a uniformly distributed load behind the wall, a corresponding uniform distributed lateral soil pressure equal to 30 percent of the surcharge should be added to the equivalent

fluid pressure. A vertical component equal to one-third of the horizontal force so obtained may be assumed at the plane of application of the force.

- *Hydrostatic Pressures*: If groundwater is allowed to saturate the backfill soils, hydrostatic pressures will act against a retaining wall. However, if an adequate drainage system is included with each retaining wall, we do *not* expect that hydrostatic pressures will develop.

Resisting Forces: Active pressures, at-rest pressures, seismic pressures, and surcharge pressures for conventional retaining wall foundations are resisted by a combination of passive lateral earth pressure, base friction, and subgrade bearing capacity. Passive pressure acts over the embedded front of the wall (neglecting the upper 1 foot for paved foreslopes, or the upper 2 feet for soil foreslopes) and varies with the foreslope inclination, whereas base friction and bearing capacity act along the bottom of the footings. For retaining walls with a level foreslope and zero hydrostatic pressure behind the wall, we recommend the resisting design values presented in Table 10.

TABLE 10
RECOMMENDED RESISTING FORCES

Design Parameters	Allowable Value	
	Compacted Fill	Bedrock
Bearing Capacity	1,500 psf	2,500 psf
Maximum Bearing Capacity	3,000 psf	5,000 psf
Passive Pressure	250 pcf	350 pcf
Base Friction Coefficient	0.4	0.40

The recommended bearing capacities in the table above may be increased by 20 percent for each additional foot of depth deeper than the minimum recommended depth of 18 inches, plus 10 percent for each additional foot of width wider than the minimum recommended width of 15 inches.

6.11 Temporary and Permanent Slopes and Excavations

We offer the following recommendations and construction considerations for temporary and permanent slopes and excavations.

Safety: Temporary excavation slope stability is a function of many factors including soil type, density, cut inclination, depth, the presence of groundwater, and the length of time that the cut is to remain open. As the cut is deepened, or as the length of time an excavation is open, the likelihood of bank failure increases. For this reason, maintenance of safe slopes and worker safety should remain the responsibility of the contractor, who is present at the site, able to observe changes in the soil conditions, and monitor the performance of the excavation.

Maintenance: If seepage or surface runoff is not controlled, flatter temporary slopes would be necessary. Larger cobbles and boulders should be scaled from the excavation sidewalls prior to worker entry to prevent injury to workmen from falling rocks. In all cases, cut slopes and any excavation shoring should conform to applicable Federal, State and/or local safety guidelines.

Cut/Fill Slopes: We tentatively recommend that temporary and permanent cut and fill slopes in natural soil, bedrock and compacted fill soils not exceed the inclinations shown in Table 11.

TABLE 11
MAXIMUM SLOPE INCLINATIONS

Soil Type	Maximum Inclination (Horizontal:Vertical)	
	Temporary*	Permanent
Natural Soil/Compacted Fill	1H:1V*	2H:1V
Bedrock	1H:1V*	2H:1V

* or as shown on the geologic cross-sections

Excavations: Shallow excavations used for construction that are less than 4 feet in depth and are made in properly engineered fill or firm native soils should stand with vertical sides. Excavations deeper than 4 feet should be sloped at angles provided in Table 11 or shored. All open excavations and excavations that are shored shall conform to all applicable Federal, State and Local regulations.

Surcharge: Surcharge loads should be setback from the top of temporary excavations a minimum horizontal distance of ten feet.

Excavation Inspection: The soils exposed in temporary excavation slopes should be observed by the Geotechnical Engineer so that modifications of the slopes can be made if variations in soil conditions occur.

Limitations: The values listed in Table 11 assume that the slopes will be protected from erosion and that significant drainage will not occur over the face of the slope. It is further assumed that no loads will be imposed above the slope within one half the slope height from the slope face. The temporary cut/fill slopes should be stabilized and/or supported within three weeks. In no conditions should the temporary excavations exceed those shown on the geologic cross-sections.

6.12 Desilting/Infiltration Basins

Five water desilting basins are proposed on the site (Lot 38 through lot 42) and will be maintained by HOA. In addition, a Water Quality/Infiltration Basin is proposed on Lot 43 and is also to be maintained by the HOA. Large diameter drainage pipes will be provided in each of the desilting basins and will outlet in the proposed Water Quality/Infiltratin Basin on Lot 43. Infiltration testing will be performed on the Water Quality Basin when access is available and the results will be provided to the Project Civil Engineer. Due to its remote location and distance from access roads, it is not currently feasible to provide enough water to the area to perform the full testing in accordance with the latest County requirements.

6.13 On-Site Drainage

Seasonal precipitation and/or landscape water should not be allowed to pond within the site, especially next to slopes and foundations of any structures. Surface runoff should be collected and disposed of in such a manner as to prevent concentrated erosion. Roof gutters and yard drains should be provided. All pad drainage should be directed toward the street or an approved water course area swale via non-erosive channel, pipe and/or dispersions devices. We recommend that all planters proposed adjacent to structures be self-contained, provided with a subdrain system, and/or allowed to have positive drainage away from structure to drain excess landscape water.

We recommend that lot drainage be verified after house construction and that notices be posted cautioning homeowners not to modify drainage in any way without approval by the County of Los Angeles, Grading Department. At no time should drainage be directed toward any descending slope or allowed to pond. All slope or fill backdrains should continue to remain unobstructed and be allowed to drain freely.

Leakage from any of the appurtenant plumbing will create an artificial groundwater condition which could likely render settlement or slope stability problems; therefore, it is imperative that all underground plumbing fixtures be *absolutely* leak-free.

LIMITATIONS

The findings and recommendations of this report were prepared in accordance with generally accepted professional geotechnical engineering principles and practice for the County of Los Angeles at this time. We make no other warranty, either express or implied. The conclusions and recommendations contained in this report are based on site conditions disclosed in our subsurface investigation and the referenced reports. However, soil/rock conditions can vary significantly between borings, trenches, and natural outcrops, therefore, further refinements of our recommendations contained herein may be necessary due to changes in the building plans or what is encountered during site grading.

The recommendations provided in this report are applicable for preliminary development planning for the referenced lots provided that surface water will be kept from infiltrating into the subgrade adjacent to the house foundation system. This may include, but not be limited to rain water, roof water, landscape water and/or leaky plumbing. The lots are to be fine graded at the completion of construction to include positive drainage away from the structure and roof water will be collected via gutters, downspouts, and transported to the street in buried drain pipes. Homebuyers should be cautioned against constructing open draining planters adjacent to the houses, or obstructing the yard drainage in any way.
Since our investigation was based on the site conditions observed, selective laboratory testing, and engineering analyses, the conclusions and recommendations contained herein

are professional opinions. Further, these opinions have been derived in accordance with standard engineering practices, and no warranty is expressed or implied.

CLOSURE

We appreciate this opportunity to be of continued service to you. If you have any questions regarding the content of this report or any other aspects of the project, please do not hesitate to contact us.

Very truly yours,

GEOSOILS CONSULTANTS, INC.

RUDY F. RUBERTI	KAREN L. MILLER	ELIZETTE VIRAMONTES
CEG 1708	GE 2257	Staff Geologist

RFR.KLM.JG.W:Updated G&G Eng. Rev.

Encl: References
Plate 1, Geologic Map
Plates 2A through 2B, Geologic Cross-Sections
Appendix A, Field Exploration Procedures, Boring Logs, and Test Pit Logs
Appendix B, Laboratory Testing Procedures and Results
Plates SH-1 through SH-5, Shear Test Diagrams
Plates SH-SUM 1 and SH –SUM 2, Shear Summaries
Appendix C, Slope Stability Analyses

cc: (2) Addressee
(2) Civil Drafting and Design

MDN 19085

REFERENCES

1. Debblee, T. W., Jr. June 1992, "Geologic Map of the Oat Mountain and Canoga Peak (North ½) Quadrangles, Los Angeles County, California"

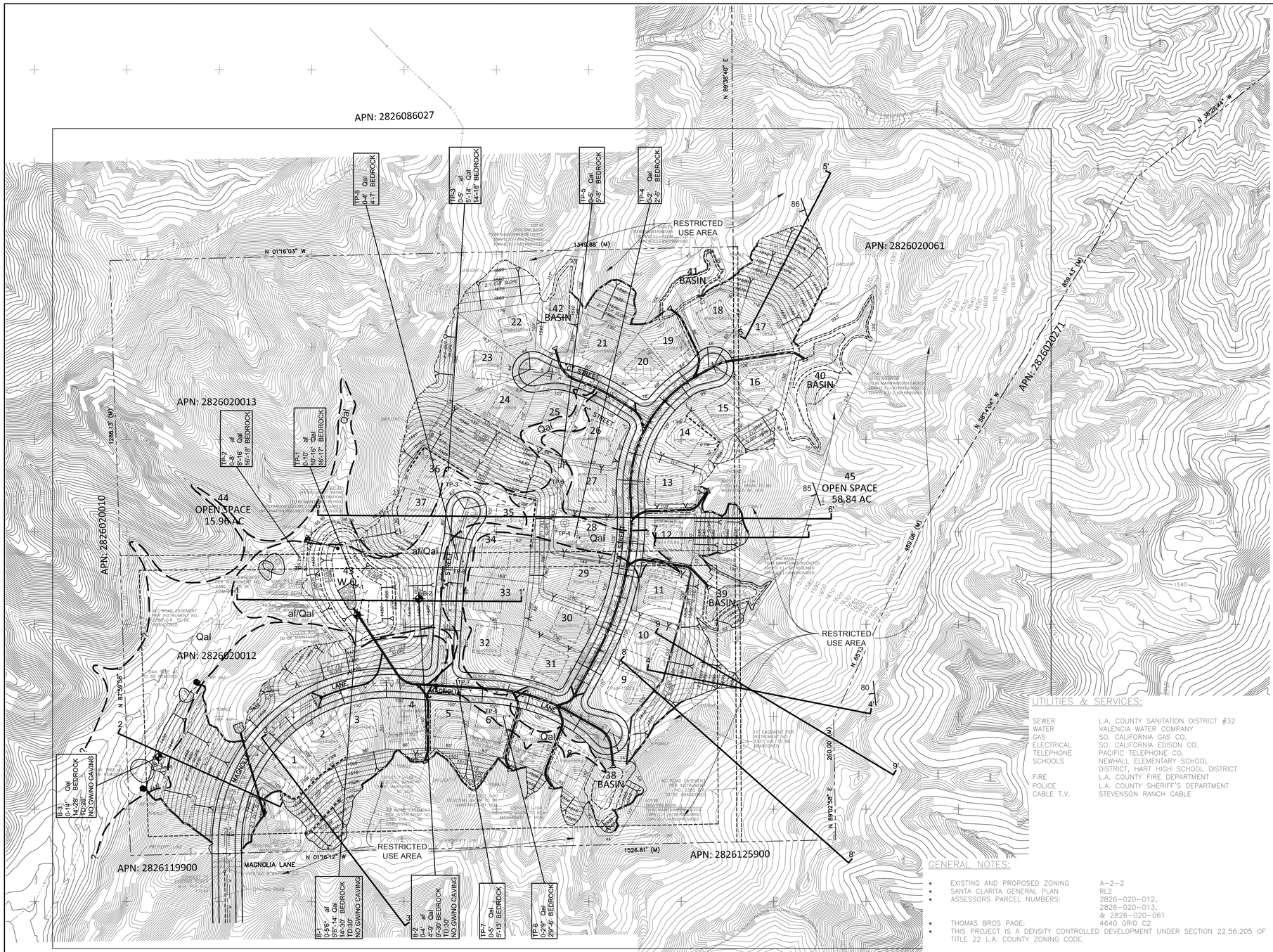
2. Yerkes, R. F. and Campbell, R. H., 1995, "Preliminary Geologic Map of the Newhall 7.5' Quadrangle, Southern California"

GSC GeoSoils Consultants Inc.
6634 Valjean Avenue
Van Nuys, CA 91406

GEOLOGIC MAP
TT 52905
JEMSTREET PROPERTIES

WORK ORDER	DATE	SCALE
6946	3/2017	1" = 80'
REVISED	PLATE 1	

MDN 19085



UTILITIES & SERVICES:

SEWER	L.A. COUNTY SANITATION DISTRICT #32
WATER	VALENCIA WATER COMPANY
GAS	SO. CALIFORNIA GAS CO.
ELECTRICAL	SO. CALIFORNIA EDISON CO.
TELEPHONE	PACIFIC TELEPHONE CO.
SCHOOLS	NEWHALL ELEMENTARY SCHOOL DISTRICT, HART HIGH SCHOOL DISTRICT
FIRE	L.A. COUNTY FIRE DEPARTMENT
POLICE	L.A. COUNTY SHERIFF'S DEPARTMENT
CABLE T.V.	STEVENSON RANCH CABLE

GENERAL NOTES:

- EXISTING AND PROPOSED ZONING A-2-2
- SANTA CLARITA GENERAL PLAN RL2
- ASSESSORS PARCEL NUMBERS: 2826-020-012, 2826-020-013, & 2826-020-061
- THOMAS BROS PAGE: 4640 GRID C2
- THIS PROJECT IS A DENSITY CONTROLLED DEVELOPMENT UNDER SECTION 22.56.205 OF TITLE 22 L.A. COUNTY ZONING CODE.

SITE DATA:

- SITE IS VACANT.
- GROSS ACREAGE=94.38 ACRES
- AVERAGE RESIDENTIAL LOT SIZE: 2.4 ACRES (DENSITY CONTROLLED DEVELOPMENT SECTION 22.56.205)
- TOTAL RESIDENTIAL LOTS: 37 (LOTS 1 THRU 37)
- OPEN SPACE & PUBLIC FACILITY LOTS 38 THRU 45
- TOTAL: 45 LOTS
- MAXIMUM SLOPE GRADE: 2 FT HORIZONTAL TO 1 FT VERTICAL
- DEVELOPER REQUESTS PERMISSION TO RECORD MULTIPLE FINAL MAPS PER SECTION 66456.1 CALIFORNIA GOVT. CODE (SUBDIVISION MAP ACT)
- OAK TREES TO REMAIN
- GRADING PROPOSED: RAW CUT–375,000 CUBIC YARDS
  RAW FILL–375,000 CUBIC YARDS

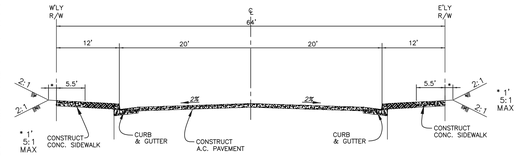
CIRCULATION:

- ALL STREETS TO BE PUBLIC RIGHTS–OF–WAY.
- HOME OWNERS ASSOCIATION TO BE ESTABLISHED TO MAINTAIN ANY COMMON OPEN SPACE LOTS CREATED.
- DEVELOPER REQUESTS RIGHT TO ADJUST LOT LINES TO THE SATISFACTION OF THE COUNTY OF LOS ANGELES.
- REQUEST RIGHT TO CREATE ADDITIONAL OPEN SPACE LOTS PRIOR TO RECORDATION OF FINAL MAP(S).
- RETURN RADII OF 13 FEET AT ALL LOCAL STREET INTERSECTIONS.
- CUL–DE–SAC DESIGN PER L.A.C.O. STD. PLATE 12–01, 2–04

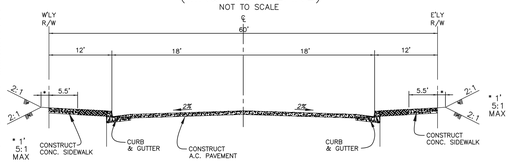
EXPLANATION

af	ARTIFICIAL FILL
Qal	ALLUVIUM
Qts	SAUGUS FORMATION
	APPROXIMATE GEOLOGIC CONTACT
A A'	LINE OF GEOLOGIC SECTION
	BEDDING ATTITUDE
B-3	APPROXIMATE LOCATION OF BORING
TP-1	APPROXIMATE LOCATION OF TEST PIT

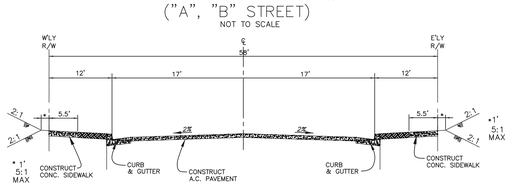
80 40 0 40 80 160
GRAPHIC SCALE
SCALE : 1"=80'



TYPICAL SECTION 64' R/W **
(MAGNOLIA LANE)
NOT TO SCALE



TYPICAL SECTION 60' R/W **
("A", "B" STREET)
NOT TO SCALE



TYPICAL SECTION 58' R/W **
("C" STREET)
NOT TO SCALE

Permission is requested to use the alternate street section on all local streets.

LOT AREA SUMMARY:

LOT NO.	NET AREA FT²	GROSS AREA FT²	TYPE
1	10355	10355	SINGLE FAMILY DETACHED
2	10510	10510	SINGLE FAMILY DETACHED
3	10365	10365	SINGLE FAMILY DETACHED
4	10152	10152	SINGLE FAMILY DETACHED
5	10179	11331	SINGLE FAMILY DETACHED
6	10462	10462	SINGLE FAMILY DETACHED
7	10328	11558	SINGLE FAMILY DETACHED
8	10011	11278	SINGLE FAMILY DETACHED
9	12435	12435	SINGLE FAMILY DETACHED
10	13142	13142	SINGLE FAMILY DETACHED
11	12129	13222	SINGLE FAMILY DETACHED
12	11178	12250	SINGLE FAMILY DETACHED
13	12036	12036	SINGLE FAMILY DETACHED
14	12498	12498	SINGLE FAMILY DETACHED
15	11278	11278	SINGLE FAMILY DETACHED
16	11534	11534	SINGLE FAMILY DETACHED
17	11737	13715	SINGLE FAMILY DETACHED
18	11817	11817	SINGLE FAMILY DETACHED
19	10001	11596	SINGLE FAMILY DETACHED
20	11348	11348	SINGLE FAMILY DETACHED
21	11478	11478	SINGLE FAMILY DETACHED
22	12135	12135	SINGLE FAMILY DETACHED
23	16449	16449	SINGLE FAMILY DETACHED
24	12718	12718	SINGLE FAMILY DETACHED
25	14176	14176	SINGLE FAMILY DETACHED
26	14887	14887	SINGLE FAMILY DETACHED
27	12962	12965	SINGLE FAMILY DETACHED
28	14059	14095	SINGLE FAMILY DETACHED
29	13242	13309	SINGLE FAMILY DETACHED
30	13012	13066	SINGLE FAMILY DETACHED
31	13277	12049	SINGLE FAMILY DETACHED
32	13793	14575	SINGLE FAMILY DETACHED
33	15445	14606	SINGLE FAMILY DETACHED
34	16624	15631	SINGLE FAMILY DETACHED
35	28923	30318	SINGLE FAMILY DETACHED
36	22179	26578	SINGLE FAMILY DETACHED
37	13296	11326	SINGLE FAMILY DETACHED
38	--	18689	BASIN LOT
39	--	23591	BASIN LOT
40	--	45095	BASIN LOT
41	--	12936	BASIN LOT
42	--	17669	BASIN LOT
43	--	77541	WATER QUALITY BASIN LOT
44	--	695071	OPEN SPACE
45	--	2562832	OPEN SPACE

UNDERGROUND SERVICE ALERT
call: TOLL FREE
1-800-422-4133
CALL TWO WORKING DAYS BEFORE YOU DIG

REVISION BLOCK

REV#	APPR	DATE	REVISION DESCRIPTION	PLAN CITY	APPR	DATE

PREPARED BY:
Design & Drafting inc.
889 Poplar Drive, Unit C
Moorpark, California 93021
Phone: 805-426-8222
Fax: 805-426-8016
email: CDD@pixeldesignanddrafting.com
RAD ASSUMPTION R.E.C. C51299
DATE

CANYON VIEW ESTATES
MAJOR LAND DIVISION
VESTING TENTATIVE TRACT NO. 74650
LOCATED IN THE UNINCORPORATED TERRITORY OF THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

SHEET 1 OF 2 SHTS
SCALE: AS NOTED

Plot Date: Wed, April 12, 2017

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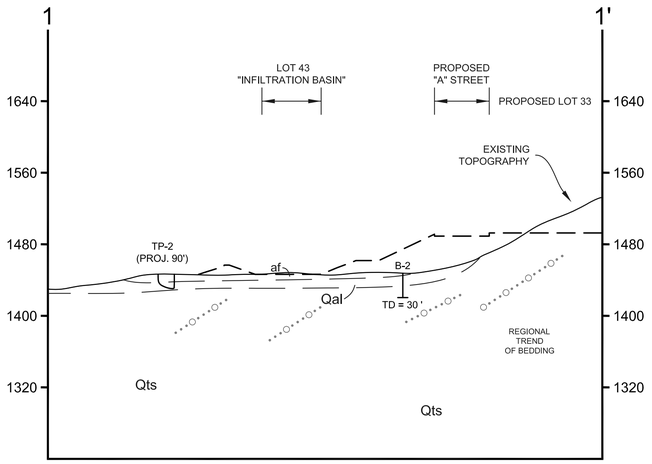

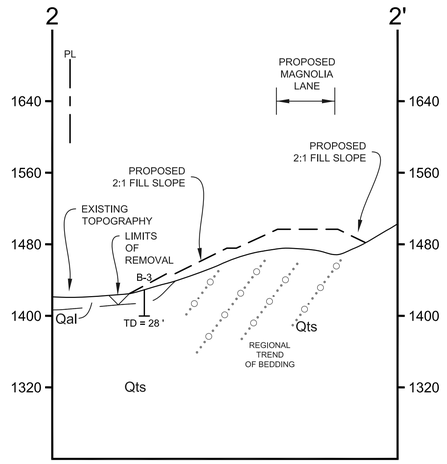

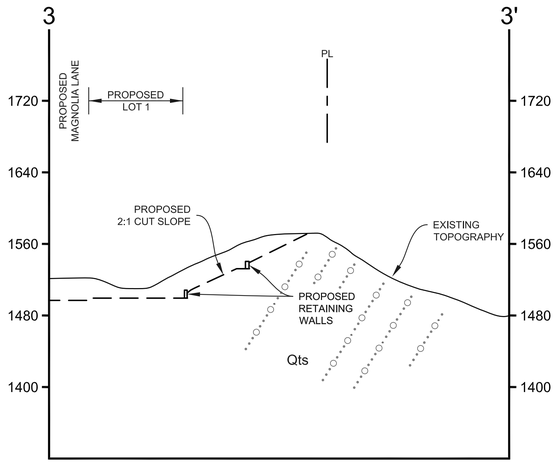

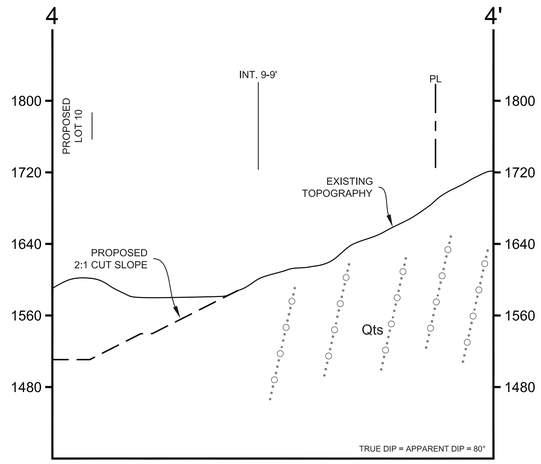

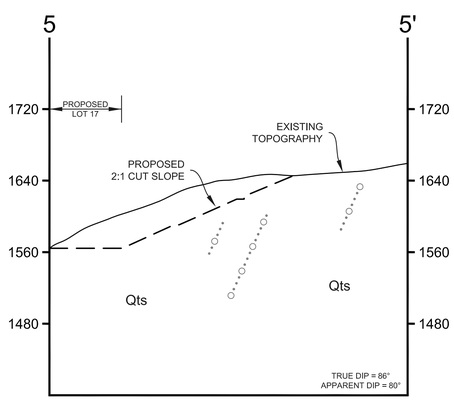

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6634 Valjean Avenue
Van Nuys, CA 91406

GEOLOGIC MAP
TT 52905
JEMSTREET PROPERTIES

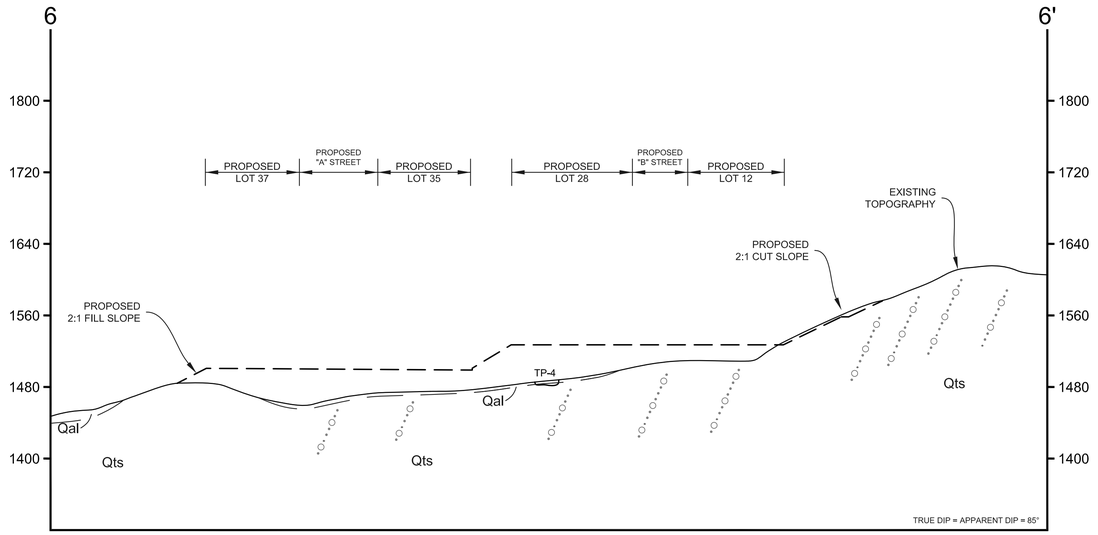
WORK ORDER	DATE	SCALE
6946	3/2017	1" = 80'

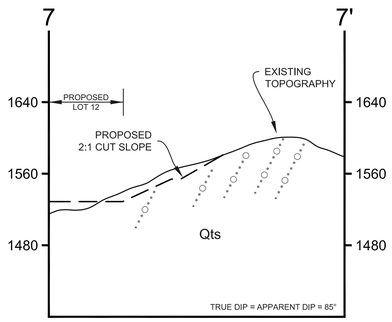
REVISED

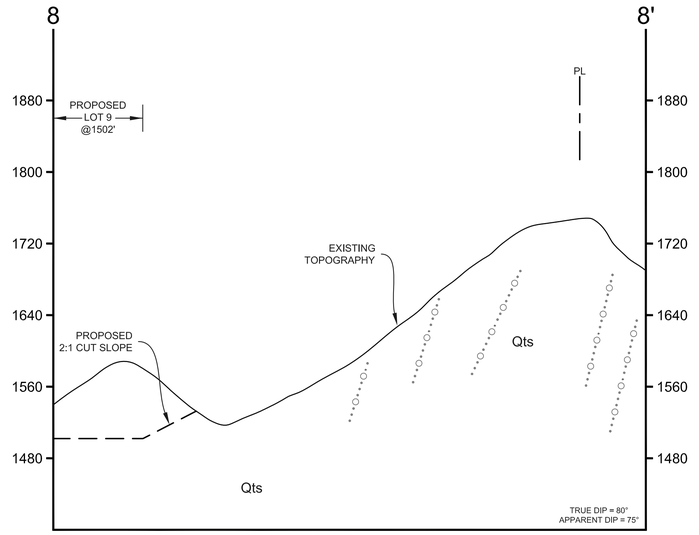
PLATE 2A

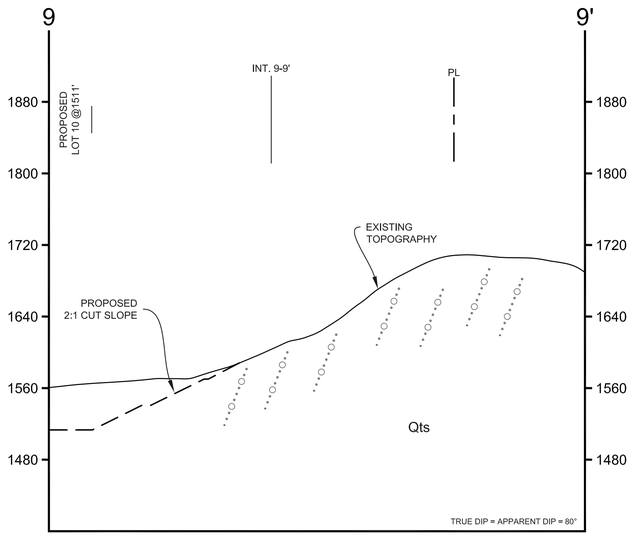
MDN 19085

X:\2001 w.o\gsc-cad\6946\Current\PLATE 2 GEOLOGIC CROSS SECTIONS 3-24-17.dwg, 4/12/2017 3:01:33 PM, Adobe PDF









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6634 Valjean Avenue
Van Nuys, CA 91406

GEOLOGIC MAP
TT 52905
JEMSTREET PROPERTIES

WORK ORDER	DATE	SCALE
6946	3/2017	1" = 80'

REVISED

MDN 19085

PLATE 2B

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April 17, 2017
W.O. 6946

APPENDIX A

FIELD EXPLORATION, BORING LOGS, AND TEST PIT LOGS

April 17, 2017
W.O. 6946

APPENDIX B

FIELD EXPLORATION PROCEDURES

Hollow-Stem Borings

Our exploratory borings were drilled with a limited-access drill rig operated by an independent drilling company working under subcontract to GSC. A total of 3 hollow-stem borings were drilled with an 8-inch diameter auger drill rig explored subsurface conditions to a maximum depth of 30 feet on January 31, 2017. The locations of the borings are shown on the Geologic Map, Plate 1. The borings were continuously logged and classified by one of our geologists by visual examination in accordance with the Unified Soil Classification System. The boring logs are included as Plates A-1 through A-3.

Undisturbed soil samples were collected by driving a ring sampler with a 140-pound hammer weight falling 30 inches. The soil samples were retained in a series of brass rings, each having an inside diameter of 2.36 (6.0 centimeters) and a height of 1.00 inch (2.54 centimeters). The central portions of the samples were retained in close-fitting, moisture-tight containers for shipment to our laboratory.

The enclosed *Boring Logs* describes the vertical sequence of soils and materials encountered in each boring, based primarily on our field classifications and supported by our subsequent laboratory examination and testing. Where a soil contact was observed to be gradational, our log indicates the average contact depth. Where a soil type changed between sample intervals, we inferred the contact depth. Our log also graphically indicates the blow count, sample type, sample number, and approximate depth of each soil sample obtained from the borings, as well as any laboratory tests performed on these soil samples.

Appendix A

Test Pits

GSC explored the subsurface conditions with eight (8) backhoe-dug test pits on February 15, 2017. Locations of the test pits are shown on the Geologic Map, Plate 1 and are included herein.

The soil samples were retained in a series of brass rings, each having an inside diameter of 2.36 (6.0 centimeters) and a height of 1.00 inch (2.54 centimeters). The central portions of the samples were retained in close-fitting, moisture-tight containers for shipment to our laboratory.

GEOTECHNICAL BORING LOG

PROJECT NAME	Jemstreet Properties			**W.O.**	6946
DRILLING COMPANY	Choice Drilling	**DATE STARTED**	1/31/2017	**BORING NO.**	B-1
TYPE OF DRILL RIG	Limited Access Rig	**LOGGED BY**	EV	**SHEET**	1 of 1
DRILLING METHOD	Hollow Stem	**DROP (in)**		**ELEVATION**	1448
DIAMETER OF HOLE (in)	8	**HAMMER WEIGHT**		**GW ELEV.**	

BORING LOCATION

Depth (ft)	Sample Type	Blows/12 in	GEOTECHNICAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Other Tests
			0-5' 6" Artificial Fill (af)			
			@5' Medium yellow brown, silty very fine to fine SAND. It is moderately moist, and slightly dense.	17.5	111.2	
5		12/18/28	**5'6"-14 Alluvium (Qal)**			
10		30/50-3	@10' Medium grey brown, very fine sandy silt. It is slightly moist, slightly to moderately dense, and micaceous.	12.9	120.9	
15		60-6"	**14'-30' Bedrock- Saugus Formation (Qts)** @15' Medium grey to brown, siltstone with interbedded claystone. It is micaceous, slightly moist, moderately hard, and slightly oxidized.	12.7	120.5	
20		55-6"	@20' Medium gray to brown, siltstone with interbedded claystone. It is micaceous, slightly oxidized, slightly moist and moderately hard.	12.7	115.4	
25		65-6"	@25' Medium grey silty claystone. It is slightly moist, and hard.	16.3	111.6	
			@30' Medium grey siltstone. It is slightly moist, and very hard.	12.7	118.5	
30		74-6"	Total Depth 30' No Caving No groundwater or seepage			

SAMPLE KEY

Standard Penetration Test

California Ring

TESTS

SIEVE	GRAIN SIZE ANALYSIS
MAX	MAXIMUM DRY DENSITY
DS	DIRECT SHEAR
CONS	CONSOLIDATION
HYDR	HYDROMETER ANALYSIS
EXPAN	EXPANSION INDEX

PLATE A-1

GeoSoils Consultants Inc.
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GEOTECHNICAL BORING LOG

PROJECT NAME	Jemstreet Properties			**W.O.**	6946
DRILLING COMPANY	Choice Drilling	**DATE STARTED**	1/31/2017	**BORING NO.**	B-2
TYPE OF DRILL RIG	Limited Access Rig	**LOGGED BY**	EV	**SHEET**	1 of 1
DRILLING METHOD	Hollow Stem	**DROP (in)**		**ELEVATION**	
DIAMETER OF HOLE (in)	8	**HAMMER WEIGHT**		**GW ELEV.**	

BORING LOCATION

Depth (ft)	Sample Type	Blows/12 in	GEOTECHNICAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Other Tests
			0-4' Artificial Fill (af) @0'- 4' Light brown, silty fine to coarse SAND, contains coarse pebble fragments. It is slightly dense to loose and slightly moist.			
5		25/17/11	**4'-9' Alluvium (Qal)** @5' Medium brown to grey brown,silty very fine sand. It is slightly dense and slightly moist.	5.5	126.9	
10		33/50-4	**9'-30' Bedrock- Saugus Formation (Qts)** @10' Medium grey brown, siltstone to very fine sandy siltstone. It is moderately hard, and slightly moist.	14.5	119	
15		43/50-2	@15' Light gray to white, very fine sandy micaceous, slitstone. It is slighty moist and moderately hard.	10.3	104.1	
20		50-5"	@20' Light gray brown to medium gray brown, micaceous slitstone. It is slighty moist and moderately hard.	10.5	113.6	
25		65-6"	@25' Medium gray to brown, micaceous slitstone to gray claystone. It is slighty moist and very hard.	11.5	118.6	
			@30' Light gray brown siltstone to gray,medium to fine sandstone. It is hard dense, slightly moist, and slightly oxidized.	11.7	118.7	
30		55-3"	Total Depth 30' No Caving No groundwater or seepage			

SAMPLE KEY

Standard Penetration Test

California Ring

TESTS

SIEVE	GRAIN SIZE ANALYSIS
MAX	MAXIMUM DRY DENSITY
DS	DIRECT SHEAR
CONS	CONSOLIDATION
HYDR	HYDROMETER ANALYSIS
EXPAN	EXPANSION INDEX

PLATE A-2

GeoSoils Consultants Inc.
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GEOTECHNICAL BORING LOG

PROJECT NAME	Jemstreet Properties			**W.O.**	6946
DRILLING COMPANY	Choice Drilling	**DATE STARTED**	1/31/2017	**BORING NO.**	B-3
TYPE OF DRILL RIG	Limited Access Rig	**LOGGED BY**	EV	**SHEET**	1 of 1
DRILLING METHOD	Hollow Stem	**DROP (in)**		**ELEVATION**	
DIAMETER OF HOLE (in)	8	**HAMMER WEIGHT**		**GW ELEV.**	

BORING LOCATION

Depth (ft)	Sample Type	Blows/12 in	GEOTECHNICAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Other Tests
			0-14' Alluvium (Qal)			
5		8/8/10	@5' Medium brown, silty medium to fine sand. Contains granitic rock fragments. It is slightly dense and moderately moist.	9.3	120.8	
10		18/23/30	@10' Light brown to gray, silty fine sand. It is moderately dense and dry.	3.1	120.4	
			14'-28' Bedrock- Saugus Formation (Qts)			
15		18/39/50-5"	@15' Very light brown to gray, medium to fine grained sandstone. It is hard and dry.	3.6	115.1	
20		50-4"	@20' Very light gray to white, conglomerate with a coarse to fine grained matrix. Contains minimal gravel sized fragments. It is very hard and dry to slightly moist.	2.9	115.9	
25		40-2"	@25' Light gray to white, conglomerate with fine to very coarse pebble fragments. Slightly moist to dry and very hard.	3.5	114.6	
		50-3"	@28' Light gray to white, conglomerate, contains a fine to medium grained sand matrix. It also contains coarse pebble granitic rock fragments. It is dry to slightly moist	4.2	118.4	
30			Total Depth 28' No Caving No groundwater or seepage			

SAMPLE KEY

Standard Penetration Test

California Ring

TESTS

SIEVE	GRAIN SIZE ANALYSIS
MAX	MAXIMUM DRY DENSITY
DS	DIRECT SHEAR
CONS	CONSOLIDATION
HYDR	HYDROMETER ANALYSIS
EXPAN	EXPANSION INDEX

PLATE A-3

GeoSoils Consultants Inc.
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TEST PIT LOG 1

GEOSOILS CONSULTANTS, INC.

CLIENT: Jemstreet Properties **ELEVATION:** **WORK ORDER NO.:** 6946
ADDRESS: **LOGGED BY:** EV **DATE**: 2/15/17

Depth	Material Type	Material Description	Comments
0'10'	Artificial Fill (af):	Dark brown, silty fine SAND, contains roots and trash. It is slightly dense and moderately moist. @9': Dark gray, angular bedrock fragments.	Refusal @ 17'
10'-16'	Alluvium (Qal):	Medium yellow brown, silty medium to fine SAND, contains rounded cobble size fragments. It is porous, moderately dense and slightly moist.	
16'-17'	Bedrock: Saugus Formation (Qts):	Medium yellow to light gray, medium grained sandstone to medium gray MUDSTONE. It is hard, dense and slightly moist.	

Scale: **H**: 1"=6' **V**: 1"=6' **Pit Orient.**: N20°W **Natural Slope Angle**: 0° **T.D.**: 17'

Illustration

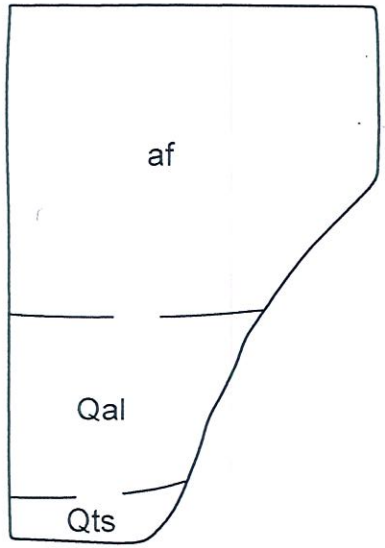


Plate TP-1

TEST PIT LOG 2

GEOSOILS CONSULTANTS, INC.

CLIENT: Jemstreet Properties **ELEVATION:** _____ **WORK ORDER NO.:** 6946
ADDRESS: _____ **LOGGED BY:** EV **DATE:** 2/15/17

Depth	Material Type	Material Description	Comments
0'-8'	Artificial Fill (af):	Dark brown, silty fine SAND, contains roots and rock fragments. It is slightly dense and moderately moist.	
8'-16'	Alluvium (Qal):	Medium yellow brown, silty medium to fine SAND, contains rounded cobble size fragments. It is porous, moderately dense and slightly moist. @15'-16': light brown, medium to fine sand, moderately dense.	Bulk Sample @ 15'-16'
16'-18'	Bedrock: Saugus Formation (Qts):	Medium gray to gray brown, MUDSTONE. It is hard, dense and slightly moist.	

Scale: H: 1"=6' V: 1"=6' **Pit Orient.:** N10°E **Natural Slope Angle:** 0° **T.D.:** 18'

Illustration

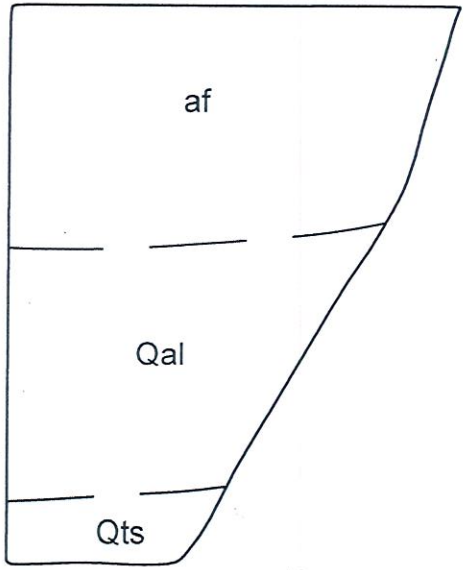


Plate TP-2

TEST PIT LOG 3

GEOSOILS CONSULTANTS, INC.

CLIENT: Jemstreet Properties **ELEVATION:** _____ **WORK ORDER NO.:** 6946
ADDRESS: _____ **LOGGED BY:** EV **DATE**: 2/15/17

Depth	Material Type	Material Description	Comments
0'-5'	Artificial Fill (af):	Dark brown, silty medium to fine SAND. It is slightly dense and moderately moist.	
5'-14'	Alluvium (Qal):	Light brown, silty fine to medium SAND, contain coarse pebble to cobble size rock fragments. It is moderately dense and moderately moist. @13'-14': light gray brown, medium grained sand, moderately dense.	Bulk Sample @ 14'-16'
14'-16'	Bedrock: Saugus Formation (Qts):	Light gray to white, fine to medium grained sandstone with gravel to cobble granitic fragments. It is hard and slightly moist.	

Scale: H: 1"=6' V: 1"=6' **Pit Orient.**: N70°E **Natural Slope Angle:** __ **T.D.:** 16'

Illustration

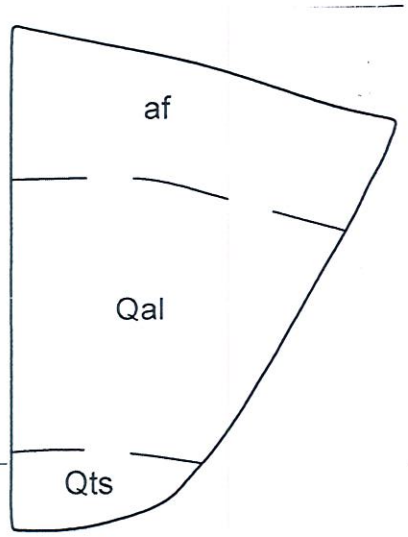


Plate TP-3

TEST PIT LOG 4

GEOSOILS CONSULTANTS, INC.

CLIENT: Jemstreet Properties **ELEVATION:** _____ **WORK ORDER NO.:** 6946
ADDRESS: _____ **LOGGED BY:** EV **DATE:** 2/15/17

Depth	Material Type	Material Description	Comments
0'-2'	Alluvium (Qal):	Medium brown, medium to coarse SAND, contains coarse pebble to fine pebble rock fragments. It contains roots and is slightly dense and moderately moist.	Ring Sample @ 6' Moisture: @6': 12.9%
2'-6'	Bedrock: Saugus Formation (Qts):	Light gray fine grained sandstone to silty fine sandstone. It is moderately dense and slightly moist and heavily oxidized.	Dry Density: @6': 10.9pcf

Scale: H: 1"=6' V: 1"=6' **Pit Orient.:** N5°E **Natural Slope Angle:** _____ **T.D.:** 6'

Illustration

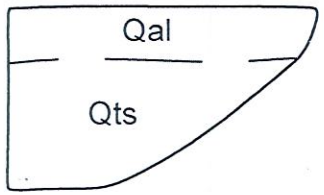


Plate TP-4

TEST PIT LOG 5

GEOSOILS CONSULTANTS, INC.

CLIENT: Jemstreet Properties **ELEVATION:** _____ **WORK ORDER NO.:** 6946
ADDRESS: _____ **LOGGED BY:** EV **DATE:** 2/15/17

Depth	Material Type	Material Description	Comments
0'-5'	Alluvium (Qal):	Black to light gray, medium to coarse SAND, contains coarse pebble to cobble rock fragments. It contains roots and is slightly dense, porous, and moderately moist.	Bulk Sample @ 8'
5'-8'	Bedrock: Saugus Formation (Qts):	Light gray medium grained sandstone. It is hard, dense and moderately moist. @ 7'-8': Black medium to coarse sandstone. It is very hard and slightly moist.	

Scale: H: 1"=6' V: 1"=6' **Pit Orient.:** N80°W **Natural Slope Angle:** __ **T.D.:** 8'

Illustration

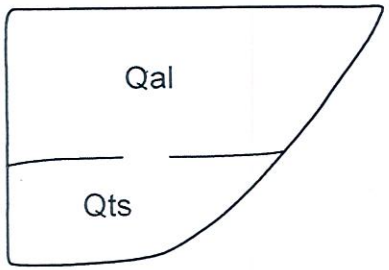


Plate TP-5

TEST PIT LOG 6

GEOSOILS CONSULTANTS, INC.

CLIENT: Jemstreet Properties **ELEVATION:** **WORK ORDER NO.:** 6946
ADDRESS: **LOGGED BY:** EV **DATE**: 2/15/17

Depth	Material Type	Material Description	Comments
0'-2'9"	Alluvium (Qal):	Dark brown, Medium to fine grained SAND, contains cobble sized rock fragments. It contains roots and is slightly dense, porous, and moderately moist.	Bulk Sample @ 8' Moisture: @6': 13.5% Dry Density: @6': 102.5pcf
2'9"-6'	Bedrock: Saugus Formation (Qts):	Medium olive brown, siltstone to fine grained sandstone. It is hard, dense, non-porous, and moderately moist.	

Scale: **H**: 1"=6' **V**: 1"=6' **Pit Orient.**: N40°E **Natural Slope Angle:** **T.D.:** 6'

Illustration

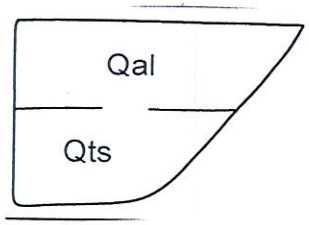


Plate TP-6

TEST PIT LOG 7

GEOSOILS CONSULTANTS, INC.

CLIENT: Jemstreet Properties **ELEVATION:** _____ **WORK ORDER NO.:** 6946
ADDRESS: _____ **LOGGED BY:** EV **DATE:** 2/15/17

Depth	Material Type	Material Description	Comments
0'-5'	Alluvium (Qal):	Medium brown, fine to medium SAND to medium to coarse SAND contains rootlets and rock fragments. It is moderately dense and moderately moist.	Bulk Sample @ 7'-8'
5'-13'	Bedrock: Saugus Formation (Qts):	Medium brown, claystone to sillty claystone, contains caliche. It is dense, hard and moderately moist. @10'-13': dark gray, claystone with mica and caliche. It is very hard, dense, and slightly moist.	

Scale: H: 1"=6' V: 1"=6' **Pit Orient.:** N60°E **Natural Slope Angle:** __ **T.D.:** 13'

Illustration

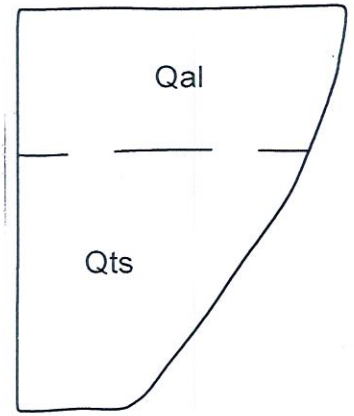


Plate TP-7

TEST PIT LOG 8

GEOSOILS CONSULTANTS, INC.

CLIENT: Jemstreet Properties **ELEVATION:** **WORK ORDER NO.:** 6946
ADDRESS: **LOGGED BY:** EV **DATE**: 2/15/17

Depth	Material Type	Material Description	Comments
0'-4'	Alluvium (Qal):	Dark brown, sitly fine SAND to light gray, medium to coarse SAND, contains gravel sized rock fragments. It is slightly dense and moderately moist.	Ring Sample @ 7' Moisture: @7': 10.4% Dry Density: @7': 110.9pcf
4'-7'	Bedrock: Saugus Formation (Qts):	Light olive-gray brown, siltstone. It is very hard, dense and slightly moist.	

Scale: **H**: 1"=6' **V**: 1"=6' **Pit Orient.**: N15°E **Natural Slope Angle:** **T.D.**: 7'

Illustration

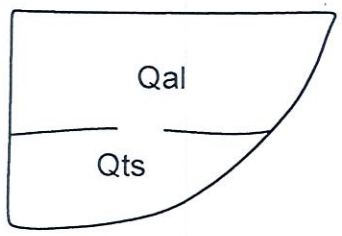


Plate TP-8

April 17, 2017
W.O. 6946

APPENDEX B

LABORATORY TESTING PROCEDURES AND RESULTS

APPENDIX B

LABORATORY TESTING PROCEDURES AND RESULTS

Moisture-Density

The field moisture content and dry unit weights were determined for each undisturbed ring sample obtained from our subsurface exploration. Once the dry unit weights had been determined, in-place densities of underlying soil profile were estimated. In those cases where ring samples were obtained, the moisture content and dry unit weights are presented on the enclosed boring logs (B-1 through B-3) and test pits (TP-1 through TP-8).

Compaction Tests

Four compaction tests were performed to determine to moisture density relationships of the typical surficial soils encountered on the site. The laboratory standard used was in accordance with ASTM Test Designation D-1557-12. A summary of the compaction test results is shown in Table C-1.

Table C-1

Boring No. and Sample Depth	Description	Maximum Dry Density (psf)	Optimum Moisture (%)
B-1 @ 15'-20'	Medium Gray-Brown, Siltstone with Claystone	122.0	13.5
B-2 @ 20'-23'	Light Brown- Medium Gray Siltstone with Claystone	124.0	11.0
TP-5 @ 8'	Dark Grey (10YR 1/4) silty CLAY	131.0	9.0
TP-7 @ 7'-8'	Brown (10YR 4/2) sandy, silty CLAY	105.5	19.5

Expansion Index Test

To determine the expansion potential of the near-surface on-site soil material, an expansion index test was performed in accordance with ASTM Test Method D-4829. The test indicates a low potential for expansion.

Shear Tests

Multiple shear test were performed in a strain-control type Direct Shear Machine. The shear testing was performed in series corresponding to the date the samples were collected. The sample was sheared under varying confining loads in order to determine the Coulomb shear strength parameters: cohesion (c), and angle of internal friction (ϕ) for peak and residual

APPENDIX B

strength conditions. The samples were tested in an artificially-saturated condition. The results are plotted and a linear approximation is drawn of the failure curve. The results are shown on the Shear Test Diagrams included with this appendix as Plates SH-1 through SH-11.

Sulfates

Soluble sulfates react chemically with the hydrated lime and calcium aluminate of hardened cement to form calcium aluminate and calcium sulfo-aluminate. The effect is disintegration of the concrete. In addition to the potential detrimental effects of high concentration of sulfate to certain mixtures of concrete, sulfates may catalyze reaction of certain clay minerals in soil columns which undergo large, isolated volume changes which prove detrimental to some structures. Type V cement is normally used where sulfates are present. Testing for soluble sulfates was performed on one representative sample of the material concentrated with in the subject site by American Analytics (see Plate AA-1 this appendix). The results indicate that the soluble sulfate content is less than 6,000 ppm within the soil samples;-therefore, the soils will have a severe effect on the cement used at the site.

SULFATE EXPOSURE	RECOMMENDATIONS FOR CONCRETE IN SULFATE ENVIRONMENTS (AFTER TABLE 19-A-4)				
	SOLUBLE SULFATES IN SOIL %	SULFATES IN WATER, PPM	CEMENT TYPE	MAXIMUM WATER/ CEMENT RATIO	MINIMUM CEMENT CONTENT, LBS
Negligible	0.0-0.10%	0-150			
Moderate	0.10-0.20%	150-1,500	LI	0.55	470
Severe	0.20-2.0	1,500-10,000	V	0.45	660
Very Severe	Over 2.0	Over 10,000	V+Pozzolan	0.45	660

Table 1 - Laboratory Tests on Soil Samples

GeoSoils Consultants, Inc.
Jemstreet Properties
Your #6946, HDR Lab #17-0065LAB
13-Feb-17

Sample ID			B-1 @ 15-20'	B-2 @ 20-23'
Resistivity		**Units**		
as-received		ohm-cm	7,200	9,200
minimum		ohm-cm	480	760
pH			6.8	6.8
Electrical Conductivity		mS/cm	1.86	1.54
Chemical Analyses				
Cations				
calcium	Ca^{2+}	mg/kg	1,550	1,520
magnesium	Mg^{2+}	mg/kg	326	211
sodium	Na^{1+}	mg/kg	376	106
potassium	K^{1+}	mg/kg	63	80
Anions				
carbonate	CO_3^{2-}	mg/kg	ND	ND
bicarbonate	HCO_3^{1-}	mg/kg	122	125
fluoride	F^{1-}	mg/kg	12	8.7
chloride	Cl^{1-}	mg/kg	4.9	ND
sulfate	SO_4^{2-}	mg/kg	5,320	4,350
phosphate	PO_4^{3-}	mg/kg	ND	5.2
Other Tests				
ammonium	NH_4^{1+}	mg/kg	2.7	ND
nitrate	NO_3^{1-}	mg/kg	ND	ND
sulfide	S^{2-}	qual	na	na
Redox		mV	na	na

Minimum resistivity per CTM 643, Chlorides per CTM 422, Sulfates per CTM 417

Electrical conductivity in millisiemens/cm and chemical analyses were made on a 1:5 soil-to-water extract.

mg/kg = milligrams per kilogram (parts per million) of dry soil.

Redox = oxidation-reduction potential in millivolts

ND = not detected

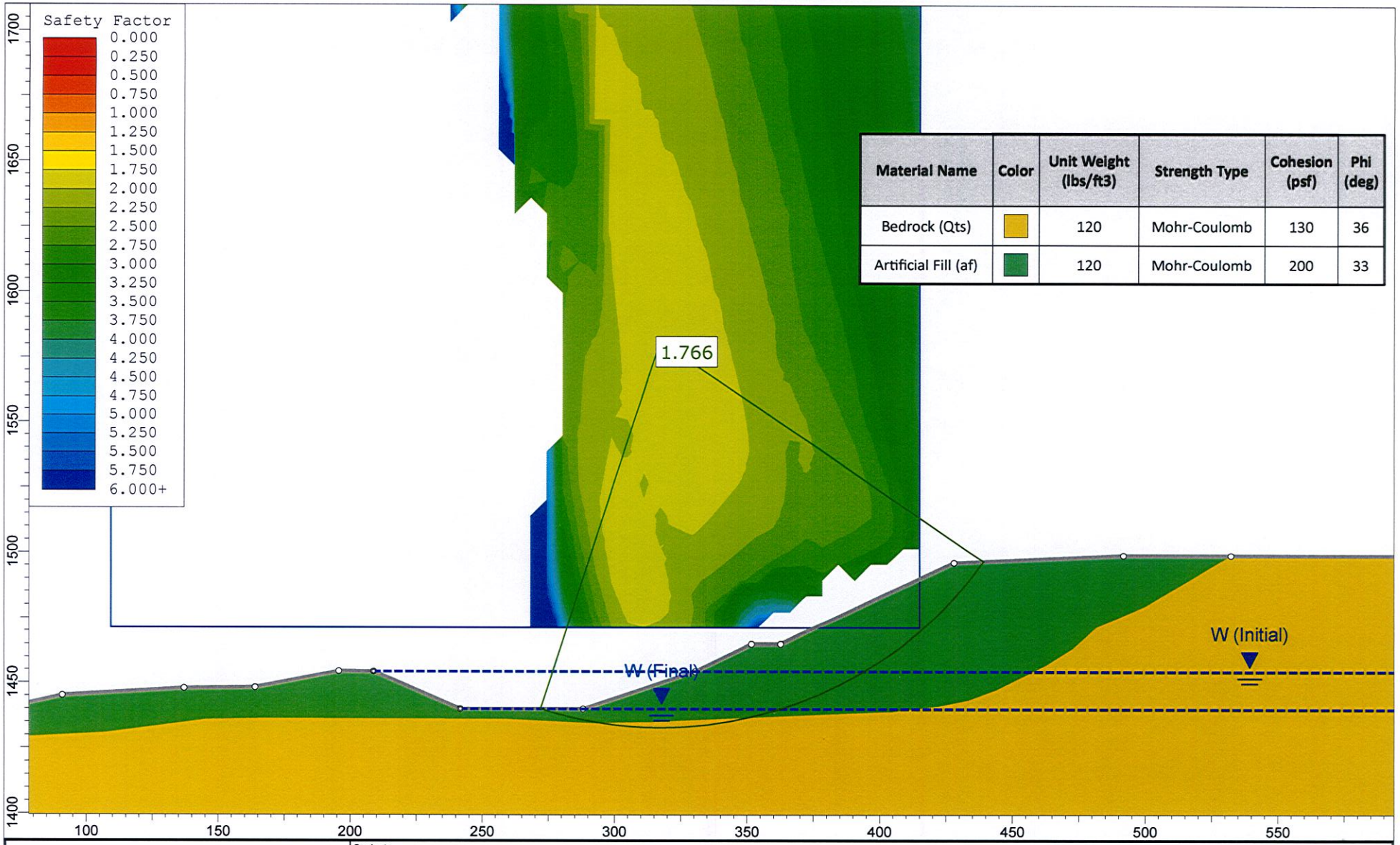
na = not analyzed

431 West Baseline Road · Claremont, CA 91711
Phone: 909.962.5485 · Fax: 909.626.3316

April 17, 2017
W.O. 6946

APPENDIX C

SLOPE STABILITY ANALYSES



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Bedrock (Qts)		120	Mohr-Coulomb	130	36
Artificial Fill (af)		120	Mohr-Coulomb	200	33

rocscience

SLIDEINTERPRET 7.009

Project	# 6946			
Analysis Description	1-1' Rapid Drawdown (Static)			
Drawn By	JG	Scale	1:600	Company: GeoSoils Consultants, Inc.
Date	4/6/2017			File Name: 6946 1-1 Static.slim

Slide Analysis Information

6946

Project Summary

File Name:	6946 1-1 Static.slim
Slide Modeler Version:	7.009
Project Title:	# 6946
Analysis:	1-1' Rapid Drawdown (Static)
Author:	JG
Company:	GeoSoils Consultants, Inc.
Date Created:	4/6/2017

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Failure Direction:	Right to Left
Data Output:	Standard
Maximum Material Properties:	20
Maximum Support Properties:	20

Analysis Options

Slices Type:	Vertical
Analysis Methods Used	
	Spencer
Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft3]:	62.4
Advanced Groundwater Method:	Rapid Drawdown
Rapid Drawdown Method:	Effective Stress using B-Bar

Random Numbers

Pseudo-random Seed:	10116
Random Number Generation Method:	Park and Miller v.3

Surface Options

Surface Type:	Circular
Search Method:	Grid Search
Radius Increment:	10
Composite Surfaces:	Disabled
Reverse Curvature:	Invalid Surfaces
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic

Advanced Seismic Analysis:	No
Staged pseudostatic analysis:	No

Material Properties

Property	Bedrock (Qts)	Artificial Fill (af)
Color		
Strength Type	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft3]	120	120
Cohesion [psf]	130	200
Friction Angle [deg]	36	33
Water Surface	Water Table	Water Table
Hu Value	1	1
Rapid Drawdown Undrained Behaviour	Yes	Yes
RD Shear Strength Envelope Properties	CR: 0 PhiR: 0	CR: 0 PhiR: 0

Global Minimums

Method: spencer

FS	1.765970
Center:	317.172, 1581.267
Radius:	148.386
Left Slip Surface Endpoint:	272.061, 1439.904
Right Slip Surface Endpoint:	439.141, 1496.758
Resisting Moment:	.10591e+007 lb-ft
Driving Moment:	.75875e+007 lb-ft
Resisting Horizontal Force:	86973 lb
Driving Horizontal Force:	05875 lb
Total Slice Area:	575.51 ft2

Valid / Invalid Surfaces

Method: spencer

Number of Valid Surfaces: 6621
Number of Invalid Surfaces: 21990

Error Codes:

Error Code -103 reported for 251 surfaces
Error Code -106 reported for 4 surfaces
Error Code -107 reported for 831 surfaces
Error Code -108 reported for 4 surfaces
Error Code -110 reported for 19677 surfaces
Error Code -111 reported for 2 surfaces
Error Code -112 reported for 28 surfaces
Error Code -114 reported for 1193 surfaces

Error Codes

The following errors were encountered during the computation:

-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.
-106 = Average slice width is less than 0.0001 * (maximum horizontal extent of soil region). This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.
-107 = Total driving moment or total driving force is negative. This will occur if the wrong failure direction is specified, or if high external or anchor loads are applied against the failure direction.
-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
-110 = The water table or a piezoline does not span the slip region for a given slip surface, when Water Surfaces is specified as the method of pore pressure calculation. If this error occurs, check that the water table or piezoline(s) span the appropriate soil cells.
-111 = safety factor equation did not converge
-112 = The coefficient M-Alpha = cos(alpha)(1+tan(alpha)tan(phi)/F) < 0.2 for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.
-114 = Surface with Reverse Curvature.

Slice Data

Global Minimum Query (spencer) - Safety Factor: 1.76597

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice	Base Material	Base Cohesion	Base Friction	Shear Stress	Shear Strength	Base Normal	Pore Pressure	Effective Normal

			Base [degrees]		[psf]	Angle [degrees]	[psf]	[psf]	Stress [psf]	[psf]	Stress [psf]
1	3.26246	195.73	-17.0397	Artificial Fill (af)	200	33	166.761	294.494	176.705	31.1971	145.508
2	3.26246	571.286	-15.7266	Artificial Fill (af)	200	33	195.477	345.207	314.658	91.0567	223.601
3	3.26246	915.342	-14.4218	Artificial Fill (af)	200	33	220.001	388.516	436.183	145.895	290.288
4	3.26246	1228.47	-13.1247	Artificial Fill (af)	200	33	240.718	425.1	542.43	195.805	346.625
5	3.26246	1512.22	-11.8344	Artificial Fill (af)	200	33	258.043	455.697	634.772	241.032	393.74
6	3.26246	2011.24	-10.5501	Artificial Fill (af)	200	33	290.573	513.144	802.77	320.57	482.2
7	3.26246	2669	-9.27119	Artificial Fill (af)	200	33	332.984	588.039	1022.94	425.41	597.53
8	3.44737	3502.37	-7.96092	Bedrock (Qts)	130	36	360.819	637.196	1226.39	528.297	698.096
9	3.44737	4170.07	-6.61883	Bedrock (Qts)	130	36	402.054	710.015	1427.33	629.012	798.322
10	3.44737	4803.95	-5.28037	Bedrock (Qts)	130	36	438.47	774.324	1611.46	724.626	886.836
11	3.44737	5404.26	-3.9448	Bedrock (Qts)	130	36	470.422	830.751	1779.68	815.176	964.5
12	3.44737	5971.18	-2.61137	Bedrock (Qts)	130	36	498.227	879.854	1932.78	900.691	1032.09
13	3.44737	6504.86	-1.27936	Bedrock (Qts)	130	36	522.167	922.132	2071.47	981.192	1090.27
14	3.44737	7005.38	0.0519557	Bedrock (Qts)	130	36	542.496	958.031	2196.38	1056.69	1139.69
15	3.44737	7472.74	1.3833	Bedrock (Qts)	130	36	559.44	987.955	2308.06	1127.19	1180.87
16	3.44737	7906.94	2.7154	Bedrock (Qts)	130	36	573.207	1012.27	2407.02	1192.68	1214.34
17	3.44737	8307.88	4.04896	Bedrock (Qts)	130	36	583.983	1031.3	2493.68	1253.16	1240.52
18	3.44737	8734.01	5.38473	Bedrock (Qts)	130	36	607.348	1072.56	2588.15	1290.83	1297.32
19	3.44737	9298.18	6.72345	Bedrock (Qts)	130	36	672.141	1186.98	2726.19	1271.38	1454.81
20	3.44737	9839.61	8.06586	Bedrock (Qts)	130	36	735.601	1299.05	2852.52	1243.46	1609.06
21	3.44737	10346.9	9.41275	Bedrock (Qts)	130	36	795.002	1403.95	2963.81	1210.38	1753.43
22	3.44737	10819.7	10.7649	Bedrock (Qts)	130	36	850.513	1501.98	3060.48	1172.1	1888.38
23	3.44737	11257.5	12.1232	Bedrock (Qts)	130	36	902.292	1593.42	3142.76	1128.55	2014.21
24	3.37612	11328.2	13.4742	Artificial Fill (af)	200	33	886.261	1565.11	3182.29	1080.21	2102.08
25	3.37612	11070.7	14.8187	Artificial Fill (af)	200	33	863.69	1525.25	3067.8	1027.1	2040.7
26	3.37612	10691.4	16.1716	Artificial Fill (af)	200	33	831.52	1468.44	2921.93	968.687	1953.24
27	3.37612	10294.4	17.5339	Artificial Fill (af)	200	33	800.591	1413.82	2773.98	904.861	1869.11
28	3.37612	10302.9	18.9065	Artificial Fill (af)	200	33	812.177	1434.28	2736.13	835.503	1900.63
29	3.37612	10467.3	20.2904	Artificial	200	33	840.394	1484.11	2737.83	760.48	1977.35

				Fill (af)							
30	3.37612	10593.9	21.6868	Artificial Fill (af)	200	33	866.221	1529.72	2727.23	679.646	2047.59
31	3.37612	10681.7	23.0969	Artificial Fill (af)	200	33	889.721	1571.22	2704.33	592.833	2111.49
32	3.37612	10729.5	24.522	Artificial Fill (af)	200	33	910.95	1608.71	2669.08	499.858	2169.22
33	3.37612	10736	25.9634	Artificial Fill (af)	200	33	929.954	1642.27	2621.42	400.513	2220.91
34	3.37612	10699.6	27.4228	Artificial Fill (af)	200	33	946.788	1672	2561.24	294.567	2266.68
35	3.37612	10618.6	28.9017	Artificial Fill (af)	200	33	961.483	1697.95	2488.4	181.761	2306.64
36	3.37612	10491.2	30.402	Artificial Fill (af)	200	33	974.088	1720.21	2402.72	61.8046	2340.91
37	3.22825	9868.22	31.8918	Artificial Fill (af)	200	33	963.454	1701.43	2311.99	-62.6736	2311.99
38	3.22825	9662.89	33.3722	Artificial Fill (af)	200	33	929.076	1640.72	2218.52	-191.691	2218.52
39	3.22825	9410.79	34.8783	Artificial Fill (af)	200	33	891.233	1573.89	2115.61	-328.242	2115.61
40	3.22825	9109.35	36.4126	Artificial Fill (af)	200	33	849.907	1500.91	2003.23	-472.741	2003.23
41	3.22825	8755.62	37.9778	Artificial Fill (af)	200	33	805.082	1421.75	1881.33	-625.663	1881.33
42	3.22825	8346.24	39.5771	Artificial Fill (af)	200	33	756.734	1336.37	1749.86	-787.548	1749.86
43	3.22825	7877.33	41.2143	Artificial Fill (af)	200	33	704.842	1244.73	1608.74	-959.024	1608.74
44	3.22825	7344.35	42.8936	Artificial Fill (af)	200	33	649.369	1146.77	1457.89	-1140.82	1457.89
45	3.22825	6742	44.62	Artificial Fill (af)	200	33	590.292	1042.44	1297.24	-1333.79	1297.24
46	3.22825	6063.96	46.3995	Artificial Fill (af)	200	33	527.574	931.68	1126.69	-1538.95	1126.69
47	3.22825	5251.63	48.2391	Artificial Fill (af)	200	33	457.634	808.168	936.497	-1757.52	936.497
48	3.22825	3946.22	50.1476	Artificial Fill (af)	200	33	357.182	630.772	663.33	-1990.99	663.33
49	3.22825	2451.45	52.1357	Artificial Fill (af)	200	33	249.45	440.521	370.369	-2241.2	370.369
50	3.22825	838.243	54.2172	Artificial Fill (af)	200	33	140.914	248.849	75.2211	-2510.49	75.2211

Interslice Data

Global Minimum Query (spencer) - Safety Factor: 1.76597

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	272.061	1439.9	0	0	0
2	275.323	1438.9	720.564	220.739	17.032
3	278.586	1437.99	1647.16	504.595	17.032
4	281.848	1437.15	2730.63	836.506	17.032
5	285.111	1436.39	3928.32	1203.41	17.032
6	288.373	1435.7	5203.84	1594.15	17.032
7	291.636	1435.09	6639.29	2033.89	17.032
8	294.898	1434.56	8270.07	2533.47	17.032
9	298.346	1434.08	10104.8	3095.52	17.032
10	301.793	1433.68	12061.3	3694.89	17.0321
11	305.24	1433.36	14085.9	4315.09	17.032
12	308.688	1433.12	16130.1	4941.33	17.032
13	312.135	1432.97	18151	5560.42	17.032
14	315.582	1432.89	20110	6160.55	17.0321
15	319.03	1432.89	21972.8	6731.18	17.032
16	322.477	1432.98	23708.6	7262.94	17.032
17	325.925	1433.14	25290.5	7747.53	17.032
18	329.372	1433.38	26694.5	8177.65	17.032
19	332.819	1433.71	27946.6	8561.21	17.032
20	336.267	1434.11	29155	8931.41	17.032
21	339.714	1434.6	30296.6	9281.1	17.032
22	343.161	1435.17	31342.5	9601.53	17.032
23	346.609	1435.83	32267.7	9884.94	17.032
24	350.056	1436.57	33050	10124.6	17.032
25	353.432	1437.38	33466.9	10252.3	17.032
26	356.808	1438.27	33641.8	10305.9	17.032
27	360.185	1439.25	33587.5	10289.3	17.0321
28	363.561	1440.32	33330.6	10210.5	17.0319
29	366.937	1441.47	32907.8	10081	17.032
30	370.313	1442.72	32326.8	9903.04	17.032
31	373.689	1444.07	31588.6	9676.92	17.032
32	377.065	1445.51	30697.7	9404	17.032
33	380.441	1447.05	29661.4	9086.53	17.032
34	383.817	1448.69	28490.5	8727.83	17.032
35	387.193	1450.44	27199.4	8332.3	17.032
36	390.57	1452.31	25806.4	7905.58	17.032
37	393.946	1454.29	24334.4	7454.64	17.032
38	397.174	1456.29	22799.4	6984.41	17.032
39	400.402	1458.42	21080.3	6457.78	17.032
40	403.63	1460.67	19195.9	5880.5	17.032
41	406.859	1463.05	17168.7	5259.49	17.032
42	410.087	1465.57	15025.6	4602.97	17.032
43	413.315	1468.24	12798.3	3920.66	17.032
44	416.543	1471.07	10524.2	3224.01	17.0321
45	419.772	1474.07	8247.35	2526.51	17.032
46	423	1477.25	6019.72	1844.09	17.032
47	426.228	1480.64	3902.91	1195.62	17.032
48	429.456	1484.26	1993.83	610.793	17.032
49	432.685	1488.13	581.123	178.022	17.032
50	435.913	1492.28	-151.7	-46.4721	17.032
51	439.141	1496.76	0	0	0

List Of Coordinates

Water Table

X	Y
208.906	1454.29
622	1454.29

Drawdown Line

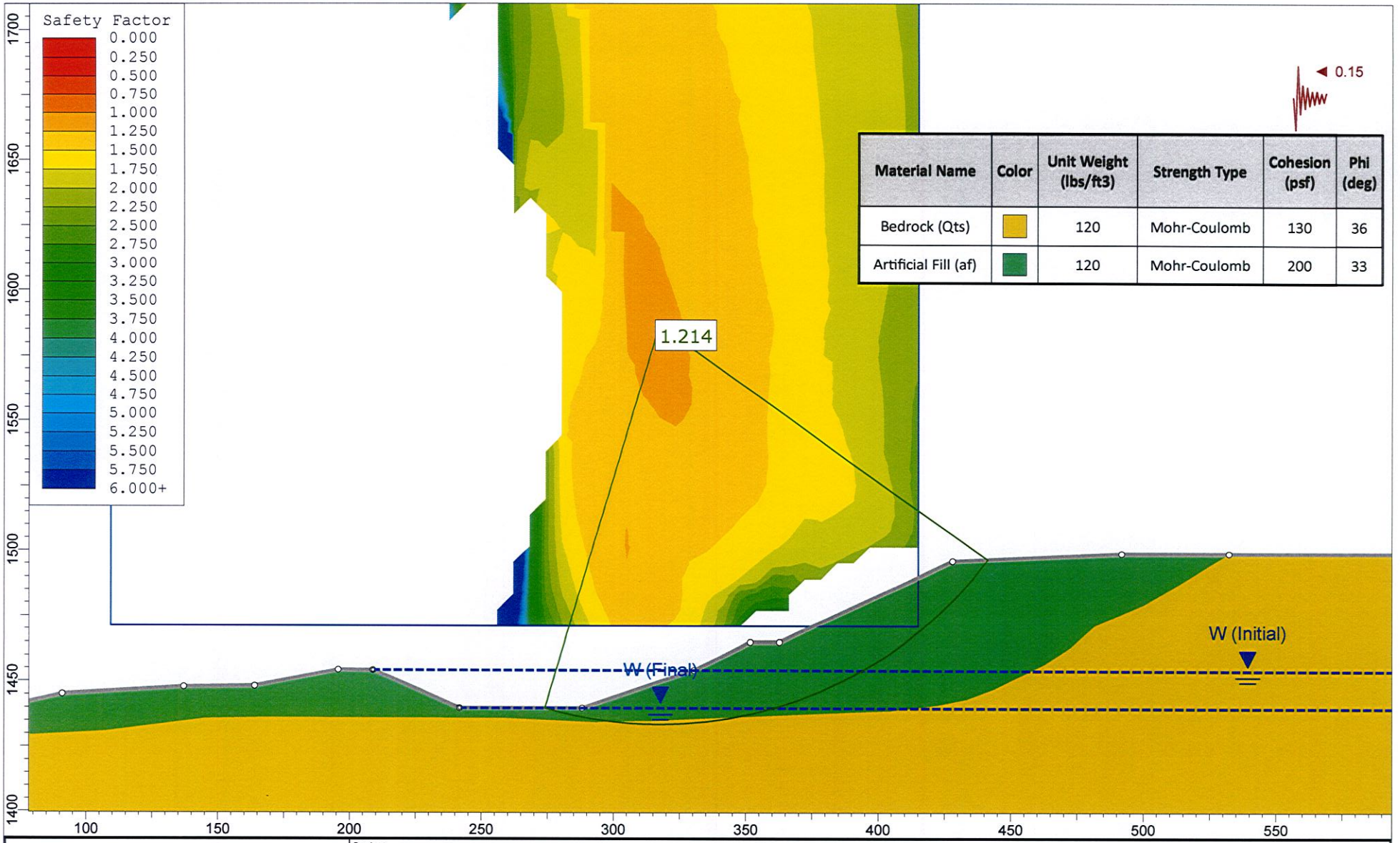
X	Y
241.715	1439.9
622	1439.9

External Boundary

X	Y
622	1240
622	1499.23
532.386	1499.23
491.904	1499.23
428.049	1496.24
362.781	1465.15
351.746	1465.15
330.417	1454.29
288.148	1439.9
241.715	1439.9
208.906	1454.29
195.722	1454.44
163.961	1448.14
137.089	1447.84
90.964	1445.1
59.681	1438.03
37.761	1434.6
0	1433
0	1425.64
0	1240

Material Boundary

X	Y
0	1425.64
34.635	1426.57
60.256	1427.03
76.672	1429.33
107.356	1431.01
145.098	1435.92
167.037	1436.38
258.629	1436.23
294.069	1434.54
314.167	1435
384.433	1438.07
404.859	1439.01
422.471	1441.13
433.478	1443.41
444.045	1447.37
462.83	1456.98
471.493	1462.63
481.683	1471.7
501.815	1480.52
520.207	1491.71
532.386	1499.23



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Bedrock (Qts)		120	Mohr-Coulomb	130	36
Artificial Fill (af)		120	Mohr-Coulomb	200	33

Project	# 6946			
Analysis Description	1-1' Rapid Drawdown (Seismic)			
Drawn By	JG	Scale	1:600	Company: GeoSoils Consultants, Inc.
Date	4/6/2017			File Name: 6946 1-1 Seismic.slim

SLIDEINTERPRET 7.009

Slide Analysis Information

6946

Project Summary

File Name:	6946 1-1 Seismic.slim
Slide Modeler Version:	7.009
Project Title:	# 6946
Analysis:	1-1' Rapid Drawdown (Seismic)
Author:	JG
Company:	GeoSoils Consultants, Inc.
Date Created:	4/6/2017

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Failure Direction:	Right to Left
Data Output:	Standard
Maximum Material Properties:	20
Maximum Support Properties:	20

Analysis Options

Slices Type:	Vertical
Analysis Methods Used	
	Spencer
Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft3]:	62.4
Advanced Groundwater Method:	Rapid Drawdown
Rapid Drawdown Method:	Effective Stress using B-Bar

Random Numbers

Pseudo-random Seed: 10116
Random Number Generation Method: Park and Miller v.3

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius Increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Invalid Surfaces
Minimum Elevation: Not Defined
Minimum Depth: Not Defined
Minimum Area: Not Defined
Minimum Weight: Not Defined

Seismic

Advanced Seismic Analysis: No
Staged pseudostatic analysis: No

Loading

Seismic Load Coefficient (Horizontal): 0.15

Material Properties

Property	Bedrock (Qts)	Artificial Fill (af)
Color		
Strength Type	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft3]	120	120
Cohesion [psf]	130	200
Friction Angle [deg]	36	33
Water Surface	Water Table	Water Table
Hu Value	1	1
Rapid Drawdown Undrained Behaviour	Yes	Yes
RD Shear Strength Envelope Properties	CR: 0 PhiR: 0	CR: 0 PhiR: 0

Global Minimums

Method: spencer

FS	1.214300
Center:	317.172, 1587.380
Radius:	153.665
Left Slip Surface Endpoint:	274.000, 1439.904
Right Slip Surface Endpoint:	441.346, 1496.861
Resisting Moment:	.05623e+007 lb-ft
Driving Moment:	.51686e+007 lb-ft
Resisting Horizontal Force:	79590 lb
Driving Horizontal Force:	47896 lb
Total Slice Area:	521.45 ft2

Valid / Invalid Surfaces

Method: spencer

Number of Valid Surfaces: 6378
Number of Invalid Surfaces: 22233

Error Codes:

Error Code -103 reported for 251 surfaces
Error Code -106 reported for 4 surfaces
Error Code -107 reported for 14 surfaces
Error Code -108 reported for 2 surfaces
Error Code -110 reported for 20485 surfaces
Error Code -111 reported for 76 surfaces
Error Code -112 reported for 208 surfaces
Error Code -114 reported for 1193 surfaces

Error Codes

The following errors were encountered during the computation:

-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.
-106 = Average slice width is less than 0.0001 * (maximum horizontal extent of soil region). This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.
-107 = Total driving moment or total driving force is negative. This will occur if the wrong failure direction is specified, or if high external or anchor loads are applied against the failure direction.
-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
-110 = The water table or a piezoline does not span the slip region for a given slip surface, when Water Surfaces is specified as the method of pore pressure calculation. If this error occurs, check that the water table or piezoline(s) span the appropriate soil cells.
-111 = safety factor equation did not converge
-112 = The coefficient M-Alpha = cos(alpha)(1+tan(alpha)tan(phi)/F) < 0.2 for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.
-114 = Surface with Reverse Curvature.

Slice Data

Global Minimum Query (spencer) - Safety Factor: 1.2143

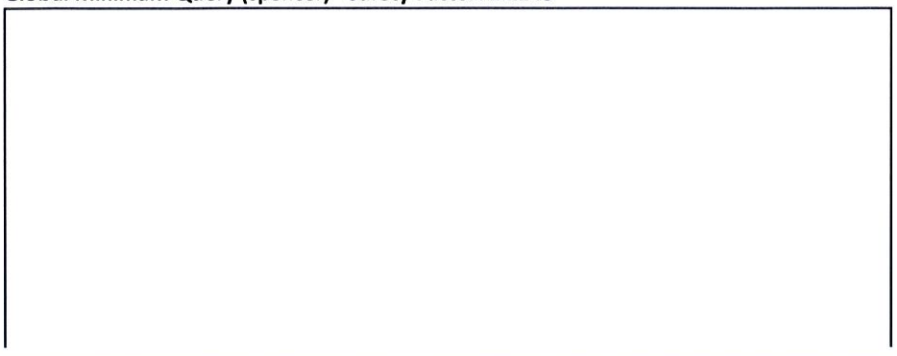
Slice Number	Width [ft]	Weight [lbs]	Angle of Slice	Base Material	Base Cohesion	Base Friction	Shear Stress	Shear Strength	Base Normal	Pore Pressure	Effective Normal

			Base [degrees]		[psf]	Angle [degrees]	[psf]	[psf]	Stress [psf]	[psf]	Stress [psf]
1	3.24874	177.852	-15.6875	Artificial Fill (af)	200	33	317.702	385.786	314.554	28.4674	286.086
2	3.24874	518.686	-14.433	Artificial Fill (af)	200	33	358.429	435.24	445.259	83.022	362.237
3	3.24874	830.028	-13.1855	Artificial Fill (af)	200	33	390.851	474.61	555.719	132.856	422.863
4	3.24874	1112.35	-11.9444	Artificial Fill (af)	200	33	416.114	505.287	648.144	178.045	470.099
5	3.24874	1455.73	-10.7089	Artificial Fill (af)	200	33	446.737	542.473	760.371	233.007	527.364
6	3.24874	2085	-9.4784	Artificial Fill (af)	200	33	509.641	618.857	978.713	333.729	644.984
7	3.24874	2713.5	-8.25233	Artificial Fill (af)	200	33	566.741	688.194	1186.08	434.328	751.752
8	3.24874	3314.36	-7.03006	Artificial Fill (af)	200	33	615.58	747.499	1373.58	530.504	843.075
9	3.26201	3904.83	-5.80851	Bedrock (Qts)	130	36	657.03	797.832	1541.66	622.473	919.191
10	3.26201	4455.46	-4.58712	Bedrock (Qts)	130	36	698.324	847.975	1698.46	710.249	988.208
11	3.26201	4978.71	-3.36781	Bedrock (Qts)	130	36	732.34	889.28	1838.72	793.661	1045.06
12	3.26201	5474.71	-2.15003	Bedrock (Qts)	130	36	759.849	922.685	1963.77	872.728	1091.04
13	3.26201	5943.53	-0.933222	Bedrock (Qts)	130	36	781.523	949.003	2074.72	947.464	1127.26
14	3.26201	6385.24	0.283165	Bedrock (Qts)	130	36	797.943	968.942	2172.58	1017.88	1154.7
15	3.26201	6799.82	1.49968	Bedrock (Qts)	130	36	809.621	983.123	2258.19	1083.97	1174.22
16	3.26201	7187.27	2.71687	Bedrock (Qts)	130	36	817.007	992.091	2332.3	1145.73	1186.57
17	3.26201	7547.51	3.93529	Bedrock (Qts)	130	36	820.497	996.33	2395.56	1203.16	1192.4
18	3.26201	7929.26	5.1555	Bedrock (Qts)	130	36	842.289	1022.79	2469.4	1240.58	1228.82
19	3.26201	8439.2	6.37806	Bedrock (Qts)	130	36	928.07	1126.95	2595.93	1223.74	1372.19
20	3.26201	8933.12	7.60354	Bedrock (Qts)	130	36	1012.16	1229.06	2711.5	1198.78	1512.72
21	3.26201	9399.2	8.83253	Bedrock (Qts)	130	36	1089.83	1323.38	2811.93	1169.38	1642.55
22	3.26201	9837.18	10.0656	Bedrock (Qts)	130	36	1161.56	1410.48	2897.93	1135.5	1762.43
23	3.4513	10853	11.3395	Artificial Fill (af)	200	33	1159.52	1408.01	2956.02	1095.84	1860.18
24	3.4513	11257.1	12.6553	Artificial Fill (af)	200	33	1214.07	1474.25	3012.24	1050.07	1962.17
25	3.4513	11131.2	13.9778	Artificial Fill (af)	200	33	1192.9	1448.54	2921.66	999.084	1922.58
26	3.4513	10757.7	15.308	Artificial Fill (af)	200	33	1141.04	1385.57	2768.42	942.806	1825.61
27	3.4513	10348.9	16.6467	Artificial Fill (af)	200	33	1089.92	1323.49	2611.15	881.136	1730.02
28	3.4513	10269.3	17.9948	Artificial Fill (af)	200	33	1088.45	1321.71	2541.25	813.963	1727.29
29	3.4513	10466.9	19.3533	Artificial	200	33	1126.57	1368	2539.72	741.164	1798.56

				Fill (af)							
30	3.4513	10626.3	20.7232	Artificial Fill (af)	200	33	1161.31	1410.18	2526.12	662.604	1863.52
31	3.4513	10746.4	22.1057	Artificial Fill (af)	200	33	1192.86	1448.49	2500.63	578.128	1922.5
32	3.4513	10826.1	23.5018	Artificial Fill (af)	200	33	1221.37	1483.11	2463.39	487.566	1975.82
33	3.4513	10864.2	24.9129	Artificial Fill (af)	200	33	1247.01	1514.24	2414.48	390.728	2023.75
34	3.4513	10859.2	26.3404	Artificial Fill (af)	200	33	1269.9	1542.04	2353.97	287.402	2066.57
35	3.4513	10809.5	27.7857	Artificial Fill (af)	200	33	1290.2	1566.69	2281.87	177.349	2104.52
36	3.4513	10713.5	29.2504	Artificial Fill (af)	200	33	1308.02	1588.33	2198.14	60.305	2137.84
37	3.38356	10363.5	30.7217	Artificial Fill (af)	200	33	1291.82	1568.66	2107.55	-62.7353	2107.55
38	3.38356	10177	32.201	Artificial Fill (af)	200	33	1241.14	1507.12	2012.78	-191.952	2012.78
39	3.38356	9940.57	33.7048	Artificial Fill (af)	200	33	1186.36	1440.6	1910.36	-328.851	1910.36
40	3.38356	9651.5	35.2354	Artificial Fill (af)	200	33	1127.56	1369.2	1800.41	-473.836	1800.41
41	3.38356	9306.84	36.7954	Artificial Fill (af)	200	33	1064.79	1292.98	1683.04	-627.364	1683.04
42	3.38356	8903.18	38.388	Artificial Fill (af)	200	33	998.131	1212.03	1558.39	-789.961	1558.39
43	3.38356	8436.58	40.0165	Artificial Fill (af)	200	33	927.634	1126.43	1426.57	-962.229	1426.57
44	3.38356	7902.49	41.6848	Artificial Fill (af)	200	33	853.375	1036.25	1287.72	-1144.87	1287.72
45	3.38356	7295.61	43.3977	Artificial Fill (af)	200	33	775.431	941.606	1141.97	-1338.7	1141.97
46	3.38356	6609.64	45.1605	Artificial Fill (af)	200	33	693.894	842.595	989.509	-1544.68	989.509
47	3.38356	5582.02	46.9797	Artificial Fill (af)	200	33	588.136	714.174	791.758	-1763.97	791.758
48	3.38356	4125.34	48.8633	Artificial Fill (af)	200	33	454.571	551.985	542.01	-1997.95	542.01
49	3.38356	2560.46	50.8207	Artificial Fill (af)	200	33	321.615	390.537	293.4	-2248.34	293.4
50	3.38356	874.893	52.8642	Artificial Fill (af)	200	33	190.445	231.257	48.1318	-2517.28	48.1318

Interslice Data

Global Minimum Query (spencer) - Safety Factor: 1.2143



Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	274	1439.9	0	0	0
2	277.249	1438.99	1295.89	575.926	23.9616
3	280.497	1438.16	2758.69	1226.03	23.9615
4	283.746	1437.39	4331.15	1924.87	23.9615
5	286.995	1436.71	5966.07	2651.47	23.9616
6	290.244	1436.09	7671.03	3409.2	23.9616
7	293.492	1435.55	9550.32	4244.4	23.9616
8	296.741	1435.08	11549.5	5132.87	23.9615
9	299.99	1434.68	13609.1	6048.23	23.9616
10	303.252	1434.35	15685.3	6970.95	23.9616
11	306.514	1434.08	17747	7887.23	23.9616
12	309.776	1433.89	19750	8777.41	23.9616
13	313.038	1433.77	21656.2	9624.56	23.9616
14	316.3	1433.72	23432.7	10414.1	23.9616
15	319.562	1433.73	25051.5	11133.5	23.9615
16	322.824	1433.82	26488.4	11772.1	23.9615
17	326.086	1433.97	27723.2	12320.9	23.9616
18	329.348	1434.2	28738.9	12772.3	23.9616
19	332.61	1434.49	29579.5	13145.8	23.9614
20	335.872	1434.86	30404.5	13512.5	23.9615
21	339.134	1435.29	31196.4	13864.5	23.9616
22	342.396	1435.8	31928.1	14189.6	23.9615
23	345.658	1436.38	32576.1	14477.6	23.9615
24	349.109	1437.07	32917.4	14629.3	23.9615
25	352.561	1437.85	33098.6	14709.8	23.9615
26	356.012	1438.7	33049.7	14688.1	23.9615
27	359.463	1439.65	32771.9	14564.7	23.9616
28	362.915	1440.68	32299.1	14354.5	23.9615
29	366.366	1441.8	31679	14078.9	23.9615
30	369.817	1443.01	30931.3	13746.6	23.9615
31	373.268	1444.32	30060.2	13359.5	23.9616
32	376.72	1445.72	29073.4	12921	23.9616
33	380.171	1447.22	27981.8	12435.8	23.9615
34	383.622	1448.83	26799.9	11910.5	23.9615
35	387.074	1450.53	25546	11353.3	23.9616
36	390.525	1452.35	24242.6	10774	23.9615
37	393.976	1454.29	22916.2	10184.5	23.9615
38	397.36	1456.3	21509.4	9559.33	23.9616
39	400.743	1458.43	19907.4	8847.36	23.9616
40	404.127	1460.68	18132.2	8058.41	23.9616
41	407.51	1463.07	16209.4	7203.88	23.9616
42	410.894	1465.61	14168.7	6296.94	23.9616
43	414.278	1468.29	12044.3	5352.77	23.9615
44	417.661	1471.13	9875.31	4388.84	23.9616
45	421.045	1474.14	7707.05	3425.2	23.9615
46	424.428	1477.34	5591.5	2485	23.9615
47	427.812	1480.74	3588.82	1594.96	23.9615
48	431.195	1484.37	1877.32	834.329	23.9616
49	434.579	1488.24	702.155	312.055	23.9615
50	437.963	1492.39	191.79	85.2361	23.9615
51	441.346	1496.86	0	0	0

List Of Coordinates

Water Table

X	Y
208.906	1454.29
622	1454.29

Drawdown Line

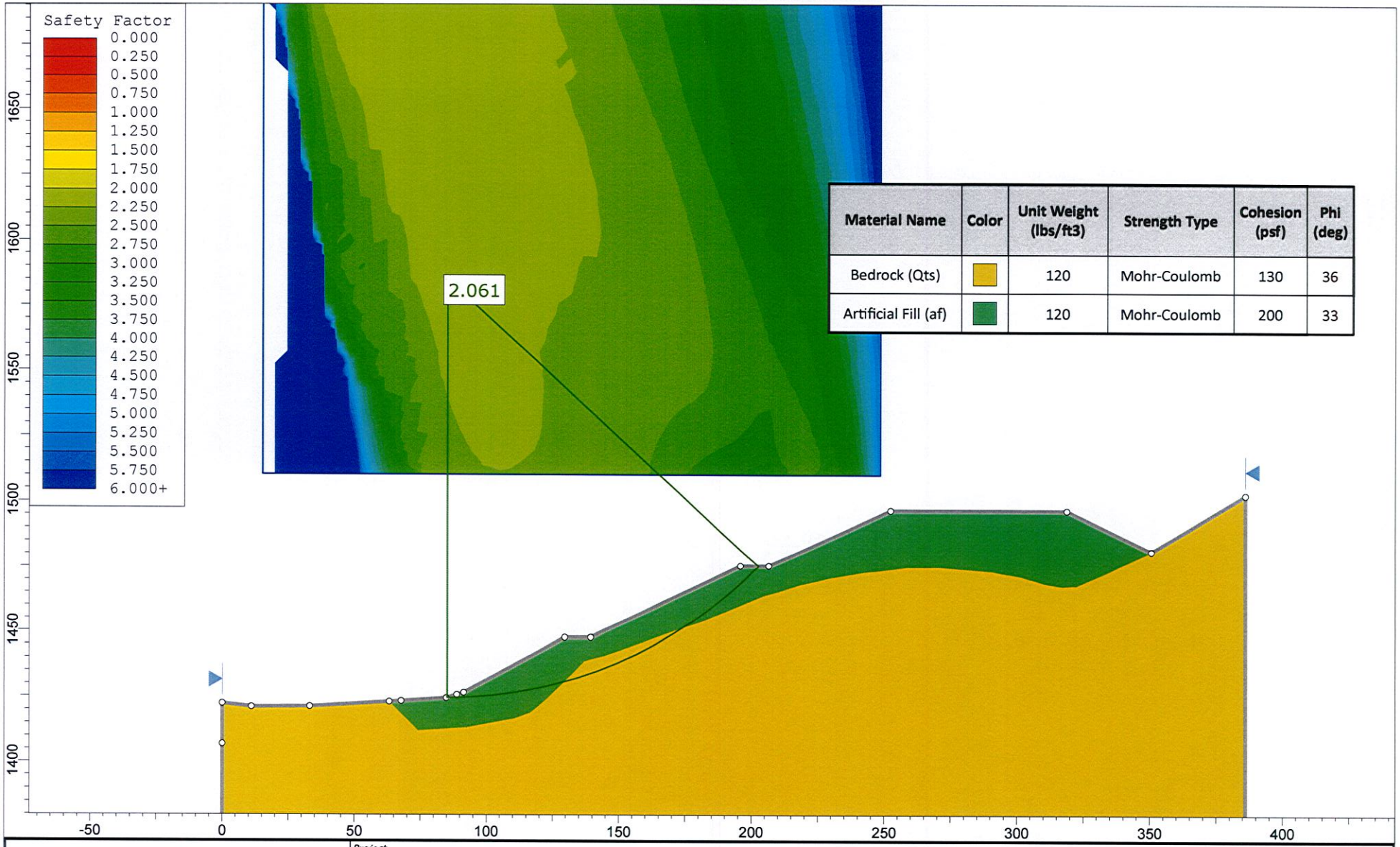
X	Y
241.715	1439.9
622	1439.9

External Boundary

X	Y
622	1240
622	1499.23
532.386	1499.23
491.904	1499.23
428.049	1496.24
362.781	1465.15
351.746	1465.15
330.417	1454.29
288.148	1439.9
241.715	1439.9
208.906	1454.29
195.722	1454.44
163.961	1448.14
137.089	1447.84
90.964	1445.1
59.681	1438.03
37.761	1434.6
0	1433
0	1425.64
0	1240

Material Boundary

X	Y
0	1425.64
34.635	1426.57
60.256	1427.03
76.672	1429.33
107.356	1431.01
145.098	1435.92
167.037	1436.38
258.629	1436.23
294.069	1434.54
314.167	1435
384.433	1438.07
404.859	1439.01
422.471	1441.13
433.478	1443.41
444.045	1447.37
462.83	1456.98
471.493	1462.63
481.683	1471.7
501.815	1480.52
520.207	1491.71
532.386	1499.23



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Bedrock (Qts)		120	Mohr-Coulomb	130	36
Artificial Fill (af)		120	Mohr-Coulomb	200	33

Project	# 6946			
Analysis Description	2-2' Global (Static)			
Drawn By	JG	Scale	1:600	Company: GeoSoils Consultants, Inc.
Date	4/7/2017			File Name: 6946 2-2 Static.slim

SLIDEINTERPRET 7.009

Slide Analysis Information

6946

Project Summary

File Name:	6946 2-2 Static.slim
Slide Modeler Version:	7.009
Project Title:	# 6946
Analysis:	2-2' Global (Static)
Author:	JG
Company:	GeoSoils Consultants, Inc.
Date Created:	4/7/2017

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Failure Direction:	Right to Left
Data Output:	Standard
Maximum Material Properties:	20
Maximum Support Properties:	20

Analysis Options

Slices Type:	Vertical
Analysis Methods Used	
	Spencer
Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft3]:	62.4
Advanced Groundwater Method:	None

Random Numbers

Pseudo-random Seed:	10116
Random Number Generation Method:	Park and Miller v.3

Surface Options

Surface Type:	Circular
Search Method:	Grid Search
Radius Increment:	10
Composite Surfaces:	Disabled
Reverse Curvature:	Invalid Surfaces
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic

Advanced Seismic Analysis:	No
Staged pseudostatic analysis:	No

Material Properties

Property	Bedrock (Qts)	Artificial Fill (af)
Color		
Strength Type	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft3]	120	120
Cohesion [psf]	130	200
Friction Angle [deg]	36	33
Water Surface	None	None
Ru Value	0	0

Global Minimums

Method: spencer

FS	2.061040
Center:	85.152, 1585.163
Radius:	160.582
Left Slip Surface Endpoint:	85.164, 1424.581
Right Slip Surface Endpoint:	202.622, 1475.676
Resisting Moment:	.98314e+007 lb-ft
Driving Moment:	.62205e+006 lb-ft
Resisting Horizontal Force:	11835 lb
Driving Horizontal Force:	4261.4 lb
Total Slice Area:	295.92 ft2

Valid / Invalid Surfaces

Method: spencer

Number of Valid Surfaces: 27626
Number of Invalid Surfaces: 985

Error Codes:

Error Code -102 reported for 17 surfaces
Error Code -103 reported for 2 surfaces
Error Code -106 reported for 77 surfaces
Error Code -107 reported for 92 surfaces
Error Code -108 reported for 301 surfaces
Error Code -111 reported for 1 surface
Error Code -1000 reported for 495 surfaces

Error Codes

The following errors were encountered during the computation:

-102 = Two surface / slope intersections, but resulting arc is actually outside soil region.
-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.
-106 = Average slice width is less than 0.0001 * (maximum horizontal extent of soil region). This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.
-107 = Total driving moment or total driving force is negative. This will occur if the wrong failure direction is specified, or if high external or anchor loads are applied against the failure direction.
-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
-111 = safety factor equation did not converge
-1000 = No valid slip surfaces are generated at a grid center. Unable to draw a surface.

Slice Data

Global Minimum Query (spencer) - Safety Factor: 2.06104

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	2.31406	99.5515	0.41726	Artificial Fill (af)	200	33	126.738	261.212	94.2589	0	94.2589
2	2.31406	294.023	1.24304	Artificial Fill (af)	200	33	155.822	321.156	186.565	0	186.565
3	2.31406	486.062	2.06907	Artificial Fill (af)	200	33	183.861	378.944	275.549	0	275.549
4	2.31406	776.348	2.89554	Artificial Fill (af)	200	33	226.015	465.825	409.334	0	409.334
5	2.31406	1094.38	3.72261	Artificial Fill (af)	200	33	271.322	559.206	553.128	0	553.128
6	2.31406	1403.09	4.55045	Artificial Fill (af)	200	33	314.224	647.628	689.288	0	689.288
7	2.31406	1702.46	5.37925	Artificial Fill (af)	200	33	354.788	731.232	818.027	0	818.027
8	2.31406	1992.43	6.20918	Artificial Fill (af)	200	33	393.078	810.15	939.546	0	939.546
9	2.31406	2272.98	7.04043	Artificial Fill (af)	200	33	429.154	884.504	1054.04	0	1054.04

10	2.31406	2544.06	7.87316	Artificial Fill (af)	200	33	463.072	954.41	1161.69	0	1161.69
11	2.31406	2805.61	8.70757	Artificial Fill (af)	200	33	494.886	1019.98	1262.66	0	1262.66
12	2.31406	3057.57	9.54385	Artificial Fill (af)	200	33	524.644	1081.31	1357.1	0	1357.1
13	2.31406	3299.88	10.3822	Artificial Fill (af)	200	33	552.394	1138.51	1445.17	0	1445.17
14	2.31406	3532.45	11.2228	Artificial Fill (af)	200	33	578.18	1191.65	1527.01	0	1527.01
15	2.31406	3755.21	12.0658	Artificial Fill (af)	200	33	602.046	1240.84	1602.74	0	1602.74
16	2.31406	3968.06	12.9115	Artificial Fill (af)	200	33	624.025	1286.14	1672.5	0	1672.5
17	2.31406	4170.91	13.7601	Artificial Fill (af)	200	33	644.155	1327.63	1736.4	0	1736.4
18	2.31406	4363.66	14.6118	Artificial Fill (af)	200	33	662.476	1365.39	1794.54	0	1794.54
19	2.31406	4546.18	15.4667	Artificial Fill (af)	200	33	679.016	1399.48	1847.03	0	1847.03
20	2.37393	4719	16.3364	Bedrock (Qts)	130	36	715.459	1474.59	1850.67	0	1850.67
21	2.37393	4521.61	17.2211	Bedrock (Qts)	130	36	680.482	1402.5	1751.45	0	1751.45
22	2.37393	4306.22	18.1101	Bedrock (Qts)	130	36	643.801	1326.9	1647.4	0	1647.4
23	2.37393	4079.18	19.0036	Bedrock (Qts)	130	36	606.335	1249.68	1541.11	0	1541.11
24	2.37393	3916.75	19.902	Bedrock (Qts)	130	36	578.13	1191.55	1461.1	0	1461.1
25	2.37393	3983.41	20.8055	Bedrock (Qts)	130	36	580.188	1195.79	1466.93	0	1466.93
26	2.37393	4055.51	21.7144	Bedrock (Qts)	130	36	582.769	1201.11	1474.26	0	1474.26
27	2.37393	4115.14	22.6291	Bedrock (Qts)	130	36	583.589	1202.8	1476.58	0	1476.58
28	2.37393	4162.05	23.5499	Bedrock (Qts)	130	36	582.667	1200.9	1473.96	0	1473.96
29	2.37393	4195.98	24.4773	Bedrock (Qts)	130	36	580.023	1195.45	1466.47	0	1466.47
30	2.37393	4216.64	25.4115	Bedrock (Qts)	130	36	575.685	1186.51	1454.16	0	1454.16
31	2.37393	4223.73	26.353	Bedrock (Qts)	130	36	569.674	1174.12	1437.1	0	1437.1
32	2.37393	4216.92	27.3022	Bedrock (Qts)	130	36	561.998	1158.3	1415.34	0	1415.34
33	2.37393	4195.86	28.2597	Bedrock (Qts)	130	36	552.682	1139.1	1388.91	0	1388.91
34	2.37393	4160.16	29.2258	Bedrock (Qts)	130	36	541.745	1116.56	1357.88	0	1357.88
35	2.37393	4109.42	30.2011	Bedrock (Qts)	130	36	529.196	1090.7	1322.28	0	1322.28
36	2.37393	4043.18	31.1862	Bedrock (Qts)	130	36	515.051	1061.54	1282.16	0	1282.16
37	2.37393	3960.97	32.1817	Bedrock (Qts)	130	36	499.321	1029.12	1237.53	0	1237.53
38	2.37393	3862.25	33.1881	Bedrock (Qts)	130	36	482.019	993.461	1188.45	0	1188.45
39	2.36546	3733.34	34.2044	Artificial	200	33	455.287	938.365	1136.98	0	1136.98

				Fill (af)							
40	2.36546	3600.89	35.2313	Artificial Fill (af)	200	33	437.022	900.72	1079.01	0	1079.01
41	2.36546	3450.28	36.2714	Artificial Fill (af)	200	33	417.351	860.178	1016.58	0	1016.58
42	2.36546	3280.79	37.3255	Artificial Fill (af)	200	33	396.279	816.746	949.705	0	949.705
43	2.36546	3091.6	38.3947	Artificial Fill (af)	200	33	373.804	770.426	878.38	0	878.38
44	2.36546	2881.86	39.4799	Artificial Fill (af)	200	33	349.932	721.224	802.615	0	802.615
45	2.36546	2650.59	40.5823	Artificial Fill (af)	200	33	324.661	669.139	722.412	0	722.412
46	2.36546	2396.72	41.7032	Artificial Fill (af)	200	33	297.991	614.171	637.767	0	637.767
47	2.36546	2119.05	42.844	Artificial Fill (af)	200	33	269.921	556.317	548.68	0	548.68
48	2.36546	1700.75	44.0062	Artificial Fill (af)	200	33	230.615	475.306	423.934	0	423.934
49	2.36546	1043.13	45.1918	Artificial Fill (af)	200	33	172.448	355.423	239.331	0	239.331
50	2.36546	352.577	46.4026	Artificial Fill (af)	200	33	113.66	234.257	52.7521	0	52.7521

Interslice Data

Global Minimum Query (spencer) - Safety Factor: 2.06104

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	85.1642	1424.58	0	0	0
2	87.4782	1424.6	291.206	121.98	22.7278
3	89.7923	1424.65	641.825	268.847	22.7278
4	92.1064	1424.73	1043.55	437.12	22.7277
5	94.4204	1424.85	1517.79	635.768	22.7277
6	96.7345	1425	2061.32	863.444	22.7278
7	99.0485	1425.18	2660.31	1114.35	22.7278
8	101.363	1425.4	3301.71	1383.01	22.7277
9	103.677	1425.65	3973.27	1664.31	22.7277
10	105.991	1425.94	4663.48	1953.43	22.7277
11	108.305	1426.26	5361.54	2245.83	22.7277
12	110.619	1426.61	6057.34	2537.29	22.7278
13	112.933	1427	6741.4	2823.82	22.7277
14	115.247	1427.43	7404.85	3101.73	22.7277
15	117.561	1427.89	8039.45	3367.55	22.7277
16	119.875	1428.38	8637.52	3618.07	22.7278
17	122.189	1428.91	9191.93	3850.3	22.7278
18	124.503	1429.48	9696.1	4061.48	22.7277
19	126.817	1430.08	10144	4249.09	22.7277
20	129.131	1430.72	10530	4410.79	22.7278
21	131.505	1431.42	10937.9	4581.65	22.7278
22	133.879	1432.15	11261.9	4717.37	22.7278
23	136.253	1432.93	11508.7	4820.75	22.7278
24	138.627	1433.75	11685.7	4894.9	22.7278
25	141.001	1434.61	11800.2	4942.84	22.7277
26	143.375	1435.51	11852	4964.55	22.7278
27	145.749	1436.45	11839.4	4959.28	22.7278
28	148.123	1437.44	11761.3	4926.56	22.7278
29	150.497	1438.48	11617.2	4866.18	22.7277
30	152.871	1439.56	11407	4778.13	22.7277
31	155.245	1440.69	11131.3	4662.67	22.7278
32	157.619	1441.86	10791.4	4520.29	22.7278
33	159.992	1443.09	10389	4351.73	22.7278
34	162.366	1444.36	9926.52	4158	22.7277
35	164.74	1445.69	9406.99	3940.38	22.7277
36	167.114	1447.07	8834.16	3700.44	22.7278
37	169.488	1448.51	8212.47	3440.03	22.7278
38	171.862	1450	7547.13	3161.33	22.7278
39	174.236	1451.56	6844.15	2866.86	22.7277
40	176.602	1453.16	6091.25	2551.49	22.7277
41	178.967	1454.84	5320.71	2228.73	22.7278
42	181.332	1456.57	4541.73	1902.43	22.7277
43	183.698	1458.37	3764.61	1576.91	22.7277
44	186.063	1460.25	3000.86	1256.99	22.7277
45	188.429	1462.2	2263.31	948.053	22.7278
46	190.794	1464.22	1566.28	656.083	22.7278
47	193.16	1466.33	925.728	387.768	22.7278
48	195.525	1468.53	359.455	150.568	22.7278
49	197.891	1470.81	-64.541	-27.0348	22.7277
50	200.256	1473.19	-227.227	-95.1803	22.7277
51	202.622	1475.68	0	0	0

List Of Coordinates

External Boundary

X	Y
386	1320
386	1503.05
350.671	1481.63
318.787	1497.09
252.442	1497.09
206.548	1475.68
195.92	1475.68
139.398	1447.66
129.575	1447.66
91.411	1426.56
88.8798	1425.76
84.808	1424.47
67.739	1423.34
63.2505	1423.07
33.117	1421.25
11.056	1421.09
0	1422.37
0	1406.94
0	1320

Material Boundary

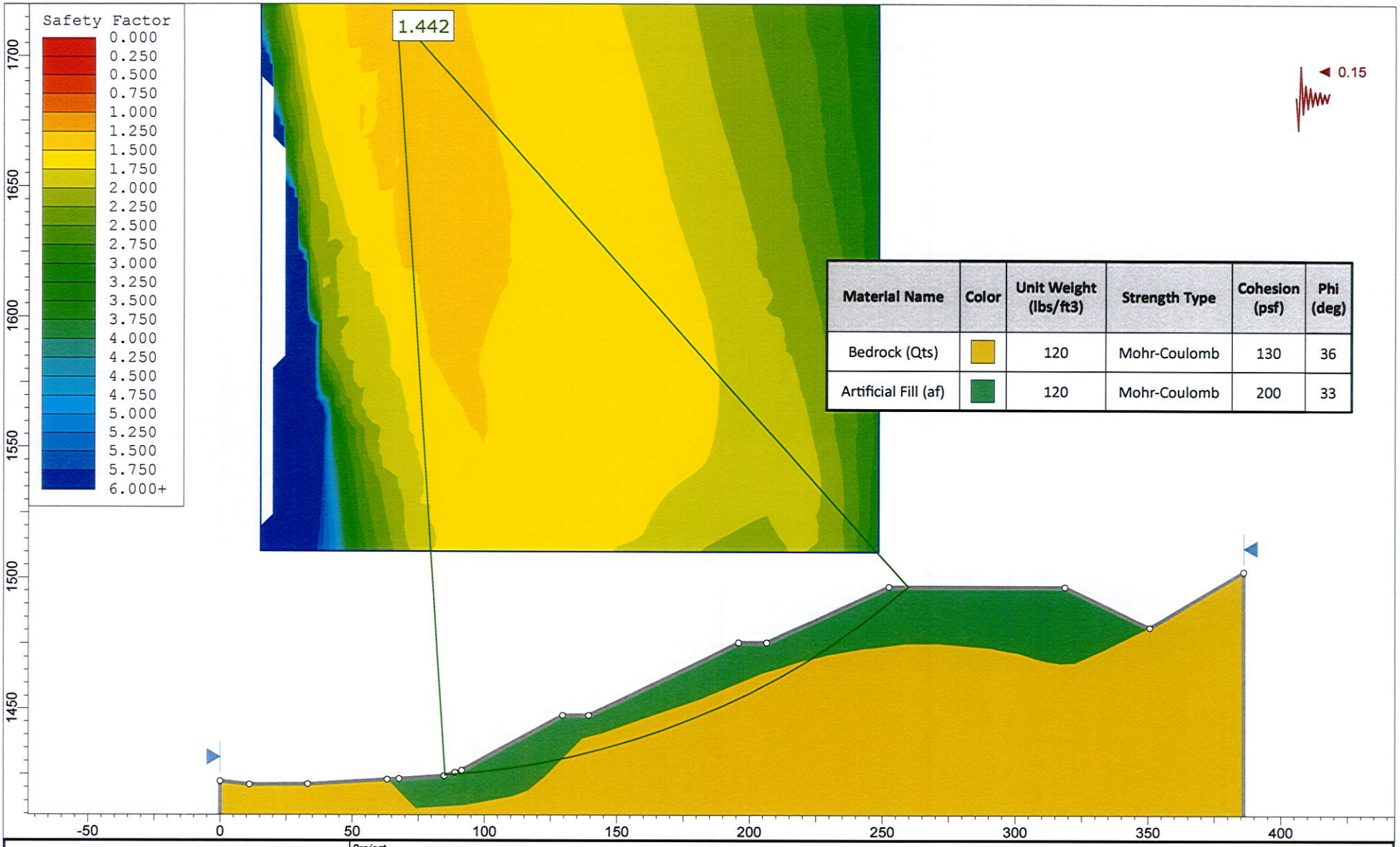
X	Y
88.8798	1425.76
136.893	1438.74
144.583	1440.81
183.792	1455.02
205.04	1464.06
218.775	1468.64
228.87	1470.98
243.427	1473.45
258.571	1475.44
269.605	1475.44
290.971	1473.68
301.419	1471.92
311.632	1468.75
317.149	1467.93
322.549	1468.28
333.936	1473.33
350.671	1481.63

Material Boundary

X	Y
63.2505	1423.07
74.0749	1412.15
92.475	1413.35
110.438	1416.7
116.49	1419.02
122.864	1424.36
131.491	1433.12
136.893	1438.74

Material Boundary

X	Y
0	1406.94
19.488	1408.27
35.827	1409.42
56.67	1411.18
74.0749	1412.15



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Bedrock (Qts)		120	Mohr-Coulomb	130	36
Artificial Fill (af)		120	Mohr-Coulomb	200	33

Project	# 6946			
Analysis Description	2-2' Global (Seismic)			
Drawn By	JG	Scale	1:600	Company: GeoSoils Consultants, Inc.
Date	4/7/2017			File Name: 6946 2-2 Seismic.slim

SLIDEINTERPRET 7.009

Slide Analysis Information

6946

Project Summary

File Name:	6946 2-2 Seismic.slim
Slide Modeler Version:	7.009
Project Title:	# 6946
Analysis:	2-2' Global (Seismic)
Author:	JG
Company:	GeoSoils Consultants, Inc.
Date Created:	4/7/2017

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Failure Direction:	Right to Left
Data Output:	Standard
Maximum Material Properties:	20
Maximum Support Properties:	20

Analysis Options

Slices Type:	Vertical
Analysis Methods Used	
	Spencer
Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft3]:	62.4
Advanced Groundwater Method:	None

Random Numbers

Pseudo-random Seed: 10116
Random Number Generation Method: Park and Miller v.3

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius Increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Invalid Surfaces
Minimum Elevation: Not Defined
Minimum Depth: Not Defined
Minimum Area: Not Defined
Minimum Weight: Not Defined

Seismic

Advanced Seismic Analysis: No
Staged pseudostatic analysis: No

Loading

Seismic Load Coefficient (Horizontal): 0.15

Material Properties

Property	Bedrock (Qts)	Artificial Fill (af)
Color		
Strength Type	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft3]	120	120
Cohesion [psf]	130	200
Friction Angle [deg]	36	33
Water Surface	None	None
Ru Value	0	0

Global Minimums

Method: spencer

FS	1.442470
Center:	66.482, 1715.854
Radius:	291.883
Left Slip Surface Endpoint:	85.119, 1424.567
Right Slip Surface Endpoint:	259.715, 1497.093
Resisting Moment:	.08789e+007 lb-ft
Driving Moment:	.22045e+007 lb-ft
Resisting Horizontal Force:	92177 lb
Driving Horizontal Force:	33227 lb
Total Slice Area:	377.99 ft2

Valid / Invalid Surfaces

Method: spencer

Number of Valid Surfaces: 27681
Number of Invalid Surfaces: 930

Error Codes:

Error Code -102 reported for 17 surfaces
Error Code -103 reported for 2 surfaces
Error Code -106 reported for 77 surfaces
Error Code -108 reported for 84 surfaces
Error Code -111 reported for 255 surfaces
Error Code -1000 reported for 495 surfaces

Error Codes

The following errors were encountered during the computation:

-102 = Two surface / slope intersections, but resulting arc is actually outside soil region.
-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.
-106 = Average slice width is less than 0.0001 * (maximum horizontal extent of soil region). This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.
-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
-111 = safety factor equation did not converge
-1000 = No valid slip surfaces are generated at a grid center. Unable to draw a surface.

Slice Data

Global Minimum Query (spencer) - Safety Factor: 1.44247

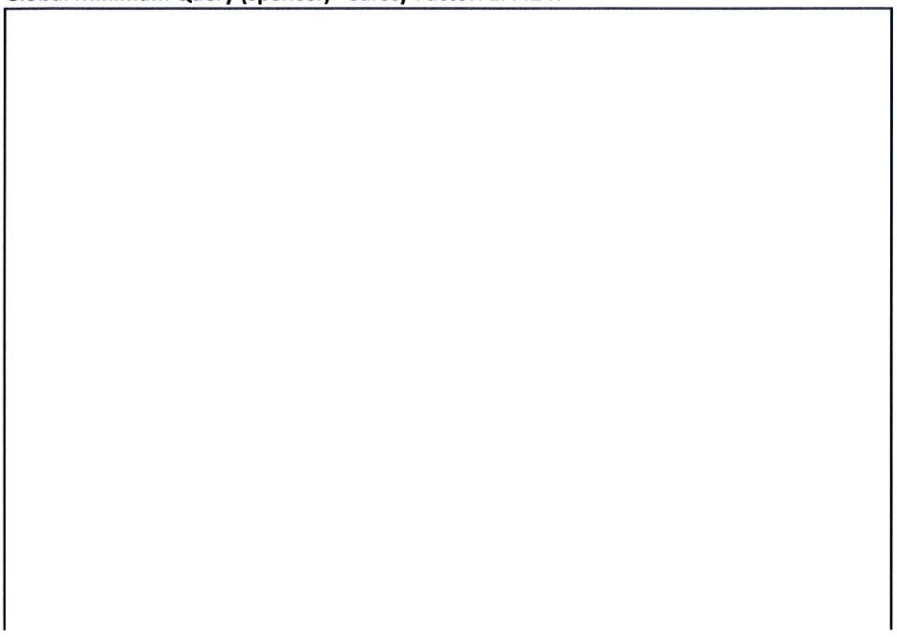
Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	3.39071	170.589	3.99453	Artificial Fill (af)	200	33	195.969	282.679	127.315	0	127.315
2	3.39071	507.069	4.66203	Artificial Fill (af)	200	33	243.03	350.564	231.848	0	231.848
3	3.39071	1030.03	5.33017	Artificial Fill (af)	200	33	315.46	455.041	392.729	0	392.729
4	3.39071	1655.76	5.99904	Artificial	200	33	400.496	577.704	581.614	0	581.614

				Fill (af)							
5	3.39071	2265.2	6.66873	Artificial Fill (af)	200	33	481.098	693.97	760.647	0	760.647
6	3.39071	2858.28	7.33934	Artificial Fill (af)	200	33	557.4	804.033	930.13	0	930.13
7	3.39071	3434.94	8.01095	Artificial Fill (af)	200	33	629.531	908.08	1090.35	0	1090.35
8	3.39071	3995.08	8.68368	Artificial Fill (af)	200	33	697.614	1006.29	1241.57	0	1241.57
9	3.39071	4538.64	9.35762	Artificial Fill (af)	200	33	761.764	1098.82	1384.06	0	1384.06
10	3.39071	5065.51	10.0329	Artificial Fill (af)	200	33	822.092	1185.84	1518.07	0	1518.07
11	3.39071	5575.59	10.7095	Artificial Fill (af)	200	33	878.701	1267.5	1643.81	0	1643.81
12	3.39071	6068.77	11.3877	Artificial Fill (af)	200	33	931.7	1343.95	1761.52	0	1761.52
13	3.39071	6544.95	12.0675	Artificial Fill (af)	200	33	981.171	1415.31	1871.41	0	1871.41
14	3.48642	6887.43	12.7587	Bedrock (Qts)	130	36	1049.1	1513.3	1903.94	0	1903.94
15	3.48642	6552.44	13.4614	Bedrock (Qts)	130	36	990.419	1428.65	1787.44	0	1787.44
16	3.48642	6195.78	14.1661	Bedrock (Qts)	130	36	930.259	1341.87	1667.99	0	1667.99
17	3.48642	6231.31	14.8731	Bedrock (Qts)	130	36	923.277	1331.8	1654.14	0	1654.14
18	3.48642	6557.3	15.5824	Bedrock (Qts)	130	36	954.162	1376.35	1715.45	0	1715.45
19	3.48642	6863.79	16.2942	Bedrock (Qts)	130	36	981.587	1415.91	1769.9	0	1769.9
20	3.48642	7150.58	17.0085	Bedrock (Qts)	130	36	1005.64	1450.61	1817.66	0	1817.66
21	3.48642	7417.44	17.7256	Bedrock (Qts)	130	36	1026.41	1480.57	1858.91	0	1858.91
22	3.48642	7664.14	18.4456	Bedrock (Qts)	130	36	1043.99	1505.92	1893.79	0	1893.79
23	3.48642	7890.42	19.1686	Bedrock (Qts)	130	36	1058.43	1526.76	1922.47	0	1922.47
24	3.48642	8096.03	19.8947	Bedrock (Qts)	130	36	1069.82	1543.19	1945.09	0	1945.09
25	3.48642	8280.68	20.6243	Bedrock (Qts)	130	36	1078.23	1555.32	1961.78	0	1961.78
26	3.48642	8444.08	21.3573	Bedrock (Qts)	130	36	1083.73	1563.25	1972.7	0	1972.7
27	3.48642	8585.9	22.094	Bedrock (Qts)	130	36	1086.37	1567.06	1977.95	0	1977.95
28	3.48642	8705.82	22.8346	Bedrock (Qts)	130	36	1086.23	1566.85	1977.66	0	1977.66
29	3.48642	8803.48	23.5793	Bedrock (Qts)	130	36	1083.36	1562.71	1971.95	0	1971.95
30	3.48642	8878.5	24.3282	Bedrock (Qts)	130	36	1077.8	1554.7	1960.93	0	1960.93
31	3.48642	8930.49	25.0815	Bedrock (Qts)	130	36	1069.64	1542.92	1944.72	0	1944.72
32	3.48642	8959.02	25.8396	Bedrock (Qts)	130	36	1058.9	1527.43	1923.4	0	1923.4
33	3.48642	8694.84	26.6025	Bedrock (Qts)	130	36	1017.01	1467.01	1840.23	0	1840.23

34	3.48642	7958.88	27.3705	Bedrock (Qts)	130	36	926.425	1336.34	1660.38	0	1660.38
35	3.48642	7191.19	28.1439	Bedrock (Qts)	130	36	834.763	1204.12	1478.4	0	1478.4
36	3.48642	6623.53	28.9229	Bedrock (Qts)	130	36	765.829	1104.68	1341.54	0	1341.54
37	3.48642	6473.32	29.7078	Bedrock (Qts)	130	36	740.646	1068.36	1291.54	0	1291.54
38	3.48642	6308.3	30.499	Bedrock (Qts)	130	36	714.472	1030.61	1239.58	0	1239.58
39	3.48642	6116.04	31.2965	Bedrock (Qts)	130	36	686.145	989.743	1183.34	0	1183.34
40	3.48642	5895.85	32.101	Bedrock (Qts)	130	36	655.702	945.831	1122.89	0	1122.89
41	3.63842	5886.84	32.9304	Artificial Fill (af)	200	33	614.87	886.932	1057.78	0	1057.78
42	3.63842	5582.29	33.7855	Artificial Fill (af)	200	33	582.433	840.142	985.731	0	985.731
43	3.63842	5243.23	34.6493	Artificial Fill (af)	200	33	547.981	790.446	909.206	0	909.206
44	3.63842	4868.58	35.5221	Artificial Fill (af)	200	33	511.545	737.888	828.275	0	828.275
45	3.63842	4457.19	36.4046	Artificial Fill (af)	200	33	473.153	682.509	742.999	0	742.999
46	3.63842	4007.8	37.2972	Artificial Fill (af)	200	33	432.834	624.35	653.442	0	653.442
47	3.63842	3519.05	38.2006	Artificial Fill (af)	200	33	390.615	563.451	559.665	0	559.665
48	3.63842	2989.47	39.1152	Artificial Fill (af)	200	33	346.524	499.85	461.729	0	461.729
49	3.63842	2047.5	40.042	Artificial Fill (af)	200	33	273.761	394.892	300.107	0	300.107
50	3.63842	690.011	40.9815	Artificial Fill (af)	200	33	172.523	248.859	75.2357	0	75.2357

Interslice Data

Global Minimum Query (spencer) - Safety Factor: 1.44247



Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	85.1188	1424.57	0	0	0
2	88.5095	1424.8	609.348	315.885	27.4021
3	91.9002	1425.08	1293.98	670.796	27.4021
4	95.291	1425.4	2085.85	1081.3	27.4021
5	98.6817	1425.75	2989.45	1549.72	27.4021
6	102.072	1426.15	3980.88	2063.68	27.4021
7	105.463	1426.59	5037.64	2611.5	27.4021
8	108.854	1427.06	6138.6	3182.23	27.4021
9	112.244	1427.58	7263.95	3765.61	27.4021
10	115.635	1428.14	8395.09	4351.99	27.4021
11	119.026	1428.74	9514.63	4932.36	27.4021
12	122.417	1429.38	10606.3	5498.29	27.4022
13	125.807	1430.06	11655	6041.94	27.4022
14	129.198	1430.79	12646.6	6555.98	27.4022
15	132.684	1431.58	13771.4	7139.05	27.4021
16	136.171	1432.41	14753	7647.94	27.4022
17	139.657	1433.29	15602.1	8088.07	27.4021
18	143.144	1434.22	16357.7	8479.77	27.4021
19	146.63	1435.19	17035.8	8831.33	27.4021
20	150.117	1436.21	17627.9	9138.25	27.4021
21	153.603	1437.28	18126.1	9396.53	27.4021
22	157.089	1438.39	18523.8	9602.68	27.4021
23	160.576	1439.55	18815.1	9753.68	27.4021
24	164.062	1440.77	18995.1	9846.99	27.4021
25	167.549	1442.03	19059.8	9880.55	27.4021
26	171.035	1443.34	19006.2	9852.75	27.4021
27	174.521	1444.7	18832	9762.44	27.4021
28	178.008	1446.12	18535.8	9608.9	27.4021
29	181.494	1447.59	18117.2	9391.88	27.402
30	184.981	1449.11	17576.4	9111.58	27.4022
31	188.467	1450.68	16914.9	8768.63	27.4021
32	191.953	1452.32	16134.6	8364.11	27.402
33	195.44	1454	15238.5	7899.57	27.402
34	198.926	1455.75	14270.1	7397.56	27.402
35	202.413	1457.55	13312.2	6901.03	27.4022
36	205.899	1459.42	12389.3	6422.6	27.4022
37	209.386	1461.35	11483.9	5953.21	27.4021
38	212.872	1463.34	10528.2	5457.81	27.4022
39	216.358	1465.39	9529.67	4940.16	27.4021
40	219.845	1467.51	8498.58	4405.64	27.4021
41	223.331	1469.7	7446.46	3860.23	27.4021
42	226.97	1472.05	6309.94	3271.06	27.4021
43	230.608	1474.49	5194.03	2692.57	27.4021
44	234.246	1477	4116.87	2134.17	27.4021
45	237.885	1479.6	3098.16	1606.08	27.4021
46	241.523	1482.28	2159.28	1119.36	27.402
47	245.162	1485.05	1323.4	686.045	27.402
48	248.8	1487.92	615.625	319.139	27.4022
49	252.439	1490.87	63.1486	32.736	27.4021
50	256.077	1493.93	-164.597	-85.3266	27.4021
51	259.715	1497.09	0	0	0

List Of Coordinates

External Boundary

X	Y
386	1320
386	1503.05
350.671	1481.63
318.787	1497.09
252.442	1497.09
206.548	1475.68
195.92	1475.68
139.398	1447.66
129.575	1447.66
91.411	1426.56
88.8798	1425.76
84.808	1424.47
67.739	1423.34
63.2505	1423.07
33.117	1421.25
11.056	1421.09
0	1422.37
0	1406.94
0	1320

Material Boundary

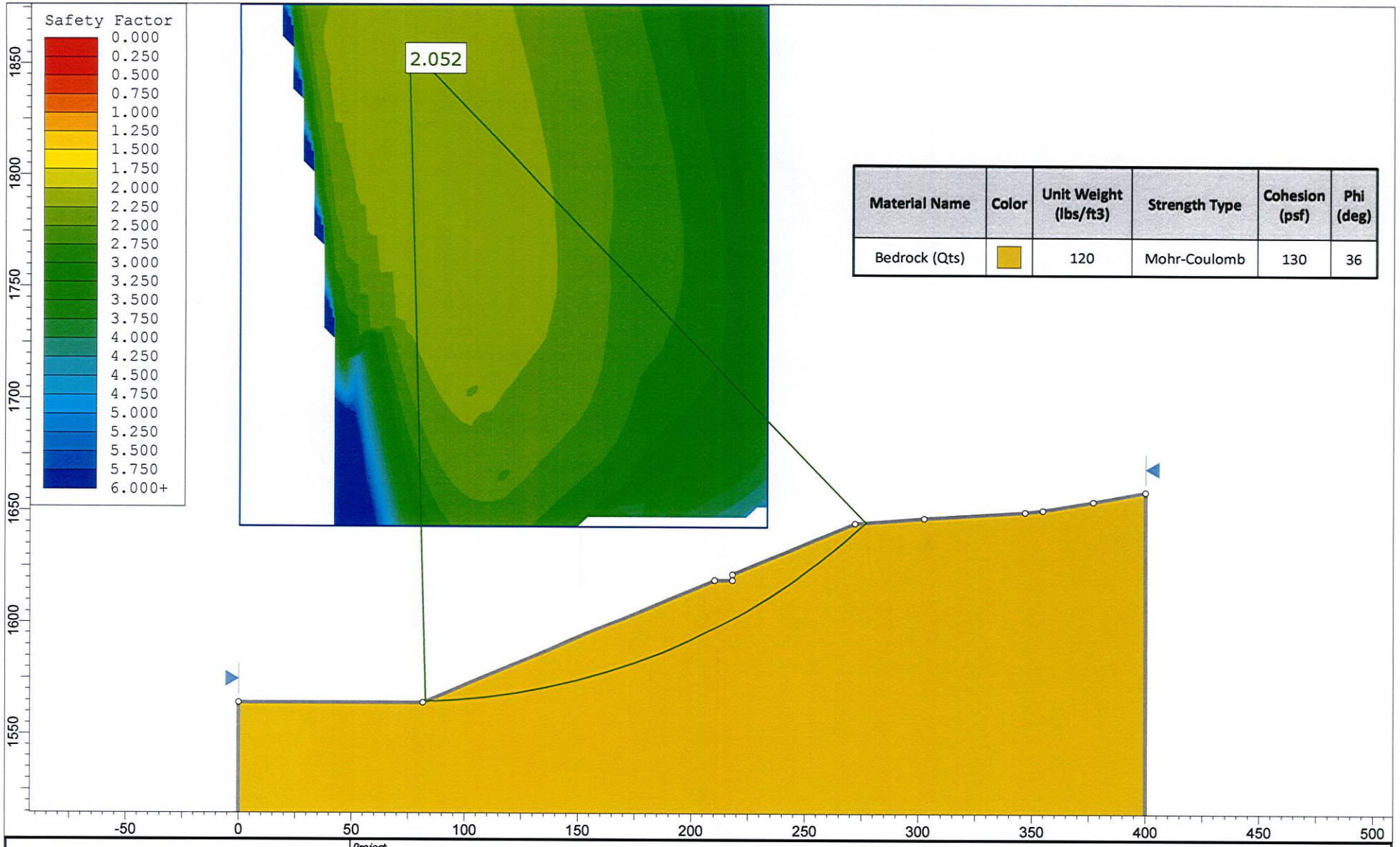
X	Y
88.8798	1425.76
136.893	1438.74
144.583	1440.81
183.792	1455.02
205.04	1464.06
218.775	1468.64
228.87	1470.98
243.427	1473.45
258.571	1475.44
269.605	1475.44
290.971	1473.68
301.419	1471.92
311.632	1468.75
317.149	1467.93
322.549	1468.28
333.936	1473.33
350.671	1481.63

Material Boundary

X	Y
63.2505	1423.07
74.0749	1412.15
92.475	1413.35
110.438	1416.7
116.49	1419.02
122.864	1424.36
131.491	1433.12
136.893	1438.74

Material Boundary

X	Y
0	1406.94
19.488	1408.27
35.827	1409.42
56.67	1411.18
74.0749	1412.15



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Bedrock (Qts)		120	Mohr-Coulomb	130	36

SLIDEINTERPRET 7.009

Project	# 6946			
Analysis Description	5-5' Global (Static)			
Drawn By	JG	Scale	1:700	Company: GeoSoils Consultants, Inc.
Date	4/7/2017			File Name: 6946 5-5 Static.slim

Slide Analysis Information

6946

Project Summary

File Name:	6946 5-5 Static.slim
Slide Modeler Version:	7.009
Project Title:	# 6946
Analysis:	5-5' Global (Static)
Author:	JG
Company:	GeoSoils Consultants, Inc.
Date Created:	4/7/2017

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Failure Direction:	Right to Left
Data Output:	Standard
Maximum Material Properties:	20
Maximum Support Properties:	20

Analysis Options

Slices Type:	Vertical
Analysis Methods Used	
	Spencer
Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft3]:	62.4
Advanced Groundwater Method:	Rapid Drawdown
Rapid Drawdown Method:	Effective Stress using B-Bar

Random Numbers

Pseudo-random Seed:	10116
Random Number Generation Method:	Park and Miller v.3

Surface Options

Surface Type:	Circular
Search Method:	Grid Search
Radius Increment:	10
Composite Surfaces:	Disabled
Reverse Curvature:	Invalid Surfaces
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic

Advanced Seismic Analysis:	No
Staged pseudostatic analysis:	No

Material Properties

Property	Bedrock (Qts)
Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft3]	120
Cohesion [psf]	130
Friction Angle [deg]	36
Water Surface	None
Ru Value	0
Rapid Drawdown Undrained Behaviour	Yes
RD Shear Strength Envelope Properties	CR: 0 PhiR: 0

Global Minimums

Method: spencer

FS	2.052030
Center:	74.851, 1857.551
Radius:	293.091
Left Slip Surface Endpoint:	82.692, 1564.565
Right Slip Surface Endpoint:	276.967, 1645.297
Resisting Moment:	.91166e+007 lb-ft
Driving Moment:	.85553e+007 lb-ft
Resisting Horizontal Force:	47328 lb
Driving Horizontal Force:	20529 lb
Total Slice Area:	945.26 ft2

Valid / Invalid Surfaces

Method: spencer

Number of Valid Surfaces: 14952
Number of Invalid Surfaces: 13659

Error Codes:

Error Code -102 reported for 462 surfaces
Error Code -103 reported for 145 surfaces
Error Code -106 reported for 246 surfaces
Error Code -108 reported for 2430 surfaces
Error Code -111 reported for 45 surfaces
Error Code -114 reported for 215 surfaces
Error Code -116 reported for 10116 surfaces

Error Codes

The following errors were encountered during the computation:

-102 = Two surface / slope intersections, but resulting arc is actually outside soil region.
-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.
-106 = Average slice width is less than 0.0001 * (maximum horizontal extent of soil region). This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.
-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
-111 = safety factor equation did not converge
-114 = Surface with Reverse Curvature.
-116 = Not enough slices to analyze the surface Increase the number of slices in the job control in the modeler.

Slice Data

Global Minimum Query (spencer) - Safety Factor: 2.05203

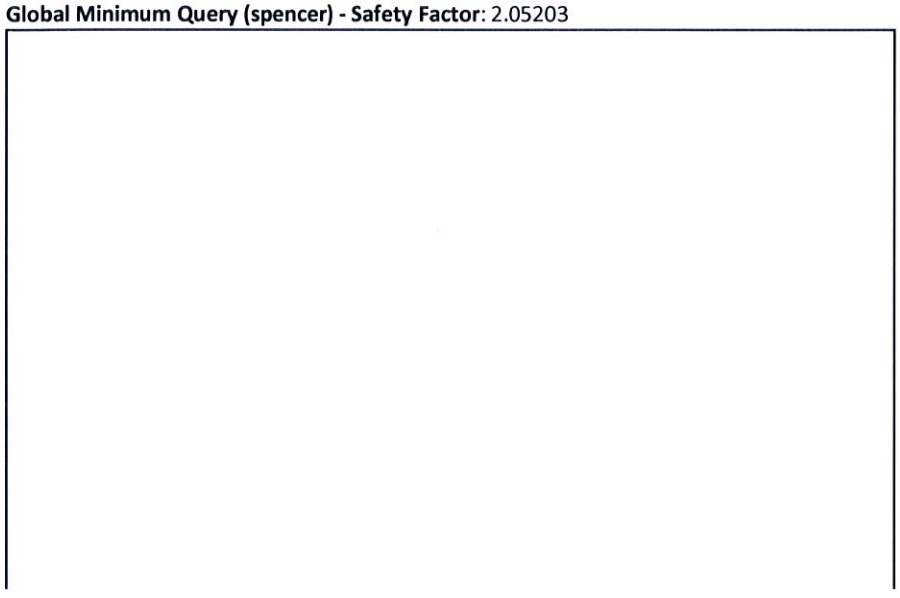
Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	3.8855	358.699	1.91283	Bedrock (Qts)	130	36	109.271	224.227	129.692	0	129.692
2	3.8855	1064.06	2.67303	Bedrock (Qts)	130	36	180.166	369.706	329.928	0	329.928
3	3.8855	1745.32	3.4337	Bedrock	130	36	247.1	507.057	518.974	0	518.974

				(Qts)							
4	3.8855	2402.44	4.19497	Bedrock (Qts)	130	36	310.186	636.511	697.152	0	697.152
5	3.8855	3035.34	4.95699	Bedrock (Qts)	130	36	369.53	758.287	864.763	0	864.763
6	3.8855	3643.94	5.71989	Bedrock (Qts)	130	36	425.233	872.59	1022.09	0	1022.09
7	3.8855	4228.17	6.48381	Bedrock (Qts)	130	36	477.389	979.616	1169.4	0	1169.4
8	3.8855	4787.91	7.24889	Bedrock (Qts)	130	36	526.088	1079.55	1306.94	0	1306.94
9	3.8855	5323.04	8.01527	Bedrock (Qts)	130	36	571.415	1172.56	1434.96	0	1434.96
10	3.8855	5833.44	8.7831	Bedrock (Qts)	130	36	613.451	1258.82	1553.68	0	1553.68
11	3.8855	6318.95	9.55252	Bedrock (Qts)	130	36	652.271	1338.48	1663.32	0	1663.32
12	3.8855	6779.41	10.3237	Bedrock (Qts)	130	36	687.943	1411.68	1764.08	0	1764.08
13	3.8855	7214.65	11.0967	Bedrock (Qts)	130	36	720.545	1478.58	1856.16	0	1856.16
14	3.8855	7624.47	11.8718	Bedrock (Qts)	130	36	750.13	1539.29	1939.73	0	1939.73
15	3.8855	8008.66	12.6492	Bedrock (Qts)	130	36	776.772	1593.96	2014.96	0	2014.96
16	3.8855	8366.99	13.4289	Bedrock (Qts)	130	36	800.519	1642.69	2082.03	0	2082.03
17	3.8855	8699.22	14.2111	Bedrock (Qts)	130	36	821.426	1685.59	2141.09	0	2141.09
18	3.8855	9005.08	14.9961	Bedrock (Qts)	130	36	839.554	1722.79	2192.28	0	2192.28
19	3.8855	9284.28	15.7839	Bedrock (Qts)	130	36	854.944	1754.37	2235.75	0	2235.75
20	3.8855	9536.53	16.5748	Bedrock (Qts)	130	36	867.643	1780.43	2271.62	0	2271.62
21	3.8855	9761.5	17.369	Bedrock (Qts)	130	36	877.702	1801.07	2300.03	0	2300.03
22	3.8855	9958.84	18.1666	Bedrock (Qts)	130	36	885.158	1816.37	2321.09	0	2321.09
23	3.8855	10128.2	18.968	Bedrock (Qts)	130	36	890.05	1826.41	2334.91	0	2334.91
24	3.8855	10269.1	19.7731	Bedrock (Qts)	130	36	892.424	1831.28	2341.61	0	2341.61
25	3.8855	10381.2	20.5824	Bedrock (Qts)	130	36	892.307	1831.04	2341.28	0	2341.28
26	3.8855	10464	21.396	Bedrock (Qts)	130	36	889.734	1825.76	2334.02	0	2334.02
27	3.8855	10517.1	22.2141	Bedrock (Qts)	130	36	884.743	1815.52	2319.92	0	2319.92
28	3.8855	10539.9	23.037	Bedrock (Qts)	130	36	877.36	1800.37	2299.07	0	2299.07
29	3.8855	10531.9	23.865	Bedrock (Qts)	130	36	867.619	1780.38	2271.55	0	2271.55
30	3.8855	10492.4	24.6984	Bedrock (Qts)	130	36	855.538	1755.59	2237.44	0	2237.44
31	3.8855	10420.9	25.5373	Bedrock (Qts)	130	36	841.152	1726.07	2196.8	0	2196.8
32	3.8855	10316.8	26.3821	Bedrock (Qts)	130	36	824.481	1691.86	2149.72	0	2149.72

33	3.8855	10170.2	27.2332	Bedrock (Qts)	130	36	804.891	1651.66	2094.39	0	2094.39
34	3.8855	9500.1	28.0909	Bedrock (Qts)	130	36	747.703	1534.31	1932.87	0	1932.87
35	3.8855	8681.02	28.9554	Bedrock (Qts)	130	36	680.974	1397.38	1744.4	0	1744.4
36	3.8855	9148.58	29.8272	Bedrock (Qts)	130	36	706.486	1449.73	1816.46	0	1816.46
37	3.8855	8865.42	30.7067	Bedrock (Qts)	130	36	678.801	1392.92	1738.26	0	1738.26
38	3.8855	8544.46	31.5943	Bedrock (Qts)	130	36	648.962	1331.69	1653.99	0	1653.99
39	3.8855	8184.61	32.4905	Bedrock (Qts)	130	36	616.984	1266.07	1563.67	0	1563.67
40	3.8855	7784.73	33.3956	Bedrock (Qts)	130	36	582.886	1196.1	1467.37	0	1467.37
41	3.8855	7343.56	34.3103	Bedrock (Qts)	130	36	546.685	1121.82	1365.12	0	1365.12
42	3.8855	6859.75	35.2351	Bedrock (Qts)	130	36	508.393	1043.24	1256.96	0	1256.96
43	3.8855	6331.84	36.1705	Bedrock (Qts)	130	36	468.025	960.401	1142.95	0	1142.95
44	3.8855	5758.26	37.1173	Bedrock (Qts)	130	36	425.596	873.335	1023.11	0	1023.11
45	3.8855	5137.28	38.076	Bedrock (Qts)	130	36	381.12	782.07	897.498	0	897.498
46	3.8855	4467.03	39.0475	Bedrock (Qts)	130	36	334.613	686.635	766.143	0	766.143
47	3.8855	3745.47	40.0325	Bedrock (Qts)	130	36	286.086	587.058	629.087	0	629.087
48	3.8855	2970.36	41.032	Bedrock (Qts)	130	36	235.557	483.371	486.373	0	486.373
49	3.8855	2119.64	42.0469	Bedrock (Qts)	130	36	181.874	373.21	334.749	0	334.749
50	3.8855	775.958	43.0783	Bedrock (Qts)	130	36	104.595	214.632	116.485	0	116.485

Interslice Data

Global Minimum Query (spencer) - Safety Factor: 2.05203

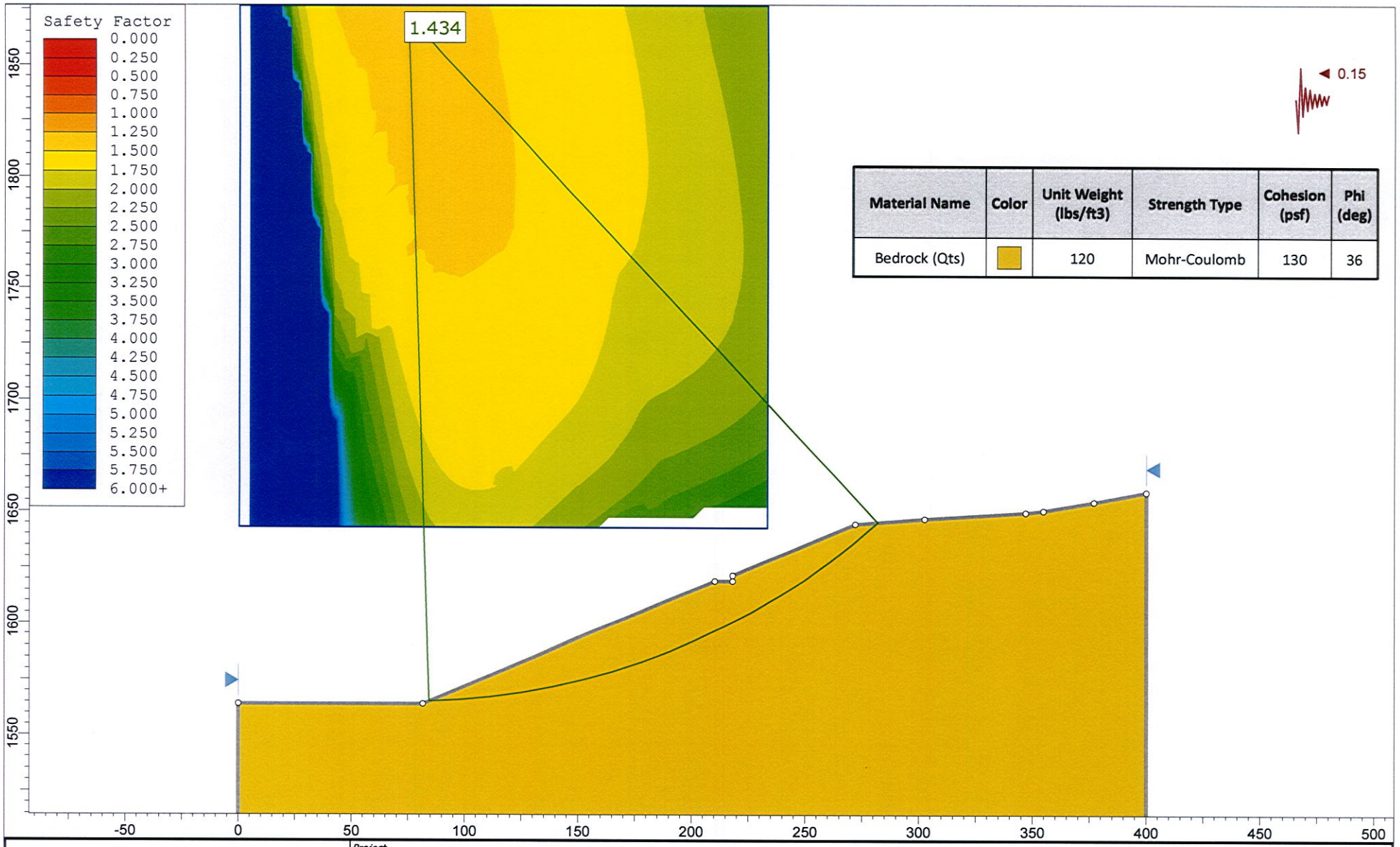


Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	82.6916	1564.56	0	0	0
2	86.5771	1564.69	407.611	161.365	21.5976
3	90.4626	1564.88	1047.58	414.717	21.5977
4	94.3481	1565.11	1886.4	746.79	21.5977
5	98.2336	1565.39	2892.57	1145.12	21.5978
6	102.119	1565.73	4036.52	1597.98	21.5977
7	106.005	1566.12	5290.46	2094.4	21.5977
8	109.89	1566.56	6628.4	2624.06	21.5977
9	113.776	1567.06	8025.96	3177.33	21.5977
10	117.661	1567.6	9460.4	3745.2	21.5977
11	121.547	1568.2	10910.5	4319.26	21.5977
12	125.432	1568.86	12356.5	4891.71	21.5977
13	129.318	1569.57	13780.1	5455.29	21.5977
14	133.203	1570.33	15164.4	6003.3	21.5977
15	137.089	1571.14	16493.8	6529.57	21.5976
16	140.974	1572.02	17753.9	7028.43	21.5977
17	144.86	1572.94	18931.8	7494.74	21.5977
18	148.745	1573.93	20015.7	7923.82	21.5976
19	152.631	1574.97	20994.9	8311.5	21.5977
20	156.516	1576.07	21860.3	8654.06	21.5976
21	160.402	1577.22	22603.4	8948.26	21.5977
22	164.287	1578.44	23217.4	9191.31	21.5976
23	168.173	1579.71	23696.2	9380.89	21.5977
24	172.058	1581.05	24035.3	9515.12	21.5977
25	175.944	1582.45	24231	9592.58	21.5976
26	179.829	1583.91	24280.8	9612.3	21.5977
27	183.715	1585.43	24183.5	9573.78	21.5977
28	187.6	1587.01	23938.9	9476.97	21.5977
29	191.486	1588.67	23548.2	9322.29	21.5977
30	195.371	1590.39	23013.5	9110.63	21.5977
31	199.257	1592.17	22338.4	8843.36	21.5977
32	203.142	1594.03	21527.6	8522.36	21.5977
33	207.028	1595.96	20587	8150.02	21.5977
34	210.913	1597.96	19525.3	7729.69	21.5977
35	214.799	1600.03	18421.1	7292.55	21.5976
36	218.684	1602.18	17316	6855.1	21.5977
37	222.57	1604.41	16013.7	6339.54	21.5977
38	226.455	1606.71	14639.1	5795.34	21.5977
39	230.341	1609.1	13207.1	5228.44	21.5977
40	234.226	1611.58	11734.5	4645.45	21.5976
41	238.112	1614.14	10239.8	4053.74	21.5977
42	241.997	1616.79	8743.63	3461.44	21.5977
43	245.883	1619.54	7268.66	2877.53	21.5977
44	249.768	1622.38	5839.85	2311.89	21.5977
45	253.654	1625.32	4484.61	1775.37	21.5977
46	257.539	1628.36	3233.02	1279.89	21.5977
47	261.425	1631.51	2118.07	838.504	21.5977
48	265.31	1634.78	1175.93	465.527	21.5976
49	269.196	1638.16	446.266	176.668	21.5976
50	273.081	1641.66	-20.3394	-8.05197	21.5976
51	276.967	1645.3	0	0	0

List Of Coordinates

External Boundary

X	Y
400	1480
400	1659.19
376.988	1654.84
354.774	1650.96
347.016	1650.14
302.568	1647.31
272.113	1644.92
218.154	1621.86
218.154	1619.37
210.322	1619.37
81.553	1564.08
0	1564.08
0	1480



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Bedrock (Qts)		120	Mohr-Coulomb	130	36

SLIDEINTERPRET 7.009

Project	# 6946			
Analysis Description	5-5' Global (Seismic)			
Drawn By	JG	Scale	1:700	Company: GeoSoils Consultants, Inc.
Date	4/7/2017			File Name: 6946 5-5 Seismic.slim

Slide Analysis Information

6946

Project Summary

File Name:	6946 5-5 Seismic.slim
Slide Modeler Version:	7.009
Project Title:	# 6946
Analysis:	5-5' Global (Seismic)
Author:	JG
Company:	GeoSoils Consultants, Inc.
Date Created:	4/7/2017

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Failure Direction:	Right to Left
Data Output:	Standard
Maximum Material Properties:	20
Maximum Support Properties:	20

Analysis Options

Slices Type:	Vertical
Analysis Methods Used	
	Spencer
Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft3]:	62.4
Advanced Groundwater Method:	Rapid Drawdown
Rapid Drawdown Method:	Effective Stress using B-Bar

Random Numbers

Pseudo-random Seed:	10116
Random Number Generation Method:	Park and Miller v.3

Surface Options

Surface Type:	Circular
Search Method:	Grid Search
Radius Increment:	10
Composite Surfaces:	Disabled
Reverse Curvature:	Invalid Surfaces
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic

Advanced Seismic Analysis:	No
Staged pseudostatic analysis:	No

Loading

Seismic Load Coefficient (Horizontal): 0.15

Material Properties

Property	Bedrock (Qts)
Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft3]	120
Cohesion [psf]	130
Friction Angle [deg]	36
Water Surface	None
Ru Value	0
Rapid Drawdown Undrained Behaviour	Yes
RD Shear Strength Envelope Properties	CR: 0 PhiR: 0

Global Minimums

Method: spencer

FS	1.433790
Center:	74.851, 1871.538
Radius:	306.433
Left Slip Surface Endpoint:	84.289, 1565.251
Right Slip Surface Endpoint:	281.957, 1645.688
Resisting Moment:	.20863e+007 lb-ft
Driving Moment:	.72513e+007 lb-ft
Resisting Horizontal Force:	47088 lb
Driving Horizontal Force:	72332 lb
Total Slice Area:	093.67 ft2

Valid / Invalid Surfaces

Method: spencer

Number of Valid Surfaces: 17293
Number of Invalid Surfaces: 11318

Error Codes:

Error Code -102 reported for 462 surfaces
Error Code -103 reported for 145 surfaces
Error Code -106 reported for 246 surfaces
Error Code -108 reported for 15 surfaces
Error Code -111 reported for 119 surfaces
Error Code -114 reported for 215 surfaces
Error Code -116 reported for 10116 surfaces

Error Codes

The following errors were encountered during the computation:

-102 = Two surface / slope intersections, but resulting arc is actually outside soil region.
-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.
-106 = Average slice width is less than 0.0001 * (maximum horizontal extent of soil region). This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.
-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
-111 = safety factor equation did not converge
-114 = Surface with Reverse Curvature.
-116 = Not enough slices to analyze the surface Increase the number of slices in the job control in the modeler.

Slice Data

Global Minimum Query (spencer) - Safety Factor: 1.43379

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	3.95337	367.706	2.13467	Bedrock (Qts)	130	36	172.04	246.669	160.581	0	160.581
2	3.95337	1090.98	2.87458	Bedrock (Qts)	130	36	277.199	397.445	368.107	0	368.107
3	3.95337	1789.97	3.61498	Bedrock	130	36	375.579	538.502	562.254	0	562.254

				(Qts)							
4	3.95337	2464.61	4.35598	Bedrock (Qts)	130	36	467.451	670.226	743.558	0	743.558
5	3.95337	3114.85	5.09772	Bedrock (Qts)	130	36	553.067	792.982	912.518	0	912.518
6	3.95337	3740.59	5.84031	Bedrock (Qts)	130	36	632.668	907.113	1069.6	0	1069.6
7	3.95337	4341.76	6.58388	Bedrock (Qts)	130	36	706.478	1012.94	1215.26	0	1215.26
8	3.95337	4918.24	7.32858	Bedrock (Qts)	130	36	774.708	1110.77	1349.91	0	1349.91
9	3.95337	5469.92	8.07451	Bedrock (Qts)	130	36	837.556	1200.88	1473.94	0	1473.94
10	3.95337	5996.66	8.82183	Bedrock (Qts)	130	36	895.215	1283.55	1587.73	0	1587.73
11	3.95337	6498.33	9.57067	Bedrock (Qts)	130	36	947.858	1359.03	1691.62	0	1691.62
12	3.95337	6974.76	10.3212	Bedrock (Qts)	130	36	995.655	1427.56	1785.94	0	1785.94
13	3.95337	7425.78	11.0734	Bedrock (Qts)	130	36	1038.76	1489.37	1871.01	0	1871.01
14	3.95337	7851.19	11.8277	Bedrock (Qts)	130	36	1077.33	1544.66	1947.12	0	1947.12
15	3.95337	8250.79	12.584	Bedrock (Qts)	130	36	1111.5	1593.66	2014.55	0	2014.55
16	3.95337	8624.36	13.3425	Bedrock (Qts)	130	36	1141.41	1636.54	2073.57	0	2073.57
17	3.95337	8971.67	14.1035	Bedrock (Qts)	130	36	1167.18	1673.49	2124.43	0	2124.43
18	3.95337	9292.44	14.8669	Bedrock (Qts)	130	36	1188.93	1704.68	2167.36	0	2167.36
19	3.95337	9586.42	15.6331	Bedrock (Qts)	130	36	1206.79	1730.28	2202.6	0	2202.6
20	3.95337	9853.29	16.4022	Bedrock (Qts)	130	36	1220.86	1750.45	2230.36	0	2230.36
21	3.95337	10092.8	17.1743	Bedrock (Qts)	130	36	1231.23	1765.33	2250.84	0	2250.84
22	3.95337	10304.5	17.9497	Bedrock (Qts)	130	36	1238.02	1775.06	2264.23	0	2264.23
23	3.95337	10488.1	18.7285	Bedrock (Qts)	130	36	1241.31	1779.78	2270.73	0	2270.73
24	3.95337	10643.2	19.5108	Bedrock (Qts)	130	36	1241.2	1779.62	2270.51	0	2270.51
25	3.95337	10769.4	20.297	Bedrock (Qts)	130	36	1237.77	1774.7	2263.74	0	2263.74
26	3.95337	10866.3	21.0872	Bedrock (Qts)	130	36	1231.1	1765.14	2250.58	0	2250.58
27	3.95337	10933.4	21.8816	Bedrock (Qts)	130	36	1221.27	1751.04	2231.17	0	2231.17
28	3.95337	10970.2	22.6805	Bedrock (Qts)	130	36	1208.35	1732.52	2205.68	0	2205.68
29	3.95337	10976.2	23.484	Bedrock (Qts)	130	36	1192.41	1709.67	2174.23	0	2174.23
30	3.95337	10950.8	24.2925	Bedrock (Qts)	130	36	1173.53	1682.6	2136.97	0	2136.97
31	3.95337	10893.5	25.1062	Bedrock (Qts)	130	36	1151.77	1651.39	2094.02	0	2094.02
32	3.95337	10797.7	25.9253	Bedrock (Qts)	130	36	1126.63	1615.35	2044.4	0	2044.4

33	3.95337	10181	26.7501	Bedrock (Qts)	130	36	1052.66	1509.29	1898.43	0	1898.43
34	3.95337	9390.34	27.581	Bedrock (Qts)	130	36	964.318	1382.63	1724.1	0	1724.1
35	3.95337	9914.54	28.4182	Bedrock (Qts)	130	36	998.877	1432.18	1792.29	0	1792.29
36	3.95337	9683.14	29.2621	Bedrock (Qts)	130	36	963.802	1381.89	1723.08	0	1723.08
37	3.95337	9415.28	30.1131	Bedrock (Qts)	130	36	926.203	1327.98	1648.87	0	1648.87
38	3.95337	9110.02	30.9714	Bedrock (Qts)	130	36	886.113	1270.5	1569.76	0	1569.76
39	3.95337	8766.37	31.8375	Bedrock (Qts)	130	36	843.582	1209.52	1485.84	0	1485.84
40	3.95337	8383.24	32.7118	Bedrock (Qts)	130	36	798.673	1145.13	1397.2	0	1397.2
41	3.95337	7959.47	33.5948	Bedrock (Qts)	130	36	751.419	1077.38	1303.95	0	1303.95
42	3.95337	7493.82	34.4869	Bedrock (Qts)	130	36	701.869	1006.33	1206.17	0	1206.17
43	3.95337	6984.94	35.3887	Bedrock (Qts)	130	36	650.069	932.062	1103.94	0	1103.94
44	3.95337	6431.38	36.3006	Bedrock (Qts)	130	36	596.061	854.627	997.363	0	997.363
45	3.95337	5831.58	37.2234	Bedrock (Qts)	130	36	539.89	774.089	886.512	0	886.512
46	3.95337	5183.82	38.1576	Bedrock (Qts)	130	36	481.6	690.513	771.48	0	771.48
47	3.95337	4486.26	39.1039	Bedrock (Qts)	130	36	421.233	603.959	652.349	0	652.349
48	3.95337	3658.29	40.0631	Bedrock (Qts)	130	36	352.984	506.105	517.663	0	517.663
49	3.95337	2285.63	41.036	Bedrock (Qts)	130	36	247.08	354.261	308.668	0	308.668
50	3.95337	771.491	42.0235	Bedrock (Qts)	130	36	131.893	189.106	81.3526	0	81.3526

Interslice Data

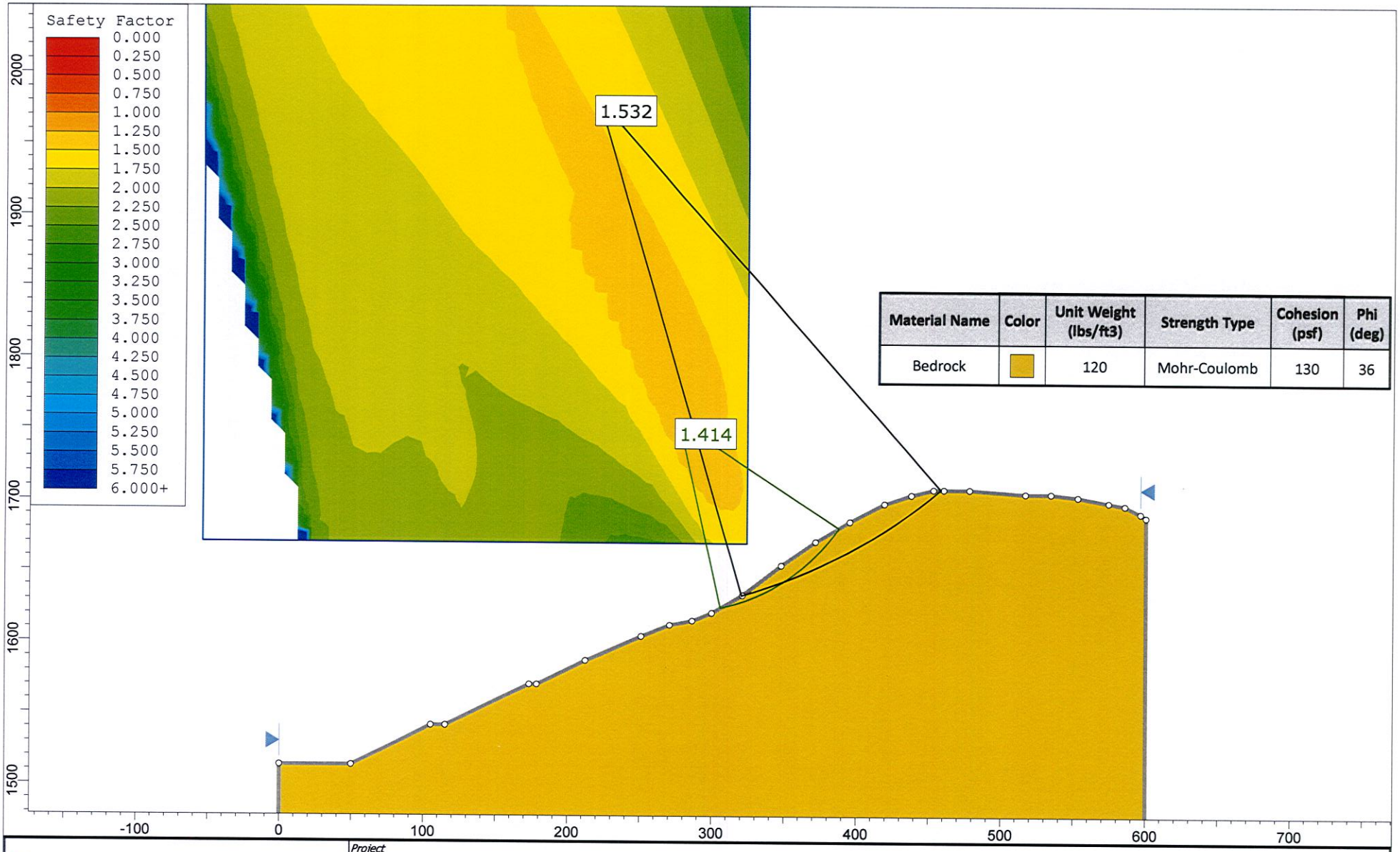
Global Minimum Query (spencer) - Safety Factor: 1.43379

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	84.2887	1565.25	0	0	0
2	88.242	1565.4	602.556	303.767	26.7541
3	92.1954	1565.6	1463.7	737.898	26.7541
4	96.1488	1565.85	2542.29	1281.64	26.754
5	100.102	1566.15	3800.05	1915.72	26.7541
6	104.056	1566.5	5201.47	2622.22	26.7541
7	108.009	1566.9	6713.58	3384.52	26.7541
8	111.962	1567.36	8305.86	4187.24	26.7541
9	115.916	1567.87	9950.06	5016.13	26.7541
10	119.869	1568.43	11620.1	5858.06	26.7541
11	123.822	1569.04	13292	6700.92	26.7541
12	127.776	1569.71	14943.7	7533.6	26.7541
13	131.729	1570.43	16555.1	8345.93	26.7541
14	135.683	1571.2	18107.7	9128.64	26.7541
15	139.636	1572.03	19584.8	9873.31	26.7541
16	143.589	1572.91	20971.5	10572.4	26.7541
17	147.543	1573.85	22254.2	11219	26.754
18	151.496	1574.85	23421	11807.3	26.7542
19	155.449	1575.89	24461.4	12331.8	26.7542
20	159.403	1577	25366.4	12788	26.7541
21	163.356	1578.16	26128.2	13172	26.754
22	167.31	1579.39	26740.5	13480.7	26.7541
23	171.263	1580.67	27198.3	13711.5	26.7541
24	175.216	1582.01	27497.9	13862.5	26.754
25	179.17	1583.41	27636.7	13932.5	26.7541
26	183.123	1584.87	27613.7	13920.9	26.7541
27	187.076	1586.39	27428.6	13827.6	26.7541
28	191.03	1587.98	27083	13653.4	26.7541
29	194.983	1589.63	26579.1	13399.3	26.754
30	198.937	1591.35	25920.7	13067.4	26.754
31	202.89	1593.14	25112.7	12660.1	26.7541
32	206.843	1594.99	24161.4	12180.5	26.7541
33	210.797	1596.91	23074.9	11632.7	26.7539
34	214.75	1598.9	21933.9	11057.6	26.7542
35	218.703	1600.97	20784.2	10477.9	26.754
36	222.657	1603.11	19419	9789.72	26.7541
37	226.61	1605.32	17967	9057.69	26.754
38	230.564	1607.62	16442.3	8289.05	26.754
39	234.517	1609.99	14860.6	7491.7	26.7541
40	238.47	1612.44	13239.4	6674.36	26.754
41	242.424	1614.98	11597.3	5846.57	26.7541
42	246.377	1617.61	9955.15	5018.7	26.7541
43	250.33	1620.32	8335.23	4202.05	26.7541
44	254.284	1623.13	6761.88	3408.87	26.7541
45	258.237	1626.04	5261.47	2652.47	26.7541
46	262.191	1629.04	3862.53	1947.22	26.7541
47	266.144	1632.15	2595.95	1308.7	26.7541
48	270.097	1635.36	1495.16	753.758	26.7541
49	274.051	1638.68	623.362	314.256	26.7541
50	278.004	1642.13	196.973	99.3003	26.7541
51	281.957	1645.69	0	0	0

List Of Coordinates

External Boundary

X	Y
400	1480
400	1659.19
376.988	1654.84
354.774	1650.96
347.016	1650.14
302.568	1647.31
272.113	1644.92
218.154	1621.86
218.154	1619.37
210.322	1619.37
81.553	1564.08
0	1564.08
0	1480



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Bedrock		120	Mohr-Coulomb	130	36

SLIDEINTERPRET 7.009

Project	# 6946			
Analysis Description	9-9' Global (Static)			
Drawn By	JG	Scale	1:1100	Company: GeoSoils Consultants, Inc.
Date	4/11/2017			File Name: 6946 9-9 Static.slim

Slide Analysis Information

6946

Project Summary

File Name:	6946 9-9 Static.slim
Slide Modeler Version:	7.009
Project Title:	# 6946
Analysis:	9-9' Global (Static)
Author:	JG
Company:	GeoSoils Consultants, Inc.
Date Created:	4/11/2017

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Failure Direction:	Right to Left
Data Output:	Standard
Maximum Material Properties:	20
Maximum Support Properties:	20

Analysis Options

Slices Type:	Vertical
Analysis Methods Used	
	Bishop simplified
	Spencer
Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft3]:	62.4
Advanced Groundwater Method:	None

Random Numbers

Pseudo-random Seed:	10116
Random Number Generation Method:	Park and Miller v.3

Surface Options

Surface Type:	Circular
Search Method:	Grid Search
Radius Increment:	10
Composite Surfaces:	Disabled
Reverse Curvature:	Invalid Surfaces
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic

Advanced Seismic Analysis:	No
Staged pseudostatic analysis:	No

Material Properties

Property	Bedrock
Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft3]	120
Cohesion [psf]	130
Friction Angle [deg]	36
Water Surface	None
Ru Value	0

Global Minimums

Method: bishop simplified

FS	1.414080
Center:	276.659, 1755.326
Radius:	133.206
Left Slip Surface Endpoint:	305.646, 1625.312
Right Slip Surface Endpoint:	387.555, 1681.528
Resisting Moment:	.18071e+006 lb-ft
Driving Moment:	.78519e+006 lb-ft
Total Slice Area:	51.387 ft2

Method: spencer

FS	1.411940
Center:	286.106, 1745.880
Radius:	120.139
Left Slip Surface Endpoint:	310.674, 1628.279
Right Slip Surface Endpoint:	387.558, 1681.530
Resisting Moment:	.05776e+006 lb-ft
Driving Moment:	.99863e+006 lb-ft
Resisting Horizontal Force:	8223.9 lb
Driving Horizontal Force:	4154.4 lb
Total Slice Area:	25.712 ft2

Valid / Invalid Surfaces

Method: bishop simplified

Number of Valid Surfaces: 16652
Number of Invalid Surfaces: 1839

Error Codes:

Error Code -103 reported for 32 surfaces
Error Code -106 reported for 84 surfaces
Error Code -108 reported for 42 surfaces
Error Code -114 reported for 471 surfaces
Error Code -1000 reported for 1210 surfaces

Method: spencer

Number of Valid Surfaces: 16379
Number of Invalid Surfaces: 2112

Error Codes:

Error Code -103 reported for 32 surfaces
Error Code -106 reported for 84 surfaces
Error Code -108 reported for 52 surfaces
Error Code -111 reported for 263 surfaces
Error Code -114 reported for 471 surfaces
Error Code -1000 reported for 1210 surfaces

Error Codes

The following errors were encountered during the computation:

-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.
-106 = Average slice width is less than 0.0001 * (maximum horizontal extent of soil region). This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.
-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
-111 = safety factor equation did not converge
-114 = Surface with Reverse Curvature.
-1000 = No valid slip surfaces are generated at a grid center. Unable to draw a surface.

Slice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.41408

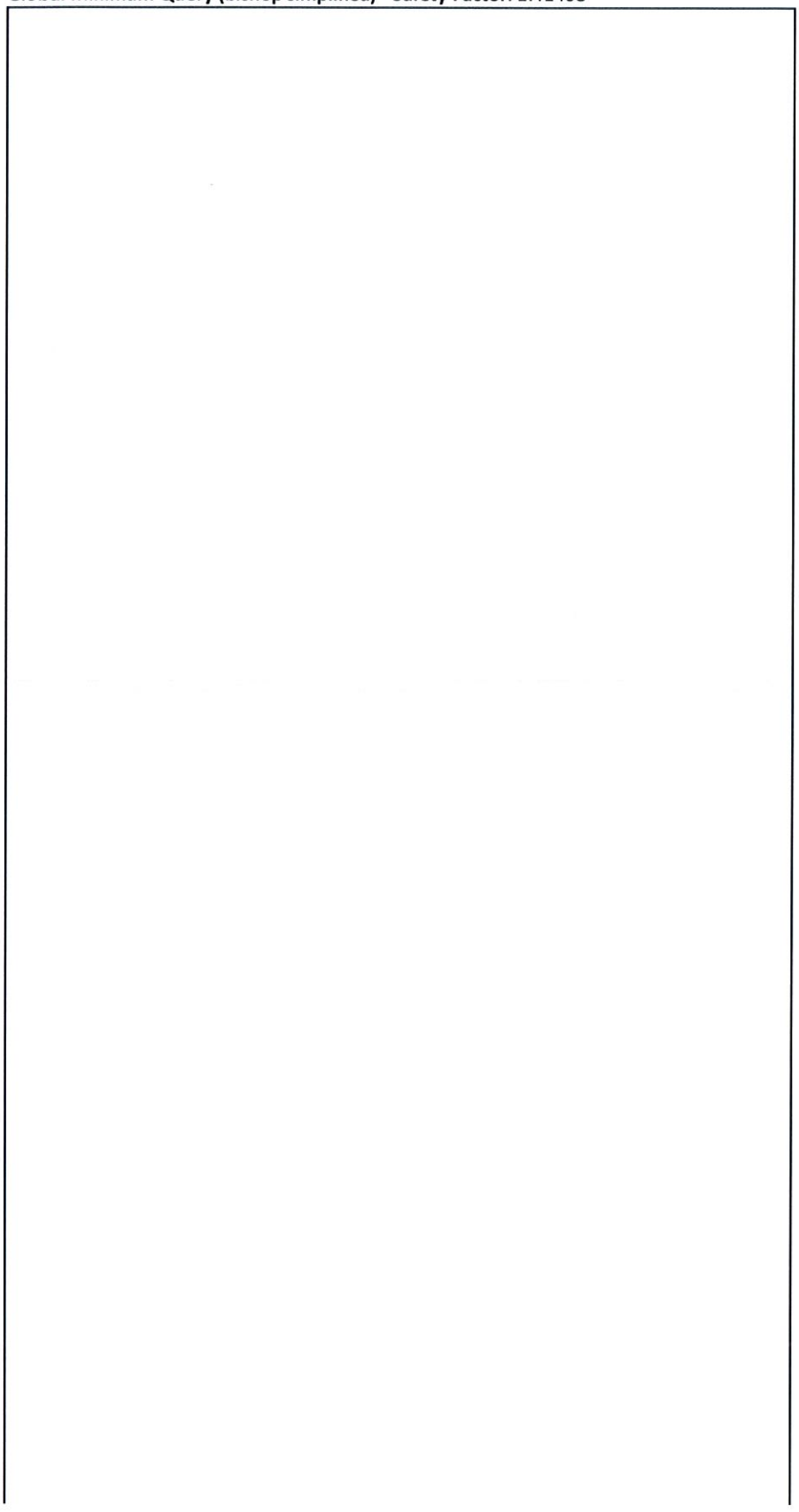
Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	1.63817	58.0574	12.9299	Bedrock	130	36	98.5426	139.347	12.8651	0	12.8651
2	1.63817	172.024	13.654	Bedrock	130	36	129.728	183.446	73.5626	0	73.5626
3	1.63817	281.674	14.3803	Bedrock	130	36	159.332	225.308	131.18	0	131.18
4	1.63817	386.966	15.1089	Bedrock	130	36	187.364	264.948	185.74	0	185.74
5	1.63817	487.856	15.84	Bedrock	130	36	213.837	302.382	237.263	0	237.263
6	1.63817	584.297	16.5739	Bedrock	130	36	238.759	337.624	285.769	0	285.769
7	1.63817	676.24	17.3105	Bedrock	130	36	262.139	370.686	331.276	0	331.276
8	1.63817	763.631	18.05	Bedrock	130	36	283.987	401.58	373.798	0	373.798
9	1.63817	846.414	18.7928	Bedrock	130	36	304.308	430.316	413.35	0	413.35
10	1.63817	933.796	19.5388	Bedrock	130	36	325.569	460.381	454.73	0	454.73
11	1.63817	1058.68	20.2882	Bedrock	130	36	356.42	504.007	514.777	0	514.777
12	1.63817	1183.96	21.0413	Bedrock	130	36	386.949	547.177	574.194	0	574.194
13	1.63817	1304.37	21.7982	Bedrock	130	36	415.779	587.945	630.308	0	630.308
14	1.63817	1419.84	22.5592	Bedrock	130	36	442.912	626.313	683.114	0	683.114
15	1.63817	1530.27	23.3244	Bedrock	130	36	468.348	662.282	732.622	0	732.622
16	1.63817	1635.59	24.094	Bedrock	130	36	492.09	695.854	778.833	0	778.833
17	1.63817	1735.7	24.8682	Bedrock	130	36	514.133	727.025	821.735	0	821.735
18	1.63817	1830.51	25.6474	Bedrock	130	36	534.478	755.794	861.329	0	861.329
19	1.63817	1919.9	26.4316	Bedrock	130	36	553.119	782.154	897.612	0	897.612
20	1.63817	2003.79	27.2213	Bedrock	130	36	570.053	806.101	930.575	0	930.575
21	1.63817	2082.04	28.0166	Bedrock	130	36	585.275	827.626	960.201	0	960.201
22	1.63817	2154.53	28.8178	Bedrock	130	36	598.778	846.72	986.481	0	986.481
23	1.63817	2221.13	29.6252	Bedrock	130	36	610.553	863.371	1009.4	0	1009.4
24	1.63817	2281.7	30.4391	Bedrock	130	36	620.593	877.568	1028.94	0	1028.94
25	1.63817	2336.09	31.2599	Bedrock	130	36	628.885	889.294	1045.08	0	1045.08
26	1.63817	2383.63	32.0879	Bedrock	130	36	635.302	898.368	1057.56	0	1057.56
27	1.63817	2412.96	32.9235	Bedrock	130	36	637.194	901.043	1061.25	0	1061.25
28	1.63817	2430.67	33.767	Bedrock	130	36	636.196	899.632	1059.31	0	1059.31
29	1.63817	2441.47	34.6189	Bedrock	130	36	633.463	895.768	1053.99	0	1053.99
30	1.63817	2445.17	35.4797	Bedrock	130	36	628.981	889.43	1045.26	0	1045.26
31	1.63817	2441.53	36.3498	Bedrock	130	36	622.731	880.592	1033.1	0	1033.1
32	1.63817	2430.31	37.2297	Bedrock	130	36	614.696	869.229	1017.46	0	1017.46
33	1.63817	2411.23	38.12	Bedrock	130	36	604.855	855.313	998.307	0	998.307
34	1.63817	2384.02	39.0213	Bedrock	130	36	593.187	838.814	975.599	0	975.599
35	1.63817	2348.36	39.9343	Bedrock	130	36	579.669	819.699	949.29	0	949.29
36	1.63817	2303.91	40.8596	Bedrock	130	36	564.278	797.934	919.333	0	919.333
37	1.63817	2250.29	41.798	Bedrock	130	36	546.985	773.481	885.675	0	885.675
38	1.63817	2187.11	42.7504	Bedrock	130	36	527.764	746.301	848.267	0	848.267
39	1.63817	2113.92	43.7176	Bedrock	130	36	506.586	716.353	807.047	0	807.047
40	1.63817	2030.23	44.7008	Bedrock	130	36	483.418	683.592	761.953	0	761.953
41	1.63817	1925.23	45.7009	Bedrock	130	36	456.116	644.984	708.813	0	708.813
42	1.63817	1785.31	46.7193	Bedrock	130	36	422.081	596.856	642.571	0	642.571
43	1.63817	1632.19	47.7572	Bedrock	130	36	385.949	545.763	572.25	0	572.25
44	1.63817	1466.02	48.8163	Bedrock	130	36	347.878	491.928	498.149	0	498.149
45	1.63817	1285.95	49.8983	Bedrock	130	36	307.839	435.309	420.223	0	420.223
46	1.63817	1091.04	51.0052	Bedrock	130	36	265.805	375.869	338.41	0	338.41
47	1.63817	880.212	52.1392	Bedrock	130	36	221.751	313.574	252.668	0	252.668
48	1.63817	652.214	53.3028	Bedrock	130	36	175.656	248.392	162.953	0	162.953
49	1.63817	405.613	54.499	Bedrock	130	36	127.504	180.301	69.2341	0	69.2341
50	1.63817	138.735	55.7314	Bedrock	130	36	77.288	109.291	-28.503	0	-28.503

Global Minimum Query (spencer) - Safety Factor: 1.41194

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	1.53769	53.1147	12.1752	Bedrock	130	36	131.175	185.212	75.9929	0	75.9929
2	1.53769	157.392	12.9265	Bedrock	130	36	166.887	235.634	145.393	0	145.393
3	1.53769	257.746	13.6801	Bedrock	130	36	200.076	282.496	209.893	0	209.893
4	1.53769	354.14	14.4361	Bedrock	130	36	230.829	325.916	269.655	0	269.655
5	1.53769	446.536	15.1946	Bedrock	130	36	259.223	366.007	324.835	0	324.835
6	1.53769	534.89	15.956	Bedrock	130	36	285.334	402.875	375.581	0	375.581
7	1.53769	620.428	16.7202	Bedrock	130	36	309.653	437.211	422.84	0	422.84
8	1.53769	735.539	17.4875	Bedrock	130	36	342.674	483.835	487.012	0	487.012
9	1.53769	861.445	18.258	Bedrock	130	36	378.013	533.731	555.689	0	555.689
10	1.53769	983.109	19.032	Bedrock	130	36	410.841	580.083	619.488	0	619.488
11	1.53769	1100.47	19.8096	Bedrock	130	36	441.228	622.987	678.541	0	678.541
12	1.53769	1213.48	20.5911	Bedrock	130	36	469.241	662.54	732.979	0	732.979
13	1.53769	1322.05	21.3765	Bedrock	130	36	494.942	698.829	782.924	0	782.924
14	1.53769	1426.13	22.1662	Bedrock	130	36	518.394	731.941	828.499	0	828.499
15	1.53769	1525.63	22.9604	Bedrock	130	36	539.651	761.955	869.813	0	869.813
16	1.53769	1620.49	23.7592	Bedrock	130	36	558.769	788.949	906.964	0	906.964
17	1.53769	1710.6	24.563	Bedrock	130	36	575.801	812.996	940.063	0	940.063
18	1.53769	1795.88	25.372	Bedrock	130	36	590.793	834.164	969.2	0	969.2
19	1.53769	1876.24	26.1864	Bedrock	130	36	603.794	852.521	994.468	0	994.468
20	1.53769	1951.58	27.0066	Bedrock	130	36	614.848	868.129	1015.95	0	1015.95
21	1.53769	2021.78	27.8328	Bedrock	130	36	623.998	881.048	1033.73	0	1033.73
22	1.53769	2086.72	28.6653	Bedrock	130	36	631.283	891.334	1047.88	0	1047.88
23	1.53769	2146.29	29.5045	Bedrock	130	36	636.742	899.042	1058.49	0	1058.49
24	1.53769	2200.34	30.3507	Bedrock	130	36	640.412	904.223	1065.63	0	1065.63
25	1.53769	2243.57	31.2043	Bedrock	130	36	641.061	905.14	1066.89	0	1066.89
26	1.53769	2271.3	32.0657	Bedrock	130	36	637.7	900.394	1060.35	0	1060.35
27	1.53769	2292.83	32.9353	Bedrock	130	36	632.717	893.358	1050.67	0	1050.67
28	1.53769	2308.22	33.8135	Bedrock	130	36	626.194	884.149	1038	0	1038
29	1.53769	2317.28	34.7008	Bedrock	130	36	618.159	872.803	1022.38	0	1022.38
30	1.53769	2319.8	35.5978	Bedrock	130	36	608.636	859.358	1003.87	0	1003.87
31	1.53769	2315.55	36.5049	Bedrock	130	36	597.651	843.847	982.527	0	982.527
32	1.53769	2304.32	37.4228	Bedrock	130	36	585.224	826.301	958.378	0	958.378
33	1.53769	2285.82	38.352	Bedrock	130	36	571.378	806.751	931.467	0	931.467
34	1.53769	2259.79	39.2934	Bedrock	130	36	556.133	785.226	901.839	0	901.839
35	1.53769	2225.93	40.2476	Bedrock	130	36	539.507	761.752	869.53	0	869.53
36	1.53769	2183.89	41.2155	Bedrock	130	36	521.519	736.354	834.572	0	834.572
37	1.53769	2133.31	42.1978	Bedrock	130	36	502.184	709.054	796.998	0	796.998
38	1.53769	2073.79	43.1958	Bedrock	130	36	481.519	679.876	756.837	0	756.837
39	1.53769	2004.89	44.2103	Bedrock	130	36	459.536	648.837	714.116	0	714.116
40	1.53769	1923.52	45.2426	Bedrock	130	36	435.769	615.28	667.93	0	667.93
41	1.53769	1809.21	46.2941	Bedrock	130	36	406.663	574.184	611.366	0	611.366
42	1.53769	1678.64	47.3661	Bedrock	130	36	375.55	530.254	550.902	0	550.902
43	1.53769	1536.38	48.4604	Bedrock	130	36	343.404	484.866	488.433	0	488.433
44	1.53769	1381.64	49.5789	Bedrock	130	36	310.235	438.033	423.971	0	423.971
45	1.53769	1213.55	50.7236	Bedrock	130	36	276.049	389.764	357.534	0	357.534
46	1.53769	1031.13	51.897	Bedrock	130	36	240.852	340.068	289.134	0	289.134
47	1.53769	833.212	53.102	Bedrock	130	36	204.65	288.953	218.78	0	218.78
48	1.53769	618.474	54.3417	Bedrock	130	36	167.446	236.423	146.479	0	146.479
49	1.53769	385.351	55.62	Bedrock	130	36	129.242	182.482	72.2349	0	72.2349
50	1.53769	131.991	56.9416	Bedrock	130	36	87.9644	124.2	-7.98237	0	-7.98237

Interslice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.41408



Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	305.646	1625.31	0	0	0
2	307.284	1625.69	156.247	0	0
3	308.922	1626.09	339.037	0	0
4	310.56	1626.51	544.397	0	0
5	312.199	1626.95	768.527	0	0
6	313.837	1627.41	1007.8	0	0
7	315.475	1627.9	1258.77	0	0
8	317.113	1628.41	1518.15	0	0
9	318.751	1628.95	1782.82	0	0
10	320.389	1629.5	2049.84	0	0
11	322.028	1630.08	2317.69	0	0
12	323.666	1630.69	2588.57	0	0
13	325.304	1631.32	2859.26	0	0
14	326.942	1631.97	3125.97	0	0
15	328.58	1632.66	3385.1	0	0
16	330.219	1633.36	3633.22	0	0
17	331.857	1634.09	3867.07	0	0
18	333.495	1634.85	4083.56	0	0
19	335.133	1635.64	4279.78	0	0
20	336.771	1636.45	4453.01	0	0
21	338.409	1637.3	4600.69	0	0
22	340.048	1638.17	4720.48	0	0
23	341.686	1639.07	4810.22	0	0
24	343.324	1640	4867.96	0	0
25	344.962	1640.96	4891.95	0	0
26	346.6	1641.96	4880.7	0	0
27	348.238	1642.99	4832.94	0	0
28	349.877	1644.05	4748.84	0	0
29	351.515	1645.14	4628.56	0	0
30	353.153	1646.27	4472.12	0	0
31	354.791	1647.44	4279.83	0	0
32	356.429	1648.65	4052.34	0	0
33	358.067	1649.89	3790.65	0	0
34	359.706	1651.18	3496.15	0	0
35	361.344	1652.5	3170.64	0	0
36	362.982	1653.88	2816.37	0	0
37	364.62	1655.29	2436.08	0	0
38	366.258	1656.76	2033.07	0	0
39	367.897	1658.27	1611.24	0	0
40	369.535	1659.84	1175.16	0	0
41	371.173	1661.46	730.149	0	0
42	372.811	1663.14	285.828	0	0
43	374.449	1664.88	-141.997	0	0
44	376.087	1666.68	-543.4	0	0
45	377.726	1668.55	-907.443	0	0
46	379.364	1670.5	-1221.67	0	0
47	381.002	1672.52	-1471.89	0	0
48	382.64	1674.63	-1641.84	0	0
49	384.278	1676.83	-1712.87	0	0
50	385.916	1679.12	-1663.44	0	0
51	387.555	1681.53	0	0	0

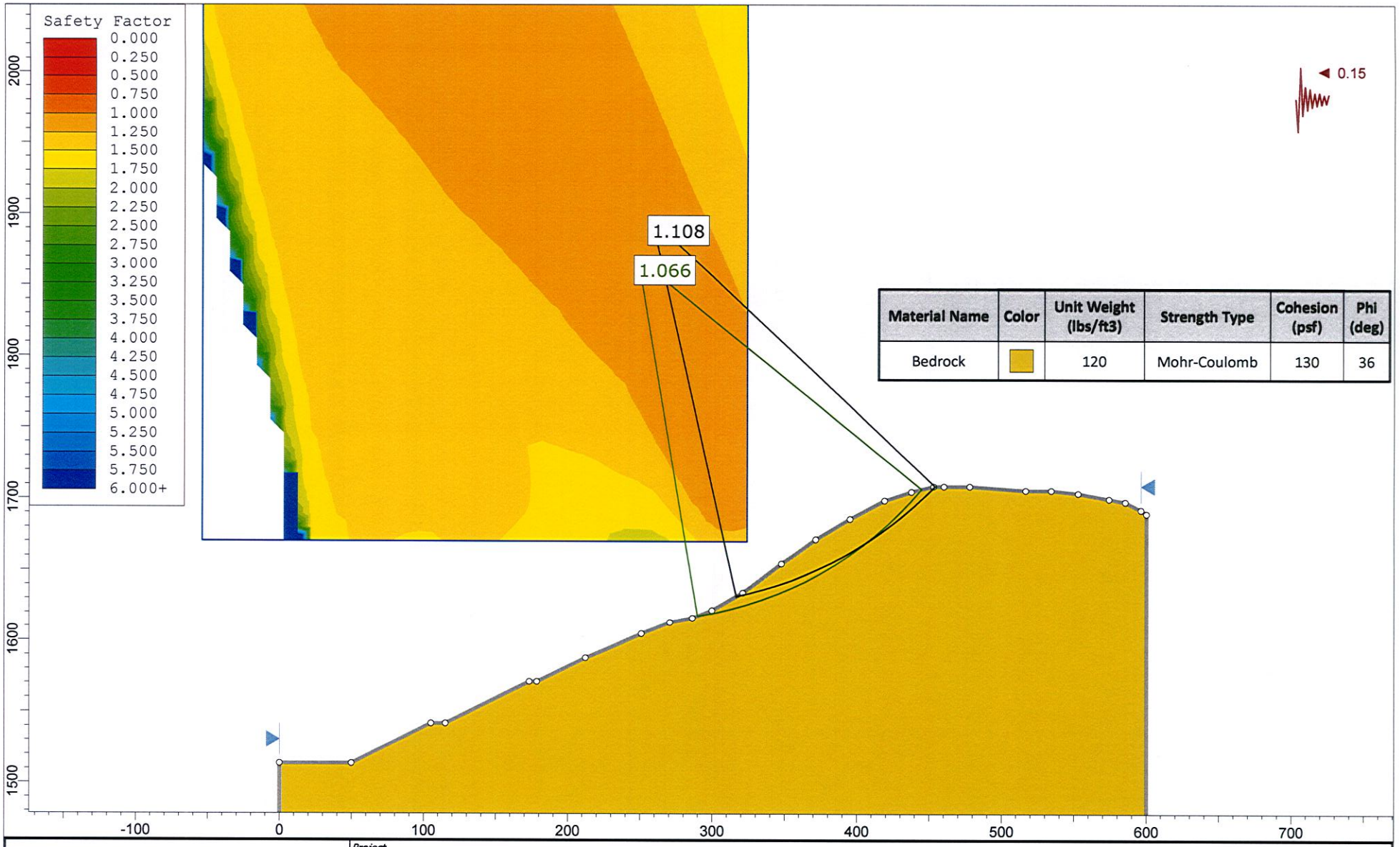
Global Minimum Query (spencer) - Safety Factor: 1.41194

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	310.674	1628.28	0	0	0
2	312.212	1628.61	176.405	109.35	31.794
3	313.749	1628.96	381.598	236.544	31.7938
4	315.287	1629.34	610.557	378.471	31.7939
5	316.825	1629.73	858.6	532.227	31.7939
6	318.362	1630.15	1121.37	695.11	31.7938
7	319.9	1630.59	1394.8	864.608	31.7939
8	321.438	1631.05	1675.42	1038.56	31.794
9	322.976	1631.54	1966.17	1218.79	31.794
10	324.513	1632.05	2265.28	1404.2	31.7939
11	326.051	1632.58	2568.15	1591.94	31.7939
12	327.589	1633.13	2870.48	1779.35	31.7939
13	329.126	1633.71	3168.26	1963.94	31.7939
14	330.664	1634.31	3457.75	2143.39	31.7939
15	332.202	1634.94	3735.5	2315.56	31.7939
16	333.739	1635.59	3998.3	2478.46	31.7939
17	335.277	1636.26	4243.21	2630.28	31.7939
18	336.815	1636.97	4467.54	2769.33	31.7939
19	338.352	1637.7	4668.82	2894.1	31.7939
20	339.89	1638.45	4844.86	3003.22	31.7938
21	341.428	1639.24	4993.67	3095.47	31.7939
22	342.965	1640.05	5113.52	3169.76	31.7939
23	344.503	1640.89	5202.89	3225.16	31.7939
24	346.041	1641.76	5260.53	3260.89	31.7939
25	347.579	1642.66	5285.37	3276.29	31.7939
26	349.116	1643.59	5276.97	3271.08	31.7939
27	350.654	1644.55	5235.67	3245.48	31.7939
28	352.192	1645.55	5161.56	3199.54	31.7939
29	353.729	1646.58	5054.97	3133.47	31.7939
30	355.267	1647.64	4916.48	3047.62	31.7939
31	356.805	1648.75	4746.9	2942.5	31.7939
32	358.342	1649.88	4547.35	2818.8	31.7938
33	359.88	1651.06	4319.19	2677.38	31.794
34	361.418	1652.28	4064.12	2519.26	31.7939
35	362.955	1653.53	3784.12	2345.7	31.7939
36	364.493	1654.84	3481.53	2158.13	31.7939
37	366.031	1656.18	3159.04	1958.22	31.7939
38	367.568	1657.58	2819.74	1747.89	31.7938
39	369.106	1659.02	2467.13	1529.32	31.7939
40	370.644	1660.52	2105.21	1304.97	31.7938
41	372.181	1662.07	1739.18	1078.08	31.7939
42	373.719	1663.68	1380.68	855.855	31.7939
43	375.257	1665.35	1037.77	643.288	31.7938
44	376.795	1667.08	717.846	444.978	31.7939
45	378.332	1668.89	429.23	266.071	31.7939
46	379.87	1670.77	181.259	112.359	31.794
47	381.408	1672.73	-15.5065	-9.61216	31.7939
48	382.945	1674.78	-149.054	-92.3956	31.7939
49	384.483	1676.92	-205.625	-127.463	31.794
50	386.021	1679.17	-169.322	-104.959	31.7939
51	387.558	1681.53	0	0	0

List Of Coordinates

External Boundary

X	Y
600	1400
600	1689.93
596.265	1692.6
585.362	1698.11
574.157	1700.17
552.836	1704.17
534.241	1706.16
516.615	1706.16
477.91	1709.13
460.102	1709.13
452.941	1709.13
437.624	1705.31
419.067	1699.05
395.184	1686.15
371.546	1671.83
347.843	1654.93
321.091	1634.43
299.898	1621.92
286.348	1616.36
270.714	1613.23
251.084	1604.9
212.345	1588.05
178.645	1570.85
173.433	1570.85
115.238	1541.84
105.163	1541.84
49.854	1513.7
0	1513.7
0	1400



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Bedrock		120	Mohr-Coulomb	130	36

SLIDEINTERPRET 7.009

Project	# 6946			
Analysis Description	9-9' Global (Seismic)			
Drawn By	JG	Scale	1:1100	Company: GeoSoils Consultants, Inc.
Date	4/11/2017			File Name: 6946 9-9 Seismic.slim

Slide Analysis Information

6946

Project Summary

File Name:	6946 9-9 Seismic.slim
Slide Modeler Version:	7.009
Project Title:	# 6946
Analysis:	9-9' Global (Seismic)
Author:	JG
Company:	GeoSoils Consultants, Inc.
Date Created:	4/11/2017

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Failure Direction:	Right to Left
Data Output:	Standard
Maximum Material Properties:	20
Maximum Support Properties:	20

Analysis Options

Slices Type:	Vertical
Analysis Methods Used	
	Bishop simplified
	Spencer
Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft3]:	62.4
Advanced Groundwater Method:	None

Random Numbers

Pseudo-random Seed:	10116
Random Number Generation Method:	Park and Miller v.3

Surface Options

Surface Type:	Circular
Search Method:	Grid Search
Radius Increment:	10
Composite Surfaces:	Disabled
Reverse Curvature:	Invalid Surfaces
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic

Advanced Seismic Analysis:	No
Staged pseudostatic analysis:	No

Loading

Seismic Load Coefficient (Horizontal): 0.15

Material Properties

Property	Bedrock
Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft3]	120
Cohesion [psf]	130
Friction Angle [deg]	36
Water Surface	None
Ru Value	0

Global Minimums

Method: bishop simplified

FS	1.066130
Center:	248.320, 1868.685
Radius:	254.327
Left Slip Surface Endpoint:	289.746, 1617.755
Right Slip Surface Endpoint:	444.696, 1707.073
Resisting Moment:	.07821e+007 lb-ft
Driving Moment:	.7632e+007 lb-ft
Total Slice Area:	498.89 ft2

Method: spencer

FS	1.066400
Center:	248.320, 1868.685
Radius:	254.327
Left Slip Surface Endpoint:	289.746, 1617.755
Right Slip Surface Endpoint:	444.696, 1707.073
Resisting Moment:	.07946e+007 lb-ft
Driving Moment:	.7632e+007 lb-ft
Resisting Horizontal Force:	72202 lb
Driving Horizontal Force:	61480 lb
Total Slice Area:	498.89 ft2

Valid / Invalid Surfaces

Method: bishop simplified

Number of Valid Surfaces: 16681
Number of Invalid Surfaces: 1810

Error Codes:

Error Code -103 reported for 32 surfaces
Error Code -106 reported for 84 surfaces
Error Code -108 reported for 13 surfaces
Error Code -114 reported for 471 surfaces
Error Code -1000 reported for 1210 surfaces

Method: spencer

Number of Valid Surfaces: 16357
Number of Invalid Surfaces: 2134

Error Codes:

Error Code -103 reported for 32 surfaces
Error Code -106 reported for 84 surfaces
Error Code -108 reported for 29 surfaces
Error Code -111 reported for 308 surfaces
Error Code -114 reported for 471 surfaces
Error Code -1000 reported for 1210 surfaces

Error Codes

The following errors were encountered during the computation:

-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them.

This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.
-106 = Average slice width is less than 0.0001 * (maximum horizontal extent of soil region). This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.
-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
-111 = safety factor equation did not converge
-114 = Surface with Reverse Curvature.
-1000 = No valid slip surfaces are generated at a grid center. Unable to draw a surface.

Slice Data

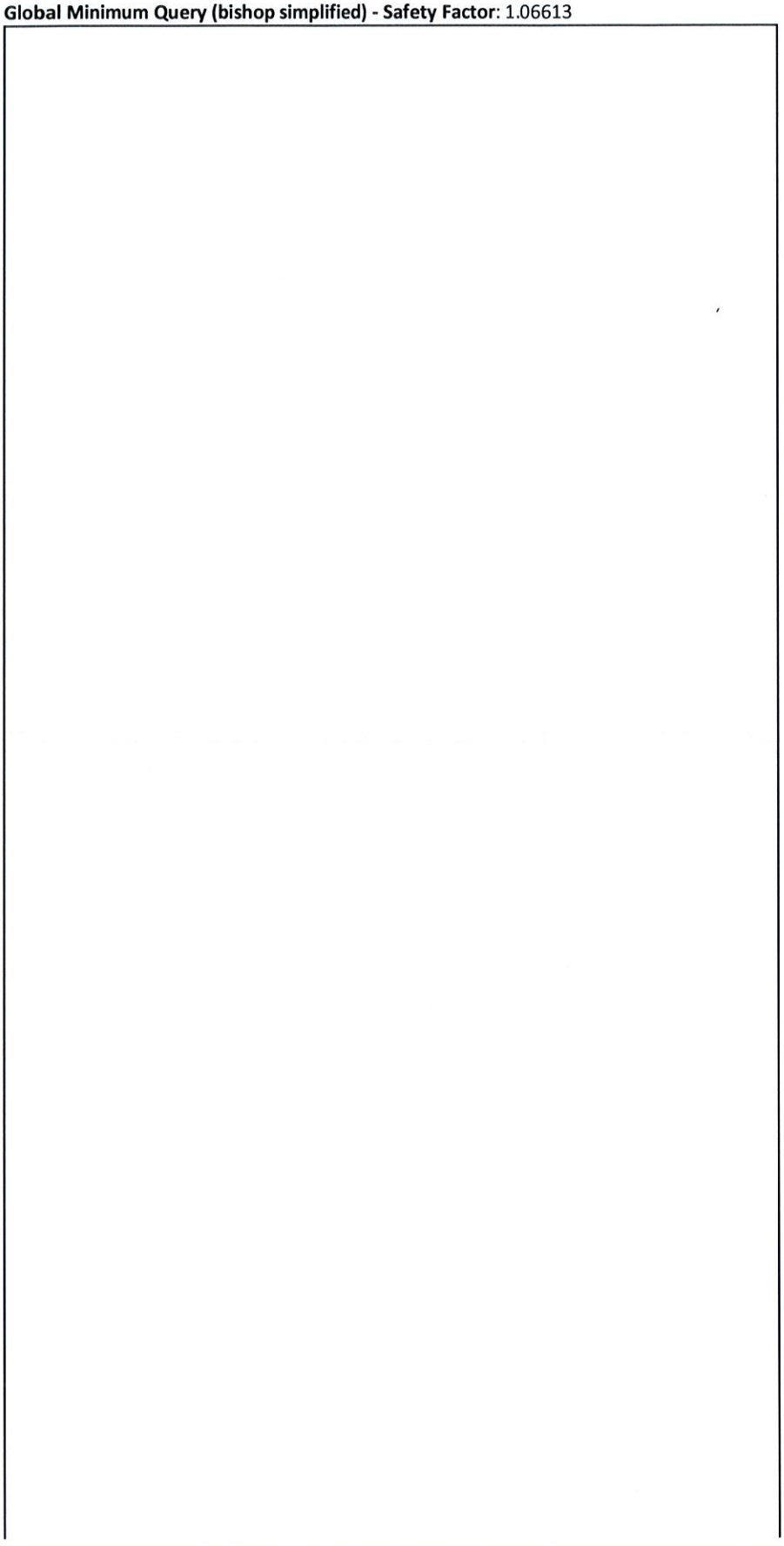
Global Minimum Query (bishop simplified) - Safety Factor: 1.06613

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	3.09901	137.611	9.72855	Bedrock	130	36	136.279	145.291	21.0462	0	21.0462
2	3.09901	405.476	10.4377	Bedrock	130	36	187.561	199.964	96.2978	0	96.2978
3	3.09901	658.575	11.1484	Bedrock	130	36	235.181	250.734	166.176	0	166.176
4	3.09901	951.137	11.8609	Bedrock	130	36	289.648	308.802	246.1	0	246.1
5	3.09901	1373.8	12.5753	Bedrock	130	36	368.094	392.436	361.211	0	361.211
6	3.09901	1789.26	13.2916	Bedrock	130	36	443.944	473.302	472.514	0	472.514
7	3.09901	2189.47	14.0101	Bedrock	130	36	515.732	549.837	577.858	0	577.858
8	3.09901	2574.32	14.7308	Bedrock	130	36	583.509	622.096	677.311	0	677.311
9	3.09901	2943.63	15.4539	Bedrock	130	36	647.32	690.127	770.95	0	770.95
10	3.09901	3297.26	16.1796	Bedrock	130	36	707.211	753.979	858.832	0	858.832
11	3.09901	3714.57	16.9079	Bedrock	130	36	777.711	829.141	962.285	0	962.285
12	3.09901	4237.89	17.6391	Bedrock	130	36	866.205	923.487	1092.14	0	1092.14
13	3.09901	4746.32	18.3732	Bedrock	130	36	950.56	1013.42	1215.93	0	1215.93
14	3.09901	5238.32	19.1105	Bedrock	130	36	1030.57	1098.72	1333.33	0	1333.33
15	3.09901	5713.68	19.8511	Bedrock	130	36	1106.27	1179.43	1444.41	0	1444.41
16	3.09901	6172.15	20.5951	Bedrock	130	36	1177.69	1255.57	1549.21	0	1549.21
17	3.09901	6613.5	21.3428	Bedrock	130	36	1244.85	1327.17	1647.77	0	1647.77
18	3.09901	7037.46	22.0943	Bedrock	130	36	1307.79	1394.27	1740.12	0	1740.12
19	3.09901	7441.81	22.8499	Bedrock	130	36	1366.18	1456.53	1825.8	0	1825.8
20	3.09901	7785.98	23.6097	Bedrock	130	36	1413.23	1506.69	1894.85	0	1894.85
21	3.09901	8094.79	24.3739	Bedrock	130	36	1453.37	1549.48	1953.74	0	1953.74
22	3.09901	8385.01	25.1427	Bedrock	130	36	1489.51	1588.01	2006.79	0	2006.79
23	3.09901	8656.29	25.9165	Bedrock	130	36	1521.69	1622.32	2054	0	2054
24	3.09901	8908.27	26.6953	Bedrock	130	36	1549.9	1652.39	2095.39	0	2095.39
25	3.09901	9140.55	27.4795	Bedrock	130	36	1574.15	1678.25	2130.98	0	2130.98
26	3.09901	9352.72	28.2693	Bedrock	130	36	1594.45	1699.89	2160.76	0	2160.76
27	3.09901	9521.81	29.0651	Bedrock	130	36	1607.21	1713.49	2179.48	0	2179.48
28	3.09901	9578.75	29.867	Bedrock	130	36	1601.67	1707.59	2171.36	0	2171.36
29	3.09901	9604.5	30.6754	Bedrock	130	36	1591	1696.21	2155.71	0	2155.71
30	3.09901	9608.17	31.4906	Bedrock	130	36	1576.73	1681	2134.77	0	2134.77
31	3.09901	9589.18	32.3131	Bedrock	130	36	1558.86	1661.95	2108.55	0	2108.55
32	3.09901	9546.92	33.143	Bedrock	130	36	1537.38	1639.05	2077.03	0	2077.03
33	3.09901	9480.73	33.9809	Bedrock	130	36	1512.29	1612.3	2040.21	0	2040.21
34	3.09901	9389.9	34.8271	Bedrock	130	36	1483.57	1581.68	1998.07	0	1998.07
35	3.09901	9237.36	35.6821	Bedrock	130	36	1445.86	1541.48	1942.73	0	1942.73
36	3.09901	9018.81	36.5464	Bedrock	130	36	1398.8	1491.3	1873.67	0	1873.67
37	3.09901	8773.15	37.4205	Bedrock	130	36	1348.31	1437.47	1799.58	0	1799.58
38	3.09901	8499.44	38.3049	Bedrock	130	36	1294.39	1379.99	1720.46	0	1720.46
39	3.09901	8196.66	39.2002	Bedrock	130	36	1237.03	1318.83	1636.28	0	1636.28
40	3.09901	7863.68	40.107	Bedrock	130	36	1176.2	1253.98	1547.03	0	1547.03
41	3.09901	7499.29	41.0262	Bedrock	130	36	1111.91	1185.44	1452.68	0	1452.68
42	3.09901	7093.66	41.9583	Bedrock	130	36	1042.97	1111.94	1351.52	0	1351.52
43	3.09901	6491.21	42.9043	Bedrock	130	36	948.663	1011.4	1213.14	0	1213.14
44	3.09901	5790.84	43.8651	Bedrock	130	36	843.194	898.954	1058.37	0	1058.37
45	3.09901	5052.96	44.8416	Bedrock	130	36	735.053	783.662	899.688	0	899.688
46	3.09901	4275.65	45.8349	Bedrock	130	36	624.263	665.545	737.116	0	737.116
47	3.09901	3456.77	46.8463	Bedrock	130	36	510.851	544.634	570.696	0	570.696
48	3.09901	2589.89	47.8772	Bedrock	130	36	394.349	420.427	399.738	0	399.738
49	3.09901	1604.61	48.929	Bedrock	130	36	266.468	284.09	212.086	0	212.086
50	3.09901	543.4	50.0034	Bedrock	130	36	133.236	142.047	16.5815	0	16.5815

Global Minimum Query (spencer) - Safety Factor: 1.0664

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	3.09901	137.611	9.72855	Bedrock	130	36	215.618	229.935	137.548	0	137.548
2	3.09901	405.476	10.4377	Bedrock	130	36	280.751	299.393	233.149	0	233.149
3	3.09901	658.575	11.1484	Bedrock	130	36	339.413	361.95	319.251	0	319.251
4	3.09901	951.137	11.8609	Bedrock	130	36	405.165	432.068	415.759	0	415.759
5	3.09901	1373.8	12.5753	Bedrock	130	36	499.137	532.28	553.692	0	553.692
6	3.09901	1789.26	13.2916	Bedrock	130	36	587.416	626.42	683.263	0	683.263
7	3.09901	2189.47	14.0101	Bedrock	130	36	668.419	712.802	802.158	0	802.158
8	3.09901	2574.32	14.7308	Bedrock	130	36	742.471	791.771	910.848	0	910.848
9	3.09901	2943.63	15.4539	Bedrock	130	36	809.878	863.654	1009.79	0	1009.79
10	3.09901	3297.26	16.1796	Bedrock	130	36	870.928	928.758	1099.39	0	1099.39
11	3.09901	3714.57	16.9079	Bedrock	130	36	942.656	1005.25	1204.68	0	1204.68
12	3.09901	4237.89	17.6391	Bedrock	130	36	1033.08	1101.68	1337.4	0	1337.4
13	3.09901	4746.32	18.3732	Bedrock	130	36	1116.52	1190.66	1459.88	0	1459.88
14	3.09901	5238.32	19.1105	Bedrock	130	36	1192.99	1272.2	1572.1	0	1572.1
15	3.09901	5713.68	19.8511	Bedrock	130	36	1262.74	1346.59	1674.49	0	1674.49
16	3.09901	6172.15	20.5951	Bedrock	130	36	1326.05	1414.1	1767.41	0	1767.41
17	3.09901	6613.5	21.3428	Bedrock	130	36	1383.16	1475	1851.23	0	1851.23
18	3.09901	7037.46	22.0943	Bedrock	130	36	1434.29	1529.53	1926.29	0	1926.29
19	3.09901	7441.81	22.8499	Bedrock	130	36	1479.32	1577.55	1992.39	0	1992.39
20	3.09901	7785.98	23.6097	Bedrock	130	36	1511.42	1611.78	2039.5	0	2039.5
21	3.09901	8094.79	24.3739	Bedrock	130	36	1535.56	1637.52	2074.92	0	2074.92
22	3.09901	8385.01	25.1427	Bedrock	130	36	1554.95	1658.2	2103.39	0	2103.39
23	3.09901	8656.29	25.9165	Bedrock	130	36	1569.8	1674.03	2125.17	0	2125.17
24	3.09901	8908.27	26.6953	Bedrock	130	36	1580.23	1685.16	2140.5	0	2140.5
25	3.09901	9140.55	27.4795	Bedrock	130	36	1586.43	1691.77	2149.59	0	2149.59
26	3.09901	9352.72	28.2693	Bedrock	130	36	1588.53	1694.01	2152.67	0	2152.67
27	3.09901	9521.81	29.0651	Bedrock	130	36	1583.24	1688.37	2144.91	0	2144.91
28	3.09901	9578.75	29.867	Bedrock	130	36	1560.69	1664.32	2111.8	0	2111.8
29	3.09901	9604.5	30.6754	Bedrock	130	36	1533.72	1635.56	2072.22	0	2072.22
30	3.09901	9608.17	31.4906	Bedrock	130	36	1503.91	1603.77	2028.47	0	2028.47
31	3.09901	9589.18	32.3131	Bedrock	130	36	1471.35	1569.05	1980.69	0	1980.69
32	3.09901	9546.92	33.143	Bedrock	130	36	1436.15	1531.51	1929.02	0	1929.02
33	3.09901	9480.73	33.9809	Bedrock	130	36	1398.4	1491.25	1873.6	0	1873.6
34	3.09901	9389.9	34.8271	Bedrock	130	36	1358.17	1448.35	1814.55	0	1814.55
35	3.09901	9237.36	35.6821	Bedrock	130	36	1310.88	1397.92	1745.15	0	1745.15
36	3.09901	9018.81	36.5464	Bedrock	130	36	1256.49	1339.92	1665.31	0	1665.31
37	3.09901	8773.15	37.4205	Bedrock	130	36	1200.28	1279.98	1582.81	0	1582.81
38	3.09901	8499.44	38.3049	Bedrock	130	36	1142.32	1218.17	1497.74	0	1497.74
39	3.09901	8196.66	39.2002	Bedrock	130	36	1082.68	1154.57	1410.19	0	1410.19
40	3.09901	7863.68	40.107	Bedrock	130	36	1021.41	1089.23	1320.27	0	1320.27
41	3.09901	7499.29	41.0262	Bedrock	130	36	958.574	1022.22	1228.04	0	1228.04
42	3.09901	7093.66	41.9583	Bedrock	130	36	893.297	952.612	1132.23	0	1132.23
43	3.09901	6491.21	42.9043	Bedrock	130	36	809.176	862.905	1008.76	0	1008.76
44	3.09901	5790.84	43.8651	Bedrock	130	36	718.02	765.696	874.96	0	874.96
45	3.09901	5052.96	44.8416	Bedrock	130	36	626.688	668.3	740.907	0	740.907
46	3.09901	4275.65	45.8349	Bedrock	130	36	535.215	570.753	606.644	0	606.644
47	3.09901	3456.77	46.8463	Bedrock	130	36	443.637	473.094	472.229	0	472.229
48	3.09901	2589.89	47.8772	Bedrock	130	36	351.606	374.953	337.148	0	337.148
49	3.09901	1604.61	48.929	Bedrock	130	36	252.945	269.741	192.337	0	192.337
50	3.09901	543.4	50.0034	Bedrock	130	36	141.098	150.467	28.1706	0	28.1706

Global Minimum Query (bishop simplified) - Safety Factor: 1.06613



Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	289.746	1617.75	0	0	0
2	292.845	1618.29	390.401	0	0
3	295.944	1618.86	855.715	0	0
4	299.043	1619.47	1384.09	0	0
5	302.142	1620.12	1978.64	0	0
6	305.241	1620.81	2663.31	0	0
7	308.34	1621.54	3424.44	0	0
8	311.439	1622.32	4247.06	0	0
9	314.538	1623.13	5116.89	0	0
10	317.637	1623.99	6020.4	0	0
11	320.736	1624.89	6944.7	0	0
12	323.835	1625.83	7890.56	0	0
13	326.934	1626.81	8862.41	0	0
14	330.033	1627.84	9843.99	0	0
15	333.132	1628.92	10819.5	0	0
16	336.231	1630.04	11773.9	0	0
17	339.33	1631.2	12692.7	0	0
18	342.429	1632.41	13562.2	0	0
19	345.528	1633.67	14369.4	0	0
20	348.627	1634.97	15101.6	0	0
21	351.726	1636.33	15745.6	0	0
22	354.825	1637.73	16291	0	0
23	357.924	1639.19	16729.3	0	0
24	361.023	1640.69	17052.3	0	0
25	364.122	1642.25	17252.7	0	0
26	367.221	1643.86	17324	0	0
27	370.32	1645.53	17260.1	0	0
28	373.419	1647.25	17057.4	0	0
29	376.518	1649.03	16718.7	0	0
30	379.617	1650.87	16244.6	0	0
31	382.716	1652.77	15635.9	0	0
32	385.815	1654.73	14894.3	0	0
33	388.914	1656.75	14022.5	0	0
34	392.013	1658.84	13024.2	0	0
35	395.112	1661	11904.3	0	0
36	398.211	1663.22	10674.9	0	0
37	401.31	1665.52	9352.06	0	0
38	404.409	1667.89	7946.45	0	0
39	407.508	1670.34	6470.39	0	0
40	410.607	1672.87	4937.78	0	0
41	413.706	1675.48	3364.24	0	0
42	416.805	1678.17	1767.27	0	0
43	419.904	1680.96	168.869	0	0
44	423.003	1683.84	-1359.72	0	0
45	426.102	1686.82	-2768.41	0	0
46	429.201	1689.9	-4021.75	0	0
47	432.3	1693.09	-5080.86	0	0
48	435.399	1696.4	-5903.05	0	0
49	438.498	1699.82	-6439.65	0	0
50	441.597	1703.38	-6608.95	0	0
51	444.696	1707.07	0	0	0

Global Minimum Query (spencer) - Safety Factor: 1.0664

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	289.746	1617.75	0	0	0
2	292.845	1618.29	576.821	436.539	37.1185
3	295.944	1618.86	1256	950.543	37.1185
4	299.043	1619.47	2017.77	1527.05	37.1185
5	302.142	1620.12	2864.51	2167.87	37.1185
6	305.241	1620.81	3827.93	2896.98	37.1185
7	308.34	1621.54	4886.11	3697.82	37.1185
8	311.439	1622.32	6016.12	4553.01	37.1185
9	314.538	1623.13	7196.81	5446.56	37.1185
10	317.637	1623.99	8408.75	6363.76	37.1185
11	320.736	1624.89	9634.12	7291.12	37.1185
12	323.835	1625.83	10873.7	8229.2	37.1184
13	326.934	1626.81	12132.9	9182.17	37.1184
14	330.033	1627.84	13390.5	10134	37.1186
15	333.132	1628.92	14626.7	11069.5	37.1185
16	336.231	1630.04	15823.2	11975	37.1184
17	339.33	1631.2	16963	12837.6	37.1184
18	342.429	1632.41	18030.7	13645.7	37.1186
19	345.528	1633.67	19012.3	14388.5	37.1184
20	348.627	1634.97	19894.7	15056.3	37.1184
21	351.726	1636.33	20664.5	15639	37.1186
22	354.825	1637.73	21312.4	16129.2	37.1184
23	357.924	1639.19	21831	16521.7	37.1184
24	361.023	1640.69	22214.1	16811.7	37.1185
25	364.122	1642.25	22456.6	16995.2	37.1185
26	367.221	1643.86	22554.3	17069.2	37.1186
27	370.32	1645.53	22504.1	17031.2	37.1186
28	373.419	1647.25	22305.1	16880.5	37.1184
29	376.518	1649.03	21963.6	16622.1	37.1185
30	379.617	1650.87	21483.3	16258.6	37.1185
31	382.716	1652.77	20868.3	15793.1	37.1184
32	385.815	1654.73	20123.3	15229.3	37.1184
33	388.914	1656.75	19254	14571.5	37.1186
34	392.013	1658.84	18267.2	13824.6	37.1184
35	395.112	1661	17170.2	12994.4	37.1184
36	398.211	1663.22	15977.6	12091.9	37.1186
37	401.31	1665.52	14707	11130.3	37.1185
38	404.409	1667.89	13370.7	10119	37.1186
39	407.508	1670.34	11982	9068.01	37.1185
40	410.607	1672.87	10555.2	7988.22	37.1186
41	413.706	1675.48	9105.9	6891.36	37.1185
42	416.805	1678.17	7650.74	5790.1	37.1185
43	419.904	1680.96	6210.03	4699.76	37.1185
44	423.003	1683.84	4847.35	3668.48	37.1185
45	426.102	1686.82	3605.51	2728.66	37.1185
46	429.201	1689.9	2513.08	1901.9	37.1185
47	432.3	1693.09	1600.58	1211.32	37.1185
48	435.399	1696.4	900.782	681.714	37.1185
49	438.498	1699.82	450.342	340.82	37.1185
50	441.597	1703.38	312.312	236.358	37.1185
51	444.696	1707.07	0	0	0

List Of Coordinates

External Boundary

X	Y
600	1400
600	1689.93
596.265	1692.6
585.362	1698.11
574.157	1700.17
552.836	1704.17
534.241	1706.16
516.615	1706.16
477.91	1709.13
460.102	1709.13
452.941	1709.13
437.624	1705.31
419.067	1699.05
395.184	1686.15
371.546	1671.83
347.843	1654.93
321.091	1634.43
299.898	1621.92
286.348	1616.36
270.714	1613.23
251.084	1604.9
212.345	1588.05
178.645	1570.85
173.433	1570.85
115.238	1541.84
105.163	1541.84
49.854	1513.7
0	1513.7
0	1400

APPENDIX 9

PHASE I ENVIRONMENTAL SITE ASSESSMENT

Phase I Environmental Site Assessment, Approximately 95.41 Acre Vacant Lot (APN 2826-020-012, APN 2826-020-013, APN 2826-020-015 Excluding its Southwest Portion, and the Northeastern Corner of APN 2826-020-016), Stevenson Ranch, Los Angeles County California. Prepared by Robin Environmental Management, July 15, 2004.

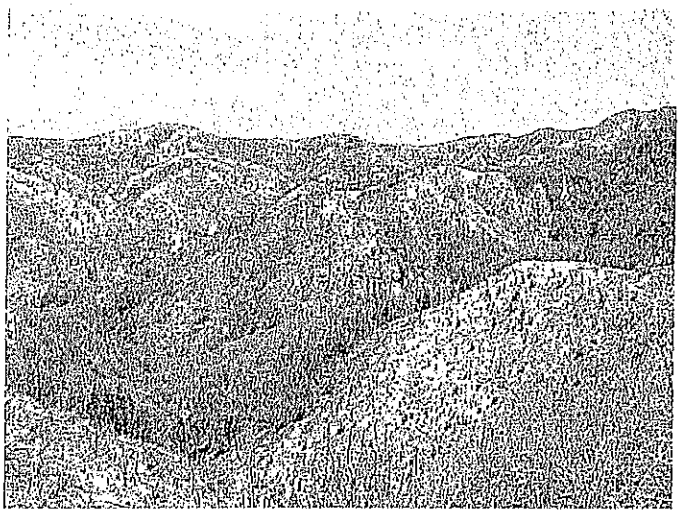
REM Robin Environmental Management

For a Shiny Happy Earth

PHASE I
ENVIRONMENTAL ASSESSMENT REPORT

JULY 15, 2004

APPROXIMATELY 95.41 ACRE VACANT LOT (APN 2826-020-012, APN 2826-020-013, APN 2826-020-015 EXCLUDING ITS SOUTHWESTERN PORTION, AND THE NORTHEASTERN CORNER OF APN 2826-020-016), STEVENSON RANCH, LOS ANGELES COUNTY, CALIFORNIA



PREPARED BY

ROBIN ENVIRONMENTAL MANAGEMENT CO. (REM)
1015 VIA ROMALES
SAN DIMAS, CA 91773

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FIGURE 1 SITE LOCATION MAP
FIGURE 2 RECENT AERIAL PHOTOGRAPH FOR THE SITE AREA SHOWING SITE CONFIGURATION AND ITS VICINITY
FIGURE 3 SITE PHOTOS

APPENDIX B CALIFORNIA DIVISION OF OIL & GAS ABANDONED OIL/GAS WELL MAP FOR THE SITE AREA

APPENDIX C GOVERNMENT RECORDS SEARCH DATABASE

THIS REPORT WAS PREPARED IN CONFORMANCE TO MEET OR EXCEED THE LIMITATIONS AS SET FORTH BY THE AMERICAN SOCIETY FOR TESTING & MATERIALS (ASTM) STANDARD PRACTICE E 1527-97. IT IS FOR THE EXPRESS USE OF THE CLIENT, AND ITS CONTENTS ARE CONSIDERED TO BE PREVILEGED AND CONFIDENTIAL. ACCEPTANCE OF THIS REPORT CONSTITUTES AN AGREEMENT BY THE CLIENT TO ASSUME FULL LIABILITY FOR INFORMATION CONTAINED HEREIN. THIS REPORT IS FOR THE SOLE USE AND INTERPRETATION OF THE CLIENT, AND IT IS NOT TO BE REPRODUCED OR DISTRIBUTED TO OUTSIDE PARTIES. THE INFORMATION IN THIS REPORT IS FURNISHED IN GOOD FAITH AND WAS OBTAINED FROM PUBLIC & PRIVATE SOURCES AND DATABASE CONSIDERED RELIABLE. REM MAKES NO REPRESENTATION OF WARRANTY REGARDING THE ACCURACY, OR RELIABILITY, QUALITY OR COMPLETENESS OF SUCH INFORMATION. IN NO EVENT, SHALL REM BE LIABLE TO ANY PARTY FOR SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXAMPLARY DAMAGES. THE CUSTOMER SHALL ASSUME FULL LIABILITY FOR USE OF THIS REPORT.

1. INTRODUCTION

1.1 Objective

This report summarizes the results of a Phase I Environmental Site Assessment of the subject property performed by Robin Environmental Management Co. (REM) in July 2004. The purpose of this Environmental Site Assessment is to evaluate the potential for environmental concerns or liabilities due to past and/or current land use practices at the subject site or from nearby properties. This assessment included in this report is solely targeted for CERCLA (Superfund) liability and the "innocent landowner defense", to permit user to satisfy one of the requirements to qualify for the innocent landowner defense to CERCLA liability, by conducting all appropriate inquiries to identify recognized environmental conditions (REC's).

1.2 Scope of Work

- Visual investigation of the property to obtain information regarding obvious visual signs of adverse environmental conditions, contamination, hazardous material usage, storage and handling on and in the adjoining sites (only up to one parcel next to the subject property) of the subject property

- Visual survey of the adjoining land uses (only up to one parcel next to the subject property) and determination of any current nearby operations which may potentially impact the subject site

- Government document search of records compiled by various government agencies for on site or nearby operations (past and present) to aid in the identification of any potential contamination sources

- Review of reasonably available historical information such as building permit records from local agency, aerial photographs, historical topographic maps, if available, to identify any potential past on-site operation which may have environmental implications

- Historic Topographic Maps and Aerial Photographs
- Available historic abandoned oil & gas well records from the California State Division of Oil & Gas
- Interview with Individuals knowledgeable about previous site usage

REM's staff engineer visited the County of Los Angeles Department of Public Works (CLADPW), Building Division, Santa Clarita field office (in charge of issuing building permits for the subject site area) to review records of occupancy and building permit copies of the subject site. Based on records available at the CLADPW, Santa Clarita office, no development has ever occurred on the subject site. The subject site has always been documented as vacant/unimproved land.

Figure 1 - Site Location Map is adopted from the 1952 original and 1969 photorevised version of the USGS topographic map of the site area, and Figure 2 is a 1994 aerial photograph for the subject site area. Both map/photograph documents show that the subject site was vacant/undeveloped land from prior to 1952 to present. Findings identified from historic topographic map/aerial photograph records are consistent wit building permit records.

On 7/8/04, REM staff also visited the California State Division of Oil & Gas (CSDOG) office at Cypress to review abandoned oil/gas well records (with abandoned oil/gas well map for the site area from the CSDOG included as Appendix B) for the site area and found two plugged and abandoned dry holes, but no oil wells, either within or in the immediate vicinity of the subject site.

Based on above summary, no past or current occupants were/are likely to exhibit business operations involving usage/generation of significant quantities of hazardous material/ wastes.

2.5 Regional Physical Setting

The subject property's physical locations were researched employing a United States Geological Survey (USGS) 7.5 Minute Topographic Quadrangle (Quad) Map relevant to the subject property. The USGS 7.5 Minute Quad Map has an approximate scale of 1 inch to 2,000 feet, and shows physical features with environmental significance such as wetlands, water bodies, roadways, mines, and buildings.

2. PROPERTY DESCRIPTION

2.1 Geographical Description of Property

The subject property is an approximately 95.41 acre irregularly shaped lot located in the northeastern portion of Section 5, Township 3 North, Range 15 West of the San Bernardino Baseline and Meridian. See Figure 1 for site location and configuration. The site is located in an unincorporated portion of the Los Angeles County generally known as Stevenson Ranch to the west of the southwestern portion of the city of Santa Clarita, California. See Figure 1 for a Site Location Map, Figure 2 for Recent Aerial Photograph for the Site Area showing site configuration and its vicinity, and Figure 3 for Site Photos.

2.2 General Description of the Subject Property

The subject property is an approximately 95.41 acre irregularly-shaped unpaved vacant mountain lot located in the northeastern portion of Section 5, Township 3 North, Range 15 West of the San Bernardino Baseline and Meridian in an unincorporated portion of the Los Angeles County generally known as Stevenson Ranch to the west of the southwestern portion of the city of Santa Clarita, California. Near the northwestern corner of the lot, there is a NW-SE trending unpaved road leading to the end of the NW-SE trending canyon in the northwestern portion of the lot.

2.3 Present Tenants and Business Operation

At the time of site inspection on July 7, 2004, the subject property was an unpaved vacant mountain lot.

2.4 Past Tenants and Business Operation

Methods of researching historic use of ownership of the subject property employed by REM are as follows.

- Public Agency's Records
- Local Building Department & Zoning/Planning

The physical and natural features illustrated on the Quad Map served as areas of visual emphasis when conducting the site inspection of the subject property. The USGS 7.5 Minute Quad Map was used as the only Standard Physical Setting Source, and is sufficient as a single reference. The surface elevation of the subject site lot ranges from 1,410 feet above the Mean Sea Level (MSL) at its northwestern corner to 1,800 feet above the MSL at its southeastern corner.

2.6 Hydro-geological Information

Geographically, the subject site is generally located on the south side of (the generally E-W trending) Pico Canyon extending from the southwestern end of Santa Clarita valley westward about 5 miles until diminishing into the northern rim of Santa Susana Mountains that separates Santa Clarita Valley to the north and San Fernando valley to the south. According to information available at the County of Los Angeles Department of Public Works, Hydrological Records Section, there is no known groundwater occurrence in the northern rim area of Santa Susana Mountains as the bedrock occurrence is generally rather shallow throughout the area.

2.7 Historical Hazardous Substance Usage

2.7.1 Records search sources

REM's field engineer contacted the following public agencies to find any records of former operation of underground storage tank (UST) of gasoline or any other hazardous substances on the subject premises.

- County of Los Angeles Department of Public Works, Building Division, Santa Clarita field office
- County of Los Angeles Department of Public Works, Environmental Programs Division
- Los Angeles County Fire Department
- Regional Water Quality Control Board – Los Angeles Region, www.swrcb.ca.gov/~cwphome/lustis
- California Department of Water Resources, (800) 952-5530, www.dwr.water.ca.gov

No records were found in reference to historical usage or handling of UST on the subject property.

2.7.2 List and quantities of the hazardous materials

List and quantities of the hazardous materials previously or presently used, disposed, treated, stored, or generated at the subject property were searched and assessed. During the site inspection, the use, storage, and generation of any significant quantity of hazardous materials was not observed. No violations were found regarding unauthorized release of hazardous material/waste occurring on the subject site in the past.

2.7.3 Permits, licenses, and registrations

All present and past records of permits, licenses, registrations, certificates of environmental relation were searched.

No equipment requiring environmentally related licensing was observed. Thus, no permits or registrations were necessary for the operation of subject business.

2.7.4 Violation or non-compliance notice

No violation or notice of non-compliance was issued with the present environmental regulations, according to the findings of our environmental assessment on the subject property.

2.7.5 Regulatory database record research.

The subject property was not listed on the following environmental regulatory database record research (FirstSearch records search): NPL, RCRA-TSD, CERCLIS, NFRAP, RCRA-G, ERNS, CORRACTS, CORTESE, CALSITES, LUST, UST and SWF.

3. PROPERTY RECONNAISSANCE

REM's environmental assessor/geologist performed the field survey of the subject site and adjacent properties on July 7, 2004. A site location map and a recent aerial photograph of the site area showing site vicinity are included as Figure 1 and Figure 2, respectively.

3.1 Air Quality - Indoor and Visible Emissions

No unusual smells, obnoxious odors, or visual emissions were observed during the inspection of the subject property. Neither air emission stacks nor paint booth were present, thus no pertinent permits were searched for the previous records of violation history.

3.2 Asbestos-Containing Material (ACM)

Since the subject lot is currently vacant, asbestos-containing building materials are not of environmental concern.

3.3 Lead-Based Paint (LBP)

Since the subject lot is currently vacant with no improvements, lead-based paint is also not a potentially environmental I concern.

3.4 Polychlorinated Biphenyl (PCB's)

Prior to 1978, PCBs were commonly used in dielectric fluids in transformers, capacitors, and light ballasts due to their desirable thermal characteristics, and hydraulic fluid compactor. Due to their demonstrated toxicity and persistence in the environment, PCB manufacturing in the United States was discontinued.

Pole-mounted transformers were found in the vicinity of the subject building, appearing in good condition without any sign of leakage. No PCB-containing hydraulic fluid trash compactor or concrete pad-mounted transformers were noticed present on the subject site premise.

3.5 Underground Storage Tank (UST)

The visual inspection of the subject site revealed no evidence of surface or above ground (e.g., fill pipe, vent pipes, fill connections, concrete pads, saw cuts, sumps, spill containment device, leak detection device, etc.) features normally associated with underground storage tanks (UST's).

3.6 Aboveground Storage Tank

REM's field officer performed the visual inspection of the subject site to find evidence of surface or above ground (e.g., fill pipe, vent pipes, fill connections, concrete pads, saw cuts, concrete pad, drains in vicinity, etc.) features normally associated with aboveground storage tanks (AST's). Visual observation also includes the inspection to identify any surface markings indicating the existence of aboveground product pipelines. No evidence on the presence of on-site aboveground storage tank was identified.

3.7 Fuel Islands

The visual inspection of the subject site revealed no evidence of fuel islands or dispensers either in operation or abandoned.

3.8 Hydraulic Hoist Unit

The visual inspection of the subject site revealed no presence of underground hydraulic hoist units within the subject site premise.

3.9 Hazardous Materials / Petroleum Products Storage & Handling

No containers storing automotive or industrial batteries, pesticides, or chemicals seemingly exhibiting toxic hazards at the time of site inspection. No major spills, leakage, or staining were observed throughout the site

3.10 Other Containers

No other containers indicating any sign of environmental concern were observed during the site inspection.

3.11 Hazardous Waste Treatment, Storage, Disposal (TSD)

No storage, treatment, or disposal of hazardous waste was found during the site investigation. No severely improper waste stream processing or disposal practices were observed on the subject property.

3.12 Distress Vegetation

Planters and vegetation in the vicinity of and within the subject site were found bare soil in relatively good appearance with no sign of chemical stress or unnatural appearance.

3.13 Stockpiled Soils

REM's site inspection did not reveal any evidence of stockpiled soils on the ground of subject property.

3.14 Wastewater Treatment Unit /Clarifier

No underground industrial wastewater treatment facility, i.e., clarifier was observed on the subject property during the site visit.

Storm water drainage system in the close proximity of the subject area did not identify any abnormal accumulation of petroleum or chemical run-off or foreign materials. No unusual blockage of the storm-water control system was observed during the site visual investigation. REM recommends no additional investigation on described storm-water systems at the subject property.

3.15 Solid Waste Disposal

No improper activities of treatment or disposal of hazardous, medical, or toxic wastes were noticed being performed on the subject site. During the site inspection, there were few apparently illegally dumped used tires present along the unpaved NW-Se trending road at the northwestern corner of the site. No apparently significant staining was noticed around these used tires.

3.16 Wells

REM's site walk-through did not discover any irrigation wells, injection wells, abandoned wells, groundwater-monitoring wells, dry wells, septic wells, oil wells, gas wells, domestic water wells, or other monitoring wells on the subject premises. As described in Section 2.4, conducted records search by REM at the California State division of Oil & Gas office at Cypress identified two plugged and abandoned dry holes, but no oil wells, either within or in the immediate vicinity of the subject site.

3.17 Underground Pipelines

REM's site inspection did not reveal any evidence of underground pipelines beneath the ground of subject property, other than public utility lines such as sewer, power, electric lines, for which public "dig-alert" service would easily identify upon 48-hour telephone notice in advance.

3.18 Visual Indication of Spills, Leakage, Staining

REM's site inspection did not reveal any evidence of on-site or off-site spills, leakages, or staining significant enough to pose immediate environmental concern onto the subject property. No significantly stained catch basins, drip pads, or sumps were observed. There were no major spills around surface drains, pipes, gutters, spouts, or tubes, if any, at the time of site investigation.

3.19 Soil Staining or Surface Staining on Unpaved/Natural Lands

No staining or surface staining on the bare soil or unpaved lands were identified during the site investigation.

3.20 Pits, Ponds, Lagoons

No visible evidence of wetlands such as pits, ponds, lagoons, or any other water bodies, was observed within the subject property's boundary lines.

3.21 Herbicides/Pesticides

No evidence of herbicide or pesticide use on the subject property was observed during the inspection.

3.22 Radon

Radon sources can be found from earth and rock beneath building structures, well water, and building materials themselves. Though there is no immediate health effect, it is believed to account for approximately 10% of lung cancer deaths in the United States. Estimated national average is 1.5 picocuries per liter of air, however, levels as high as 200 picocuries per liter in some commercial buildings can be found. USEPA and California Department of Health Services' Radon Survey Interim Results report shows different U.S. regions according to general geological and climate information, where Region 9 includes Imperial, Los Angeles, Orange, Riverside, San Bernardino and San Diego Counties.

According to the California EPA, Los Angeles and Riverside County is classified as a "Zone 2" county having a predicted average screening level between 2-4 picocuries per liter of air. Orange and San Diego County is under Zone 3, having the level less than 2 picocuries/L, and Ventura County as Zone 1 has the level greater than 4 picocuries/L.

If a property region reportedly has radon concentration below 4 picocuries per liter of air in 99.5% of homes within the region, then, it is not likely impacted by the presence of radon gas, considering EPA action limit of 4 picocuries per liter of air volume. REM is not contracted to perform the testing of radon level on the subject property, thus the delineation of radon level is beyond the scope of the service and not included in this report.

4. NEIGHBORING PROPERTIES

4.1 Adjacent/Adjoining Businesses

For the scope of this assessment, properties are defined and categorized based upon their physical proximity to the subject property. An adjoining property is any real estate property whose border is contiguous or partially contiguous with the subject properties, or that would be if the properties were not separated by a roadway, street, public thoroughfare, river, or stream.

North: By vacant land with grasses and bushes

East: By mountainous land with grasses/bushes

South: By mountainous land with grasses/bushes

West: By residences (developed in 2001 and not shown on Figure 2) for its northern half and mountainous land with grasses/bushes for its southern half

4.2 Historical Hazardous Substance Usage in Neighboring Properties

REM's field engineer contacted the following public agencies to find any records of former operation of gasoline UST or any other hazardous substances in the vicinity of the subject premises.

- County of Los Angeles Department of Public Works, Building Division, Santa Clarita field office
- County of Los Angeles Department of Public Works, Environmental Programs Division
- Los Angeles County Fire Department
- Regional Water Quality Control Board – Los Angeles Region

No locations in the immediate adjacency of the subject site were found to pose any significant environmental threat to the subject property, based upon the data obtained via FirstSearch governmental records search database and the conducted agency records search.

5. GOVERNMENT RECORDS SEARCH AND POTENTIAL OFF-SITE CONTAMINATION SOURCES

5.1 Historical Background and Scope of Coverage

Since the early 1970s, environmental agencies have been tracking the compliance of many facilities with the various laws that have been promulgated to halt the pollution of air, land and water. More recently, records have been maintained documenting spills of hazardous materials and the locations of known waste sites or regulated waste handling facilities. The following sections summarizes REM's review of database search of available records at the local, state and federal level and highlights the approximate location of such sites with respect to the subject property.

The conducted government record search was performed to aid:

1) Identification of facilities, located within a one-mile radius of the subject property, which might pose a potential threat to the subsurface environment at the subject property; and

2) Identification of any environmental violation notices associated with activities conducted at the subject property itself. The following lists were reviewed for sites within one mile of the property:

5.2 Database Sources

A. Federal Sources

- United States Environmental Protection Agency (U.S. EPA), Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS)
- U.S. EPA, National Priority List (NPL)
- Resource Conservation and Recovery Act (RCRA) Federal TSD Facilities
- Federal Emergency Response Notification System (ERNS)
- CERCLA Site Enforcement Tracking System
- RCRA Violators List (CORRACTS)

- U.S. EPA Federal Enforcement Docket
- Toxic Release Inventory System (TRIS)
- No Further Remedial Action Planned (NFRAP)

The CERCLIS is the EPA compilation of sites for which the EPA has evidence of, or is investigating, a release or threatened release, of hazardous substances which may be subject to review in accordance with the terms and conditions of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (Superfund Act). Sites to be included are identified primarily by the reporting requirements of hazardous substances including degreasing solvents, oily waste, acid solutions, alkaline solutions, and heavy metal solutions, Treatment, Storage and Disposal (TSD) facilities and releases larger than specific Reportable Quantities (RQ), established by EPA.

An NPL site is an uncontrolled or abandoned hazardous waste site identified for priority remedial action under Superfund Program. Such prioritized sites with significant risk to human health and the environment receive remedial funding under the Comprehensive Environmental Response Conservation and Liability Act (CERCLA).
RCRA generator/TSD list is a compilation of hazardous waste generating facilities which have obtained an identification number from EPA.

ERNS is a national computer database used to store information on unauthorized release of oil and hazardous substances. The program is a cooperative effort of the Environmental Protection Agency, the Department of Transportation Research and Special Program Administration's National Transportation System Center and the National Response Center. There are primarily five Federal statues that requires release reporting: CERCLA Section 103; the Superfund Amendments and Reauthorization Act (SARA) Title III Section 304; the Clean Water Act of 1972 (CWA) Section 311(b)(3); and the Hazardous Material Transportation Act of 1974 (HMTA) Section 1808 (b).

RCRA Violators List (CORRACTS): The Resource Conservation and Recovery Act of 1976 provides for "Cradle to Grave" regulation of hazardous wastes. RCRA requires regulation of hazardous waste generators, transporters, and TSD sites. Evaluation to potential violations, ranging from manifest requirements to hazardous waste discharges, is typically conducted by the US EPA. This database is also known as Corrective Action Report (CORRACTS).

Toxic Release Inventory System (TRIS): TRIS compiles database for a property having had a release of chemical compound, whose listing reflects permitted air releases rather than a release to soil or groundwater.

B. California State Sources

- State of California Office of Planning and Research (CORTESE), the State of California equivalent of CERCLIS
- Leaking Underground Storage Tanks (LUST)
- Solid Waste Information System (SWIS)
- Annual Work Plan (previously known as Bond Expenditure Plan), the State of California equivalent of NPL
- California Historical Abandoned Site Survey Program (CALSITES)

CALSITES: The Historical Abandoned Site Survey (HASS) Program, formerly the California Abandoned Sites Program Information System – ASPIS, identified certain potential hazardous waste sites. The identification of these sites were generally not made via sampling and site characterization, but as a result of file searches and windshield surveys.

No Further Action sites are also on the CALSITE list which have been marked for no further action by the California Environmental Protection Agency, Department of Toxic Substance Control (DTSC) in accordance with California Health & Safety Code.

CORTESE: This database is a consolidation of information from various sources. It is maintained by the State Office of Planning and Research and lists potential and confirmed hazardous waste or substances sites.

LUST(s): The Leaking Underground Storage Tanks (LUST) Information System is maintained by the State Water Resource Board pursuant to California Health & Safety Code.

SWIS (Solid Waste Information System): As legislated under Solid Waste Management and Resource Recovery Act of 1972, the California Waste Management Board maintains list of certain facilities, i.e. Active solid waste disposal sites, Inactive or Closed solid waste disposal sites and Transfer facilities.

AW (Annual Work Plan previously known as Bond Expenditure Plan): The California Health & Safety code requires the California EPA to develop a site-specific expenditure plan as the basis for an appropriation of California Hazardous Substance Cleanup Bond Act of 1984 funds. The Agency is also required to update annually and report any significant adjustments to the Legislature on an ongoing basis. The plan identifies California hazardous waste sites targeted for cleanup by responsible parties, the California and the Federal Environmental Protection Agency over the next coming years.

C. Regional Sources

- LUST - Regional
- Toxic Releases (NT)
- Toxic Pits (TPC)
- California Regional Water Resources Control Board, Solid Waste Assessment Test (SWAT)
- Well Investigation Program

NT (Toxic Releases): The California Regional Water Quality Control Boards or local Department of Health & Safety Services keeps track of toxic releases to the environment. These lists are known as Unauthorized Releases, Spill, Leaks, Investigation and Cleanups, Non-Tank Releases, Toxic List or similar, depending on the local agency

TPC (Toxic Pits): The Toxic Pits Cleanup Act places strict limitations on the discharge of liquid hazardous wastes into surface impoundment, toxic ponds, pits and lagoons. Regional Water Quality Control Boards are required to inspect all surface impoundments annually, in addition, every facility was required to file a Hydrogeological Assessment Report. Recent legislation allows the Department of Health Services to exempt facilities that closed on or before December 31, 1985, if a showing is made that no significant environmental risk remains.

SWAT (Solid Waste Assessment Test): This program requires that disposal sites with more than 50,000 cubic yards of waste provide sufficient information to the regional water quality control board to determine whether or not the site has discharged hazardous substances which will impact the environment. Site operators are required to file Solid Waste Assessment Test reports on a staggered basis. Operators submit water quality tests to the Regional Water Quality Control Board, describing surface and groundwater quality and supply; and the geology within 1 mile of the site. Air quality tests are submitted to the local Air Quality Management District or Air Pollution Control District.

D. Other Sources

- RCRA-Generator
- RCRA-TSD Facilities
- SWLF (Solid Waste Landfill)

RCRA-G: The EPA regulates generators of hazardous material through the Resource Conservation and Recovery Act (RCRA). All hazardous waste generators are required to notify EPA of their existence by submitting the Federal Notification of Regulated Waste Activity Form or a State equivalent form. The notification form provides basic identification information and specific waste activities.

RCRA-D: The EPA regulates the treatment, storage and disposal of hazardous material through the Resource Conservation and Recovery Act (RCRA). All hazardous waste TSD facilities are required to notify EPA of their existence by submitting the Federal Notification of Regulated Waste Activity Form or a State equivalent form.

SWLF: The California Waste Information system database consists both open as well closed and inactive solid waste disposal facilities and transfer stations pursuant to the Solid Waste Management and Resource Recovery Act of 1972. Generally the California Integrated Waste Management Board learns of locations of disposal facilities through permit applications and from local enforcement agencies.

5.3 Case Study References

A. Case-Closure

If sites are listed on the California Leaking Underground Storage Tank (LUST) database with a "case closed (no further remedial actions required)" status, it shall be interpreted as follows. The identified contamination at such sites was mitigated to a degree that the governing agency believed that these sites do not pose apparent concern/threat to the subsurface environment of the neighboring area.

B. Lawrence Livermore National Laboratory Reports on LUFT's

According to Lawrence Livermore National Laboratory / University of California 1995 Reports on Leaking Underground Fuel Tanks (LUFT's), approximately ninety percent of dissolved petroleum products is found less than 280 feet in distance from the origination source, and most of these plumes are either stable or decreasing in distance. And seventy percent of the plume is in shallow groundwater less than 25 feet below the ground surface.

C. Hydrological Gradient

Environmentally-concerned sites located not directly at the up-gradient from the subject site can be deleted from anticipated target sites, since contamination from identified sites is unlikely to migrate along the groundwater flow direction to affect the subsurface environment underneath the subject site (Section 2.6 – Hydrologic Setting).

5.4 Potential Source of Contamination

Sites identified on referenced agency listing within the one-mile radius from the subject property are tabulated in Appendix C of this Report. The synopsis of each site is preceded by a number that refers to its location on the map that is provided by FirstSearch of Dedham, Massachusetts (an environmental information retrieval company for REM). As shown in Appendix C, there are no leaking underground storage tank (LUST) sites or other sites

with potentially environmental concern identified within the vicinity (< 1/4 mile) of the subject site being identified as of potentially environmental concern.

5.5 UST, Disposal Sites, and Generators

As also summarized in Appendix C, there are no sites listed on permitted Underground Storage Tank (UST)/Aboveground Storage Tank (AST) database compiled by the State Water Resources Control Board or federal EPA hazardous waste generator database, located within 1/4-mile radius of the subject site.

6. CONCLUSIONS AND RECOMMENDATIONS

- As a result of the site reconnaissance, records research, historical investigation, and review of federal, state, and local reported environmental information, this assessment identified no evidence of recognized environmental conditions that could significantly impact the subject property, and there is no apparently significant environmental concern induced by the present or past operations and practices at the subject property and its immediate neighbors.

- The subject property is an approximately 95.41 acre irregularly-shaped unpaved vacant mountain lot located in the northeastern portion of Section 5, Township 3 North, Range 15 West of the San Bernardino Baseline and Meridian in an unincorporated portion of the Los Angeles County generally known as Stevenson Ranch to the west of the southwestern portion of the city of Santa Clarita, California. Near the northwestern corner of the lot, there is a NW-SE trending unpaved road leading to the end of the NW-SE trending canyon in the northwestern portion of the lot. At the time of site inspection on July 7, 2004, the subject property was an unpaved vacant mountain lot.

- The subject property is not listed on the following environmental regulatory database record research (FirstSearch database): NPL, RCRA-TSD, CERCLIS, NFRAP, RCRA-G, ERNS, CORRACTS, CORTESE, CALSITES, LUST, UST and SWF. The conducted government records search identified no sites within the vicinity (< 1/4 mile) of the subject site exhibiting potentially environmental concern.

- Significant environmental concerns with respect to historical business operation were not recognized during the site investigation. Based on building permit records available at the County of Los Angeles Department of Public Works (CLADPW), Building Division, Santa Clarita field office (in charge of issuing building permits for the subject site area) and available historic topographic map/aerial photographs, no development has ever occurred on the subject site. The subject site has always been documented as vacant/unimproved land.

  On 7/8/04, REM staff also visited the California State Division of Oil & Gas (CSDOG) office at Cypress to review abandoned oil/gas well records (with abandoned oil/gas well map for the site area from the CSDOG included as Appendix B) for the site area and found and found two plugged and abandoned dry holes, but no oil wells, either within

or in the immediate vicinity of the subject site.

Based on above summary, no past or current occupants were/are likely to exhibit business operations involving usage/generation of significant quantities of hazardous material/wastes.

- In conclusion, according to findings of the conducted Phase I environmental assessment, no apparently significant environmental concern was identified being induced by current and historic operations of the subject property and its neighboring sites. No Phase II investigation is recommended for the subject property.

7. LIMITATIONS

The opinion expressed herein is based on the information collected during our study, our present understanding of the site conditions and our professional judgement in light of such information at the time of preparation of this opinion. The report is a professional opinion work, and no warranty is either expressed, implied or made as to the conclusions, advice and recommendations offered in this report.

Our investigation was performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable Engineers and Geologists practicing in this or similar localities.

The findings, conclusions and recommendations in this report are considered valid as of the present date. However, changes in the conditions of the property can occur with the passage of time, due to natural process or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standard may occur. REM is not responsible for conditions found at or beneath the subject property or adjacent properties. Accordingly, portions of this report may be invalidated wholly or partially by the changes beyond our control.

This report is prepared for the exclusive use of the client, and opinions/recommendations contained in this report apply only to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated.

Report Prepared by:
ROBIN ENVIRONMENTAL MANAGEMENT CO.

Robin Chang, Ph.D., R.E.A.
Project Manager

APPENDICES

APPENDIX A

FIGURES & PHOTOS

FIGURE 1

SITE LOCATION MAP

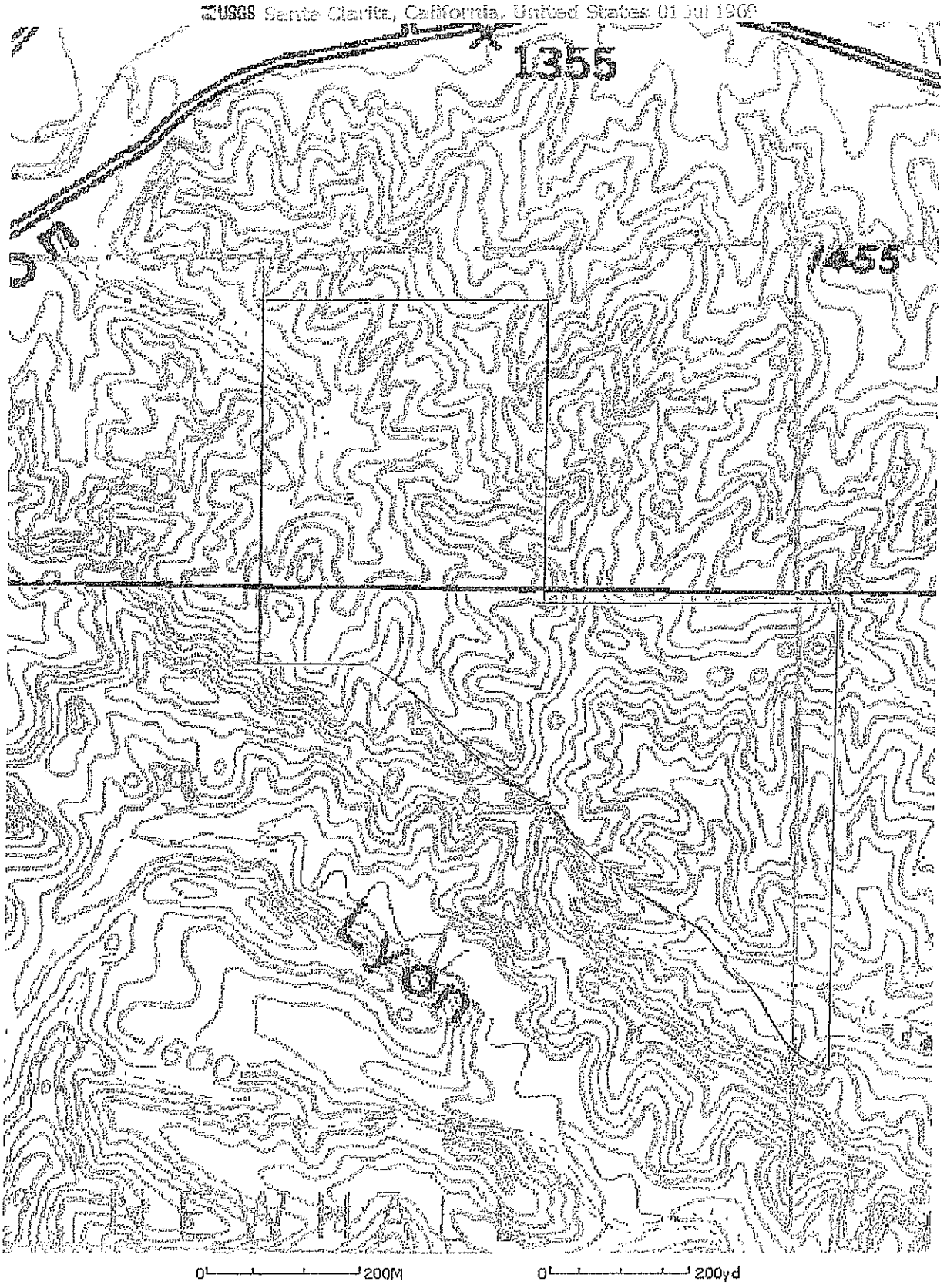

Image courtesy of the U.S. Geological Survey

FIGURE 2

RECENT AERIAL PHOTOGRAPH FOR THE SITE AREA SHOWING SITE CONFIGURATION AND ITS VICINITY

Send To Printer Back To TerraServer Change to 11x17 Print Size Show Grid Lines Change to Landscape

USGS Santa Clarita, California, United States 01 Jun 1994

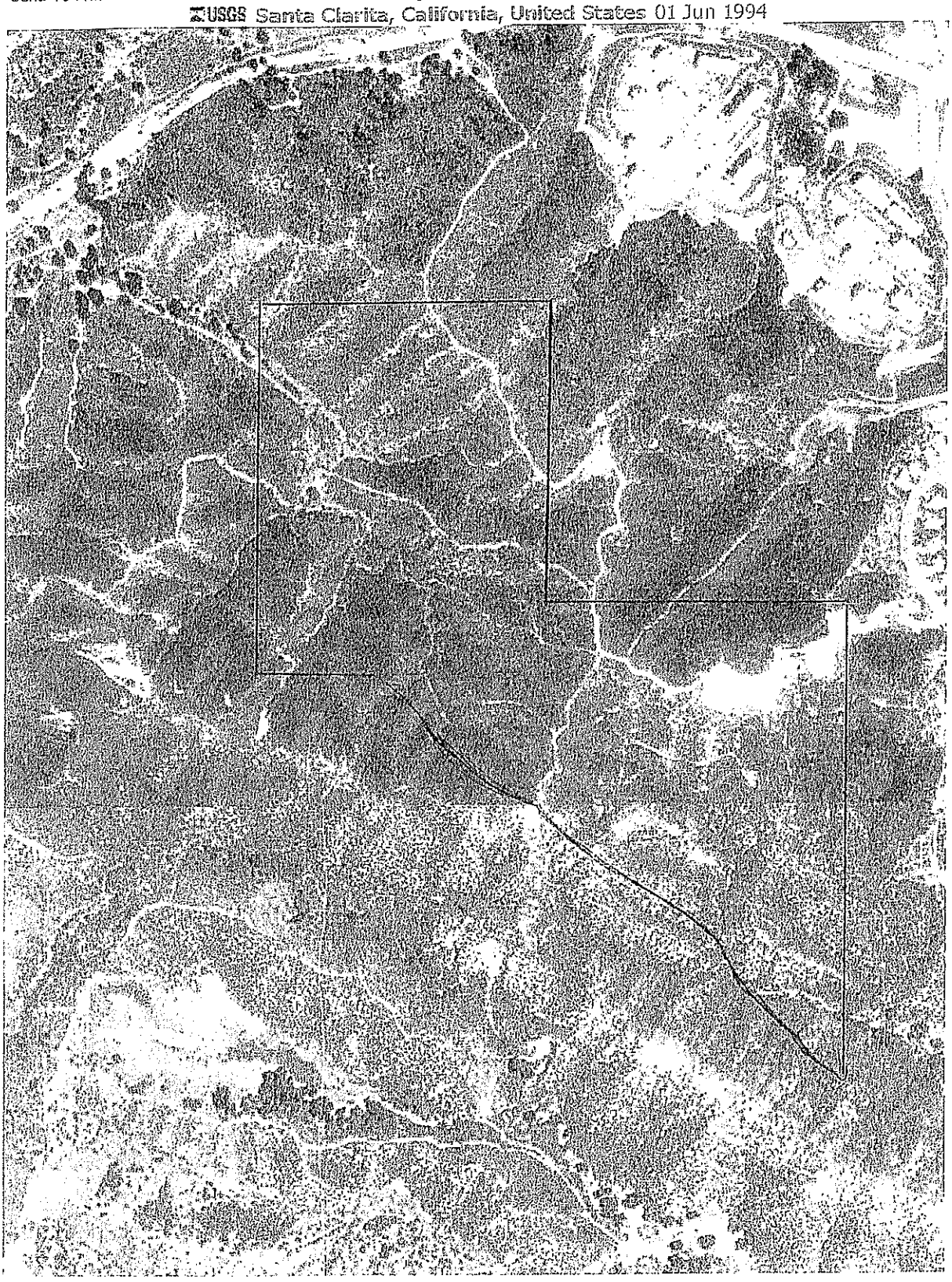

Image courtesy of the U.S. Geological Survey
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FIGURE 3

SITE PHOTOS

Photo 1
Site overview (taken from near the northwestern corner of the site; facing southeast)

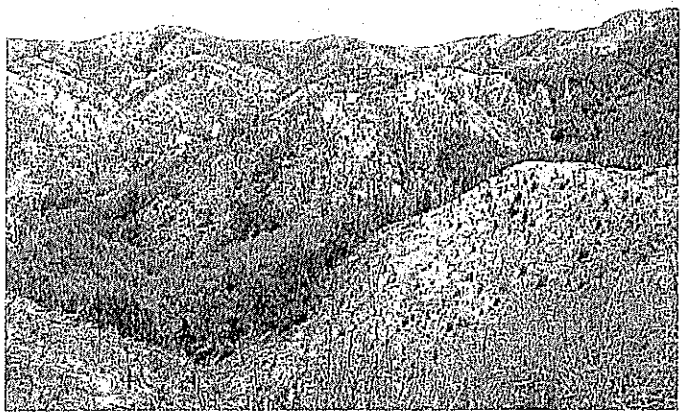


Photo 2
Some apparently illegally dumped used tires and other debris present along the NW-Se trending unpaved road at the northwestern corner of the site

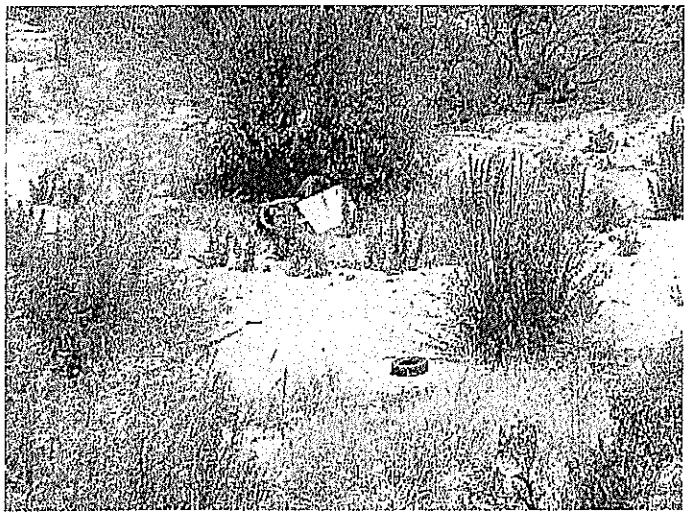


Photo 3
Some burned bushes from apparently October 2003 fire near the northwestern corner of the site

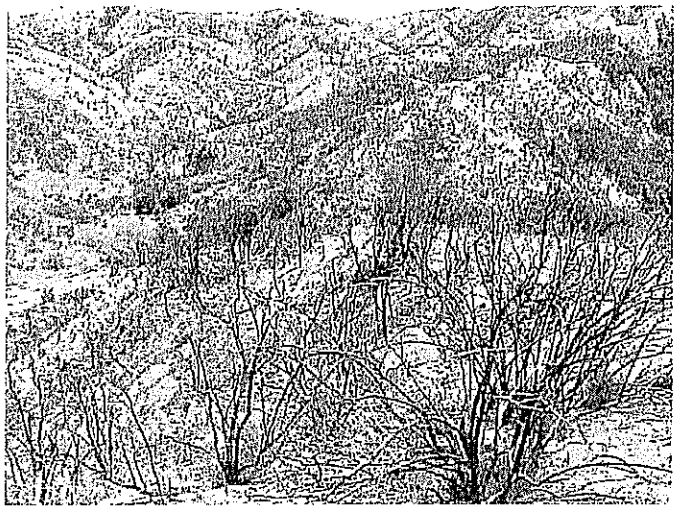
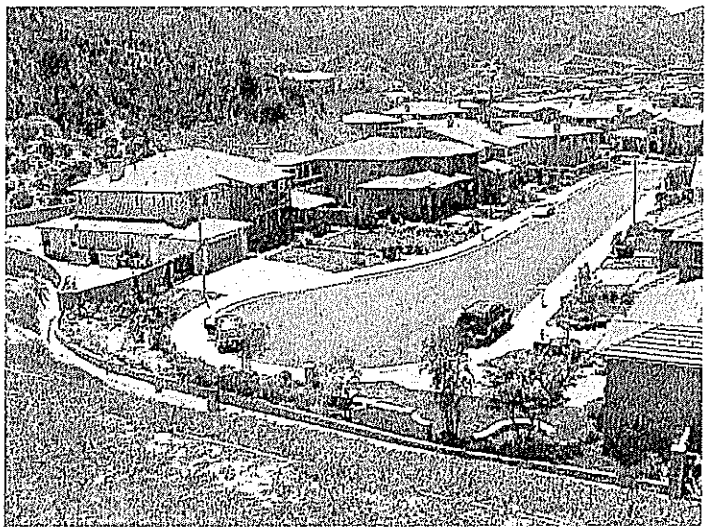
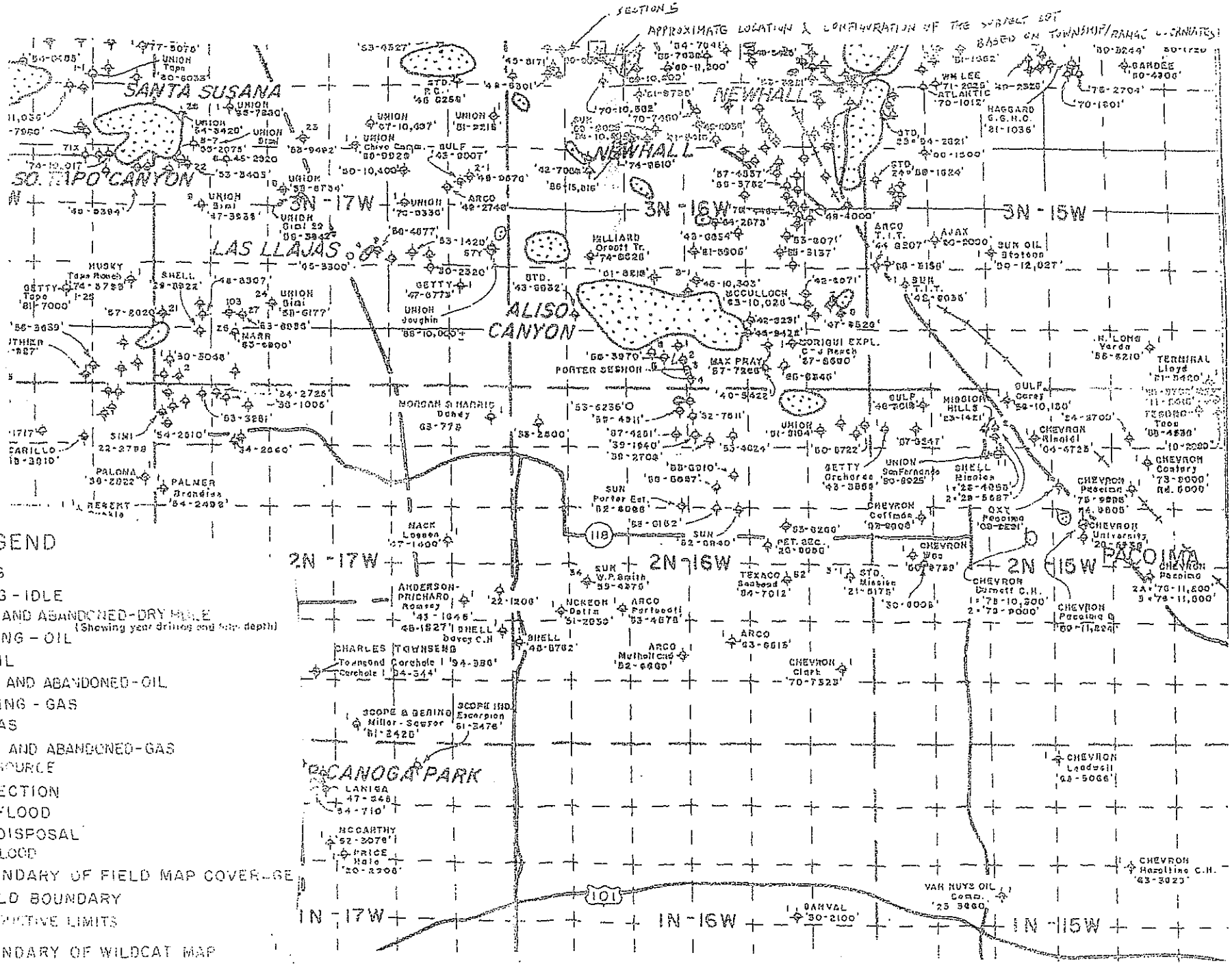


Photo 4
2001-developed residences to the west of the northwestern portion of the site (facing west-southwest)



APPENDIX B

CALIFORNIA DIVISION OF OIL & GAS ABANDONED OIL/GAS WELL MAP FOR THE SITE AREA



LEGEND

- LING
- LING - IDLE
- GED AND ABANDONED - DRY HOLE (Showing year drilled and total depth)
- DUCING - OIL
- E - OIL
- GED AND ABANDONED - OIL
- DUCING - GAS
- E - GAS
- GED AND ABANDONED - GAS
- ER SOURCE
- INJECTION
- TER FLOOD
- ER DISPOSAL
- AM FLOOD
- BOUNDARY OF FIELD MAP COVERAGE
- FIELD BOUNDARY
- PRODUCTIVE LIMITS
- BOUNDARY OF WILDCAT MAP
- OBSERVATION
- BURIED IDLE - OIL

APPENDIX C

GOVERNMENT RECORDS SEARCH DATABASE

FirstSearch Technology Corporation

Environmental FirstSearch™ PreScreen

TARGET PROPERTY:

26300 PICO CANYON ROAD

STEVENSON RANCH CA 91381

Job Number: 24092

PREPARED FOR:

07-07-04

Tel: (781) 320-3720 *Fax: (781) 320-3715*

Environmental FirstSearch
Search Summary Report

Target Site: 26300 PICO CANYON ROAD
STEVENSON RANCH CA 91381

FirstSearch Summary

Database	Sel	Updated	Radius	Site	1/8	1/4	1/2	1/2>	ZIP	TOTALS
NPL	Y	04-08-04	1.00	0	0	0	0	0	0	0
CERCLIS	Y	02-09-04	0.50	0	0	0	0	-	0	0
NFRAP	Y	02-09-04	0.15	0	0	0	-	-	0	0
RCRA TSD	Y	02-09-04	0.50	0	0	0	0	-	0	0
RCRA COR	Y	02-09-04	1.00	0	0	0	0	0	0	0
RCRA GEN	Y	02-09-04	0.15	0	0	0	-	-	0	0
RCRA NLR	N	02-09-04	0.25	-	-	-	-	-	-	-
ERNS	Y	12-31-03	0.15	0	0	0	-	-	0	0
NPDES	N	01-26-04	0.25	-	-	-	-	-	-	-
FINDS	N	07-16-98	0.25	-	-	-	-	-	-	-
TRIS	N	03-29-04	0.25	-	-	-	-	-	-	-
State Sites	Y	03-02-04	1.00	0	0	0	0	0	1	1
Spills-1990	Y	07-01-03	0.15	0	0	0	-	-	0	0
Spills-1980	N	NA	0.25	-	-	-	-	-	-	-
SWL	Y	03-08-04	0.50	0	0	0	0	-	0	0
Permits	N	02-11-04	0.25	-	-	-	-	-	-	-
Other	N	03-02-04	0.25	-	-	-	-	-	-	-
REG UST/AST	Y	06-02-04	0.15	0	0	0	-	-	0	0
Leaking UST	Y	05-26-04	0.50	0	0	0	1	-	0	1
State Wells	N	NA	0.50	-	-	-	-	-	-	-
Aquifers	N	NA	0.50	-	-	-	-	-	-	-
ACEC	N	NA	0.50	-	-	-	-	-	-	-
Wetlands	N	11-20-00	0.50	-	-	-	-	-	-	-
Floodplains	N	09-01-98	0.50	-	-	-	-	-	-	-
Nuclear Permits	N	04-30-99	0.50	-	-	-	-	-	-	-
Historic/Landmark	N	09-01-02	0.50	-	-	-	-	-	-	-
Federal Land Use	N	06-17-98	0.50	-	-	-	-	-	-	-
Federal Wells	N	05-19-03	0.50	-	-	-	-	-	-	-
Releases(Air/Water)	N	12-31-03	0.25	-	-	-	-	-	-	-
HMIRS	N	03-31-03	0.25	-	-	-	-	-	-	-
NCDB	N	04-30-04	0.25	-	-	-	-	-	-	-
PADS	N	03-01-04	0.25	-	-	-	-	-	-	-
Federal Other	N	NA	0.25	-	-	-	-	-	-	-
Misc	N	NA	0.25	-	-	-	-	-	-	-
Towers	N	08-16-01	0.25	-	-	-	-	-	-	-
Soils	N	03-18-97	0.25	-	-	-	-	-	-	-
Receptors	N	01-01-95	0.50	-	-	-	-	-	-	-
- TOTALS -				0	0	0	1	0	1	2

Notice of Disclaimer

Due to the limitations, constraints, inaccuracies and incompleteness of government information and computer mapping data currently available to FirstSearch Technology Corp., certain conventions have been utilized in preparing the locations of all federal, state and local agency sites residing in FirstSearch Technology Corp.'s databases. All EPA NPL and state landfill sites are depicted by a rectangle approximating their location and size. The boundaries of the rectangles represent the eastern and western most longitudes; the northern and southern most latitudes. As such, the mapped areas may exceed the actual areas and do not represent the actual boundaries of these properties. All other sites are depicted by a point representing their approximate address location and make no attempt to represent the actual areas of the associated property. Actual boundaries and locations of individual properties can be found in the files residing at the agency responsible for such information.

Waiver of Liability

Although FirstSearch Technology Corp. uses its best efforts to research the actual location of each site, FirstSearch Technology Corp. does not and can not warrant the accuracy of these sites with regard to exact location and size. All authorized users of FirstSearch Technology Corp.'s services proceeding are signifying an understanding of FirstSearch Technology Corp.'s searching and mapping conventions, and agree to waive any and all liability claims associated with search and map results showing incomplete and or inaccurate site locations.

Environmental FirstSearch
Site Information Report

Request Date:	07-07-04	**Search Type:**	COORD
Requestor Name:	Robin Chang	**Job Number:**	24092
Standard:	ASTM		Filtered Report

TARGET ADDRESS: 26300 PICO CANYON ROAD
STEVENSON RANCH CA 91381

Demographics

Sites:	2	**Non-Geocoded:**	1	**Population:**	NA
Radon:	NA				

Site Location

	Degrees (Decimal)	Degrees (Min/Sec)		UTMs
Longitude:	-118.584461	-118:35:4	**Easting:**	354317.632
Latitude:	34.376823	34:22:37	**Northing:**	3804880.545
			Zone:	11

Comment

Comment:

Additional Requests/Services

Adjacent ZIP Codes: 0 Mile(s)

ZIP Code	City Name	ST	Dist/Dir	Sel

Services:

	Requested?	Date
Sanborns	No	
Aerial Photographs	No	
Topographical Maps	No	
City Directories	No	
Title Search	No	
Municipal Reports	No	
Online Topos	No	

Environmental FirstSearch
Sites Summary Report

TARGET SITE: 26300 PICO CANYON ROAD
STEVENSON RANCH CA 91381

JOB: 24092

TOTAL: 2 **GEOCODED:** 1 **NON GEOCODED:** 1 **SELECTED:** 0

ID	DB Type	Site Name/ID/Status	Address	Dist/Dir	Map ID
1	LUST	ARCO PRODUCTS CO T0603702702/CASE CLOSED	26835 PICO CANYON RD STEVENSON RANC CA 91381	0.38 NW	1

Environmental FirstSearch
Sites Summary Report

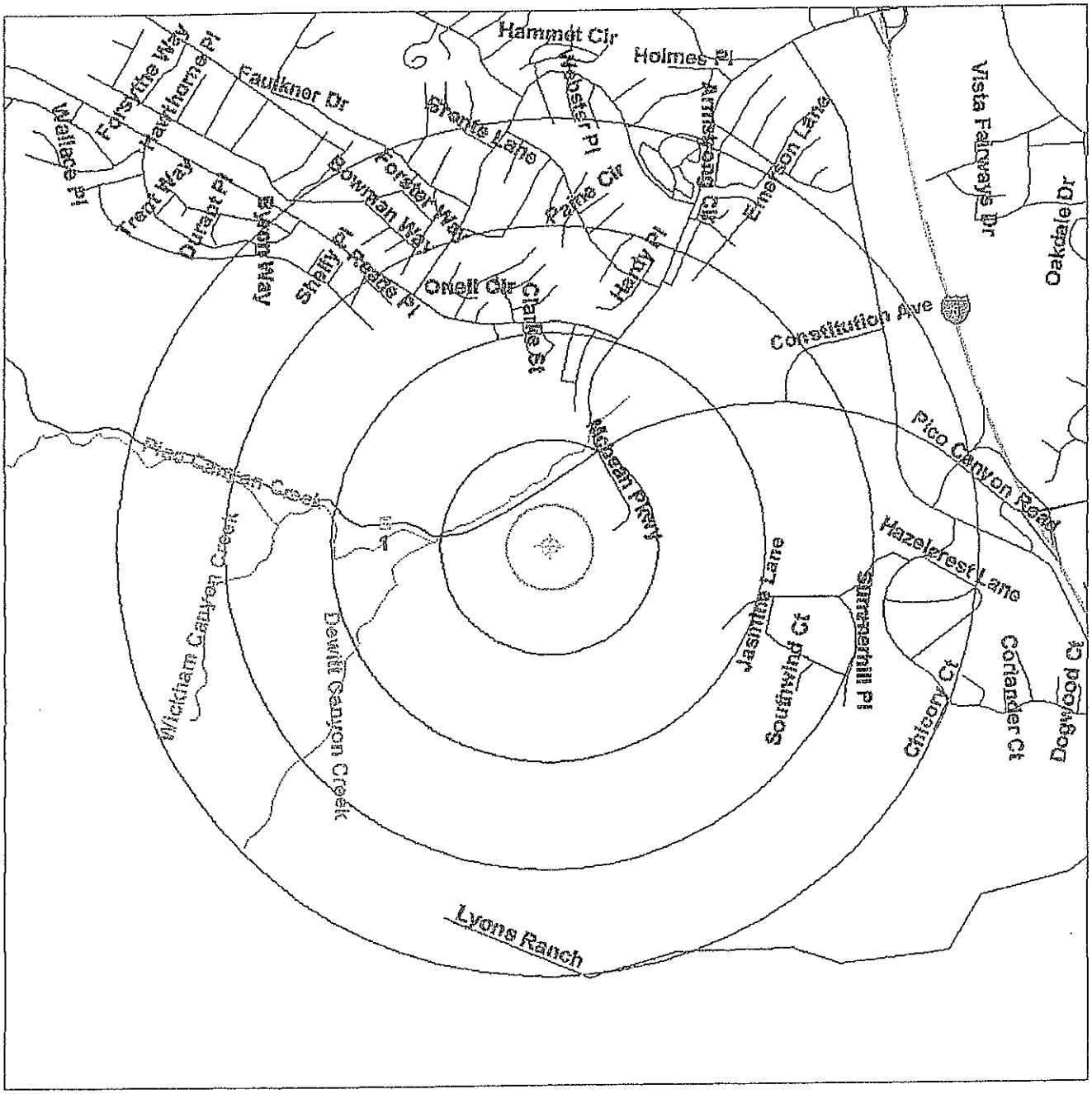
TARGET SITE: 26300 PICO CANYON ROAD
STEVENSON RANCH CA 91381

JOB: 24092

TOTAL: 2 **GEOCODED:** 1 **NON GEOCODED:** 1 **SELECTED:** 0

ID	DB Type	Site Name/ID/Status	Address	Dist/Dir	Map ID
2	STATE	STEVENSON RANCH CAL19000005/NO ACTION - FOR CALM	STEVENSON RANCH PARKWAY/PICO C NEWHALL CA 91381	NON GC	

Environmental FirstSearch
1 Mile Radius
Single Map:



Source: 1999 U.S. Census TIGER Files

Target Site (Latitude: 34.376823 Longitude: -118.584461) .....

Identified Site, Multiple Sites, Receptor .....

NPL, Solid Waste Landfill (SWL) or Hazardous Waste .....

Railroads .....

Environmental FirstSearch
Federal Databases and Sources

ASTM Databases:

CERCLIS: *Comprehensive Environmental Response Compensation and Liability Information System.* The EPA's database of current and potential Superfund sites currently or previously under investigation. Source: Environmental Protection Agency.

Updated quarterly.

CERCLIS-NFRAP (Archive): *Comprehensive Environmental Response Compensation and Liability Information System Archived Sites.* The Archive designation means that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL). This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Updated quarterly.

ERNS: *Emergency Response Notification System.* The EPA's database of emergency response actions. Source: Environmental Protection Agency. Data since January, 2001, has been received from the National Response Center as the EPA no longer maintains this data.

Updated quarterly.

FINDS: *The Facility Index System.* The EPA's Index of identification numbers associated with a property or facility which the EPA has investigated or has been made aware of in conjunction with various regulatory programs. Each record indicates the EPA office that may have files on the site or facility. Source: Environmental Protection Agency.

Updated semi-annually.

NPL: *National Priority List.* The EPA's list of confirmed or proposed Superfund sites. Source: Environmental Protection Agency.

Updated quarterly.

RCRIS: *Resource Conservation and Recovery Information System.* The EPA's database of registered hazardous waste generators and treatment, storage and disposal facilities. Included are RAATS (RCRA Administrative Action Tracking System) and CMEL (Compliance Monitoring & Enforcement List). Source: Environmental Protection Agency.

RCRA TSD: *Resource Conservation and Recovery Information System Treatment, Storage, and Disposal Facilities.* The EPA's database of RCRIS sites which treat, store, dispose, or incinerate hazardous waste. This information is also reported in the standard RCRIS detailed data.

ASTM Databases (continued):

RCRA COR: *Resource Conservation and Recovery Information System Corrective Action Sites.* The EPA's database of RCRIS sites with reported corrective action. This information is also reported in the standard RCRIS detailed data.

RCRA GEN: *Resource Conservation and Recovery Information System Large and Small Quantity Generators.* The EPA's database of RCRIS sites that create more than 100kg of hazardous waste per month or meet other RCRA requirements. Included are RAATS (RCRA Administrative Action Tracking System) and CMEL (Compliance Monitoring & Enforcement List).

RCRA NLR: *Resource Conservation and Recovery Information System sites No Longer Regulated.* The EPA's database of RCRIS sites that create less than 100kg of hazardous waste per month or do not meet other RCRA requirements.

All RCRA databases are Updated quarterly

Environmental FirstSearch
Federal Databases and Sources

Non-ASTM Databases:

HMIRS: *Hazardous Materials Incident Response System.* This database contains information from the US Department of Transportation regarding materials, packaging, and a description of events for tracked incidents.

Updated quarterly.

NCDB: *National Compliance Database.* The National Compliance Data Base System (NCDB) tracks regional compliance and enforcement activity and manages the Pesticides and Toxic Substances Compliance and Enforcement program at a national level. The system tracks all compliance monitoring and enforcement activities from the time an inspector conducts and inspection until the time the inspector closes or the case settles the enforcement action. NCDB is the national repository of the 10 regional and Headquarters FIFRA/TSCA Tracking System (FTTS). Data collected in the regional FTTS is transferred to NCDB to support the need for monitoring national performance of regional programs.

Updated quarterly

NPDES: *National Pollution Discharge Elimination System.* The EPA's database of all permitted facilities receiving and discharging effluents. Source: Environmental Protection Agency.

Updated semi-annually.

NRDB: *National Radon Database.* The NRDB was created by the EPA to distribute information regarding the EPA/State Residential Radon Surveys and the National Residential Radon Survey. The data is presented by zipcode in Environmental FirstSearch Reports. Source: National Technical Information Service (NTIS)

Updated Periodically

Nuclear: The Nuclear Regulatory Commission□s (NRC) list of permitted nuclear facilities.

Updated Periodically

PADS: PCB Activity Database System
The EPA's database PCB handlers (generators, transporters, storers and/or disposers) that are required to notify the EPA, the rules being similar to RCRA. This database indicates the type of handler and registration number. Also included is the PCB Transformer Registration Database.

Updated semi-annually.

Receptors: 1995 TIGER census listing of schools and hospitals that may house individuals deemed sensitive to environmental discharges due to their fragile immune systems.

Updated Periodically

Non-ASTM Databases (continued):

RELEASES: ***Air and Surface Water Releases.*** A subset of the EPA's ERNS database which have impacted only air or surface water.

Updated semi-annually.

Soils: This database includes the State Soil Geographic (STATSGO) data for the conterminous United States. It contains information regarding soil characteristics such as water capacity, percent clay, organic material, permeability, thickness of layers, hydrological characteristics, quality of drainage, surface, slope, liquid limit, and the annual frequency of flooding. Source: United States Geographical Survey (USGS).

Updated quarterly

TRIS: ***Toxic Release Inventory System.*** The EPA's database of all facilities that have had or may be prone to toxic material releases. Source: Environmental Protection Agency.

Updated semi-annually.

ENVIRONMENTAL FIRST SEARCH
CALIFORNIA DATABASES (DB) AND SOURCES

CAL SITES: DB TYPE = ST (STATE SITES)
Source: The CAL EPA, Depart. Of Toxic Substances Control
Phone: (916) 323-3400

The CAL EPA Department of Toxic Substances Control (DTSC) maintains a database of information on properties (or sites) in California where hazardous substances have been released, or where the potential for such release exists. The types of properties in the CALSITES database are categorized as: Annual Work Plan, Backlogged Properties, Certified / De-listed Sites, No Further Action, Preliminary Endangerment Assessment in Progress, Preliminary Endangerment Assessment Required, Removal Action Required, Expedited Remedial Action Program, Voluntary Cleanup Program, Deed Restricted Properties, and Referred Properties. For more information on individual sites call the number listed above.

CORTESE: DB TYPE = ST (STATE SITES)
Source: The CAL EPA, Department of Toxic Substances Control
Phone: (916) 445-6532

Pursuant to Government Code Section 65962.5, the Hazardous Waste and Substances Sites List has been compiled by Cal/EPA, Hazardous Materials Data Management Program. The CAL EPA Dept. of Toxic Substances Control compiles information from subsets of the following databases to make up the CORTESE list:

1. The Dept. of Toxic Substances Control; contaminated or potentially contaminated hazardous waste sites listed in the CAL Sites database. Formerly known as ASPIS are included (CALSITES formerly known as ASPIS).
2. The California State Water Resources Control Board; listing of Leaking Underground Storage Tanks are included (LTANK)
3. The California Integrated Waste Management Board; Sanitary Landfills which have evidence of groundwater contamination or known migration of hazardous materials (formerly WB-LF, now AB 3750).

Note: Track Info Services collects each of the above data sets individually and lists them separately in the following First Search categories in order to provide more current and comprehensive information: CALSITES: SPL, LTANK: LUST, WB-LF: SWL

SWIS SOLID WASTE INFORMATION SYSTEM: DB TYPE = SW
(SOLID WASTE RELATED SITES)
Source: The Integrated Waste Management Board
Phone: (916) 255-2331

The California Integrated Waste Management Board maintains a database on solid waste facilities, operations, and disposal sites throughout the state of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites. For more information on individual sites call the number listed above.

Note: This database contains poor site location information for many sites in the First Search reports; therefore, it may not be possible to locate or plot some sites in First Search reports.

WMUDS: DB TYPE = SW (SOLID WASTE RELATED SITES)
Source: The State Water Resources Control Board
Phone: (916) 227-4365

The State Water Resources Control Board maintained the Waste Management Unit Database System (WMUDS). It is no longer updated. It tracked management units for several regulatory programs related to waste management and its potential impact on groundwater. Two of these programs (SWAT & TPCA) are no longer on-going regulatory programs as described below. Chapter 15 (SC15) is still an on-going regulatory program and information is updated periodically but not to the WMUDS database. The WMUDS System contains information from the following agency databases: Facility, Waste Management Unit (WMU), Waste Discharger System (WDS), SWAT, Chapter 15, TPCA, RCRA, Inspections, Violations, and Enforcement's.

Note: This database contains poor site location information for many sites in the First Search reports; therefore, it may not be possible to locate or plot some sites in First Search reports.

ORANGE COUNTY LANDFILLS: DB TYPE = SW (SOLID WASTE RELATED SITES)
Source: Orange County Health Dept.
Phone: (714) 834-3536

LUSTIS: DB TYPE = LU (LEAKING UNDERGROUND STORAGE TANKS)
Source: The State Water Resources Control Board
Phone: (916) 227-4416

The State Water Resources Control Board maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks. Information for this database is collected from the states regional boards quarterly and integrated with this database.

SAN DIEGO COUNTY LEAKING TANKS: DB TYPE = LU
(LEAKING UNDERGROUND STORAGE TANKS)
Source: San Diego County Dept. of Environmental Health
Phone: (619) 338-2242

Maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks within its HE17/58 database. For more information on a specific file call the HazMat Duty Specialist at phone number listed above.

SLIC REGIONS 1 - 9: DB TYPE = SP (SPILLS-90)
Source: The CAL EPA Regional Water Quality Control Boards 1 - 9

The California Regional Water Quality Control Boards maintain report of sites that have records of spills, leaks, investigation, and cleanups. For phone number listings of departments within each region visit their web sites at: http://www.swrcb.ca.gov/regions.html

SAN DIEGO COUNTY HE17 PERMITS: DB TYPE = PE (PERMITS)

Source: The San Diego County Depart. Of Environmental Health
Phone: (619) 338-2211

The HE17/58 database tracks establishments issued permits and the status of their permits in relation to compliance with federal, state, and local regulations that the County oversees. It tracks if a site is a hazardous waste generator, TSD, gas station, has underground tanks, violations, or unauthorized releases. For more information on a specific file call the HazMat Duty Specialist at the phone number listed above.

SAN BERNARDINO COUNTY HAZARDOUS MATERIALS PERMITS: DB TYPE = PE (PERMITS)
Source: San Bernardino County Fire Dept.
Phone: (909) 387-3080

Handlers and Generators Permit Information Maintained by the Hazardous Materials Div.

LA COUNTY SITE MITIGATION COMPLAINT CONTROL LOG: DB TYPE = OT (OTHER UNIQUE DATABASES)
Source: The Los Angeles County Hazardous Materials Division
Phone: (323) 890-7806

The County of Los Angeles Public Health Investigation Compliant Control Log

ORANGE COUNTY INDUSTRIAL SITE CLEANUPS: DB TYPE = OT (OTHER UNIQUE DATABASES)
Source: Orange County Environmental Health Agency
Phone: (714) 834-3536

AST ABOVEGROUND STORAGE TANKS: DB TYPE = US (UNDERGROUND STORAGE TANKS)
Source: The State Water Resources Control Board
Phone: (916) 227-4364

The Above Ground Petroleum Storage Act became State Law effective January 1, 1990. In general, the law requires owners or operators of AST's with petroleum products to file a storage statement and pay a fee by July 1, 1990 and every two years thereafter, take specific action to prevent spills, and in certain instances implement a groundwater monitoring program. This law does not apply to that portion of a tank facility associated with the production oil and regulated by the State Division of Oil and Gas of the Dept. of Conservation.

SWEEPS / FIDS STATE REGISTERED UNERGOROUND STORAGE TANKS: DB TYPE = US
Source: CAL EPA Dept of Toxic Substances Control
Phone: (916)227-4404

Until 1994 the State Water Resources Control Board maintained a database of registered underground storage tanks statewide referred to as the SWEEPS System. The SWEEPS UST information was integrated with the CAL EPA's Facility Index System database (FIDS) which is a master index of information from numerous California agency environmental databases. That was last updated in 1994. Track Info Services included the UST information from the FIDS database in its First Search reports for historical purposes to help its clients identify where tanks may possibly have existed. For more information on specific sites from individual paper files archived at the State Water Resources Control Board call the number listed above.

CUPA DATABASES & SOURCES
(DB TYPE = US (UNDERGROUND STORAGE TANKS)

DEFINITION OF A CUPA: A Certified Unified Program Agency (CUPA) is a local agency that has been certified by the CAL EPA to implement six state environmental programs within the local agency's jurisdiction. These can be a county, city, or JPA (Joint Powers Authority). This program was established under the amendments to the California Health and Safety Code made by SB 1082 in 1994.

A Participating Agency (PA) is a local agency that has been designated by the local CUPA to administer one or more Unified Programs within their jurisdiction on behalf of the CUPA. A Designated Agency (DA) is an agency that has not been certified by the CUPA but is the responsible local agency that would implement the six unified programs until they are certified.

Please Note: Track Info Services, LLC collects and maintains information regarding Underground Storage Tanks from majority of the CUPAS and Participating Agencies in the State of California. These agencies typically do not maintain nor release such information on a uniform or consistent schedule; therefor, currency of the data may vary. Please look at the details on a specific site with a UST record in the First Search Report to determine the actual currency date of the record as provided by the relevant agency. Numerous efforts are made on a regular basis to obtain updated records.

ALAMEDA COUNTY CUPA'S
* County of Alameda Department of Environmental Health
* Cities of Berkeley, Fremont, Hayward, Livermore / Pleasanton, Newark, Oakland, San Leandro, Union

ALPINE COUNTY CUPA
* Health Department (Only updated by agency annually)

AMADOR COUNTY CUPA
* County of Amador Environmental Health Department

BUTTE COUNTY CUPA
* County of Butte Environmental Health Division (Only updated by agency biannually)

CALAVERAS COUNTY CUPA
* County of Calaveras Environmental Health Department

COLUSA COUNTY CUPA
* Environmental Health Dept.

CONTRA COSTA COUNTY CUPA
* Hazardous Materials Program

DEL NORTE COUNTY CUPA (US)
* Department of Health and Social Services

EL DORADO COUNTY CUPA'S
* County of El Dorado Environmental Health - Solid Waste Div (Only updated by agency annually)
* County of El Dorado EMD Tahoe Division
(Only updated by agency annually)

FRESNO COUNTY CUPA
* Haz. Mat and Solid Waste Programs

GLENN COUNTY CUPA
* Air Pollution Control District

HUMBOLDT COUNTY CUPA (US)
* Environmental Health Division

IMPERIAL COUNTY CUPA (US)
* Department of Planning and Building

INYO COUNTY CUPA (US)
* Environmental Health Department

KERN COUNTY CUPA (US)
* County of Kern Environmental Health Department
* City of Bakersfield Fire Department
KINGS COUNTY CUPA (US)
* Environmental Health Services
LAKE COUNTY CUPA (US)
* Division of Environmental Health
LASSEN COUNTY CUPA (US)
* Department of Agriculture
LOS ANGELES COUNTY CUPA'S (US)
* County of Los Angeles Fire Department
* County of Los Angeles Environmental Programs Division
* Cities of Burbank, El Segundo, Glendale, Long Beach/Signal Hill, Los Angeles,Pasadena, Santa Fe Springs, Santa Monica, Torrance, Vernon
MADERA COUNTY CUPA (US)
* Environmental Health Department
MARIN COUNTY CUPA (US)
* County of Marin Office of Waste Management
* City of San Rafael Fire Department
MARIPOSA COUNTY CUPA (US)
* Health Department
MENDOCINO COUNTY CUPA (US)
* Environmental Health Department
MERCED COUNTY CUPA (US)
* Division of Environmental Health
MODOC COUNTY CUPA (US)
* Department of Agriculture
MONO COUNTY CUPA (US)
* Health Department
MONTEREY COUNTY CUPA (US)
* Environmental Health Division
NAPA COUNTY CUPA (US)
* Hazardous Materials Section
NEVADA COUNTY CUPA (UST)
* Environmental Health Department
ORANGE COUNTY CUPA'S (US)
* County of Orange Environmental Health Department
* Cities of Anaheim, Fullerton, Orange, Santa Ana
* County of Orange Environmental Health Department
PLACER COUNTY CUPA (US)
* County of Placer Division of Environmental Health Field Office
* Tahoe City
* City of Roseville Roseville Fire Department
PLUMAS COUNTY CUPA (UST)
* Environmental Health Department
RIVERSIDE COUNTY CUPA (US)
* Environmental Health Department
SACRAMENTO COUNTY (US)
* County Environmental Mgmt Dept, Haz. Mat. Div.
SAN BENITO COUNTY CUPA (US)
* City of Hollister Environmental Service Department
SAN BERNARDINO COUNTY CUPA'S (US)
* County of San Bernardino Fire Department, Haz. Mat. Div.
* City of Hesperia Hesperia Fire Prevention Department
City of Victorville Victorville Fire Department
SAN DIEGO COUNTY CUPA (US)
* The San Diego County Dept. of Environmental Health HE 17/58
SAN FRANCISCO COUNTY CUPA (US)
* Department of Public Health
SAN JOAQUIN COUNTY CUPA (US)
* Environmental Health Division

SAN LUIS OBISPO COUNTY CUPA'S (US)
* County of San Luis Obispo Environmental Health Division
* City of San Luis Obispo City Fire Department
SAN MATEO COUNTY CUPA (US)
* Environmental Health Department
SANTA BARBARA COUNTY CUPA (US)
* Co Fire Dept Protective Services Div
SANTA CLARA COUNTY CUPA'S (US)
* County of Santa Clara Hazardous Materials Compliance Division
* Santa Clara Co Central Fire Prot. Dist. (Covers Campbell, Cupertino, Los Gatos, & Morgan Hill)
* Cities of Gilroy, Milpitas, Mountain View, Palo Alto, San Jose Fire, Santa Clara, Sunnyvale
SANTA CRUZ COUNTY CUPA (US)
* Environmental Health Department
SHASTA COUNTY CUPA (US)
* Environmental Health Department
SIERRA COUNTY CUPA (US)
* Health Department
SISKIYOU COUNTY CUPA (US)
* Environmental Health Department
SONOMA COUNTY CUPA'S (US)
* County of Sonoma Department Of Environmental Health
* Cities of Healdsburg / Sebastapol, Petaluma, Santa Rosa
STANINSLAUS COUNTY CUPA (US)
* Dept. of Env. Rsrcs. Haz. Mat. Div.
SUTTER COUNTY CUPA (US)
* Department of Agriculture
TEHAMA COUNTY CUPA (US)
* Department of Environmental Health
TRINITY COUNTY CUPA (US)
* Department of Health
TULARE COUNTY CUPA (US)
* Environmental Health Department
TUOLUMNE COUNTY CUPA (US)
* Environmental Health
VENTURA COUNTY CUPA'S (BWT UST'S & CERTIFIED UST'S)
* County of Ventura Environmental Health Division
* Cities of Oxnard, Ventura
YOLO COUNTY CUPA (US)
* Environmental Health Department
YUBA COUNTY CUPA (US)
* Yuba County of Emergency Services

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION
HYDROLOGY UNIT

TO: Civil Design & Drafting, Inc.
885 Patriot Drive, Unit C
Moorpark, CA 93021

Date: 8/20/18

REVIEW OF HYDROLOGY STUDY

PD NO.	**TBD**	**DATE OF REPORT**	**May 2018**
TR NO.	**74650**	**PLAN CHECK NO.**	**4(ESTU2016000112)**

We have reviewed your Hydrology Study.

[X] The Hydrology Study has been approved.

[X] Refer to comments below:

COMMENTS:

1. Infiltration rate for the project site has been assumed but must be approved by Geotechnical and Materials Engineering Division prior to the grading plans. Any changes to the assumed infiltration rate may require a revised Hydrology Study and/or Tentative Map.

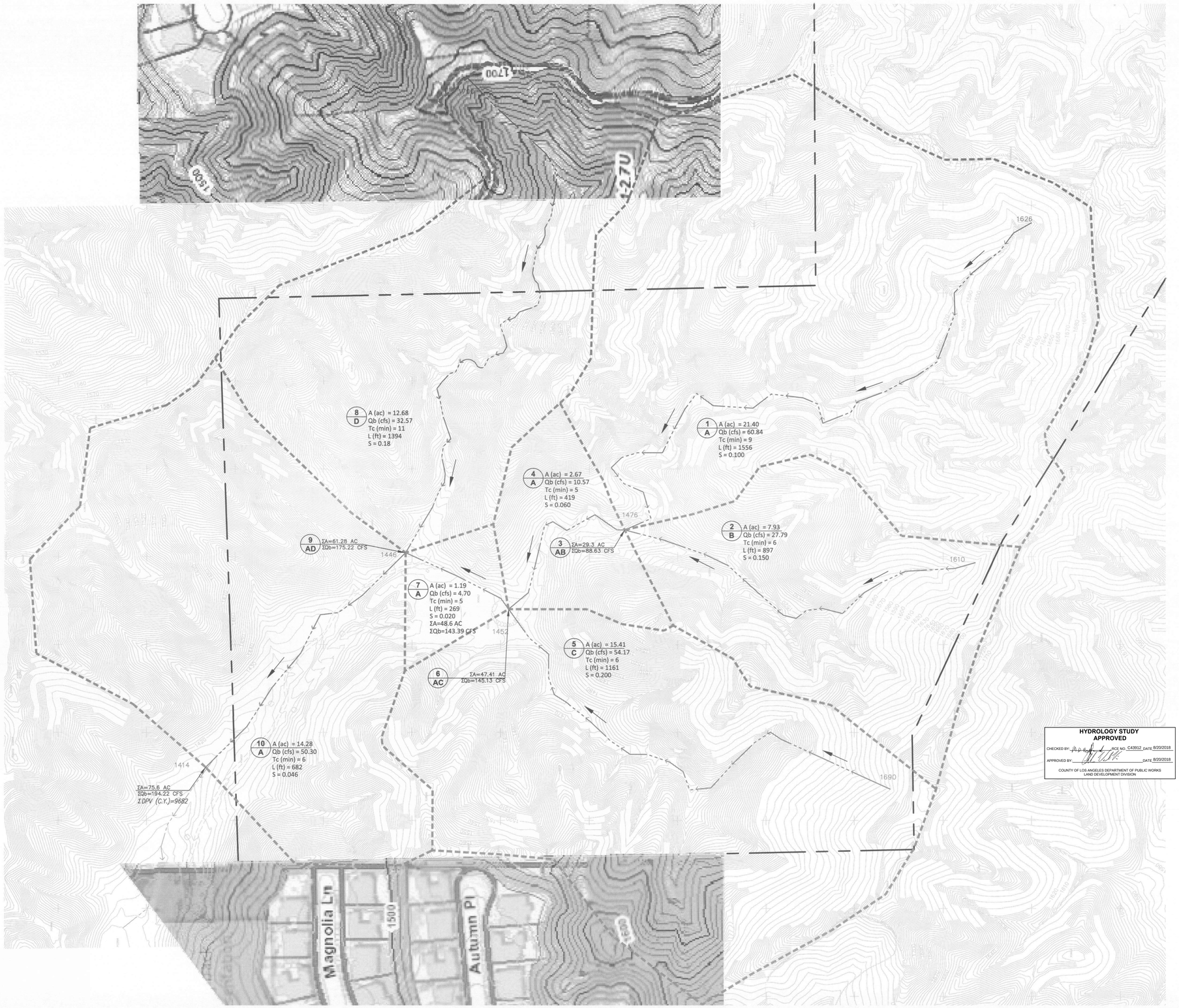
2. A Drainage Benefit Assessment Area must be established prior to the recordation of the final map. This DBAA will be to finance the future ongoing maintenance and capital replacement of all water quality devices/systems identified to be maintained by the County of Los Angeles.

REVIEWED BY M.D. Esfandi
David Esfandi (626) 458-7130

REGISTERED PROFESSIONAL ENGINEER
MANOUCHEHR DAVID ESFANDI
No. C 043912
Exp. 6/30/19
CIVIL
STATE OF CALIFORNIA

APPROVED BY:

TENTATIVE TRACT No. 74650
CANYON VIEW ESTATES
EXISTING HYDROLOGY MAP



HYDROLOGY STUDY APPROVED

CHECKED BY _____ RCE NO. C43912 DATE 8/20/2018

APPROVED BY _____ DATE 8/20/2018

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

N

80 40 0 40 80 160
GRAPHIC SCALE
SCALE : 1"=80'

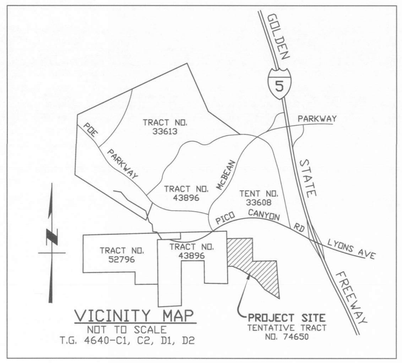
HYDROLOGY CRITERIA:

DPA ZONE = 5
BASIN NAME = SANTA CLARA
SOIL TYPE NUMBER = 097
PEAK BULKING FACTOR = 1.465 (FOR AREAS 64 AC OR UNDER)
DEBRIS PRODUCTION RATE = 128.0 CY/AC (FOR AREAS 64 AC OR UNDER)
ISOHYETS = 8.0" (50-YR, 24-HOUR)
1% IMPERVIOUSNESS FOR UNDEVELOPED/NATURAL AREAS

LEGEND:

- TRIBUTARY SUBAREA
- DIRECTION OF FLOW
- TRACT BOUNDARY
- FLOW PATH
- 14 A — LOCATION NAMES

Qb 50-YR, BURNED DESIGN FLOW IN CUBIC FEET PER SECOND, CFS
ΣDPV DEBRIS PRODUCTION VOLUME IN CUBIC YARDS, CY



civil Design & Drafting inc.
885 Patriot Drive, Unit C
Moorpark, CA 93021
Phone: 805-522-2622
Fax: 805-426-8016
CDD@civildesignanddrafting.com

IMAD ABOUJAWDAH R.C.E. C51299 — 05-02-2018 DATE

REGISTERED PROFESSIONAL ENGINEER — IMAD ABOUJAWDAH — No. 51299 — Exp. 6-30-20 — CIVIL — STATE OF CALIFORNIA

REV#	RECORD RCE APPR.	RECORD RCE DATE	REVISIONS DESCRIPTION	CITY PLAN CHK. APPR.	CITY ENGR. APPR.	CITY ENGR. DATE
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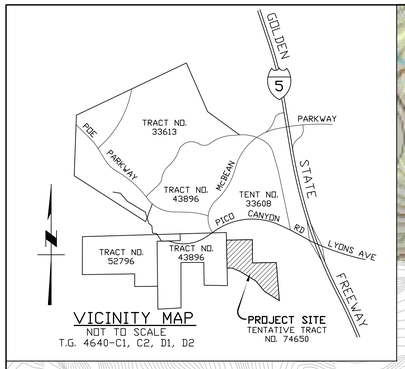
CITY STAFF _____ DATE _____
CITY ENGINEER _____ DATE _____

COUNTY OF LOS ANGELES
HYDROLOGY STUDY
TENTATIVE TRACT No. 74650
EXISTING CONDITIONS

PLOT DATE: 05-02-2018

SCALE: AS SHOWN
DESIGNED:
DRAWN:
CHECKED:
SHEET NO. 1 OF 1

TTM No. 74650
CANYON VIEW ESTATES
PROPOSED HYDROLOGY MAP



VICINITY MAP
NOT TO SCALE
T.G. 4640-C1, C2, D1, D2

HYDROLOGY STUDY APPROVED
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APPROVED BY: [signature] DATE 8/20/2018
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

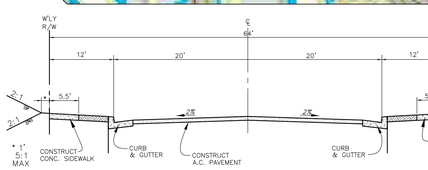
80 40 0 40 80 160
GRAPHIC SCALE
SCALE : 1"=80'

HYDROLOGY CRITERIA:

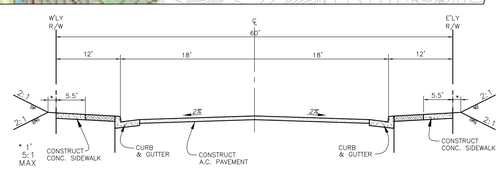
DESIGN STORM FREQUENCY:
50-YR FOR UNDEVELOPED AREAS
25-YR FOR DEVELOPED AREAS
DPA ZONE = 5
BASIN NAME = SANTA CLARA
SOIL TYPE NUMBER = 097
PEAK BULKING FACTOR = 1.465 (FOR AREAS 64 AC OR UNDER)
DEBRIS PRODUCTION RATE = 128.0 CY/AC (FOR AREAS 64 AC OR UNDER)
ISOHYETS = 8.0" (50-YR, 24-HOUR)
%IMPERVIOUSNESS:
1% FOR UNDEVELOPED/NATURAL AREAS
42% FOR STREET AREAS

NOTE:

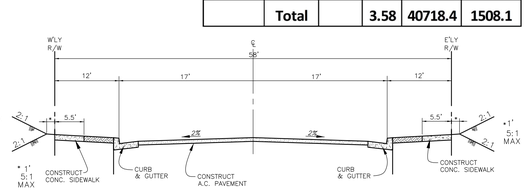
1. NOT WITHIN COUNTY ADOPTED FLOODWAY
2. NOT WITHIN "FEMA" FLOOD ZONE A



TYPICAL SECTION 64' R/W
(MAGNOLIA LANE)
NOT TO SCALE



TYPICAL SECTION 60' R/W
("A", "B" STREET)
NOT TO SCALE



TYPICAL SECTION 58' R/W
("C" STREET)
NOT TO SCALE

DETETION/RETENTION BASIN #43 VOLUME CALCULATION

Elevation	Area(sq-ft)	Volume(cf)	TOTAL(C.F)	TOTAL(C.Y.)
1460	26410	25445	176405	**6534**
1459	24480	23540	150960	5591
1458	22600	21700	127420	4719
1457	20800	19925	105720	3916
1456	19050	18210	85795	3178
1455	17370	16560	67585	2503
1454	15750	14975	51025	1890
1453	14200	13455	36050	1335
1452	12710	11995	22595	837
1451	11280	10600	10600	393
1450	9920	0	0	

Tract No. 74650 - Discharge Volume for Existing and Proposed Condition

Proposed Volume At Sub-Area "20A"(HYDROCALC)				Existing Volume At Sub-Area "7A" (HYDROCALC)
Storm Drain Event	Total Proposed Volume @ "20A" (C.Y.)	Detention volume (C.Y.)	Total Volume Discharge @ Sub-Area "20A"(C.Y.)	Total Discharge Volume @ Sub-Area "7A"(C.Y.)
2-yrs	1,713	6,534	0	838
5-yr	4,511	6,534	0	2,608
10-yr	7,319	6,534	785	4,626
25-yr	12,505	6,534	5,971	8,686
50-yr	17,904	6,534	11,370	13,238

Total Provided Volume: 6,500 C.Y.

Tract No. 74650 - Discharge Flow Rate for Existing and Proposed Condition

Existing Condition @ Sub-Area 7A (LAR04)		Proposed Condition @ Sub-Area 20A (RETARD)	
Frequency	Flow Rate (cfs)	Frequency	Flow Rate (cfs)
2yrs	19.8	2yrs	12.76
5yrs	50.23	5yrs	44.32
10yrs	75.2	10yrs	66.72
25yrs	112.87	25yrs	91.86
50yrs	143.39	50yrs	109.99

Table 2: Table 2-Onsite LID Calcualtion Summary-85th Percentile, 24-hour Rainfall Event (Non-Burn)

Subarea	Area (Acres)	Tc (min)	Qpm (cfs)	Volume (cu.ft)	Volume (C.Y.)
4B	2.34	33	0.26	3819.8	141.5
8A	3.01	34	0.33	4913.6	182.0
9A	3.07	39	0.32	5011.5	185.6
14A	2.23	42	0.22	3640.3	134.8
16D	1.65	65	0.13	2693.6	99.8
17D	2.67	65	0.22	4358.7	161.4
Total		**14.97**	**1.48**	**24437.5**	**905.1**

Table 4: Onsite and Offsite LID Calculation Summary-85th Percentile, 24-hour Rainfall Event

Subarea	Area (Acres)	Tc (min)	Qpm (cfs)	Volume (cu.ft)	Volume (C.Y.)
1A	8.6	54	0.29	3477.6	128.8
2A	3.96	54	0.13	1601.3	59.3
3B	4.46	54	0.15	1803.5	66.8
4B	2.34	22	0.31	3819.8	141.5
6A	0.85	22	0.47	343.7	12.7
7A	4.48	44	0.17	1811.5	67.1
8A	3.01	34	0.33	4913.6	182.0
9A	3.07	39	0.31	5011.5	185.6
10C	7.12	40	0.28	2879.0	106.6
12A	0.72	34	0.03	291.1	10.8
13A	0.37	8	0.07	162.5	6.0
14A	2.23	28	0.27	3640.3	134.8
15A	1.15	28	0.06	465.0	17.2
16D	1.65	43	0.16	2693.5	99.8
17D	2.67	49	0.25	4358.6	161.4
19A	2.11	19	0.31	3446.0	127.6
	Total		**3.58**	**40718.4**	**1508.1**

Table 3-Preliminary BMP Calculation to Show 96 Hours Drawdown Time

Infiltration Location	Design Infiltration Rate (in/hr)	Max Water Depth(ft)	Drawdown Time (Hours)
Lot 143	0.5	3.0	72.0

WATER QUALITY BASIN # 43
REQUIRED INFILTRATION VOLUME =950 C.Y.

ELEVATION	AREA(SF)	AVG. AREA(SF)	VOLUME(CY)	Σ VOLUME(CY)
1450	0			
1451	11269	5635	209	209
1452	12697	11983	444	653
1453	14188	13443	498	1150

Tract No. 74650 - Discharge Volume Calculation

Frequency (Years)	Existing Volume (C.Y.)	Proposed Volume(C.Y.)	Difference(C.Y.)	Provided Storage (C.Y.)
2-yrs	838	1,713	874	6,534
5-yr	2,608	4,511	1,902	6,534
10-yr	4,626	7,319	2,693	6,534
25-yr	8,686	12,505	3,819	6,534
50-yr	13,238	17,904	4,666	6,534

LEGEND:

- *TRIBUTARY SUBAREA*
- *SD MAIN LINE (LACFCD)*
- *SD LATERALS (HOA) – LID*
- *DIRECTION OF FLOW*
- *TRACT BOUNDARY*
- *FLOW PATH*
- (14 A) *LOCATION NAMES*

Qd 25-YR, DESIGN FLOW IN CUBIC FEET PER SECOND, CFS
Qb 50-YR, BURNED DESIGN FLOW IN CUBIC FEET PER SECOND, CFS
ΣDPV DEBRIS PRODUCTION VOLUME IN CUBIC YARDS, CY
Qpm PEAK MITIGATION FLOW IN CUBIC FEET PER SECOND, CFS
Vm MITIGATION VOLUME IN CUBIC FEET, CF

1. *PROPOSED STORM DRAIN SYSTEM – TO BE MAINTAINED BY LACFCD*
2. *PROPOSED STORM DRAIN SYSTEM – TO BE MAINTAINED BY THE HOA*
3. *PROPOSED CONCRETE SWALE – DESIGN WITH SELF-CLEANING VELOCITY*
4. *PROPOSED ACCESS ROAD TO BE MAINTAINED BY LACFCD*
5. *PROPOSED 10' ACCESS ROAD EASEMENT TO THE HOA FOR SD MAINTENANCE PURPOSES*
6. *PROPOSED 15' ACCESS ROAD TO BE MAINTAINED BY LACFCD*
7. *PROPOSED 40'x40' ACCESS TURN-AROUND TO BE MAINTAINED BY LACFCD*
8. *SD INLINE CDS TO BE MAINTAINED BT LACFCD*

civil Design & Drafting inc.
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Fax: 805-426-8016
CDD@civildesignanddrafting.com
IMAD ABOUJAWDAH R.C.E. C51299 08-16-2018 DATE

REGISTERED PROFESSIONAL ENGINEER
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COUNTY OF LOS ANGELES
HYDROLOGY STUDY
TTM No. 74650
PROPOSED CONDITIONS
PLOT DATE: 08-16-2018

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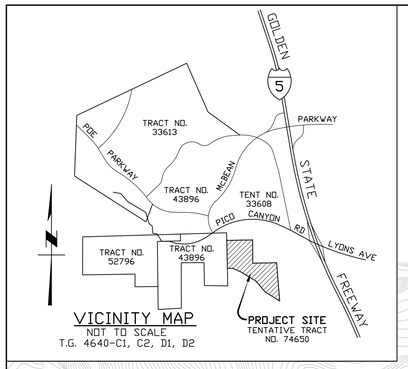
TTM No. 74650
CANYON VIEW ESTATES
LID HYDROLOGY MAP



VICINITY MAP
NOT TO SCALE
T.G. 4640-C1, C2, D1, D2

80 40 0 40 80 160
GRAPHIC SCALE
SCALE : 1"=80'

HYDROLOGY CRITERIA:

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25-YR FOR DEVELOPED AREAS
DPA ZONE = 5
BASIN NAME = SANTA CLARA
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DEBRIS PRODUCTION RATE = 128.0 CY/AC (FOR AREAS 64 AC OR UNDER)
ISOHYETS = 8.0" (50-YR, 24-HOUR)
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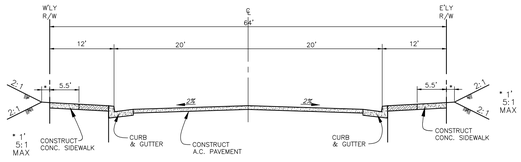

TYPICAL SECTION 64' R/W
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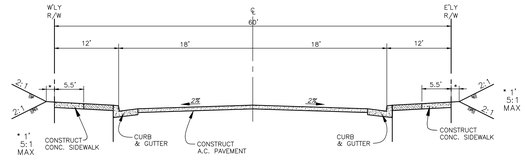

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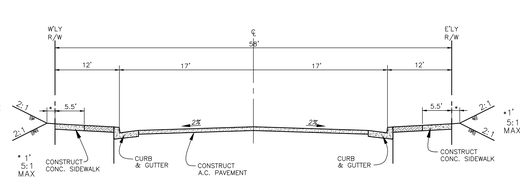

TYPICAL SECTION 58' R/W
("C" STREET)
NOT TO SCALE

Table 1: Table 1-Onsite LID Calcualtion-85th Percentile, 24-hour Rainfall Event (Non-Burn)

Subarea	Area (Acres)	Length (ft)	Slope	Isohyet Depth (in)	% Impervio	Soil Type	Frequency	Fire	Flowrate (cfs)	Tc (min)
4B	2.34	220	0.010	1.04	0.42	97	85th	0	0.26	33
8A	3.01	770	0.074	1.04	0.42	97	85th	0	0.33	34
9A	3.07	860	0.056	1.04	0.42	97	85th	0	0.32	39
14A	2.23	310	0.010	1.04	0.42	97	85th	0	0.22	42
16D	1.65	630	0.010	1.04	0.42	97	85th	0	0.13	65
17D	2.67	620	0.005	1.04	0.42	97	85th	0	0.22	65
									1.48	

Table 2: Table 2-Onsite LID Calcualtion Summary-85th Percentile, 24-hour Rainfall Event (Non-Burn)

Subarea	Area (Acres)	Tc (min)	Qpm (cfs)	Volume (cu.ft)	Volume (C.Y.)
4B	2.34	33	0.26	3819.8	141.5
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9A	3.07	39	0.32	5011.5	185.6
14A	2.23	42	0.22	3640.3	134.8
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	Total		**3.58**	**40718.4**	**1508.1**

HYDROLOGY STUDY APPROVED
CHECKED BY: _____ RCE NO. C43912 DATE 8/20/2018
APPROVED BY: _____ DATE 8/20/2018
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

LEGEND:

- TRIBUTARY SUBAREA
- SD MAIN LINE (LACFCD)
- SD LATERALS (HOA) – LID
- DIRECTION OF FLOW
- TRACT BOUNDARY
- FLOW PATH
- 14/A LOCATION NAMES

Qd 25-YR, DESIGN FLOW IN CUBIC FEET PER SECOND, CFS
Qb 50-YR, BURNED DESIGN FLOW IN CUBIC FEET PER SECOND, CFS
ΣDPV DEBRIS PRODUCTION VOLUME IN CUBIC YARDS, CY
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LOW IMPACT DEVELOPMENT(LID)
PLOT DATE: 08-16-2018

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County of Los Angeles

California

Tentative Tract Map

74650

Hydrology Report

May 2018

HYDROLOGY STUDY
APPROVED

CHECKED BY: _____ RCE NO. C43912 DATE 8/20/2018

APPROVED BY: _____ DATE 8/20/2018

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

Prepared for:

Jon Friedman
1435 Reynolds Ct.
Thousand Oaks, CA 91362
(805) 373-2860

Prepared by:

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Imad Aboujawdah

885 Patriot Dr., Unit C

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8/7/2018

Imad Aboujawdah, P.E. Date

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METHODOLOGY 10-11
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CONCLUSION 12
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COUNTY HYDROLOGY MANUAL APPENDIX INFORMATION .....
ISOHYET MAPS .....

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1. STORM RUNOFF CALCULATIONS FOR EXISTING CONDITIONS .....
2. STORM RUNOFF CALCULATIONS FOR PROPOSED CONDITIONS .....
3. DISCHARGE ANALYSIS FOR 2-YRS,5-YRS,10YRS, 25-YRS, AND 50YRS_PROPOSED AND EXISTING CONDITION .....
4. LID HYDROCALC CALCULATIONS PRINTOUTS .....
5. BMP INFORMATION .....
6. EXISTING AND PROPOSED CONDITION HYDROCALC PRINTOUTS .....
7. WSPG @ RIP-RAP OUTLET_PROPSOSED CONDITION .....
8. HEC-RAS DISCHARGE CALCULATION FOR EXISTING AND PROPOSED @ PROPERTY LINE
9. CDS INSTALLATION, INSPECTION AND MAINTENANCE PROCEDURES

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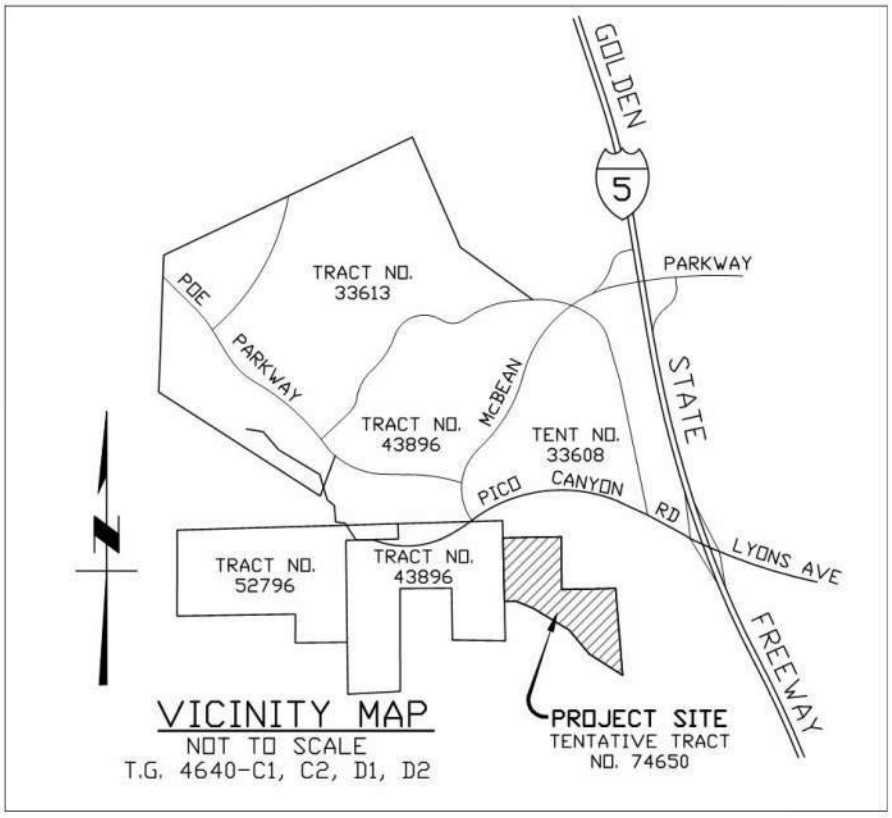
2. EXISTING CONDITIONS HYDROLOGY MAPS .....
3. PROPOSED CONDITIONS HYDROLOGY MAPS .....
4. LID HYDROLOGY MAPS .....

VICINITY MAP



INTRODUCTION

Tentative Tract Map No. 74650 is located in the County of Los Angeles, in the Stevenson Ranch area. The project site is bordered by vacant land and existing development to the north, existing development to the West and vacant land to the south. The project is located entirely within the County of Los Angeles and consists of approximately 94.38 acres. The proposed project will result in the development of 37 single family dwellings. The purpose of this report is to facilitate the planning and implementation of drainage infrastructure improvements to accommodate storm water runoff in the general vicinity of the proposed Tentative Tract Map No. 74650.

This report includes an evaluation of existing drainage patterns and proposed drainage patterns and solutions. Additionally, this report will identify LID - Low Impact Development solutions. The results of this report will be the basis for subsequent storm drainage improvements for the tract.

This report addresses the storm run-off from a 2-year, 5-year, 10-year, 25-year, and 50-year 24-hour design storm events. Its intended use is for the development of drainage infrastructure in the project. The following information is contained within this report:

1. A description of the existing drainage conditions within the study area.
2. Recommended drainage improvement options showing the conceptual locations of the primary components of the drainage infrastructures that will be needed to accommodate or alleviate storm water runoff generated by the proposed project:
    - Storm drain pipes and/or open channels
    - Desilting Basins
3. Watershed catchment boundaries and hydrologic information that support the drainage infrastructure plan. The Los Angeles County MODRAT – Modified Rational Method computer model has been used as the basis for hydrologic evaluations. Discharges expected at numerous key points of concentration have been estimated using the MODRAT computer model for the respective design storm events.

EXISTING CONDITIONS

The current storm water is sheet flowing from the southeast to the northwest portion of the property. There are currently two main drainage courses running through the property and exiting the site. Both drainage courses drain to the northwest.

PROPOSED CONDITIONS

A series of desilting basins will be constructed to capture debris and silt from various offsite drainage courses prior to entering the development area. A storm drain system will then collect the offsite storm water and discharge it through infiltration water quality basin. Onsite storm water will also be collected and discharged back to the proposed storm drain system running through the project. Per table 1 below, the proposed conditions total Q is less than the calculated Q that was accounted for in the existing storm drain system. Therefore, the project should not adversely affect the hydrologic conditions of the surrounding properties and downstream properties.

Tract No. 74650 - Discharge Flow Rate for Existing and Proposed Condition			
Existing Condition @ Sub-Area 7A (LAR04)		Proposed Condition @ Sub-Area 20A (RETARD)	
Frequency	Flow Rate (cfs)	Frequency	Flow Rate (cfs)
2yrs	19.8	2yrs	12.76
5yrs	50.23	5yrs	44.32
10yrs	75.2	10yrs	66.72
25yrs	112.87	25yrs	91.86
50yrs	143.39	50yrs	109.99

See section 3 for discharge analysis.

LOW IMPACT DEVELOPMENT(LID) COMPLIANCE

a. Calculation:

The proposed project is a "Designate Project", which has 37 single family residential lots. The project is designed to retain 100 percent of the SWQDv on site through infiltration water quality basin and drywells.

In order to comply with Los Angeles County LID requirements, the onsite storm water were calculated by using the LA County HydroCalc Version 0.3.1. Which is shown on LID Hydrology Map (See Map 4: LID Hydrology Map).

Per County of Los Angeles Department of Public Works Low Impact Development standards Manual (February 2014) the design storm, from which the SWQDv is calculated, is designed as the greater of:

- The 0.75-inch, 24-hour rain event; or
- The 85th percentile, 24-hour rain event as determined from the Los Angeles County 85th percentile precipitation isoheytal map.

The 85th percentile, 24-hour rain event as determined from the Los Angeles County 85th percentile precipitation isoheytal map(See reference section) is 1.04-inch, which is greater than 0.75inches. Therefore, the 85th percentile, 24-hour event is used to calculate the SWQDv volume. Following tables 2, 3, 4, and 5 are showing the calculation and summary of the SWQDv volume.

Table 2: Onsite LID Calcualtion-85th Percentile, 24-hour Rainfall Event (Non-Burn)

Subarea	Area (Acres)	Length (ft)	Slope	Isohyet Depth (in)	% Impervio	Soil Type	Frequency	Fire	Flowrate (cfs)	Tc (min)
4B	2.34	220	0.010	1.04	0.42	97	85th	0	0.32	22
8A	3.01	770	0.074	1.04	0.42	97	85th	0	0.33	34
9A	3.07	860	0.056	1.04	0.42	97	85th	0	0.32	39
14A	2.23	310	0.010	1.04	0.42	97	85th	0	0.26	28
16D	1.65	630	0.010	1.04	0.42	97	85th	0	0.16	43
17D	2.67	620	0.005	1.04	0.42	97	85th	0	0.24	49
	14.97								**1.63**	

Table 3: Onsite LID Calculation Summary-85th Percentile, 24-hour Rainfall Event (Non-Burn)

Subarea	Area (Acres)	Tc (min)	Qpm (cfs)	Volume (cu.ft)	Volume (C.Y.)
4B	2.34	33	0.26	3819.8	141.5
8A	3.01	34	0.33	4913.6	182.0
9A	3.07	39	0.32	5011.5	185.6
14A	2.23	42	0.22	3640.3	134.8
16D	1.65	65	0.13	2693.6	99.8
17D	2.67	65	0.22	4358.7	161.4
Total		**14.97**	**1.48**	**24437.5**	**905.1**

Table 4: WATER QUALITY BASIN # 43

REQUIRED INFILTRATION VOLUME =950 C.Y.

ELEVATION	AREA(SF)	AVG. AREA(SF)	VOLUME(C.Y)	Σ VOLUME(C.Y)
1450	0			
1451	11269	5635	209	209
1452	12697	11983	444	653
1453	14188	13443	498	1150

Per table 4 above, we provided about 1,150 C.Y. which satisfies the requirement of 905.1 C.Y on table 3.

Table 4: Onsite and Offsite LID Calcualtion-85th Percentile, 24-hour Rainfall Event										
Subarea	Area (Acres)	Length (ft)	Slope	Isohyet Depth (in)	% Impervio	Soil Type	Frequency	Fire	Flowrate (cfs)	Tc (min)
1A	8.6	444	0.17	1.04	0.01	97	85th	scr	0.29	54
2A	3.96	478	0.24	1.04	0.01	97	85th	scr	0.13	54
3B	4.46	484	0.25	1.04	0.01	97	85th	scr	0.15	54
4B	2.34	220	0.01	1.04	0.42	97	85th	0	0.31	22
6A	0.85	136	0.39	1.04	0.01	97	85th	scr	0.47	22
7A	4.48	343	0.23	1.04	0.01	97	85th	scr	0.17	44
8A	3.01	770	0.074	1.04	0.42	97	85th	0	0.33	34
9A	3.07	860	0.056	1.04	0.42	97	85th	0	0.31	39
10C	7.12	378	0.56	1.04	0.01	97	85th	scr	0.28	40
12A	0.72	263	0.39	1.04	0.01	97	85th	scr	0.03	34
13A	0.37	86	0.44	1.04	0.01	97	85th	scr	0.07	8
14A	2.23	310	0.01	1.04	0.42	97	85th	0	0.27	28
15A	1.15	181	0.29	1.04	0.01	97	85th	scr	0.06	28
16D	1.65	630	0.01	1.04	0.42	97	85th	0	0.16	43
17D	2.67	620	0.005	1.04	0.42	97	85th	0	0.25	49
19A	2.11	290	0.062	1.04	0.42	97	85th	scr	0.31	19
Total	**48.79**								**3.58**	

Table 5: Onsite and Offsite LID Calculation Summary-85th Percentile, 24-hour Rainfall Event					
Subarea	Area (Acres)	Tc (min)	Qpm (cfs)	Volume (cu.ft)	Volume (C.Y.)
1A	8.6	54	0.29	3477.6	128.8
2A	3.96	54	0.13	1601.3	59.3
3B	4.46	54	0.15	1803.5	66.8
4B	2.34	22	0.31	3819.8	141.5
6A	0.85	22	0.47	343.7	12.7
7A	4.48	44	0.17	1811.5	67.1
8A	3.01	34	0.33	4913.6	182.0
9A	3.07	39	0.31	5011.5	185.6
10C	7.12	40	0.28	2879.0	106.6
12A	0.72	34	0.03	291.1	10.8
13A	0.37	8	0.07	162.5	6.0
14A	2.23	28	0.27	3640.3	134.8
15A	1.15	28	0.06	465.0	17.2
16D	1.65	43	0.16	2693.5	99.8
17D	2.67	49	0.25	4358.6	161.4
19A	2.11	19	0.31	3446.0	127.6
	Total		**3.58**	**40718**	**1508**

Refer to Map 4 LID Hydrology Map.

Refer to Section 4 LID HydroCalc Calculation Printouts.

b. Mitigation

In order to comply with Los Angeles County LID requirements, onsite storm water will be collected through a series of catch basins and storm drain lines and will be directed to the proposed CDS unit (Please see section 9 CDS installation, inspection and maintenance procedures) for treatment before enter to the proposed infiltration water quality basin (Please see Map 4: LID Hydrology Map). The infiltration method will be used to treat the volume of water required under the LID.

Table 6-Preliminary BMP Calculation to Show 96 Hours Drawdown Time			
Infiltration Location	Design Infiltration Rate (in/hr)	Max Water Depth(ft)	Drawdown Time (Hours)
Lot 143	0.5	3	72

Drawdown Time(Hours) = $\frac{36(inch)}{0.5(\frac{in}{hr})} = 72hours$

Table 6 is showing the max water depth that can be drawn down in 96 hours.

Based on the calculation shown in table 6, the proposed project provides enough volume to hold the minimum required volume.

c. Proposed Best Management Practices (BMPs)

Per table 5-1 in County of Los Angeles Department of Public Works Low Impact Development standards Manual (February 2014), the BMPs on the following page are proposed for the project. See section 4 of this report for BMP information.

BMP No.	Objective	BMP Name	Summary
S-1	SOURCE CONTROL	STORM DRAIN MESSAGE AND SIGNAGE	INFORMS THE PUBLIC THAT DUMPING OF WASTES INTO STORM DRAIN INLETS IS PROHIBITED AND/OR THAT THE DRAIN ULTIMATELY DISCHARGES INTO RECEIVING WATERS.
S-8	SOURCE CONTROL	LANDSCAPE IRRIGATION PRACTICES	BY EFFECTIVELY IRRIGATING, LESS RUNOFF IS PRODUCED RESULTING IN LESS POTENTIAL FOR POLLUTANTS TO ENTER THE STORM DRAIN SYSTEM.
S-9	SOURCE CONTROL	BUILDING MATERIALS SELECTION	THE USE OF ALTERNATIVE BUILDING MATERIALS CAN REDUCE POLLUTANT SOURCES IN STORMWATER RUNOFF BY ELIMINATING COMPOUNDS THAT CAN LEACH INTO STORMWATER RUNOFF.

d. Post-Construction BMP Operations & Maintenance (O&M)

The BMPs known in this section will require post-construction Operations and Maintenance (O&M) to ensure their continued effectiveness throughout the life of the project. It is expected that all BMP O&M will start immediately following construction of the project.

The following party shall be responsible for the implementation and funding of all BMP O&M:

- **Party Name:** PICO CANYON., LLC
- **Primary Contact:** Jon Friedman
- **Mailing Address:** 1435 Reynolds CT
  Thousand Oaks, CA 91362
- **Phone:** (805) 373-2860

Note that the above information is subject to change prior to implementation of BMP O&M, when a homeowner association (HOA) takes over the maintenance responsibilities.

METHODOLOGY

In order to adequately evaluate and mitigate for the impacts of the proposed project, the existing and proposed drainage conditions were analyzed. The purpose of this drainage study is to document the impacts of certain rainfall events on the study area, and for the comparison

between pre-development and post-development storm events. The study will also include the required infrastructure improvements needed to mitigate for the proposed project.

This study will analyze the effects of the 2 year, 5 year, 10 year, 25 year, and 50 year 24-hour storm events within the study area.

The runoff coefficient was taken from the Los Angeles County Hydrology Manual charts, available in Appendix C.

The proportion impervious data was taken from the Los Angeles County Hydrology Manual tables, available in Appendix D.

BULKING ANALYSIS

To determine bulked flow rates, QB, use the equation listed below for the appropriate case.

$$Qb\&b = P.B.F. \times Qb$$

P.B.F. was calculated for areas under 0.1 sq. mile to be 1.465, burned flows will be multiplied by this factor to determine the burned bulked flow. (DPA-5 was used in the calculations)

Total drainage debris volume for desilting basin is described in the following table:

Tentative Tract No. 74650 - DPV & Bulking Calculation
Existing Condition, 50yr Design Frequency

Subarea	Area (acres)	DPR (cy/sqmi)	DP (cy)	P.B.F.	Qb (cfs)	Qb&b (cfs)
1A	21.41	82000	2743.16	1.465	60.84	89.1
2B	7.93	82000	1016.03	1.465	27.79	40.7
4A	2.67	82000	342.09	1.465	10.57	15.5
5C	15.41	82000	1974.41	1.465	54.17	79.4
7A	1.19	82000	152.47	1.465	4.70	6.9
8D	12.68	82000	1624.63	1.465	32.57	47.7
10A	14.28	82000	1829.63	1.465	50.30	73.7

Tentative Tract No. 74650 - DPV & Bulking Calculation
Proposed Condition, 50yr Design Frequency

Subarea	Area (acres)	DPR(cy/sqmi)	DP (cy)	P.B.F.	Qb (cfs)	Qb&b (cfs)
1A	8.60	82000	1101.88	1.465	33.7	49.4
2A	3.96	82000	507.38	1.465	15.7	22.9
3B	4.46	82000	571.44	1.465	17.6	25.8
6A	0.85	82000	108.91	1.465	3.5	5.2
7A	4.48	82000	574.00	1.465	17.6	25.8
10C	7.12	82000	912.25	1.465	27.8	40.7
12A	0.72	82000	92.25	1.465	2.7	4.0
13A	0.37	82000	47.41	1.465	1.6	2.3
15A	1.15	82000	147.34	1.465	4.3	6.3
21E	12.72	82000	1629.75	1.465	41.0	60.1
23A	12.86	82000	1647.69	1.465	47.0	68.8
100A	0.27	82000	34.59	1.465	0.8	1.1

CONCLUSION

This study consists of a series of offsite watershed and an onsite developed conditions watershed within the development envelope of the project. In order to properly mitigate for the offsite runoff, a series of desilting basins and concrete "V" swales will be constructed to intercept the flow entering the project from the south and convey it through a storm drain system within the project to discharge at the north side of the project into a infiltration water quality basin. All offsite drainage is designed to bypass the proposed project development area through a proposed storm drain system that will be constructed as a part of this project

Onsite storm water will also be collected through a series of Catch Basins, Storm Drain lines and infiltration pit for LID compliant and then directed to the proposed storm drain system throughout the site.

The project should not adversely affect the hydrologic conditions of the surrounding properties nor the properties downstream.

REFERENCES

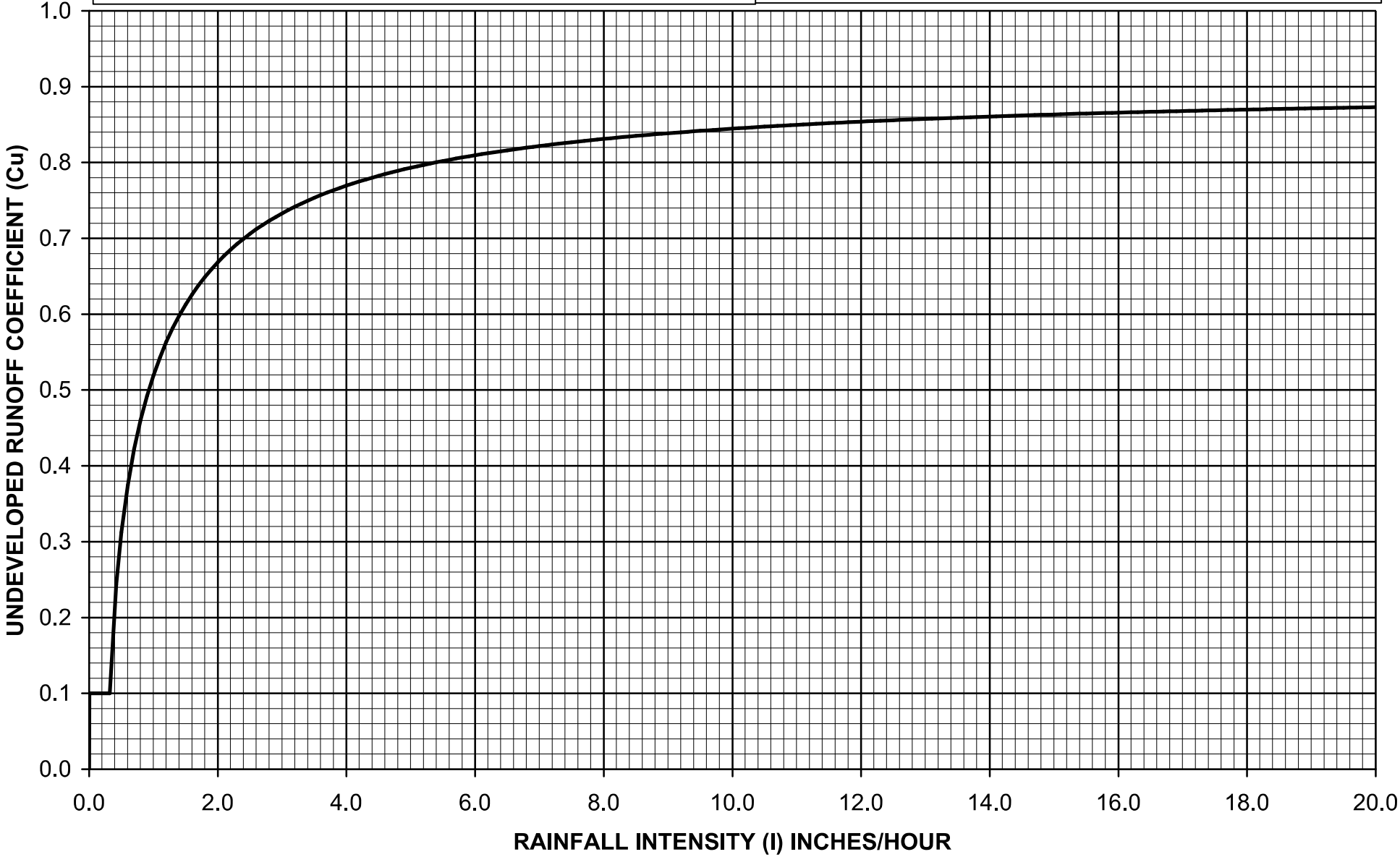
- The analysis for the storm runoff was prepared in accordance with the County of Los Angeles Flood Control District and Hydrology Manual guidelines of January 2006.
- The LID study was prepare in accordance with County of Los Angeles Department of Public Works Low Impact Development standards Manual (February 2014)
- The peak bulk flow factor and the debris volume generated from the watersheds north of the project site was calculated using the method in the Sedimentation Manual of March 2009.

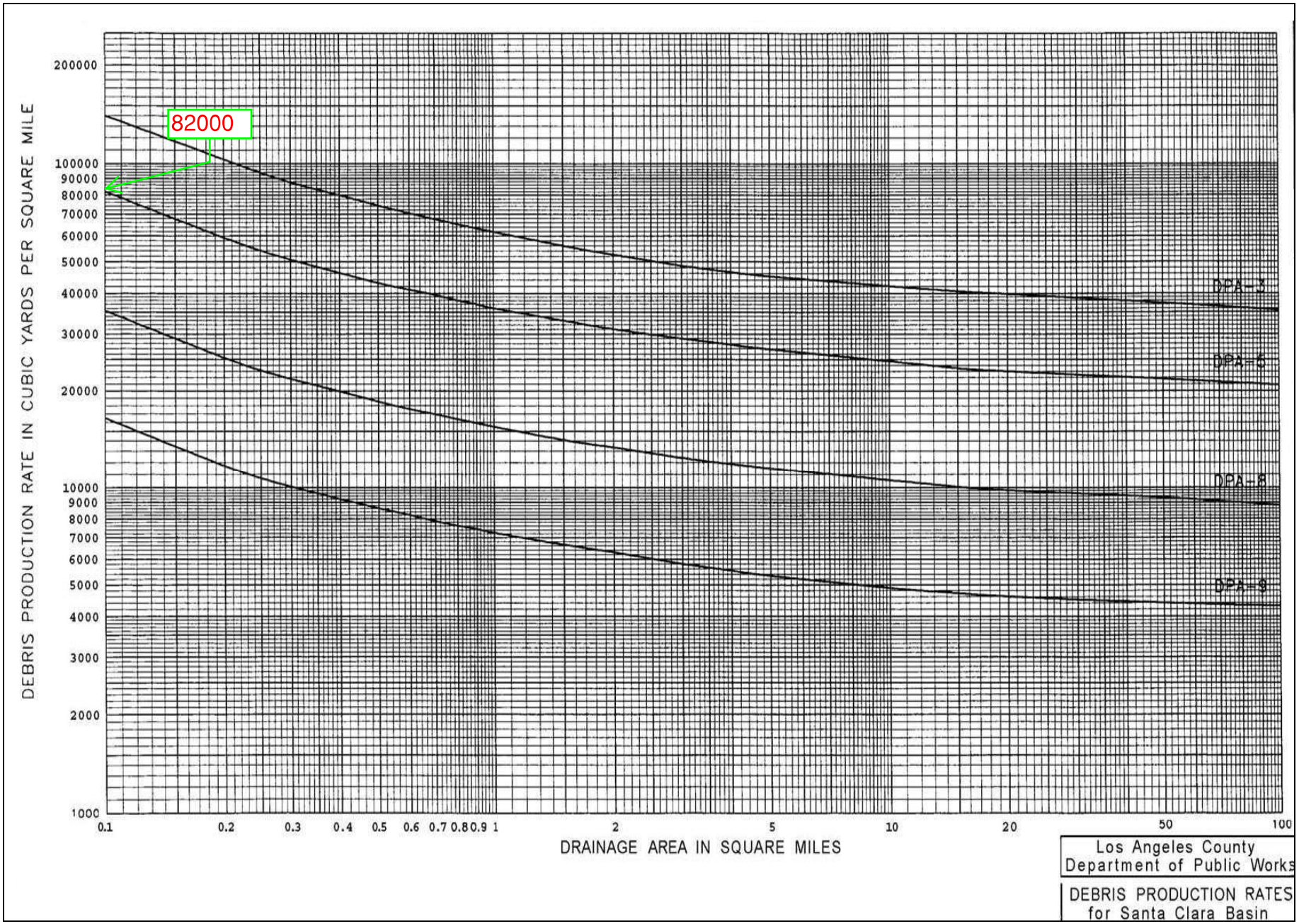
$C_D = (0.9 * IMP) + (1.0 - IMP) * C_U$

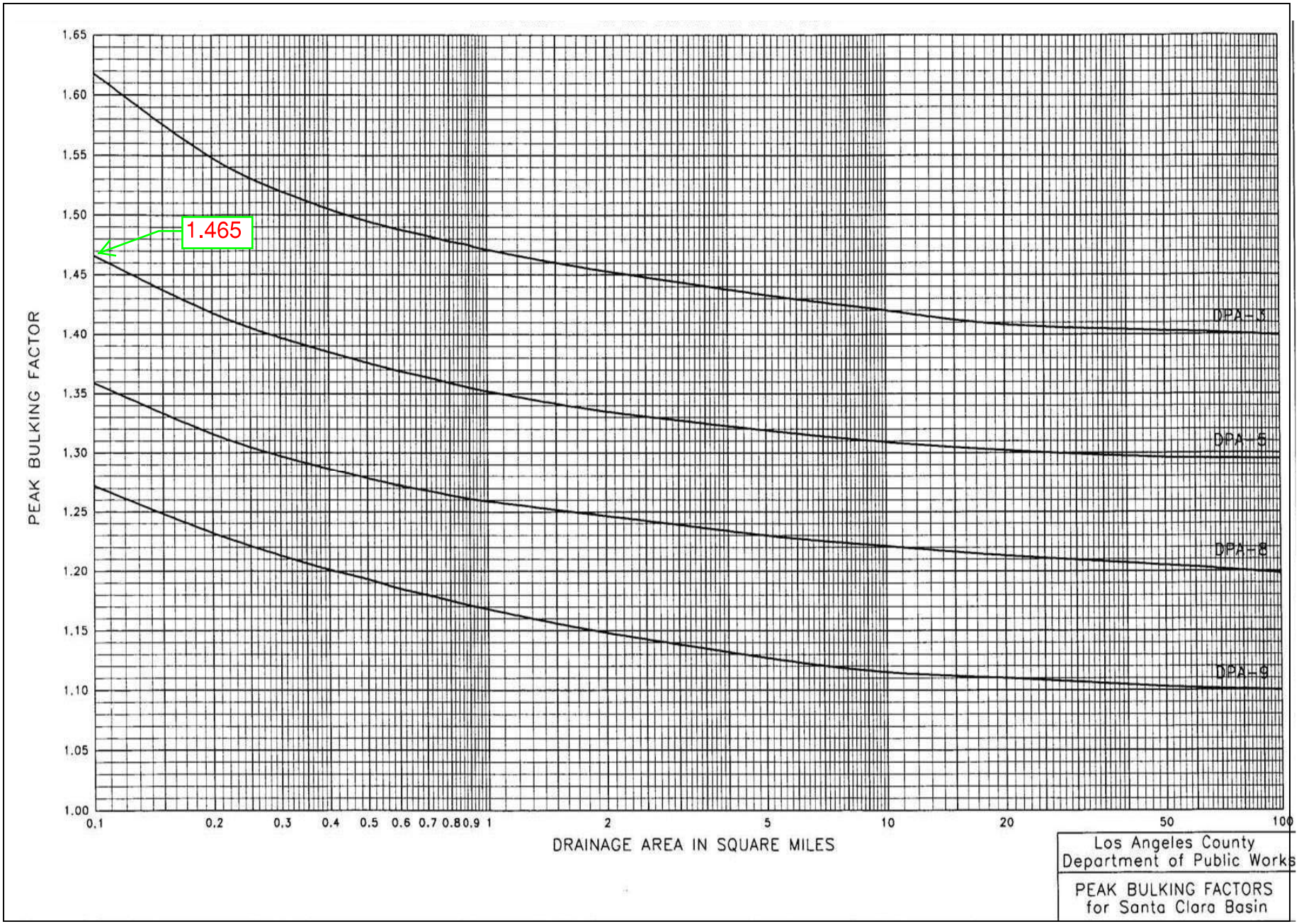
Where: C_D = Developed Runoff Coefficient
IMP = Proportion Impervious
C_U = Undeveloped runoff coefficient

Los Angeles County Department of Public Works

RUNOFF COEFFICIENT CURVE
SOIL TYPE NO. 097




82000
DEBRIS PRODUCTION RATE IN CUBIC YARDS PER SQUARE MILE
200000
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
2
5
10
20
50
100
DRAINAGE AREA IN SQUARE MILES
DPA-3
DPA-6
DPA-8
DPA-9
Los Angeles County
Department of Public Works
DEBRIS PRODUCTION RATES
for Santa Clara Basin


1.465
PEAK BULKING FACTOR
1.65
1.60
1.55
1.50
1.45
1.40
1.35
1.30
1.25
1.20
1.15
1.10
1.05
1.00
DPA-5
DPA-6
DPA-8
DPA-9
0.1
0.2
0.3
0.4
0.5
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1
2
5
10
20
50
100
DRAINAGE AREA IN SQUARE MILES
Los Angeles County
Department of Public Works
PEAK BULKING FACTORS
for Santa Clara Basin

APPENDIX D

Proportion Impervious Data

Proportion Impervious Data

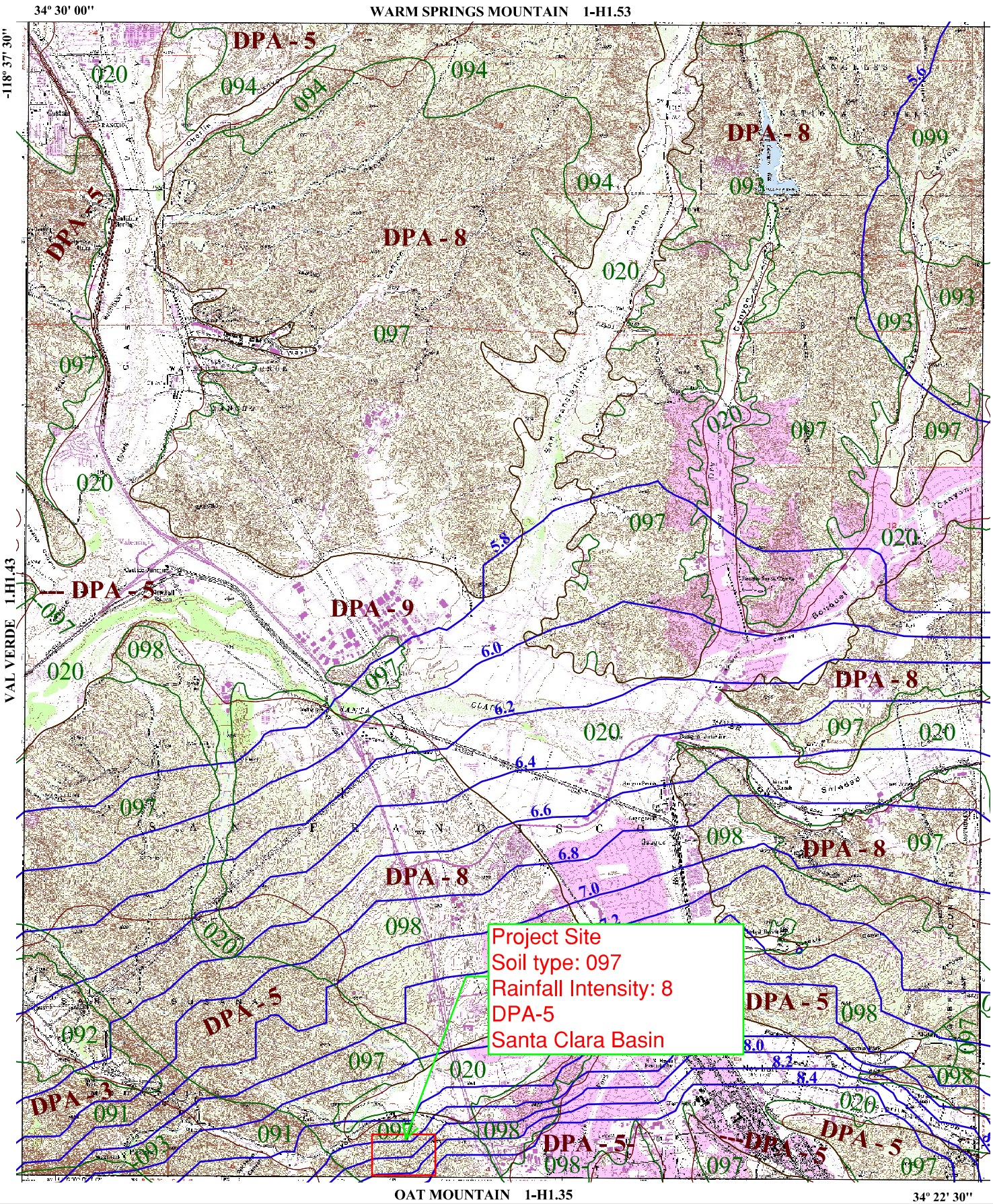
Code	Land Use Description	% Impervious
1111	High-Density Single Family Residential	42
1112	Low-Density Single Family Residential	21
1121	Mixed Multi-Family Residential	74
1122	Duplexes, Triplexes and 2-or 3-Unit Condominiums and Townhouses	55
1123	Low-Rise Apartments, Condominiums, and Townhouses	86
1124	Medium-Rise Apartments and Condominiums	86
1125	High-Rise Apartments and Condominiums	90
1131	Trailer Parks and Mobile Home Courts, High-Density	91
1132	Mobile Home Courts and Subdivisions, Low-Density	42
1140	Mixed Residential	59
1151	Rural Residential, High-Density	15
1152	Rural Residential, Low-Density	10
1211	Low- and Medium-Rise Major Office Use	91
1212	High-Rise Major Office Use	91
1213	Skyscrapers	91
1221	Regional Shopping Center	95
1222	Retail Centers (Non-Strip With Contiguous Interconnected Off-Street	96
1223	Modern Strip Development	96
1224	Older Strip Development	97
1231	Commercial Storage	90
1232	Commercial Recreation	90
1233	Hotels and Motels	96
1234	Attended Pay Public Parking Facilities	91
1241	Government Offices	91
1242	Police and Sheriff Stations	91
1243	Fire Stations	91
1244	Major Medical Health Care Facilities	74
1245	Religious Facilities	82
1246	Other Public Facilities	91
1247	Non-Attended Public Parking Facilities	91
1251	Correctional Facilities	91
1252	Special Care Facilities	74
1253	Other Special Use Facilities	86
1261	Pre-Schools/Day Care Centers	68
1262	Elementary Schools	82
1263	Junior or Intermediate High Schools	82
1264	Senior High Schools	82
1265	Colleges and Universities	47
1266	Trade Schools and Professional Training Facilities	91
1271	Base (Built-up Area)	65
1271.01	Base High-Density Single Family Residential	42
1271.02	Base Duplexes, Triplexes and 2-or 3-Unit Condominiums and T	55

Code	Land Use Description	% Impervious
1271.03	Base Government Offices	91
1271.04	Base Fire Stations	91
1271.05	Base Non-Attended Public Parking Facilities	91
1271.06	Base Air Field	45
1271.07	Base Petroleum Refining and Processing	91
1271.08	Base Mineral Extraction - Oil and Gas	10
1271.09	Base Harbor Facilities	91
1271.10	Base Navigation Aids	47
1271.11	Base Developed Local Parks and Recreation	10
1271.12	Base Vacant Undifferentiated	1
1272	Vacant Area	2
1273	Air Field	45
1274	Former Base (Built-up Area)	65
1275	Former Base Vacant Area	2
1276	Former Base Air Field	91
1311	Manufacturing, Assembly, and Industrial Services	91
1312	Motion Picture and Television Studio Lots	82
1313	Packing Houses and Grain Elevators	96
1314	Research and Development	91
1321	Manufacturing	91
1322	Petroleum Refining and Processing	91
1323	Open Storage	66
1324	Major Metal Processing	91
1325	Chemical Processing	91
1331	Mineral Extraction - Other Than Oil and Gas	10
1332	Mineral Extraction - Oil and Gas	10
1340	Wholesaling and Warehousing	91
1411	Airports	91
1411.01	Airstrip	10
1412	Railroads	15
1412.01	Railroads-Attended Pay Public Parking Facilities	91
1412.02	Railroads-Non-Attended Public Parking Facilities	91
1412.03	Railroads-Manufacturing, Assembly, and Industrial Services	91
1412.04	Railroads-Petroleum Refining and Processing	91
1412.05	Railroads-Open Storage	66
1412.06	Railroads-Truck Terminals	91
1413	Freeways and Major Roads	91
1414	Park-and-Ride Lots	91
1415	Bus Terminals and Yards	91
1416	Truck Terminals	91
1417	Harbor Facilities	91
1418	Navigation Aids	47
1420	Communication Facilities	82
1420.01	Communication Facilities-Antenna	2

Code	Land Use Description	% Impervious
1431	Electrical Power Facilities	47
1431.01	Electrical Power Facilities-Powerlines (Urban)	2
1431.02	Electrical Power Facilities-Powerlines (Rural)	1
1432	Solid Waste Disposal Facilities	15
1433	Liquid Waste Disposal Facilities	96
1434	Water Storage Facilities	91
1435	Natural Gas and Petroleum Facilities	91
1435.01	Natural Gas and Petroleum Facilities-Manufacturing, Assembly, and In	91
1435.02	Natural Gas and Petroleum Facilities-Petroleum Refining and Processing	91
1435.03	Natural Gas and Petroleum Facilities-Mineral Extraction – Oil and Gas	10
1435.04	Natural Gas and Petroleum Facilities-Vacant Undifferentiated	1
1436	Water Transfer Facilities	96
1437	Improved Flood Waterways and Structures	100
1440	Maintenance Yards	91
1450	Mixed Transportation	90
1460	Mixed Transportation and Utility	91
1460.01	Mixed Utility and Transportation-Improved Flood Waterways and Structures	100
1460.02	Mixed Utility and Transportation-Railroads	15
1460.03	Mixed Utility and Transportation-Freeways and Major Roads	91
1500	Mixed Commercial and Industrial	91
1600	Mixed Urban	89
1700	Under Construction (Use appropriate value)	91
1810	Golf Courses	3
1821	Developed Local Parks and Recreation	10
1822	Undeveloped Local Parks and Recreation	2
1831	Developed Regional Parks and Recreation	2
1832	Undeveloped Regional Parks and Recreation	1
1840	Cemeteries	10
1850	Wildlife Preserves and Sanctuaries	2
1850.01	Wildlife-Commercial Recreation	90
1850.02	Wildlife-Other Special Use Facilities	86
1850.03	Wildlife-Developed Local Parks and Recreation	10
1860	Specimen Gardens and Arboreta	15
1870	Beach Parks	10
1880	Other Open Space and Recreation	10
2110	Irrigated Cropland and Improved Pasture Land	2
2120	Non-Irrigated Cropland and Improved Pasture Land	2
2200	Orchards and Vineyards	2
2300	Nurseries	15
2400	Dairy, Intensive Livestock, and Associated Facilities	42
2500	Poultry Operations	62
2600	Other Agriculture	42
2700	Horse Ranches	42

Code	Land Use Description	% Impervious
3100	Vacant Undifferentiated	1
3200	Abandoned Orchards and Vineyards	2
3300	Vacant With Limited Improvements (Use appropriate value)	42
3400	Beaches (Vacant)	1
4100	Water, Undifferentiated	100
4200	Harbor Water Facilities	100
4300	Marina Water Facilities	100
4400	Water Within a Military Installation	100

ISOHYET MAP



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

N W E S

1 0 1 2 Miles

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

N E W H A L L

50-YEAR 24-HOUR ISOHYET

1-H1.44

LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

85 TH PERCENTILE

24-hr RAINFALL

Hydrology Map

dpw.lacounty.gov/wrd/hydrologygis/

Department of Public Works
dpw.lacounty.gov

search our site..

Hydrology Map A GIS viewer application to view the data for the hydrology manual.

LAYERS

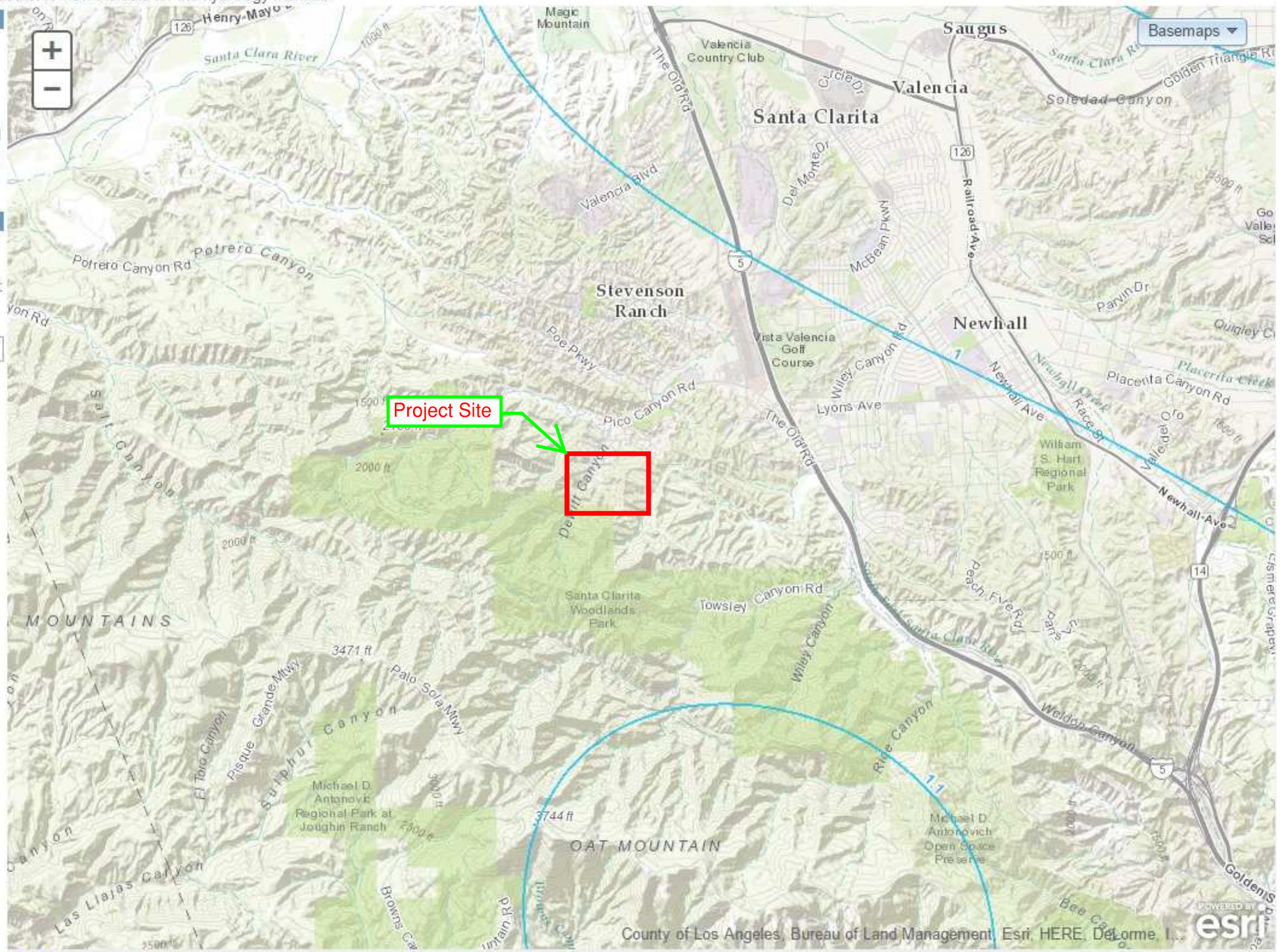
- [ ] 50yr Two Tenths (Rainfall)
- [ ] DPA Zones
- [ ] Soils 2004
- [ ] TG Page
- [x] Final 85th Percentile, 24-hr Rainfall
- [ ] Final 95th Percentile, 24-hr Rainfall
- [ ] 1-year, 1-hour Rainfall Intensity

SEARCH

Zoom to TG Page:

Enter Address, Cross Street, or Parcel No.:
(ex: 900 S. Fremont Ave., Fremont@Valley, 5342005904)

Search



Map Tips

SECTIONS

SECTION 1

RUNOFF CALCULATIONS FOR

EXISTING CONDITIONS

LAR04 CALCULATION
INPUT DATA
EXISTING CONDITION
FOR 2-YRS, 5 YRS, 10-YRS, 25YRS, AND 50-YRS

Tract No. 74650 Existing Condition 2-yr, 5-yr, and 10-yr

Project	Subarea	Area (Acres)	Length (ft)	Slope	Isohyet Depth (in)	% Impervio	Soil Type	Frequency	Fire	Subarea Flowrate (cfs)	Tc (min)	Volume (cu.ft)	Volume (C.Y.)
TR. 74650	1A	21.40	1556	0.10	3.096	0.01	97	2-yr	scr	8.82	30	9,969	369
TR. 74650	2B	7.93	897	0.15	3.096	0.01	97	2-yr	scr	3.25	30	3,694	137
TR. 74650	4A	2.67	419	0.06	3.096	0.01	97	2-yr	scr	1.11	30	1,244	46
TR. 74650	5C	15.41	1161	0.20	3.096	0.01	97	2-yr	scr	6.34	30	7,178	266
TR. 74650	7A	1.19	296	0.02	3.096	0.01	97	2-yr	scr	0.49	30	554	21
											TOTAL	**22,639**	**838**
TR. 74650	8D	12.68	1394	0.018	3.096	0.01	97	2-yr	scr	5.23	30		
TR. 74650	10A	14.28	682	0.046	3.096	0.01	97	2-yr	scr	5.89	30		
Total		75.56							**TOTAL**	**31.13**			

Project	Subarea	Area (Acres)	Length (ft)	Slope	Isohyet Depth (in)	% Impervio	Soil Type	Frequency	Fire	Subarea Flowrate (cfs)	Tc (min)	Volume (cu.ft)	Volume (C.Y.)
TR. 74650	1A	21.40	1556	0.10	4.672	0.01	97	5-yr	scr	17.38	26	30,777	1,140
TR. 74650	2B	7.93	897	0.15	4.672	0.01	97	5-yr	scr	8.60	16	11,566	428
TR. 74650	4A	2.67	419	0.06	4.672	0.01	97	5-yr	scr	3.66	11	3,919	145
TR. 74650	5C	15.41	1161	0.20	4.672	0.01	97	5-yr	scr	15.60	18	22,413	830
TR. 74650	7A	1.19	296	0.02	4.672	0.01	97	5-yr	scr	5.77	10	1,748	65
											TOTAL	**70,423**	**2,608**
TR. 74650	8D	12.68	1394	0.018	4.672	0.01	97	5-yr	scr	9.40	30		
TR. 74650	10A	14.28	682	0.046	4.672	0.01	97	5-yr	scr	15.57	16		
Total		75.56							**TOTAL**	**75.98**			

Project	Subarea	Area (Acres)	Length (ft)	Slope	Isohyet Depth (in)	% Impervio	Soil Type	Frequency	Fire	Subarea Flowrate (cfs)	Tc (min)	Volume (cu.ft)	Volume (C.Y.)
TR. 74650	1A	21.40	1556	0.10	5.712	0.01	97	10-yr	scr	29.97	16	54,824	2,031
TR. 74650	2B	7.93	897	0.15	5.712	0.01	97	10-yr	scr	14.44	10	20,434	757
TR. 74650	4A	2.67	419	0.06	5.712	0.01	97	10-yr	scr	5.93	7	6,902	256
TR. 74650	5C	15.41	1161	0.20	5.712	0.01	97	10-yr	scr	26.61	11	39,678	1,470
TR. 74650	7A	1.19	296	0.02	5.712	0.01	97	10-yr	scr	2.63	7	3,076	114
											TOTAL	**124,914**	**4,626**
TR. 74650	8D	12.68	1394	0.018	5.712	0.01	97	10-yr	scr	15.18	21		
TR. 74650	10A	14.28	682	0.046	5.712	0.01	97	10-yr	scr	26.14	10		
Total		75.56							**TOTAL**	**120.90**			

Tract No. 74650 Existing Condition 2-yr, 5-yr, and 10-yr

Project	Subarea	Area (Acres)	Length (ft)	Slope	Isohyet Depth (in)	% Impervio	Soil Type	Frequency	Fire	Flowrate (cfs)	Tc (min)	Volume (cu.ft)	Volume (C.Y.)
TR. 74650	1A	21.40	1556	0.10	7.024	0.01	97	25-yr	scr	47.22	11	103,181	3,822
TR. 74650	2B	7.93	897	0.15	7.024	0.01	97	25-yr	scr	22.00	7	38,295	1,418
TR. 74650	4A	2.67	419	0.06	7.024	0.01	97	25-yr	scr	9.14	5	12,911	478
TR. 74650	5C	15.41	1161	0.20	7.024	0.01	97	25-yr	scr	39.98	8	74,380	2,755
TR. 74650	7A	1.19	296	0.02	7.024	0.01	97	25-yr	scr	4.06	5	5,754	213
											TOTAL	**234,521**	**8,686**
TR. 74650	8D	12.68	1394	0.018	7.024	0.01	97	25-yr	scr	24.55	14		
TR. 74650	10A	14.28	682	0.046	7.024	0.01	97	25-yr	scr	43.46	7		
Total		75.56							**TOTAL**	**190.41**			

Project	Subarea	Area (Acres)	Length (ft)	Slope	Isohyet Depth (in)	% Impervio	Soil Type	Frequency	Fire	Subarea Flowrate (cfs)	Tc (min)	Volume (cu.ft)	Volume (C.Y.)
TR. 74650	1A	21.40	1556	0.10	8.000	0.01	97	50-yr	scr	60.84	9	157,297	5,826
TR. 74650	2B	7.93	897	0.15	8.000	0.01	97	50-yr	scr	27.79	6	58,345	2,161
TR. 74650	4A	2.67	419	0.06	8.000	0.01	97	50-yr	scr	10.57	5	19,651	728
TR. 74650	5C	15.41	1161	0.20	8.000	0.01	97	50-yr	scr	54.17	6	113,380	4,199
TR. 74650	7A	1.19	296	0.02	8.000	0.01	97	50-yr	scr	4.70	5	8,758	324
											TOTAL	**357,431**	**13,238**
TR. 74650	8D	12.68	1394	0.018	8.000	0.01	97	50-yr	scr	32.57	11		
TR. 74650	10A	14.28	682	0.046	8.000	0.01	97	50-yr	scr	50.30	6		
Total		75.56							**TOTAL**	**240.94**			

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006 74650    1A 297  121.430A40                              0  G1
006 74650    2B 297  1 7.930A40                              0
006 74650    3AB297  0  .0 0A401419.0006000                  0
006 74650    4A 297  1 2.730A40                              0
006 74650    5C 297  115.430A40                              0
006 74650    6AC297  0  .0 0A401269.0002000                  0
006 74650    7A 297  1 1.230A40                              02
006 74650    8D 297  112.730A40                              0
006 74650    9AD297  0      A401682.0004600                  0 1
006 74650   10A 297  114.330A40                              0   2
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006 74650    1A 297  121.426A40                              0  G1
006 74650    2B 297  1 7.916A40                              0
006 74650    3AB297  0  .0 0A401419.0006000                  0
006 74650    4A 297  1 2.711A40                              0
006 74650    5C 297  115.418A40                              0
006 74650    6AC297  0  .0 0A401269.0002000                  0
006 74650    7A 297  1 1.210A40                              02
006 74650    8D 297  112.730A40                              0
006 74650    9AD297  0      A401682.0004600                  0 1
006 74650   10A 297  114.316A40                              0   2
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006 74650    1A 297  121.416A40                              0  G1
006 74650    2B 297  1 7.910A40                              0
006 74650    3AB297  0  .0 0A401419.0006000                  0
006 74650    4A 297  1 2.7 7A40                              0
006 74650    5C 297  115.411A40                              0
006 74650    6AC297  0  .0 0A401269.0002000                  0
006 74650    7A 297  1 1.2 7A40                              02
006 74650    8D 297  112.721A40                              0
006 74650    9AD297  0      A401682.0004600                  0 1
006 74650   10A 297  114.310A40                              0   2
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006 74650    1A 297  121.411A40                              0  G1
006 74650    2B 297  1 7.9 7A40                              0
006 74650    3AB297  0  .0 0A401419.0006000                  0
006 74650    4A 297  1 2.7 5A40                              0
006 74650    5C 297  115.4 8A40                              0
006 74650    6AC297  0  .0 0A401269.0002000                  0
006 74650    7A 297  1 1.2 5A40                              02
006 74650    8D 297  112.714A40                              0
006 74650    9AD297  0      A401682.0004600                  0 1
006 74650   10A 297  114.3 6A40                              0   2
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006 74650    1A 297  121.4 9A40                                0  G1
006 74650    2B 297  1 7.9 6A40                                0
006 74650    3AB297  0  .0 0A401419.0006000                    0
006 74650    4A 297  1 2.7 5A40                                0
006 74650    5C 297  115.4 6A40                                0
006 74650    6AC297  0  .0 0A401269.0002000                    0
006 74650    7A 297  1 1.2 5A40                                02
006 74650    8D 297  112.711A40                                0
006 74650    9AD297  0      A401682.0004600                    0 1
006 74650   10A 297  114.3 6A40                                0   2
```

LAR04 CALCULATION
OUTPUT DATA
EXISTING CONDITION
FOR 2-YRS, 5 YRS, 10-YRS, 25YRS, AND 50-YRS

```
 Program Package Serial Number:  2175
12/18/17   FILE: 2EXCVS   INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     1
                                   LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                        PROG F0601M

     Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR =  2  SOIL DATA FILE: C:\civild\scr_soilx_34.dat
                                                                                                                  STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL    TOTAL  CONV    CONV      CONV     CONV     CONV   CONTROL SOIL       RAIN  PCT
     LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
     4650    1A    21.4       8.82      21.4      8.82   0       0.   .00000      .00   .00        0.  297  30   A40   .01
     4650    2B     7.9       3.25       7.9      3.25   0       0.   .00000      .00   .00        0.  297  30   A40   .01
     4650    3AB    7.9       3.25      29.3     12.07   1     419.   .06000      .00   .00        0.  297   0   A40   .00
     4650    4A     2.7       1.11      32.0     13.12   0       0.   .00000      .00   .00        0.  297  30   A40   .01
     4650    5C    15.4       6.34      15.4      6.34   0       0.   .00000      .00   .00        0.  297  30   A40   .01
     4650    6AC   15.4       6.34      47.4     19.41   1     269.   .02000      .00   .00        0.  297   0   A40   .00
     4650    7A     1.2        .49      48.6     19.80   0       0.   .00000      .00   .00        0.  297  30   A40   .01
     4650    8D    12.7       5.23      12.7      5.23   0       0.   .00000      .00   .00        0.  297  30   A40   .01
   ********************************************************************************************************************************
   *                                                    CONFLUENCE Q'S                                                            *
   *   4650    9A  TA 1164 QA    19.80 QAD    24.84 QD     5.05    4650    9D  TD 1158 QD     5.23 QDA    22.72 QA    17.49   *
   *                          4650    9AD TAD 1163 QAD    24.87 QA    19.76 QD     5.11                                        *
   ********************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL    TOTAL  CONV    CONV      CONV     CONV     CONV   CONTROL SOIL       RAIN  PCT
     LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
     4650    9AD   12.7       5.23      61.3     24.87   1     682.   .04600      .00   .00        0.  297   0   A40   .00
     4650   10A    14.3       5.89      75.6     29.88   0       0.   .00000      .00   .00        0.  297  30   A40   .01
```

Program Package Serial Number: 2175

01/09/18 FILE: 5EXCVS INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 5 SOIL DATA FILE: C:\civild\scr_soilx_34.dat

STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
4650	1A	21.4	17.38	21.4	17.38	0	0.	.00000	.00	.00	0.	297	26	A40	.01
4650	2B	7.9	8.60	7.9	8.60	0	0.	.00000	.00	.00	0.	297	16	A40	.01
4650	3AB	7.9	8.60	29.3	25.94	1	419.	.06000	.00	.00	0.	297	0	A40	.00
4650	4A	2.7	3.66	32.0	29.04	0	0.	.00000	.00	.00	0.	297	11	A40	.01
4650	5C	15.4	15.60	15.4	15.60	0	0.	.00000	.00	.00	0.	297	18	A40	.01
4650	6AC	15.4	15.60	47.4	44.46	1	269.	.02000	.00	.00	0.	297	0	A40	.00
4650	7A	1.2	5.77	48.6	50.23	0	0.	.00000	.00	.00	0.	297	10	A40	.01
4650	8D	12.7	9.40	12.7	9.40	0	0.	.00000	.00	.00	0.	297	30	A40	.01

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* CONFLUENCE Q'S *

* 4650 9A TA 1159 QA 45.26 QAD 59.63 QD 9.40 4650 9D TD 1158 QD 9.40 QDA 54.13 QA 44.73 *

* 4650 9AD TAD 1159 QAD 54.66 QA 45.26 QD 9.40 *

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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
4650	9AD	12.7	9.40	61.3	59.63	1	682.	.04600	.00	.00	0.	297	0	A40	.00
4650	10A	14.3	15.57	75.6	75.20	0	0.	.00000	.00	.00	0.	297	16	A40	.01

```
 Program Package Serial Number:  2175
12/18/17   FILE: 10EXCV   INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     1
                                  LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                        PROG F0601M

      Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 10  SOIL DATA FILE: C:\civild\scr_soilx_34.dat
                                                                                                                  STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL    TOTAL  CONV    CONV      CONV     CONV    CONV   CONTROL SOIL       RAIN  PCT
     LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
     4650    1A    21.4      29.97      21.4     29.97   0       0.   .00000      .00   .00        0.  297  16   A40   .01
     4650    2B     7.9      14.44       7.9     14.44   0       0.   .00000      .00   .00        0.  297  10   A40   .01
     4650    3AB    7.9      14.44      29.3     44.21   1     419.   .06000      .00   .00        0.  297   0   A40   .00
     4650    4A     2.7       5.93      32.0     48.48   0       0.   .00000      .00   .00        0.  297   7   A40   .01
     4650    5C    15.4      26.61      15.4     26.61   0       0.   .00000      .00   .00        0.  297  11   A40   .01
     4650    6AC   15.4      26.61      47.4     74.49   1     269.   .02000      .00   .00        0.  297   0   A40   .00
     4650    7A     1.2       2.63      48.6     75.20   0       0.   .00000      .00   .00        0.  297   7   A40   .01
     4650    8D    12.7      15.18      12.7     15.18   0       0.   .00000      .00   .00        0.  297  21   A40   .01
   ********************************************************************************************************************************
   *                                                                                                                              *
   *   4650    9A  TA 1157 QA    75.20 QAD    90.38 QD    15.18    4650    9D  TD 1156 QD    15.18 QDA    88.21 QA    73.03   *
   *                             4650    9AD TAD 1157 QAD    90.38 QA    75.20 QD    15.18                                   *
   ********************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL    TOTAL  CONV    CONV      CONV     CONV    CONV   CONTROL SOIL       RAIN  PCT
     LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
     4650    9AD   12.7      15.18      61.3     90.38   1     682.   .04600      .00   .00        0.  297   0   A40   .00
     4650   10A    14.3      26.14      75.6    105.77   0       0.   .00000      .00   .00        0.  297  10   A40   .01
```

Program Package Serial Number: 2175

12/18/17 FILE: 25EXCV INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 25 SOIL DATA FILE: C:\civild\scr_soilx_34.dat

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
4650	1A	21.4	47.22	21.4	47.22	0	0.	.00000	.00	.00	0.	297	11	A40	.01
4650	2B	7.9	22.00	7.9	22.00	0	0.	.00000	.00	.00	0.	297	7	A40	.01
4650	3AB	7.9	22.00	29.3	69.22	1	419.	.06000	.00	.00	0.	297	0	A40	.00
4650	4A	2.7	9.14	32.0	73.98	0	0.	.00000	.00	.00	0.	297	5	A40	.01
4650	5C	15.4	39.98	15.4	39.98	0	0.	.00000	.00	.00	0.	297	8	A40	.01
4650	6AC	15.4	39.98	47.4	113.24	1	269.	.02000	.00	.00	0.	297	0	A40	.00
4650	7A	1.2	4.06	48.6	112.87	0	0.	.00000	.00	.00	0.	297	5	A40	.01
4650	8D	12.7	24.55	12.7	24.55	0	0.	.00000	.00	.00	0.	297	14	A40	.01

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* CONFLUENCE Q'S *

* 4650 9A TA 1157 QA 112.87 QAD 136.96 QD 24.08 4650 9D TD 1154 QD 24.55 QDA 122.79 QA 98.23 *

* 4650 9AD TAD 1156 QAD 137.22 QA 112.84 QD 24.38 *

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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
4650	9AD	12.7	24.55	61.3	137.22	1	682.	.04600	.00	.00	0.	297	0	A40	.00
4650	10A	14.3	43.46	75.6	149.11	0	0.	.00000	.00	.00	0.	297	6	A40	.01

Program Package Serial Number: 2175

12/18/17 FILE: 50EXCV INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\scr_soilx_34.dat

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
4650	1A	21.4	60.84	21.4	60.84	0	0.	.00000	.00	.00	0.	297	9	A40	.01
4650	2B	7.9	27.79	7.9	27.79	0	0.	.00000	.00	.00	0.	297	6	A40	.01
4650	3AB	7.9	27.79	29.3	88.63	1	419.	.06000	.00	.00	0.	297	0	A40	.00
4650	4A	2.7	10.57	32.0	94.40	0	0.	.00000	.00	.00	0.	297	5	A40	.01
4650	5C	15.4	54.17	15.4	54.17	0	0.	.00000	.00	.00	0.	297	6	A40	.01
4650	6AC	15.4	54.17	47.4	145.13	1	269.	.02000	.00	.00	0.	297	0	A40	.00
4650	7A	1.2	4.70	48.6	143.39	0	0.	.00000	.00	.00	0.	297	5	A40	.01
4650	8D	12.7	32.57	12.7	32.57	0	0.	.00000	.00	.00	0.	297	11	A40	.01

****

* CONFLUENCE Q'S *

* 4650 9A TA 1156 QA 143.39 QAD 175.22 QD 31.83 4650 9D TD 1154 QD 32.57 QDA 162.70 QA 130.12 *

* 4650 9AD TAD 1156 QAD 175.22 QA 143.39 QD 31.83 *

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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
4650	9AD	12.7	32.57	61.3	175.22	1	682.	.04600	.00	.00	0.	297	0	A40	.00
4650	10A	14.3	50.30	75.6	194.22	0	0.	.00000	.00	.00	0.	297	6	A40	.01

SECTION 2

RUNOFF CALCULATIONS FOR

PROPOSED CONDITIONS

LAR04 CALCULATION
INPUT DATA
PROPOSED CONDITION
FOR 2-YRS, 5 YRS, 10-YRS, 25YRS, AND 50-YRS

Tract No. 74650 Proposed Condition 2-yr

Project	Subarea	Area (Acres)	Length (ft)	Slope	Isohyet Depth (in)	% Impervio	Soil Type	Frequency	Fire	Flowrate (cfs)	Tc (min)	Volume (cu.ft)	Volume (C.Y.)
TR. 74650	1A	8.6	444	0.17	3.10	0.01	97	2-yr	scr	3.54	30	4,011	149
TR. 74650	2A	3.96	478	0.24	3.10	0.01	97	2-yr	scr	1.65	30	1,847	68
TR. 74650	3B	4.46	484	0.25	3.10	0.01	97	2-yr	scr	1.85	30	2,080	77
TR. 74650	4B	2.34	220	0.01	3.10	0.42	97	2-yr	0	1.60	19	4,429	164
TR. 74650	6A	0.85	136	0.39	3.10	0.01	97	2-yr	scr	0.81	9	442	16
TR. 74650	7A	4.48	343	0.23	3.10	0.01	97	2-yr	scr	1.85	30	2,090	77
TR. 74650	8A	3.01	770	0.074	3.10	0.42	97	2-yr	0	1.53	30	5,668	210
TR. 74650	9A	3.07	860	0.056	3.10	0.42	97	2-yr	0	1.59	30	5,781	214
TR. 74650	10C	7.12	378	0.56	3.10	0.01	97	2-yr	scr	2.92	30	3,321	123
TR. 74650	12A	0.72	263	0.39	3.10	0.01	97	2-yr	scr	0.29	30	336	12
TR. 74650	13A	0.37	86	0.44	3.10	0.01	97	2-yr	scr	0.46	6	195	7
TR. 74650	14A	2.23	310	0.01	3.10	0.42	97	2-yr	0	1.29	24	4,205	156
TR. 74650	15A	1.15	181	0.29	3.10	0.01	97	2-yr	scr	0.73	15	570	21
TR. 74650	16D	1.65	630	0.01	3.10	0.42	97	2-yr	0	0.87	30	3,107	115
TR. 74650	17D	2.67	620	0.005	3.10	0.42	97	2-yr	0	1.38	30	5,028	186
TR. 74650	19A	1.6	290	0.062	3.10	0.42	97	2-yr	scr	2.24	16	3,132	116
									Total	**24.60**	**Total**	**46,244**	**1,713**
TR. 74650	21E	12.72	1394	0.18	3.10	0.42	97	2-yr	scr	5.23	30		
TR. 74650	23A	12.03	682	0.046	3.10	0.01	97	2-yr	scr	4.94	30		
TR. 74650	100A	0.2	116	0.56	3.10	0.01	97	2-yr	scr	0.05	7		
TR. 74650	200A	0.45	234	0.3	3.10	0.01	97	2-yr	0	0.02	30		
TR. 74650	200B	0.38	234	0.3	3.10	0.01	97	2-yr	0	0.01	30		

Tract No. 74650 Proposed Condition 5-yr

Project	Subarea	Area (Acres)	Length (ft)	Slope	Isohyet Depth (in)	% Impervio	Soil Type	Frequency	Fire	Flowrate (cfs)	Tc (min)	Volume (cu.ft)	Volume (C.Y.)
TR. 74650	1A	8.6	444	0.17	4.67	0.01	97	5-yr	scr	13.00	9	12,642	468
TR. 74650	2A	3.96	478	0.24	4.67	0.01	97	5-yr	scr	6.05	9	5,821	216
TR. 74650	3B	4.46	484	0.25	4.67	0.01	97	5-yr	scr	6.80	9	6,556	243
TR. 74650	4B	2.34	220	0.01	4.67	0.42	97	5-yr	0	4.06	8	10,581	392
TR. 74650	6A	0.85	136	0.39	4.67	0.01	97	5-yr	scr	1.91	5	1,258	47
TR. 74650	7A	4.48	343	0.23	4.67	0.01	97	5-yr	scr	7.79	7	6,606	245
TR. 74650	8A	3.01	770	0.074	4.67	0.42	97	5-yr	0	4.00	13	13,597	504
TR. 74650	9A	3.07	860	0.056	4.67	0.42	97	5-yr	0	3.85	15	13,861	513
TR. 74650	10C	7.12	378	0.56	4.67	0.01	97	5-yr	scr	13.45	6	10,521	390
TR. 74650	12A	0.72	263	0.39	4.67	0.01	97	5-yr	scr	1.49	5	1,066	39
TR. 74650	13A	0.37	86	0.44	4.67	0.01	97	5-yr	scr	0.69	5	548	20
TR. 74650	14A	2.23	310	0.01	4.67	0.42	97	5-yr	0	3.39	10	10,079	373
TR. 74650	15A	1.15	181	0.29	4.67	0.01	97	5-yr	scr	2.33	5	1,702	63
TR. 74650	16D	1.65	630	0.01	4.67	0.42	97	5-yr	0	1.97	17	7,445	276
TR. 74650	17D	2.67	620	0.005	4.67	0.42	97	5-yr	0	2.94	19	12,042	446
TR. 74650	19A	2.11	290	0.062	4.67	0.42	97	5-yr	scr	2.94	7	7,464	276
									Total	**76.66**	**Total**	**121,789**	**4,511**
TR. 74650	21E	12.72	1394	0.18	4.67	0.42	97	5-yr	scr	13.31	17		
TR. 74650	23A	12.03	682	0.046	4.67	0.01	97	5-yr	scr	14.72	13		
TR. 74650	100A	0.2	116	0.56	4.67	0.01	97	5-yr	scr	0.21	5		
TR. 74650	200A	0.45	234	0.3	4.67	0.01	97	5-yr	0	0.46	5		
TR. 74650	200B	0.38	234	0.3	4.67	0.01	97	5-yr	0	0.40	5		

Tract No. 74650 Proposed Condition 10-yr

Project	Subarea	Area (Acres)	Length (ft)	Slope	Isohyet Depth (in)	% Impervio	Soil Type	Frequency	Fire	Flowrate (cfs)	Tc (min)	Volume (cu.ft)	Volume (C.Y.)
TR. 74650	1A	8.6	444	0.17	3.10	0.01	97	10-yr	scr	20.64	6	22,184	822
TR. 74650	2A	3.96	478	0.24	3.10	0.01	97	10-yr	scr	9.60	6	10,215	378
TR. 74650	3B	4.46	484	0.25	3.10	0.01	97	10-yr	scr	10.80	6	11,505	426
TR. 74650	4B	2.34	220	0.01	3.10	0.42	97	10-yr	0	5.89	6	16,315	604
TR. 74650	6A	0.85	136	0.39	3.10	0.01	97	10-yr	scr	2.41	5	2,195	81
TR. 74650	7A	4.48	343	0.23	3.10	0.01	97	10-yr	scr	12.05	5	11,567	428
TR. 74650	8A	3.01	770	0.074	3.10	0.42	97	10-yr	0	6.08	9	20,972	777
TR. 74650	9A	3.07	860	0.056	3.10	0.42	97	10-yr	0	5.68	11	21,382	792
TR. 74650	10C	7.12	378	0.56	3.10	0.01	97	10-yr	scr	19.01	5	18,384	681
TR. 74650	12A	0.72	263	0.39	3.10	0.01	97	10-yr	scr	1.87	5	1,859	69
TR. 74650	13A	0.37	86	0.44	3.10	0.01	97	10-yr	scr	1.07	5	955	35
TR. 74650	14A	2.23	310	0.01	3.10	0.42	97	10-yr	0	5.05	7	15,545	576
TR. 74650	15A	1.15	181	0.29	3.10	0.01	97	10-yr	scr	2.95	5	2,969	110
TR. 74650	16D	1.65	630	0.01	3.10	0.42	97	10-yr	0	2.97	12	11,490	426
TR. 74650	17D	2.67	620	0.005	3.10	0.42	97	10-yr	0	4.53	13	18,590	689
TR. 74650	19A	2.11	290	0.062	3.10	0.42	97	10-yr	scr	4.44	5	11,506	426
									Total	**115.04**	**Total**	**197,633**	**7,320**
TR. 74650	21E	12.72	1394	0.18	3.10	0.42	97	10-yr	scr	20.88	12		
TR. 74650	23A	12.03	682	0.046	3.10	0.01	97	10-yr	scr	23.07	9		
TR. 74650	100A	0.2	116	0.56	3.10	0.01	97	10-yr	scr	0.36	5		
TR. 74650	200A	0.45	234	0.3	3.10	0.01	97	10-yr	0	0.76	5		
TR. 74650	200B	0.38	234	0.3	3.10	0.01	97	10-yr	0	0.64	5		

Tract No. 74650 Proposed Condition 25-yr

Project	Subarea	Area (Acres)	Length (ft)	Slope	Isohyet Depth (in)	% Impervio	Soil Type	Frequency	Fire	Flowrate (cfs)	Tc (min)	Volume (cu.ft)	Volume (C.Y.)
TR. 74650	1A	8.6	444	0.17	3.10	0.01	97	25-yr	scr	29.11	5	41,547	1,539
TR. 74650	2A	3.96	478	0.24	3.10	0.01	97	25-yr	scr	13.54	5	19,131	709
TR. 74650	3B	4.46	484	0.25	3.10	0.01	97	25-yr	scr	15.23	5	21,547	798
TR. 74650	4B	2.34	220	0.01	3.10	0.42	97	25-yr	0	8.16	5	25,976	962
TR. 74650	6A	0.85	136	0.39	3.10	0.01	97	25-yr	scr	3.05	5	4,106	152
TR. 74650	7A	4.48	343	0.23	3.10	0.01	97	25-yr	scr	15.23	5	21,643	802
TR. 74650	8A	3.01	770	0.074	3.10	0.42	97	25-yr	0	8.63	7	33,402	1,237
TR. 74650	9A	3.07	860	0.056	3.10	0.42	97	25-yr	0	8.34	8	34,064	1,262
TR. 74650	10C	7.12	378	0.56	3.10	0.01	97	25-yr	scr	24.03	5	34,397	1,274
TR. 74650	12A	0.72	263	0.39	3.10	0.01	97	25-yr	scr	2.37	5	3,478	129
TR. 74650	13A	0.37	86	0.44	3.10	0.01	97	25-yr	scr	1.35	5	1,788	66
TR. 74650	14A	2.23	310	0.01	3.10	0.42	97	25-yr	0	7.63	5	24,755	917
TR. 74650	15A	1.15	181	0.29	3.10	0.01	97	25-yr	scr	3.72	5	5,556	206
TR. 74650	16D	1.65	630	0.01	3.10	0.42	97	25-yr	0	4.58	8	18,308	678
TR. 74650	17D	2.67	620	0.005	3.10	0.42	97	25-yr	0	6.88	9	29,623	1,097
TR. 74650	19A	2.11	290	0.062	3.10	0.42	97	25-yr	scr	5.55	5	18,316	678
									Total	**157.40**	**Total**	**337,637**	**12,505**
TR. 74650	21E	12.72	1394	0.18	3.10	0.42	97	25-yr	scr	32.97	8		
TR. 74650	23A	12.03	682	0.046	3.10	0.01	97	25-yr	scr	40.62	7		
TR. 74650	100A	0.2	116	0.56	3.10	0.01	97	25-yr	scr	0.58	5		
TR. 74650	200A	0.45	234	0.3	3.10	0.01	97	25-yr	0	1.25	5		
TR. 74650	200B	0.38	234	0.3	3.10	0.01	97	25-yr	0	1.06	5		

Tract No. 74650 Proposed Condition 50-yr

Project	Subarea	Area (Acres)	Length (ft)	Slope	Isohyet Depth (in)	% Impervio	Soil Type	Frequency	Fire	Flowrate (cfs)	Tc (min)	Volume (cu.ft)	Volume (C.Y.)
TR. 74650	1A	8.6	444	0.17	3.10	0.01	97	50-yr	scr	33.67	5	63,294	2,344
TR. 74650	2A	3.96	478	0.24	3.10	0.01	97	50-yr	scr	15.66	5	29,145	1,079
TR. 74650	3B	4.46	484	0.25	3.10	0.01	97	50-yr	scr	17.62	5	32,825	1,216
TR. 74650	4B	2.34	220	0.01	3.10	0.42	97	50-yr	0	9.18	5	35,208	1,304
TR. 74650	6A	0.85	136	0.39	3.10	0.01	97	50-yr	scr	3.52	5	6,256	232
TR. 74650	7A	4.48	343	0.23	3.10	0.01	97	50-yr	scr	17.62	5	32,972	1,221
TR. 74650	8A	3.01	770	0.074	3.10	0.42	97	50-yr	0	9.94	5	45,290	1,677
TR. 74650	9A	3.07	860	0.056	3.10	0.42	97	50-yr	0	11.16	6	46,188	1,711
TR. 74650	10C	7.12	378	0.56	3.10	0.01	97	50-yr	scr	27.79	5	52,402	1,941
TR. 74650	12A	0.72	263	0.39	3.10	0.01	97	50-yr	scr	2.74	5	5,299	196
TR. 74650	13A	0.37	86	0.44	3.10	0.01	97	50-yr	scr	1.57	5	2,723	101
TR. 74650	14A	2.23	310	0.01	3.10	0.42	97	50-yr	0	8.78	5	33,553	1,243
TR. 74650	15A	1.15	181	0.29	3.10	0.01	97	50-yr	scr	4.31	5	8,464	313
TR. 74650	16D	1.65	630	0.01	3.10	0.42	97	50-yr	0	5.63	7	24,822	919
TR. 74650	17D	2.67	620	0.005	3.10	0.42	97	50-yr	0	8.37	8	40,162	1,487
TR. 74650	19A	2.11	290	0.062	3.10	0.42	97	50-yr	scr	6.03	5	24,826	919
									Total	**183.59**	**Total**	**483,429**	**17,905**
TR. 74650	21E	12.72	1394	0.18	3.10	0.01	97	50-yr	scr	41	7		
TR. 74650	23A	12.03	682	0.046	3.10	0.01	97	50-yr	scr	46.98	5		
TR. 74650	100A	0.2	116	0.56	3.10	0.01	97	50-yr	scr	0.78	5		
TR. 74650	200A	0.45	234	0.3	3.10	0.01	97	50-yr	0	1.69	5		
TR. 74650	200B	0.38	234	0.3	3.10	0.01	97	50-yr	0	1.42	5		

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006 74650    1A 297  1 8.630A404252.0005000     3.50        0  G1
006 74650    2A 297  1 4.030A404252.0007100     3.50        0
006 74650    3B 297  1 4.530A404277.0005000     3.50        0
006 74650    4B 297 42 2.319A404 70.0005000     3.50        0
006 74650    5AB297  0  .0 0A404200.0005000     3.50        0 1
006 74650    6A 297  1  .9 9A404100.0005000     3.50        0
006 74650    7A 297  1 4.530A404349.0005700     3.50        0
006 74650    8A  97 42 3.030A404 20.0002000     2.00        0
006 74650    9A  97 42 3.130A404 50.0005000     3.50        0
006 74650   10C 297  1 7.130A404180.0005000     3.50        0
006 74650   11AC297  0  .0 0A404 20.0005000     3.50        0 1
006 74650   12A 297  1  .730A404108.0005000     3.50        0
006 74650   13A 297  1  .4 6A404170.0005000     3.50        0
006 74650   14A  97 42 2.224A404 36.0005000     3.50        0
006 74650   15A 297  1 1.115A404110.0005000     3.50        0
006 74650   16D  97 42 1.730A404 24.0014700     2.00        0
006 74650   17D  97 42 2.730A404166.0014700     2.00        0
006 74650   18AD297  0  .0 0A404114.0008000     3.50        0
006 74650   19A  97 42 1.6 5A40                              0
006 74650   20A  97  1  .0 5A404 63.0020000     4.00        02
006 74650   21E 297  112.730A40                             0
006 74650   22AE297         A401682.0004600                 0 1
006 74650   23A 297  112.030A40                             0   2
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006 74650    2A 297  1 4.0 9A404252.0007100     3.50        0
006 74650    3B 297  1 4.5 9A404277.0005000     3.50        0
006 74650    4B 297 42 2.3 8A404 70.0005000     3.50        0
006 74650    5AB297  0  .0 0A404200.0005000     3.50        0 1
006 74650    6A 297  1  .9 5A404100.0005000     3.50        0
006 74650    7A 297  1 4.5 7A404349.0005700     3.50        0
006 74650    8A  97 42 3.013A404 20.0002000     2.00        0
006 74650    9A  97 42 3.115A404 50.0005000     3.50        0
006 74650   10C 297  1 7.1 6A404180.0005000     3.50        0
006 74650   11AC297  0  .0 0A404 20.0005000     3.50        0 1
006 74650   12A 297  1  .7 5A404108.0005000     3.50        0
006 74650   13A 297  1  .4 5A404170.0005000     3.50        0
006 74650   14A  97 42 2.210A404 36.0005000     3.50        0
006 74650   15A 297  1 1.1 5A404110.0005000     3.50        0
006 74650   16D  97 42 1.717A404 24.0014700     2.00        0
006 74650   17D  97 42 2.719A404166.0014700     2.00        0
006 74650   18AD297  0  .0 0A404114.0008000     3.50        0
006 74650   19A  97 42 1.6 7A40                              0
006 74650   20A  97  1     5A404 63.0020000     4.00        02
006 74650   21E 297  112.717A40                             0
006 74650   22AE297         A401682.0004600                 0 1
006 74650   23A 297  112.013A40                             0   2
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006 74650    2A 297  1 4.0 6A404252.0007100     3.50        0
006 74650    3B 297  1 4.5 6A404277.0005000     3.50        0
006 74650    4B 297 42 2.3 6A404 70.0005000     3.50        0
006 74650    5AB297  0  .0 0A404200.0005000     3.50        0 1
006 74650    6A 297  1  .9 5A404100.0005000     3.50        0
006 74650    7A 297  1 4.5 5A404349.0005700     3.50        0
006 74650    8A  97 42 3.0 9A404 20.0002000     2.00        0
006 74650    9A  97 42 3.111A404 50.0005000     3.50        0
006 74650   10C 297  1 7.1 5A404180.0005000     3.50        0
006 74650   11AC297  0  .0 0A404 20.0005000     3.50        0 1
006 74650   12A 297  1  .7 5A404108.0005000     3.50        0
006 74650   13A 297  1  .4 5A404170.0005000     3.50        0
006 74650   14A  97 42 2.2 7A404 36.0005000     3.50        0
006 74650   15A 297  1 1.1 5A404110.0005000     3.50        0
006 74650   16D  97 42 1.712A404 24.0014700     2.00        0
006 74650   17D  97 42 2.713A404166.0014700     2.00        0
006 74650   18AD297  0  .0 0A404114.0008000     3.50        0
006 74650   19A  97 42 1.6 5A40                              0
006 74650   20A  97  1     5A404 63.0020000     4.00        02
006 74650   21E 297  112.712A40                             0
006 74650   22AE297         A401682.0004600                 0 1
006 74650   23A 297  112.0 9A40                             0   2
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006 74650    2A 297  1 4.0 5A404252.0007100     3.50        0
006 74650    3B 297  1 4.5 5A404277.0005000     3.50        0
006 74650    4B 297 42 2.3 5A404 70.0005000     3.50        0
006 74650    5AB297  0  .0 0A404200.0005000     3.50        0 1
006 74650    6A 297  1  .9 5A404100.0005000     3.50        0
006 74650    7A 297  1 4.5 5A404349.0005700     3.50        0
006 74650    8A  97 42 3.0 7A404 20.0002000     2.00        0
006 74650    9A  97 42 3.1 8A404 50.0005000     3.50        0
006 74650   10C 297  1 7.1 5A404180.0005000     3.50        0
006 74650   11AC297  0  .0 0A404 20.0005000     3.50        0 1
006 74650   12A 297  1  .7 5A404108.0005000     3.50        0
006 74650   13A 297  1  .4 5A404170.0005000     3.50        0
006 74650   14A  97 42 2.2 5A404 36.0005000     3.50        0
006 74650   15A 297  1 1.1 5A404110.0005000     3.50        0
006 74650   16D  97 42 1.7 8A404 24.0014700     2.00        0
006 74650   17D  97 42 2.7 9A404166.0014700     2.00        0
006 74650   18AD297  0  .0 0A404114.0008000     3.50        0
006 74650   19A  97 42 1.6 5A40                              0
006 74650   20A  97  1     5A404 63.0020000     4.00        02
006 74650   21E 297  112.7 8A40                            0
006 74650   22AE297         A401682.0004600               0 1
006 74650   23A 297  112.0 5A40                            0   2
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006 74650    1A 297  1 8.6 5A404252.0005000     3.50        0  G1
006 74650    2A 297  1 4.0 5A404252.0007100     3.50        0
006 74650    3B 297  1 4.5 5A404277.0005000     3.50        0
006 74650    4B  97 42 2.3 5A404 70.0005000     3.50        0
006 74650    5AB297  0  .0 0A404200.0005000     3.50        0 1
006 74650    6A 297  1  .9 5A404100.0005000     3.50        0
006 74650    7A 297  1 4.5 5A404349.0005700     3.50        0
006 74650    8A  97 42 3.0 7A404 20.0002000     2.00        0
006 74650    9A  97 42 3.1 6A404 50.0005000     3.50        0
006 74650   10C 297  1 7.1 5A404180.0005000     3.50        0
006 74650   11AC297  0  .0 0A404 20.0005000     3.50        0 1
006 74650   12A 297  1  .7 5A404108.0005000     3.50        0
006 74650   13A 297  1  .4 5A404170.0005000     3.50        0
006 74650   14A  97 42 2.2 5A404 36.0005000     3.50        0
006 74650   15A 297  1 1.1 5A404110.0005000     3.50        0
006 74650   16D  97 42 1.7 7A404 24.0014700     2.00        0
006 74650   17D  97 42 2.7 8A404166.0014700     2.00        0
006 74650   18AD297  0  .0 0A404114.0008000     3.50        0
006 74650   19A  97  1 1.6 5A40                              0
006 74650   20A  97  1    5A404 63.0020000     4.00        02
006 74650   21E 297  112.7 7A40                             0
006 74650   22AE297        A401682.0004600                  0 1
006 74650   23A 297  112.0 5A40                              0   2
```

LAR04 CALCULATION
OUTPUT DATA
PROPOSED CONDITION
FOR 2-YRS, 5 YRS, 10-YRS, 25YRS, AND 50-YRS

```
 Program Package Serial Number:  2175
12/18/17   FILE: 2PRCVS   INPUT DATA: English Units  RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units     PAGE     1
                                LOS ANGELES COUNTY FLOOD CONTROL DISTRICT                          PROG F0601M

     Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR =  2  SOIL DATA FILE: C:\civild\scr_soilx_34.dat
                                                                                                                  STORM DAY 4
                  SUBAREA   SUBAREA     TOTAL    TOTAL  CONV   CONV      CONV     CONV    CONV   CONTROL SOIL      RAIN  PCT
     LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
     4650    1A      8.6       3.54       8.6       3.54   4     252.   .05000     3.50   .00        0.  297  30   A40   .01
     4650    2A      4.0       1.65      12.6       5.19   4     252.   .07100     3.50   .00        0.  297  30   A40   .01
     4650    3B      4.5       1.85       4.5       1.85   4     277.   .05000     3.50   .00        0.  297  30   A40   .01
     4650    4B      2.3       1.60       6.8       3.44   4      70.   .05000     3.50   .00        0.  297  19   A40   .42
 ************************************************************************************************************************
 *                                                  CONFLUENCE Q'S                                                      *
 *   4650    5A  TA 1160 QA     5.19 QAB     8.59 QB     3.40    4650    5B  TB 1158 QB     3.44 QBA     8.61 QA     5.17   *
 *                              4650    5AB TAB 1159 QAB     8.61 QA     5.18 QB     3.43                               *
 ************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL    TOTAL  CONV   CONV      CONV     CONV    CONV   CONTROL SOIL      RAIN  PCT
     LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
     4650    5AB     6.8       3.44      19.4       8.61   4     200.   .05000     3.50   .00        0.  297   0   A40   .00
     4650    6A       .9        .81      20.3       9.29   4     100.   .05000     3.50   .00        0.  297   9   A40   .01
     4650    7A      4.5       1.85      24.8      11.12   4     349.   .05700     3.50   .00        0.  297  30   A40   .01
     4650    8A      3.0       1.53      27.8      12.64   4      20.   .02000     2.00   .00        0.   97  30   A40   .42
     4650    9A      3.1       1.59      30.9      14.22   4      50.   .05000     3.50   .00        0.   97  30   A40   .42
     4650   10C      7.1       2.92       7.1       2.92   4     180.   .05000     3.50   .00        0.  297  30   A40   .01
 ************************************************************************************************************************
 *                                                  CONFLUENCE Q'S                                                      *
 *   4650   11A  TA 1158 QA    14.22 QAC    17.14 QC     2.92    4650   11C  TC 1159 QC     2.92 QCA    17.11 QA    14.18   *
 *                              4650   11AC TAC 1158 QAC    17.14 QA    14.22 QC     2.92                               *
 ************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL    TOTAL  CONV   CONV      CONV     CONV    CONV   CONTROL SOIL      RAIN  PCT
     LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
     4650   11AC     7.1       2.92      38.0      17.14   4      20.   .05000     3.50   .00        0.  297   0   A40   .00
     4650   12A       .7        .29      38.7      17.43   4     108.   .05000     3.50   .00        0.  297  30   A40   .01
     4650   13A       .4        .46      39.1      17.58   4     170.   .05000     3.50   .00        0.  297   6   A40   .01
     4650   14A      2.2       1.29      41.3      18.85   4      36.   .05000     3.50   .00        0.   97  24   A40   .42
     4650   15A      1.1        .73      42.4      19.55   4     110.   .05000     3.50   .00        0.  297  15   A40   .01
     4650   16D      1.7        .87       1.7        .87   4      24.   .14700     2.00   .00        0.   97  30   A40   .42
     4650   17D      2.7       1.38       4.4       2.25   4     166.   .14700     2.00   .00        0.   97  30   A40   .42
     4650   18AD     4.4       2.25      46.8      21.78   4     114.   .08000     3.50   .00        0.  297   0   A40   .00
     4650   19A      1.6       2.24      48.4      22.50   0       0.   .00000      .00   .00        0.   97   5   A40   .42
     4650   20A       .0        .00      48.4      22.50   4      63.   .20000     4.00   .00        0.   97   5   A40   .01
     4650   21E     12.7       5.23      12.7       5.23   0       0.   .00000      .00   .00        0.  297  30   A40   .01
 ************************************************************************************************************************
 *                                                  CONFLUENCE Q'S                                                      *
 *   4650   22A  TA 1157 QA    22.50 QAE    27.72 QE     5.22    4650   22E  TE 1158 QE     5.23 QEA    27.57 QA    22.34   *
 *                              4650   22AE TAE 1157 QAE    27.72 QA    22.50 QE     5.22                               *
 ************************************************************************************************************************
                  SUBAREA   SUBAREA     TOTAL    TOTAL  CONV   CONV      CONV     CONV    CONV   CONTROL SOIL      RAIN  PCT
     LOCATION     AREA(Ac)  Q(CFS)    AREA(Ac)  Q(CFS) TYPE  LNGTH(Ft) SLOPE  SIZE(Ft)   Z     Q(CFS) NAME  TC  ZONE  IMPV
     4650   22AE    12.7       5.23      61.1      27.72   1     682.   .04600      .00   .00        0.  297   0   A40   .00
     4650   23A     12.0       4.94      73.1      31.89   0       0.   .00000      .00   .00        0.  297  30   A40   .01
```

Program Package Serial Number: 2175

12/18/17 FILE: 5PRCVS INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 5 SOIL DATA FILE: C:\civild\scr_soilx_34.dat

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
4650	1A	8.6	13.00	8.6	13.00	4	252.	.05000	3.50	.00	0.	297	9	A40	.01
4650	2A	4.0	6.05	12.6	19.05	4	252.	.07100	3.50	.00	0.	297	9	A40	.01
4650	3B	4.5	6.80	4.5	6.80	4	277.	.05000	3.50	.00	0.	297	9	A40	.01
4650	4B	2.3	4.06	6.8	10.83	4	70.	.05000	3.50	.00	0.	297	8	A40	.42

***

Program Package Serial Number: 2175

12/18/17 FILE: 10PRCV INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 10 SOIL DATA FILE: C:\civild\scr_soilx_34.dat

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
4650	1A	8.6	20.64	8.6	20.64	4	252.	.05000	3.50	.00	0.	297	6	A40	.01
4650	2A	4.0	9.60	12.6	30.16	4	252.	.07100	3.50	.00	0.	297	6	A40	.01
4650	3B	4.5	10.80	4.5	10.80	4	277.	.05000	3.50	.00	0.	297	6	A40	.01
4650	4B	2.3	5.89	6.8	16.65	4	70.	.05000	3.50	.00	0.	297	6	A40	.42

***

Program Package Serial Number: 2175

12/18/17 FILE: 25PRCV INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 25 SOIL DATA FILE: C:\civild\scr_soilx_34.dat

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
4650	1A	8.6	29.11	8.6	29.11	4	252.	.05000	3.50	.00	0.	297	5	A40	.01
4650	2A	4.0	13.54	12.6	41.30	4	252.	.07100	3.50	.00	0.	297	5	A40	.01
4650	3B	4.5	15.23	4.5	15.23	4	277.	.05000	3.50	.00	0.	297	5	A40	.01
4650	4B	2.3	8.16	6.8	22.45	4	70.	.05000	3.50	.00	0.	297	5	A40	.42

***

Program Package Serial Number: 2175

01/08/18 FILE: 50PRCV INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\scr_soilx_34.dat

STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
4650	1A	8.6	33.67	8.6	33.67	4	252.	.05000	3.50	.00	0.	297	5	A40	.01
4650	2A	4.0	15.66	12.6	47.84	4	252.	.07100	3.50	.00	0.	297	5	A40	.01
4650	3B	4.5	17.62	4.5	17.62	4	277.	.05000	3.50	.00	0.	297	5	A40	.01
4650	4B	2.3	9.18	6.8	25.79	4	70.	.05000	3.50	.00	0.	97	5	A40	.42

***

SECTION 3
DISCHARGE ANALYSIS FOR 2-YRS,5-YRS,10YRS, 25-YRS, AND 50YRS_PROPOSED AND EXISTING CONDITION

COMPARISON TABLE FOR EXISTING AND PROPOSED CONDITION

Tract No. 74650 - Discharge Flow Rate for Existing and Proposed Condition

Existing Condition @ Sub-Area 7A		Proposed Condition @ Sub-Area 20A	
Frequency	Flow Rate (cfs)	Frequency	Flow Rate (cfs)
2yrs	19.8	2yrs	14.04
5yrs	50.23	5yrs	48.34
10yrs	75.2	10yrs	62.16
25yrs	112.87	25yrs	70.31
50yrs	143.39	50yrs	75.33

PROPOSED CONDITION HYDROGRAPH INPUT DATA FOR 2-yrs, 5-yrs.10-yrs, 25-yrs, and 50-yrs

HYDROGRAPH INPUT DATA FOR 2-yrs

```
7  4650   20A    48.4 431157    22.5200  4
8  5   0.       .0 100.       .5 200.       .6 300.       .6 400.       .7
8 10 500.       .9 600.      1.0 700.      1.2 800.      1.3 900.      1.6
8 151000.      2.01050.      2.51100.      3.21110.      3.51120.      3.9
8 201130.      5.11131.      5.21132.      5.41133.      5.61134.      5.8
8 251135.      6.01136.      6.21137.      6.41138.      6.71139.      7.0
8 301140.      7.21141.      7.61142.      7.91143.      8.31144.      8.7
8 351145.      9.11146.      9.71147.     10.21148.     10.81149.     11.9
8 401150.     13.41151.     15.21152.     17.31153.     19.51154.     21.0
8 451155.     22.01156.     22.41157.     22.51158.     22.31159.     22.2
8 501160.     22.01161.     21.81162.     21.61163.     21.31164.     20.9
8 551165.     20.61166.     20.21167.     19.81168.     19.41169.     19.0
8 601170.     18.51171.     18.01172.     17.51173.     16.91174.     16.3
8 651175.     15.61176.     15.01177.     14.31178.     13.61179.     12.9
8 701180.     11.91181.     10.71182.      9.51183.      8.21184.      6.9
8 751185.      5.81186.      5.11187.      4.51188.      4.01189.      3.6
8 801190.      3.41191.      3.21192.      3.11193.      3.01194.      2.9
8 851195.      2.91196.      2.81197.      2.81198.      2.71199.      2.6
8 901200.      2.61201.      2.61202.      2.51203.      2.51204.      2.4
8 951205.      2.41206.      2.41207.      2.31208.      2.31209.      2.3
81001210.      2.21211.      2.21212.      2.21213.      2.21214.      2.1
81051215.      2.11216.      2.11217.      2.11218.      2.11219.      2.0
81101220.      2.01221.      2.01222.      2.01223.      2.01224.      1.9
81151225.      1.91226.      1.91227.      1.91228.      1.91229.      1.9
81201230.      1.81231.      1.81232.      1.81233.      1.81234.      1.8
81251235.      1.81236.      1.81237.      1.71238.      1.71239.      1.6
81301240.      1.61241.      1.61242.      1.61243.      1.61244.      1.6
81351245.      1.61246.      1.61247.      1.51248.      1.51249.      1.5
81401250.      1.51251.      1.51252.      1.51253.      1.51254.      1.4
81451255.      1.41256.      1.41257.      1.41258.      1.41259.      1.4
81501260.      1.31261.      1.31262.      1.31263.      1.31264.      1.3
81551265.      1.31266.      1.31267.      1.31268.      1.31269.      1.3
81601270.      1.31271.      1.31272.      1.31273.      1.31274.      1.3
81651275.      1.21276.      1.21277.      1.21278.      1.21279.      1.2
81701280.      1.21281.      1.21282.      1.21283.      1.21284.      1.2
81751285.      1.21286.      1.21287.      1.21288.      1.21289.      1.2
81801290.      1.21291.      1.21292.      1.21293.      1.21294.      1.2
81851295.      1.21296.      1.11297.      1.11298.      1.11299.      1.1
81901300.      1.11310.      1.11320.      1.11330.      1.01340.       .9
81951350.       .91360.       .81370.       .81380.       .71390.       .6
82001400.       .61420.       .61440.       .61460.       .51500.       .5
```

HYDROGRAPH INPUT DATA FOR 5-yrs

```
7  4650   20A    48.4 411155    72.6200  4
8  5   0.       .0 100.     1.2 200.     1.3 300.     1.3 400.     1.4
8 10 500.     1.6 600.     1.8 700.     2.0 800.     2.2 900.     2.5
8 151000.     3.11050.     3.81100.     5.91110.     8.31120.    10.9
8 201130.    13.61131.    13.91132.    14.31133.    14.71134.    15.2
8 251135.    15.71136.    16.21137.    16.81138.    17.51139.    18.2
8 301140.    18.91141.    19.71142.    20.61143.    21.61144.    22.7
8 351145.    24.01146.    25.51147.    27.21148.    29.11149.    32.5
8 401150.    38.31151.    46.01152.    54.61153.    63.71154.    70.4
8 451155.    72.61156.    71.01157.    66.81158.    61.21159.    54.9
8 501160.    48.11161.    41.91162.    36.21163.    31.01164.    26.6
8 551165.    22.71166.    19.51167.    17.01168.    14.91169.    13.1
8 601170.    11.81171.    10.61172.     9.71173.     8.91174.     8.2
8 651175.     7.71176.     7.21177.     6.81178.     6.41179.     6.0
8 701180.     5.81181.     5.51182.     5.21183.     5.01184.     4.7
8 751185.     4.61186.     4.41187.     4.31188.     4.11189.     4.0
8 801190.     3.91191.     3.91192.     3.81193.     3.71194.     3.7
8 851195.     3.61196.     3.61197.     3.51198.     3.51199.     3.4
8 901200.     3.41201.     3.41202.     3.31203.     3.31204.     3.3
8 951205.     3.21206.     3.21207.     3.21208.     3.11209.     3.1
81001210.     3.11211.     3.01212.     3.01213.     3.01214.     3.0
81051215.     2.91216.     2.91217.     2.91218.     2.91219.     2.9
81101220.     2.81221.     2.81222.     2.81223.     2.81224.     2.7
81151225.     2.71226.     2.71227.     2.71228.     2.71229.     2.6
81201230.     2.61231.     2.61232.     2.61233.     2.61234.     2.5
81251235.     2.51236.     2.51237.     2.51238.     2.51239.     2.5
81301240.     2.51241.     2.41242.     2.41243.     2.41244.     2.4
81351245.     2.41246.     2.41247.     2.41248.     2.41249.     2.3
81401250.     2.31251.     2.31252.     2.31253.     2.31254.     2.3
81451255.     2.31256.     2.31257.     2.21258.     2.21259.     2.2
81501260.     2.21261.     2.21262.     2.21263.     2.21264.     2.2
81551265.     2.21266.     2.11267.     2.11268.     2.11269.     2.1
81601270.     2.11271.     2.11272.     2.11273.     2.11274.     2.1
81651275.     2.11276.     2.11277.     2.11278.     2.01279.     2.0
81701280.     2.01281.     2.01282.     2.01283.     2.01284.     2.0
81751285.     2.01286.     2.01287.     2.01288.     2.01289.     2.0
81801290.     1.91291.     1.91292.     1.91293.     1.91294.     1.9
81851295.     1.91296.     1.91297.     1.91298.     1.91299.     1.9
81901300.     1.91310.     1.81320.     1.81330.     1.71340.     1.6
81951350.     1.51360.     1.51370.     1.41380.     1.31390.     1.3
82001400.     1.31420.     1.21440.     1.21460.     1.11500.     1.1
```

HYDROGRAPH INPUT DATA FOR 10-yrs

```
7  4650   20A    48.4 401154   105.6200  4
8  5   0.       .0 100.      1.6 200.      1.6 300.      1.8 400.      1.9
8 10 500.      2.1 600.      2.2 700.      2.4 800.      2.7 900.      3.1
8 151000.      3.71050.      5.41100.      8.91110.     12.11120.     15.4
8 201130.     18.51131.     19.01132.     19.51133.     20.11134.     20.8
8 251135.     21.61136.     22.51137.     23.41138.     24.41139.     25.4
8 301140.     26.41141.     27.51142.     28.81143.     30.21144.     31.7
8 351145.     33.61146.     35.91147.     38.51148.     41.11149.     46.3
8 401150.     55.71151.     68.21152.     82.41153.     97.01154.    105.6
8 451155.    105.11156.     98.01157.     86.61158.     72.81159.     59.9
8 501160.     49.21161.     40.31162.     33.21163.     27.71164.     23.5
8 551165.     20.31166.     18.01167.     16.31168.     15.01169.     13.9
8 601170.     13.01171.     12.31172.     11.71173.     11.11174.     10.5
8 651175.     10.01176.      9.51177.      9.11178.      8.71179.      8.4
8 701180.      8.01181.      7.71182.      7.41183.      7.21184.      6.9
8 751185.      6.71186.      6.41187.      6.21188.      6.01189.      5.7
8 801190.      5.51191.      5.31192.      5.21193.      5.01194.      4.8
8 851195.      4.71196.      4.51197.      4.41198.      4.31199.      4.2
8 901200.      4.11201.      4.11202.      4.01203.      4.01204.      3.9
8 951205.      3.91206.      3.81207.      3.81208.      3.81209.      3.7
81001210.      3.71211.      3.71212.      3.61213.      3.61214.      3.6
81051215.      3.61216.      3.51217.      3.51218.      3.51219.      3.4
81101220.      3.41221.      3.41222.      3.41223.      3.31224.      3.3
81151225.      3.31226.      3.21227.      3.21228.      3.21229.      3.2
81201230.      3.21231.      3.11232.      3.11233.      3.11234.      3.1
81251235.      3.11236.      3.01237.      3.01238.      3.01239.      3.0
81301240.      3.01241.      3.01242.      3.01243.      2.91244.      2.9
81351245.      2.91246.      2.91247.      2.91248.      2.91249.      2.8
81401250.      2.81251.      2.81252.      2.81253.      2.81254.      2.8
81451255.      2.71256.      2.71257.      2.71258.      2.71259.      2.7
81501260.      2.71261.      2.71262.      2.71263.      2.61264.      2.6
81551265.      2.61266.      2.61267.      2.61268.      2.61269.      2.6
81601270.      2.61271.      2.61272.      2.61273.      2.51274.      2.5
81651275.      2.51276.      2.51277.      2.51278.      2.51279.      2.5
81701280.      2.51281.      2.41282.      2.41283.      2.41284.      2.4
81751285.      2.41286.      2.41287.      2.41288.      2.41289.      2.4
81801290.      2.41291.      2.41292.      2.41293.      2.41294.      2.4
81851295.      2.31296.      2.31297.      2.31298.      2.31299.      2.3
81901300.      2.31310.      2.21320.      2.21330.      2.11340.      2.0
81951350.      2.01360.      2.01370.      1.91380.      1.91390.      1.8
82001400.      1.81420.      1.71440.      1.71460.      1.51500.      1.5
```

HYDROGRAPH INPUT DATA FOR 25-yrs

```
7  4650   20A    48.4 401154   144.1200  4
8  5   0.       .0 100.      2.1 200.      2.1 300.      2.3 400.      2.4
8 10 500.      2.5 600.      2.7 700.      3.0 800.      3.3 900.      3.8
8 151000.      5.41050.      8.31100.     12.81110.     16.91120.     20.8
8 201130.     24.91131.     25.61132.     26.21133.     27.01134.     28.0
8 251135.     29.21136.     30.51137.     31.91138.     33.21139.     34.5
8 301140.     35.71141.     37.21142.     38.91143.     40.81144.     42.7
8 351145.     45.21146.     48.31147.     51.71148.     55.31149.     62.9
8 401150.     76.71151.     94.51152.    114.21153.    134.11154.    144.1
8 451155.    140.01156.    126.31157.    106.81158.     85.11159.     66.0
8 501160.     51.31161.     40.51162.     33.21163.     28.81164.     25.9
8 551165.     23.61166.     21.81167.     20.31168.     19.01169.     17.9
8 601170.     16.91171.     16.11172.     15.31173.     14.61174.     13.9
8 651175.     13.41176.     12.91177.     12.41178.     12.01179.     11.6
8 701180.     11.21181.     10.91182.     10.51183.     10.21184.      9.9
8 751185.      9.61186.      9.41187.      9.11188.      8.81189.      8.5
8 801190.      8.31191.      8.11192.      7.91193.      7.61194.      7.4
8 851195.      7.31196.      7.11197.      6.91198.      6.81199.      6.6
8 901200.      6.41201.      6.31202.      6.21203.      6.01204.      5.9
8 951205.      5.81206.      5.61207.      5.51208.      5.41209.      5.2
81001210.      5.11211.      5.01212.      4.91213.      4.91214.      4.8
81051215.      4.71216.      4.61217.      4.51218.      4.41219.      4.3
81101220.      4.21221.      4.21222.      4.11223.      4.11224.      4.0
81151225.      4.01226.      4.01227.      3.91228.      3.91229.      3.9
81201230.      3.91231.      3.91232.      3.81233.      3.81234.      3.8
81251235.      3.71236.      3.71237.      3.71238.      3.71239.      3.7
81301240.      3.71241.      3.61242.      3.61243.      3.61244.      3.6
81351245.      3.61246.      3.51247.      3.51248.      3.51249.      3.5
81401250.      3.51251.      3.41252.      3.41253.      3.41254.      3.4
81451255.      3.41256.      3.31257.      3.31258.      3.31259.      3.3
81501260.      3.31261.      3.31262.      3.31263.      3.21264.      3.2
81551265.      3.21266.      3.21267.      3.21268.      3.21269.      3.2
81601270.      3.21271.      3.21272.      3.11273.      3.11274.      3.1
81651275.      3.11276.      3.11277.      3.11278.      3.01279.      3.0
81701280.      3.01281.      3.01282.      3.01283.      3.01284.      3.0
81751285.      3.01286.      3.01287.      3.01288.      2.91289.      2.9
81801290.      2.91291.      2.91292.      2.91293.      2.91294.      2.9
81851295.      2.91296.      2.91297.      2.81298.      2.81299.      2.8
81901300.      2.81310.      2.71320.      2.71330.      2.61340.      2.5
81951350.      2.51360.      2.41370.      2.31380.      2.31390.      2.2
82001400.      2.21420.      2.11440.      2.11460.      2.01500.      2.0
```

HYDROGRAPH INPUT DATA FOR 50-yrs

```
7  4650   20A    48.4 401154   168.7200  4
8  5   0.       .0 100.      2.2 200.     2.3 300.     2.5 400.     2.6
8 10 500.      2.8 600.      3.0 700.     3.2 800.     3.6 900.     4.4
8 151000.     6.91050.    10.31100.    15.41110.    20.11120.    24.7
8 201130.    29.41131.    30.31132.    31.01133.    32.01134.    33.2
8 251135.    34.71136.    36.21137.    37.81138.    39.31139.    40.8
8 301140.    42.11141.    43.71142.    45.71143.    47.91144.    50.2
8 351145.    53.21146.    57.01147.    60.91148.    65.11149.    74.2
8 401150.    90.91151.   111.91152.   134.61153.   157.71154.   168.7
8 451155.   162.91156.   145.11157.   120.71158.    94.91159.    72.3
8 501160.    55.51161.    44.21162.    37.21163.    32.91164.    29.7
8 551165.    27.41166.    25.41167.    23.71168.    22.21169.    20.9
8 601170.    19.81171.    18.91172.    18.11173.    17.31174.    16.6
8 651175.    15.91176.    15.31177.    14.91178.    14.41179.    13.9
8 701180.    13.51181.    13.11182.    12.71183.    12.31184.    12.0
8 751185.    11.71186.    11.41187.    11.11188.    10.81189.    10.4
8 801190.    10.11191.     9.91192.     9.71193.     9.41194.     9.2
8 851195.     9.01196.     8.81197.     8.61198.     8.41199.     8.2
8 901200.     8.01201.     7.91202.     7.81203.     7.61204.     7.5
8 951205.     7.41206.     7.21207.     7.01208.     6.91209.     6.7
81001210.     6.61211.     6.51212.     6.41213.     6.31214.     6.2
81051215.     6.11216.     6.01217.     5.91218.     5.81219.     5.6
81101220.     5.61221.     5.51222.     5.31223.     5.31224.     5.1
81151225.     5.01226.     4.91227.     4.81228.     4.81229.     4.7
81201230.     4.71231.     4.61232.     4.51233.     4.41234.     4.3
81251235.     4.21236.     4.21237.     4.11238.     4.11239.     4.0
81301240.     4.01241.     4.01242.     4.01243.     4.01244.     3.9
81351245.     3.91246.     3.91247.     3.81248.     3.81249.     3.8
81401250.     3.81251.     3.71252.     3.71253.     3.71254.     3.7
81451255.     3.61256.     3.61257.     3.61258.     3.61259.     3.6
81501260.     3.61261.     3.51262.     3.51263.     3.51264.     3.5
81551265.     3.51266.     3.51267.     3.51268.     3.41269.     3.4
81601270.     3.41271.     3.41272.     3.41273.     3.41274.     3.4
81651275.     3.31276.     3.31277.     3.31278.     3.31279.     3.3
81701280.     3.31281.     3.31282.     3.31283.     3.31284.     3.2
81751285.     3.21286.     3.21287.     3.21288.     3.21289.     3.2
81801290.     3.21291.     3.11292.     3.21293.     3.21294.     3.1
81851295.     3.11296.     3.11297.     3.11298.     3.11299.     3.0
81901300.     3.01310.     3.01320.     2.91330.     2.81340.     2.7
81951350.     2.71360.     2.61370.     2.51380.     2.51390.     2.4
82001400.     2.41420.     2.31440.     2.21460.     2.21500.     2.2
```

PROPOSED CONDITION
RETAR PROGRAM
OUTPUT DATA FOR
2-yrs, 5-yrs.10-yrs, 25-yrs, and 50-yrs
@ SUB-AREA "20A"

PROPOSED CONDITION
RETAR PROGRAM
OUTPUT DATA FOR
2-yrs
@ SUB-AREA "20A"

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1997-2004 Version 6.4

Study Date : 08/15/18 Input hydrograph file name : 2prcvs.hyd
Output hydrograph file name: proposed2yrhyd.hin

Program computation of outflow v. depth

****
CALCULATED OUTFLOW DATA AT DEPTH = 1.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 2.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 3.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 4.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 5.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 6.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

```
************************************************************
CALCULATED OUTFLOW DATA AT DEPTH =    7.00(Ft.)
************************************************************
Pipe length  =     1.00(Ft.)   Elevation difference =   0.10(Ft.)
Manning's N = 0.013   No. of pipes = 1
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    11.750(CFS)
Normal flow depth in pipe =    5.31(In.)
Flow top width inside pipe =   30.12(In.)
Critical depth could not be calculated.
Calculated flow rate through pipe(s) =     11.750(CFS)

Total outflow at this depth =     11.75(CFS)


************************************************************
CALCULATED OUTFLOW DATA AT DEPTH =    8.00(Ft.)
************************************************************
Pipe length  =     1.00(Ft.)   Elevation difference =   0.10(Ft.)
Manning's N = 0.013   No. of pipes = 1
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    44.725(CFS)
Normal flow depth in pipe =   10.17(In.)
Flow top width inside pipe =   39.23(In.)
Critical Depth =    2.00(Ft.)
Calculated flow rate through pipe(s) =     44.725(CFS)

Total outflow at this depth =     44.72(CFS)


************************************************************
CALCULATED OUTFLOW DATA AT DEPTH =    9.00(Ft.)
************************************************************
Pipe length  =     1.00(Ft.)   Elevation difference =   0.10(Ft.)
Manning's N = 0.013   No. of pipes = 1
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    98.088(CFS)
Normal flow depth in pipe =   15.15(In.)
Flow top width inside pipe =   44.62(In.)
Critical Depth =    3.00(Ft.)
Calculated flow rate through pipe(s) =     98.088(CFS)

Total outflow at this depth =     98.09(CFS)


************************************************************
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CALCULATED OUTFLOW DATA AT DEPTH = 10.00(Ft.)

****

Pipe length = 1.00(Ft.) Elevation difference = 0.10(Ft.)
Manning's N = 0.013 No. of pipes = 1
Given pipe size = 48.00(In.)
NOTE: Assuming free outlet flow.
NOTE: Normal flow is pressure flow.
The total friction loss through the pipe is 4.100(Ft.)
Pipe friction loss = 0.013(Ft.)
Minor friction loss = 4.084(Ft.) K-factor = 1.50
Maximum capacity of pipe(s) = 0.00(CFS)
Calculated flow rate through pipe(s) = 166.399(CFS)

Total outflow at this depth = 166.40(CFS)

Hydrograph time unit varies
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data @ 1 Min. Intervals:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.240	0.000	0.240	0.240
2.000	0.520	0.000	0.520	0.520
3.000	0.830	0.000	0.830	0.830
4.000	1.170	0.000	1.170	1.170
5.000	1.550	0.000	1.550	1.550
6.000	1.970	0.000	1.970	1.970
7.000	2.430	11.750	2.422	2.438
8.000	2.930	44.725	2.899	2.961
9.000	3.470	98.088	3.402	3.538
10.000	4.050	166.399	3.935	4.165

Hydrograph Detention Basin Routing
Hydrograph at 4650 20 A Storm Day: 4 Drainage Area = 48.40
Total flood hydrograph volume this storm day = 3.34 Ac. Ft.

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Min)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 5.6 11.3 16.9 22.5	Depth (Ft.)
0	0.0	0.0	0.000	O	0.0
100	0.5	0.0	0.035	O	0.1
200	0.6	0.0	0.111	O	0.5
300	0.6	0.0	0.193	O	0.8
400	0.7	0.0	0.283	O	1.2
500	0.9	0.0	0.393	OI	1.5
600	1.0	0.0	0.524	OI	2.0
700	1.2	0.0	0.676	OI	2.5
800	1.3	0.0	0.848	OI	3.1
900	1.6	0.0	1.048	O I	3.6
1000	2.0	0.0	1.296	O I	4.3
1050	2.5	0.0	1.451	O I	4.7
1100	3.2	0.0	1.648	O I	5.2
1110	3.5	0.0	1.695	O I	5.3
1120	3.9	0.0	1.746	O I	5.5
1130	5.1	0.0	1.809	O I	5.6
1131	5.2	0.0	1.816	O I	5.6
1132	5.4	0.0	1.823	O I	5.7
1133	5.6	0.0	1.831	O I	5.7
1134	5.8	0.0	1.839	O I	5.7
1135	6.0	0.0	1.847	O I	5.7
1136	6.2	0.0	1.856	O I	5.7
1137	6.4	0.0	1.865	O I	5.7
1138	6.7	0.0	1.874	O I	5.8
1139	7.0	0.0	1.883	O I	5.8
1140	7.2	0.0	1.893	O I	5.8
1141	7.6	0.0	1.904	O I	5.8
1142	7.9	0.0	1.915	O I	5.9
1143	8.3	0.0	1.926	O I	5.9
1144	8.7	0.0	1.938	O I	5.9
1145	9.1	0.0	1.951	O I	6.0
1146	9.7	0.0	1.964	O I	6.0
1147	10.2	0.2	1.978	O I	6.0
1148	10.8	0.6	1.992	O I	6.0
1149	11.9	1.0	2.008	O I	6.1
1150	13.4	1.4	2.024	O I	6.1
1151	15.2	1.9	2.043	O I	6.2
1152	17.3	2.4	2.064	O I	6.2
1153	19.5	3.0	2.087	O I	6.3
1154	21.0	3.6	2.112	O I	6.3
1155	22.0	4.3	2.136	O I	6.4
1156	22.4	4.9	2.161	O I	6.4
1157	22.5	5.5	2.185	O I	6.5
1158	22.3	6.1	2.208	O I	6.5
1159	22.2	6.6	2.229	O I	6.6
1160	22.0	7.2	2.250	O I	6.6

1161	21.8	7.7	2.270	|	O |	|	I|	6.7
1162	21.6	8.1	2.289	|	O |	|	I |	6.7
1163	21.3	8.6	2.307	|	O |	|	I |	6.7
1164	20.9	9.0	2.323	|	O |	|	I |	6.8
1165	20.6	9.4	2.339	|	O |	|	I |	6.8
1166	20.2	9.8	2.354	|	O |	|	I |	6.8
1167	19.8	10.1	2.367	|	O |	|	I |	6.9
1168	19.4	10.5	2.380	|	O |	|	I |	6.9
1169	19.0	10.8	2.391	|	O|	|	I |	6.9
1170	18.5	11.0	2.402	|	O|	|	I |	6.9
1171	18.0	11.3	2.411	|	O |	|	I |	7.0
1172	17.5	11.5	2.420	|	O |	|	I |	7.0
1173	16.9	11.7	2.427	|	O |	|	I |	7.0
1174	16.3	12.0	2.433	|	|O I|	|	|	7.0
1175	15.6	12.3	2.438	|	|O I |	|	|	7.0
1176	15.0	12.5	2.441	|	|O I |	|	|	7.0
1177	14.3	12.7	2.444	|	| O I |	|	|	7.0
1178	13.6	12.7	2.445	|	| OI |	|	|	7.0
1179	12.9	12.8	2.445	|	| O |	|	|	7.0
1180	11.9	12.7	2.444	|	I O |	|	|	7.0
1181	10.7	12.5	2.442	|	I|O |	|	|	7.0
1182	9.5	12.2	2.438	|	I |O |	|	|	7.0
1183	8.2	11.9	2.432	|	I O |	|	|	7.0
1184	6.9	11.6	2.426	|	|I O |	|	|	7.0
1185	5.8	11.4	2.418	|	I O |	|	|	7.0
1186	5.1	11.2	2.409	|	I| O|	|	|	7.0
1187	4.5	11.0	2.400	|	I | O|	|	|	6.9
1188	4.0	10.7	2.391	|	I | O|	|	|	6.9
1189	3.6	10.5	2.381	|	I | O |	|	|	6.9
1190	3.4	10.2	2.371	|	I | O |	|	|	6.9
1191	3.2	10.0	2.362	|	I | O |	|	|	6.9
1192	3.1	9.8	2.352	|	I | O |	|	|	6.8
1193	3.0	9.5	2.343	|	I | O |	|	|	6.8
1194	2.9	9.3	2.334	|	I | O |	|	|	6.8
1195	2.9	9.1	2.326	|	I | O |	|	|	6.8
1196	2.8	8.9	2.317	|	I | O |	|	|	6.8
1197	2.8	8.7	2.309	|	I | O |	|	|	6.7
1198	2.7	8.4	2.301	|	I | O |	|	|	6.7
1199	2.6	8.2	2.293	|	I | O |	|	|	6.7
1200	2.6	8.1	2.285	|	I | O |	|	|	6.7
1201	2.6	7.9	2.278	|	I | O |	|	|	6.7
1202	2.5	7.7	2.271	|	I | O |	|	|	6.7
1203	2.5	7.5	2.264	|	I | O |	|	|	6.6
1204	2.4	7.3	2.257	|	I | O |	|	|	6.6
1205	2.4	7.2	2.250	|	I | O |	|	|	6.6
1206	2.4	7.0	2.244	|	I |O |	|	|	6.6
1207	2.3	6.8	2.237	|	I |O |	|	|	6.6
1208	2.3	6.7	2.231	|	I |O |	|	|	6.6

1209	2.3	6.5	2.225	I	O			6.6
1210	2.2	6.4	2.219	I	O			6.5
1211	2.2	6.2	2.214	I	O			6.5
1212	2.2	6.1	2.208	I	O			6.5
1213	2.2	6.0	2.203	I	O			6.5
1214	2.1	5.8	2.198	I	O			6.5
1215	2.1	5.7	2.193	I	O			6.5
1216	2.1	5.6	2.188	I	O			6.5
1217	2.1	5.4	2.183	I	O			6.5
1218	2.1	5.3	2.179	I	O			6.5
1219	2.0	5.2	2.174	I	O			6.4
1220	2.0	5.1	2.170	I	O			6.4
1221	2.0	5.0	2.166	I	O			6.4
1222	2.0	4.9	2.162	I	O			6.4
1223	2.0	4.8	2.158	I	O			6.4
1224	1.9	4.7	2.154	I	O			6.4
1225	1.9	4.6	2.150	I	O			6.4
1226	1.9	4.5	2.146	I	O			6.4
1227	1.9	4.4	2.143	I	O			6.4
1228	1.9	4.3	2.139	I	O			6.4
1229	1.9	4.2	2.136	I	O			6.4
1230	1.8	4.2	2.133	I	O			6.4
1231	1.8	4.1	2.130	I	O			6.3
1232	1.8	4.0	2.126	I	O			6.3
1233	1.8	3.9	2.124	I	O			6.3
1234	1.8	3.8	2.121	I	O			6.3
1235	1.8	3.8	2.118	I	O			6.3
1236	1.8	3.7	2.115	I	O			6.3
1237	1.7	3.6	2.112	I	O			6.3
1238	1.7	3.6	2.110	I	O			6.3
1239	1.6	3.5	2.107	I	O			6.3
1240	1.6	3.4	2.105	I	O			6.3
1241	1.6	3.4	2.102	I	O			6.3
1242	1.6	3.3	2.100	I	O			6.3
1243	1.6	3.3	2.097	I	O			6.3
1244	1.6	3.2	2.095	I	O			6.3
1245	1.6	3.1	2.093	I	O			6.3
1246	1.6	3.1	2.091	I	O			6.3
1247	1.5	3.0	2.089	I	O			6.3
1248	1.5	3.0	2.087	I	O			6.3
1249	1.5	2.9	2.085	I	O			6.2
1250	1.5	2.9	2.083	I	O			6.2
1251	1.5	2.8	2.081	I	O			6.2
1252	1.5	2.8	2.079	I	O			6.2
1253	1.5	2.7	2.077	I	O			6.2
1254	1.4	2.7	2.076	I	O			6.2
1255	1.4	2.7	2.074	I	O			6.2
1256	1.4	2.6	2.072	I	O			6.2

1257	1.4	2.6	2.070	I O				6.2
1258	1.4	2.5	2.069	I O				6.2
1259	1.4	2.5	2.067	I O				6.2
1260	1.3	2.4	2.066	I O				6.2
1261	1.3	2.4	2.064	I O				6.2
1262	1.3	2.4	2.063	I O				6.2
1263	1.3	2.3	2.061	I O				6.2
1264	1.3	2.3	2.060	I O				6.2
1265	1.3	2.3	2.058	I O				6.2
1266	1.3	2.2	2.057	I O				6.2
1267	1.3	2.2	2.056	I O				6.2
1268	1.3	2.2	2.055	I O				6.2
1269	1.3	2.1	2.054	I O				6.2
1270	1.3	2.1	2.052	IO				6.2
1271	1.3	2.1	2.051	IO				6.2
1272	1.3	2.1	2.050	IO				6.2
1273	1.3	2.0	2.049	IO				6.2
1274	1.3	2.0	2.048	IO				6.2
1275	1.2	2.0	2.047	IO				6.2
1276	1.2	1.9	2.046	IO				6.2
1277	1.2	1.9	2.045	IO				6.2
1278	1.2	1.9	2.044	IO				6.2
1279	1.2	1.9	2.043	IO				6.2
1280	1.2	1.8	2.042	IO				6.2
1281	1.2	1.8	2.041	IO				6.2
1282	1.2	1.8	2.041	IO				6.2
1283	1.2	1.8	2.040	IO				6.2
1284	1.2	1.8	2.039	IO				6.1
1285	1.2	1.7	2.038	IO				6.1
1286	1.2	1.7	2.038	IO				6.1
1287	1.2	1.7	2.037	IO				6.1
1288	1.2	1.7	2.036	IO				6.1
1289	1.2	1.7	2.035	IO				6.1
1290	1.2	1.7	2.035	IO				6.1
1291	1.2	1.6	2.034	IO				6.1
1292	1.2	1.6	2.034	IO				6.1
1293	1.2	1.6	2.033	IO				6.1
1294	1.2	1.6	2.032	IO				6.1
1295	1.2	1.6	2.032	IO				6.1
1296	1.1	1.6	2.031	IO				6.1
1297	1.1	1.5	2.031	IO				6.1
1298	1.1	1.5	2.030	IO				6.1
1299	1.1	1.5	2.029	IO				6.1
1300	1.1	1.5	2.029	IO				6.1
1310	1.1	1.4	2.024	O				6.1
1320	1.1	1.3	2.021	O				6.1
1330	1.0	1.2	2.018	O				6.1
1340	0.9	1.1	2.015	O				6.1

1350	0.9	1.1	2.012	|O	|	|	|	6.1
1360	0.8	1.0	2.009	|O	|	|	|	6.1
1370	0.8	0.9	2.007	|O	|	|	|	6.1
1380	0.7	0.9	2.005	IO	|	|	|	6.1
1390	0.6	0.8	2.002	IO	|	|	|	6.1
1400	0.6	0.7	1.999	IO	|	|	|	6.1
1420	0.6	0.7	1.996	O	|	|	|	6.1
1440	0.6	0.6	1.995	O	|	|	|	6.1
1460	0.5	0.6	1.993	O	|	|	|	6.1
1500	0.5	0.5	1.990	O	|	|	|	6.0

Remaining water in basin = 1.99 (Ac.Ft)
Peak flow out of basin = 12.76(CFS)
Peak flow time = 1179 Min., time interval # = 65
Maximum depth in basin = 7.03(Ft.)

PROPOSED CONDITION
RETAR PROGRAM
OUTPUT DATA FOR
5-yrs
@ SUB-AREA "20A"

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1997-2004 Version 6.4

Study Date : 08/15/18 Input hydrograph file name : 5prcvs.hyd
Output hydrograph file name: proposed5yrhyd.hin

Program computation of outflow v. depth

****
CALCULATED OUTFLOW DATA AT DEPTH = 1.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 2.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 3.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 4.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 5.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 6.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

```
************************************************************
CALCULATED OUTFLOW DATA AT DEPTH =    7.00(Ft.)
************************************************************
Pipe length  =     1.00(Ft.)   Elevation difference =   0.10(Ft.)
Manning's N = 0.013   No. of pipes = 1
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    11.750(CFS)
Normal flow depth in pipe =    5.31(In.)
Flow top width inside pipe =   30.12(In.)
Critical depth could not be calculated.
Calculated flow rate through pipe(s) =     11.750(CFS)

Total outflow at this depth =     11.75(CFS)


************************************************************
CALCULATED OUTFLOW DATA AT DEPTH =    8.00(Ft.)
************************************************************
Pipe length  =     1.00(Ft.)   Elevation difference =   0.10(Ft.)
Manning's N = 0.013   No. of pipes = 1
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    44.725(CFS)
Normal flow depth in pipe =   10.17(In.)
Flow top width inside pipe =   39.23(In.)
Critical Depth =    2.00(Ft.)
Calculated flow rate through pipe(s) =     44.725(CFS)

Total outflow at this depth =     44.72(CFS)


************************************************************
CALCULATED OUTFLOW DATA AT DEPTH =    9.00(Ft.)
************************************************************
Pipe length  =     1.00(Ft.)   Elevation difference =   0.10(Ft.)
Manning's N = 0.013   No. of pipes = 1
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    98.088(CFS)
Normal flow depth in pipe =   15.15(In.)
Flow top width inside pipe =   44.62(In.)
Critical Depth =    3.00(Ft.)
Calculated flow rate through pipe(s) =     98.088(CFS)

Total outflow at this depth =     98.09(CFS)


************************************************************
```

CALCULATED OUTFLOW DATA AT DEPTH = 10.00(Ft.)

****

Pipe length = 1.00(Ft.) Elevation difference = 0.10(Ft.)
Manning's N = 0.013 No. of pipes = 1
Given pipe size = 48.00(In.)
NOTE: Assuming free outlet flow.
NOTE: Normal flow is pressure flow.
The total friction loss through the pipe is 4.100(Ft.)
Pipe friction loss = 0.013(Ft.)
Minor friction loss = 4.084(Ft.) K-factor = 1.50
Maximum capacity of pipe(s) = 0.00(CFS)
Calculated flow rate through pipe(s) = 166.399(CFS)

Total outflow at this depth = 166.40(CFS)

Hydrograph time unit varies
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data @ 1 Min. Intervals:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.240	0.000	0.240	0.240
2.000	0.520	0.000	0.520	0.520
3.000	0.830	0.000	0.830	0.830
4.000	1.170	0.000	1.170	1.170
5.000	1.550	0.000	1.550	1.550
6.000	1.970	0.000	1.970	1.970
7.000	2.430	11.750	2.422	2.438
8.000	2.930	44.725	2.899	2.961
9.000	3.470	98.088	3.402	3.538
10.000	4.050	166.399	3.935	4.165

Hydrograph Detention Basin Routing
Hydrograph at 4650 20 A Storm Day: 4 Drainage Area = 48.40
Total flood hydrograph volume this storm day = 5.97 Ac. Ft.

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Min)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 18.1 36.3 54.4 72.6	Depth (Ft.)
0	0.0	0.0	0.000	O	0.0
100	1.2	0.0	0.083	O	0.3
200	1.3	0.0	0.256	O	1.1
300	1.3	0.0	0.435	O	1.7
400	1.4	0.0	0.621	O	2.3
500	1.6	0.0	0.828	O	3.0
600	1.8	0.0	1.062	O	3.7
700	2.0	0.0	1.324	O	4.4
800	2.2	0.0	1.613	O	5.2
900	2.5	0.0	1.937	OI	5.9
1000	3.1	2.8	2.081	|O	6.2
1050	3.8	3.4	2.104	|O	6.3
1100	5.9	4.9	2.160	| O	6.4
1110	8.3	5.6	2.189	| OI	6.5
1120	10.9	6.8	2.238	| OI	6.6
1130	13.6	8.5	2.303	| O I	6.7
1131	13.9	8.7	2.310	| O I |	6.7
1132	14.3	8.9	2.318	| O I |	6.8
1133	14.7	9.1	2.326	| O I |	6.8
1134	15.2	9.3	2.334	| O I |	6.8
1135	15.7	9.5	2.343	| O I |	6.8
1136	16.2	9.8	2.352	| O I|	6.8
1137	16.8	10.0	2.361	| O I|	6.9
1138	17.5	10.3	2.371	| O I|	6.9
1139	18.2	10.5	2.382	| O I	6.9
1140	18.9	10.8	2.394	| O I	6.9
1141	19.7	11.1	2.406	| O I	6.9
1142	20.6	11.5	2.418	| O |I	7.0
1143	21.6	11.9	2.432	| O |I	7.0
1144	22.7	12.8	2.446	| O | I	7.0
1145	24.0	13.8	2.461	| O | I	7.1
1146	25.5	14.8	2.476	| O | I	7.1
1147	27.2	15.9	2.493	| O| I	7.1
1148	29.1	17.0	2.510	| O| I	7.2
1149	32.5	18.4	2.531	| O I |	7.2
1150	38.3	20.1	2.557	| O I	7.3
1151	46.0	22.4	2.591	| |O | I |	7.3
1152	54.6	25.2	2.633	| | O | I |	7.4
1153	63.7	28.5	2.684	| | O | | I |	7.5
1154	70.4	32.2	2.739	| | O | | I|	7.6
1155	72.6	35.7	2.793	| | O| | I	7.7
1156	71.0	38.7	2.839	| | |O | I|	7.8
1157	66.8	41.2	2.876	| | | O | I |	7.9
1158	61.2	42.9	2.903	| | | O | I |	7.9
1159	54.9	44.0	2.918	| | | O I |	8.0
1160	48.1	44.3	2.924	| | | O I |	8.0

1161	41.9	44.1	2.921	|	|	| IO	|	|	8.0
1162	36.2	43.4	2.910	|	|	I| O	|	|	8.0
1163	31.0	42.3	2.894	|	| I	| O	|	|	7.9
1164	26.6	41.0	2.873	|	| I	| O	|	|	7.9
1165	22.7	39.4	2.849	|	| I	|O	|	|	7.8
1166	19.5	37.7	2.823	|	I	O	|	|	7.8
1167	17.0	35.9	2.796	|	I|	O|	|	|	7.7
1168	14.9	34.0	2.768	|	I |	O|	|	|	7.7
1169	13.1	32.2	2.740	|	I |	O |	|	|	7.6
1170	11.8	30.4	2.713	|	I |	O |	|	|	7.6
1171	10.6	28.7	2.687	|	I |	O |	|	|	7.5
1172	9.7	27.1	2.662	|	I |	O |	|	|	7.5
1173	8.9	25.5	2.638	|	I |	O |	|	|	7.4
1174	8.2	24.0	2.616	|	I |	O |	|	|	7.4
1175	7.7	22.6	2.594	|	I |	O |	|	|	7.3
1176	7.2	21.2	2.574	|	I |	O |	|	|	7.3
1177	6.8	20.0	2.555	|	I |	O |	|	|	7.2
1178	6.4	18.8	2.537	|	I |	O |	|	|	7.2
1179	6.0	17.7	2.520	|	I |	O|	|	|	7.2
1180	5.8	16.7	2.504	|	I |	O|	|	|	7.1
1181	5.5	15.7	2.490	|	I |	O |	|	|	7.1
1182	5.2	14.8	2.476	|	I |	O |	|	|	7.1
1183	5.0	13.9	2.463	|	I |	O |	|	|	7.1
1184	4.7	13.1	2.451	|	I |	O |	|	|	7.0
1185	4.6	12.4	2.440	|	I |	O |	|	|	7.0
1186	4.4	11.7	2.429	|I	|	O |	|	|	7.0
1187	4.3	11.5	2.419	|I	|	O |	|	|	7.0
1188	4.1	11.2	2.409	|I	|	O |	|	|	7.0
1189	4.0	11.0	2.399	|I	|	O |	|	|	6.9
1190	3.9	10.7	2.390	|I	|	O |	|	|	6.9
1191	3.9	10.5	2.380	|I	|	O |	|	|	6.9
1192	3.8	10.3	2.371	|I	|	O |	|	|	6.9
1193	3.7	10.0	2.363	|I	|	O |	|	|	6.9
1194	3.7	9.8	2.354	|I	|	O |	|	|	6.8
1195	3.6	9.6	2.346	|I	|	O |	|	|	6.8
1196	3.6	9.4	2.337	|I	|	O |	|	|	6.8
1197	3.5	9.2	2.330	|I	|	O |	|	|	6.8
1198	3.5	9.0	2.322	|I	O	|	|	|	6.8
1199	3.4	8.8	2.314	|I	O	|	|	|	6.7
1200	3.4	8.6	2.307	|I	O	|	|	|	6.7
1201	3.4	8.4	2.300	|I	O	|	|	|	6.7
1202	3.3	8.2	2.293	|I	O	|	|	|	6.7
1203	3.3	8.1	2.286	|I	O	|	|	|	6.7
1204	3.3	7.9	2.280	|I	O	|	|	|	6.7
1205	3.2	7.8	2.273	|I	O	|	|	|	6.7
1206	3.2	7.6	2.267	|I	O	|	|	|	6.6
1207	3.2	7.4	2.261	|I	O	|	|	|	6.6
1208	3.1	7.3	2.255	|I	O	|	|	|	6.6

1209	3.1	7.1	2.250	I O				6.6
1210	3.1	7.0	2.244	I O				6.6
1211	3.0	6.9	2.239	I O				6.6
1212	3.0	6.7	2.234	IO				6.6
1213	3.0	6.6	2.229	IO				6.6
1214	3.0	6.5	2.224	IO				6.6
1215	2.9	6.4	2.219	IO				6.5
1216	2.9	6.2	2.214	IO				6.5
1217	2.9	6.1	2.210	IO				6.5
1218	2.9	6.0	2.205	IO				6.5
1219	2.9	5.9	2.201	IO				6.5
1220	2.8	5.8	2.197	IO				6.5
1221	2.8	5.7	2.193	IO				6.5
1222	2.8	5.6	2.189	IO				6.5
1223	2.8	5.5	2.185	IO				6.5
1224	2.7	5.4	2.181	IO				6.5
1225	2.7	5.3	2.178	IO				6.5
1226	2.7	5.2	2.174	IO				6.4
1227	2.7	5.1	2.171	IO				6.4
1228	2.7	5.0	2.167	IO				6.4
1229	2.6	5.0	2.164	IO				6.4
1230	2.6	4.9	2.161	IO				6.4
1231	2.6	4.8	2.158	IO				6.4
1232	2.6	4.7	2.155	IO				6.4
1233	2.6	4.6	2.152	IO				6.4
1234	2.5	4.6	2.149	IO				6.4
1235	2.5	4.5	2.146	O				6.4
1236	2.5	4.4	2.144	O				6.4
1237	2.5	4.4	2.141	O				6.4
1238	2.5	4.3	2.138	O				6.4
1239	2.5	4.2	2.136	O				6.4
1240	2.5	4.2	2.134	O				6.4
1241	2.4	4.1	2.131	O				6.4
1242	2.4	4.1	2.129	O				6.3
1243	2.4	4.0	2.127	O				6.3
1244	2.4	3.9	2.125	O				6.3
1245	2.4	3.9	2.122	O				6.3
1246	2.4	3.8	2.120	O				6.3
1247	2.4	3.8	2.118	O				6.3
1248	2.4	3.7	2.117	O				6.3
1249	2.3	3.7	2.115	O				6.3
1250	2.3	3.6	2.113	O				6.3
1251	2.3	3.6	2.111	O				6.3
1252	2.3	3.6	2.109	O				6.3
1253	2.3	3.5	2.107	O				6.3
1254	2.3	3.5	2.106	O				6.3
1255	2.3	3.4	2.104	O				6.3
1256	2.3	3.4	2.103	O				6.3

1257	2.2	3.3	2.101	IO				6.3
1258	2.2	3.3	2.100	IO				6.3
1259	2.2	3.3	2.098	IO				6.3
1260	2.2	3.2	2.097	IO				6.3
1261	2.2	3.2	2.095	IO				6.3
1262	2.2	3.2	2.094	IO				6.3
1263	2.2	3.1	2.093	IO				6.3
1264	2.2	3.1	2.091	IO				6.3
1265	2.2	3.1	2.090	IO				6.3
1266	2.1	3.0	2.089	IO				6.3
1267	2.1	3.0	2.087	IO				6.3
1268	2.1	3.0	2.086	IO				6.3
1269	2.1	2.9	2.085	IO				6.3
1270	2.1	2.9	2.084	IO				6.2
1271	2.1	2.9	2.083	IO				6.2
1272	2.1	2.9	2.082	IO				6.2
1273	2.1	2.8	2.081	IO				6.2
1274	2.1	2.8	2.080	IO				6.2
1275	2.1	2.8	2.079	IO				6.2
1276	2.1	2.8	2.078	IO				6.2
1277	2.1	2.7	2.077	IO				6.2
1278	2.0	2.7	2.076	IO				6.2
1279	2.0	2.7	2.075	IO				6.2
1280	2.0	2.7	2.074	IO				6.2
1281	2.0	2.6	2.073	IO				6.2
1282	2.0	2.6	2.072	IO				6.2
1283	2.0	2.6	2.072	IO				6.2
1284	2.0	2.6	2.071	IO				6.2
1285	2.0	2.6	2.070	IO				6.2
1286	2.0	2.5	2.069	IO				6.2
1287	2.0	2.5	2.068	IO				6.2
1288	2.0	2.5	2.068	IO				6.2
1289	2.0	2.5	2.067	IO				6.2
1290	1.9	2.5	2.066	IO				6.2
1291	1.9	2.4	2.066	IO				6.2
1292	1.9	2.4	2.065	IO				6.2
1293	1.9	2.4	2.064	IO				6.2
1294	1.9	2.4	2.063	IO				6.2
1295	1.9	2.4	2.063	IO				6.2
1296	1.9	2.4	2.062	IO				6.2
1297	1.9	2.3	2.062	IO				6.2
1298	1.9	2.3	2.061	IO				6.2
1299	1.9	2.3	2.060	IO				6.2
1300	1.9	2.3	2.060	IO				6.2
1310	1.8	2.2	2.055	O				6.2
1320	1.8	2.1	2.050	O				6.2
1330	1.7	2.0	2.047	O				6.2
1340	1.6	1.9	2.043	O				6.2

1350	1.5	1.8	2.039	O	|	|	|	|	6.2
1360	1.5	1.7	2.036	O	|	|	|	|	6.1
1370	1.4	1.6	2.033	O	|	|	|	|	6.1
1380	1.3	1.5	2.030	O	|	|	|	|	6.1
1390	1.3	1.5	2.027	O	|	|	|	|	6.1
1400	1.3	1.4	2.025	O	|	|	|	|	6.1
1420	1.2	1.3	2.022	O	|	|	|	|	6.1
1440	1.2	1.3	2.019	O	|	|	|	|	6.1
1460	1.1	1.2	2.017	O	|	|	|	|	6.1
1500	1.1	1.1	2.013	O	|	|	|	|	6.1

Remaining water in basin = 2.01 (Ac.Ft)
Peak flow out of basin = 44.32(CFS)
Peak flow time = 1160 Min., time interval # = 46
Maximum depth in basin = 7.99(Ft.)

PROPOSED CONDITION
RETAR PROGRAM
OUTPUT DATA FOR
10-yrs
@ SUB-AREA "20A"

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1997-2004 Version 6.4

Study Date : 08/15/18 Input hydrograph file name : 10prcv.hyd
Output hydrograph file name: proposed10yrhyd.hin

Program computation of outflow v. depth

****
CALCULATED OUTFLOW DATA AT DEPTH = 1.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 2.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 3.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 4.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 5.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 6.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

```
************************************************************
CALCULATED OUTFLOW DATA AT DEPTH =    7.00(Ft.)
************************************************************
Pipe length  =     1.00(Ft.)   Elevation difference =   0.10(Ft.)
Manning's N = 0.013   No. of pipes = 1
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    11.750(CFS)
Normal flow depth in pipe =    5.31(In.)
Flow top width inside pipe =   30.12(In.)
Critical depth could not be calculated.
Calculated flow rate through pipe(s) =     11.750(CFS)

Total outflow at this depth =     11.75(CFS)


************************************************************
CALCULATED OUTFLOW DATA AT DEPTH =    8.00(Ft.)
************************************************************
Pipe length  =     1.00(Ft.)   Elevation difference =   0.10(Ft.)
Manning's N = 0.013   No. of pipes = 1
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    44.725(CFS)
Normal flow depth in pipe =   10.17(In.)
Flow top width inside pipe =   39.23(In.)
Critical Depth =    2.00(Ft.)
Calculated flow rate through pipe(s) =     44.725(CFS)

Total outflow at this depth =     44.72(CFS)


************************************************************
CALCULATED OUTFLOW DATA AT DEPTH =    9.00(Ft.)
************************************************************
Pipe length  =     1.00(Ft.)   Elevation difference =   0.10(Ft.)
Manning's N = 0.013   No. of pipes = 1
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    98.088(CFS)
Normal flow depth in pipe =   15.15(In.)
Flow top width inside pipe =   44.62(In.)
Critical Depth =    3.00(Ft.)
Calculated flow rate through pipe(s) =     98.088(CFS)

Total outflow at this depth =     98.09(CFS)


************************************************************
```

CALCULATED OUTFLOW DATA AT DEPTH = 10.00(Ft.)

****

Pipe length = 1.00(Ft.) Elevation difference = 0.10(Ft.)
Manning's N = 0.013 No. of pipes = 1
Given pipe size = 48.00(In.)
NOTE: Assuming free outlet flow.
NOTE: Normal flow is pressure flow.
The total friction loss through the pipe is 4.100(Ft.)
Pipe friction loss = 0.013(Ft.)
Minor friction loss = 4.084(Ft.) K-factor = 1.50
Maximum capacity of pipe(s) = 0.00(CFS)
Calculated flow rate through pipe(s) = 166.399(CFS)

Total outflow at this depth = 166.40(CFS)

Hydrograph time unit varies
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data @ 1 Min. Intervals:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.240	0.000	0.240	0.240
2.000	0.520	0.000	0.520	0.520
3.000	0.830	0.000	0.830	0.830
4.000	1.170	0.000	1.170	1.170
5.000	1.550	0.000	1.550	1.550
6.000	1.970	0.000	1.970	1.970
7.000	2.430	11.750	2.422	2.438
8.000	2.930	44.725	2.899	2.961
9.000	3.470	98.088	3.402	3.538
10.000	4.050	166.399	3.935	4.165

Hydrograph Detention Basin Routing
Hydrograph at 4650 20 A Storm Day: 4 Drainage Area = 48.40
Total flood hydrograph volume this storm day = 7.76 Ac. Ft.

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Min)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 26.4 52.8 79.2 105.6	Depth (Ft.)
0	0.0	0.0	0.000	O	0.0
100	1.6	0.0	0.111	O	0.5
200	1.6	0.0	0.332	O	1.3
300	1.8	0.0	0.566	O	2.1
400	1.9	0.0	0.821	O	3.0
500	2.1	0.0	1.096	O	3.8
600	2.2	0.0	1.393	O	4.6
700	2.4	0.0	1.710	O	5.4
800	2.7	1.6	2.031	O	6.1
900	3.1	3.0	2.086	O	6.3
1000	3.7	3.5	2.108	|O	6.3
1050	5.4	4.6	2.150	|O	6.4
1100	8.9	7.1	2.250	| O	6.6
1110	12.1	8.2	2.292	| OI	6.7
1120	15.4	9.9	2.359	| OI	6.8
1130	18.5	12.6	2.443	| O I	7.0
1131	19.0	13.1	2.451	| O I	7.0
1132	19.5	13.7	2.459	| OI	7.1
1133	20.1	14.2	2.468	| O I	7.1
1134	20.8	14.8	2.477	| O I	7.1
1135	21.6	15.4	2.485	| O I	7.1
1136	22.5	16.0	2.495	| O I	7.1
1137	23.4	16.7	2.505	| O I|	7.1
1138	24.4	17.3	2.515	| O I|	7.2
1139	25.4	18.0	2.525	| O I|	7.2
1140	26.4	18.8	2.536	| O I	7.2
1141	27.5	19.5	2.548	| O I	7.2
1142	28.8	20.3	2.560	| O I	7.3
1143	30.2	21.2	2.573	| O |I	7.3
1144	31.7	22.1	2.587	| O |I	7.3
1145	33.6	23.1	2.602	| O | I	7.3
1146	35.9	24.2	2.619	| O| I	7.4
1147	38.5	25.5	2.638	| O| I	7.4
1148	41.1	26.8	2.658	| O I	7.5
1149	46.3	28.5	2.684	| O I	7.5
1150	55.7	30.9	2.720	| |O I	7.6
1151	68.2	34.1	2.769	| | O | I	7.7
1152	82.4	38.3	2.833	| | O | I	7.8
1153	97.0	43.4	2.910	| | O | I	8.0
1154	105.6	50.7	2.991	| | O| I	8.1
1155	105.1	57.7	3.061	| | |O I|	8.2
1156	98.0	62.8	3.113	| | | O | I |	8.3
1157	86.6	65.8	3.144	| | | O | I |	8.4
1158	72.8	66.7	3.153	| | | O I |	8.4
1159	59.9	65.8	3.144	| | | IO |	8.4
1160	49.2	63.7	3.122	| | I | O |	8.4

1161	40.3	60.7	3.092	|	I	O |		8.3
1162	33.2	57.2	3.057	|	I	O |		8.2
1163	27.7	53.5	3.018	|	I	O |		8.2
1164	23.5	49.6	2.980	|	I	O |		8.1
1165	20.3	45.9	2.942	|	I	O |		8.0
1166	18.0	43.1	2.905	|	I	O |		8.0
1167	16.3	40.8	2.870	|	I	O |		7.9
1168	15.0	38.5	2.836	|	I	O |		7.8
1169	13.9	36.4	2.804	|	I	O |		7.7
1170	13.0	34.4	2.773	|	I	O |		7.7
1171	12.3	32.4	2.744	|	I	O |		7.6
1172	11.7	30.6	2.716	|	I	O |		7.6
1173	11.1	28.9	2.691	|	I	O |		7.5
1174	10.5	27.3	2.666	|	I	O |		7.5
1175	10.0	25.8	2.644	|	I	O |		7.4
1176	9.5	24.4	2.622	|	I	O |		7.4
1177	9.1	23.1	2.602	|	I	O |		7.3
1178	8.7	21.8	2.583	|	I	O |		7.3
1179	8.4	20.7	2.565	|	I	O |		7.3
1180	8.0	19.6	2.549	|	I	O |		7.2
1181	7.7	18.5	2.533	|	I	O |		7.2
1182	7.4	17.6	2.518	|	I	O |		7.2
1183	7.2	16.7	2.505	|	I	O |		7.1
1184	6.9	15.8	2.492	|	I	O |		7.1
1185	6.7	15.0	2.480	|	I	O |		7.1
1186	6.4	14.3	2.468	|	I	O |		7.1
1187	6.2	13.6	2.458	|	I	O |		7.1
1188	6.0	12.9	2.448	|	I	O |		7.0
1189	5.7	12.3	2.438	|	I	O |		7.0
1190	5.5	11.7	2.429	|	I	O |		7.0
1191	5.3	11.5	2.421	|	I	O |		7.0
1192	5.2	11.3	2.412	|	I	O |		7.0
1193	5.0	11.1	2.403	|	I	O |		6.9
1194	4.8	10.9	2.395	|	I	O |		6.9
1195	4.7	10.6	2.387	|	I	O |		6.9
1196	4.5	10.4	2.378	|	I	O |		6.9
1197	4.4	10.2	2.370	|	I	O |		6.9
1198	4.3	10.0	2.362	|	I	O |		6.9
1199	4.2	9.8	2.354	|	I	O |		6.8
1200	4.1	9.6	2.347	|	I	O |		6.8
1201	4.1	9.4	2.339	|	I	O |		6.8
1202	4.0	9.2	2.332	|	I	O |		6.8
1203	4.0	9.1	2.325	|	I	O |		6.8
1204	3.9	8.9	2.318	|	I	O |		6.8
1205	3.9	8.7	2.311	|	I	O |		6.7
1206	3.8	8.5	2.304	|	I	O |		6.7
1207	3.8	8.4	2.298	|	I	O |		6.7
1208	3.8	8.2	2.292	|	I	O |		6.7

1209	3.7	8.1	2.286	|IO	|	|	|	6.7
1210	3.7	7.9	2.280	|IO	|	|	|	6.7
1211	3.7	7.8	2.274	|IO	|	|	|	6.7
1212	3.6	7.6	2.268	|IO	|	|	|	6.6
1213	3.6	7.5	2.263	|IO	|	|	|	6.6
1214	3.6	7.3	2.258	|IO	|	|	|	6.6
1215	3.6	7.2	2.253	|IO	|	|	|	6.6
1216	3.5	7.1	2.248	|IO	|	|	|	6.6
1217	3.5	7.0	2.243	|IO	|	|	|	6.6
1218	3.5	6.8	2.238	|IO	|	|	|	6.6
1219	3.4	6.7	2.233	|IO	|	|	|	6.6
1220	3.4	6.6	2.229	|IO	|	|	|	6.6
1221	3.4	6.5	2.224	|O	|	|	|	6.6
1222	3.4	6.4	2.220	|O	|	|	|	6.5
1223	3.3	6.3	2.216	|O	|	|	|	6.5
1224	3.3	6.2	2.212	|O	|	|	|	6.5
1225	3.3	6.1	2.208	|O	|	|	|	6.5
1226	3.2	6.0	2.204	IO	|	|	|	6.5
1227	3.2	5.9	2.200	IO	|	|	|	6.5
1228	3.2	5.8	2.197	IO	|	|	|	6.5
1229	3.2	5.7	2.193	IO	|	|	|	6.5
1230	3.2	5.6	2.190	IO	|	|	|	6.5
1231	3.1	5.5	2.187	IO	|	|	|	6.5
1232	3.1	5.4	2.183	IO	|	|	|	6.5
1233	3.1	5.4	2.180	IO	|	|	|	6.5
1234	3.1	5.3	2.177	IO	|	|	|	6.4
1235	3.1	5.2	2.174	IO	|	|	|	6.4
1236	3.0	5.1	2.171	IO	|	|	|	6.4
1237	3.0	5.1	2.168	IO	|	|	|	6.4
1238	3.0	5.0	2.165	IO	|	|	|	6.4
1239	3.0	4.9	2.163	IO	|	|	|	6.4
1240	3.0	4.9	2.160	IO	|	|	|	6.4
1241	3.0	4.8	2.158	IO	|	|	|	6.4
1242	3.0	4.7	2.155	IO	|	|	|	6.4
1243	2.9	4.7	2.153	IO	|	|	|	6.4
1244	2.9	4.6	2.150	IO	|	|	|	6.4
1245	2.9	4.5	2.148	IO	|	|	|	6.4
1246	2.9	4.5	2.146	IO	|	|	|	6.4
1247	2.9	4.4	2.144	IO	|	|	|	6.4
1248	2.9	4.4	2.141	IO	|	|	|	6.4
1249	2.8	4.3	2.139	IO	|	|	|	6.4
1250	2.8	4.3	2.137	IO	|	|	|	6.4
1251	2.8	4.2	2.135	IO	|	|	|	6.4
1252	2.8	4.2	2.133	IO	|	|	|	6.4
1253	2.8	4.1	2.132	IO	|	|	|	6.4
1254	2.8	4.1	2.130	IO	|	|	|	6.3
1255	2.7	4.0	2.128	IO	|	|	|	6.3
1256	2.7	4.0	2.126	IO	|	|	|	6.3

1257	2.7	3.9	2.124	IO				6.3
1258	2.7	3.9	2.123	IO				6.3
1259	2.7	3.9	2.121	IO				6.3
1260	2.7	3.8	2.119	IO				6.3
1261	2.7	3.8	2.118	IO				6.3
1262	2.7	3.7	2.116	IO				6.3
1263	2.6	3.7	2.115	IO				6.3
1264	2.6	3.7	2.113	IO				6.3
1265	2.6	3.6	2.112	IO				6.3
1266	2.6	3.6	2.111	IO				6.3
1267	2.6	3.6	2.109	IO				6.3
1268	2.6	3.5	2.108	IO				6.3
1269	2.6	3.5	2.107	IO				6.3
1270	2.6	3.5	2.105	IO				6.3
1271	2.6	3.4	2.104	IO				6.3
1272	2.6	3.4	2.103	IO				6.3
1273	2.5	3.4	2.102	IO				6.3
1274	2.5	3.3	2.101	IO				6.3
1275	2.5	3.3	2.100	IO				6.3
1276	2.5	3.3	2.099	O				6.3
1277	2.5	3.3	2.098	O				6.3
1278	2.5	3.2	2.096	O				6.3
1279	2.5	3.2	2.095	O				6.3
1280	2.5	3.2	2.095	O				6.3
1281	2.4	3.2	2.093	O				6.3
1282	2.4	3.1	2.092	O				6.3
1283	2.4	3.1	2.091	O				6.3
1284	2.4	3.1	2.091	O				6.3
1285	2.4	3.1	2.090	O				6.3
1286	2.4	3.0	2.089	O				6.3
1287	2.4	3.0	2.088	O				6.3
1288	2.4	3.0	2.087	O				6.3
1289	2.4	3.0	2.086	O				6.3
1290	2.4	2.9	2.085	O				6.3
1291	2.4	2.9	2.085	O				6.2
1292	2.4	2.9	2.084	O				6.2
1293	2.4	2.9	2.083	O				6.2
1294	2.4	2.9	2.083	O				6.2
1295	2.3	2.9	2.082	O				6.2
1296	2.3	2.8	2.081	O				6.2
1297	2.3	2.8	2.080	O				6.2
1298	2.3	2.8	2.080	O				6.2
1299	2.3	2.8	2.079	O				6.2
1300	2.3	2.8	2.078	O				6.2
1310	2.2	2.6	2.072	O				6.2
1320	2.2	2.5	2.067	O				6.2
1330	2.1	2.4	2.063	O				6.2
1340	2.0	2.3	2.059	O				6.2

1350	2.0	2.2	2.056	O	|	|	|	|	6.2
1360	2.0	2.1	2.054	O	|	|	|	|	6.2
1370	1.9	2.1	2.051	O	|	|	|	|	6.2
1380	1.9	2.0	2.049	O	|	|	|	|	6.2
1390	1.8	2.0	2.047	O	|	|	|	|	6.2
1400	1.8	1.9	2.045	O	|	|	|	|	6.2
1420	1.7	1.8	2.042	O	|	|	|	|	6.2
1440	1.7	1.8	2.039	O	|	|	|	|	6.2
1460	1.5	1.7	2.035	O	|	|	|	|	6.1
1500	1.5	1.5	2.028	O	|	|	|	|	6.1

Remaining water in basin = 2.03 (Ac.Ft)
Peak flow out of basin = 66.72(CFS)
Peak flow time = 1158 Min., time interval # = 44
Maximum depth in basin = 8.41(Ft.)

PROPOSED CONDITION
RETAR PROGRAM
OUTPUT DATA FOR
25-yrs
@ SUB-AREA "20A"

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1997-2004 Version 6.4

Study Date : 08/15/18 Input hydrograph file name : 25prcv.hyd
Output hydrograph file name: proposed25yrhyd.hin

Program computation of outflow v. depth

****
CALCULATED OUTFLOW DATA AT DEPTH = 1.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 2.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 3.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 4.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 5.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 6.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

```
************************************************************
CALCULATED OUTFLOW DATA AT DEPTH =    7.00(Ft.)
************************************************************
Pipe length  =     1.00(Ft.)   Elevation difference =   0.10(Ft.)
Manning's N = 0.013   No. of pipes = 1
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    11.750(CFS)
Normal flow depth in pipe =    5.31(In.)
Flow top width inside pipe =   30.12(In.)
Critical depth could not be calculated.
Calculated flow rate through pipe(s) =     11.750(CFS)

Total outflow at this depth =     11.75(CFS)


************************************************************
CALCULATED OUTFLOW DATA AT DEPTH =    8.00(Ft.)
************************************************************
Pipe length  =     1.00(Ft.)   Elevation difference =   0.10(Ft.)
Manning's N = 0.013   No. of pipes = 1
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    44.725(CFS)
Normal flow depth in pipe =   10.17(In.)
Flow top width inside pipe =   39.23(In.)
Critical Depth =    2.00(Ft.)
Calculated flow rate through pipe(s) =     44.725(CFS)

Total outflow at this depth =     44.72(CFS)


************************************************************
CALCULATED OUTFLOW DATA AT DEPTH =    9.00(Ft.)
************************************************************
Pipe length  =     1.00(Ft.)   Elevation difference =   0.10(Ft.)
Manning's N = 0.013   No. of pipes = 1
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    98.088(CFS)
Normal flow depth in pipe =   15.15(In.)
Flow top width inside pipe =   44.62(In.)
Critical Depth =    3.00(Ft.)
Calculated flow rate through pipe(s) =     98.088(CFS)

Total outflow at this depth =     98.09(CFS)


************************************************************
```

CALCULATED OUTFLOW DATA AT DEPTH = 10.00(Ft.)

****

Pipe length = 1.00(Ft.) Elevation difference = 0.10(Ft.)
Manning's N = 0.013 No. of pipes = 1
Given pipe size = 48.00(In.)
NOTE: Assuming free outlet flow.
NOTE: Normal flow is pressure flow.
The total friction loss through the pipe is 4.100(Ft.)
Pipe friction loss = 0.013(Ft.)
Minor friction loss = 4.084(Ft.) K-factor = 1.50
Maximum capacity of pipe(s) = 0.00(CFS)
Calculated flow rate through pipe(s) = 166.399(CFS)

Total outflow at this depth = 166.40(CFS)

Hydrograph time unit varies
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data @ 1 Min. Intervals:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.240	0.000	0.240	0.240
2.000	0.520	0.000	0.520	0.520
3.000	0.830	0.000	0.830	0.830
4.000	1.170	0.000	1.170	1.170
5.000	1.550	0.000	1.550	1.550
6.000	1.970	0.000	1.970	1.970
7.000	2.430	11.750	2.422	2.438
8.000	2.930	44.725	2.899	2.961
9.000	3.470	98.088	3.402	3.538
10.000	4.050	166.399	3.935	4.165

Hydrograph Detention Basin Routing
Hydrograph at 4650 20 A Storm Day: 4 Drainage Area = 48.40
Total flood hydrograph volume this storm day = 10.16 Ac. Ft.

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Min)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 36.0 72.0 108.1 144.1	Depth (Ft.)
0	0.0	0.0	0.000	O	0.0
100	2.1	0.0	0.146	O	0.6
200	2.1	0.0	0.435	O	1.7
300	2.3	0.0	0.738	O	2.7
400	2.4	0.0	1.062	O	3.7
500	2.5	0.0	1.400	O	4.6
600	2.7	0.0	1.758	O	5.5
700	3.0	2.3	2.062	O	6.2
800	3.3	3.2	2.095	O	6.3
900	3.8	3.7	2.113	O	6.3
1000	5.4	5.0	2.164	|O	6.4
1050	8.3	6.9	2.239	|O	6.6
1100	12.8	10.5	2.380	| O	6.9
1110	16.9	12.0	2.435	| OI	7.0
1120	20.8	16.4	2.500	| OI	7.1
1130	24.9	20.6	2.563	| OI	7.3
1131	25.6	21.0	2.570	| OI	7.3
1132	26.2	21.4	2.577	| OI	7.3
1133	27.0	21.9	2.584	| OI	7.3
1134	28.0	22.5	2.592	| O I	7.3
1135	29.2	23.0	2.601	| OI	7.3
1136	30.5	23.7	2.611	| OI	7.4
1137	31.9	24.4	2.622	| O I|	7.4
1138	33.2	25.2	2.633	| O I|	7.4
1139	34.5	26.0	2.646	| O I|	7.4
1140	35.7	26.8	2.659	| O I|	7.5
1141	37.2	27.7	2.672	| O I	7.5
1142	38.9	28.7	2.687	| O I	7.5
1143	40.8	29.7	2.703	| O |I	7.5
1144	42.7	30.9	2.720	| O |I	7.6
1145	45.2	32.1	2.739	| O| I	7.6
1146	48.3	33.5	2.760	| O| I	7.7
1147	51.7	35.1	2.784	| O| I	7.7
1148	55.3	36.9	2.811	| O I	7.8
1149	62.9	39.1	2.845	| O I	7.8
1150	76.7	42.4	2.895	| |O |I	7.9
1151	94.5	47.9	2.963	| O | I	8.1
1152	114.2	56.4	3.048	| O | |I	8.2
1153	134.1	66.3	3.148	| O | I	8.4
1154	144.1	76.2	3.249	| O I	8.6
1155	140.0	84.3	3.331	| O I|	8.7
1156	126.3	89.7	3.385	| O | I	8.8
1157	106.8	91.9	3.407	| O I|	8.9
1158	85.1	91.0	3.398	| I O	8.9
1159	66.0	87.8	3.366	| I | O	8.8
1160	51.3	83.2	3.319	| I | O	8.7

1161	40.5	77.7	3.264	| I |O	|	|	8.6
1162	33.2	72.1	3.207	| I| O	|	|	8.5
1163	28.8	66.5	3.151	| I | O |	|	|	8.4
1164	25.9	61.4	3.098	| I | O |	|	|	8.3
1165	23.6	56.5	3.050	| I | O |	|	|	8.2
1166	21.8	52.1	3.005	| I | O |	|	|	8.1
1167	20.3	48.1	2.964	| I | O |	|	|	8.1
1168	19.0	44.5	2.926	| I |O |	|	|	8.0
1169	17.9	42.2	2.891	| I |O |	|	|	7.9
1170	16.9	40.0	2.858	| I O |	|	|	7.9
1171	16.1	37.9	2.826	| I O |	|	|	7.8
1172	15.3	35.9	2.797	| I O|	|	|	7.7
1173	14.6	34.1	2.769	| I O|	|	|	7.7
1174	13.9	32.3	2.742	| I O|	|	|	7.6
1175	13.4	30.7	2.717	| I O |	|	|	7.6
1176	12.9	29.1	2.694	| I O |	|	|	7.5
1177	12.4	27.7	2.672	| I O |	|	|	7.5
1178	12.0	26.3	2.651	| I O |	|	|	7.4
1179	11.6	25.0	2.632	| I O |	|	|	7.4
1180	11.2	23.8	2.613	| I O |	|	|	7.4
1181	10.9	22.7	2.596	| I O |	|	|	7.3
1182	10.5	21.7	2.580	| I O |	|	|	7.3
1183	10.2	20.7	2.565	| I O |	|	|	7.3
1184	9.9	19.7	2.551	| I O |	|	|	7.2
1185	9.6	18.8	2.538	| I O |	|	|	7.2
1186	9.4	18.0	2.525	| I O |	|	|	7.2
1187	9.1	17.2	2.513	| IO |	|	|	7.2
1188	8.8	16.5	2.502	|I O |	|	|	7.1
1189	8.5	15.8	2.492	|I O |	|	|	7.1
1190	8.3	15.2	2.482	|I O |	|	|	7.1
1191	8.1	14.6	2.472	|I O |	|	|	7.1
1192	7.9	14.0	2.464	|I O |	|	|	7.1
1193	7.6	13.4	2.455	|IO |	|	|	7.1
1194	7.4	12.9	2.447	|IO |	|	|	7.0
1195	7.3	12.4	2.440	|IO |	|	|	7.0
1196	7.1	11.9	2.433	|IO |	|	|	7.0
1197	6.9	11.7	2.426	|IO |	|	|	7.0
1198	6.8	11.5	2.420	|IO |	|	|	7.0
1199	6.6	11.3	2.413	|IO |	|	|	7.0
1200	6.4	11.1	2.406	|IO |	|	|	6.9
1201	6.3	11.0	2.400	|IO |	|	|	6.9
1202	6.2	10.8	2.393	|IO |	|	|	6.9
1203	6.0	10.6	2.387	|IO |	|	|	6.9
1204	5.9	10.5	2.380	|IO |	|	|	6.9
1205	5.8	10.3	2.374	|IO |	|	|	6.9
1206	5.6	10.2	2.368	|IO |	|	|	6.9
1207	5.5	10.0	2.361	|IO |	|	|	6.9
1208	5.4	9.8	2.355	|IO |	|	|	6.8

1209	5.2	9.7	2.349	|IO	|	|	|	6.8
1210	5.1	9.5	2.343	|IO	|	|	|	6.8
1211	5.0	9.4	2.337	|IO	|	|	|	6.8
1212	4.9	9.2	2.331	|IO	|	|	|	6.8
1213	4.9	9.1	2.325	|IO	|	|	|	6.8
1214	4.8	8.9	2.319	|O	|	|	|	6.8
1215	4.7	8.8	2.313	|O	|	|	|	6.7
1216	4.6	8.6	2.308	|O	|	|	|	6.7
1217	4.5	8.5	2.302	IO	|	|	|	6.7
1218	4.4	8.3	2.296	IO	|	|	|	6.7
1219	4.3	8.2	2.291	IO	|	|	|	6.7
1220	4.2	8.1	2.286	IO	|	|	|	6.7
1221	4.2	7.9	2.280	IO	|	|	|	6.7
1222	4.1	7.8	2.275	IO	|	|	|	6.7
1223	4.1	7.7	2.270	IO	|	|	|	6.7
1224	4.0	7.5	2.265	IO	|	|	|	6.6
1225	4.0	7.4	2.260	IO	|	|	|	6.6
1226	4.0	7.3	2.256	IO	|	|	|	6.6
1227	3.9	7.2	2.251	IO	|	|	|	6.6
1228	3.9	7.1	2.247	IO	|	|	|	6.6
1229	3.9	7.0	2.242	IO	|	|	|	6.6
1230	3.9	6.9	2.238	IO	|	|	|	6.6
1231	3.9	6.8	2.234	IO	|	|	|	6.6
1232	3.8	6.6	2.230	IO	|	|	|	6.6
1233	3.8	6.6	2.226	IO	|	|	|	6.6
1234	3.8	6.5	2.223	IO	|	|	|	6.5
1235	3.7	6.4	2.219	IO	|	|	|	6.5
1236	3.7	6.3	2.215	IO	|	|	|	6.5
1237	3.7	6.2	2.212	IO	|	|	|	6.5
1238	3.7	6.1	2.209	IO	|	|	|	6.5
1239	3.7	6.0	2.205	IO	|	|	|	6.5
1240	3.7	5.9	2.202	IO	|	|	|	6.5
1241	3.6	5.9	2.199	IO	|	|	|	6.5
1242	3.6	5.8	2.196	IO	|	|	|	6.5
1243	3.6	5.7	2.193	IO	|	|	|	6.5
1244	3.6	5.6	2.190	IO	|	|	|	6.5
1245	3.6	5.6	2.187	IO	|	|	|	6.5
1246	3.5	5.5	2.185	IO	|	|	|	6.5
1247	3.5	5.4	2.182	IO	|	|	|	6.5
1248	3.5	5.3	2.179	IO	|	|	|	6.5
1249	3.5	5.3	2.177	IO	|	|	|	6.4
1250	3.5	5.2	2.174	IO	|	|	|	6.4
1251	3.4	5.2	2.172	IO	|	|	|	6.4
1252	3.4	5.1	2.170	IO	|	|	|	6.4
1253	3.4	5.0	2.167	IO	|	|	|	6.4
1254	3.4	5.0	2.165	IO	|	|	|	6.4
1255	3.4	4.9	2.163	IO	|	|	|	6.4
1256	3.3	4.9	2.161	IO	|	|	|	6.4

1257	3.3	4.8	2.159	IO				6.4
1258	3.3	4.8	2.157	IO				6.4
1259	3.3	4.7	2.155	IO				6.4
1260	3.3	4.7	2.153	IO				6.4
1261	3.3	4.6	2.151	IO				6.4
1262	3.3	4.6	2.149	IO				6.4
1263	3.2	4.5	2.147	IO				6.4
1264	3.2	4.5	2.145	O				6.4
1265	3.2	4.4	2.144	O				6.4
1266	3.2	4.4	2.142	O				6.4
1267	3.2	4.4	2.140	O				6.4
1268	3.2	4.3	2.139	O				6.4
1269	3.2	4.3	2.137	O				6.4
1270	3.2	4.2	2.136	O				6.4
1271	3.2	4.2	2.134	O				6.4
1272	3.1	4.2	2.133	O				6.4
1273	3.1	4.1	2.132	O				6.4
1274	3.1	4.1	2.130	O				6.3
1275	3.1	4.1	2.129	O				6.3
1276	3.1	4.0	2.128	O				6.3
1277	3.1	4.0	2.126	O				6.3
1278	3.0	4.0	2.125	O				6.3
1279	3.0	3.9	2.124	O				6.3
1280	3.0	3.9	2.122	O				6.3
1281	3.0	3.9	2.121	O				6.3
1282	3.0	3.8	2.120	O				6.3
1283	3.0	3.8	2.119	O				6.3
1284	3.0	3.8	2.118	O				6.3
1285	3.0	3.7	2.117	O				6.3
1286	3.0	3.7	2.116	O				6.3
1287	3.0	3.7	2.115	O				6.3
1288	2.9	3.7	2.114	O				6.3
1289	2.9	3.6	2.113	O				6.3
1290	2.9	3.6	2.112	O				6.3
1291	2.9	3.6	2.111	O				6.3
1292	2.9	3.6	2.110	O				6.3
1293	2.9	3.5	2.109	O				6.3
1294	2.9	3.5	2.108	O				6.3
1295	2.9	3.5	2.107	O				6.3
1296	2.9	3.5	2.106	O				6.3
1297	2.8	3.5	2.105	O				6.3
1298	2.8	3.4	2.104	O				6.3
1299	2.8	3.4	2.104	O				6.3
1300	2.8	3.4	2.103	O				6.3
1310	2.7	3.2	2.095	O				6.3
1320	2.7	3.1	2.089	O				6.3
1330	2.6	2.9	2.085	O				6.2
1340	2.5	2.8	2.080	O				6.2

1350	2.5	2.7	2.077	O	|	|	|	|	6.2
1360	2.4	2.6	2.073	O	|	|	|	|	6.2
1370	2.3	2.6	2.070	O	|	|	|	|	6.2
1380	2.3	2.5	2.067	O	|	|	|	|	6.2
1390	2.2	2.4	2.064	O	|	|	|	|	6.2
1400	2.2	2.3	2.062	O	|	|	|	|	6.2
1420	2.1	2.2	2.058	O	|	|	|	|	6.2
1440	2.1	2.2	2.055	O	|	|	|	|	6.2
1460	2.0	2.1	2.052	O	|	|	|	|	6.2
1500	2.0	2.0	2.047	O	|	|	|	|	6.2

Remaining water in basin = 2.05 (Ac.Ft)
Peak flow out of basin = 91.86(CFS)
Peak flow time = 1157 Min., time interval # = 43
Maximum depth in basin = 8.88(Ft.)

PROPOSED CONDITION
RETAR PROGRAM
OUTPUT DATA FOR
50-yrs
@ SUB-AREA "20A"

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1997-2004 Version 6.4

Study Date : 08/15/18 Input hydrograph file name : 50prcv.hyd
Output hydrograph file name: proposed50yrhyd.hin

Program computation of outflow v. depth

****
CALCULATED OUTFLOW DATA AT DEPTH = 1.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 2.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 3.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 4.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 5.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 6.00(Ft.)
****
Total outflow at this depth = 0.00(CFS)

```
************************************************************
CALCULATED OUTFLOW DATA AT DEPTH =    7.00(Ft.)
************************************************************
Pipe length  =     1.00(Ft.)   Elevation difference =   0.10(Ft.)
Manning's N = 0.013   No. of pipes = 1
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    11.750(CFS)
Normal flow depth in pipe =    5.31(In.)
Flow top width inside pipe =   30.12(In.)
Critical depth could not be calculated.
Calculated flow rate through pipe(s) =     11.750(CFS)

Total outflow at this depth =     11.75(CFS)


************************************************************
CALCULATED OUTFLOW DATA AT DEPTH =    8.00(Ft.)
************************************************************
Pipe length  =     1.00(Ft.)   Elevation difference =   0.10(Ft.)
Manning's N = 0.013   No. of pipes = 1
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    44.725(CFS)
Normal flow depth in pipe =   10.17(In.)
Flow top width inside pipe =   39.23(In.)
Critical Depth =    2.00(Ft.)
Calculated flow rate through pipe(s) =     44.725(CFS)

Total outflow at this depth =     44.72(CFS)


************************************************************
CALCULATED OUTFLOW DATA AT DEPTH =    9.00(Ft.)
************************************************************
Pipe length  =     1.00(Ft.)   Elevation difference =   0.10(Ft.)
Manning's N = 0.013   No. of pipes = 1
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    98.088(CFS)
Normal flow depth in pipe =   15.15(In.)
Flow top width inside pipe =   44.62(In.)
Critical Depth =    3.00(Ft.)
Calculated flow rate through pipe(s) =     98.088(CFS)

Total outflow at this depth =     98.09(CFS)


************************************************************
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CALCULATED OUTFLOW DATA AT DEPTH = 10.00(Ft.)

****

Pipe length = 1.00(Ft.) Elevation difference = 0.10(Ft.)
Manning's N = 0.013 No. of pipes = 1
Given pipe size = 48.00(In.)
NOTE: Assuming free outlet flow.
NOTE: Normal flow is pressure flow.
The total friction loss through the pipe is 4.100(Ft.)
Pipe friction loss = 0.013(Ft.)
Minor friction loss = 4.084(Ft.) K-factor = 1.50
Maximum capacity of pipe(s) = 0.00(CFS)
Calculated flow rate through pipe(s) = 166.399(CFS)

Total outflow at this depth = 166.40(CFS)

Hydrograph time unit varies
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data @ 1 Min. Intervals:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.240	0.000	0.240	0.240
2.000	0.520	0.000	0.520	0.520
3.000	0.820	0.000	0.820	0.820
4.000	1.170	0.000	1.170	1.170
5.000	1.550	0.000	1.550	1.550
6.000	1.970	0.000	1.970	1.970
7.000	2.430	11.750	2.422	2.438
8.000	2.930	44.725	2.899	2.961
9.000	3.470	98.088	3.402	3.538
10.000	4.050	166.399	3.935	4.165

Hydrograph Detention Basin Routing
Hydrograph at 4650 20 A Storm Day: 4 Drainage Area = 48.40
Total flood hydrograph volume this storm day = 11.71 Ac. Ft.

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Min)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 42.2 84.3 126.5 168.7	Depth (Ft.)
0	0.0	0.0	0.000	O	0.0
100	2.2	0.0	0.153	O	0.6
200	2.3	0.0	0.463	O	1.8
300	2.5	0.0	0.794	O	2.9
400	2.6	0.0	1.145	O	3.9
500	2.8	0.0	1.517	O	4.9
600	3.0	0.0	1.917	O	5.9
700	3.2	3.0	2.088	O	6.3
800	3.6	3.5	2.106	O	6.3
900	4.4	4.2	2.134	O	6.4
1000	6.9	6.2	2.213	|O	6.5
1050	10.3	8.6	2.307	|O	6.7
1100	15.4	13.8	2.461	| O	7.1
1110	20.1	16.5	2.502	| O	7.1
1120	24.7	20.4	2.561	| OI	7.3
1130	29.4	24.7	2.626	| OI	7.4
1131	30.3	25.2	2.634	| OI	7.4
1132	31.0	25.7	2.641	| OI	7.4
1133	32.0	26.2	2.650	| O I	7.4
1134	33.2	26.8	2.659	| OI	7.5
1135	34.7	27.5	2.669	| OI	7.5
1136	36.2	28.3	2.681	| OI	7.5
1137	37.8	29.1	2.693	| O I|	7.5
1138	39.3	30.0	2.707	| O I|	7.6
1139	40.8	30.9	2.721	| O I|	7.6
1140	42.1	31.9	2.736	| OI|	7.6
1141	43.7	32.9	2.751	| O I	7.6
1142	45.7	34.0	2.768	| O I	7.7
1143	47.9	35.2	2.786	| O |I	7.7
1144	50.2	36.5	2.806	| O |I	7.8
1145	53.2	38.0	2.828	| O| I	7.8
1146	57.0	39.6	2.853	| O| I	7.8
1147	60.9	41.5	2.881	| O| I	7.9
1148	65.1	43.5	2.912	| O I	8.0
1149	74.2	46.9	2.952	| O I	8.0
1150	90.9	52.5	3.009	| |O |I	8.1
1151	111.9	60.1	3.085	| O | I	8.3
1152	134.6	69.6	3.181	| O |I	8.5
1153	157.7	80.8	3.295	| O| I	8.7
1154	168.7	92.0	3.408	| |O I	8.9
1155	162.9	101.6	3.500	| | O I	9.1
1156	145.1	108.1	3.555	| | O I	9.1
1157	120.7	110.0	3.571	| | O I	9.2
1158	94.9	107.7	3.552	| | I O	9.1
1159	72.3	102.4	3.507	| | I O	9.1
1160	55.5	95.8	3.447	| | I O	9.0

1161	44.2	89.2	3.380	| I O |	|	|	8.8
1162	37.2	82.6	3.313	| I| O|	|	|	8.7
1163	32.9	76.2	3.249	| I | O |	|	|	8.6
1164	29.7	70.3	3.189	| I | O |	|	|	8.5
1165	27.4	64.8	3.134	| I | O |	|	|	8.4
1166	25.4	59.8	3.083	| I | O |	|	|	8.3
1167	23.7	55.2	3.036	| I | O |	|	|	8.2
1168	22.2	51.0	2.994	| I |O |	|	|	8.1
1169	20.9	47.2	2.955	| I O |	|	|	8.0
1170	19.8	44.0	2.919	| I O |	|	|	8.0
1171	18.9	41.8	2.886	| I O|	|	|	7.9
1172	18.1	39.8	2.855	| I O|	|	|	7.8
1173	17.3	37.8	2.825	| I O|	|	|	7.8
1174	16.6	36.0	2.797	| I O |	|	|	7.7
1175	15.9	34.2	2.771	| I O |	|	|	7.7
1176	15.3	32.6	2.746	| I O |	|	|	7.6
1177	14.9	31.0	2.723	| I O |	|	|	7.6
1178	14.4	29.6	2.701	| I O |	|	|	7.5
1179	13.9	28.2	2.680	| I O |	|	|	7.5
1180	13.5	27.0	2.661	| I O |	|	|	7.5
1181	13.1	25.8	2.642	| I O |	|	|	7.4
1182	12.7	24.6	2.625	| I O |	|	|	7.4
1183	12.3	23.5	2.609	| I O |	|	|	7.4
1184	12.0	22.5	2.594	| I O |	|	|	7.3
1185	11.7	21.6	2.579	| I O |	|	|	7.3
1186	11.4	20.7	2.566	| IO |	|	|	7.3
1187	11.1	19.9	2.553	| IO |	|	|	7.2
1188	10.8	19.1	2.541	| IO |	|	|	7.2
1189	10.4	18.3	2.530	|I O |	|	|	7.2
1190	10.1	17.6	2.519	|I O |	|	|	7.2
1191	9.9	16.9	2.509	|I O |	|	|	7.2
1192	9.7	16.3	2.499	|I O |	|	|	7.1
1193	9.4	15.7	2.490	|IO |	|	|	7.1
1194	9.2	15.2	2.482	|IO |	|	|	7.1
1195	9.0	14.6	2.473	|IO |	|	|	7.1
1196	8.8	14.1	2.466	|IO |	|	|	7.1
1197	8.6	13.6	2.459	|IO |	|	|	7.1
1198	8.4	13.2	2.452	|IO |	|	|	7.0
1199	8.2	12.7	2.445	|IO |	|	|	7.0
1200	8.0	12.3	2.439	|IO |	|	|	7.0
1201	7.9	11.9	2.433	|IO |	|	|	7.0
1202	7.8	11.7	2.427	|IO |	|	|	7.0
1203	7.6	11.5	2.422	|IO |	|	|	7.0
1204	7.5	11.4	2.416	|IO |	|	|	7.0
1205	7.4	11.3	2.411	|IO |	|	|	7.0
1206	7.2	11.1	2.406	|IO |	|	|	6.9
1207	7.0	11.0	2.400	|IO |	|	|	6.9
1208	6.9	10.8	2.394	|IO |	|	|	6.9

1209	6.7	10.7	2.389	|IO	|	|	|	6.9
1210	6.6	10.6	2.383	|IO	|	|	|	6.9
1211	6.5	10.4	2.378	|O	|	|	|	6.9
1212	6.4	10.3	2.372	|O	|	|	|	6.9
1213	6.3	10.1	2.367	|O	|	|	|	6.9
1214	6.2	10.0	2.362	|O	|	|	|	6.9
1215	6.1	9.9	2.356	|O	|	|	|	6.8
1216	6.0	9.7	2.351	|O	|	|	|	6.8
1217	5.9	9.6	2.346	|O	|	|	|	6.8
1218	5.8	9.5	2.341	|O	|	|	|	6.8
1219	5.6	9.3	2.336	|O	|	|	|	6.8
1220	5.6	9.2	2.330	|O	|	|	|	6.8
1221	5.5	9.1	2.325	|O	|	|	|	6.8
1222	5.3	8.9	2.320	|O	|	|	|	6.8
1223	5.3	8.8	2.315	|O	|	|	|	6.8
1224	5.1	8.7	2.310	IO	|	|	|	6.7
1225	5.0	8.6	2.305	IO	|	|	|	6.7
1226	4.9	8.4	2.300	IO	|	|	|	6.7
1227	4.8	8.3	2.295	IO	|	|	|	6.7
1228	4.8	8.2	2.291	IO	|	|	|	6.7
1229	4.7	8.1	2.286	IO	|	|	|	6.7
1230	4.7	8.0	2.281	IO	|	|	|	6.7
1231	4.6	7.8	2.277	IO	|	|	|	6.7
1232	4.5	7.7	2.272	IO	|	|	|	6.7
1233	4.4	7.6	2.268	IO	|	|	|	6.6
1234	4.3	7.5	2.263	IO	|	|	|	6.6
1235	4.2	7.4	2.259	IO	|	|	|	6.6
1236	4.2	7.3	2.255	IO	|	|	|	6.6
1237	4.1	7.2	2.250	IO	|	|	|	6.6
1238	4.1	7.1	2.246	IO	|	|	|	6.6
1239	4.0	6.9	2.242	IO	|	|	|	6.6
1240	4.0	6.8	2.238	IO	|	|	|	6.6
1241	4.0	6.7	2.234	IO	|	|	|	6.6
1242	4.0	6.7	2.230	IO	|	|	|	6.6
1243	4.0	6.6	2.227	IO	|	|	|	6.6
1244	3.9	6.5	2.223	IO	|	|	|	6.6
1245	3.9	6.4	2.220	IO	|	|	|	6.5
1246	3.9	6.3	2.216	IO	|	|	|	6.5
1247	3.8	6.2	2.213	IO	|	|	|	6.5
1248	3.8	6.1	2.210	IO	|	|	|	6.5
1249	3.8	6.0	2.207	IO	|	|	|	6.5
1250	3.8	6.0	2.204	IO	|	|	|	6.5
1251	3.7	5.9	2.201	IO	|	|	|	6.5
1252	3.7	5.8	2.198	IO	|	|	|	6.5
1253	3.7	5.7	2.195	IO	|	|	|	6.5
1254	3.7	5.7	2.192	IO	|	|	|	6.5
1255	3.6	5.6	2.189	IO	|	|	|	6.5
1256	3.6	5.5	2.186	IO	|	|	|	6.5

1257	3.6	5.5	2.184	IO				6.5
1258	3.6	5.4	2.181	IO				6.5
1259	3.6	5.3	2.179	IO				6.5
1260	3.6	5.3	2.177	IO				6.4
1261	3.5	5.2	2.174	O				6.4
1262	3.5	5.2	2.172	O				6.4
1263	3.5	5.1	2.170	O				6.4
1264	3.5	5.0	2.167	O				6.4
1265	3.5	5.0	2.165	O				6.4
1266	3.5	4.9	2.163	O				6.4
1267	3.5	4.9	2.161	O				6.4
1268	3.4	4.8	2.159	O				6.4
1269	3.4	4.8	2.157	O				6.4
1270	3.4	4.7	2.156	O				6.4
1271	3.4	4.7	2.154	O				6.4
1272	3.4	4.6	2.152	O				6.4
1273	3.4	4.6	2.150	O				6.4
1274	3.4	4.6	2.149	O				6.4
1275	3.3	4.5	2.147	O				6.4
1276	3.3	4.5	2.145	O				6.4
1277	3.3	4.4	2.144	O				6.4
1278	3.3	4.4	2.142	O				6.4
1279	3.3	4.4	2.141	O				6.4
1280	3.3	4.3	2.139	O				6.4
1281	3.3	4.3	2.138	O				6.4
1282	3.3	4.3	2.137	O				6.4
1283	3.3	4.2	2.135	O				6.4
1284	3.2	4.2	2.134	O				6.4
1285	3.2	4.2	2.133	O				6.4
1286	3.2	4.1	2.131	O				6.4
1287	3.2	4.1	2.130	O				6.3
1288	3.2	4.1	2.129	O				6.3
1289	3.2	4.0	2.128	O				6.3
1290	3.2	4.0	2.126	O				6.3
1291	3.1	4.0	2.125	O				6.3
1292	3.2	3.9	2.124	O				6.3
1293	3.2	3.9	2.123	O				6.3
1294	3.1	3.9	2.122	O				6.3
1295	3.1	3.9	2.121	O				6.3
1296	3.1	3.8	2.120	O				6.3
1297	3.1	3.8	2.119	O				6.3
1298	3.1	3.8	2.118	O				6.3
1299	3.0	3.8	2.117	O				6.3
1300	3.0	3.7	2.116	O				6.3
1310	3.0	3.5	2.108	O				6.3
1320	2.9	3.3	2.101	O				6.3
1330	2.8	3.2	2.095	O				6.3
1340	2.7	3.1	2.090	O				6.3

1350	2.7	3.0	2.086	O	|	|	|	|	6.3
1360	2.6	2.9	2.082	O	|	|	|	|	6.2
1370	2.5	2.8	2.078	O	|	|	|	|	6.2
1380	2.5	2.7	2.075	O	|	|	|	|	6.2
1390	2.4	2.6	2.072	O	|	|	|	|	6.2
1400	2.4	2.6	2.070	O	|	|	|	|	6.2
1420	2.3	2.4	2.066	O	|	|	|	|	6.2
1440	2.2	2.3	2.062	O	|	|	|	|	6.2
1460	2.2	2.3	2.059	O	|	|	|	|	6.2
1500	2.2	2.1	2.054	O	|	|	|	|	6.2

Remaining water in basin = 2.05 (Ac.Ft)
Peak flow out of basin = 109.99(CFS)
Peak flow time = 1157 Min., time interval # = 43
Maximum depth in basin = 9.17(Ft.)

SECTION 4
LID CALCULATION
ONSITE

SECTION 4
LID HYDROCALC
CALCULATIONS PRINTOUTS

ONSITE
LID HYDROCALC
CALCULATIONS PRINTOUTS

Peak Flow Hydrologic Analysis

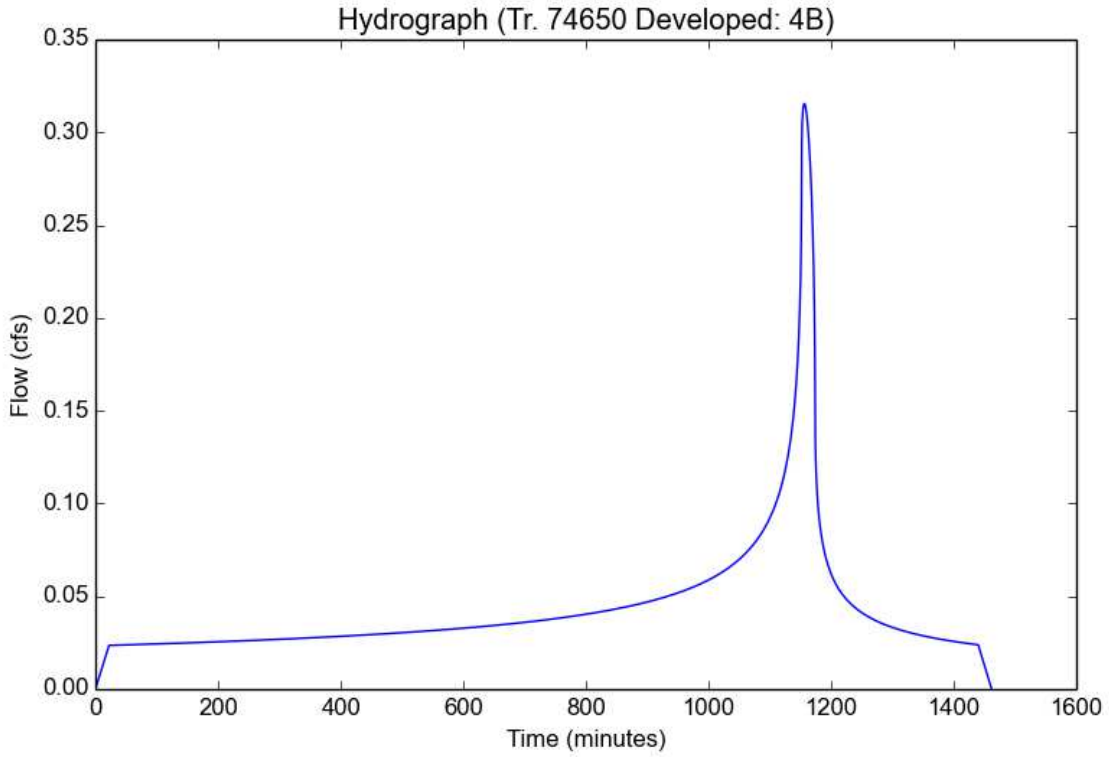
File location: H:/Oakridge/Hydrology/Analysis Data/LID/85th Percentile_Onsite .pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Tr. 74650 Developed
Subarea ID	4B
Area (ac)	2.34
Flow Path Length (ft)	220.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.04
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.04
Peak Intensity (in/hr)	0.3093
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.436
Time of Concentration (min)	22.0
Clear Peak Flow Rate (cfs)	0.3155
Burned Peak Flow Rate (cfs)	0.3155
24-Hr Clear Runoff Volume (ac-ft)	0.0877
24-Hr Clear Runoff Volume (cu-ft)	3819.802



Peak Flow Hydrologic Analysis

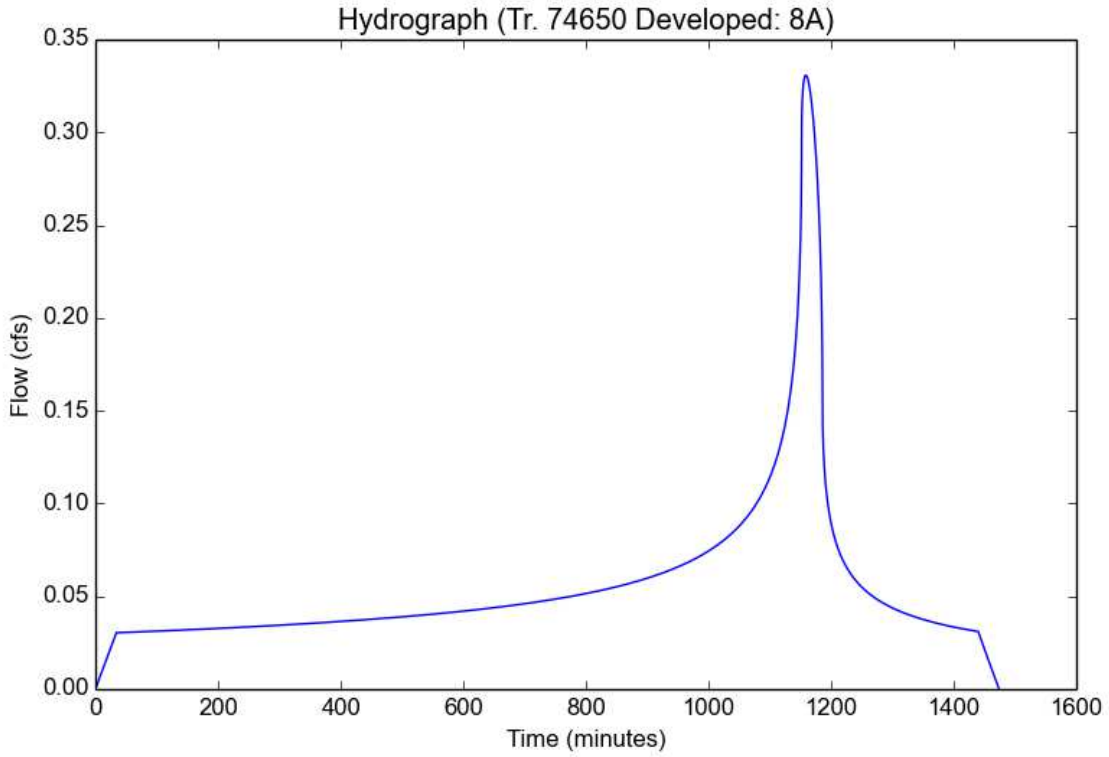
File location: H:/Oakridge/Hydrology/Analysis Data/LID/85th Percentile_Onsite .pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Tr. 74650 Developed
Subarea ID	8A
Area (ac)	3.01
Flow Path Length (ft)	770.0
Flow Path Slope (vft/hft)	0.074
85th Percentile Rainfall Depth (in)	1.04
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.04
Peak Intensity (in/hr)	0.252
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.436
Time of Concentration (min)	34.0
Clear Peak Flow Rate (cfs)	0.3308
Burned Peak Flow Rate (cfs)	0.3308
24-Hr Clear Runoff Volume (ac-ft)	0.1128
24-Hr Clear Runoff Volume (cu-ft)	4913.5485



Peak Flow Hydrologic Analysis

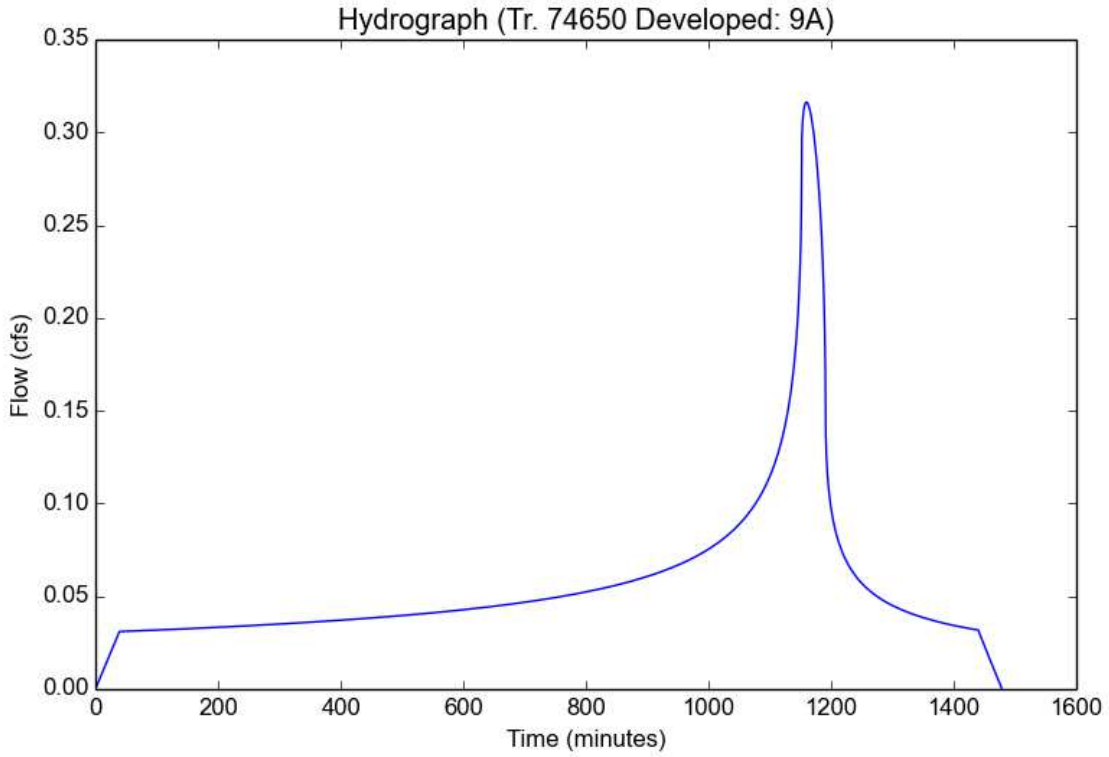
File location: H:/Oakridge/Hydrology/Analysis Data/LID/85th Percentile_Onsite .pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Tr. 74650 Developed
Subarea ID	9A
Area (ac)	3.07
Flow Path Length (ft)	860.0
Flow Path Slope (vft/hft)	0.056
85th Percentile Rainfall Depth (in)	1.04
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.04
Peak Intensity (in/hr)	0.2363
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.436
Time of Concentration (min)	39.0
Clear Peak Flow Rate (cfs)	0.3163
Burned Peak Flow Rate (cfs)	0.3163
24-Hr Clear Runoff Volume (ac-ft)	0.115
24-Hr Clear Runoff Volume (cu-ft)	5011.5167



Peak Flow Hydrologic Analysis

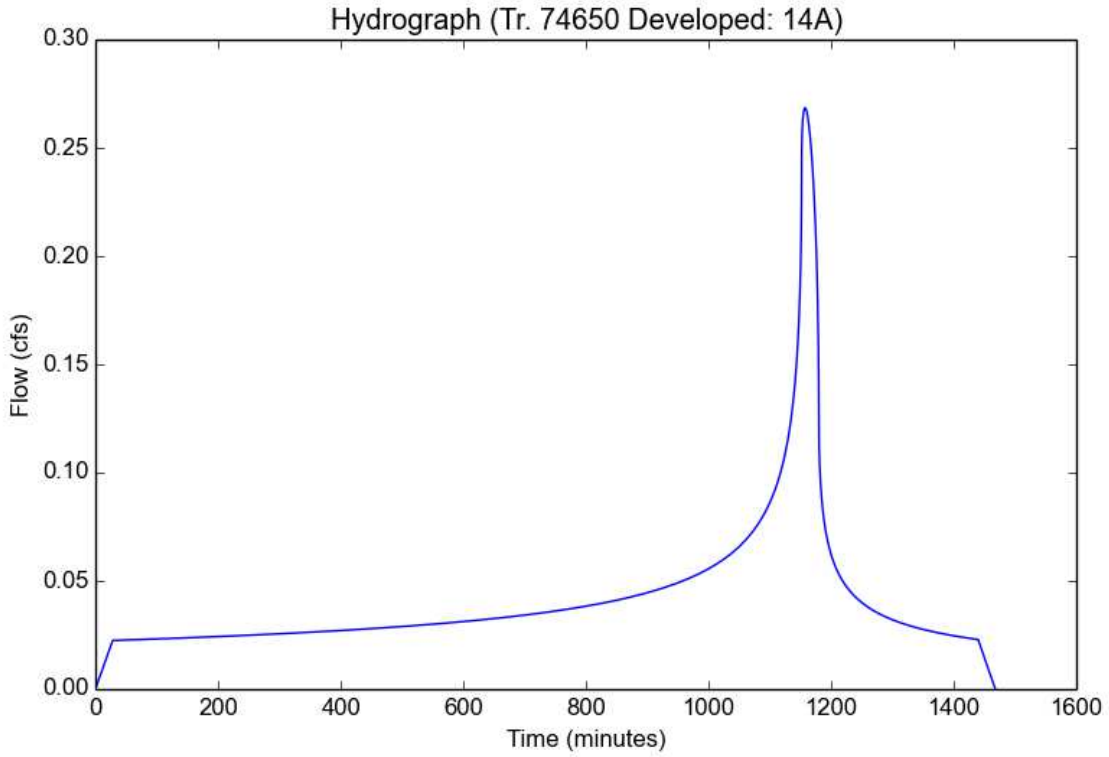
File location: H:/Oakridge/Hydrology/Analysis Data/LID/85th Percentile_Onsite .pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Tr. 74650 Developed
Subarea ID	14A
Area (ac)	2.23
Flow Path Length (ft)	310.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.04
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.04
Peak Intensity (in/hr)	0.2761
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.436
Time of Concentration (min)	28.0
Clear Peak Flow Rate (cfs)	0.2685
Burned Peak Flow Rate (cfs)	0.2685
24-Hr Clear Runoff Volume (ac-ft)	0.0836
24-Hr Clear Runoff Volume (cu-ft)	3640.2527



Peak Flow Hydrologic Analysis

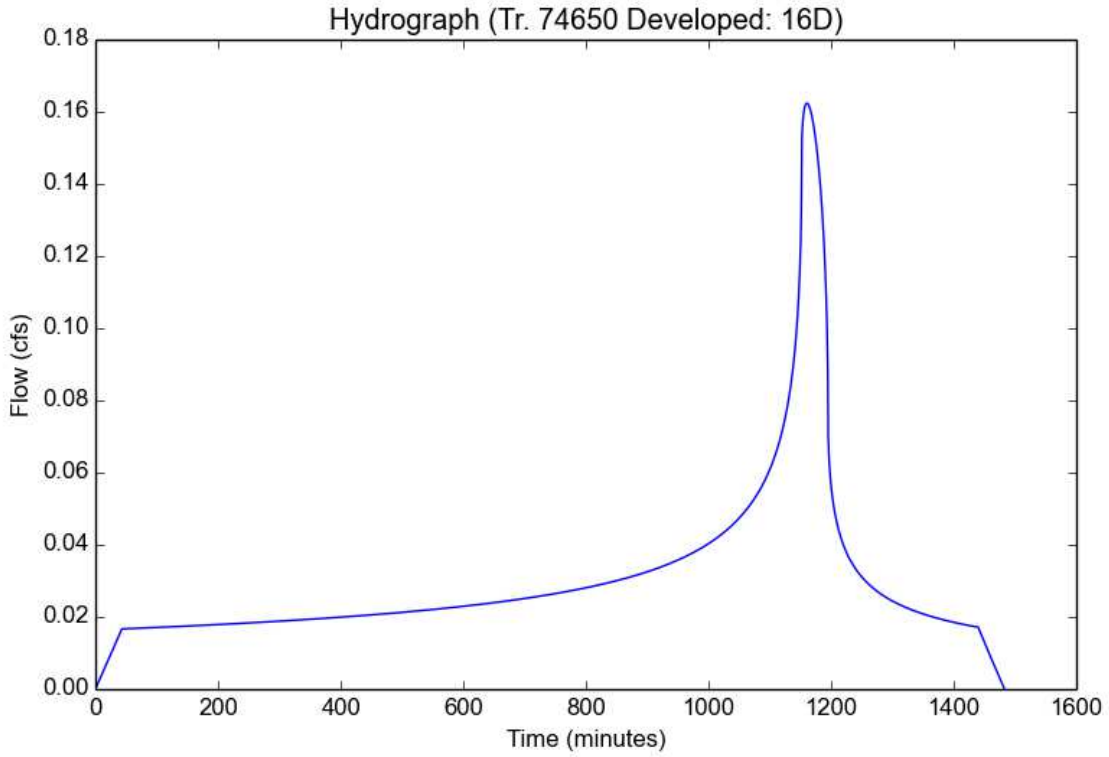
File location: H:/Oakridge/Hydrology/Analysis Data/LID/85th Percentile_Onsite .pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Tr. 74650 Developed
Subarea ID	16D
Area (ac)	1.65
Flow Path Length (ft)	630.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.04
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.04
Peak Intensity (in/hr)	0.2257
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.436
Time of Concentration (min)	43.0
Clear Peak Flow Rate (cfs)	0.1624
Burned Peak Flow Rate (cfs)	0.1624
24-Hr Clear Runoff Volume (ac-ft)	0.0618
24-Hr Clear Runoff Volume (cu-ft)	2693.4977



Peak Flow Hydrologic Analysis

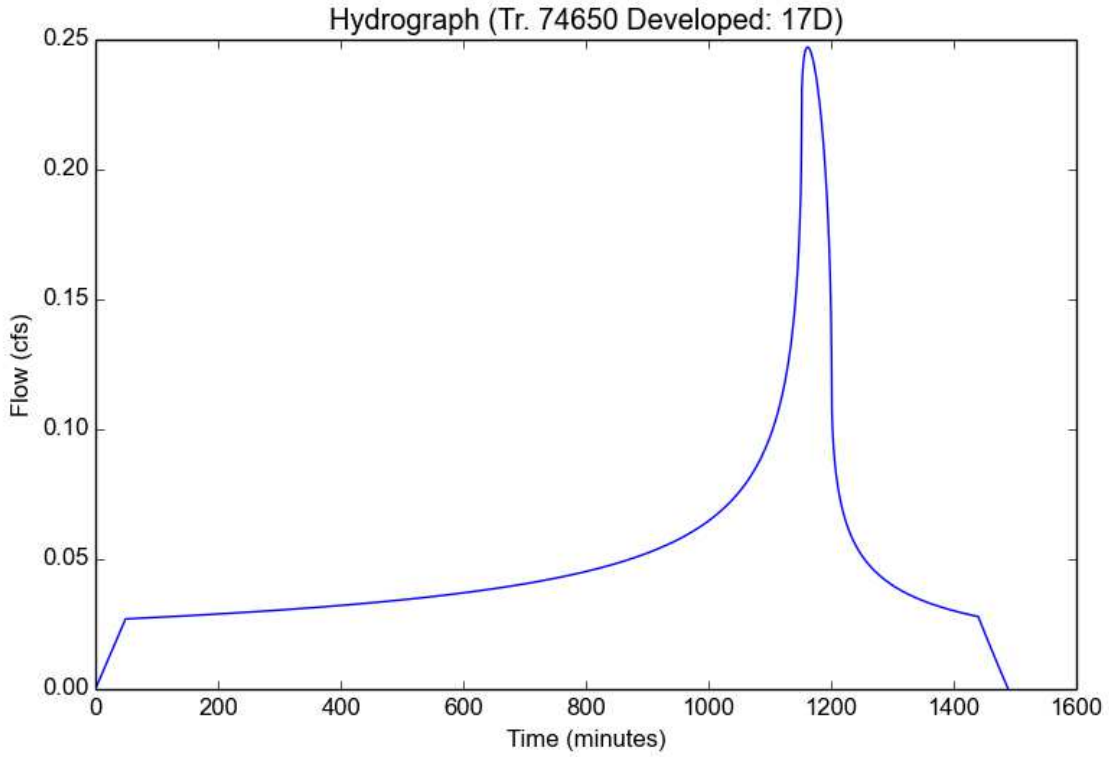
File location: H:/Oakridge/Hydrology/Analysis Data/LID/85th Percentile_Onsite .pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Tr. 74650 Developed
Subarea ID	17D
Area (ac)	2.67
Flow Path Length (ft)	620.0
Flow Path Slope (vft/hft)	0.005
85th Percentile Rainfall Depth (in)	1.04
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.04
Peak Intensity (in/hr)	0.2123
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.436
Time of Concentration (min)	49.0
Clear Peak Flow Rate (cfs)	0.2471
Burned Peak Flow Rate (cfs)	0.2471
24-Hr Clear Runoff Volume (ac-ft)	0.1001
24-Hr Clear Runoff Volume (cu-ft)	4358.6005



ONSITE AND OFFSITE
LID HYDROCALC
CALCULATIONS PRINTOUTS

Peak Flow Hydrologic Analysis

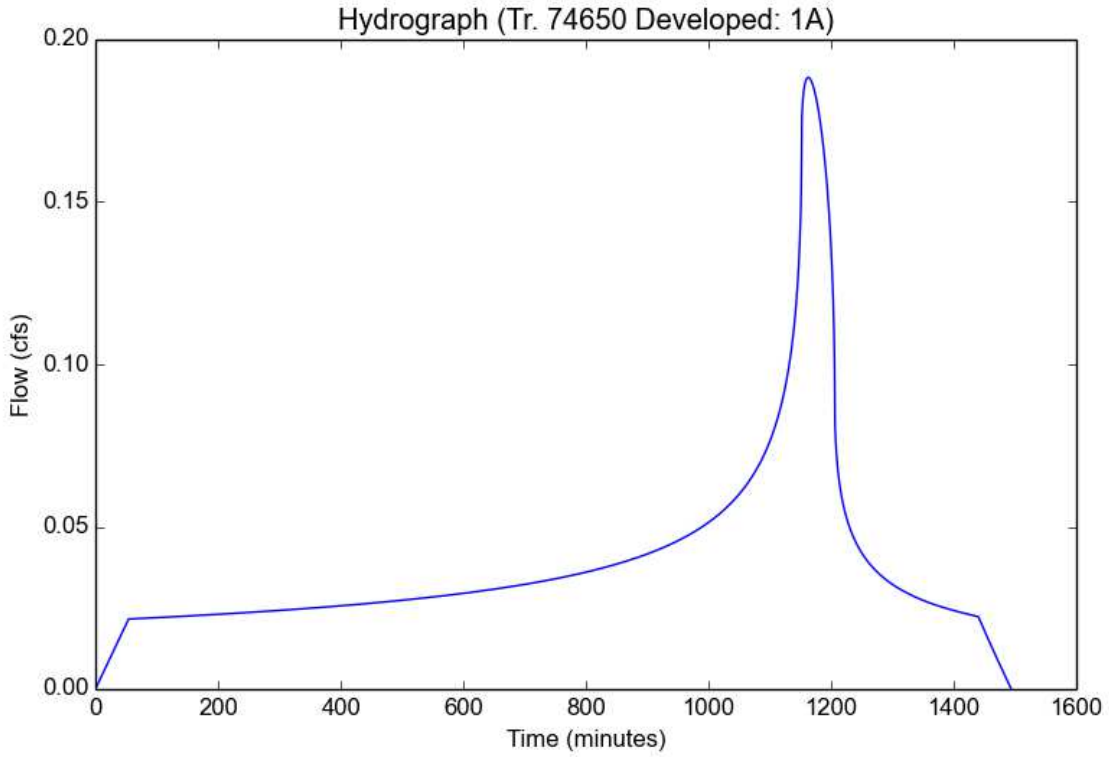
File location: H:/Oakridge/Hydrology/Analysis Data/LID/85th Percentile Onsite and Offsite.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Tr. 74650 Developed
Subarea ID	1A
Area (ac)	8.6
Flow Path Length (ft)	444.0
Flow Path Slope (vft/hft)	0.17
85th Percentile Rainfall Depth (in)	1.04
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	scr
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.04
Peak Intensity (in/hr)	0.2028
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	54.0
Clear Peak Flow Rate (cfs)	0.1883
Burned Peak Flow Rate (cfs)	0.2959
24-Hr Clear Runoff Volume (ac-ft)	0.0798
24-Hr Clear Runoff Volume (cu-ft)	3477.5586



Peak Flow Hydrologic Analysis

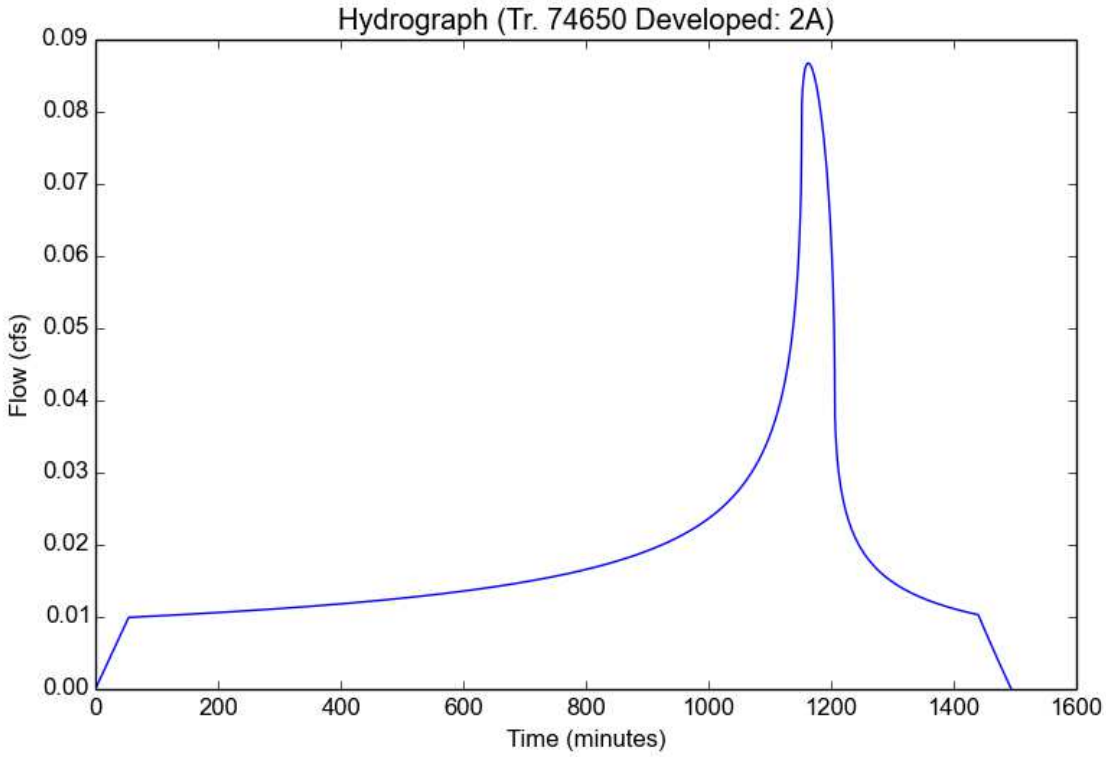
File location: H:/Oakridge/Hydrology/Analysis Data/LID/85th Percentile Onsite and Offsite.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Tr. 74650 Developed
Subarea ID	2A
Area (ac)	3.96
Flow Path Length (ft)	478.0
Flow Path Slope (vft/hft)	0.24
85th Percentile Rainfall Depth (in)	1.04
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	scr
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.04
Peak Intensity (in/hr)	0.2028
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	54.0
Clear Peak Flow Rate (cfs)	0.0867
Burned Peak Flow Rate (cfs)	0.1362
24-Hr Clear Runoff Volume (ac-ft)	0.0368
24-Hr Clear Runoff Volume (cu-ft)	1601.2944



Peak Flow Hydrologic Analysis

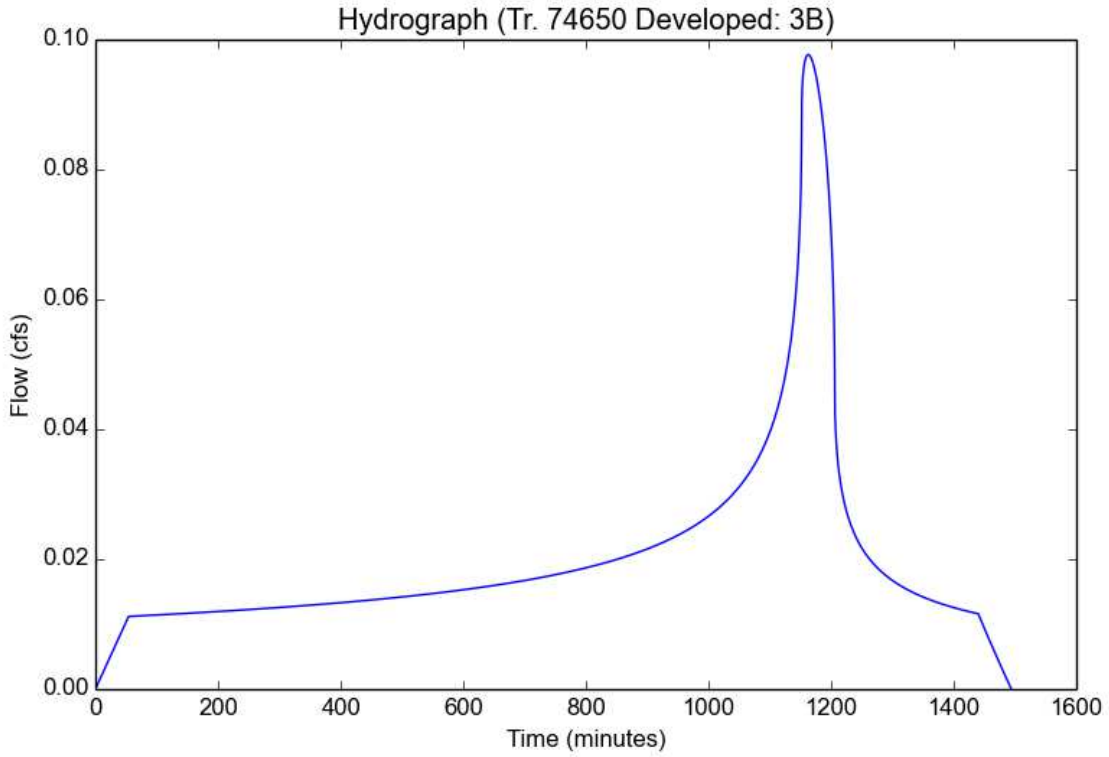
File location: H:/Oakridge/Hydrology/Analysis Data/LID/85th Percentile Onsite and Offsite.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Tr. 74650 Developed
Subarea ID	3B
Area (ac)	4.46
Flow Path Length (ft)	484.0
Flow Path Slope (vft/hft)	0.25
85th Percentile Rainfall Depth (in)	1.04
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	scr
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.04
Peak Intensity (in/hr)	0.2028
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	54.0
Clear Peak Flow Rate (cfs)	0.0977
Burned Peak Flow Rate (cfs)	0.1534
24-Hr Clear Runoff Volume (ac-ft)	0.0414
24-Hr Clear Runoff Volume (cu-ft)	1803.4781



Peak Flow Hydrologic Analysis

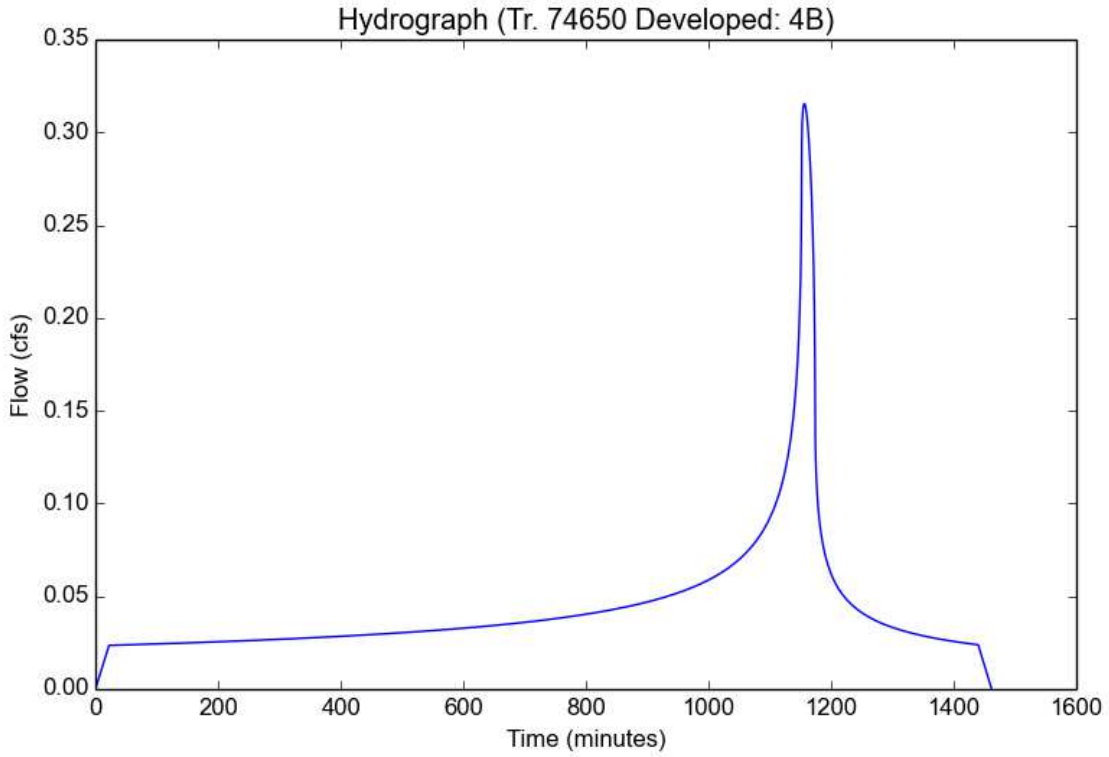
File location: H:/Oakridge/Hydrology/Analysis Data/LID/85th Percentile Onsite and Offsite.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Tr. 74650 Developed
Subarea ID	4B
Area (ac)	2.34
Flow Path Length (ft)	220.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.04
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.04
Peak Intensity (in/hr)	0.3093
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.436
Time of Concentration (min)	22.0
Clear Peak Flow Rate (cfs)	0.3155
Burned Peak Flow Rate (cfs)	0.3155
24-Hr Clear Runoff Volume (ac-ft)	0.0877
24-Hr Clear Runoff Volume (cu-ft)	3819.802



Peak Flow Hydrologic Analysis

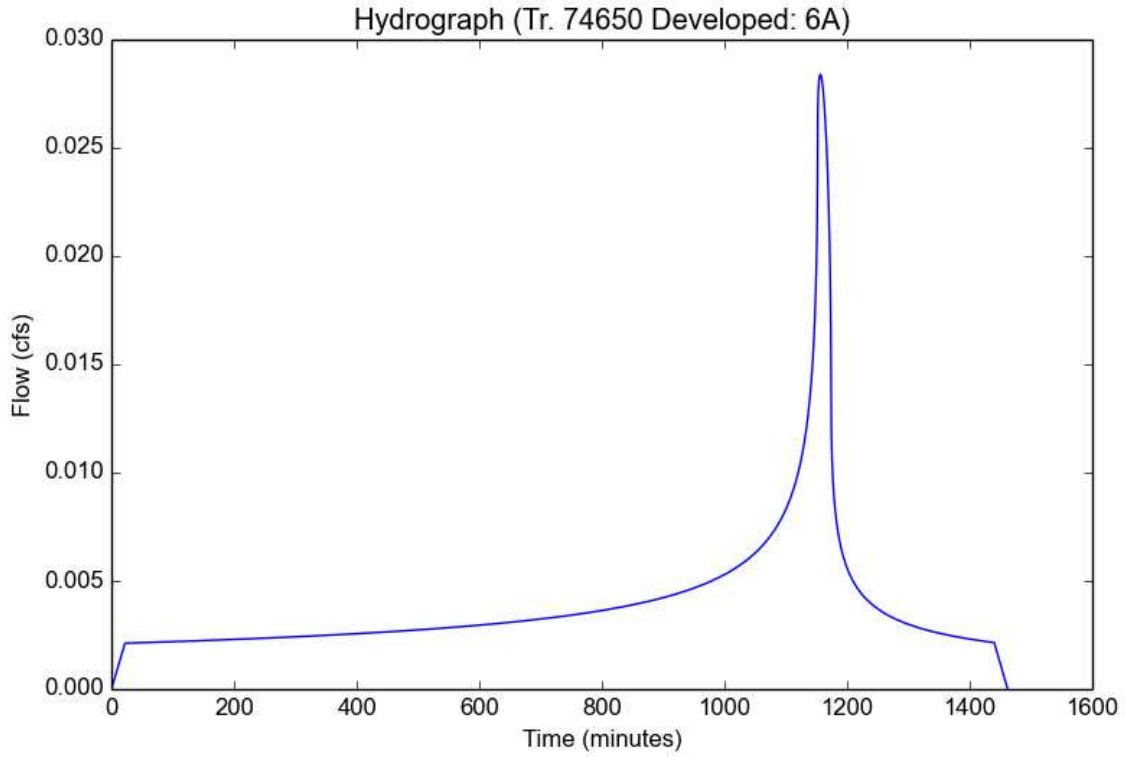
File location: H:/Oakridge/Hydrology/Analysis Data/LID/85th Percentile Onsite and Offsite.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Tr. 74650 Developed
Subarea ID	6A
Area (ac)	0.85
Flow Path Length (ft)	136.0
Flow Path Slope (vft/hft)	0.39
85th Percentile Rainfall Depth (in)	1.04
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	scr
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.04
Peak Intensity (in/hr)	0.3093
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	22.0
Clear Peak Flow Rate (cfs)	0.0284
Burned Peak Flow Rate (cfs)	0.0473
24-Hr Clear Runoff Volume (ac-ft)	0.0079
24-Hr Clear Runoff Volume (cu-ft)	343.7013



Peak Flow Hydrologic Analysis

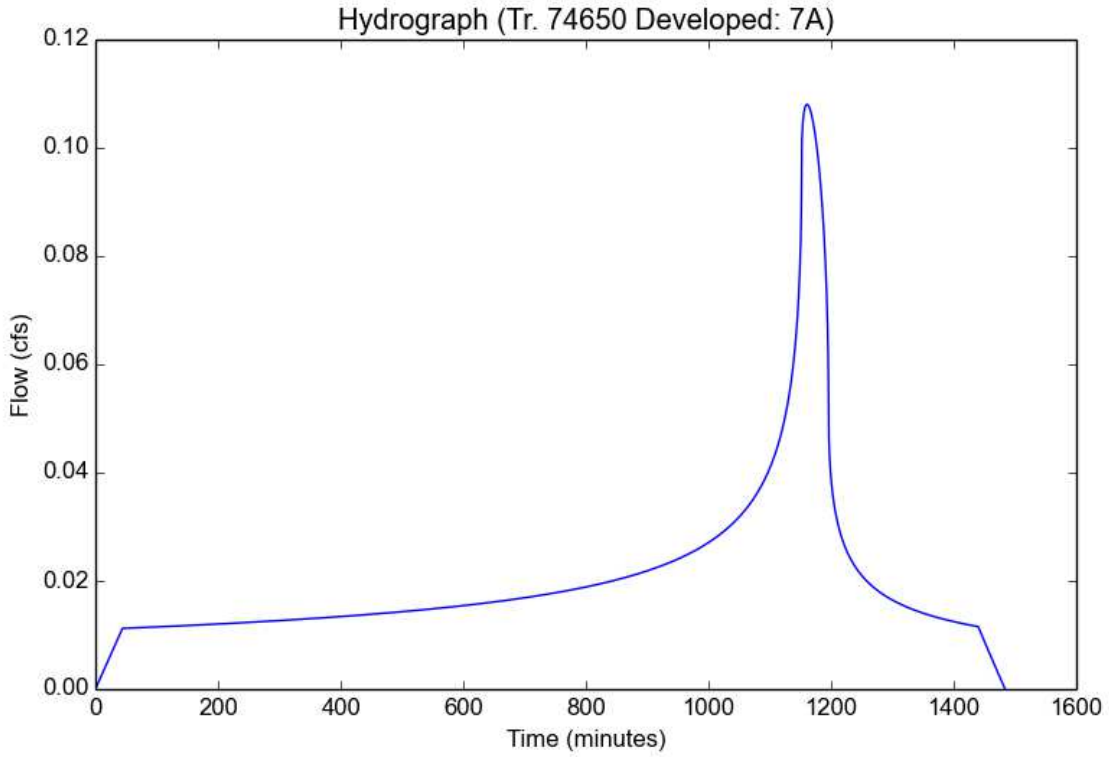
File location: H:/Oakridge/Hydrology/Analysis Data/LID/85th Percentile Onsite and Offsite.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Tr. 74650 Developed
Subarea ID	7A
Area (ac)	4.48
Flow Path Length (ft)	343.0
Flow Path Slope (vft/hft)	0.23
85th Percentile Rainfall Depth (in)	1.04
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	scr
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.04
Peak Intensity (in/hr)	0.2233
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	44.0
Clear Peak Flow Rate (cfs)	0.108
Burned Peak Flow Rate (cfs)	0.1721
24-Hr Clear Runoff Volume (ac-ft)	0.0416
24-Hr Clear Runoff Volume (cu-ft)	1811.5421



Peak Flow Hydrologic Analysis

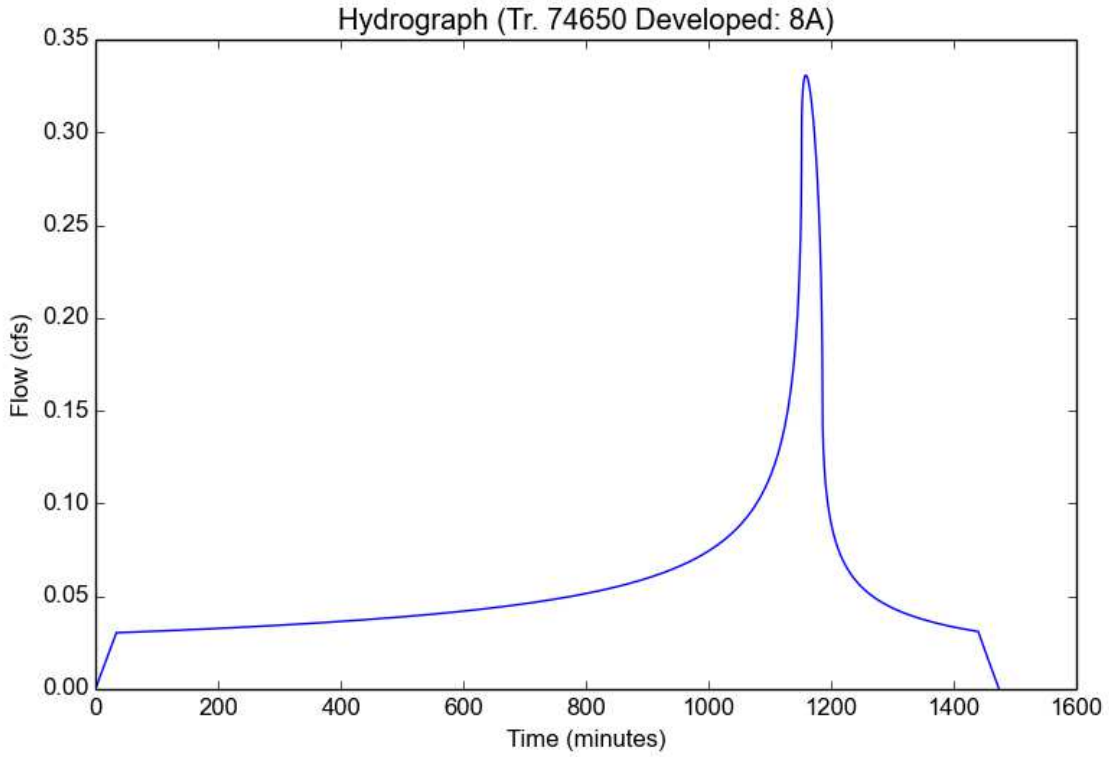
File location: H:/Oakridge/Hydrology/Analysis Data/LID/85th Percentile Onsite and Offsite.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Tr. 74650 Developed
Subarea ID	8A
Area (ac)	3.01
Flow Path Length (ft)	770.0
Flow Path Slope (vft/hft)	0.074
85th Percentile Rainfall Depth (in)	1.04
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.04
Peak Intensity (in/hr)	0.252
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.436
Time of Concentration (min)	34.0
Clear Peak Flow Rate (cfs)	0.3308
Burned Peak Flow Rate (cfs)	0.3308
24-Hr Clear Runoff Volume (ac-ft)	0.1128
24-Hr Clear Runoff Volume (cu-ft)	4913.5485



Peak Flow Hydrologic Analysis

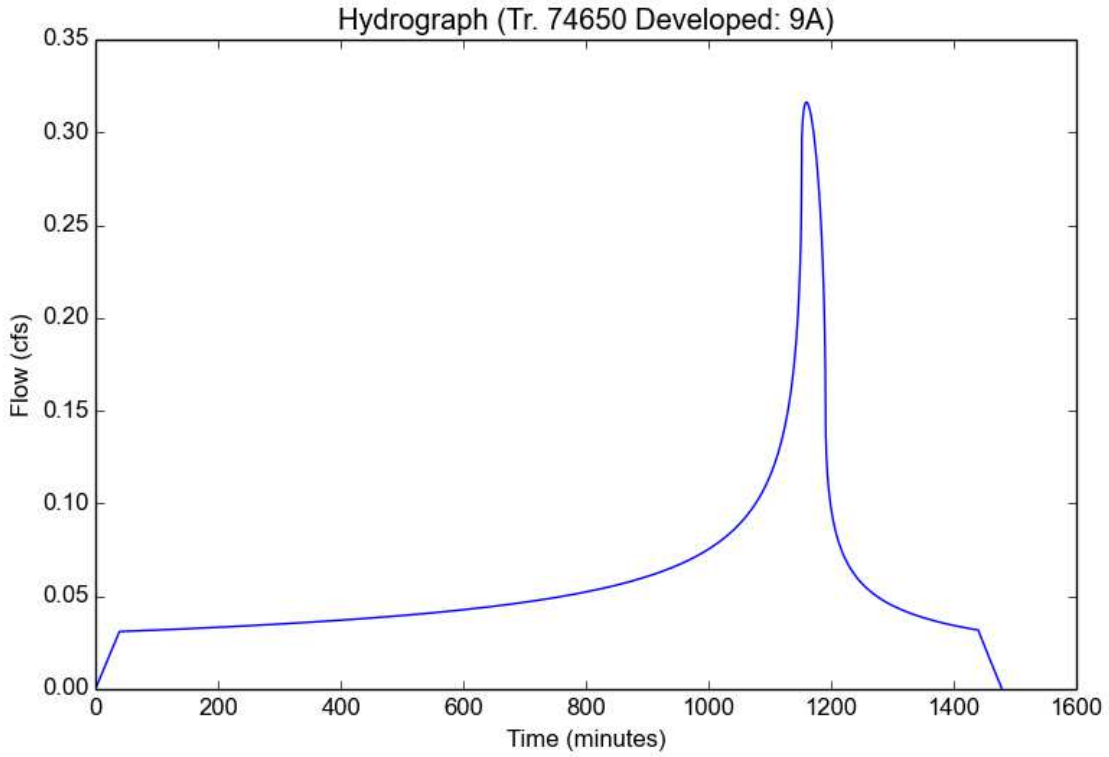
File location: H:/Oakridge/Hydrology/Analysis Data/LID/85th Percentile Onsite and Offsite.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Tr. 74650 Developed
Subarea ID	9A
Area (ac)	3.07
Flow Path Length (ft)	860.0
Flow Path Slope (vft/hft)	0.056
85th Percentile Rainfall Depth (in)	1.04
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.04
Peak Intensity (in/hr)	0.2363
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.436
Time of Concentration (min)	39.0
Clear Peak Flow Rate (cfs)	0.3163
Burned Peak Flow Rate (cfs)	0.3163
24-Hr Clear Runoff Volume (ac-ft)	0.115
24-Hr Clear Runoff Volume (cu-ft)	5011.5167



Peak Flow Hydrologic Analysis

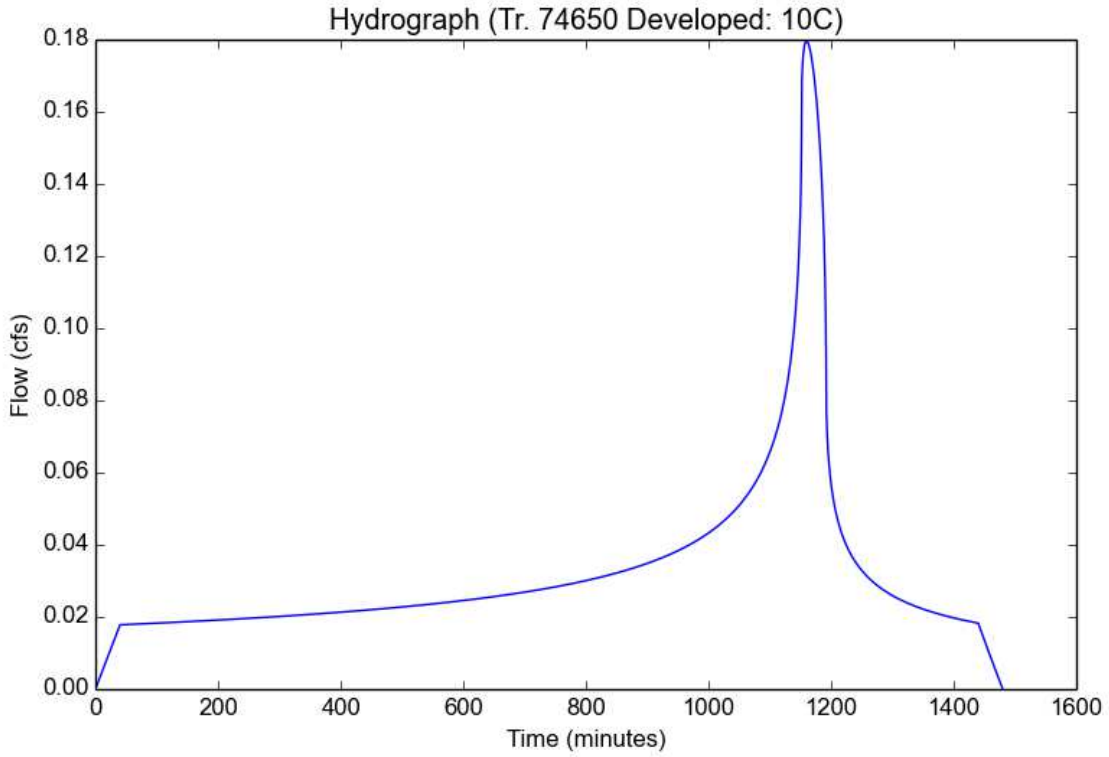
File location: H:/Oakridge/Hydrology/Analysis Data/LID/85th Percentile Onsite and Offsite.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Tr. 74650 Developed
Subarea ID	10C
Area (ac)	7.12
Flow Path Length (ft)	378.0
Flow Path Slope (vft/hft)	0.56
85th Percentile Rainfall Depth (in)	1.04
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	scr
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.04
Peak Intensity (in/hr)	0.2335
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	40.0
Clear Peak Flow Rate (cfs)	0.1796
Burned Peak Flow Rate (cfs)	0.2878
24-Hr Clear Runoff Volume (ac-ft)	0.0661
24-Hr Clear Runoff Volume (cu-ft)	2879.0454



Peak Flow Hydrologic Analysis

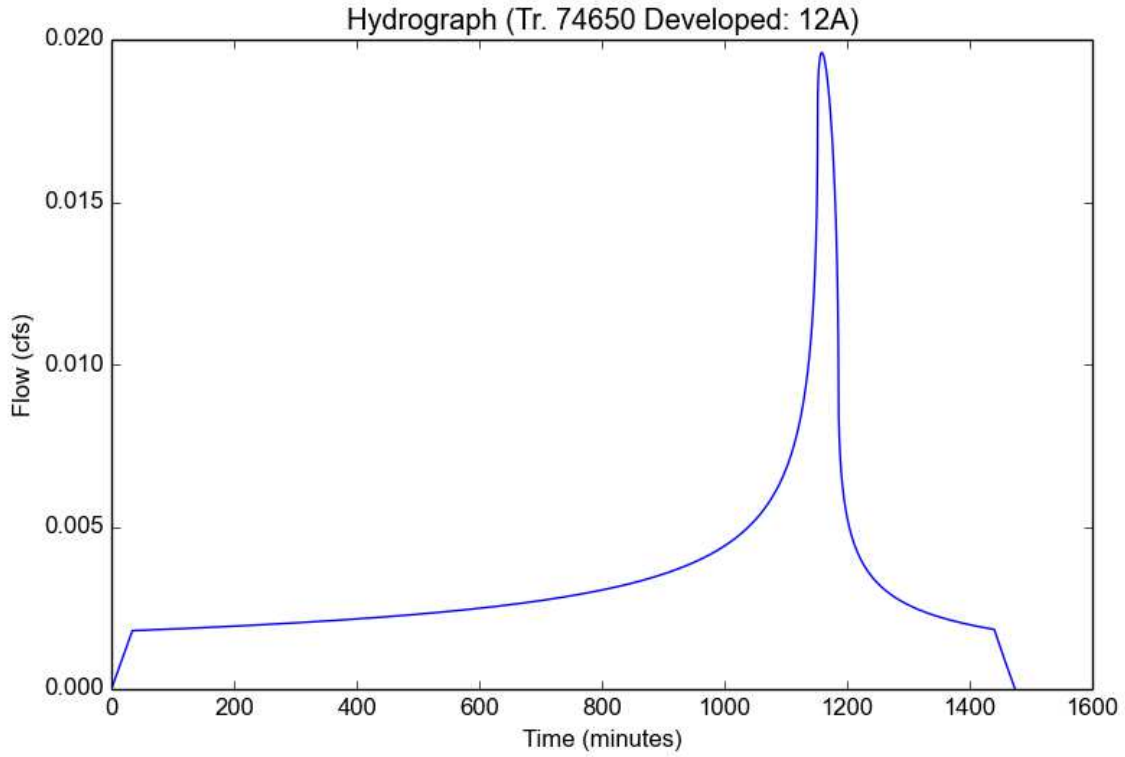
File location: H:/Oakridge/Hydrology/Analysis Data/LID/85th Percentile Onsite and Offsite.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Tr. 74650 Developed
Subarea ID	12A
Area (ac)	0.72
Flow Path Length (ft)	263.0
Flow Path Slope (vft/hft)	0.39
85th Percentile Rainfall Depth (in)	1.04
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	scr
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.04
Peak Intensity (in/hr)	0.252
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	34.0
Clear Peak Flow Rate (cfs)	0.0196
Burned Peak Flow Rate (cfs)	0.0318
24-Hr Clear Runoff Volume (ac-ft)	0.0067
24-Hr Clear Runoff Volume (cu-ft)	291.1377



Peak Flow Hydrologic Analysis

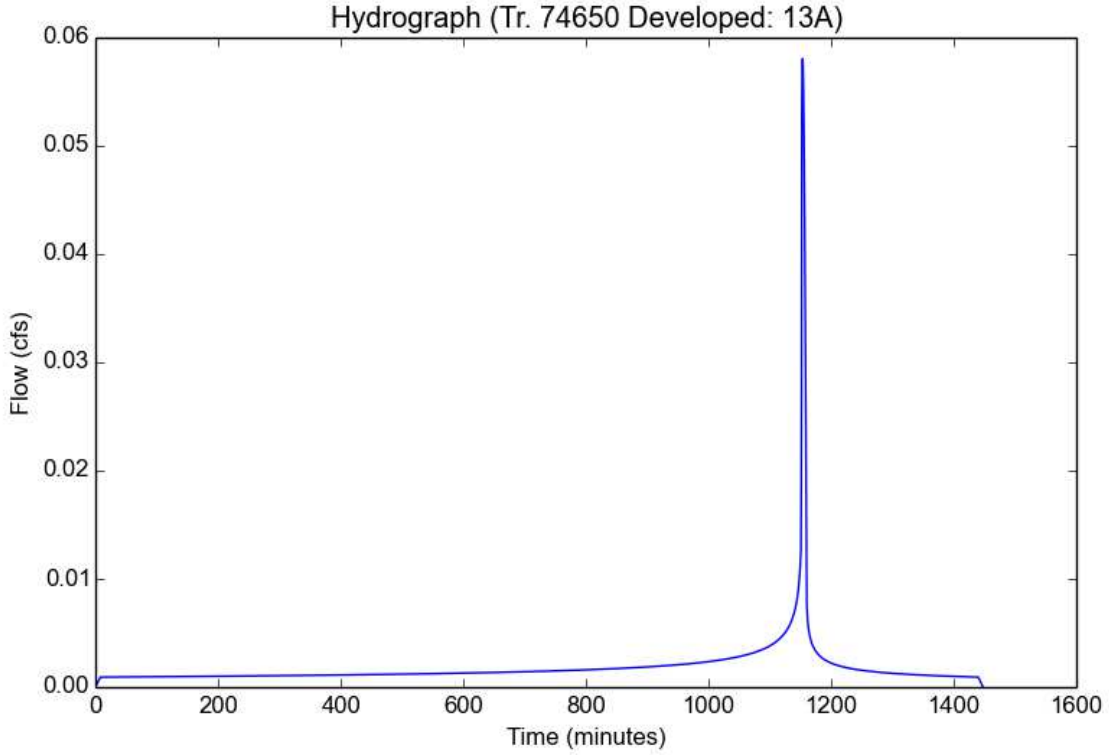
File location: H:/Oakridge/Hydrology/Analysis Data/LID/85th Percentile Onsite and Offsite.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Tr. 74650 Developed
Subarea ID	13A
Area (ac)	0.37
Flow Path Length (ft)	86.0
Flow Path Slope (vft/hft)	0.44
85th Percentile Rainfall Depth (in)	1.04
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	scr
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.04
Peak Intensity (in/hr)	0.4975
Undeveloped Runoff Coefficient (Cu)	0.3094
Developed Runoff Coefficient (Cd)	0.3153
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	0.058
Burned Peak Flow Rate (cfs)	0.0697
24-Hr Clear Runoff Volume (ac-ft)	0.0037
24-Hr Clear Runoff Volume (cu-ft)	162.4551



Peak Flow Hydrologic Analysis

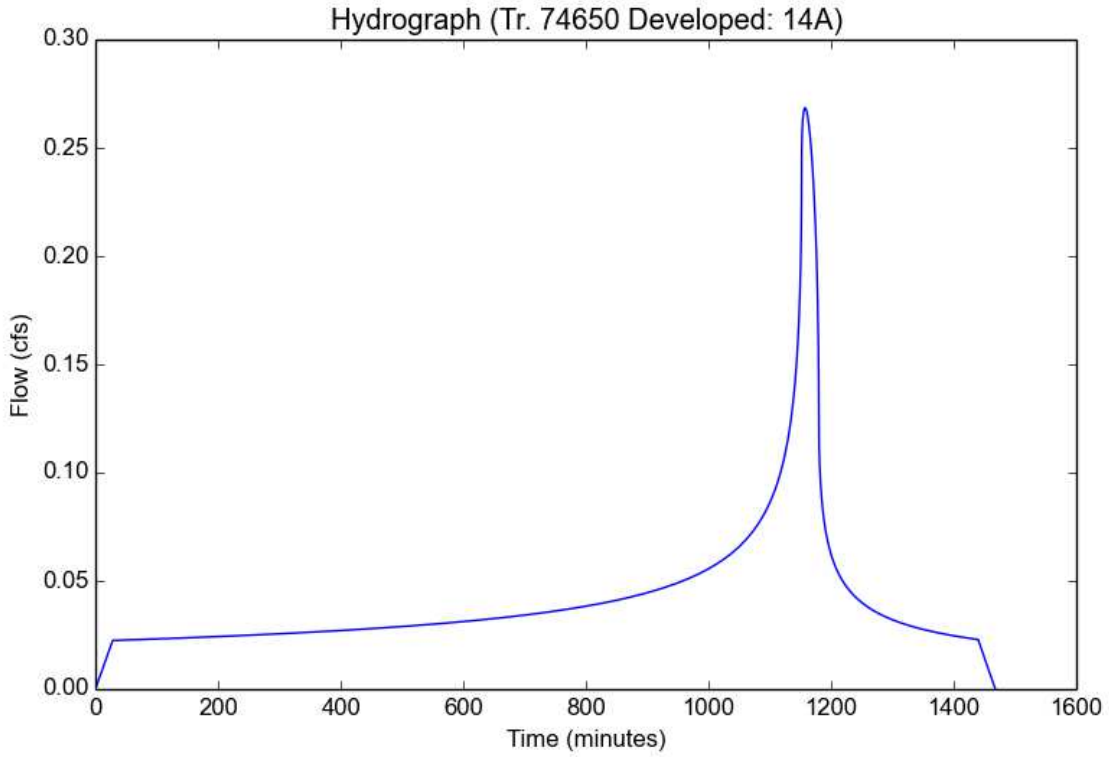
File location: H:/Oakridge/Hydrology/Analysis Data/LID/85th Percentile Onsite and Offsite.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Tr. 74650 Developed
Subarea ID	14A
Area (ac)	2.23
Flow Path Length (ft)	310.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.04
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.04
Peak Intensity (in/hr)	0.2761
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.436
Time of Concentration (min)	28.0
Clear Peak Flow Rate (cfs)	0.2685
Burned Peak Flow Rate (cfs)	0.2685
24-Hr Clear Runoff Volume (ac-ft)	0.0836
24-Hr Clear Runoff Volume (cu-ft)	3640.2527



Peak Flow Hydrologic Analysis

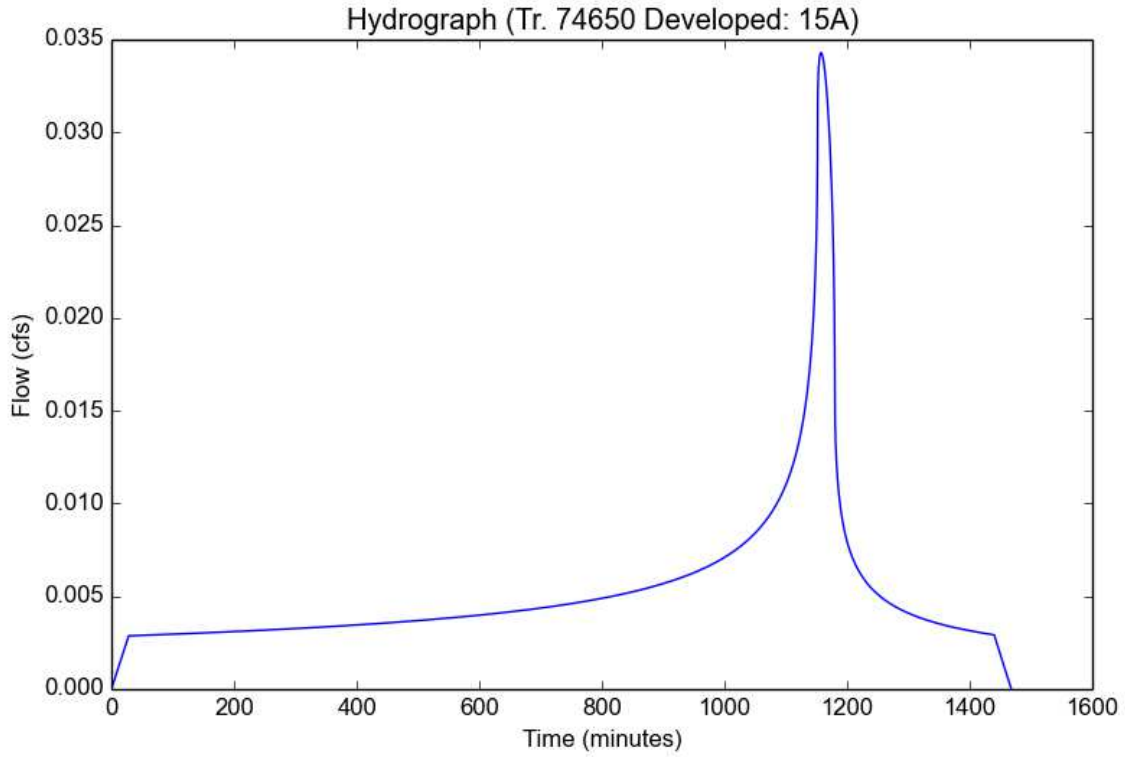
File location: H:/Oakridge/Hydrology/Analysis Data/LID/85th Percentile Onsite and Offsite.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Tr. 74650 Developed
Subarea ID	15A
Area (ac)	1.15
Flow Path Length (ft)	181.0
Flow Path Slope (vft/hft)	0.29
85th Percentile Rainfall Depth (in)	1.04
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	scr
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.04
Peak Intensity (in/hr)	0.2761
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	28.0
Clear Peak Flow Rate (cfs)	0.0343
Burned Peak Flow Rate (cfs)	0.0563
24-Hr Clear Runoff Volume (ac-ft)	0.0107
24-Hr Clear Runoff Volume (cu-ft)	465.0094



Peak Flow Hydrologic Analysis

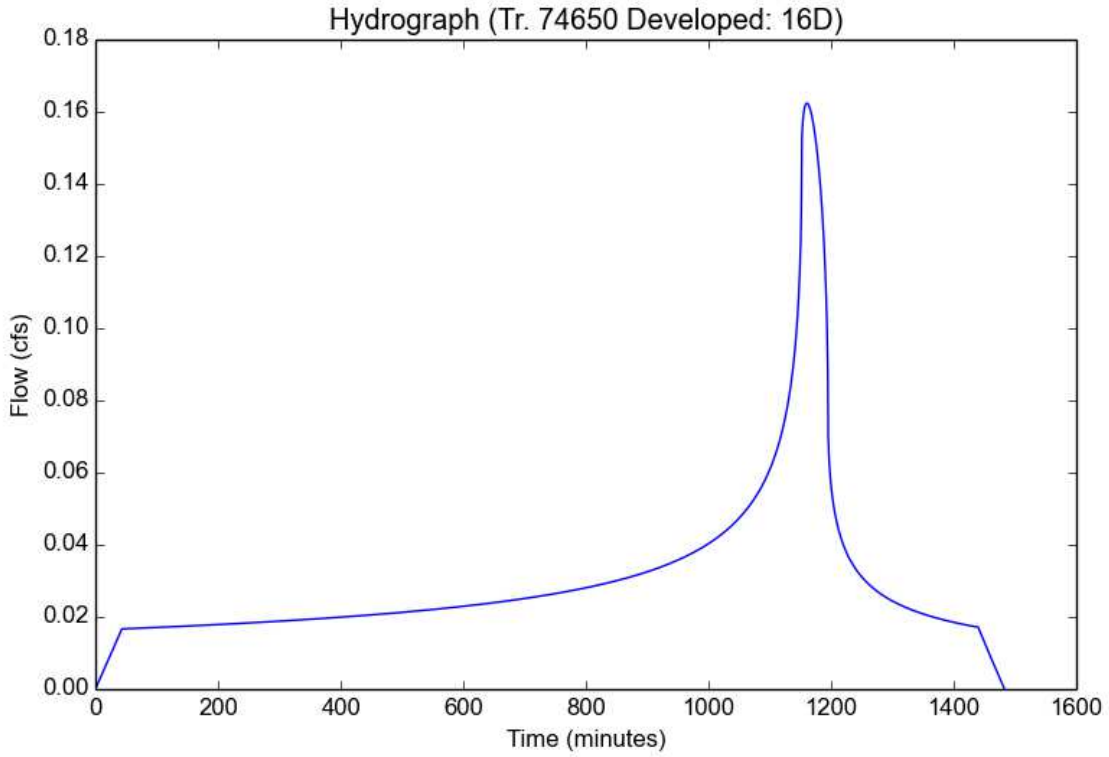
File location: H:/Oakridge/Hydrology/Analysis Data/LID/85th Percentile Onsite and Offsite.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Tr. 74650 Developed
Subarea ID	16D
Area (ac)	1.65
Flow Path Length (ft)	630.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.04
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.04
Peak Intensity (in/hr)	0.2257
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.436
Time of Concentration (min)	43.0
Clear Peak Flow Rate (cfs)	0.1624
Burned Peak Flow Rate (cfs)	0.1624
24-Hr Clear Runoff Volume (ac-ft)	0.0618
24-Hr Clear Runoff Volume (cu-ft)	2693.4977



Peak Flow Hydrologic Analysis

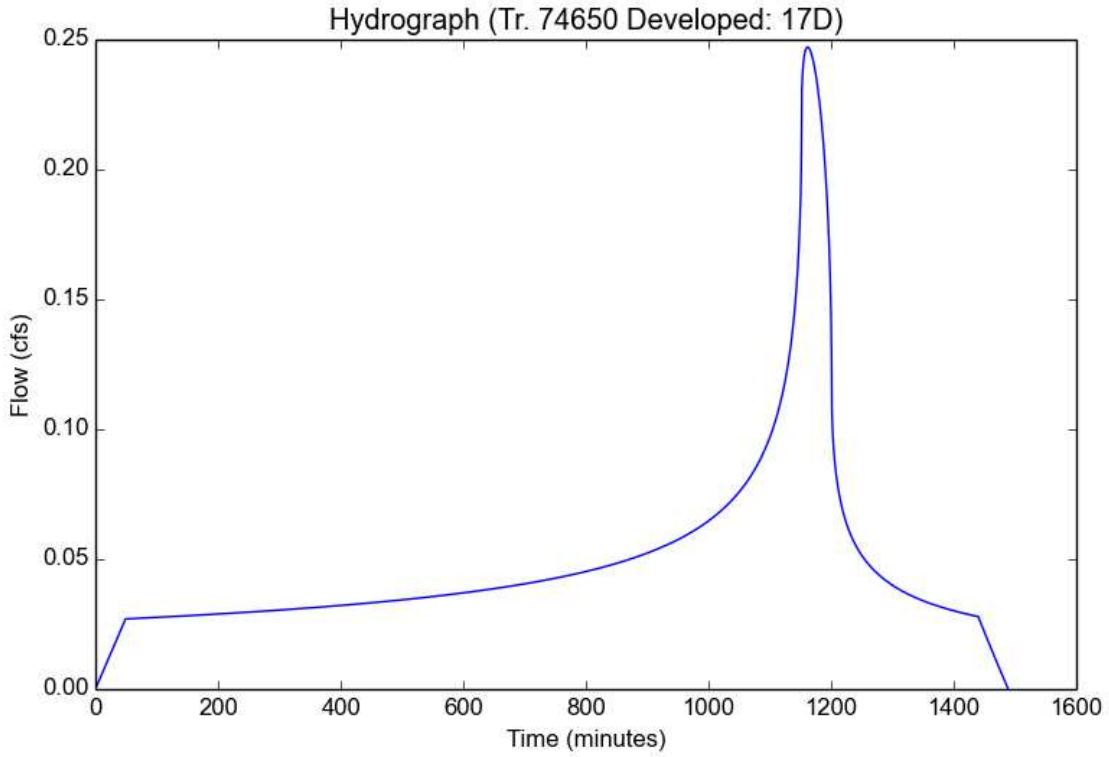
File location: H:/Oakridge/Hydrology/Analysis Data/LID/85th Percentile Onsite and Offsite.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Tr. 74650 Developed
Subarea ID	17D
Area (ac)	2.67
Flow Path Length (ft)	620.0
Flow Path Slope (vft/hft)	0.005
85th Percentile Rainfall Depth (in)	1.04
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.04
Peak Intensity (in/hr)	0.2123
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.436
Time of Concentration (min)	49.0
Clear Peak Flow Rate (cfs)	0.2471
Burned Peak Flow Rate (cfs)	0.2471
24-Hr Clear Runoff Volume (ac-ft)	0.1001
24-Hr Clear Runoff Volume (cu-ft)	4358.6005



Peak Flow Hydrologic Analysis

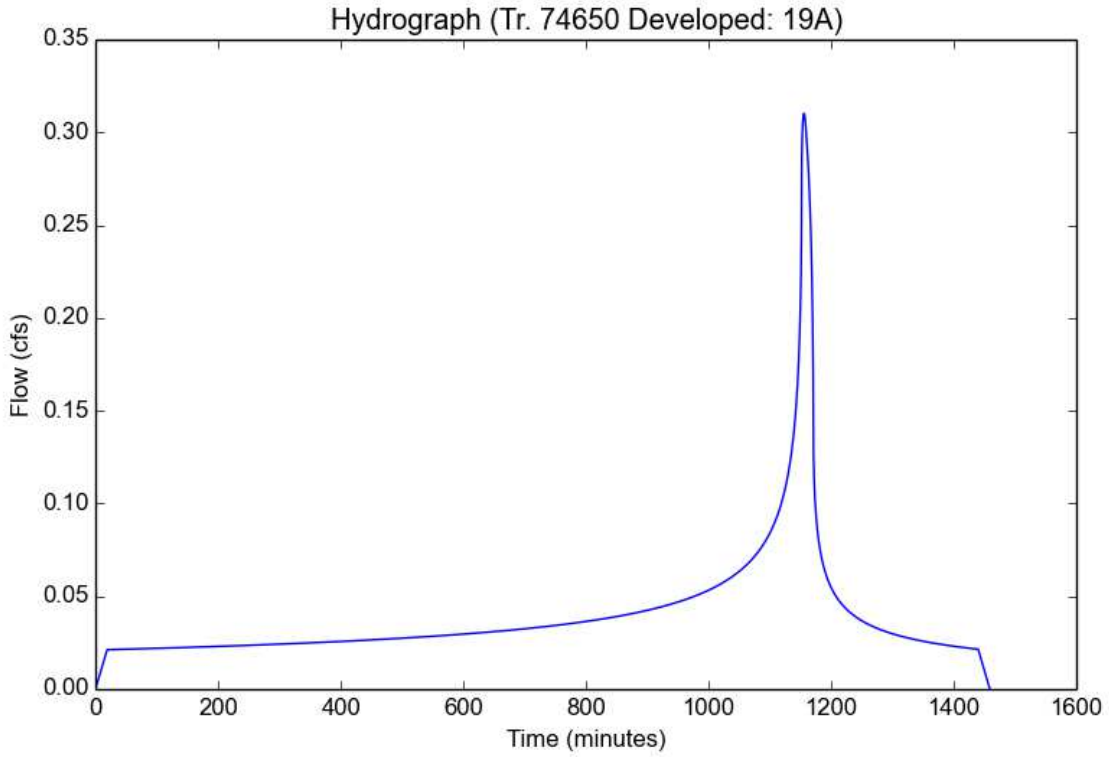
File location: H:/Oakridge/Hydrology/Analysis Data/LID/85th Percentile Onsite and Offsite.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Tr. 74650 Developed
Subarea ID	19A
Area (ac)	2.11
Flow Path Length (ft)	290.0
Flow Path Slope (vft/hft)	0.062
85th Percentile Rainfall Depth (in)	1.04
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.04
Peak Intensity (in/hr)	0.3313
Undeveloped Runoff Coefficient (Cu)	0.1133
Developed Runoff Coefficient (Cd)	0.4437
Time of Concentration (min)	19.0
Clear Peak Flow Rate (cfs)	0.3102
Burned Peak Flow Rate (cfs)	0.3102
24-Hr Clear Runoff Volume (ac-ft)	0.0791
24-Hr Clear Runoff Volume (cu-ft)	3446.0139



SECTION 5
BMP INFORMATION

S-1: Storm Drain Message and Signage

Purpose

Waste material dumped into storm drain inlets can adversely impact surface and ground waters. In fact, any material discharged into the storm drain system has the potential to significantly impact downstream receiving waters. Storm drain messages have become a popular method of alerting and reminding the public about the effects of and the prohibitions against waste disposal into the storm drain system. The signs are typically stenciled or affixed near the storm drain inlet or catch basin. The message simply informs the public that dumping of wastes into storm drain inlets is prohibited and/or that the drain ultimately discharges into receiving waters.

General Guidance

- The signs must be placed so they are easily visible to the public.
- Be aware that signs placed on sidewalk will be worn by foot traffic.

Design Specifications

- Signs with language and/or graphical icons that prohibit illegal dumping, must be posted at designated public access points along channels and streams within the project area. Consult with Los Angeles County Department of Public Works (LACDPW) staff to determine specific signage requirements for channels and streams.
- Storm drain message markers, placards, concrete stamps, or stenciled language/icons (e.g., "No Dumping – Drains to the Ocean") are required at all storm drain inlets and catch basins within the project area to discourage illegal or inadvertent dumping. Signs should be placed in clear sight facing anyone approaching the storm drain inlet or catch basin from either side (see Figure D-1 and Figure D-2). LACDPW staff should be contacted to determine specific requirements for types of signs and methods of application. A stencil can be purchased for a nominal fee from LACDPW Building and Safety Office by calling (626) 458-3171. All storm drain inlet and catch basin locations must be identified on the project site map.

Maintenance Requirements

Legibility and visibility of markers and signs should be maintained (e.g., signs should be repainted or replaced as necessary). If required by LACDPW, the owner/operator or homeowner's association shall enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards and signs.

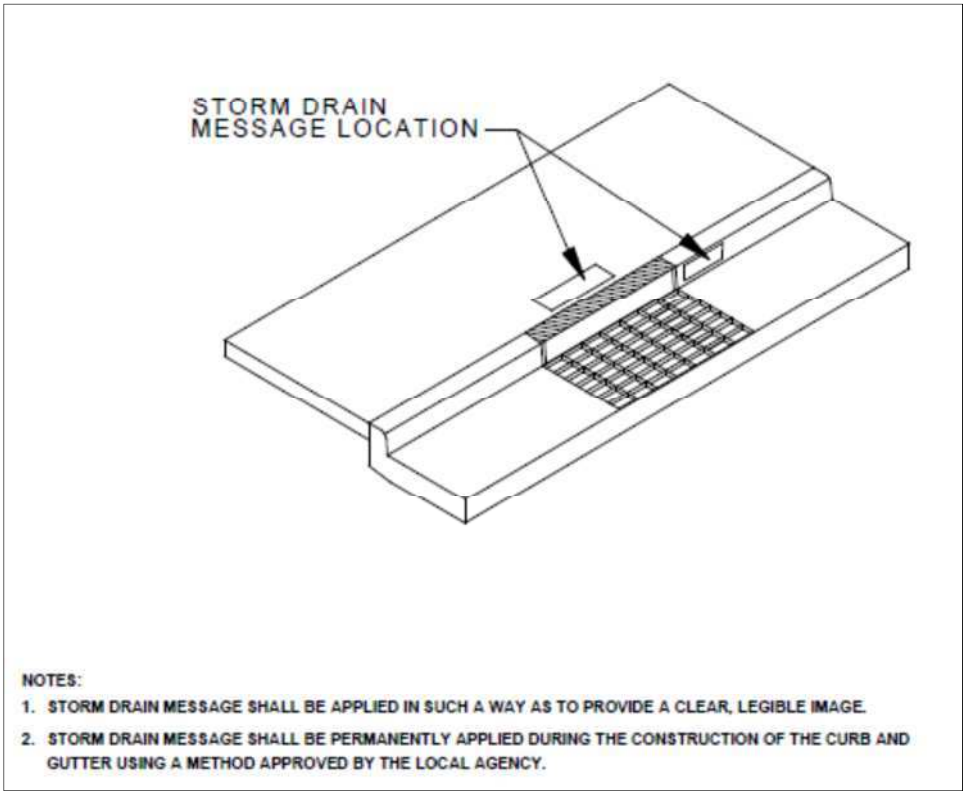


Figure D-1. Storm Drain Message Location – Curb Type Inlet

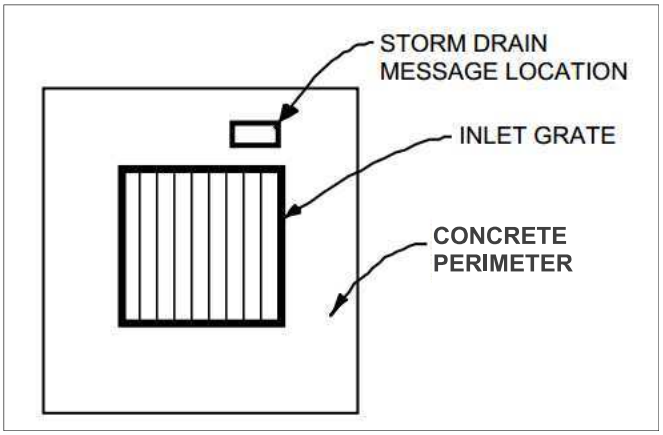


Figure D-2. Storm Drain Message Location – Catch Basin/Area Type Inlet

S-8: Landscape Irrigation Practices

Purpose

Irrigation runoff provides a pathway for pollutants (i.e., nutrients, bacteria, organics, sediment) to enter the storm drain system. By effectively irrigating, less runoff is produced resulting in less potential for pollutants to enter the storm drain system.

General Guidance

- Do not allow irrigation runoff from the landscaped area to drain directly to storm drain system.
- Minimize use of fertilizer, pesticides, and herbicides on landscaped areas.
- Plan sites with sufficient landscaped area and dispersal capacity (e.g., ability to receive irrigation water without generating runoff).
- Consult a landscape professional regarding appropriate plants, fertilizer, mulching applications, and irrigation requirements (if any) to ensure healthy vegetation growth.

Design Specifications

- Choose plants that minimize the need for fertilizer and pesticides.
- Group plants with similar water requirements and water accordingly.
- Use mulch to minimize evaporation and erosion.
- Include a vegetative boundary around project site to act as a filter.
- Design the irrigation system to only water areas that need it.
- Install an approved subsurface drip, pop-up, or other irrigation system.[1] The irrigation system should employ effective energy dissipation and uniform flow spreading methods to prevent erosion and facilitate efficient dispersion.
- Install rain sensors to shut off the irrigation system during and after storm events.
- Include pressure sensors to shut off flow-through system in case of sudden pressure drop. A sudden pressure drop may indicate a broken irrigation head or water line.
- If the hydraulic conductivity in the soil is not sufficient for the necessary water application rate, implement soil amendments to avoid potential geotechnical hazards (i.e., liquefaction, landslide, collapsible soils, and expansive soils).

[1] If alternative distribution systems (e.g., spray irrigation) are approved, the County will establish guidelines to implement these new systems.

- For sites located on or within 50 feet of a steep slope (15% or greater), do not irrigate landscape within three days of a storm event to avoid potential geotechnical instability.[2]
- Implement Integrated Pest Management practices.

For additional guidelines and requirements, refer to the Los Angeles County Department of Health Services.

Maintenance Requirements

Maintain irrigation areas to remove trash and debris and loose vegetation. Rehabilitate areas of bare soil. If a rain or pressure sensor is installed, it should be checked periodically to ensure proper function. Inspect and maintain irrigation equipment and components to ensure proper functionality. Clean equipment as necessary to prevent algae growth and vector breeding. Maintenance agreements between LACDPW and the owner/operator may be required. Failure to properly maintain building and property may subject the property owner to citation.

[2] As determined by the City of Los Angeles, Building and Safety Division

S-9: Building Materials Selection

Purpose

Building materials can potentially contribute pollutants of concern to stormwater runoff through leaching. For example, metal buildings, roofing, and fencing materials may be significant sources of metals in stormwater runoff, especially due to acidic precipitation. The use of alternative building materials can reduce pollutant sources in stormwater runoff by eliminating compounds that can leach into stormwater runoff. Alternative building materials may also reduce the need to perform maintenance activities (i.e., painting) that involve pollutants of concern, and may reduce the volume of stormwater runoff. Alternative materials are available to replace lumber and paving.

Design Specifications

Lumber

Decks and other house components constructed using pressure-treated wood that is typically treated using arsenate, copper, and chromium compounds are hazardous to the environment. Pressure-treated wood may be replaced with cement-fiber or vinyl.

Roofs, Fencing, and Metals

Minimizing the use of copper and galvanized (zinc-coated) metals on buildings and fencing can reduce leaching of these pollutants into stormwater runoff. The following building materials are conventionally made of galvanized metals:

- Metal roofs;
- Chain-link fencing and siding; and
- Metal downspouts, vents, flashing, and trim on roofs.

Architectural use of copper for roofs and gutters should be avoided. As an alternative to copper and galvanized materials, coated metal products are available for both roofing and gutter application. Vinyl-coated fencing is an alternative to traditional galvanized chain-link fences. These products eliminate contact of bare metal with precipitation or stormwater runoff, and reduce the potential for stormwater runoff contamination. Roofing materials are also made of recycled rubber and plastic.

Green roofs may be an option. Green roofs use vegetation such as grasses and other plants as an exterior surface. The plants reduce the velocity of stormwater runoff and absorb water to reduce the volume of stormwater runoff. One potential problem with using green roofs in the Los Angeles County area is the long, hot and dry summers, which may kill the plants if they are not watered. See the Green Roof Fact Sheet (RET-7) in Appendix E.

Pesticides

The use of pesticides around foundations can be reduced through the use of alternative barriers. Sand barriers can be applied around foundations to deter termites, as they cannot tunnel through sand. Metal shields also block termites from tunneling. Additionally, diatomaceous earth can be used to repel or kill a wide variety of other pests.

Maintenance Requirements

The integrity of structural elements that are subject to damage (e.g., signs) must be maintained by the owner/operator as required by local codes and ordinances. Maintenance agreements between LACDPW and the owner/operator may be required. Failure to properly maintain building and property may subject the property owner to citation.

SECTION 6
EXISTING AND PROPOSED CONDITION HYDROCALC PRINTOUTS

EXISTING CONDITION
HYDROCALC PRINTOUTS

Peak Flow Hydrologic Analysis

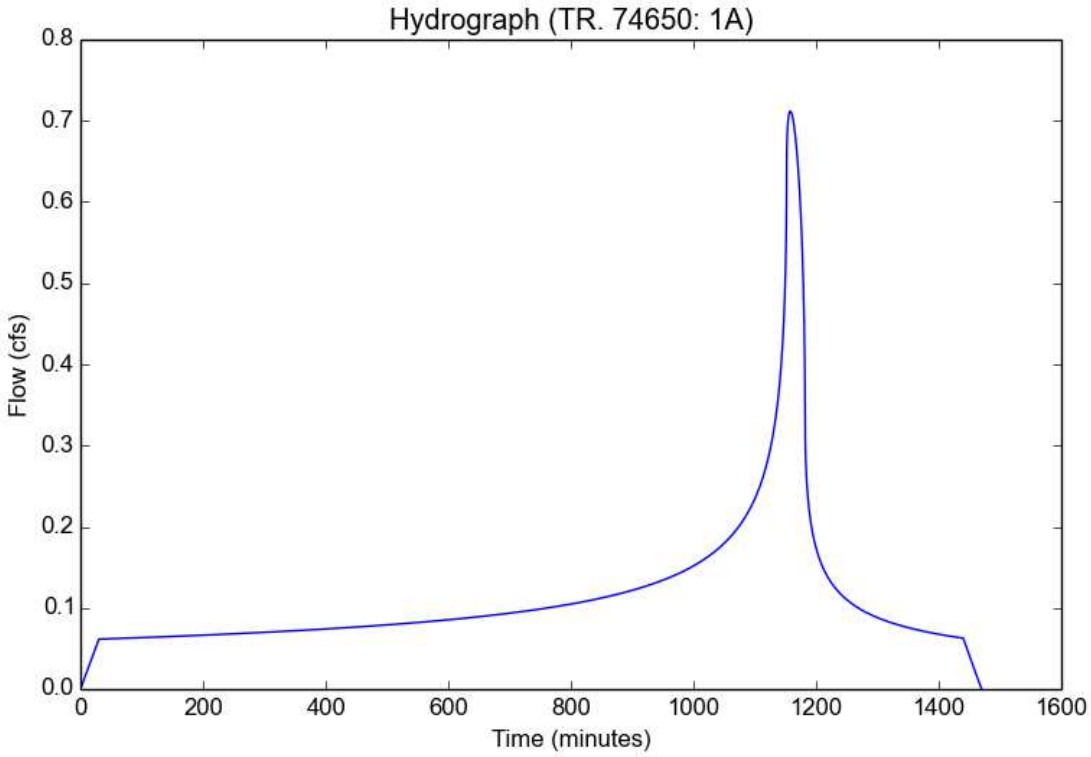
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	1A
Area (ac)	21.4
Flow Path Length (ft)	1556.0
Flow Path Slope (vft/hft)	0.1
50-yr Rainfall Depth (in)	3.096
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	scr
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1982
Peak Intensity (in/hr)	0.308
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.7117
Burned Peak Flow Rate (cfs)	1.1846
24-Hr Clear Runoff Volume (ac-ft)	0.2289
24-Hr Clear Runoff Volume (cu-ft)	9969.1225



Peak Flow Hydrologic Analysis

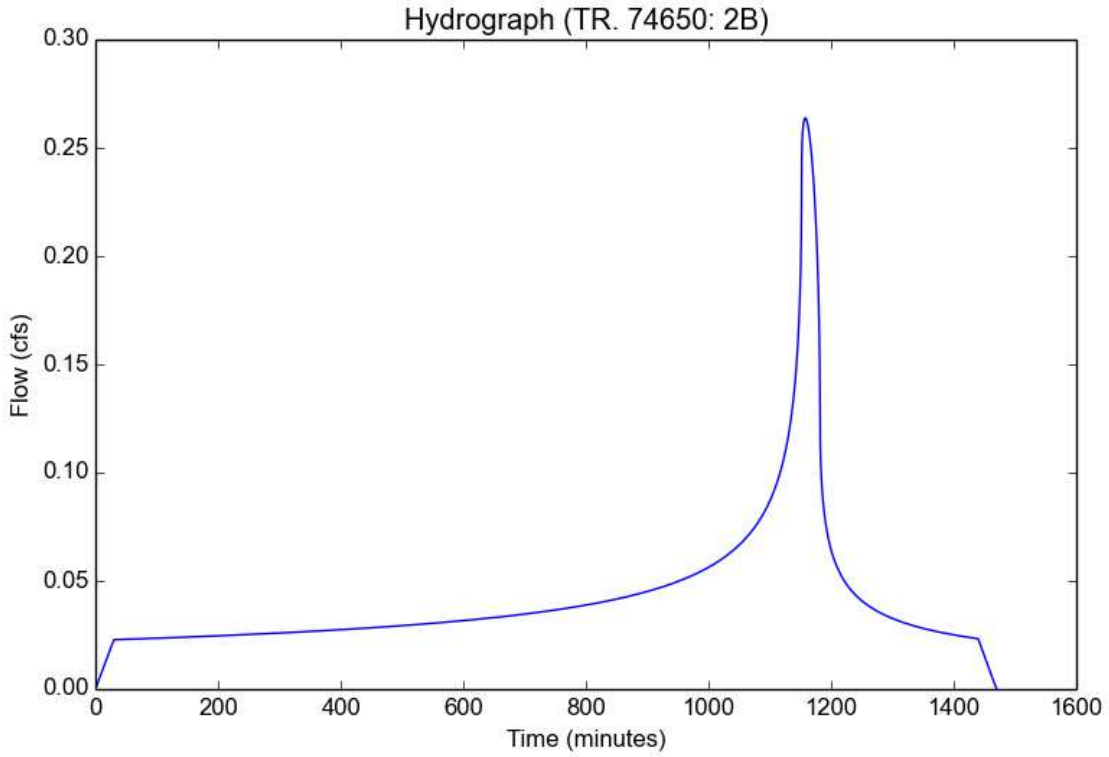
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	2B
Area (ac)	7.93
Flow Path Length (ft)	897.0
Flow Path Slope (vft/hft)	0.15
50-yr Rainfall Depth (in)	3.096
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	scr
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1982
Peak Intensity (in/hr)	0.308
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.2637
Burned Peak Flow Rate (cfs)	0.439
24-Hr Clear Runoff Volume (ac-ft)	0.0848
24-Hr Clear Runoff Volume (cu-ft)	3694.1655



Peak Flow Hydrologic Analysis

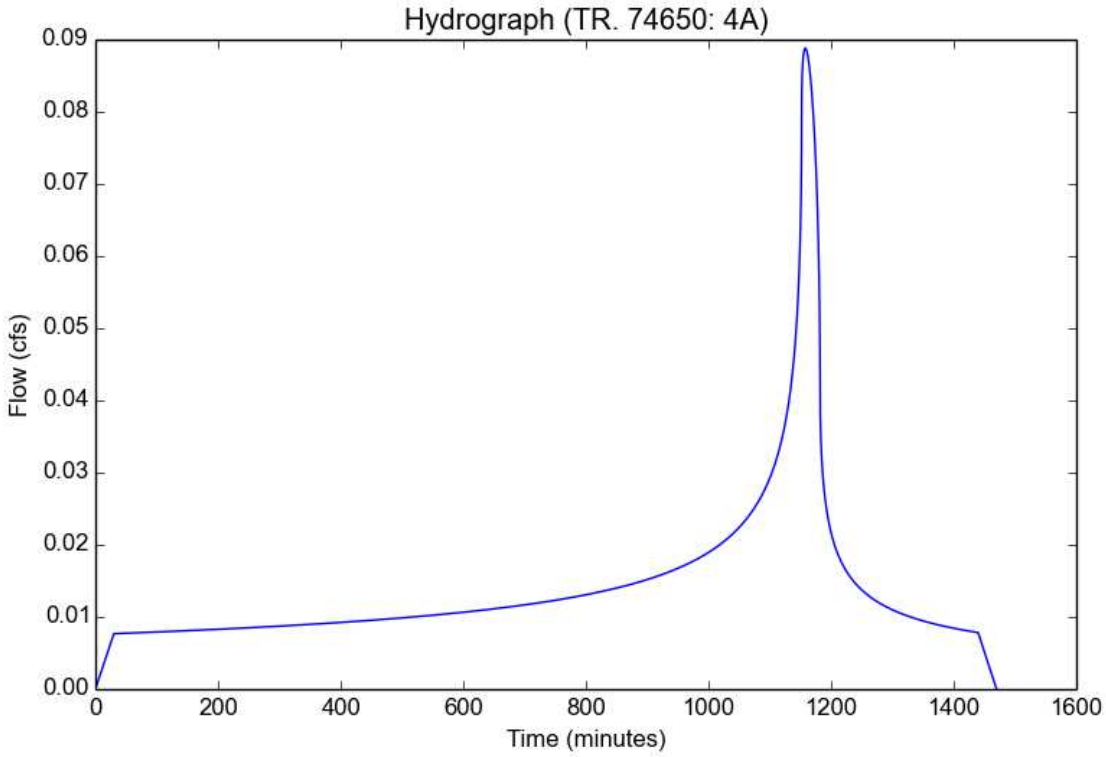
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	4A
Area (ac)	2.67
Flow Path Length (ft)	419.0
Flow Path Slope (vft/hft)	0.06
50-yr Rainfall Depth (in)	3.096
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	scr
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1982
Peak Intensity (in/hr)	0.308
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.0888
Burned Peak Flow Rate (cfs)	0.1478
24-Hr Clear Runoff Volume (ac-ft)	0.0286
24-Hr Clear Runoff Volume (cu-ft)	1243.8111



Peak Flow Hydrologic Analysis

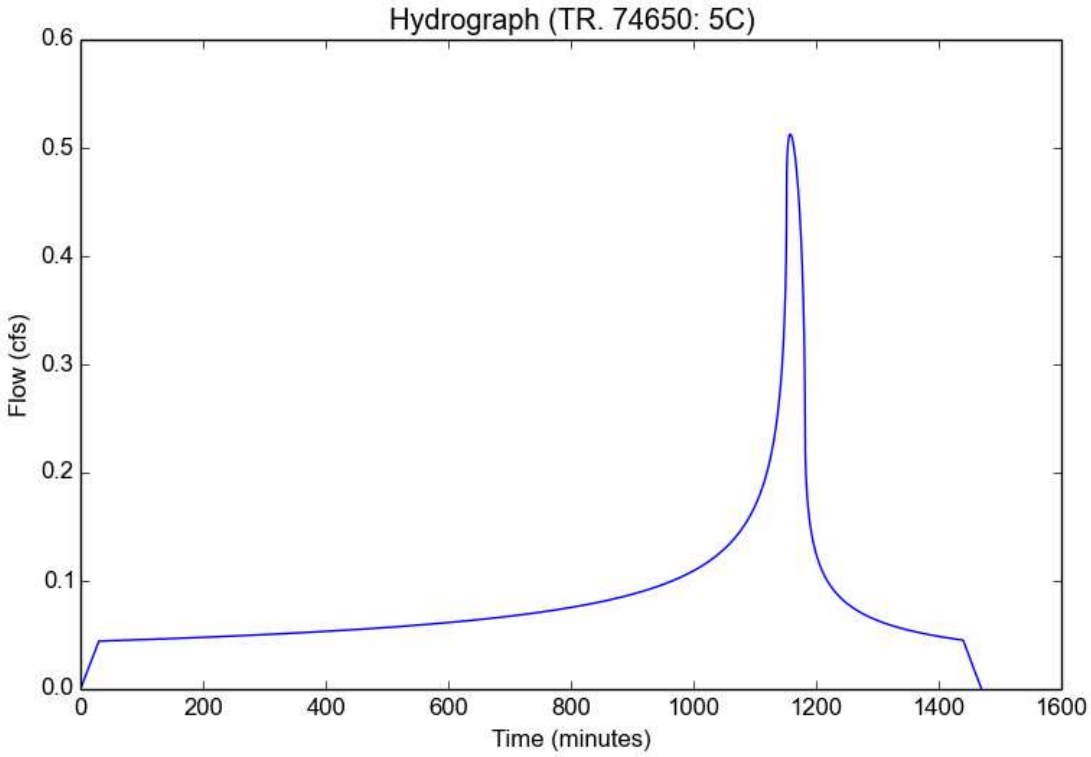
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	5C
Area (ac)	15.41
Flow Path Length (ft)	1161.0
Flow Path Slope (vft/hft)	0.2
50-yr Rainfall Depth (in)	3.096
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	scr
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1982
Peak Intensity (in/hr)	0.308
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.5125
Burned Peak Flow Rate (cfs)	0.853
24-Hr Clear Runoff Volume (ac-ft)	0.1648
24-Hr Clear Runoff Volume (cu-ft)	7178.6999



Peak Flow Hydrologic Analysis

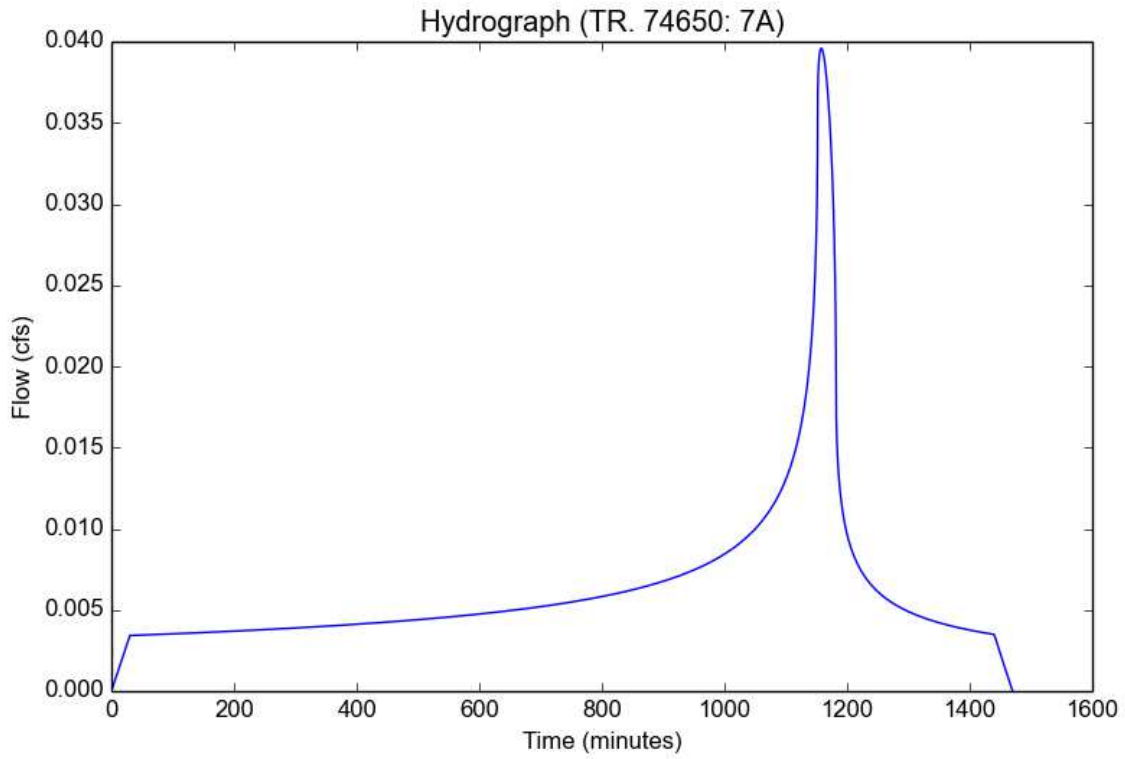
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	7A
Area (ac)	1.19
Flow Path Length (ft)	296.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	3.096
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	scr
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1982
Peak Intensity (in/hr)	0.308
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.0396
Burned Peak Flow Rate (cfs)	0.0659
24-Hr Clear Runoff Volume (ac-ft)	0.0127
24-Hr Clear Runoff Volume (cu-ft)	554.3577



Peak Flow Hydrologic Analysis

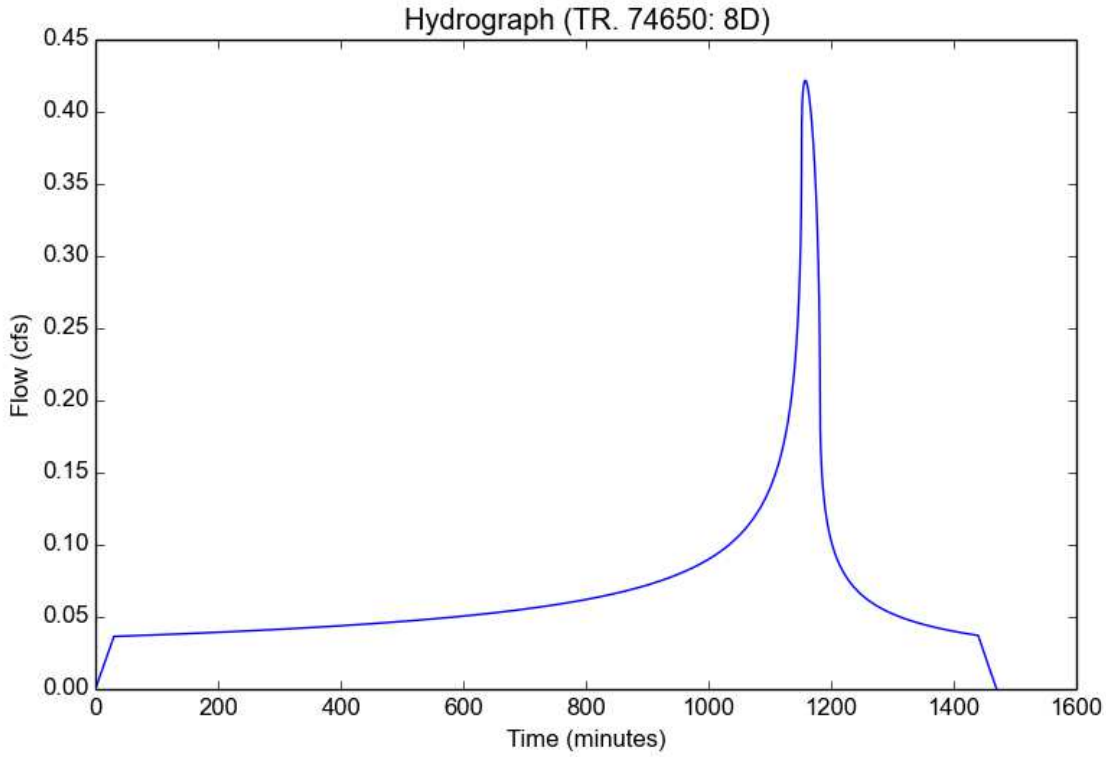
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	8D
Area (ac)	12.68
Flow Path Length (ft)	1394.0
Flow Path Slope (vft/hft)	0.018
50-yr Rainfall Depth (in)	3.096
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	scr
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1982
Peak Intensity (in/hr)	0.308
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.4217
Burned Peak Flow Rate (cfs)	0.7019
24-Hr Clear Runoff Volume (ac-ft)	0.1356
24-Hr Clear Runoff Volume (cu-ft)	5906.938



Peak Flow Hydrologic Analysis

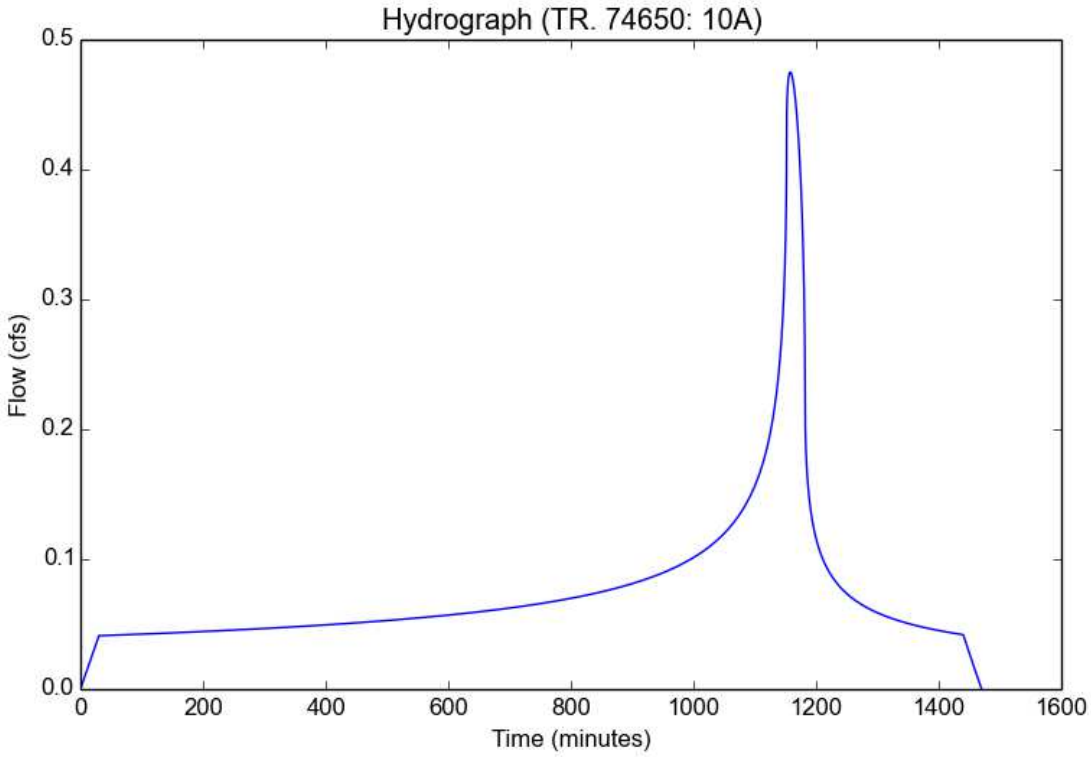
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	10A
Area (ac)	14.28
Flow Path Length (ft)	682.0
Flow Path Slope (vft/hft)	0.046
50-yr Rainfall Depth (in)	3.096
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	scr
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1982
Peak Intensity (in/hr)	0.308
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.4749
Burned Peak Flow Rate (cfs)	0.7905
24-Hr Clear Runoff Volume (ac-ft)	0.1527
24-Hr Clear Runoff Volume (cu-ft)	6652.293



Peak Flow Hydrologic Analysis

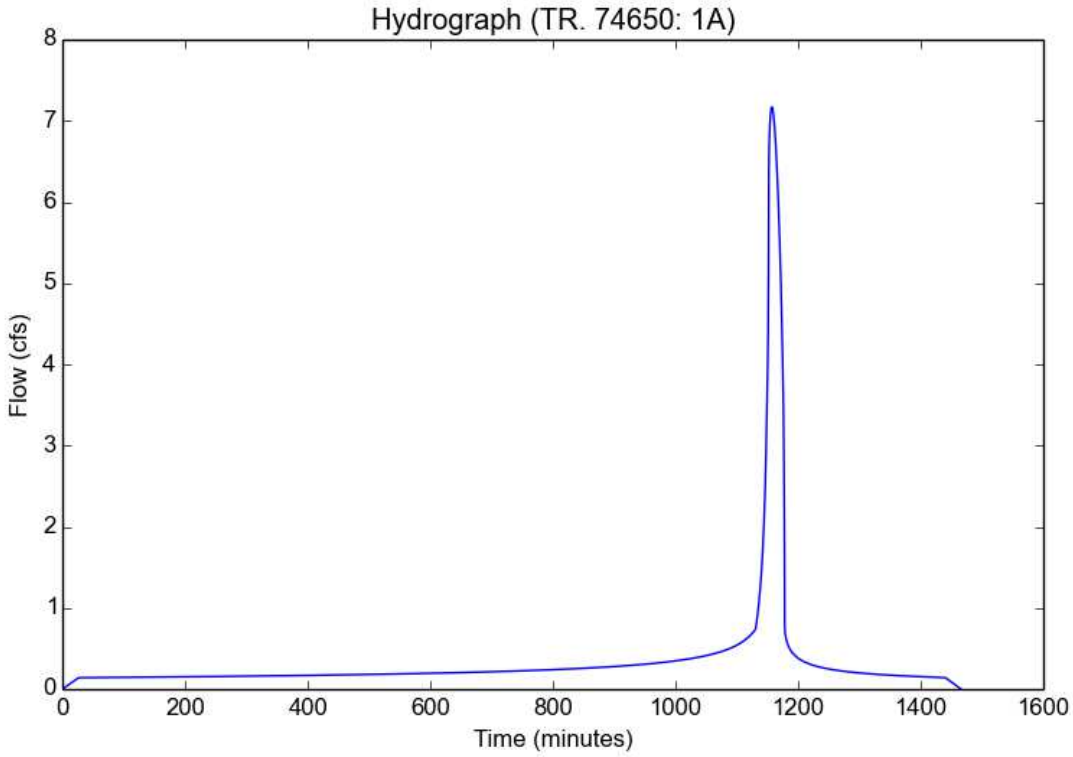
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	1A
Area (ac)	21.4
Flow Path Length (ft)	1556.0
Flow Path Slope (vft/hft)	0.1
50-yr Rainfall Depth (in)	4.672
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	scr
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7284
Peak Intensity (in/hr)	0.7501
Undeveloped Runoff Coefficient (Cu)	0.4421
Developed Runoff Coefficient (Cd)	0.4467
Time of Concentration (min)	26.0
Clear Peak Flow Rate (cfs)	7.17
Burned Peak Flow Rate (cfs)	8.0845
24-Hr Clear Runoff Volume (ac-ft)	0.7065
24-Hr Clear Runoff Volume (cu-ft)	30776.9057



Peak Flow Hydrologic Analysis

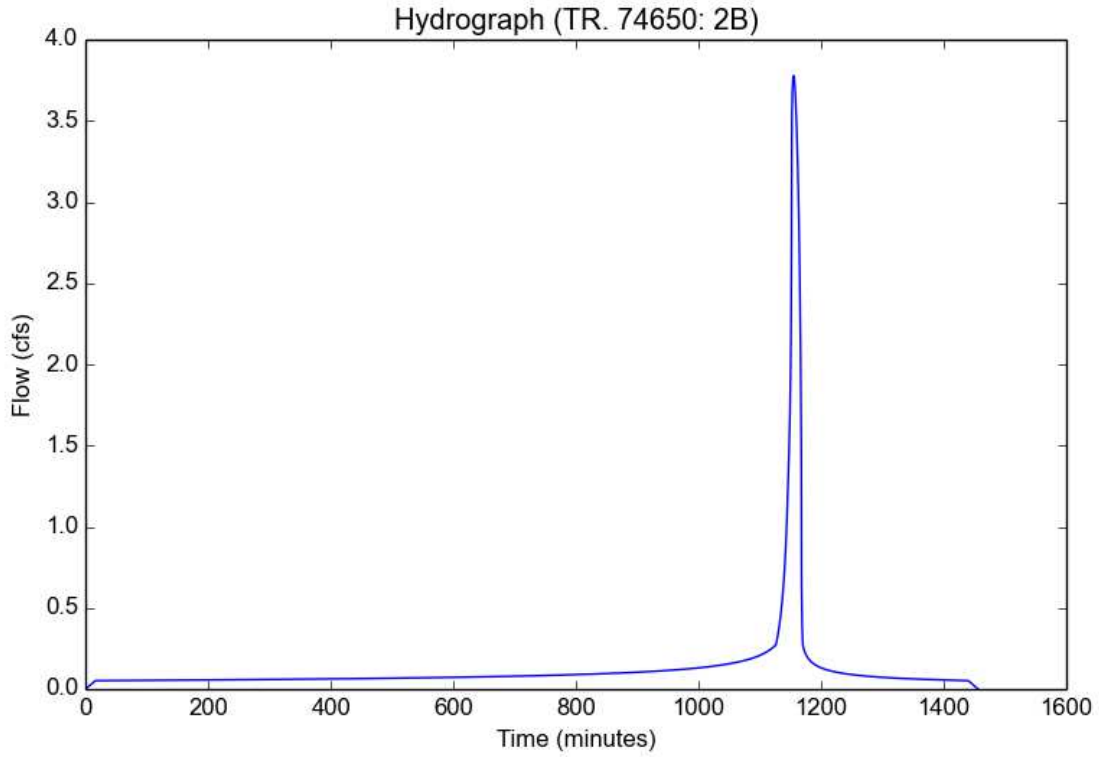
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	2B
Area (ac)	7.93
Flow Path Length (ft)	897.0
Flow Path Slope (vft/hft)	0.15
50-yr Rainfall Depth (in)	4.672
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	scr
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7284
Peak Intensity (in/hr)	0.9423
Undeveloped Runoff Coefficient (Cu)	0.5016
Developed Runoff Coefficient (Cd)	0.5056
Time of Concentration (min)	16.0
Clear Peak Flow Rate (cfs)	3.7783
Burned Peak Flow Rate (cfs)	4.1788
24-Hr Clear Runoff Volume (ac-ft)	0.2655
24-Hr Clear Runoff Volume (cu-ft)	11566.7282



Peak Flow Hydrologic Analysis

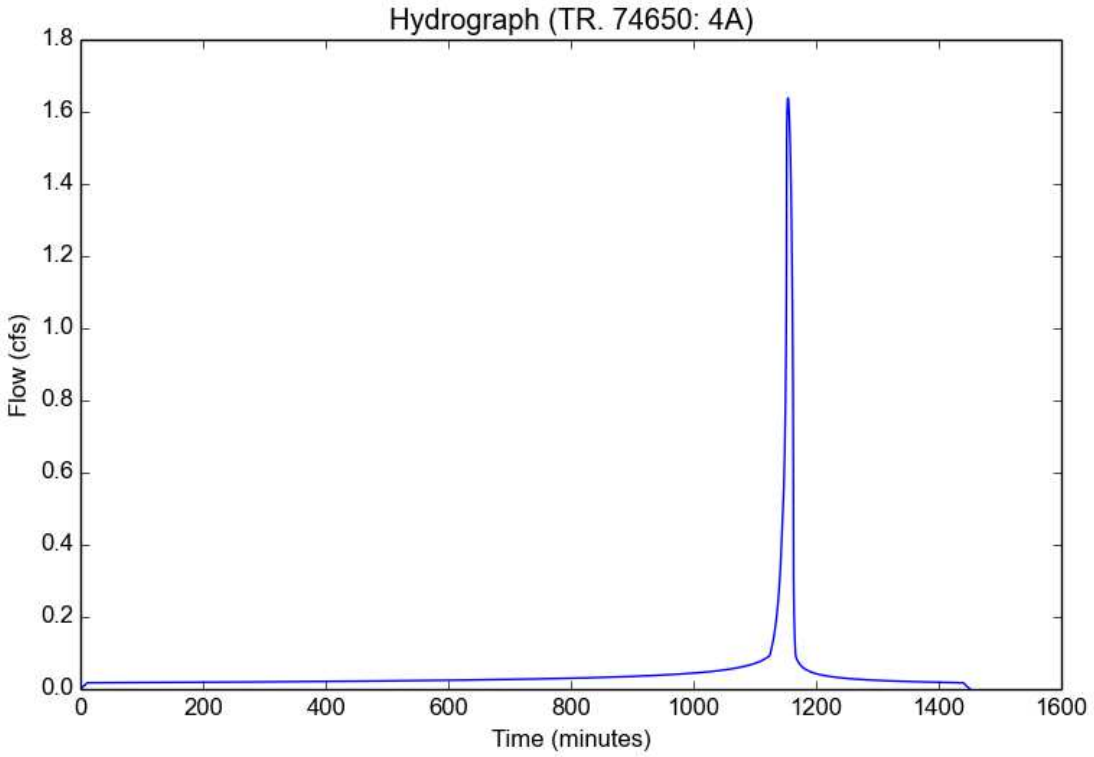
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	4A
Area (ac)	2.67
Flow Path Length (ft)	419.0
Flow Path Slope (vft/hft)	0.06
50-yr Rainfall Depth (in)	4.672
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	scr
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7284
Peak Intensity (in/hr)	1.1238
Undeveloped Runoff Coefficient (Cu)	0.5426
Developed Runoff Coefficient (Cd)	0.5462
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	1.6388
Burned Peak Flow Rate (cfs)	1.792
24-Hr Clear Runoff Volume (ac-ft)	0.09
24-Hr Clear Runoff Volume (cu-ft)	3919.2036



Peak Flow Hydrologic Analysis

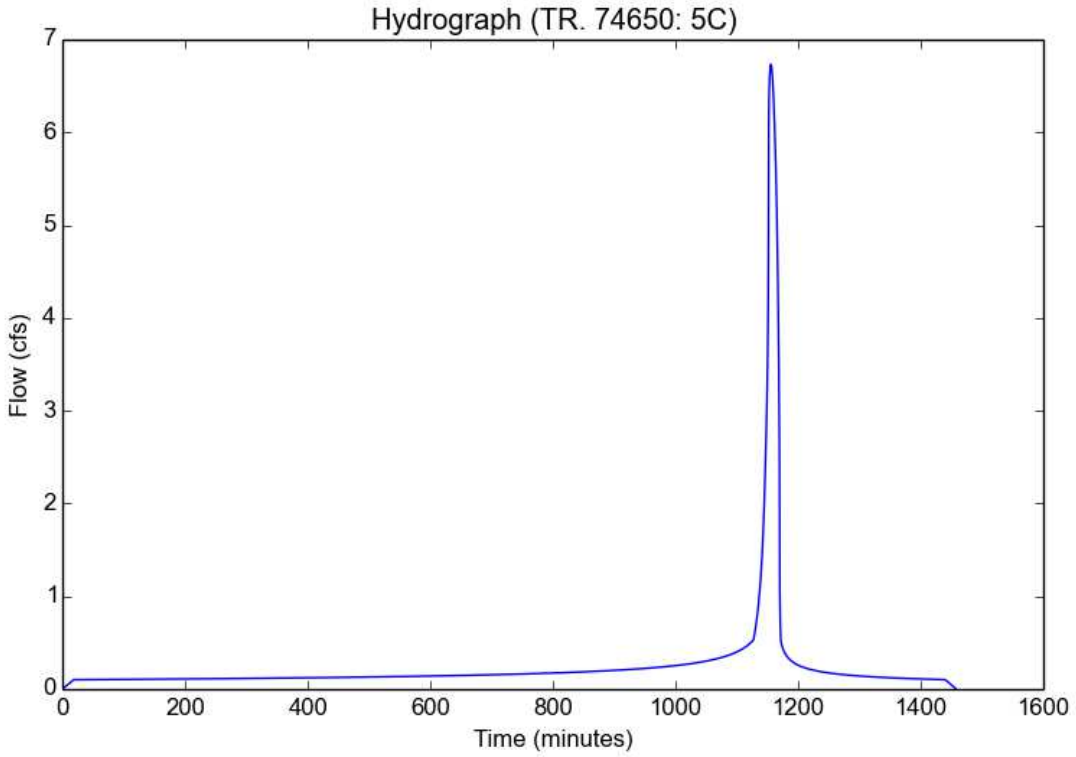
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	5C
Area (ac)	15.41
Flow Path Length (ft)	1161.0
Flow Path Slope (vft/hft)	0.2
50-yr Rainfall Depth (in)	4.672
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	scr
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7284
Peak Intensity (in/hr)	0.8916
Undeveloped Runoff Coefficient (Cu)	0.4859
Developed Runoff Coefficient (Cd)	0.4901
Time of Concentration (min)	18.0
Clear Peak Flow Rate (cfs)	6.7331
Burned Peak Flow Rate (cfs)	7.4835
24-Hr Clear Runoff Volume (ac-ft)	0.5145
24-Hr Clear Runoff Volume (cu-ft)	22413.1006



Peak Flow Hydrologic Analysis

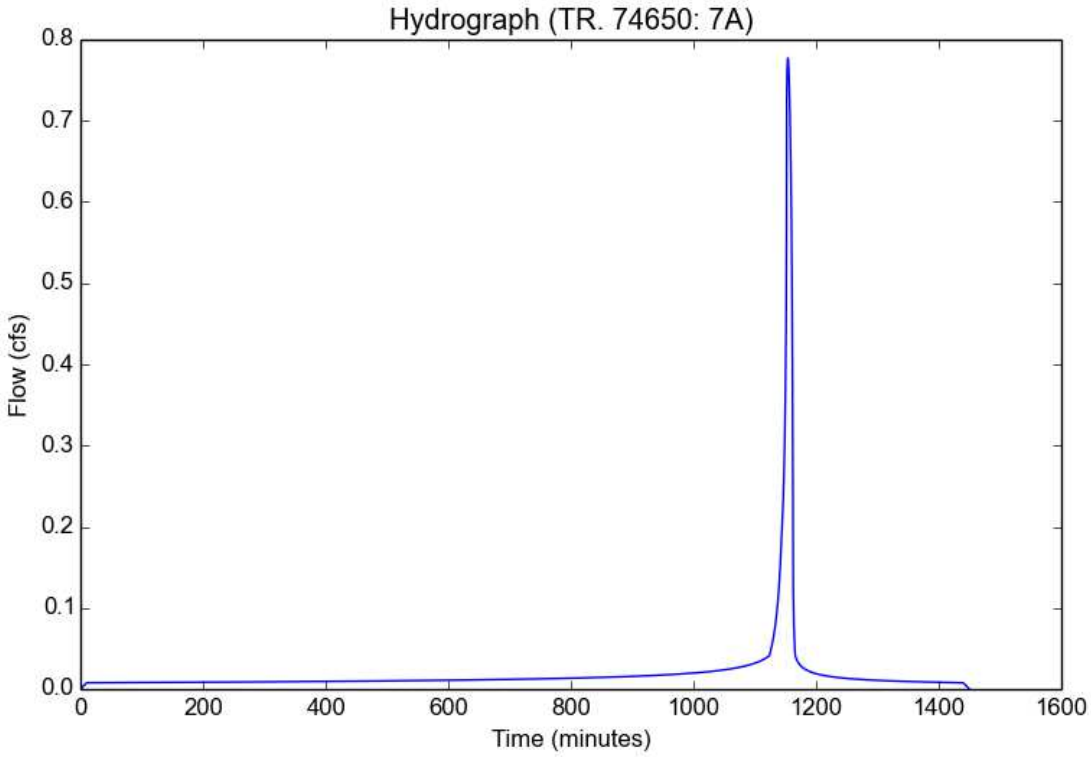
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	7A
Area (ac)	1.19
Flow Path Length (ft)	296.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	4.672
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	scr
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7284
Peak Intensity (in/hr)	1.1753
Undeveloped Runoff Coefficient (Cu)	0.5522
Developed Runoff Coefficient (Cd)	0.5557
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	0.7772
Burned Peak Flow Rate (cfs)	0.8477
24-Hr Clear Runoff Volume (ac-ft)	0.0401
24-Hr Clear Runoff Volume (cu-ft)	1748.4181



Peak Flow Hydrologic Analysis

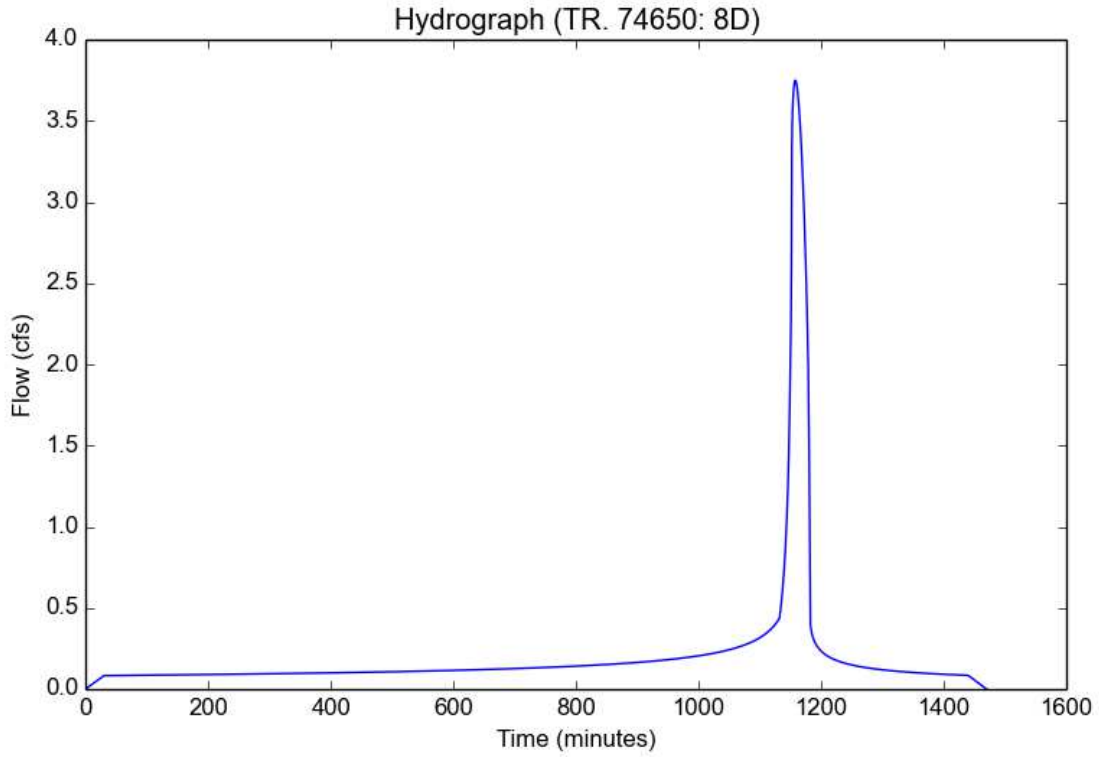
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	8D
Area (ac)	12.68
Flow Path Length (ft)	1394.0
Flow Path Slope (vft/hft)	0.018
50-yr Rainfall Depth (in)	4.672
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	scr
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7284
Peak Intensity (in/hr)	0.7013
Undeveloped Runoff Coefficient (Cu)	0.4168
Developed Runoff Coefficient (Cd)	0.4216
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	3.7492
Burned Peak Flow Rate (cfs)	4.2704
24-Hr Clear Runoff Volume (ac-ft)	0.415
24-Hr Clear Runoff Volume (cu-ft)	18078.9171



Peak Flow Hydrologic Analysis

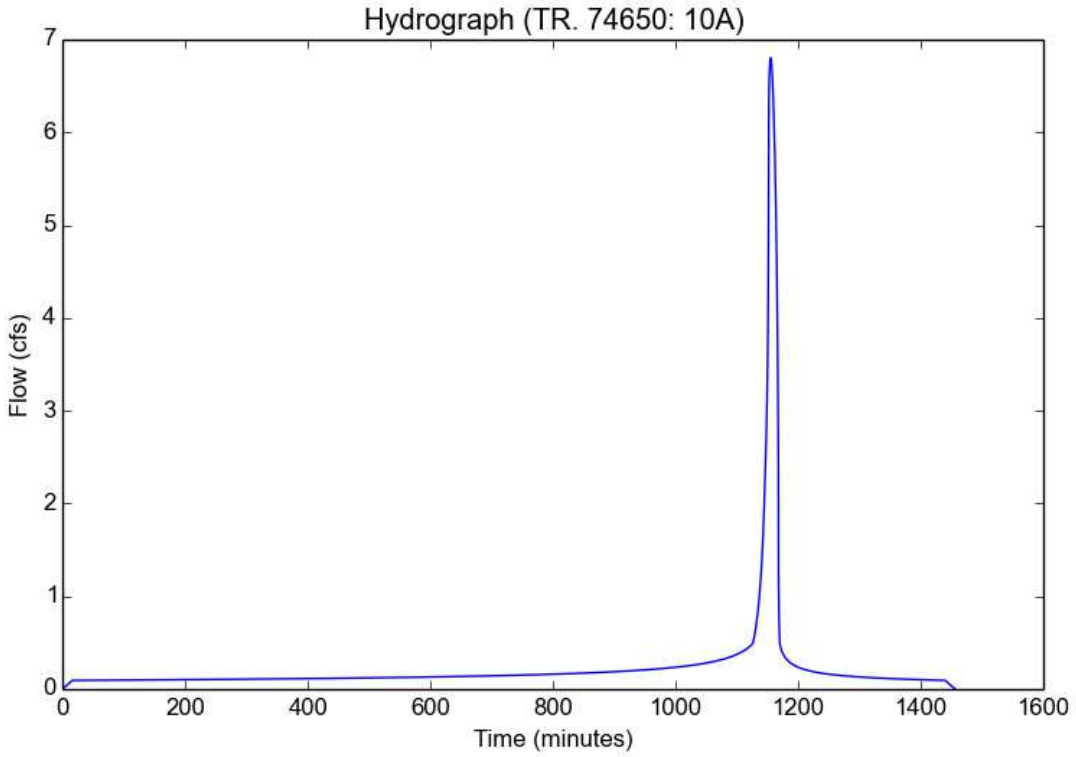
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	10A
Area (ac)	14.28
Flow Path Length (ft)	682.0
Flow Path Slope (vft/hft)	0.046
50-yr Rainfall Depth (in)	4.672
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	scr
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7284
Peak Intensity (in/hr)	0.9423
Undeveloped Runoff Coefficient (Cu)	0.5016
Developed Runoff Coefficient (Cd)	0.5056
Time of Concentration (min)	16.0
Clear Peak Flow Rate (cfs)	6.8038
Burned Peak Flow Rate (cfs)	7.525
24-Hr Clear Runoff Volume (ac-ft)	0.4782
24-Hr Clear Runoff Volume (cu-ft)	20828.8624



Peak Flow Hydrologic Analysis

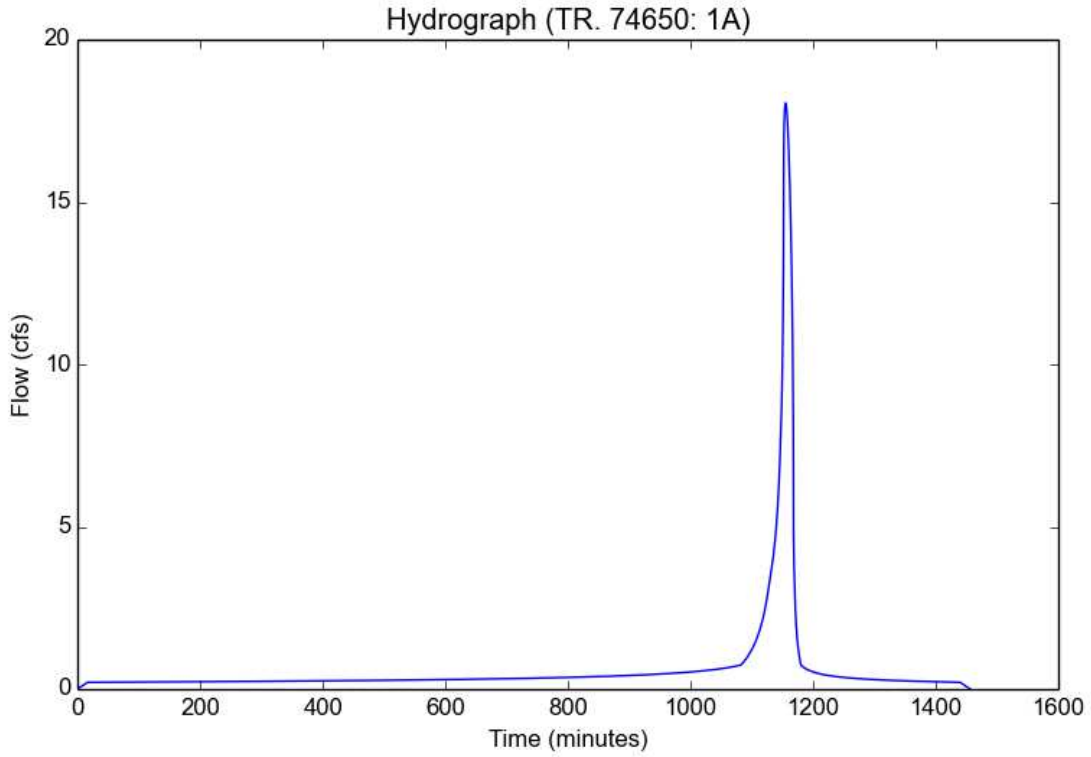
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	1A
Area (ac)	21.4
Flow Path Length (ft)	1556.0
Flow Path Slope (vft/hft)	0.1
50-yr Rainfall Depth (in)	5.712
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	scr
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0784
Peak Intensity (in/hr)	1.4085
Undeveloped Runoff Coefficient (Cu)	0.5957
Developed Runoff Coefficient (Cd)	0.5988
Time of Concentration (min)	16.0
Clear Peak Flow Rate (cfs)	18.049
Burned Peak Flow Rate (cfs)	19.4728
24-Hr Clear Runoff Volume (ac-ft)	1.2586
24-Hr Clear Runoff Volume (cu-ft)	54824.1671



Peak Flow Hydrologic Analysis

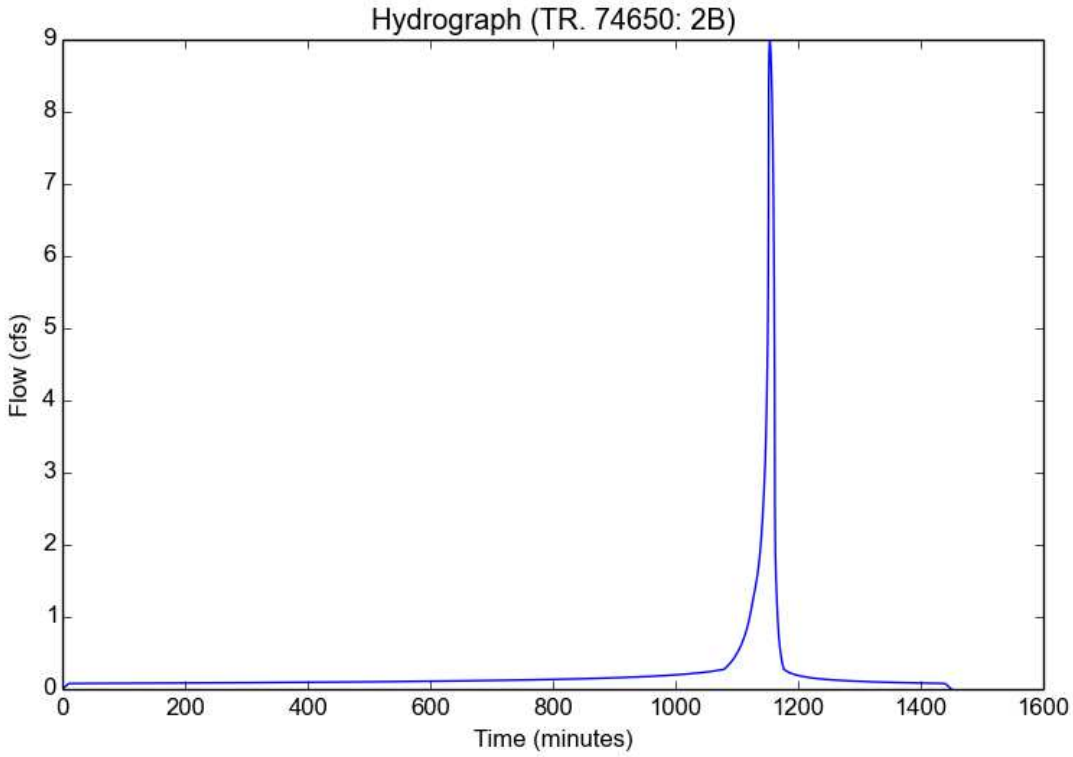
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	2B
Area (ac)	7.93
Flow Path Length (ft)	897.0
Flow Path Slope (vft/hft)	0.15
50-yr Rainfall Depth (in)	5.712
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	scr
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0784
Peak Intensity (in/hr)	1.7567
Undeveloped Runoff Coefficient (Cu)	0.6414
Developed Runoff Coefficient (Cd)	0.644
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	8.9717
Burned Peak Flow Rate (cfs)	9.5801
24-Hr Clear Runoff Volume (ac-ft)	0.4691
24-Hr Clear Runoff Volume (cu-ft)	20434.9095



Peak Flow Hydrologic Analysis

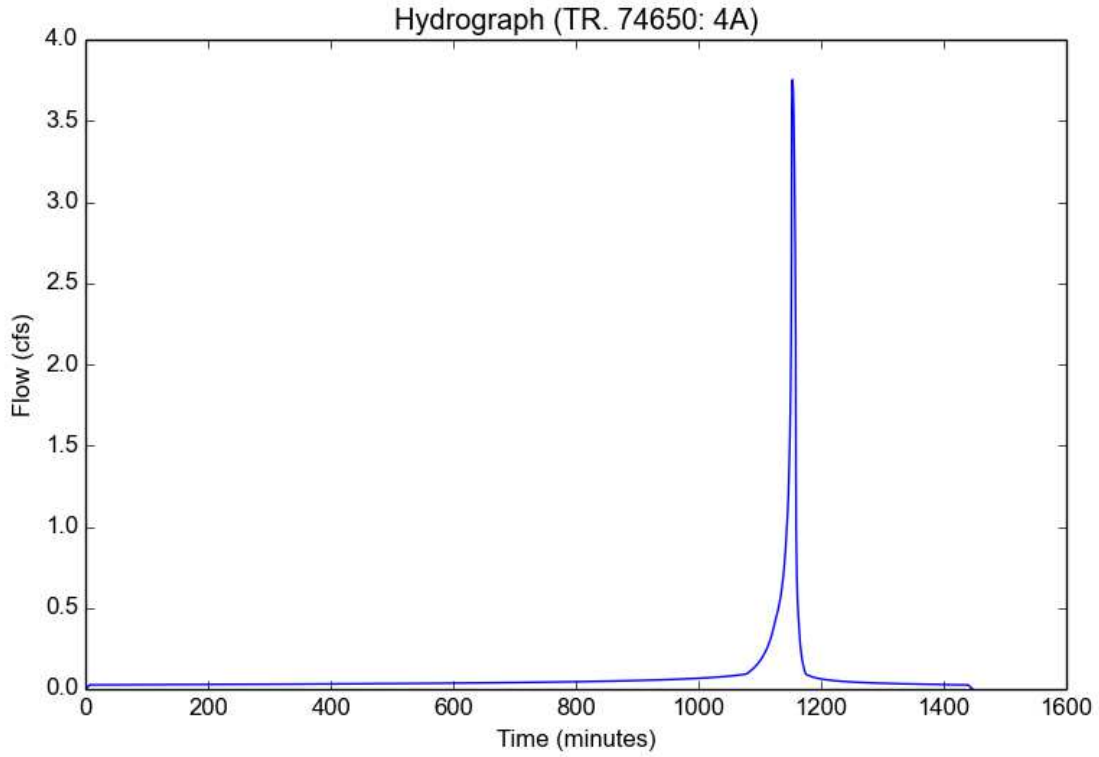
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	4A
Area (ac)	2.67
Flow Path Length (ft)	419.0
Flow Path Slope (vft/hft)	0.06
50-yr Rainfall Depth (in)	5.712
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	scr
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0784
Peak Intensity (in/hr)	2.0773
Undeveloped Runoff Coefficient (Cu)	0.6743
Developed Runoff Coefficient (Cd)	0.6766
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	3.7528
Burned Peak Flow Rate (cfs)	3.9794
24-Hr Clear Runoff Volume (ac-ft)	0.1585
24-Hr Clear Runoff Volume (cu-ft)	6902.3602



Peak Flow Hydrologic Analysis

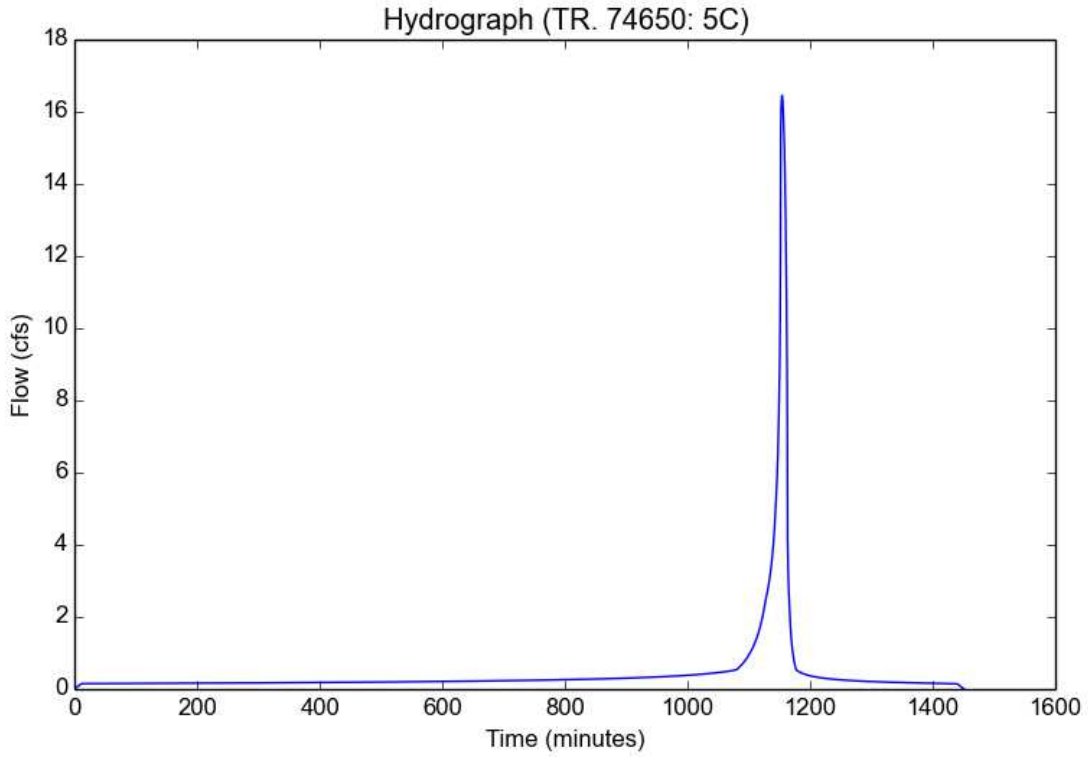
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	5C
Area (ac)	15.41
Flow Path Length (ft)	1161.0
Flow Path Slope (vft/hft)	0.2
50-yr Rainfall Depth (in)	5.712
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	scr
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0784
Peak Intensity (in/hr)	1.6798
Undeveloped Runoff Coefficient (Cu)	0.6329
Developed Runoff Coefficient (Cd)	0.6355
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	16.4508
Burned Peak Flow Rate (cfs)	17.5988
24-Hr Clear Runoff Volume (ac-ft)	0.9109
24-Hr Clear Runoff Volume (cu-ft)	39678.3389



Peak Flow Hydrologic Analysis

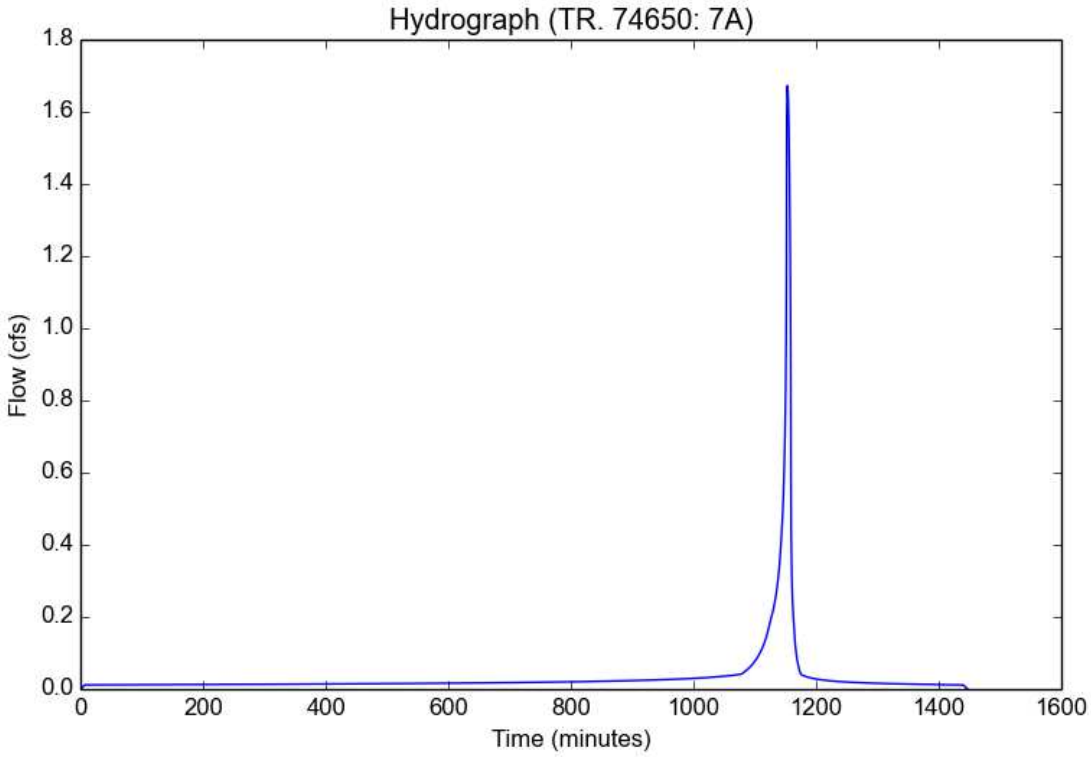
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	7A
Area (ac)	1.19
Flow Path Length (ft)	296.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	5.712
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	scr
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0784
Peak Intensity (in/hr)	2.0773
Undeveloped Runoff Coefficient (Cu)	0.6743
Developed Runoff Coefficient (Cd)	0.6766
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	1.6726
Burned Peak Flow Rate (cfs)	1.7736
24-Hr Clear Runoff Volume (ac-ft)	0.0706
24-Hr Clear Runoff Volume (cu-ft)	3076.3328



Peak Flow Hydrologic Analysis

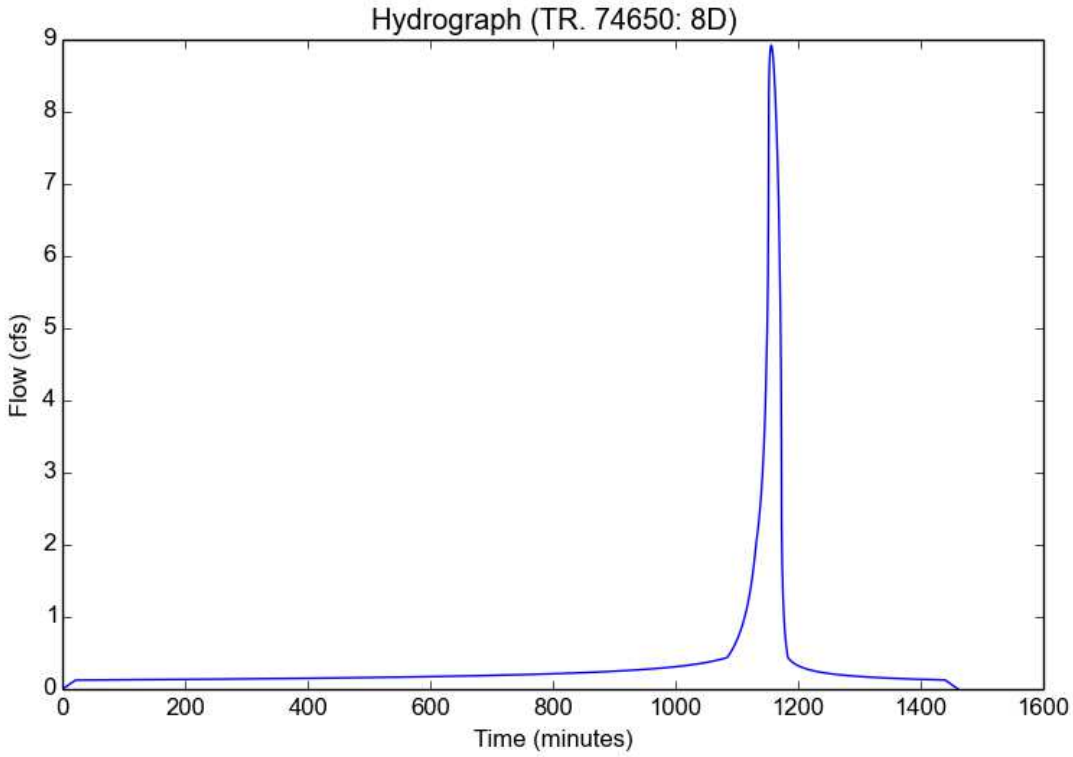
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	8D
Area (ac)	12.68
Flow Path Length (ft)	1394.0
Flow Path Slope (vft/hft)	0.018
50-yr Rainfall Depth (in)	5.712
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	scr
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0784
Peak Intensity (in/hr)	1.2395
Undeveloped Runoff Coefficient (Cu)	0.5642
Developed Runoff Coefficient (Cd)	0.5676
Time of Concentration (min)	21.0
Clear Peak Flow Rate (cfs)	8.9206
Burned Peak Flow Rate (cfs)	9.7009
24-Hr Clear Runoff Volume (ac-ft)	0.7424
24-Hr Clear Runoff Volume (cu-ft)	32340.1151



Peak Flow Hydrologic Analysis

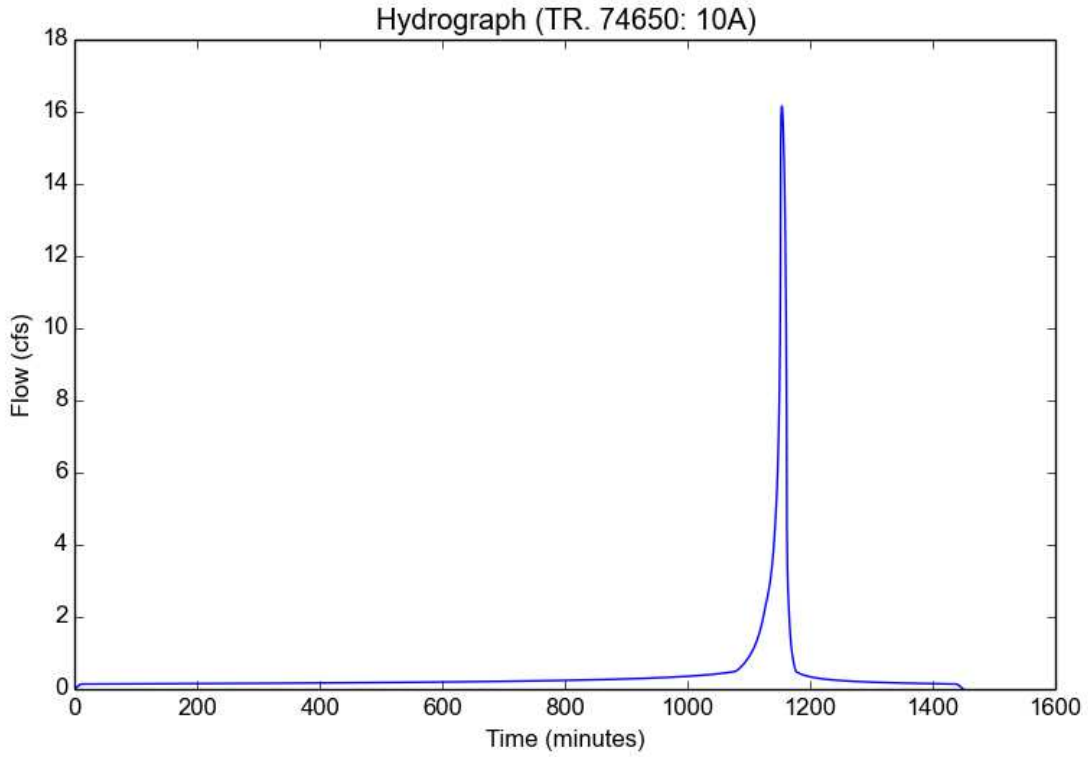
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	10A
Area (ac)	14.28
Flow Path Length (ft)	682.0
Flow Path Slope (vft/hft)	0.046
50-yr Rainfall Depth (in)	5.712
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	scr
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0784
Peak Intensity (in/hr)	1.7567
Undeveloped Runoff Coefficient (Cu)	0.6414
Developed Runoff Coefficient (Cd)	0.644
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	16.1559
Burned Peak Flow Rate (cfs)	17.2514
24-Hr Clear Runoff Volume (ac-ft)	0.8448
24-Hr Clear Runoff Volume (cu-ft)	36798.2985



Peak Flow Hydrologic Analysis

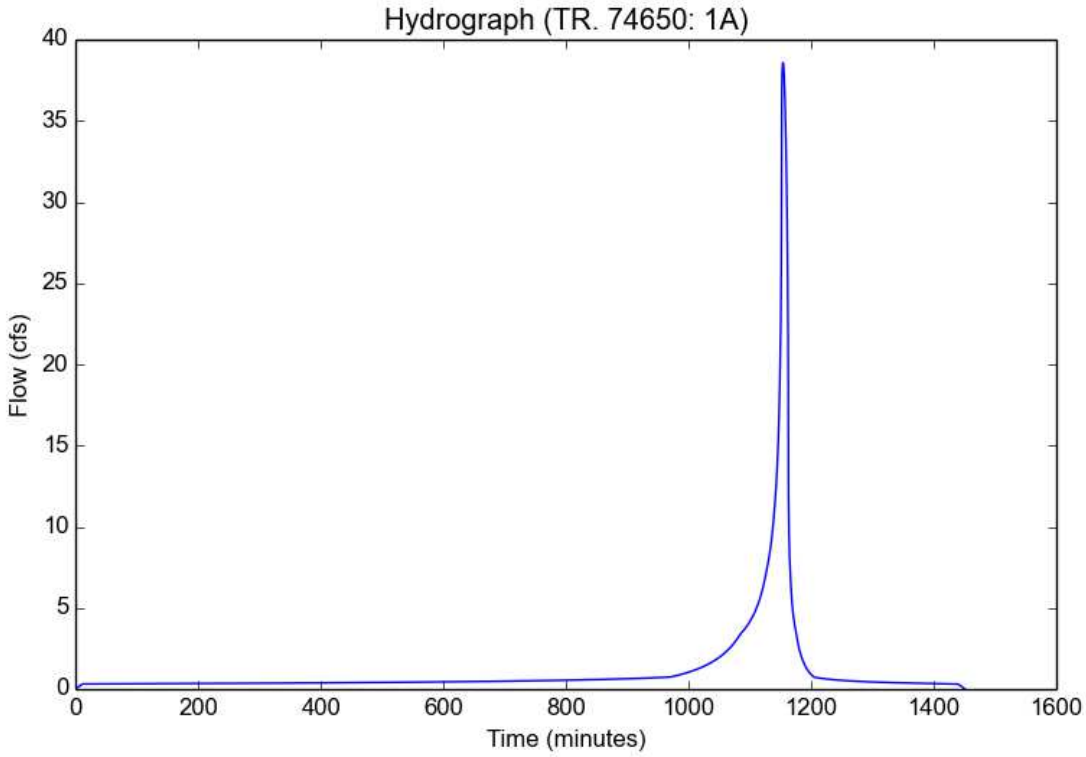
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	1A
Area (ac)	21.4
Flow Path Length (ft)	1556.0
Flow Path Slope (vft/hft)	0.1
50-yr Rainfall Depth (in)	7.024
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	scr
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1671
Peak Intensity (in/hr)	2.5401
Undeveloped Runoff Coefficient (Cu)	0.7079
Developed Runoff Coefficient (Cd)	0.7098
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	38.5848
Burned Peak Flow Rate (cfs)	40.6462
24-Hr Clear Runoff Volume (ac-ft)	2.3687
24-Hr Clear Runoff Volume (cu-ft)	103181.9821



Peak Flow Hydrologic Analysis

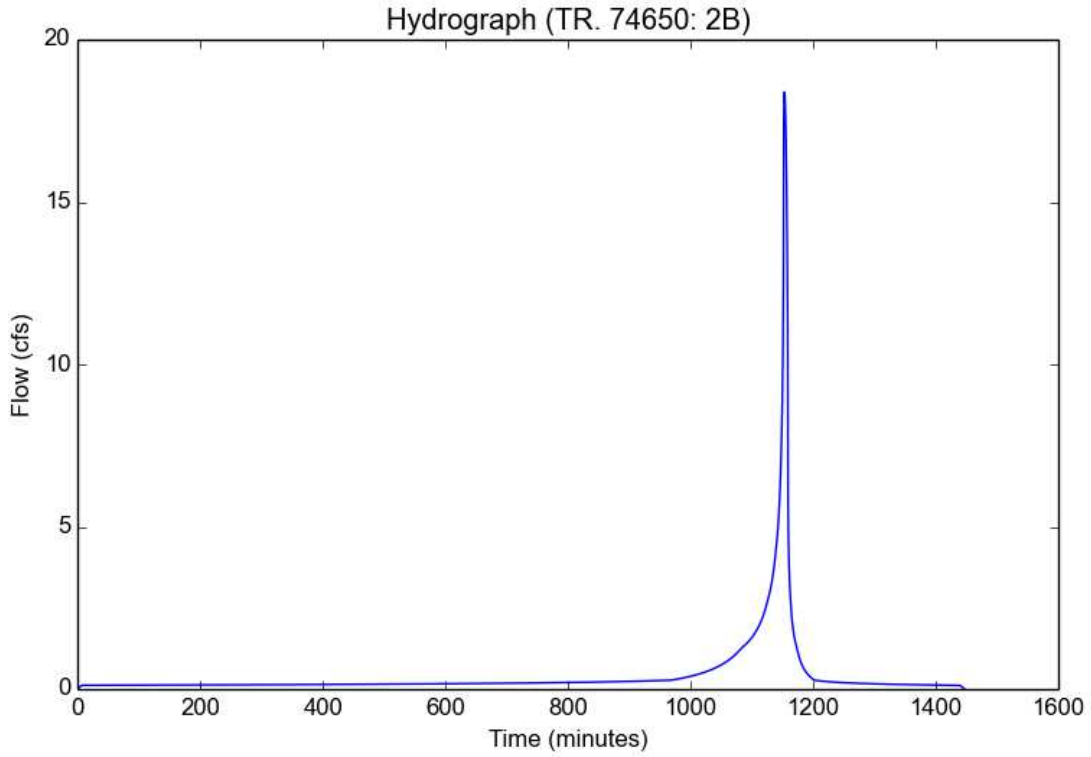
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	2B
Area (ac)	7.93
Flow Path Length (ft)	897.0
Flow Path Slope (vft/hft)	0.15
50-yr Rainfall Depth (in)	7.024
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	scr
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1671
Peak Intensity (in/hr)	3.1412
Undeveloped Runoff Coefficient (Cu)	0.7365
Developed Runoff Coefficient (Cd)	0.7381
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	18.3861
Burned Peak Flow Rate (cfs)	19.2681
24-Hr Clear Runoff Volume (ac-ft)	0.8791
24-Hr Clear Runoff Volume (cu-ft)	38294.8735



Peak Flow Hydrologic Analysis

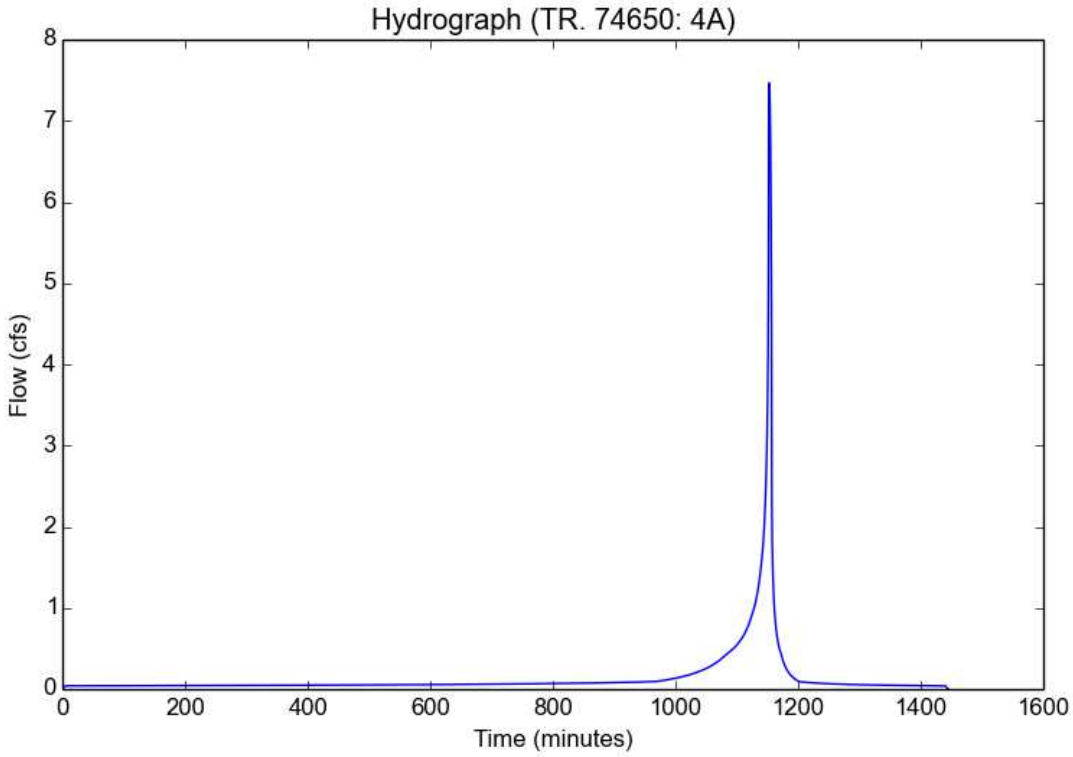
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	4A
Area (ac)	2.67
Flow Path Length (ft)	419.0
Flow Path Slope (vft/hft)	0.06
50-yr Rainfall Depth (in)	7.024
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	scr
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1671
Peak Intensity (in/hr)	3.6794
Undeveloped Runoff Coefficient (Cu)	0.7587
Developed Runoff Coefficient (Cd)	0.7601
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	7.4674
Burned Peak Flow Rate (cfs)	7.7937
24-Hr Clear Runoff Volume (ac-ft)	0.2964
24-Hr Clear Runoff Volume (cu-ft)	12910.6047



Peak Flow Hydrologic Analysis

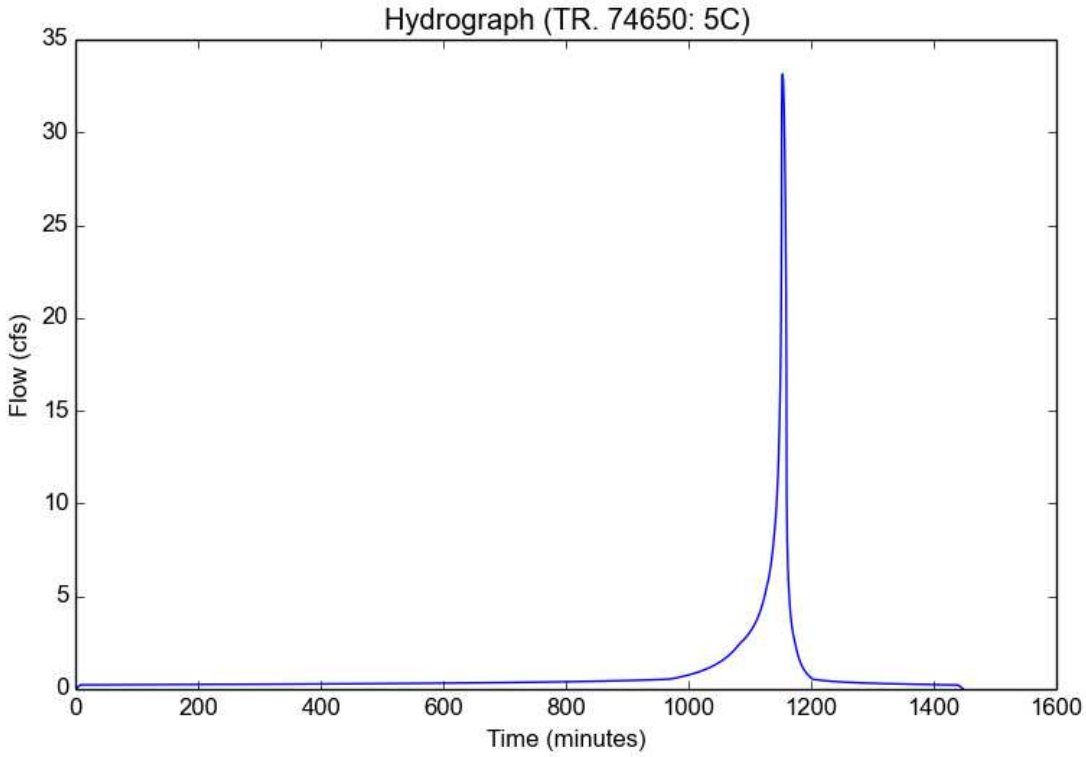
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	5C
Area (ac)	15.41
Flow Path Length (ft)	1161.0
Flow Path Slope (vft/hft)	0.2
50-yr Rainfall Depth (in)	7.024
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	scr
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1671
Peak Intensity (in/hr)	2.9502
Undeveloped Runoff Coefficient (Cu)	0.7274
Developed Runoff Coefficient (Cd)	0.7291
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	33.1471
Burned Peak Flow Rate (cfs)	34.7957
24-Hr Clear Runoff Volume (ac-ft)	1.7075
24-Hr Clear Runoff Volume (cu-ft)	74380.5233



Peak Flow Hydrologic Analysis

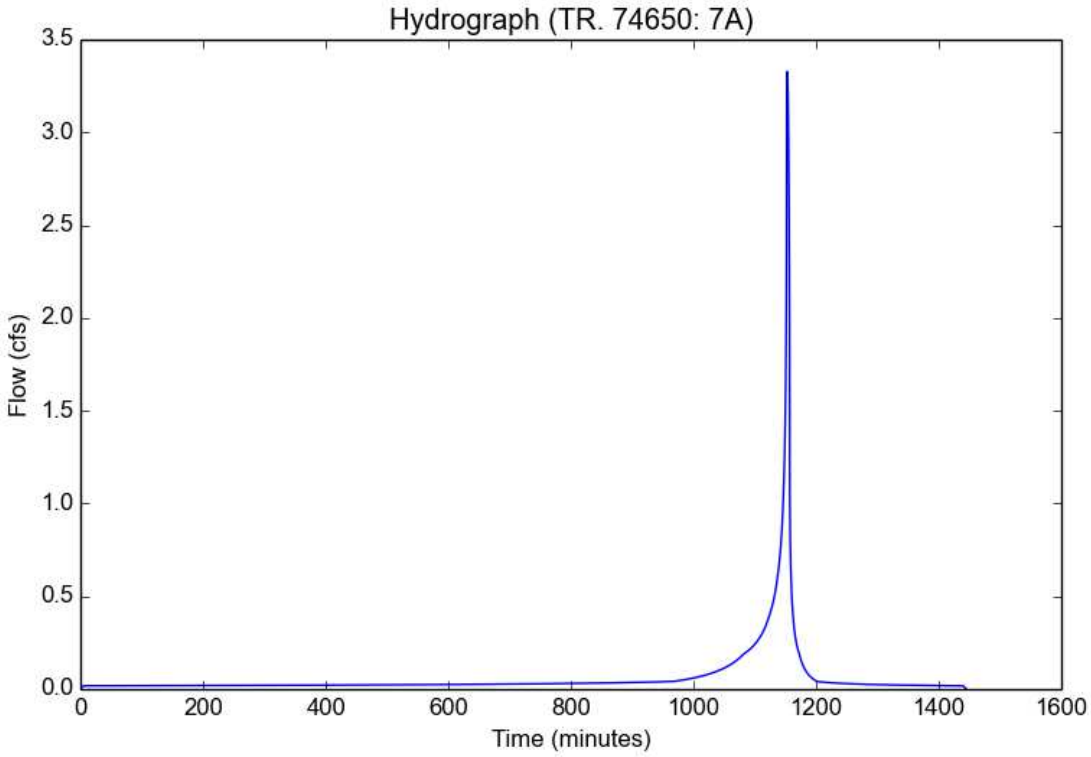
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	7A
Area (ac)	1.19
Flow Path Length (ft)	296.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	7.024
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	scr
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1671
Peak Intensity (in/hr)	3.6794
Undeveloped Runoff Coefficient (Cu)	0.7587
Developed Runoff Coefficient (Cd)	0.7601
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.3282
Burned Peak Flow Rate (cfs)	3.4736
24-Hr Clear Runoff Volume (ac-ft)	0.1321
24-Hr Clear Runoff Volume (cu-ft)	5754.1646



Peak Flow Hydrologic Analysis

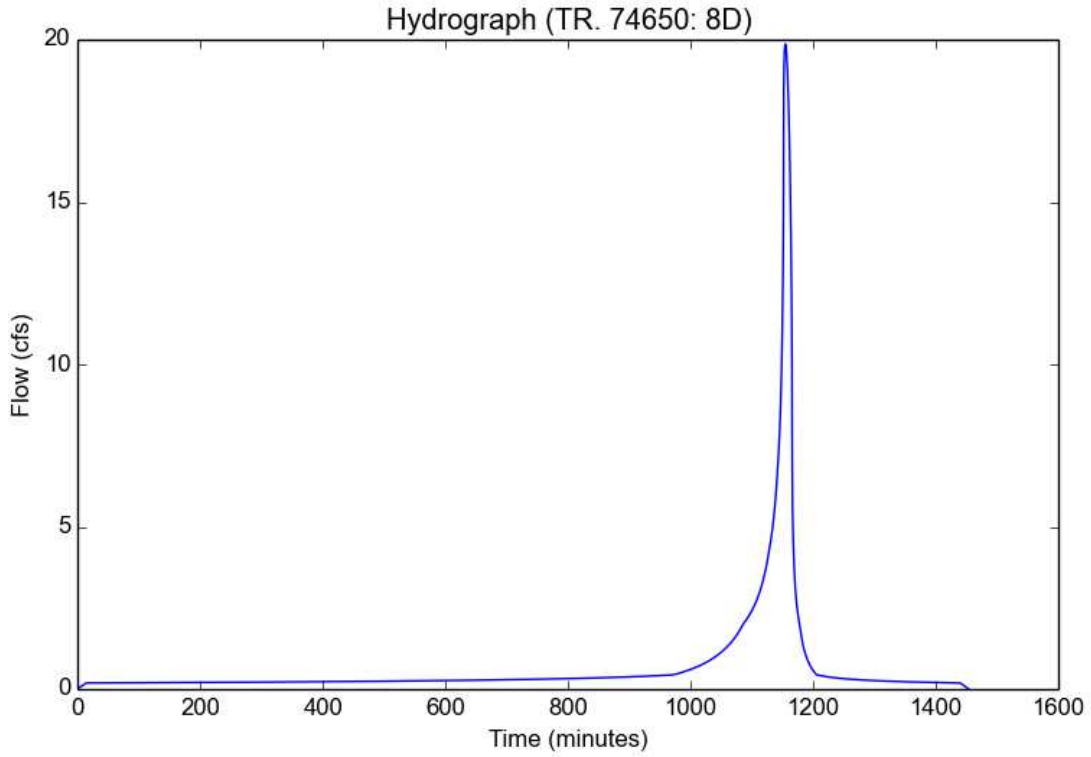
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	8D
Area (ac)	12.68
Flow Path Length (ft)	1394.0
Flow Path Slope (vft/hft)	0.018
50-yr Rainfall Depth (in)	7.024
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	scr
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1671
Peak Intensity (in/hr)	2.2679
Undeveloped Runoff Coefficient (Cu)	0.6886
Developed Runoff Coefficient (Cd)	0.6907
Time of Concentration (min)	14.0
Clear Peak Flow Rate (cfs)	19.8632
Burned Peak Flow Rate (cfs)	21.0039
24-Hr Clear Runoff Volume (ac-ft)	1.4011
24-Hr Clear Runoff Volume (cu-ft)	61032.5656



Peak Flow Hydrologic Analysis

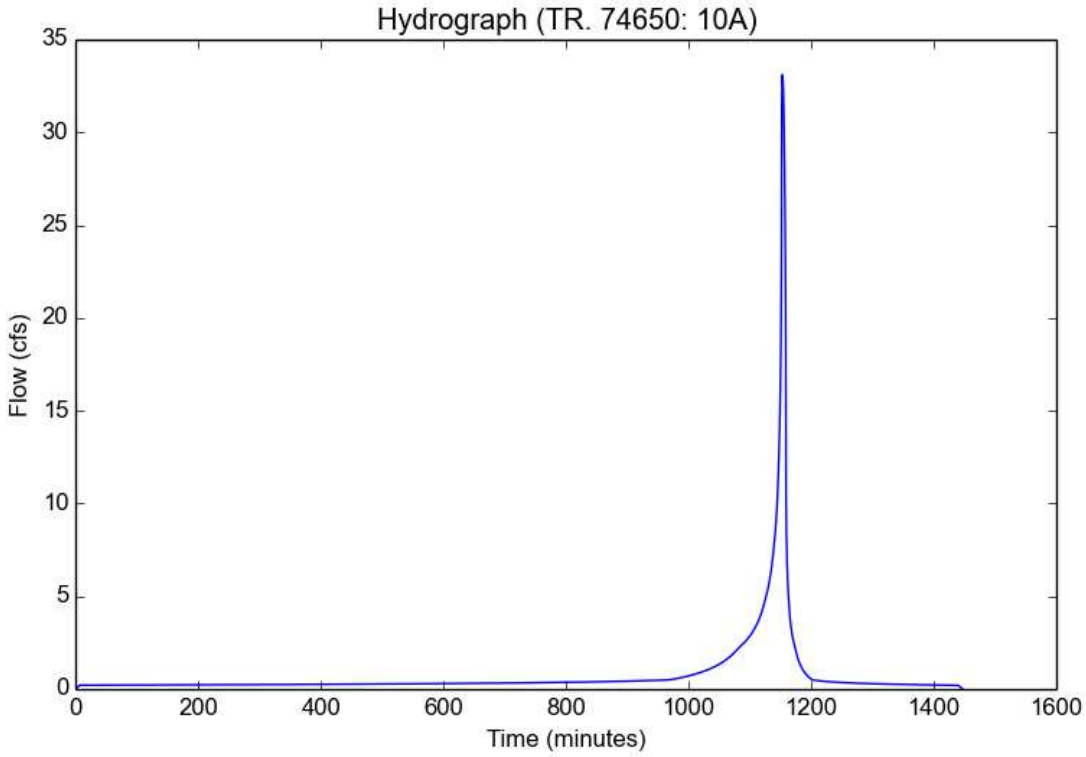
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	10A
Area (ac)	14.28
Flow Path Length (ft)	682.0
Flow Path Slope (vft/hft)	0.046
50-yr Rainfall Depth (in)	7.024
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	scr
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1671
Peak Intensity (in/hr)	3.1412
Undeveloped Runoff Coefficient (Cu)	0.7365
Developed Runoff Coefficient (Cd)	0.7381
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	33.1089
Burned Peak Flow Rate (cfs)	34.6971
24-Hr Clear Runoff Volume (ac-ft)	1.5831
24-Hr Clear Runoff Volume (cu-ft)	68959.747



Peak Flow Hydrologic Analysis

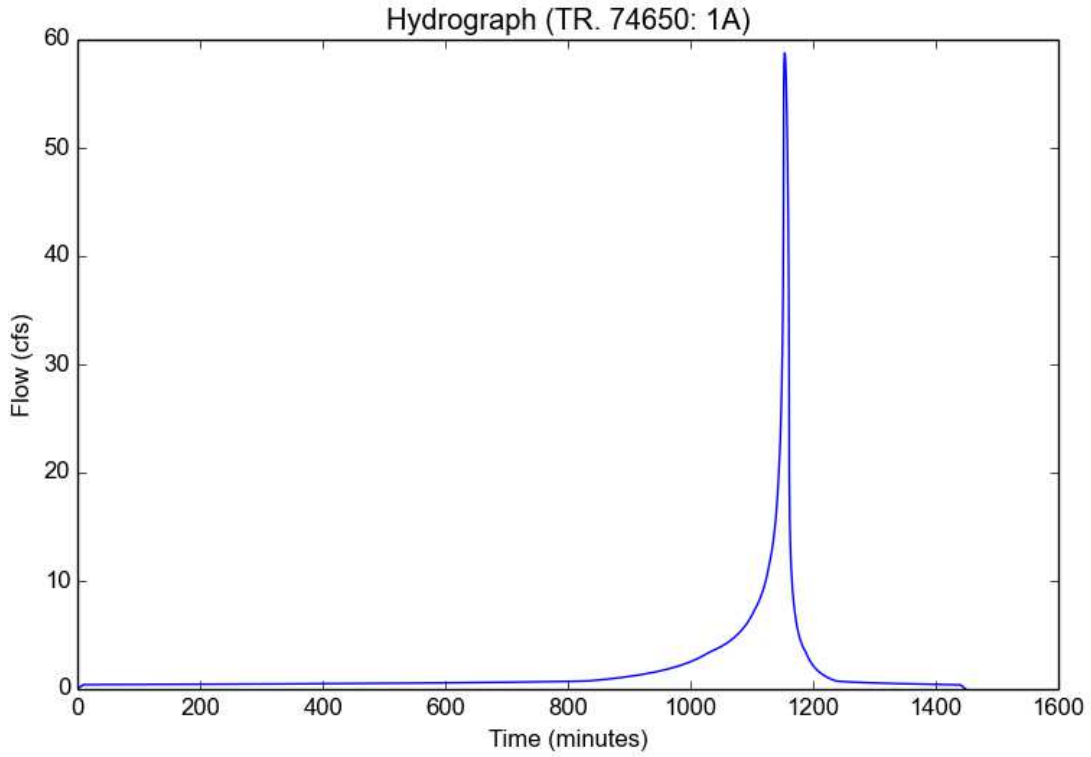
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	1A
Area (ac)	21.4
Flow Path Length (ft)	1556.0
Flow Path Slope (vft/hft)	0.1
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	scr
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	3.6209
Undeveloped Runoff Coefficient (Cu)	0.757
Developed Runoff Coefficient (Cd)	0.7584
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	58.7685
Burned Peak Flow Rate (cfs)	61.3541
24-Hr Clear Runoff Volume (ac-ft)	3.6111
24-Hr Clear Runoff Volume (cu-ft)	157297.6605



Peak Flow Hydrologic Analysis

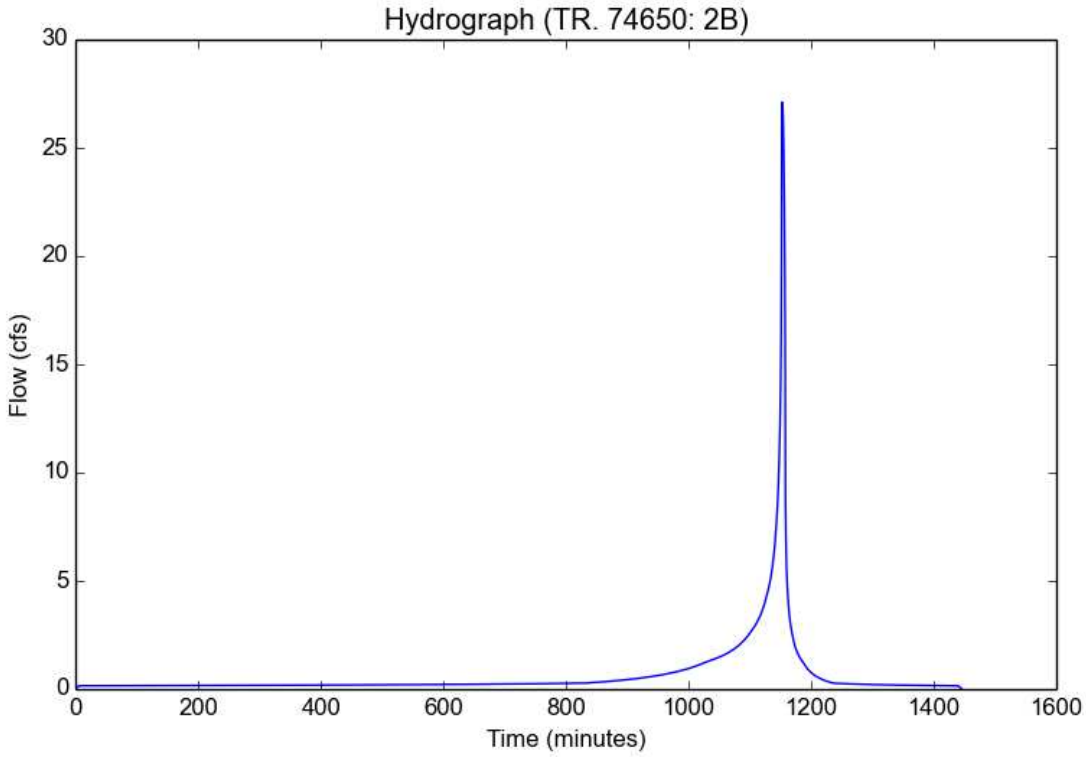
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	2B
Area (ac)	7.93
Flow Path Length (ft)	897.0
Flow Path Slope (vft/hft)	0.15
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	scr
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.381
Undeveloped Runoff Coefficient (Cu)	0.779
Developed Runoff Coefficient (Cd)	0.7802
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	27.1064
Burned Peak Flow Rate (cfs)	28.1908
24-Hr Clear Runoff Volume (ac-ft)	1.3394
24-Hr Clear Runoff Volume (cu-ft)	58345.2141



Peak Flow Hydrologic Analysis

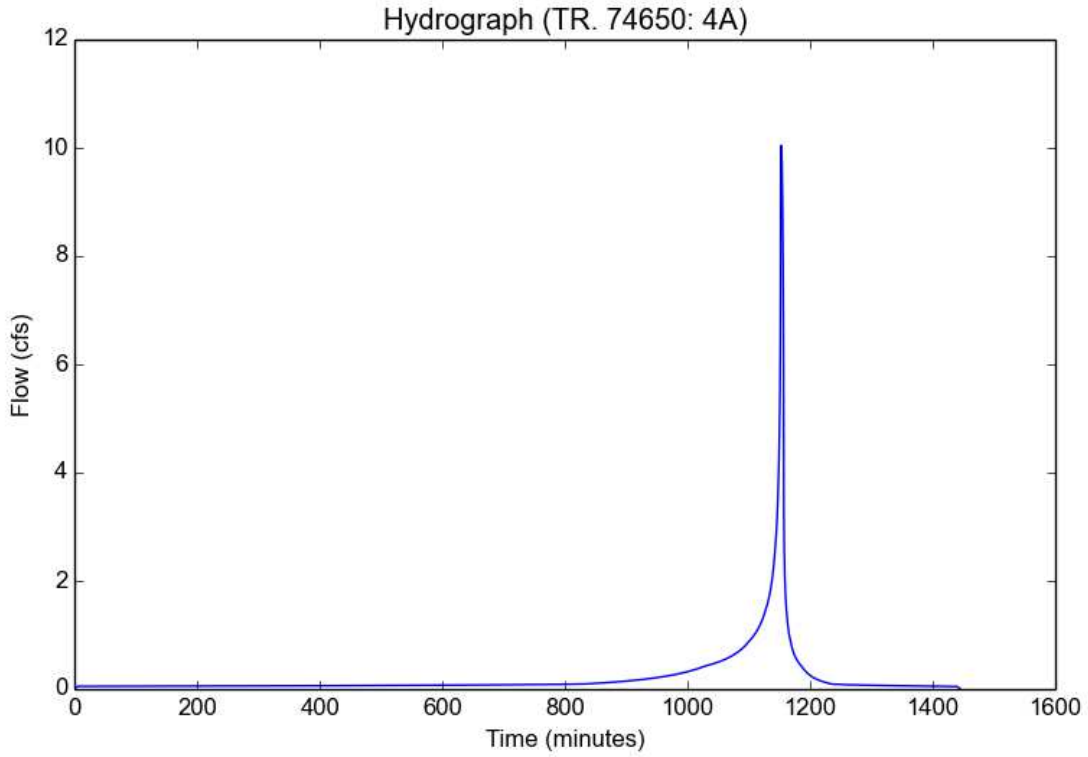
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	4A
Area (ac)	2.67
Flow Path Length (ft)	419.0
Flow Path Slope (vft/hft)	0.06
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	scr
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.773
Undeveloped Runoff Coefficient (Cu)	0.7868
Developed Runoff Coefficient (Cd)	0.7879
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	10.0408
Burned Peak Flow Rate (cfs)	10.4294
24-Hr Clear Runoff Volume (ac-ft)	0.4511
24-Hr Clear Runoff Volume (cu-ft)	19650.6938



Peak Flow Hydrologic Analysis

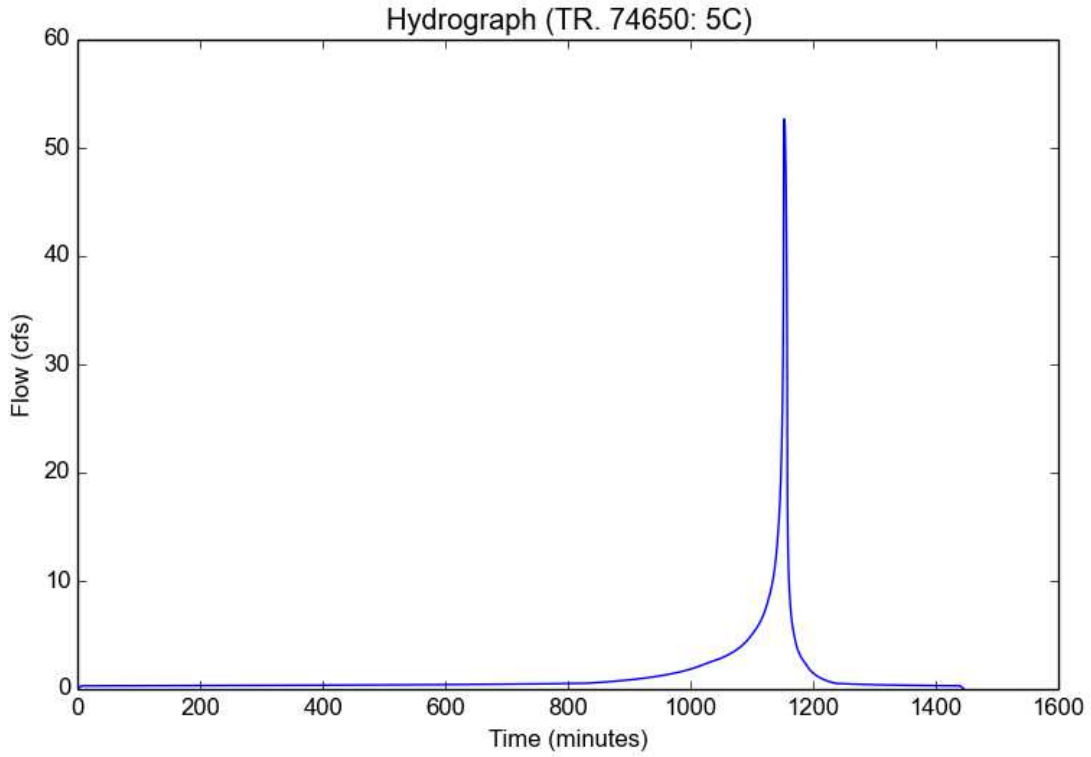
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	5C
Area (ac)	15.41
Flow Path Length (ft)	1161.0
Flow Path Slope (vft/hft)	0.2
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	scr
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.381
Undeveloped Runoff Coefficient (Cu)	0.779
Developed Runoff Coefficient (Cd)	0.7802
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	52.6746
Burned Peak Flow Rate (cfs)	54.7818
24-Hr Clear Runoff Volume (ac-ft)	2.6028
24-Hr Clear Runoff Volume (cu-ft)	113379.5396



Peak Flow Hydrologic Analysis

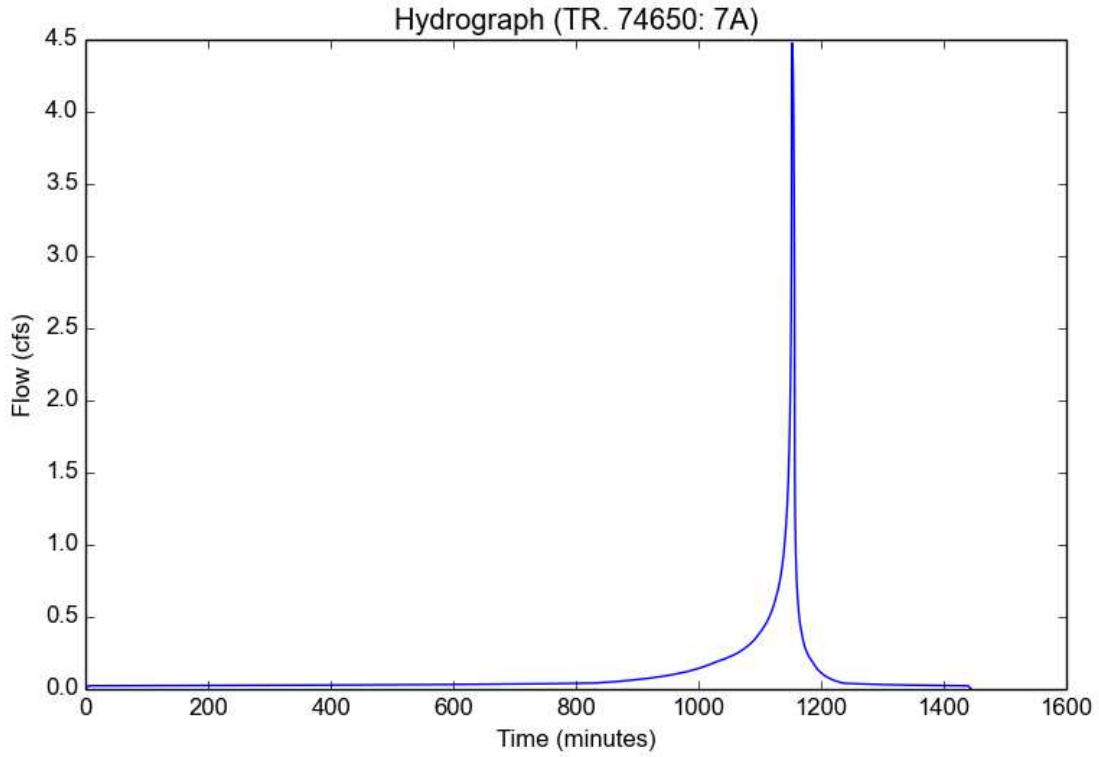
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	7A
Area (ac)	1.19
Flow Path Length (ft)	296.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	scr
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.773
Undeveloped Runoff Coefficient (Cu)	0.7868
Developed Runoff Coefficient (Cd)	0.7879
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	4.4751
Burned Peak Flow Rate (cfs)	4.6483
24-Hr Clear Runoff Volume (ac-ft)	0.2011
24-Hr Clear Runoff Volume (cu-ft)	8758.1744



Peak Flow Hydrologic Analysis

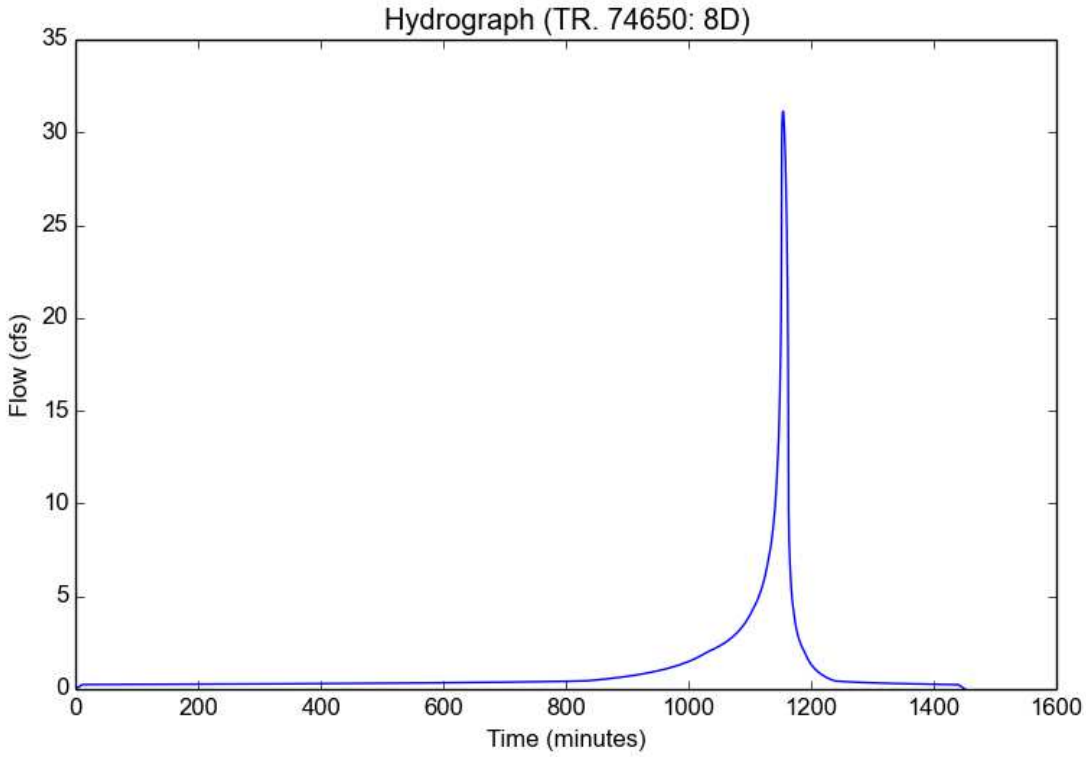
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	8D
Area (ac)	12.68
Flow Path Length (ft)	1394.0
Flow Path Slope (vft/hft)	0.018
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	scr
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	3.295
Undeveloped Runoff Coefficient (Cu)	0.7438
Developed Runoff Coefficient (Cd)	0.7453
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	31.1401
Burned Peak Flow Rate (cfs)	32.5891
24-Hr Clear Runoff Volume (ac-ft)	2.1376
24-Hr Clear Runoff Volume (cu-ft)	93115.1265



Peak Flow Hydrologic Analysis

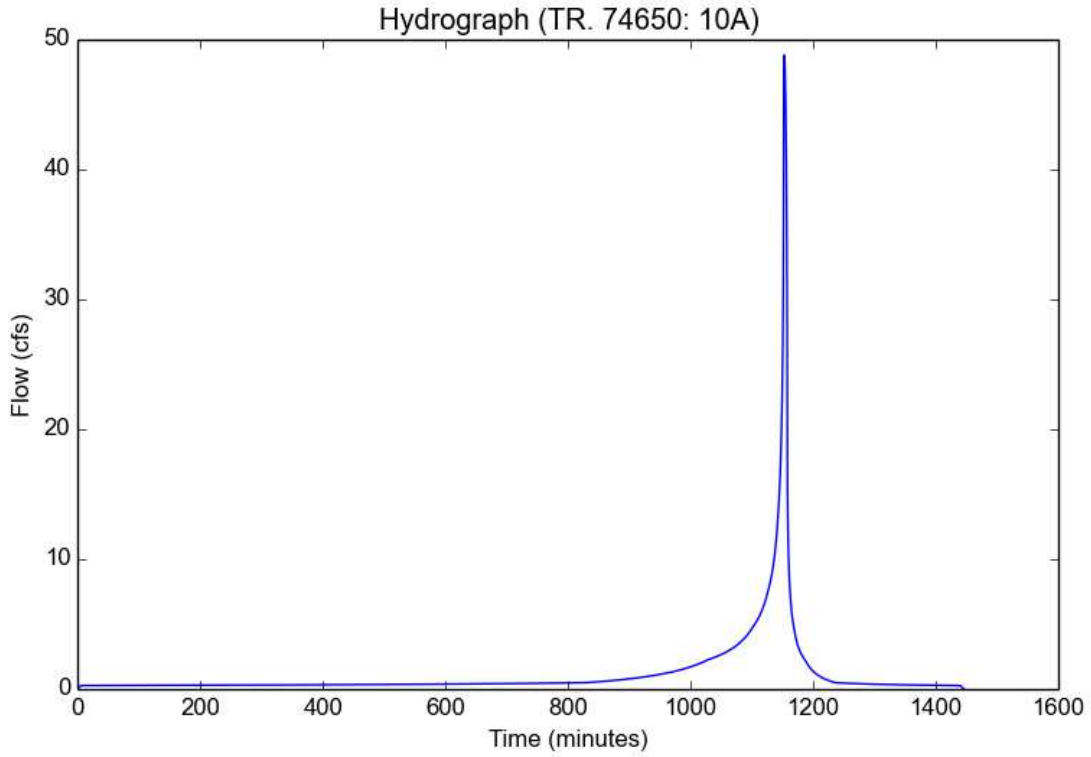
File location: H:/Oakridge/Hydrology/Analysis Data/Existing Hydrology/Existing Hydrology Data 2-50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	TR. 74650
Subarea ID	10A
Area (ac)	14.28
Flow Path Length (ft)	682.0
Flow Path Slope (vft/hft)	0.046
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	scr
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.381
Undeveloped Runoff Coefficient (Cu)	0.779
Developed Runoff Coefficient (Cd)	0.7802
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	48.812
Burned Peak Flow Rate (cfs)	50.7647
24-Hr Clear Runoff Volume (ac-ft)	2.412
24-Hr Clear Runoff Volume (cu-ft)	105065.5306



PROPOSED CONDITION
HYDROCALC PRINTOUTS

Peak Flow Hydrologic Analysis

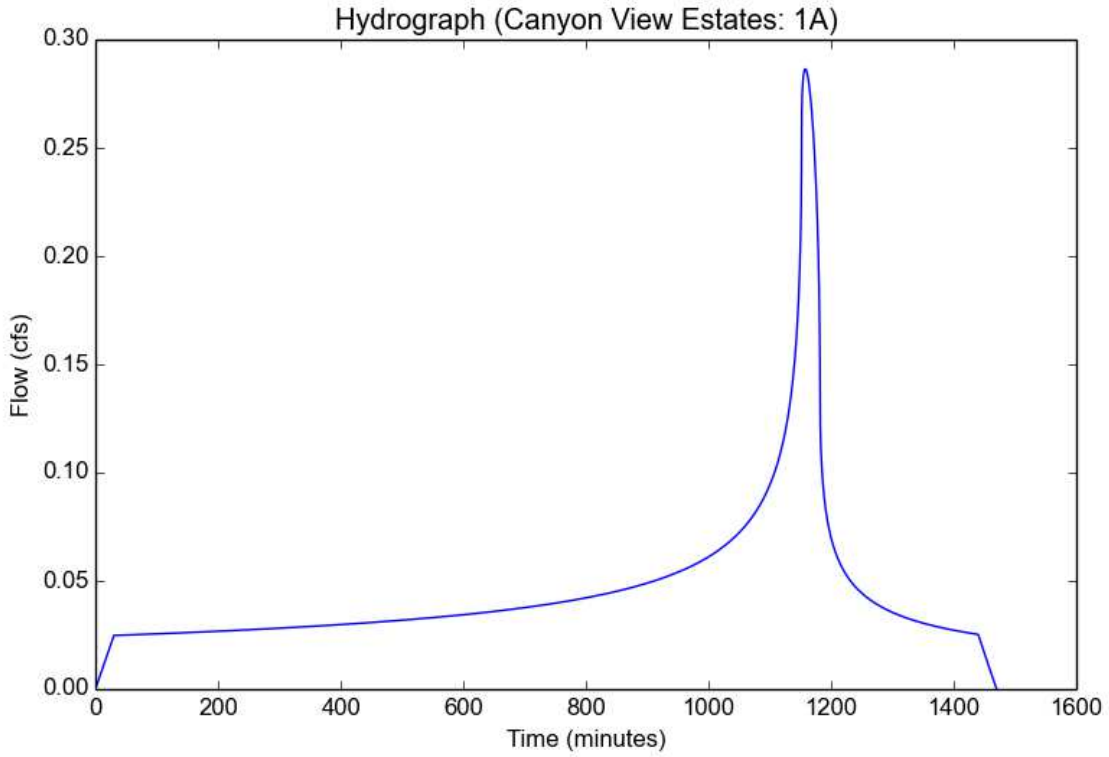
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	1A
Area (ac)	8.6
Flow Path Length (ft)	444.0
Flow Path Slope (vft/hft)	0.17
50-yr Rainfall Depth (in)	3.1
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	scr
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1997
Peak Intensity (in/hr)	0.3084
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.2864
Burned Peak Flow Rate (cfs)	0.4767
24-Hr Clear Runoff Volume (ac-ft)	0.0921
24-Hr Clear Runoff Volume (cu-ft)	4011.459



Peak Flow Hydrologic Analysis

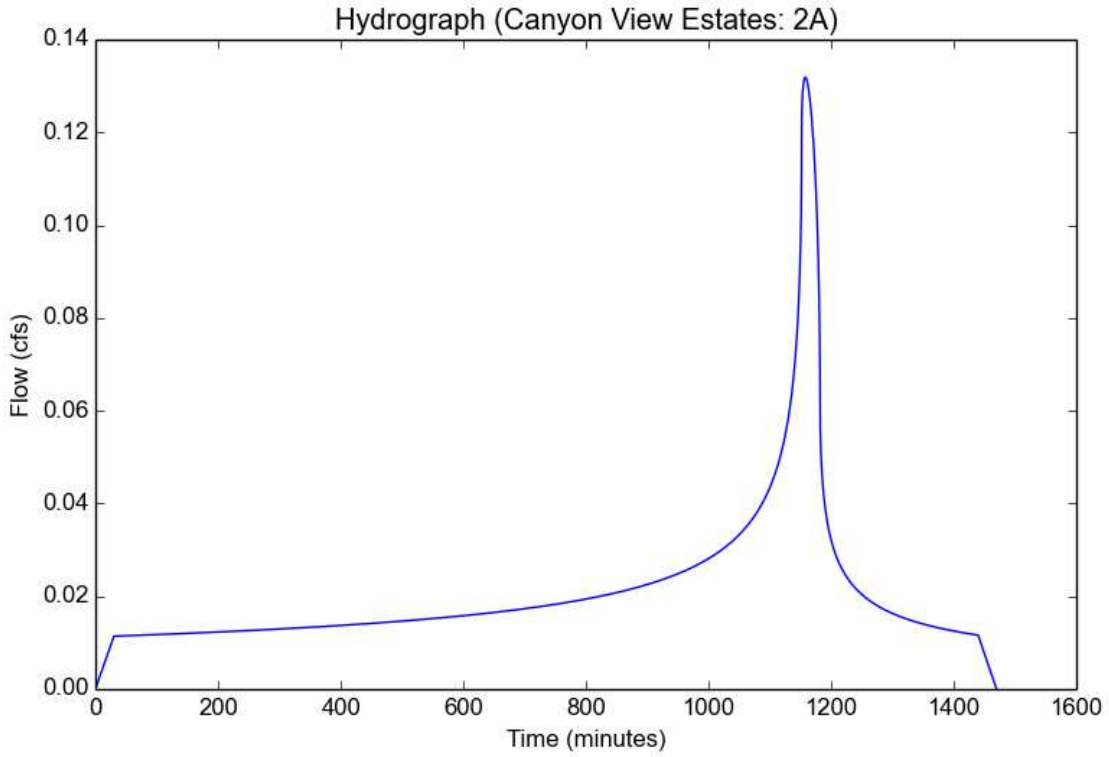
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	2A
Area (ac)	3.96
Flow Path Length (ft)	478.0
Flow Path Slope (vft/hft)	0.24
50-yr Rainfall Depth (in)	3.1
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	scr
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1997
Peak Intensity (in/hr)	0.3084
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.1319
Burned Peak Flow Rate (cfs)	0.2195
24-Hr Clear Runoff Volume (ac-ft)	0.0424
24-Hr Clear Runoff Volume (cu-ft)	1847.1369



Peak Flow Hydrologic Analysis

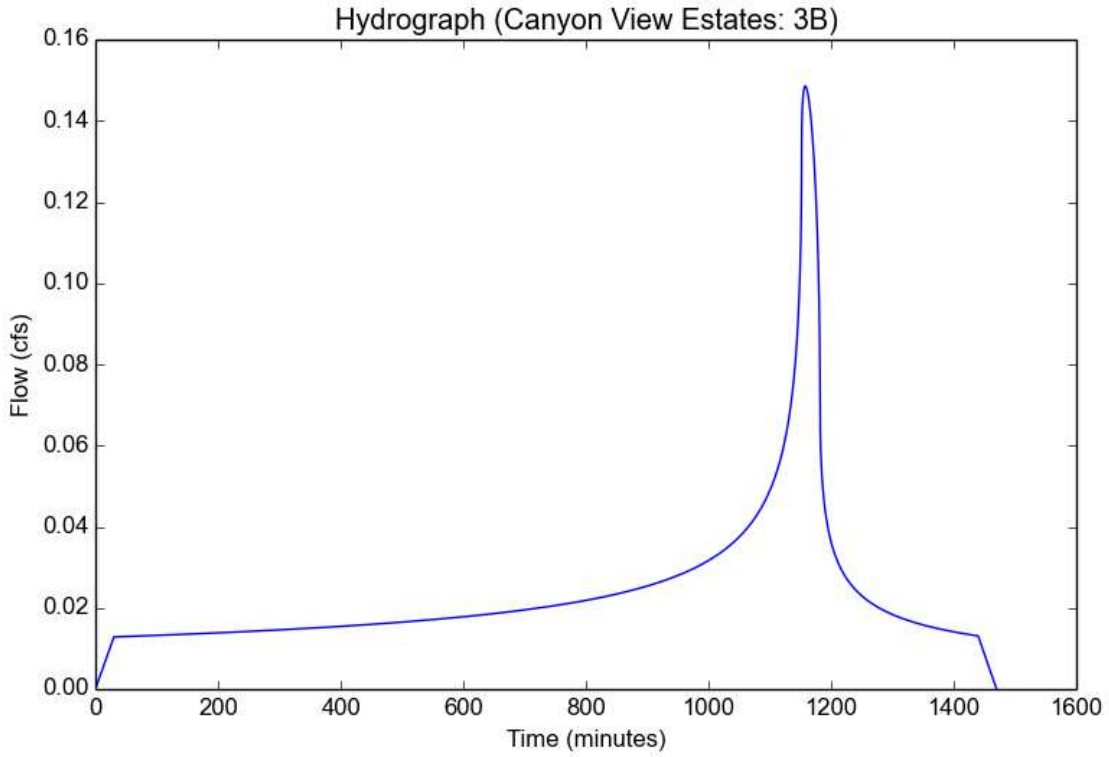
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	3B
Area (ac)	4.46
Flow Path Length (ft)	484.0
Flow Path Slope (vft/hft)	0.25
50-yr Rainfall Depth (in)	3.1
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	scr
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1997
Peak Intensity (in/hr)	0.3084
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.1485
Burned Peak Flow Rate (cfs)	0.2472
24-Hr Clear Runoff Volume (ac-ft)	0.0478
24-Hr Clear Runoff Volume (cu-ft)	2080.3613



Peak Flow Hydrologic Analysis

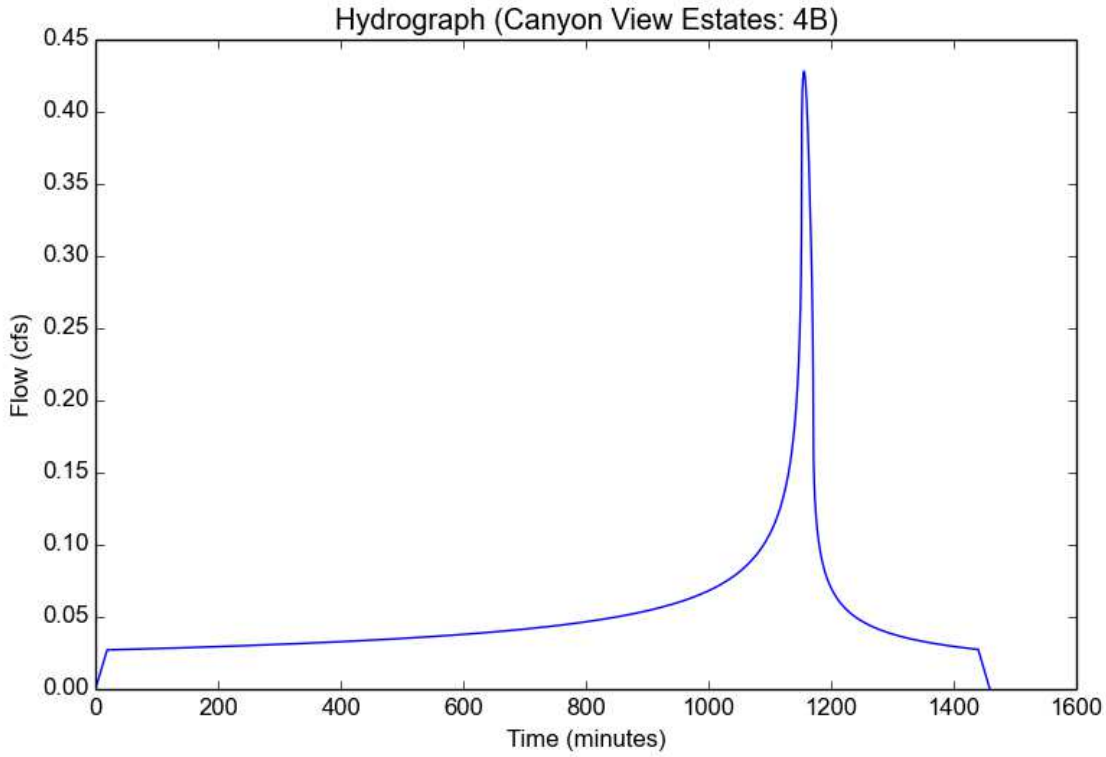
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	4B
Area (ac)	2.34
Flow Path Length (ft)	220.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	3.1
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	0
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1997
Peak Intensity (in/hr)	0.3822
Undeveloped Runoff Coefficient (Cu)	0.1734
Developed Runoff Coefficient (Cd)	0.4785
Time of Concentration (min)	19.0
Clear Peak Flow Rate (cfs)	0.428
Burned Peak Flow Rate (cfs)	0.428
24-Hr Clear Runoff Volume (ac-ft)	0.1017
24-Hr Clear Runoff Volume (cu-ft)	4429.0964



Peak Flow Hydrologic Analysis

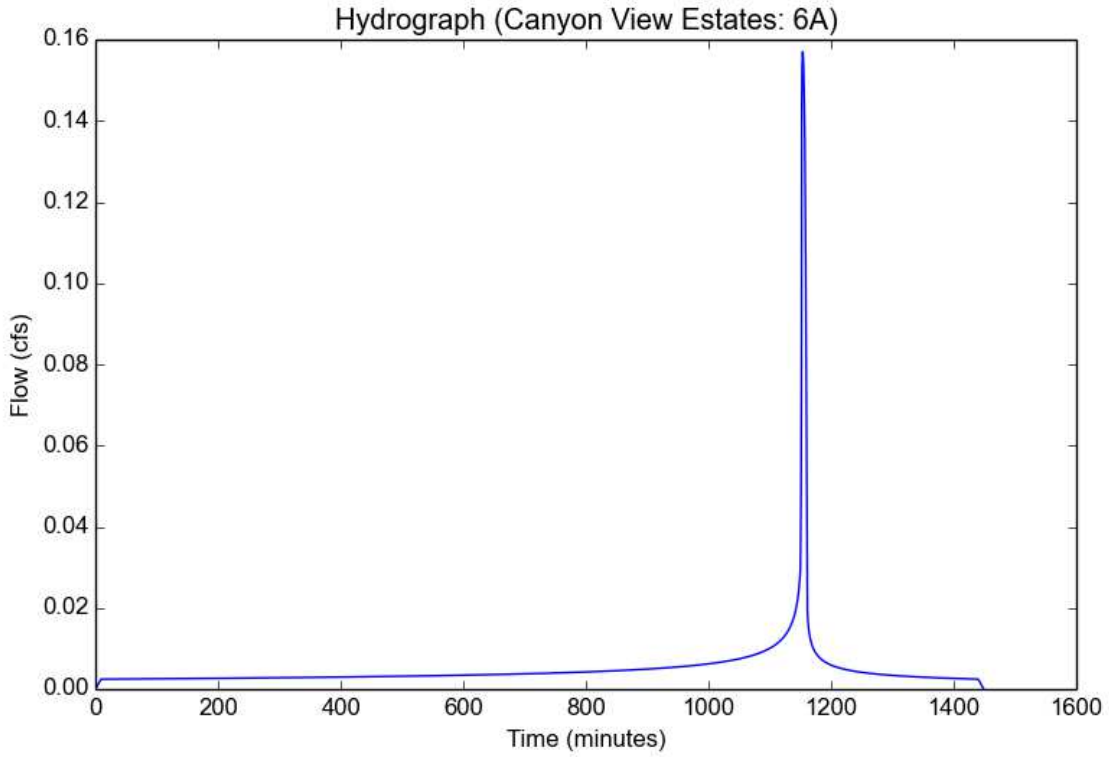
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	6A
Area (ac)	0.85
Flow Path Length (ft)	136.0
Flow Path Slope (vft/hft)	0.39
50-yr Rainfall Depth (in)	3.1
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	scr
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1997
Peak Intensity (in/hr)	0.543
Undeveloped Runoff Coefficient (Cu)	0.3346
Developed Runoff Coefficient (Cd)	0.3403
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	0.1571
Burned Peak Flow Rate (cfs)	0.186
24-Hr Clear Runoff Volume (ac-ft)	0.0101
24-Hr Clear Runoff Volume (cu-ft)	441.824



Peak Flow Hydrologic Analysis

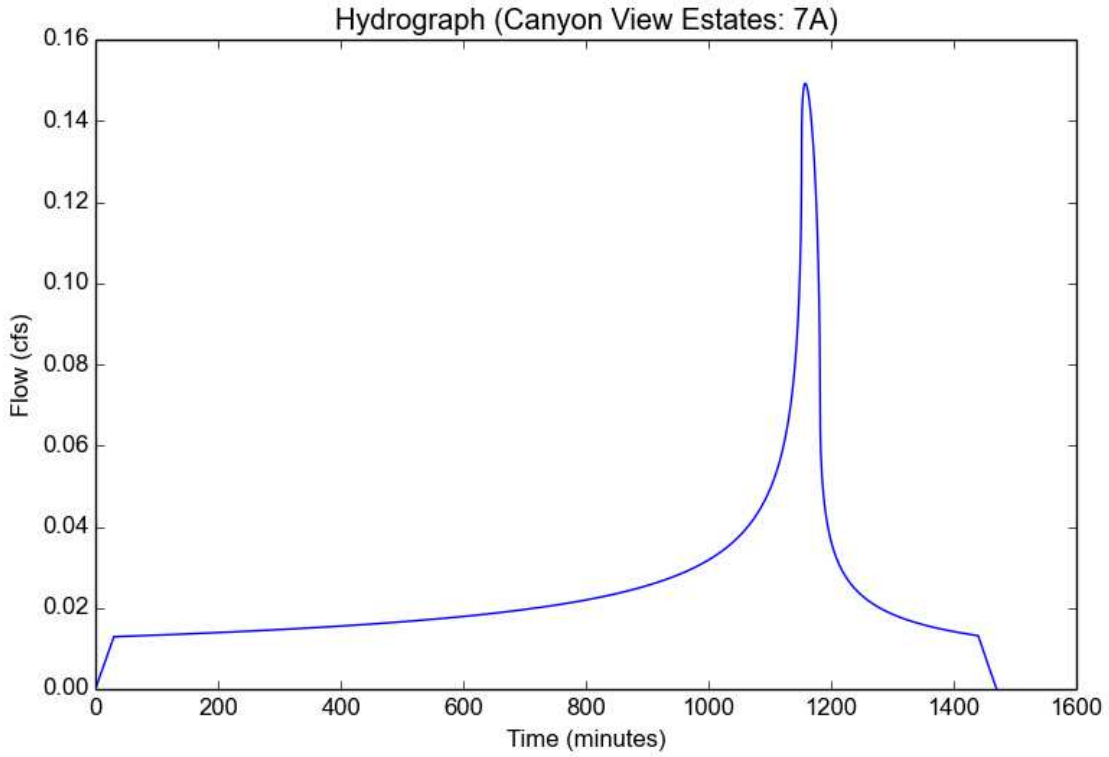
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	7A
Area (ac)	4.48
Flow Path Length (ft)	343.0
Flow Path Slope (vft/hft)	0.23
50-yr Rainfall Depth (in)	3.1
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	scr
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1997
Peak Intensity (in/hr)	0.3084
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.1492
Burned Peak Flow Rate (cfs)	0.2484
24-Hr Clear Runoff Volume (ac-ft)	0.048
24-Hr Clear Runoff Volume (cu-ft)	2089.6902



Peak Flow Hydrologic Analysis

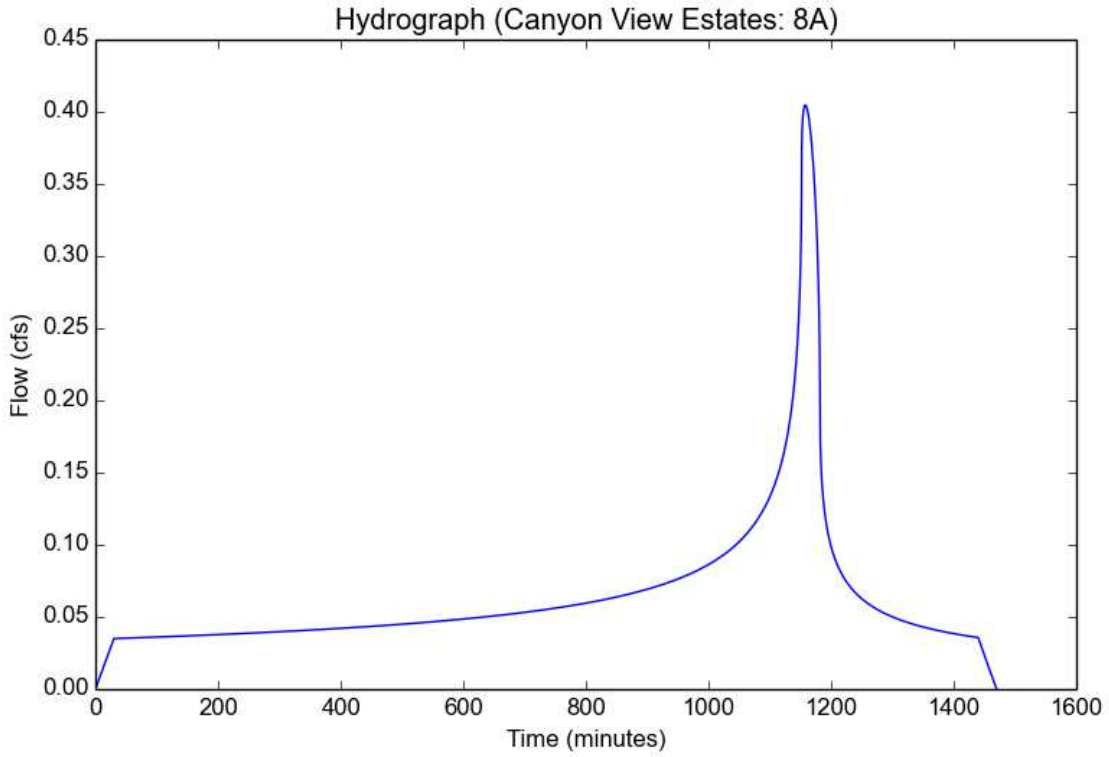
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	8A
Area (ac)	3.01
Flow Path Length (ft)	770.0
Flow Path Slope (vft/hft)	0.074
50-yr Rainfall Depth (in)	3.1
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	0
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1997
Peak Intensity (in/hr)	0.3084
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.436
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.4047
Burned Peak Flow Rate (cfs)	0.4047
24-Hr Clear Runoff Volume (ac-ft)	0.1301
24-Hr Clear Runoff Volume (cu-ft)	5668.0429



Peak Flow Hydrologic Analysis

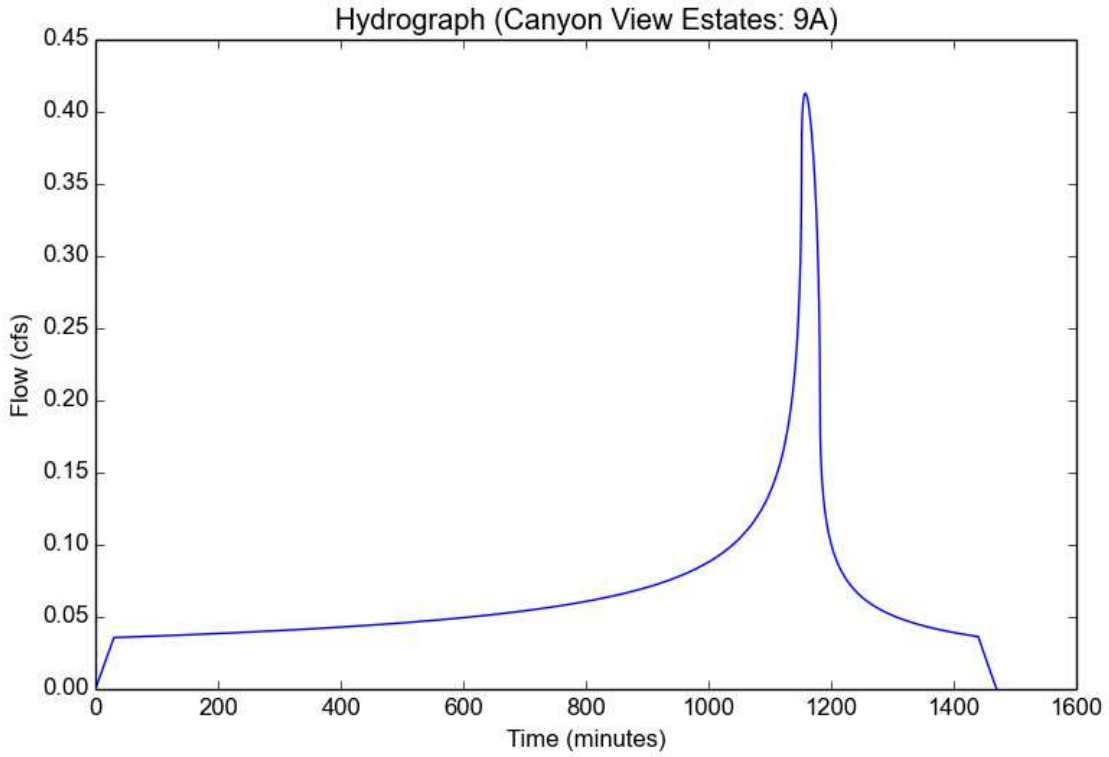
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	9A
Area (ac)	3.07
Flow Path Length (ft)	860.0
Flow Path Slope (vft/hft)	0.056
50-yr Rainfall Depth (in)	3.1
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	0
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1997
Peak Intensity (in/hr)	0.3084
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.436
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.4127
Burned Peak Flow Rate (cfs)	0.4127
24-Hr Clear Runoff Volume (ac-ft)	0.1327
24-Hr Clear Runoff Volume (cu-ft)	5781.0272



Peak Flow Hydrologic Analysis

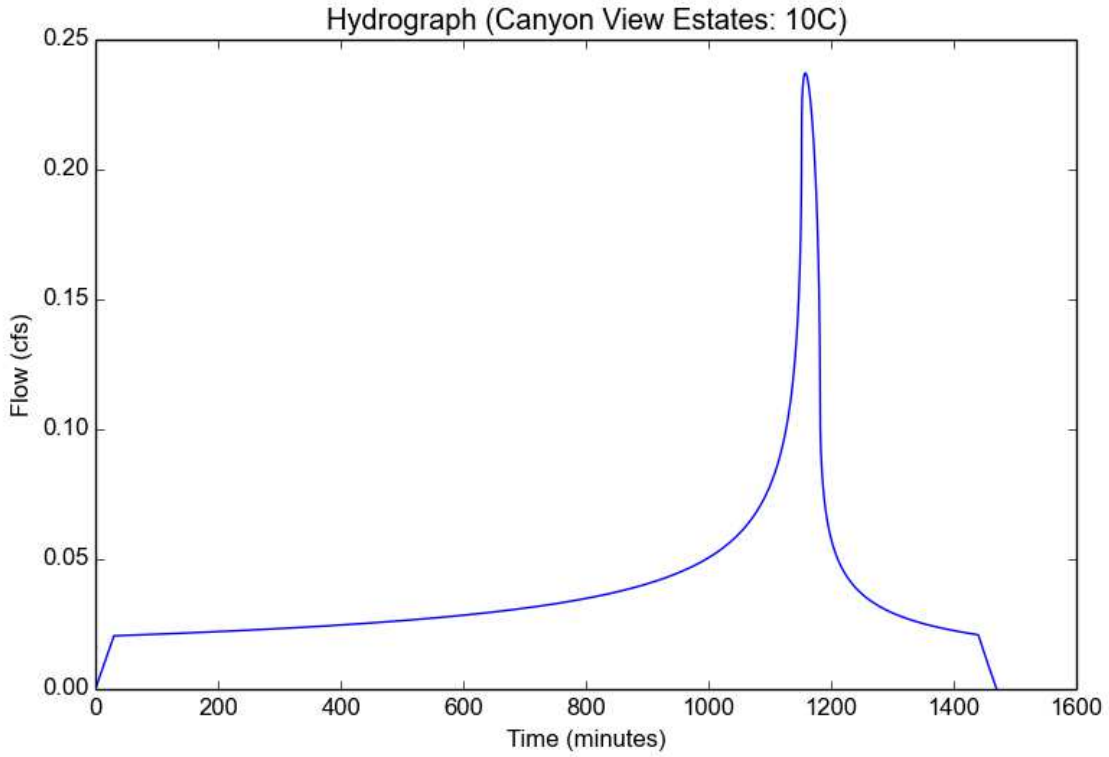
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	10C
Area (ac)	7.12
Flow Path Length (ft)	378.0
Flow Path Slope (vft/hft)	0.56
50-yr Rainfall Depth (in)	3.1
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	scr
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1997
Peak Intensity (in/hr)	0.3084
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.2371
Burned Peak Flow Rate (cfs)	0.3947
24-Hr Clear Runoff Volume (ac-ft)	0.0762
24-Hr Clear Runoff Volume (cu-ft)	3321.1149



Peak Flow Hydrologic Analysis

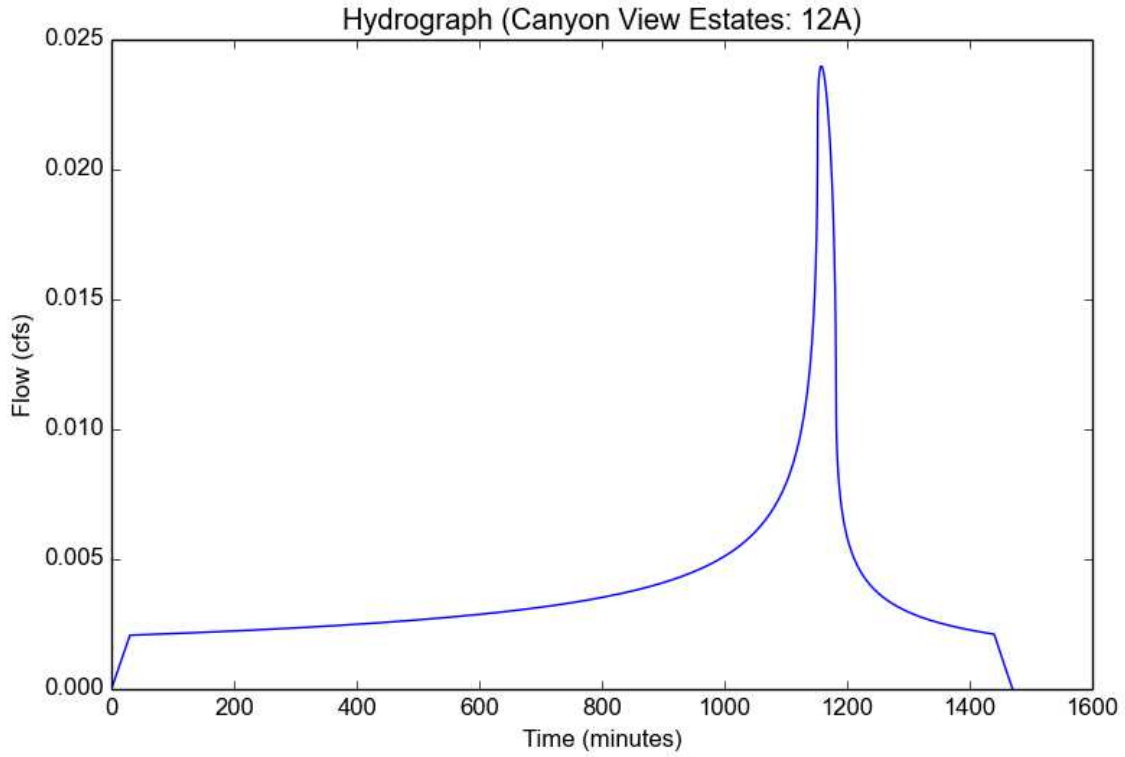
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	12A
Area (ac)	0.72
Flow Path Length (ft)	263.0
Flow Path Slope (vft/hft)	0.39
50-yr Rainfall Depth (in)	3.1
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	scr
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1997
Peak Intensity (in/hr)	0.3084
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.024
Burned Peak Flow Rate (cfs)	0.0399
24-Hr Clear Runoff Volume (ac-ft)	0.0077
24-Hr Clear Runoff Volume (cu-ft)	335.8431



Peak Flow Hydrologic Analysis

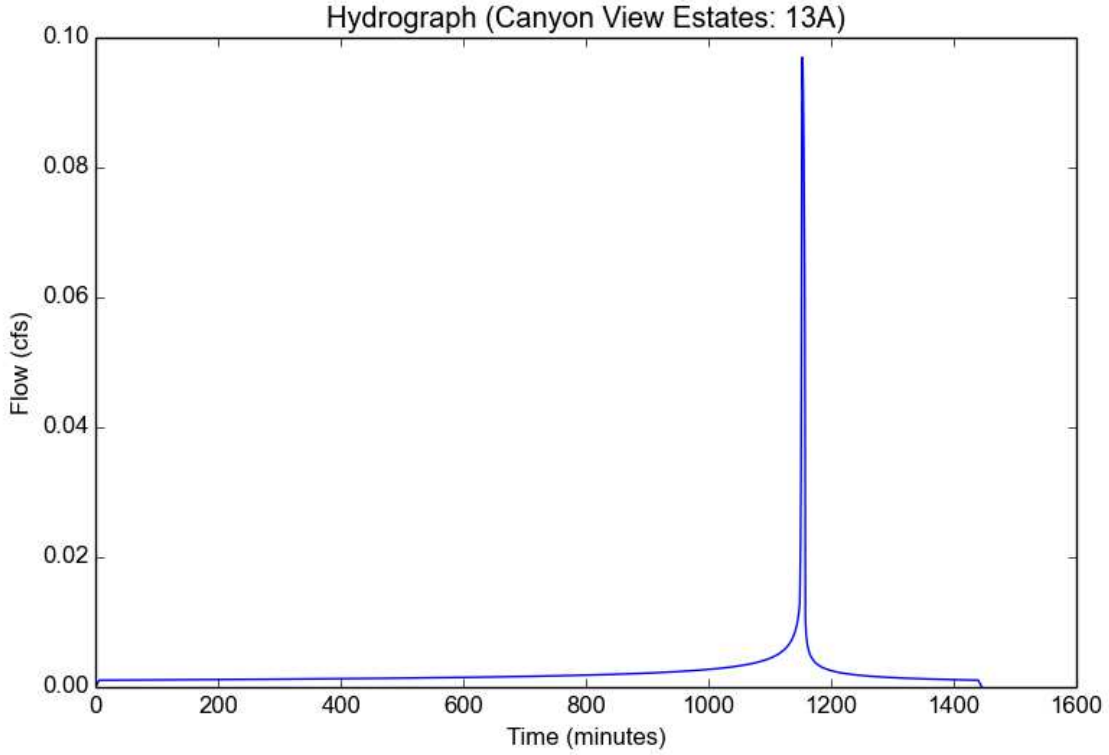
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	13A
Area (ac)	0.37
Flow Path Length (ft)	86.0
Flow Path Slope (vft/hft)	0.44
50-yr Rainfall Depth (in)	3.1
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	scr
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1997
Peak Intensity (in/hr)	0.657
Undeveloped Runoff Coefficient (Cu)	0.3938
Developed Runoff Coefficient (Cd)	0.3989
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	0.097
Burned Peak Flow Rate (cfs)	0.1115
24-Hr Clear Runoff Volume (ac-ft)	0.0045
24-Hr Clear Runoff Volume (cu-ft)	195.2725



Peak Flow Hydrologic Analysis

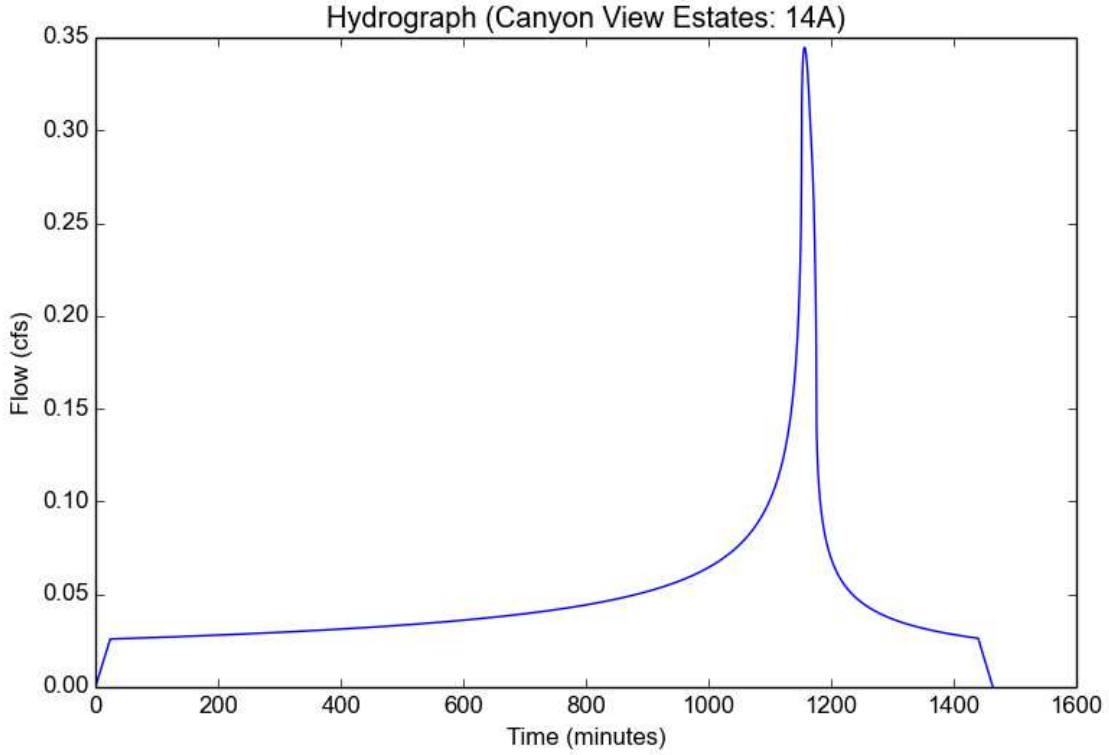
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	14A
Area (ac)	2.23
Flow Path Length (ft)	310.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	3.1
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	0
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1997
Peak Intensity (in/hr)	0.3424
Undeveloped Runoff Coefficient (Cu)	0.1265
Developed Runoff Coefficient (Cd)	0.4514
Time of Concentration (min)	24.0
Clear Peak Flow Rate (cfs)	0.3447
Burned Peak Flow Rate (cfs)	0.3447
24-Hr Clear Runoff Volume (ac-ft)	0.0965
24-Hr Clear Runoff Volume (cu-ft)	4205.3676



Peak Flow Hydrologic Analysis

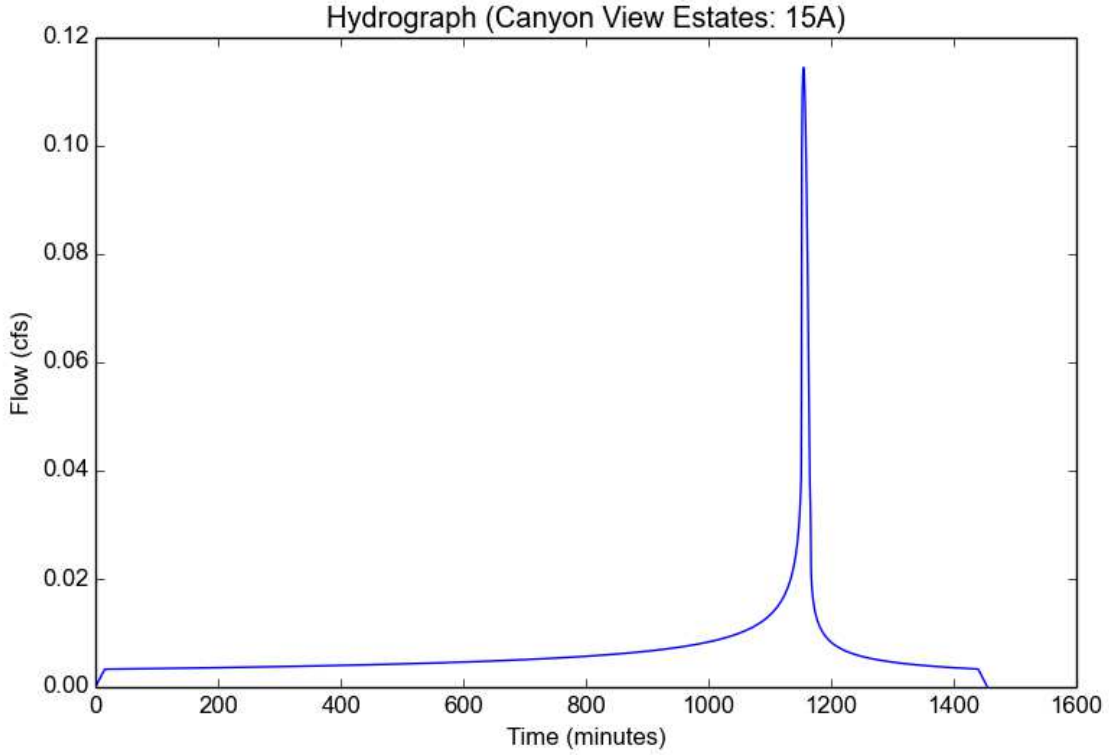
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	15A
Area (ac)	1.15
Flow Path Length (ft)	181.0
Flow Path Slope (vft/hft)	0.29
50-yr Rainfall Depth (in)	3.1
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	scr
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1997
Peak Intensity (in/hr)	0.4271
Undeveloped Runoff Coefficient (Cu)	0.2263
Developed Runoff Coefficient (Cd)	0.2331
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	0.1145
Burned Peak Flow Rate (cfs)	0.148
24-Hr Clear Runoff Volume (ac-ft)	0.0131
24-Hr Clear Runoff Volume (cu-ft)	570.3882



Peak Flow Hydrologic Analysis

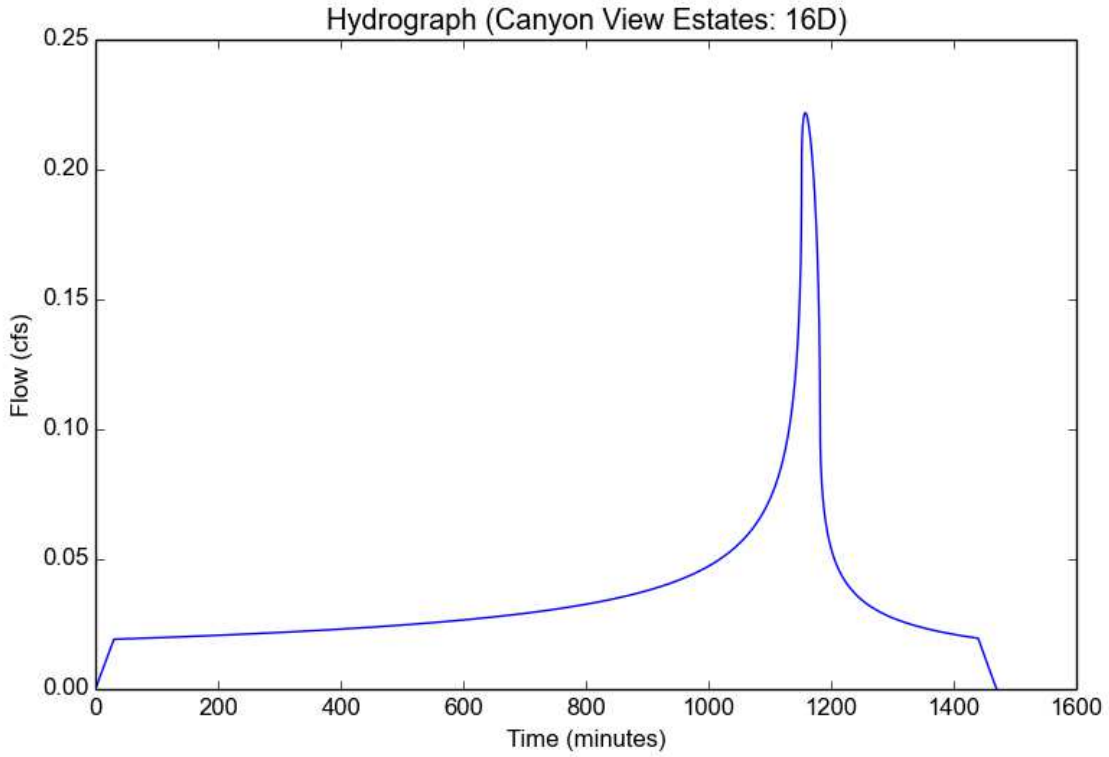
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	16D
Area (ac)	1.65
Flow Path Length (ft)	630.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	3.1
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	0
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1997
Peak Intensity (in/hr)	0.3084
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.436
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.2218
Burned Peak Flow Rate (cfs)	0.2218
24-Hr Clear Runoff Volume (ac-ft)	0.0713
24-Hr Clear Runoff Volume (cu-ft)	3107.0667



Peak Flow Hydrologic Analysis

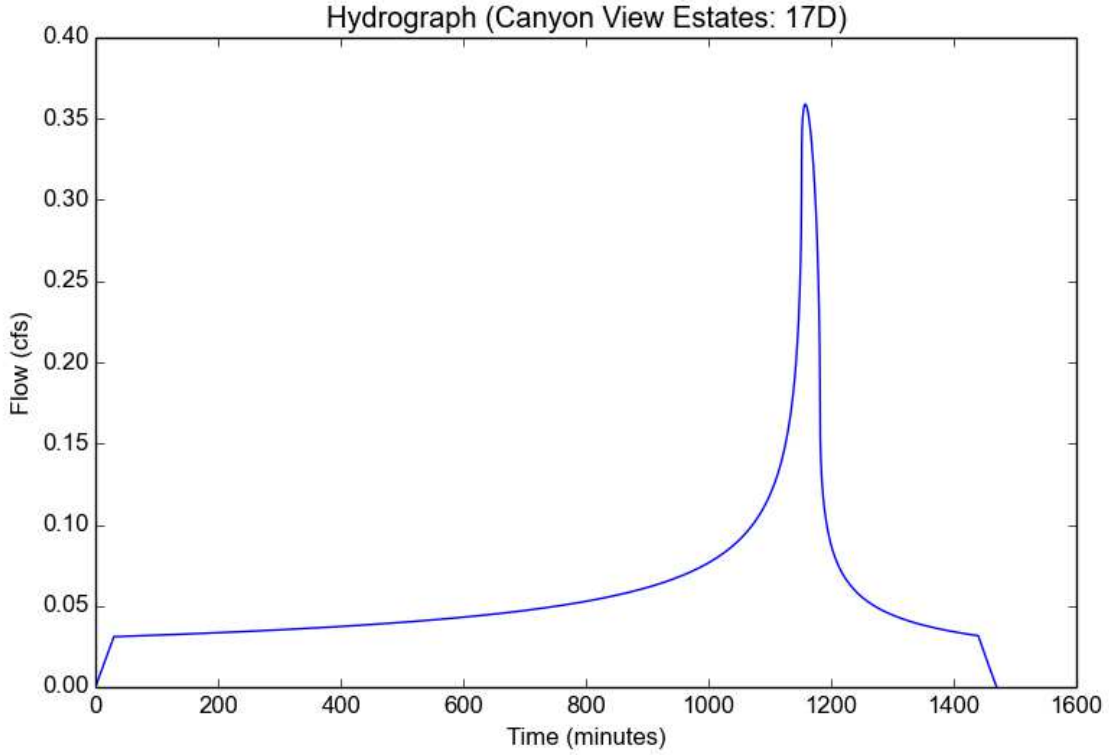
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	17D
Area (ac)	2.67
Flow Path Length (ft)	620.0
Flow Path Slope (vft/hft)	0.005
50-yr Rainfall Depth (in)	3.1
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	0
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1997
Peak Intensity (in/hr)	0.3084
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.436
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.359
Burned Peak Flow Rate (cfs)	0.359
24-Hr Clear Runoff Volume (ac-ft)	0.1154
24-Hr Clear Runoff Volume (cu-ft)	5027.7989



Peak Flow Hydrologic Analysis

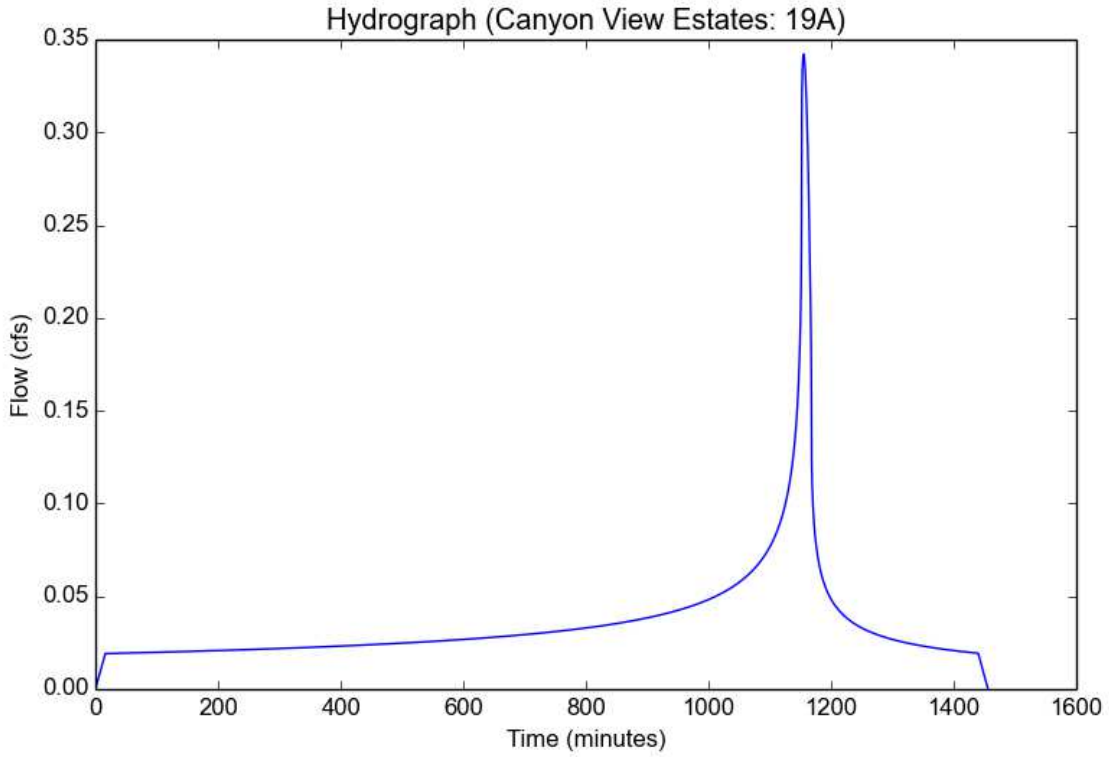
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	19A
Area (ac)	1.65
Flow Path Length (ft)	290.0
Flow Path Slope (vft/hft)	0.062
50-yr Rainfall Depth (in)	3.1
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	0
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1997
Peak Intensity (in/hr)	0.4143
Undeveloped Runoff Coefficient (Cu)	0.2113
Developed Runoff Coefficient (Cd)	0.5005
Time of Concentration (min)	16.0
Clear Peak Flow Rate (cfs)	0.3422
Burned Peak Flow Rate (cfs)	0.3422
24-Hr Clear Runoff Volume (ac-ft)	0.0719
24-Hr Clear Runoff Volume (cu-ft)	3132.1689



Peak Flow Hydrologic Analysis

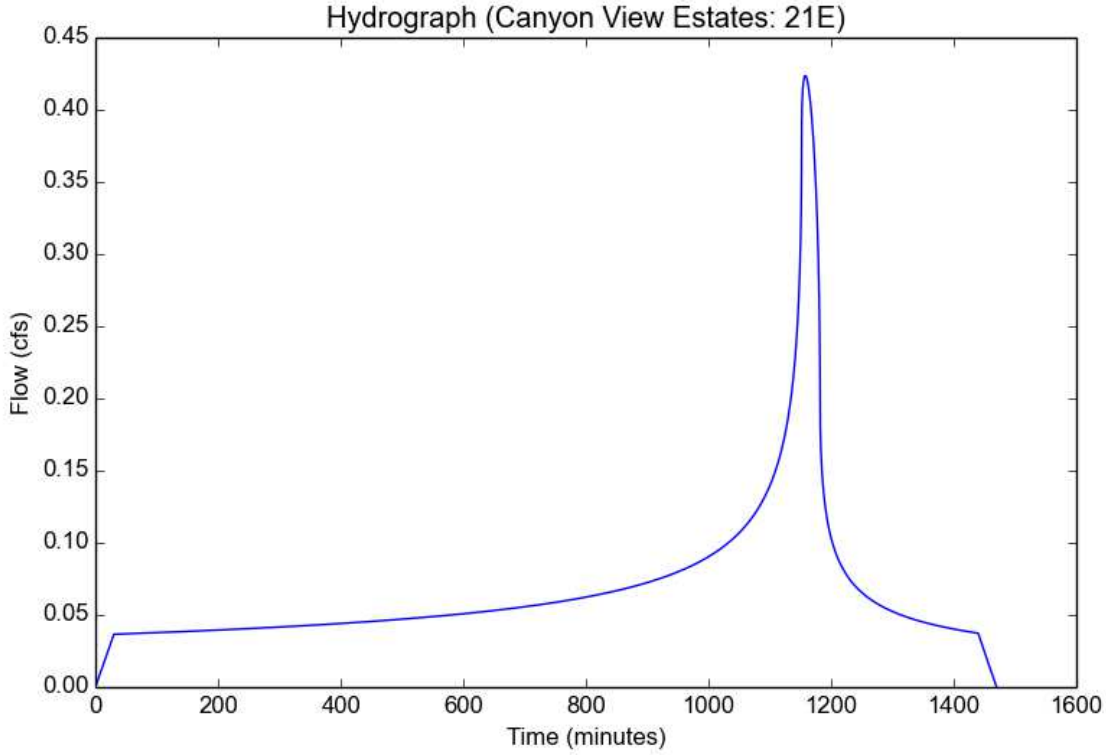
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	21E
Area (ac)	12.72
Flow Path Length (ft)	1394.0
Flow Path Slope (vft/hft)	0.18
50-yr Rainfall Depth (in)	3.1
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	scr
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1997
Peak Intensity (in/hr)	0.3084
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.4236
Burned Peak Flow Rate (cfs)	0.7051
24-Hr Clear Runoff Volume (ac-ft)	0.1362
24-Hr Clear Runoff Volume (cu-ft)	5933.2277



Peak Flow Hydrologic Analysis

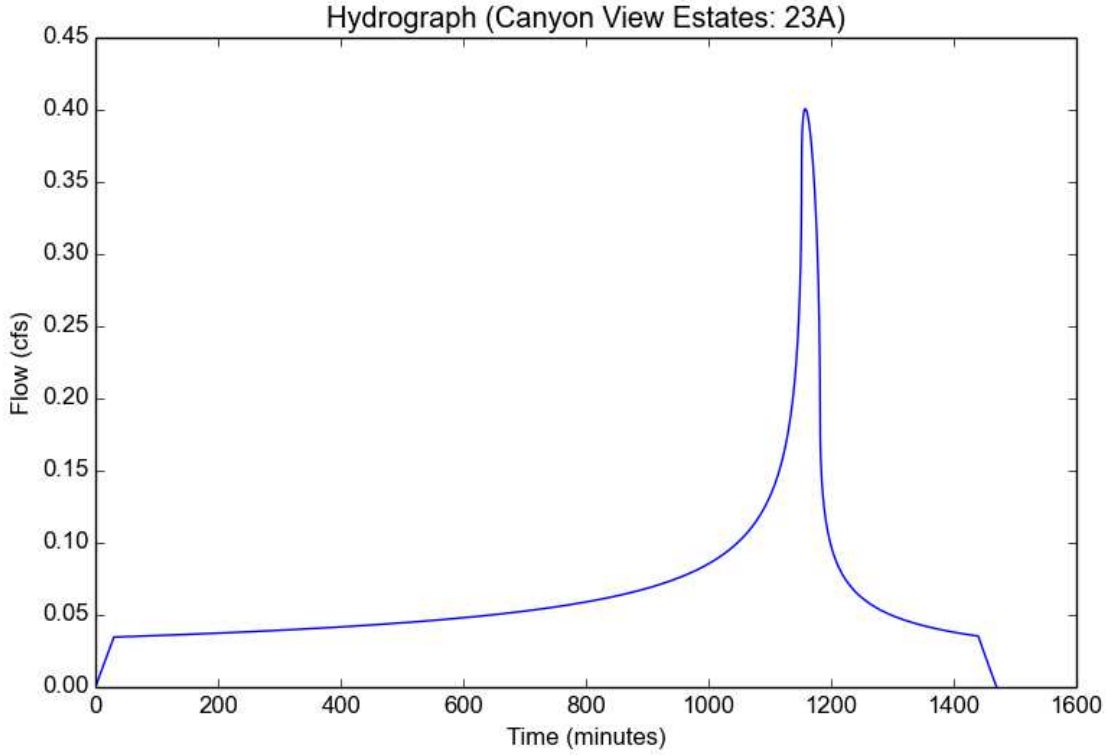
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	23A
Area (ac)	12.03
Flow Path Length (ft)	682.0
Flow Path Slope (vft/hft)	0.046
50-yr Rainfall Depth (in)	3.1
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	scr
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1997
Peak Intensity (in/hr)	0.3084
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.4006
Burned Peak Flow Rate (cfs)	0.6669
24-Hr Clear Runoff Volume (ac-ft)	0.1288
24-Hr Clear Runoff Volume (cu-ft)	5611.378



Peak Flow Hydrologic Analysis

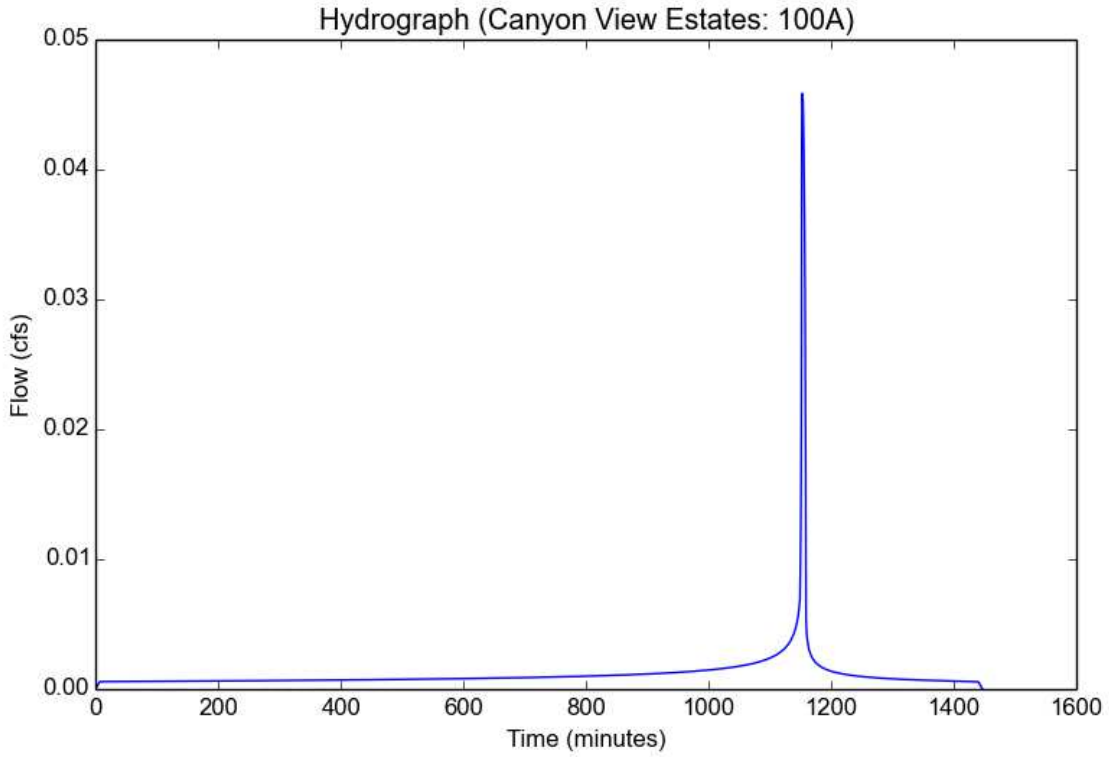
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	100A
Area (ac)	0.2
Flow Path Length (ft)	116.0
Flow Path Slope (vft/hft)	0.56
50-yr Rainfall Depth (in)	3.1
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	scr
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1997
Peak Intensity (in/hr)	0.6111
Undeveloped Runoff Coefficient (Cu)	0.37
Developed Runoff Coefficient (Cd)	0.3753
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	0.0459
Burned Peak Flow Rate (cfs)	0.0533
24-Hr Clear Runoff Volume (ac-ft)	0.0024
24-Hr Clear Runoff Volume (cu-ft)	105.0224



Peak Flow Hydrologic Analysis

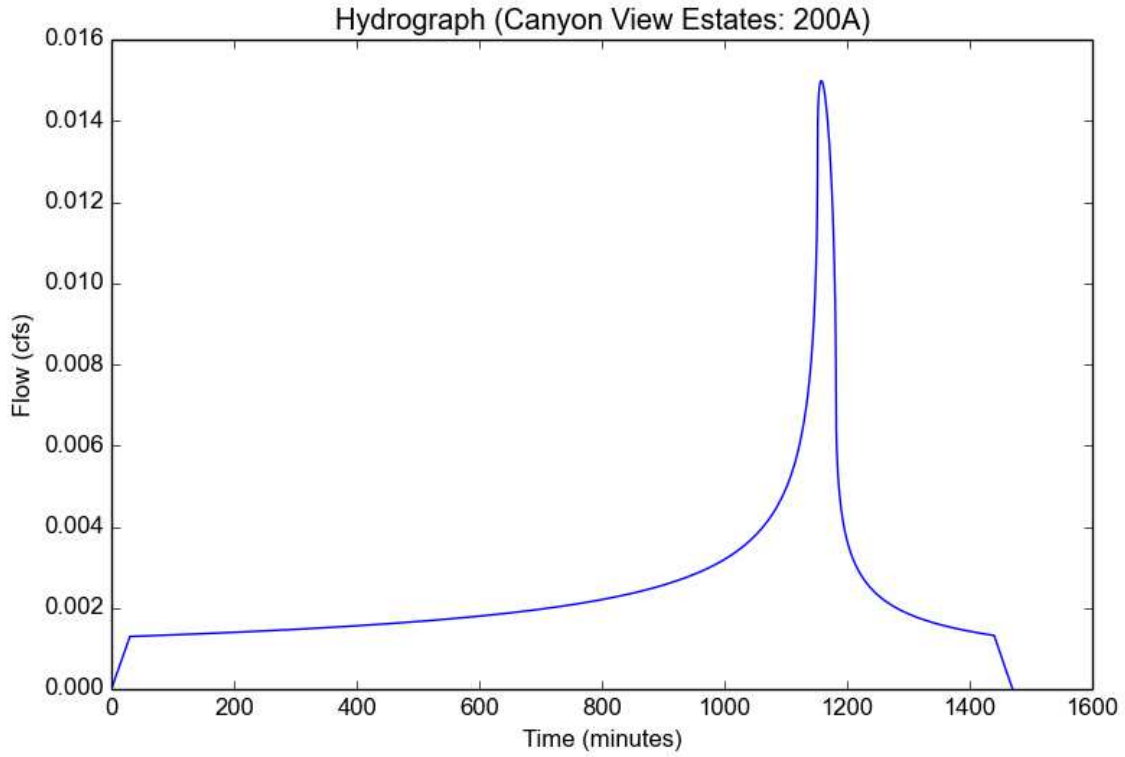
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	200A
Area (ac)	0.45
Flow Path Length (ft)	234.0
Flow Path Slope (vft/hft)	0.3
50-yr Rainfall Depth (in)	3.1
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	0
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1997
Peak Intensity (in/hr)	0.3084
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.015
Burned Peak Flow Rate (cfs)	0.015
24-Hr Clear Runoff Volume (ac-ft)	0.0048
24-Hr Clear Runoff Volume (cu-ft)	209.9019



Peak Flow Hydrologic Analysis

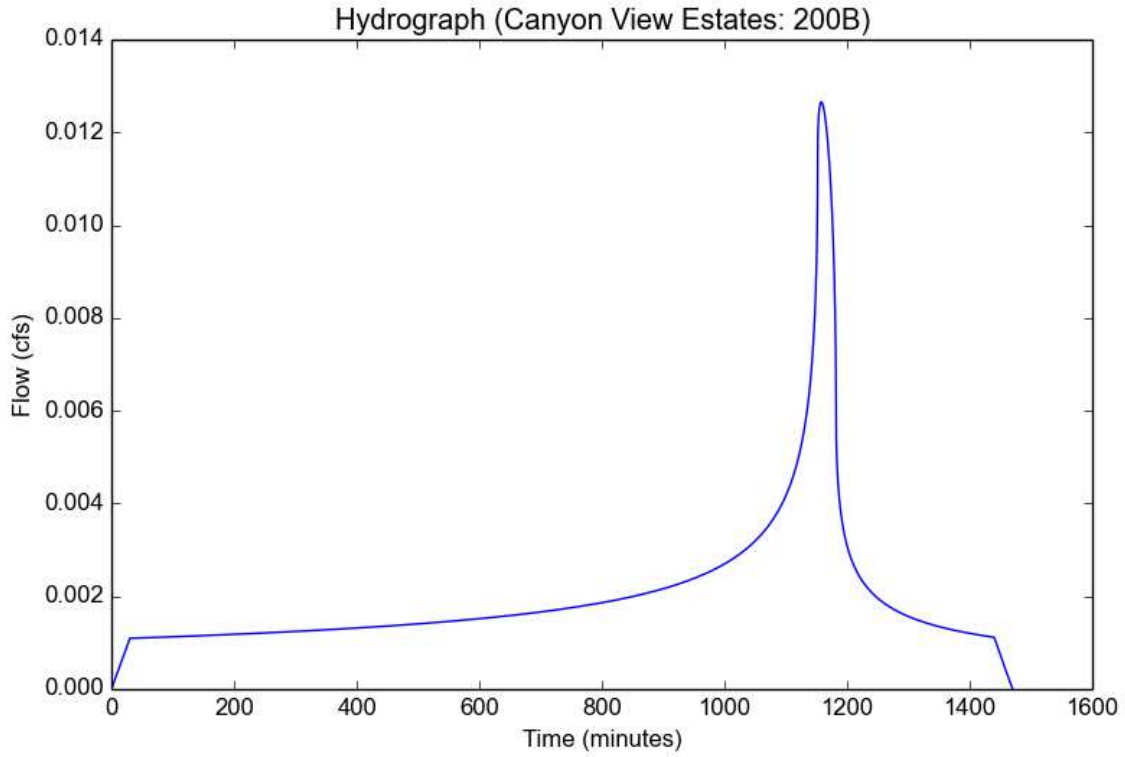
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	200B
Area (ac)	0.38
Flow Path Length (ft)	234.0
Flow Path Slope (vft/hft)	0.3
50-yr Rainfall Depth (in)	3.1
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	2-yr
Fire Factor	0
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	1.1997
Peak Intensity (in/hr)	0.3084
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.0127
Burned Peak Flow Rate (cfs)	0.0127
24-Hr Clear Runoff Volume (ac-ft)	0.0041
24-Hr Clear Runoff Volume (cu-ft)	177.2505



Peak Flow Hydrologic Analysis

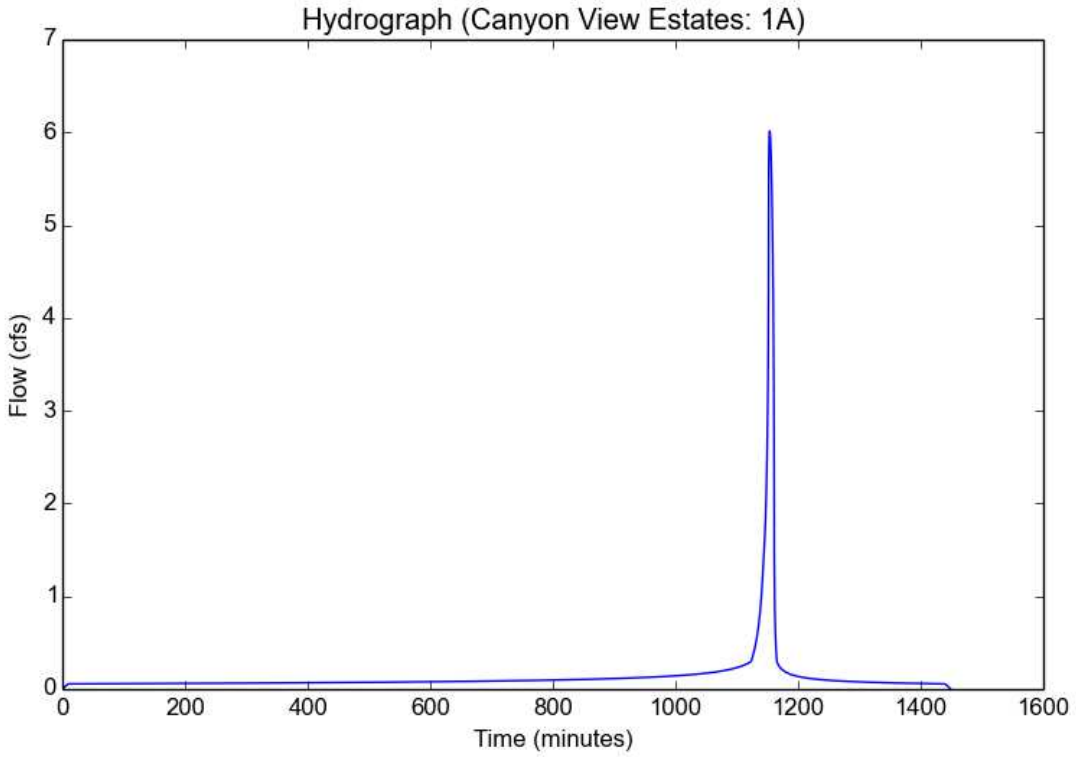
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	1A
Area (ac)	8.6
Flow Path Length (ft)	444.0
Flow Path Slope (vft/hft)	0.17
50-yr Rainfall Depth (in)	4.67
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	scr
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7273
Peak Intensity (in/hr)	1.2344
Undeveloped Runoff Coefficient (Cu)	0.5632
Developed Runoff Coefficient (Cd)	0.5666
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	6.015
Burned Peak Flow Rate (cfs)	6.5428
24-Hr Clear Runoff Volume (ac-ft)	0.2902
24-Hr Clear Runoff Volume (cu-ft)	12642.484



Peak Flow Hydrologic Analysis

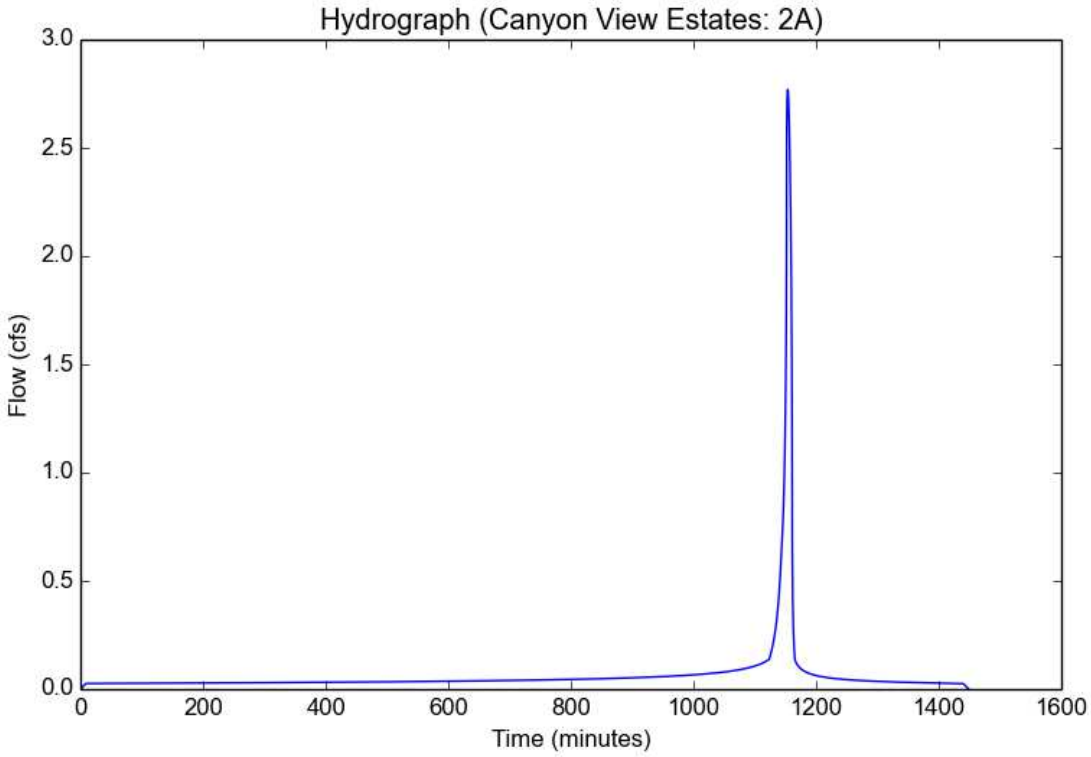
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	2A
Area (ac)	3.96
Flow Path Length (ft)	478.0
Flow Path Slope (vft/hft)	0.24
50-yr Rainfall Depth (in)	4.67
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	scr
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7273
Peak Intensity (in/hr)	1.2344
Undeveloped Runoff Coefficient (Cu)	0.5632
Developed Runoff Coefficient (Cd)	0.5666
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	2.7697
Burned Peak Flow Rate (cfs)	3.0127
24-Hr Clear Runoff Volume (ac-ft)	0.1336
24-Hr Clear Runoff Volume (cu-ft)	5821.4229



Peak Flow Hydrologic Analysis

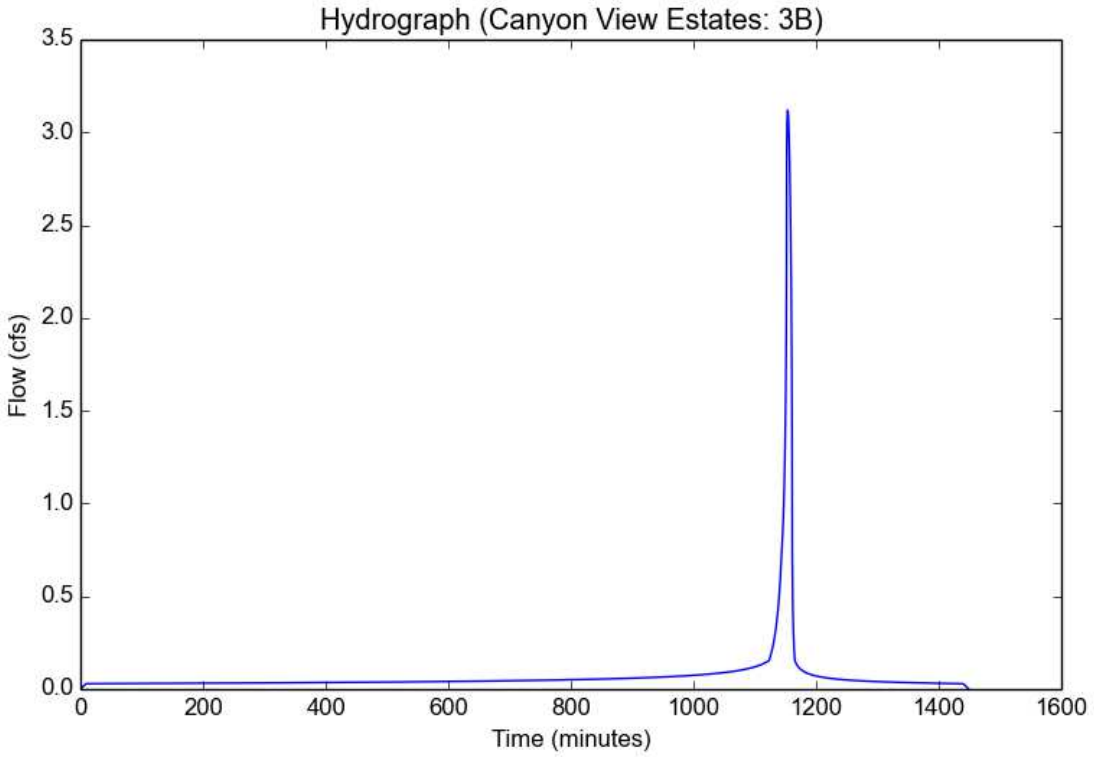
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	3B
Area (ac)	4.46
Flow Path Length (ft)	484.0
Flow Path Slope (vft/hft)	0.25
50-yr Rainfall Depth (in)	4.67
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	scr
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7273
Peak Intensity (in/hr)	1.2344
Undeveloped Runoff Coefficient (Cu)	0.5632
Developed Runoff Coefficient (Cd)	0.5666
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	3.1194
Burned Peak Flow Rate (cfs)	3.3931
24-Hr Clear Runoff Volume (ac-ft)	0.1505
24-Hr Clear Runoff Volume (cu-ft)	6556.451



Peak Flow Hydrologic Analysis

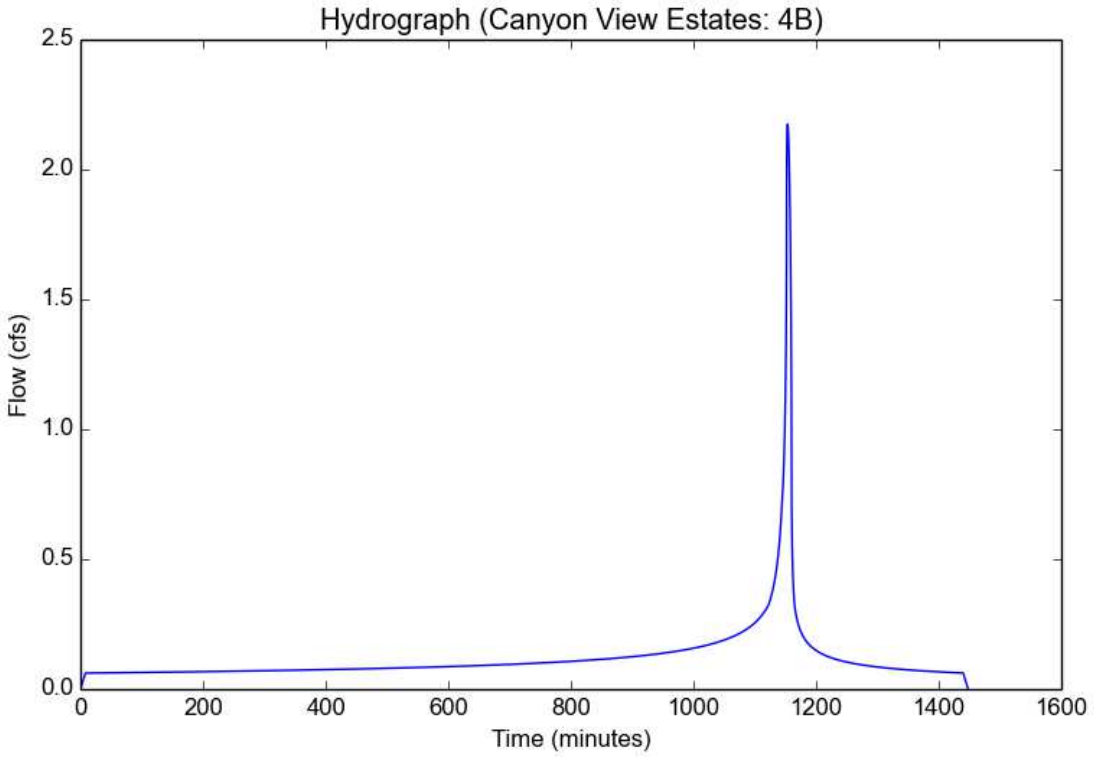
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	4B
Area (ac)	2.34
Flow Path Length (ft)	220.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	4.67
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	0
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7273
Peak Intensity (in/hr)	1.3047
Undeveloped Runoff Coefficient (Cu)	0.5764
Developed Runoff Coefficient (Cd)	0.7123
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	2.1745
Burned Peak Flow Rate (cfs)	2.1745
24-Hr Clear Runoff Volume (ac-ft)	0.2429
24-Hr Clear Runoff Volume (cu-ft)	10581.284



Peak Flow Hydrologic Analysis

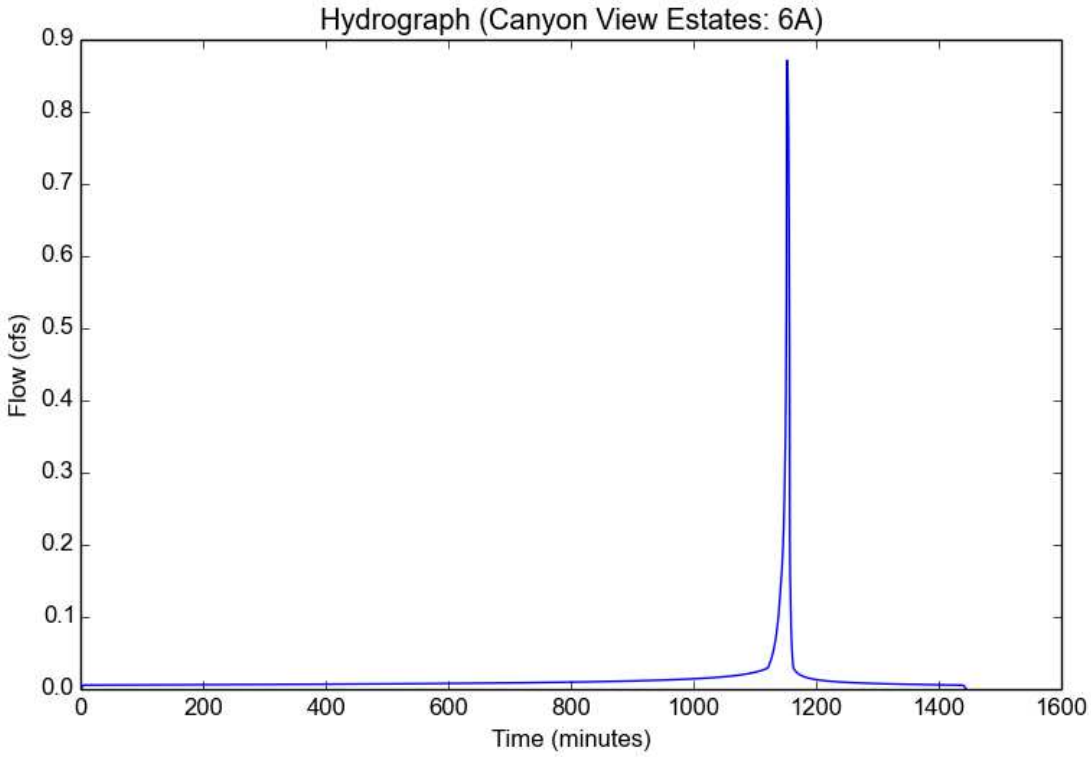
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	6A
Area (ac)	0.85
Flow Path Length (ft)	136.0
Flow Path Slope (vft/hft)	0.39
50-yr Rainfall Depth (in)	4.67
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	scr
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7273
Peak Intensity (in/hr)	1.6272
Undeveloped Runoff Coefficient (Cu)	0.627
Developed Runoff Coefficient (Cd)	0.6297
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.871
Burned Peak Flow Rate (cfs)	0.9329
24-Hr Clear Runoff Volume (ac-ft)	0.0289
24-Hr Clear Runoff Volume (cu-ft)	1257.9859



Peak Flow Hydrologic Analysis

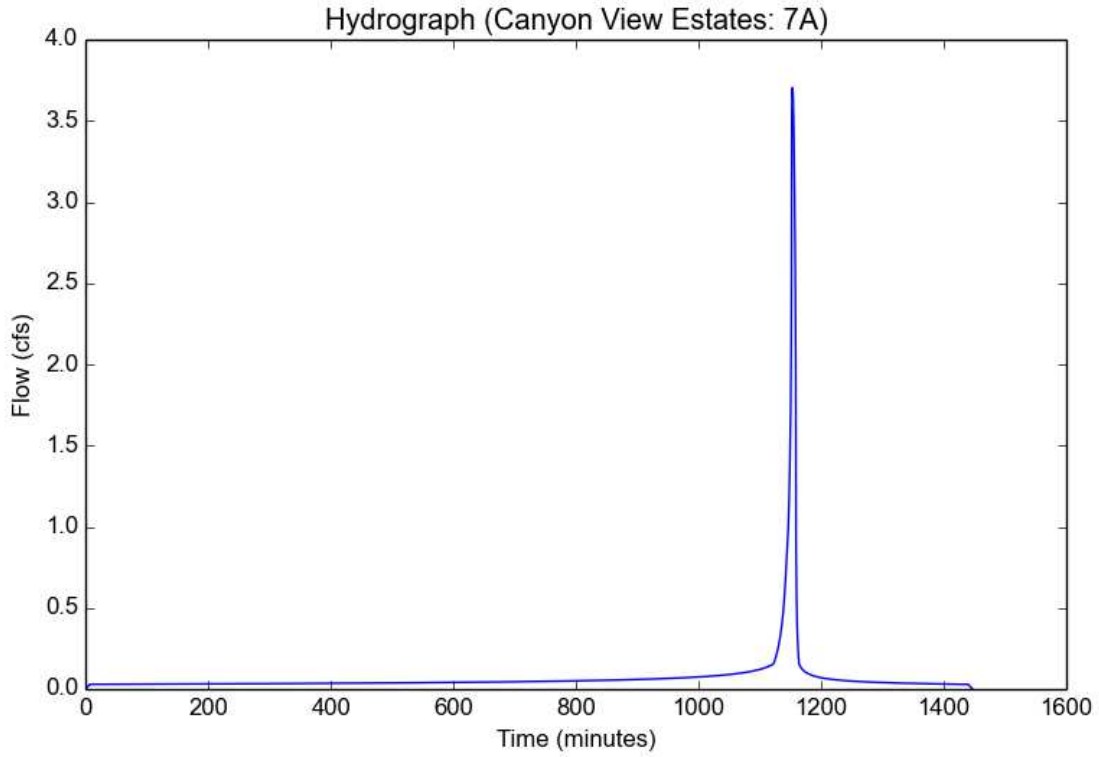
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	7A
Area (ac)	4.48
Flow Path Length (ft)	343.0
Flow Path Slope (vft/hft)	0.23
50-yr Rainfall Depth (in)	4.67
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	scr
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7273
Peak Intensity (in/hr)	1.3892
Undeveloped Runoff Coefficient (Cu)	0.5921
Developed Runoff Coefficient (Cd)	0.5952
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	3.7042
Burned Peak Flow Rate (cfs)	4.0
24-Hr Clear Runoff Volume (ac-ft)	0.1516
24-Hr Clear Runoff Volume (cu-ft)	6605.6012



Peak Flow Hydrologic Analysis

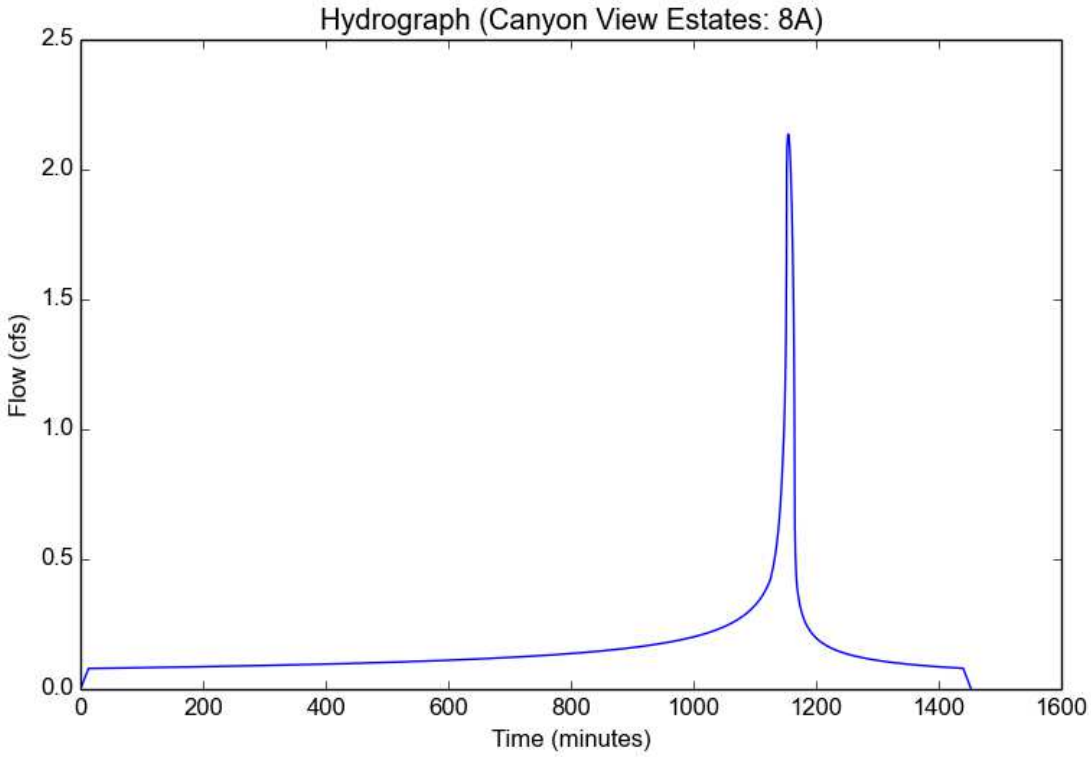
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	8A
Area (ac)	3.01
Flow Path Length (ft)	770.0
Flow Path Slope (vft/hft)	0.074
50-yr Rainfall Depth (in)	4.67
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	0
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7273
Peak Intensity (in/hr)	1.0385
Undeveloped Runoff Coefficient (Cu)	0.5267
Developed Runoff Coefficient (Cd)	0.6835
Time of Concentration (min)	13.0
Clear Peak Flow Rate (cfs)	2.1364
Burned Peak Flow Rate (cfs)	2.1364
24-Hr Clear Runoff Volume (ac-ft)	0.3122
24-Hr Clear Runoff Volume (cu-ft)	13597.437



Peak Flow Hydrologic Analysis

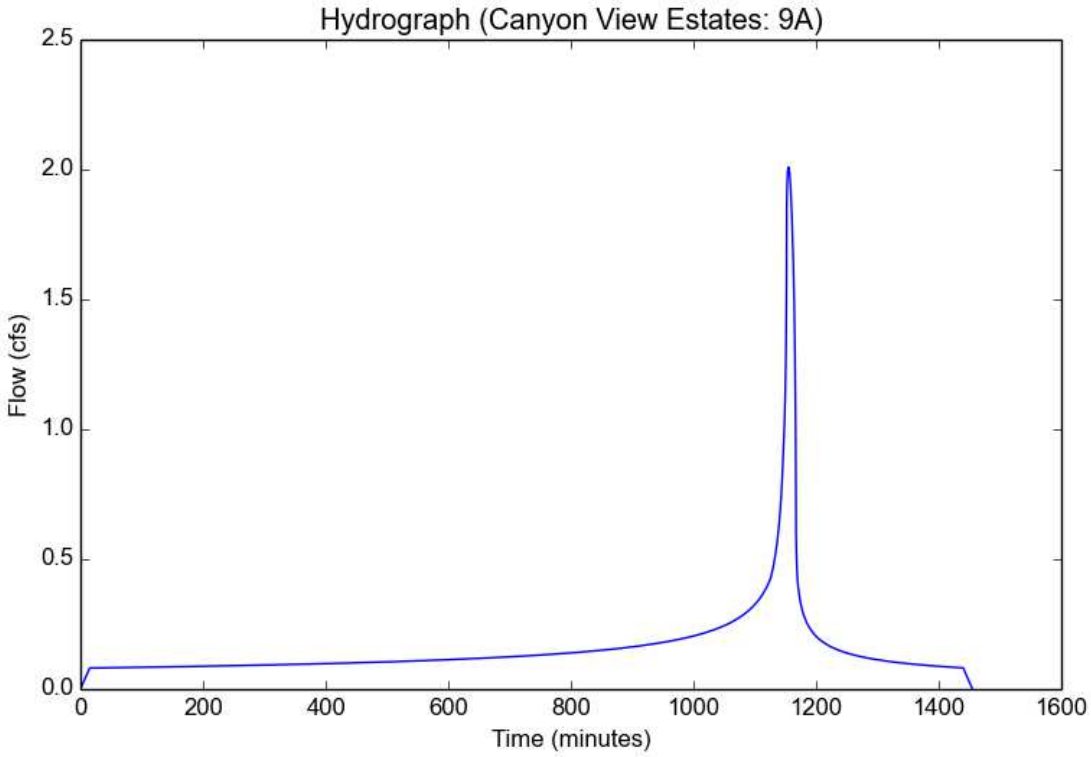
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	9A
Area (ac)	3.07
Flow Path Length (ft)	860.0
Flow Path Slope (vft/hft)	0.056
50-yr Rainfall Depth (in)	4.67
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	0
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7273
Peak Intensity (in/hr)	0.9709
Undeveloped Runoff Coefficient (Cu)	0.5105
Developed Runoff Coefficient (Cd)	0.6741
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	2.0093
Burned Peak Flow Rate (cfs)	2.0093
24-Hr Clear Runoff Volume (ac-ft)	0.3182
24-Hr Clear Runoff Volume (cu-ft)	13860.7857



Peak Flow Hydrologic Analysis

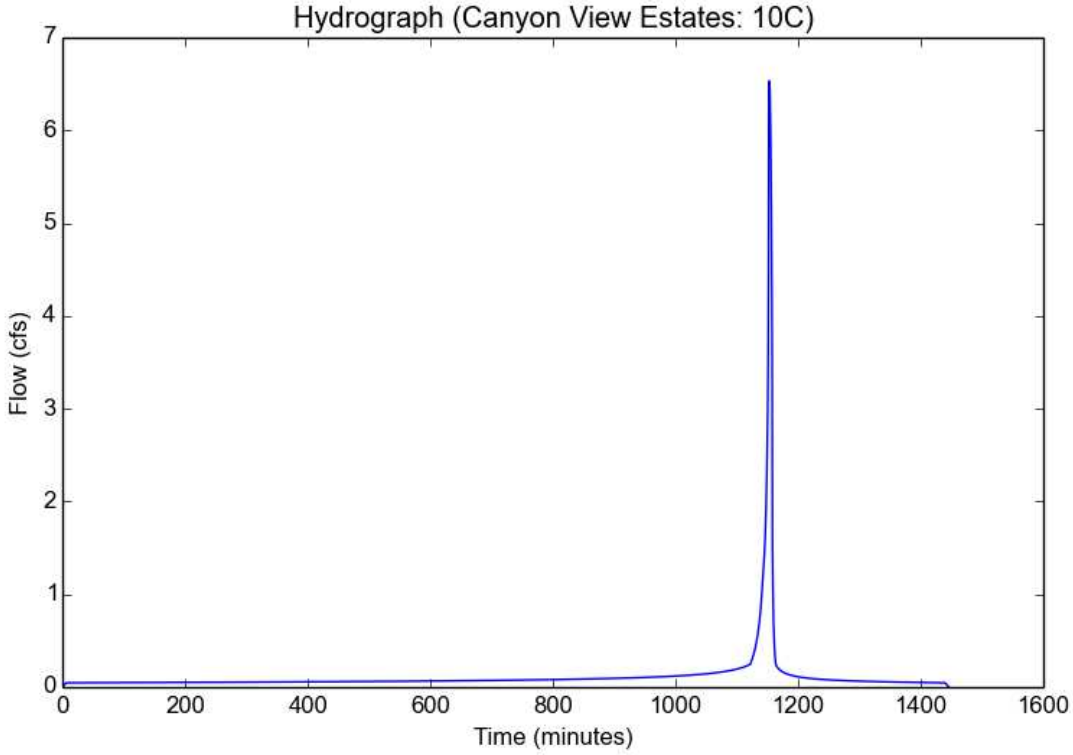
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	10C
Area (ac)	7.12
Flow Path Length (ft)	378.0
Flow Path Slope (vft/hft)	0.56
50-yr Rainfall Depth (in)	4.67
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	scr
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7273
Peak Intensity (in/hr)	1.4935
Undeveloped Runoff Coefficient (Cu)	0.6116
Developed Runoff Coefficient (Cd)	0.6145
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	6.5345
Burned Peak Flow Rate (cfs)	7.0226
24-Hr Clear Runoff Volume (ac-ft)	0.2415
24-Hr Clear Runoff Volume (cu-ft)	10520.682



Peak Flow Hydrologic Analysis

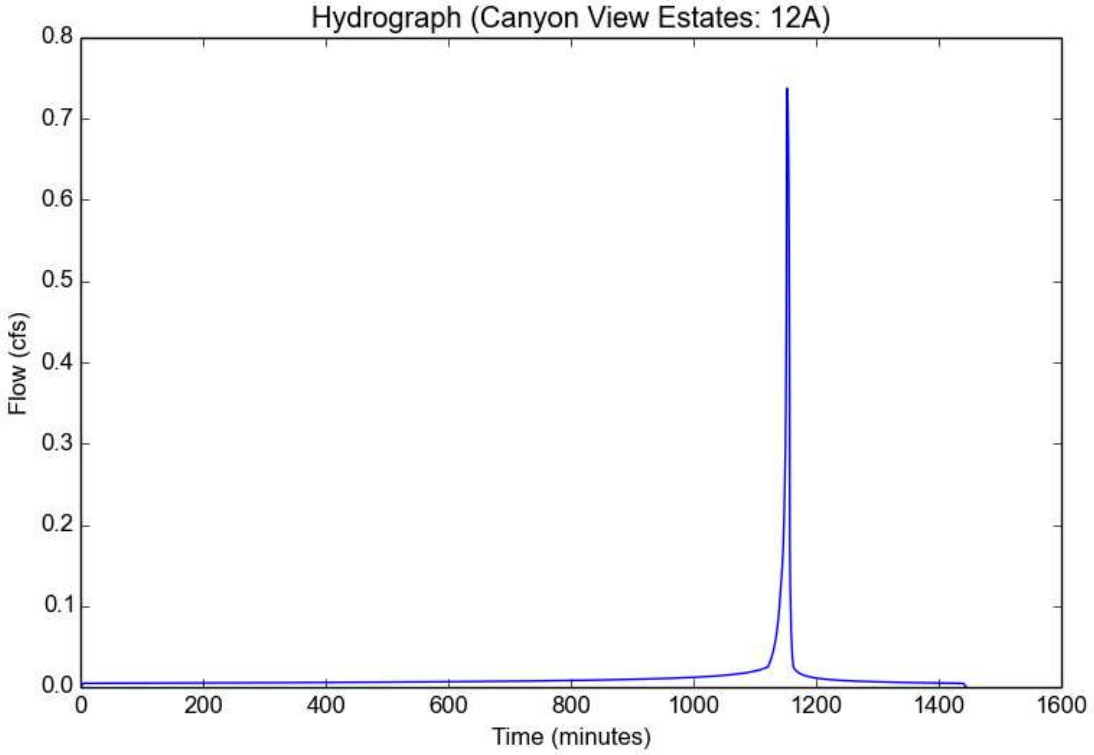
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	12A
Area (ac)	0.72
Flow Path Length (ft)	263.0
Flow Path Slope (vft/hft)	0.39
50-yr Rainfall Depth (in)	4.67
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	scr
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7273
Peak Intensity (in/hr)	1.6272
Undeveloped Runoff Coefficient (Cu)	0.627
Developed Runoff Coefficient (Cd)	0.6297
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.7378
Burned Peak Flow Rate (cfs)	0.7902
24-Hr Clear Runoff Volume (ac-ft)	0.0245
24-Hr Clear Runoff Volume (cu-ft)	1065.5881



Peak Flow Hydrologic Analysis

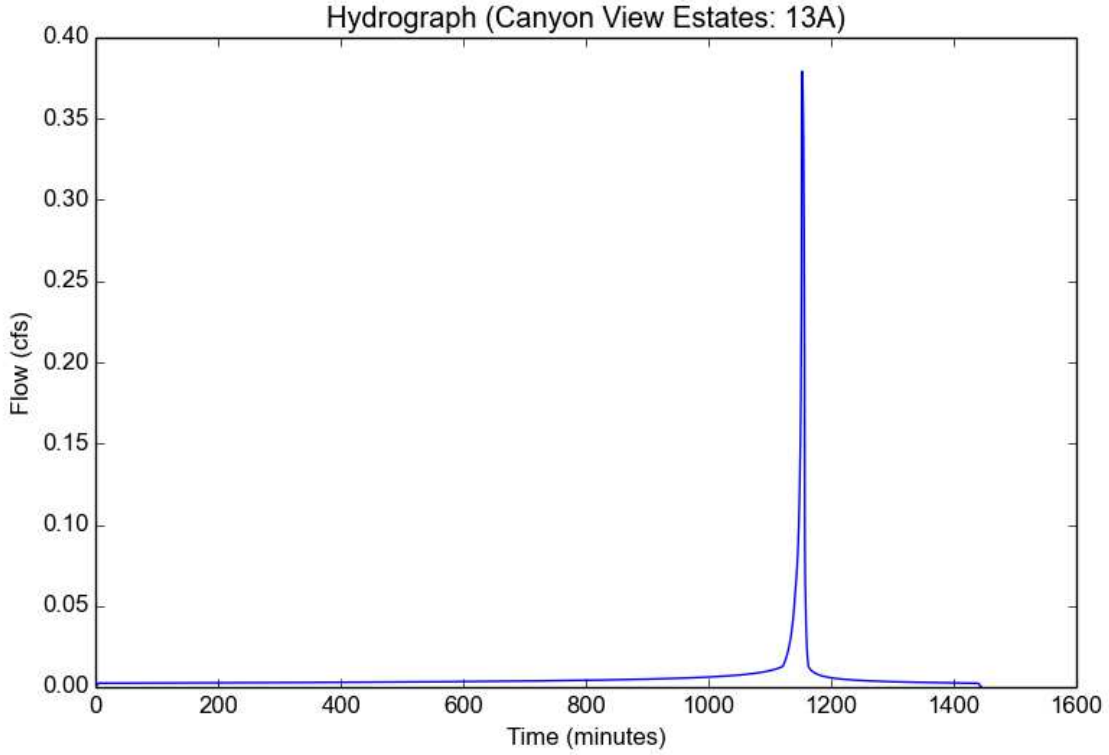
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	13A
Area (ac)	0.37
Flow Path Length (ft)	86.0
Flow Path Slope (vft/hft)	0.44
50-yr Rainfall Depth (in)	4.67
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	scr
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7273
Peak Intensity (in/hr)	1.6272
Undeveloped Runoff Coefficient (Cu)	0.627
Developed Runoff Coefficient (Cd)	0.6297
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.3791
Burned Peak Flow Rate (cfs)	0.4061
24-Hr Clear Runoff Volume (ac-ft)	0.0126
24-Hr Clear Runoff Volume (cu-ft)	547.5939



Peak Flow Hydrologic Analysis

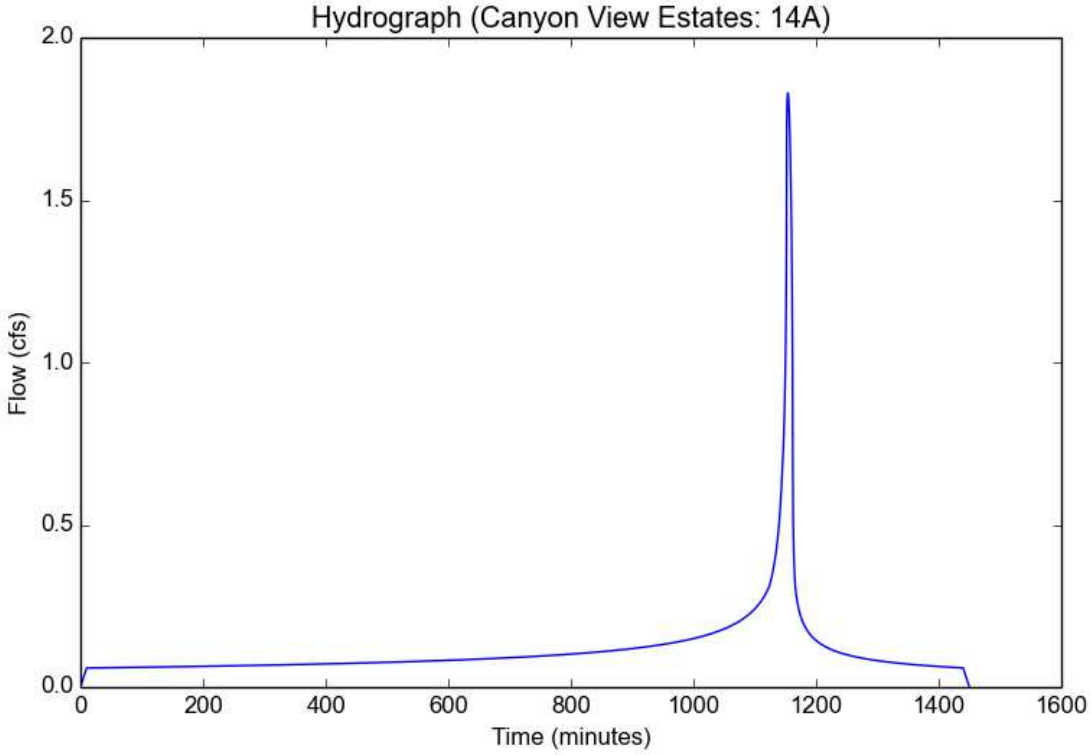
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	14A
Area (ac)	2.23
Flow Path Length (ft)	310.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	4.67
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	0
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7273
Peak Intensity (in/hr)	1.1748
Undeveloped Runoff Coefficient (Cu)	0.5521
Developed Runoff Coefficient (Cd)	0.6982
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	1.8291
Burned Peak Flow Rate (cfs)	1.8291
24-Hr Clear Runoff Volume (ac-ft)	0.2314
24-Hr Clear Runoff Volume (cu-ft)	10079.165



Peak Flow Hydrologic Analysis

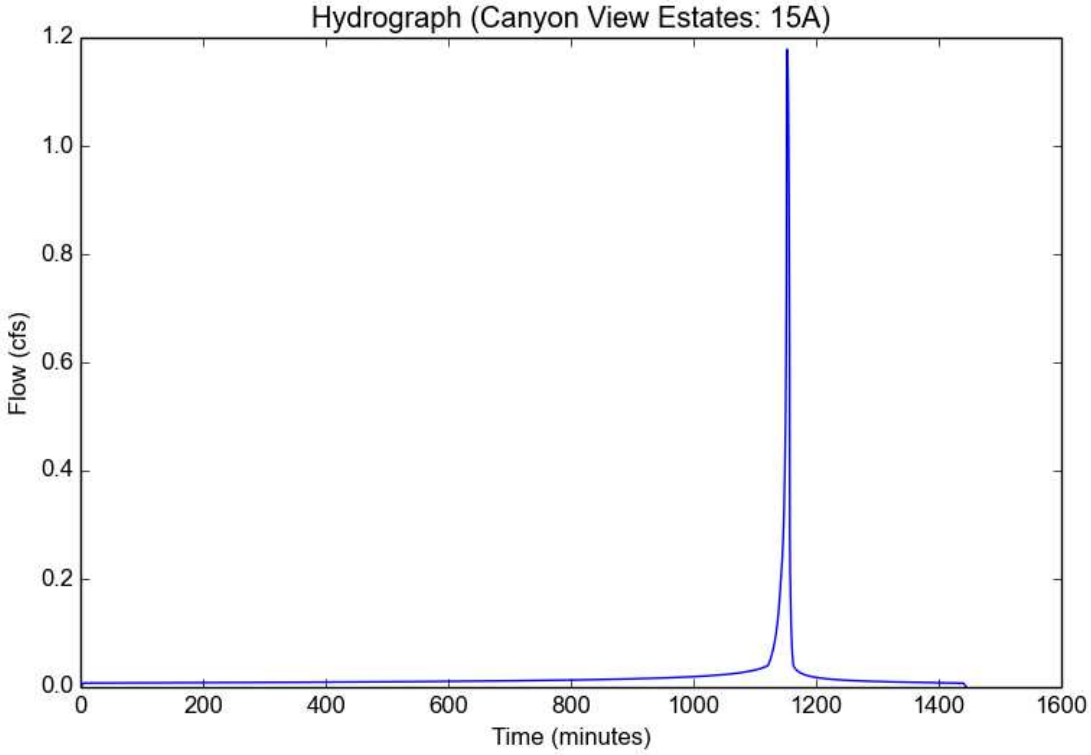
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	15A
Area (ac)	1.15
Flow Path Length (ft)	181.0
Flow Path Slope (vft/hft)	0.29
50-yr Rainfall Depth (in)	4.67
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	scr
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7273
Peak Intensity (in/hr)	1.6272
Undeveloped Runoff Coefficient (Cu)	0.627
Developed Runoff Coefficient (Cd)	0.6297
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.1784
Burned Peak Flow Rate (cfs)	1.2622
24-Hr Clear Runoff Volume (ac-ft)	0.0391
24-Hr Clear Runoff Volume (cu-ft)	1701.981



Peak Flow Hydrologic Analysis

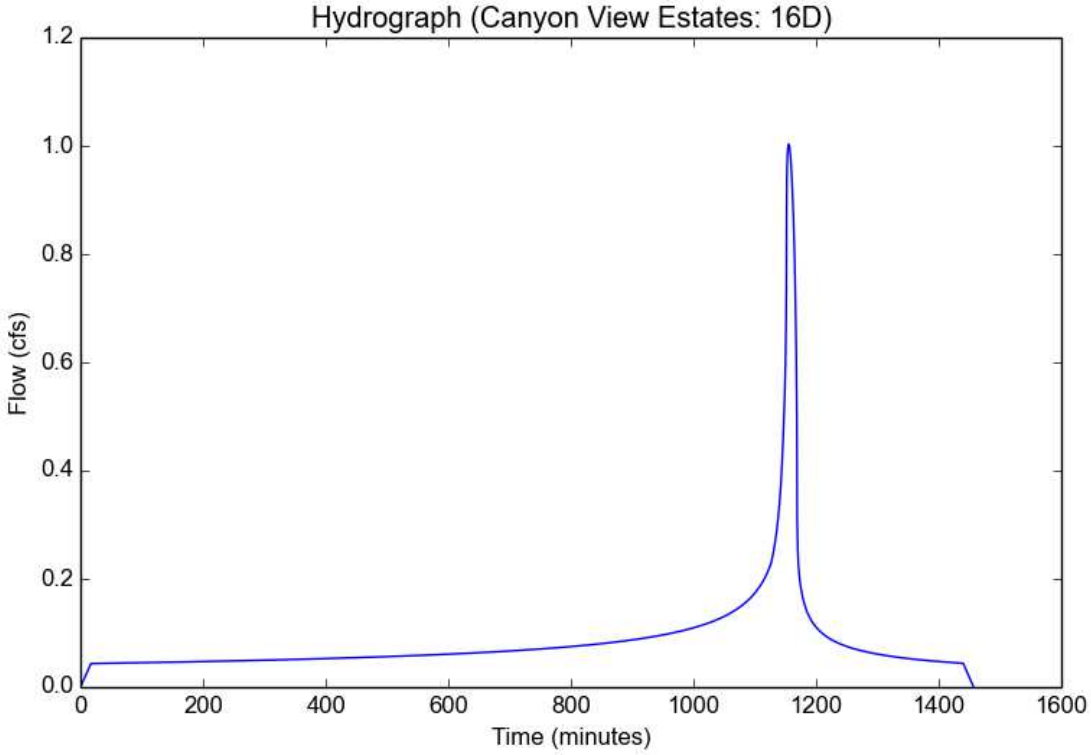
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	16D
Area (ac)	1.65
Flow Path Length (ft)	630.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	4.67
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	0
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7273
Peak Intensity (in/hr)	0.9155
Undeveloped Runoff Coefficient (Cu)	0.4933
Developed Runoff Coefficient (Cd)	0.6641
Time of Concentration (min)	17.0
Clear Peak Flow Rate (cfs)	1.0032
Burned Peak Flow Rate (cfs)	1.0032
24-Hr Clear Runoff Volume (ac-ft)	0.1709
24-Hr Clear Runoff Volume (cu-ft)	7445.3349



Peak Flow Hydrologic Analysis

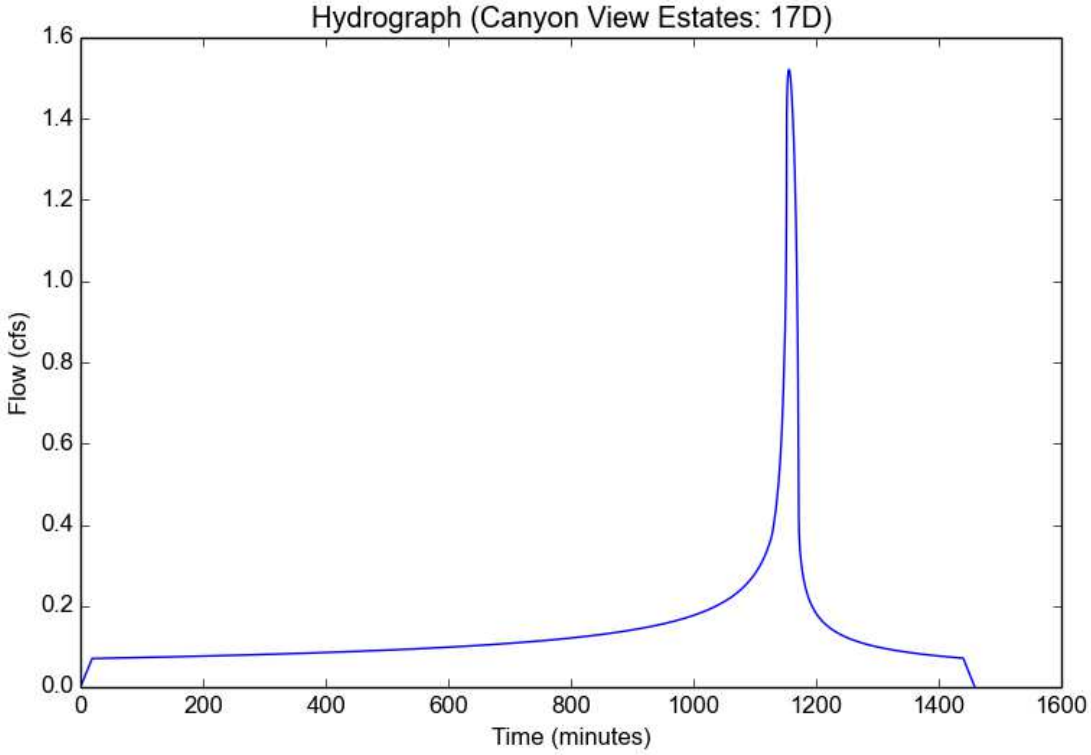
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	17D
Area (ac)	2.67
Flow Path Length (ft)	620.0
Flow Path Slope (vft/hft)	0.005
50-yr Rainfall Depth (in)	4.67
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	0
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7273
Peak Intensity (in/hr)	0.8688
Undeveloped Runoff Coefficient (Cu)	0.4789
Developed Runoff Coefficient (Cd)	0.6558
Time of Concentration (min)	19.0
Clear Peak Flow Rate (cfs)	1.5212
Burned Peak Flow Rate (cfs)	1.5212
24-Hr Clear Runoff Volume (ac-ft)	0.2764
24-Hr Clear Runoff Volume (cu-ft)	12041.7432



Peak Flow Hydrologic Analysis

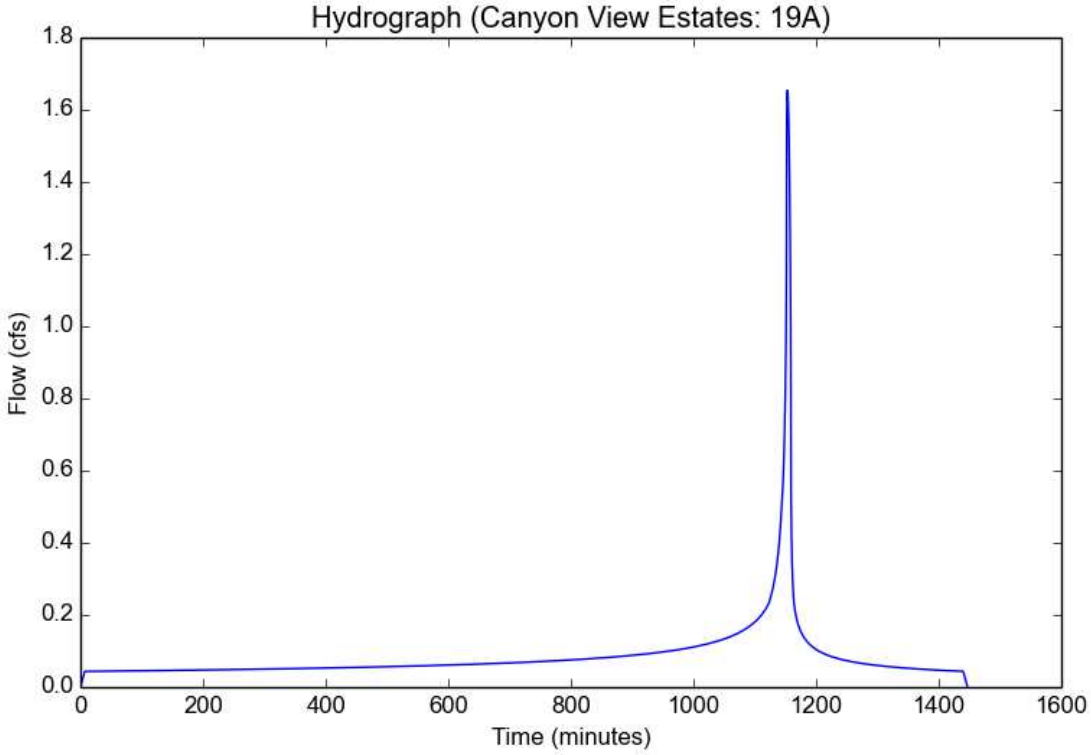
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	19A
Area (ac)	1.65
Flow Path Length (ft)	290.0
Flow Path Slope (vft/hft)	0.062
50-yr Rainfall Depth (in)	4.67
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	0
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7273
Peak Intensity (in/hr)	1.3892
Undeveloped Runoff Coefficient (Cu)	0.5921
Developed Runoff Coefficient (Cd)	0.7214
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	1.6536
Burned Peak Flow Rate (cfs)	1.6536
24-Hr Clear Runoff Volume (ac-ft)	0.1713
24-Hr Clear Runoff Volume (cu-ft)	7463.5174



Peak Flow Hydrologic Analysis

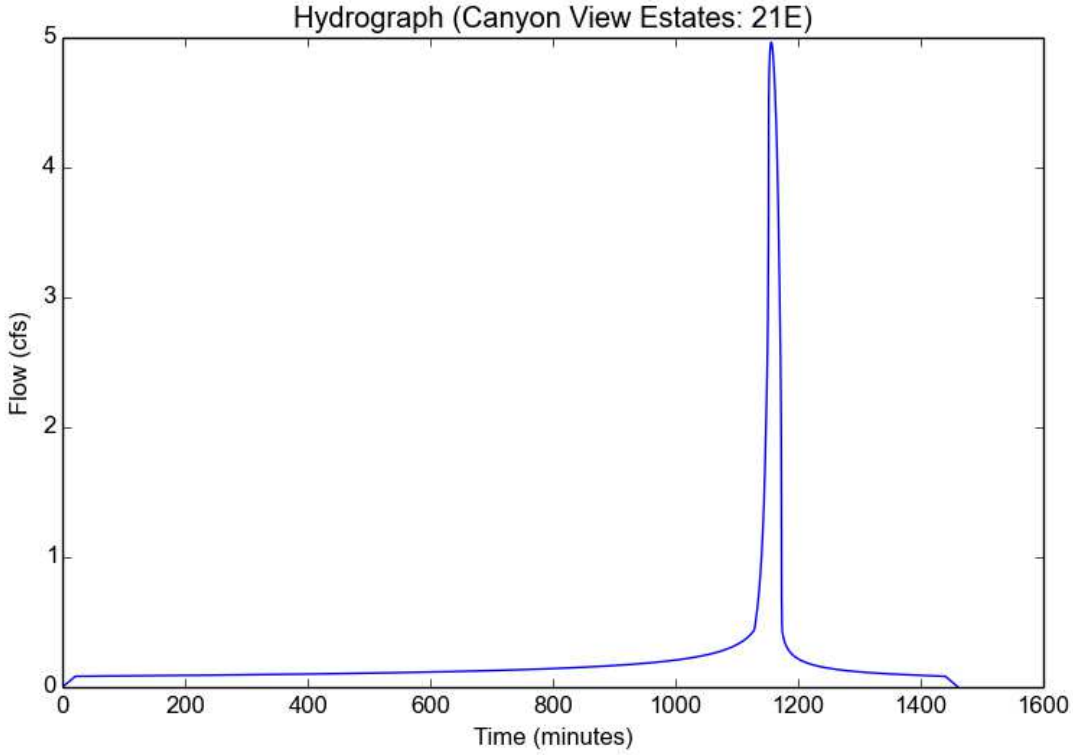
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	21E
Area (ac)	12.72
Flow Path Length (ft)	1394.0
Flow Path Slope (vft/hft)	0.18
50-yr Rainfall Depth (in)	4.67
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	scr
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7273
Peak Intensity (in/hr)	0.8289
Undeveloped Runoff Coefficient (Cu)	0.4665
Developed Runoff Coefficient (Cd)	0.4709
Time of Concentration (min)	21.0
Clear Peak Flow Rate (cfs)	4.9646
Burned Peak Flow Rate (cfs)	5.5525
24-Hr Clear Runoff Volume (ac-ft)	0.4228
24-Hr Clear Runoff Volume (cu-ft)	18418.6095



Peak Flow Hydrologic Analysis

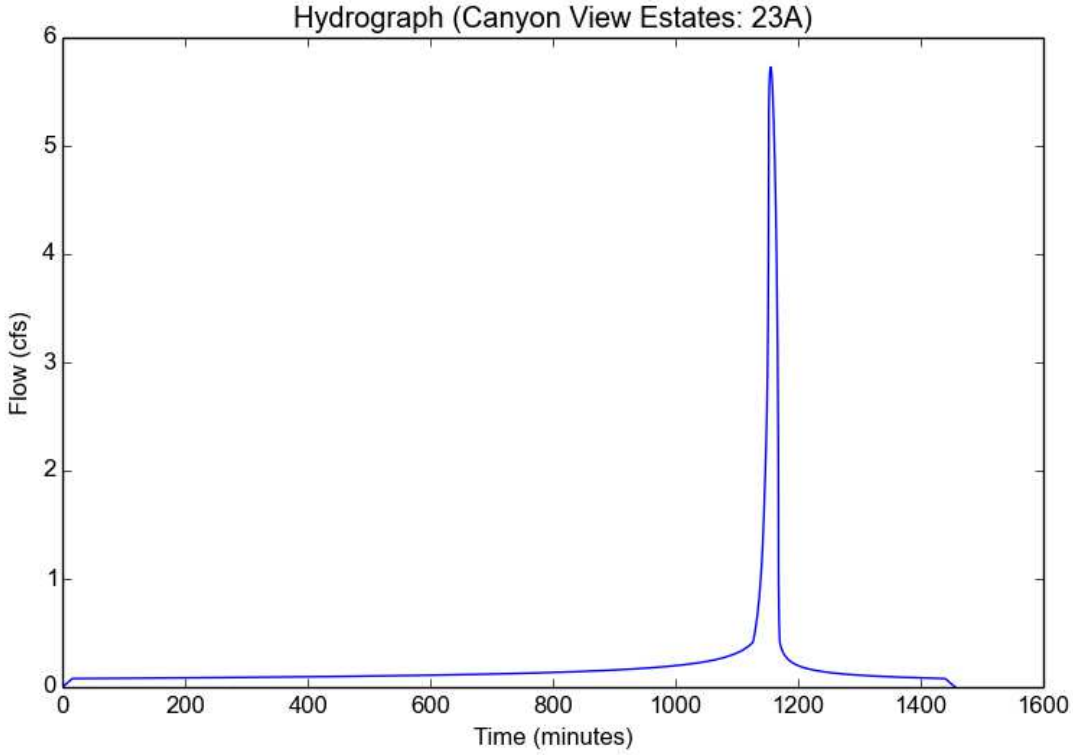
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	23A
Area (ac)	12.03
Flow Path Length (ft)	682.0
Flow Path Slope (vft/hft)	0.046
50-yr Rainfall Depth (in)	4.67
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	scr
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7273
Peak Intensity (in/hr)	0.9419
Undeveloped Runoff Coefficient (Cu)	0.5015
Developed Runoff Coefficient (Cd)	0.5055
Time of Concentration (min)	16.0
Clear Peak Flow Rate (cfs)	5.7279
Burned Peak Flow Rate (cfs)	6.3354
24-Hr Clear Runoff Volume (ac-ft)	0.4026
24-Hr Clear Runoff Volume (cu-ft)	17536.7903



Peak Flow Hydrologic Analysis

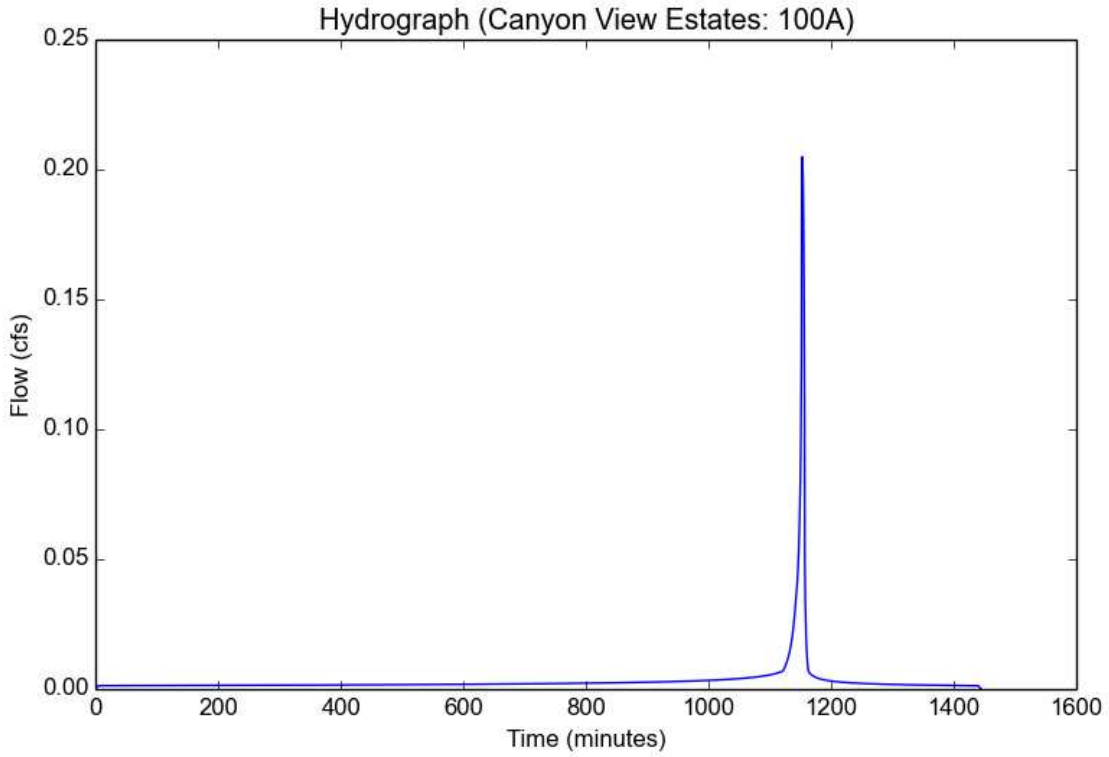
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	100A
Area (ac)	0.2
Flow Path Length (ft)	116.0
Flow Path Slope (vft/hft)	0.56
50-yr Rainfall Depth (in)	4.67
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	scr
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7273
Peak Intensity (in/hr)	1.6272
Undeveloped Runoff Coefficient (Cu)	0.627
Developed Runoff Coefficient (Cd)	0.6297
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.2049
Burned Peak Flow Rate (cfs)	0.2195
24-Hr Clear Runoff Volume (ac-ft)	0.0068
24-Hr Clear Runoff Volume (cu-ft)	295.9967



Peak Flow Hydrologic Analysis

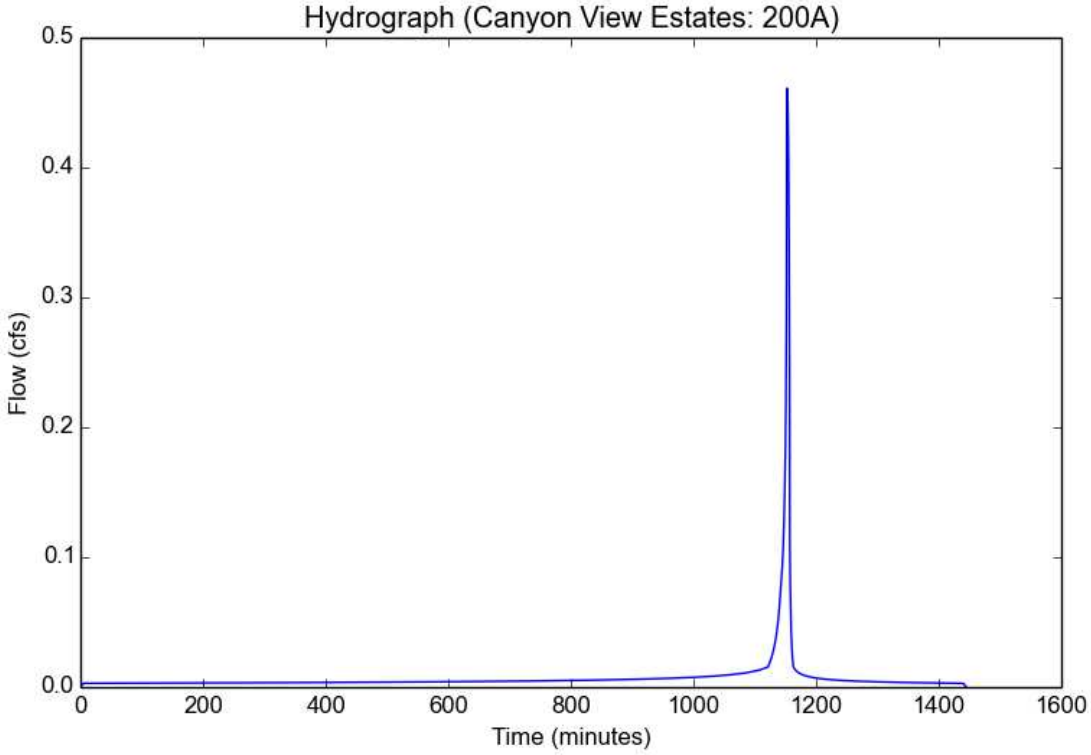
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	200A
Area (ac)	0.45
Flow Path Length (ft)	234.0
Flow Path Slope (vft/hft)	0.3
50-yr Rainfall Depth (in)	4.67
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	0
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7273
Peak Intensity (in/hr)	1.6272
Undeveloped Runoff Coefficient (Cu)	0.627
Developed Runoff Coefficient (Cd)	0.6297
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.4611
Burned Peak Flow Rate (cfs)	0.4611
24-Hr Clear Runoff Volume (ac-ft)	0.0153
24-Hr Clear Runoff Volume (cu-ft)	665.9926



Peak Flow Hydrologic Analysis

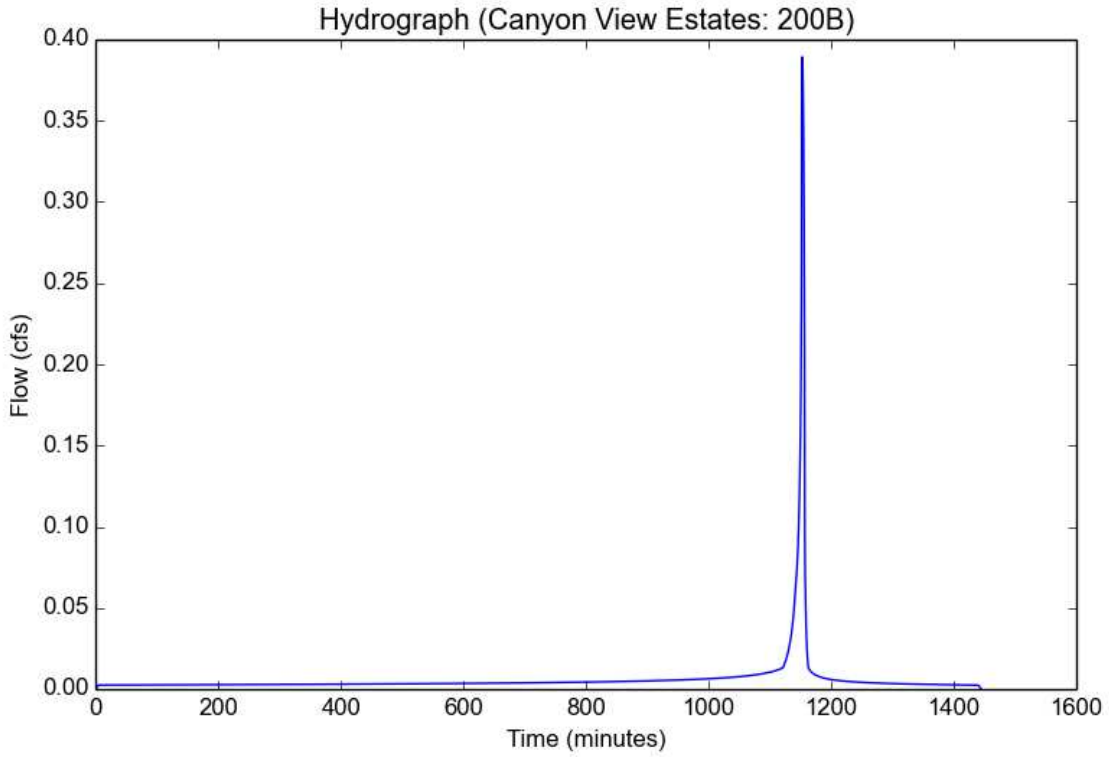
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	200B
Area (ac)	0.38
Flow Path Length (ft)	234.0
Flow Path Slope (vft/hft)	0.3
50-yr Rainfall Depth (in)	4.67
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	5-yr
Fire Factor	0
LID	False

Output Results

Modeled (5-yr) Rainfall Depth (in)	2.7273
Peak Intensity (in/hr)	1.6272
Undeveloped Runoff Coefficient (Cu)	0.627
Developed Runoff Coefficient (Cd)	0.6297
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.3894
Burned Peak Flow Rate (cfs)	0.3894
24-Hr Clear Runoff Volume (ac-ft)	0.0129
24-Hr Clear Runoff Volume (cu-ft)	562.3937



Peak Flow Hydrologic Analysis

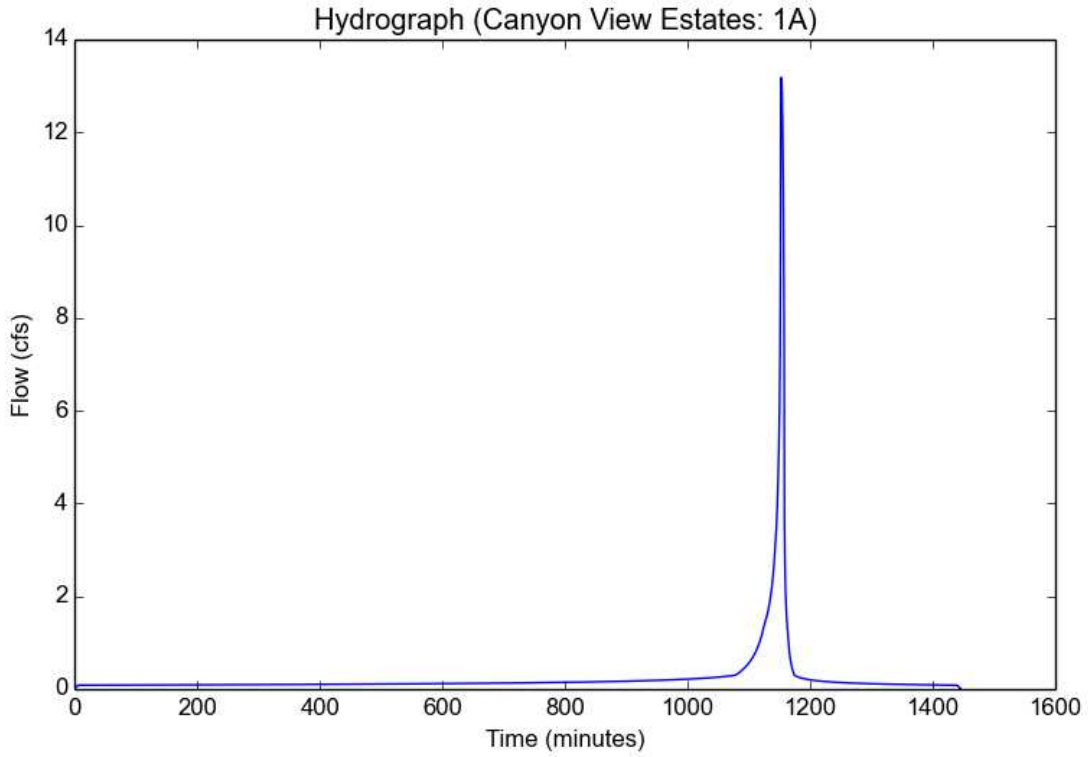
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	1A
Area (ac)	8.6
Flow Path Length (ft)	444.0
Flow Path Slope (vft/hft)	0.17
50-yr Rainfall Depth (in)	5.7
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	scr
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0698
Peak Intensity (in/hr)	2.2287
Undeveloped Runoff Coefficient (Cu)	0.6857
Developed Runoff Coefficient (Cd)	0.6878
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	13.1839
Burned Peak Flow Rate (cfs)	13.9491
24-Hr Clear Runoff Volume (ac-ft)	0.5093
24-Hr Clear Runoff Volume (cu-ft)	22183.6719



Peak Flow Hydrologic Analysis

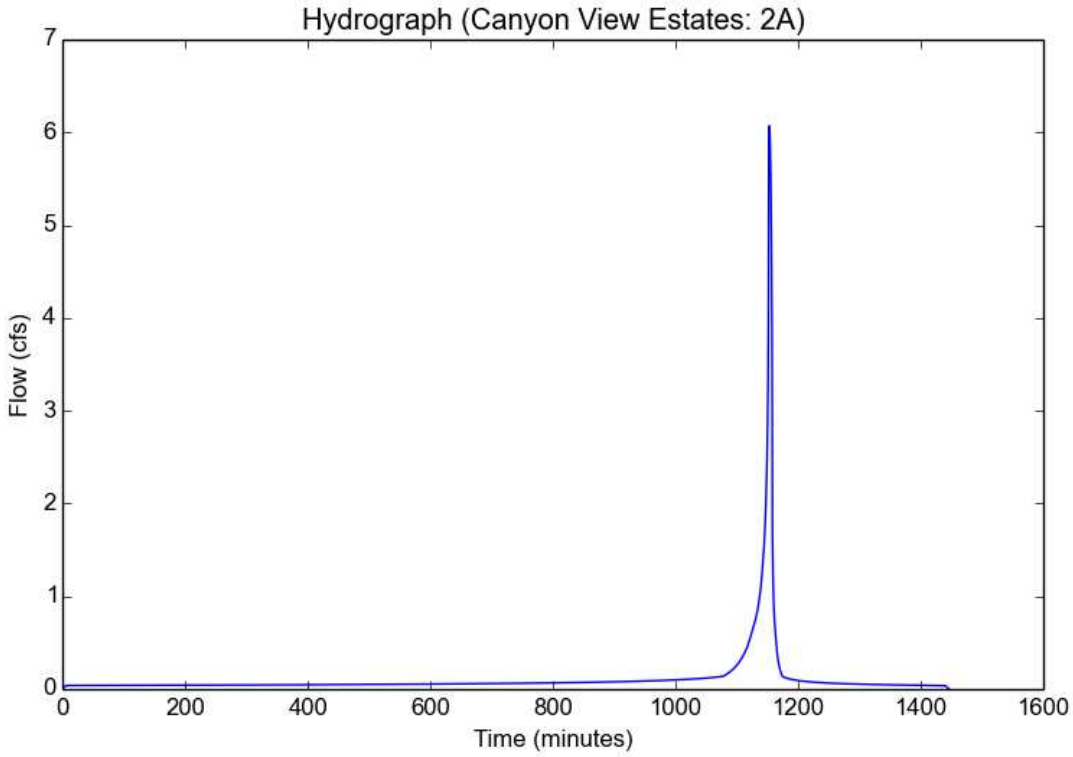
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	2A
Area (ac)	3.96
Flow Path Length (ft)	478.0
Flow Path Slope (vft/hft)	0.24
50-yr Rainfall Depth (in)	5.7
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	scr
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0698
Peak Intensity (in/hr)	2.2287
Undeveloped Runoff Coefficient (Cu)	0.6857
Developed Runoff Coefficient (Cd)	0.6878
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	6.0707
Burned Peak Flow Rate (cfs)	6.4231
24-Hr Clear Runoff Volume (ac-ft)	0.2345
24-Hr Clear Runoff Volume (cu-ft)	10214.8071



Peak Flow Hydrologic Analysis

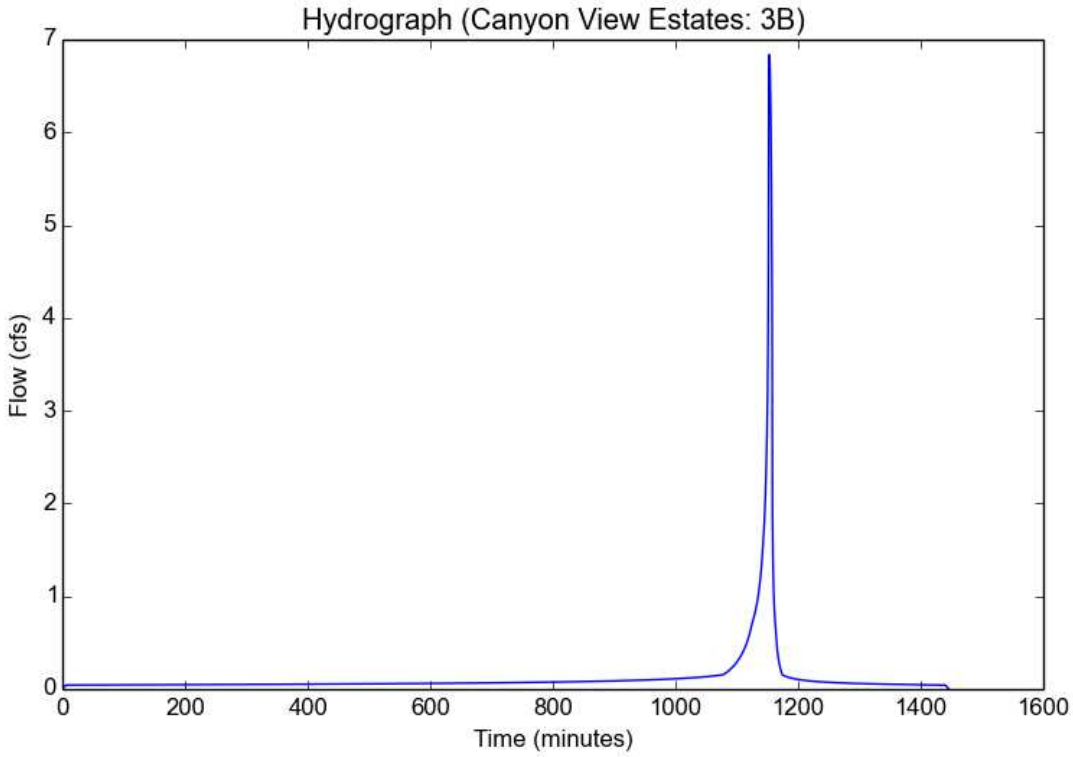
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	3B
Area (ac)	4.46
Flow Path Length (ft)	484.0
Flow Path Slope (vft/hft)	0.25
50-yr Rainfall Depth (in)	5.7
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	scr
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0698
Peak Intensity (in/hr)	2.2287
Undeveloped Runoff Coefficient (Cu)	0.6857
Developed Runoff Coefficient (Cd)	0.6878
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	6.8372
Burned Peak Flow Rate (cfs)	7.234
24-Hr Clear Runoff Volume (ac-ft)	0.2641
24-Hr Clear Runoff Volume (cu-ft)	11504.5554



Peak Flow Hydrologic Analysis

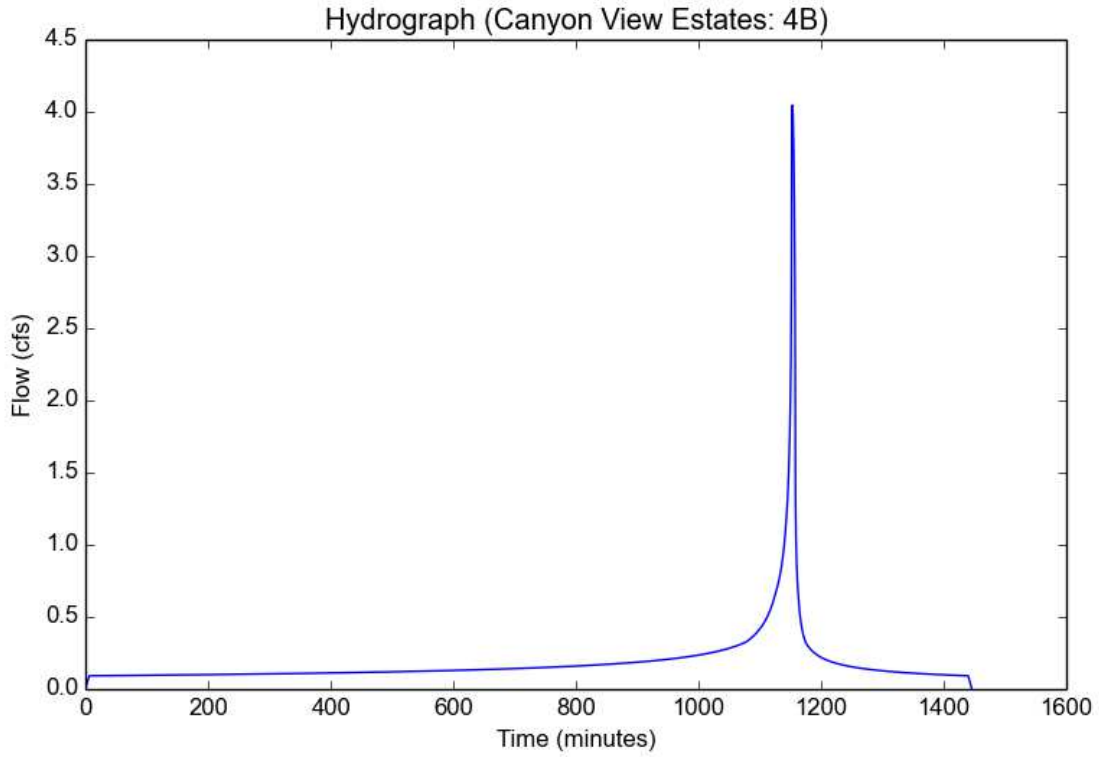
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	4B
Area (ac)	2.34
Flow Path Length (ft)	220.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.7
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0698
Peak Intensity (in/hr)	2.2287
Undeveloped Runoff Coefficient (Cu)	0.6857
Developed Runoff Coefficient (Cd)	0.7757
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	4.0455
Burned Peak Flow Rate (cfs)	4.0455
24-Hr Clear Runoff Volume (ac-ft)	0.3745
24-Hr Clear Runoff Volume (cu-ft)	16314.8413



Peak Flow Hydrologic Analysis

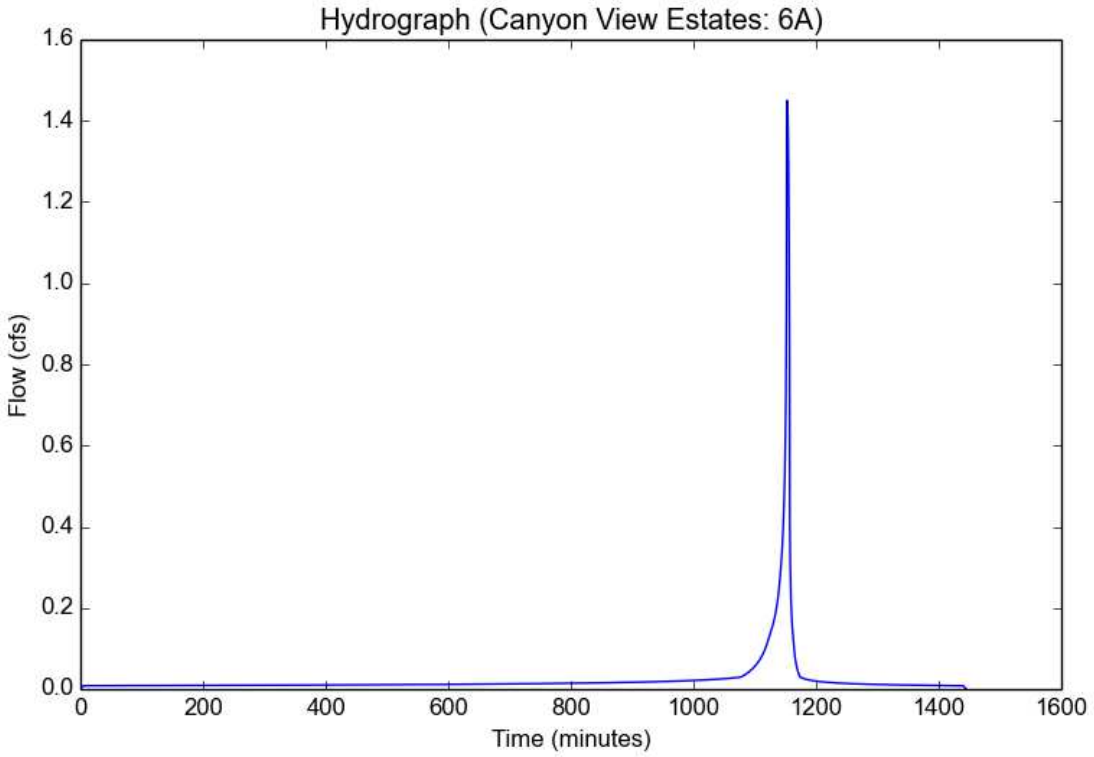
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	6A
Area (ac)	0.85
Flow Path Length (ft)	136.0
Flow Path Slope (vft/hft)	0.39
50-yr Rainfall Depth (in)	5.7
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	scr
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0698
Peak Intensity (in/hr)	2.4282
Undeveloped Runoff Coefficient (Cu)	0.7006
Developed Runoff Coefficient (Cd)	0.7026
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.4502
Burned Peak Flow Rate (cfs)	1.5298
24-Hr Clear Runoff Volume (ac-ft)	0.0504
24-Hr Clear Runoff Volume (cu-ft)	2194.7187



Peak Flow Hydrologic Analysis

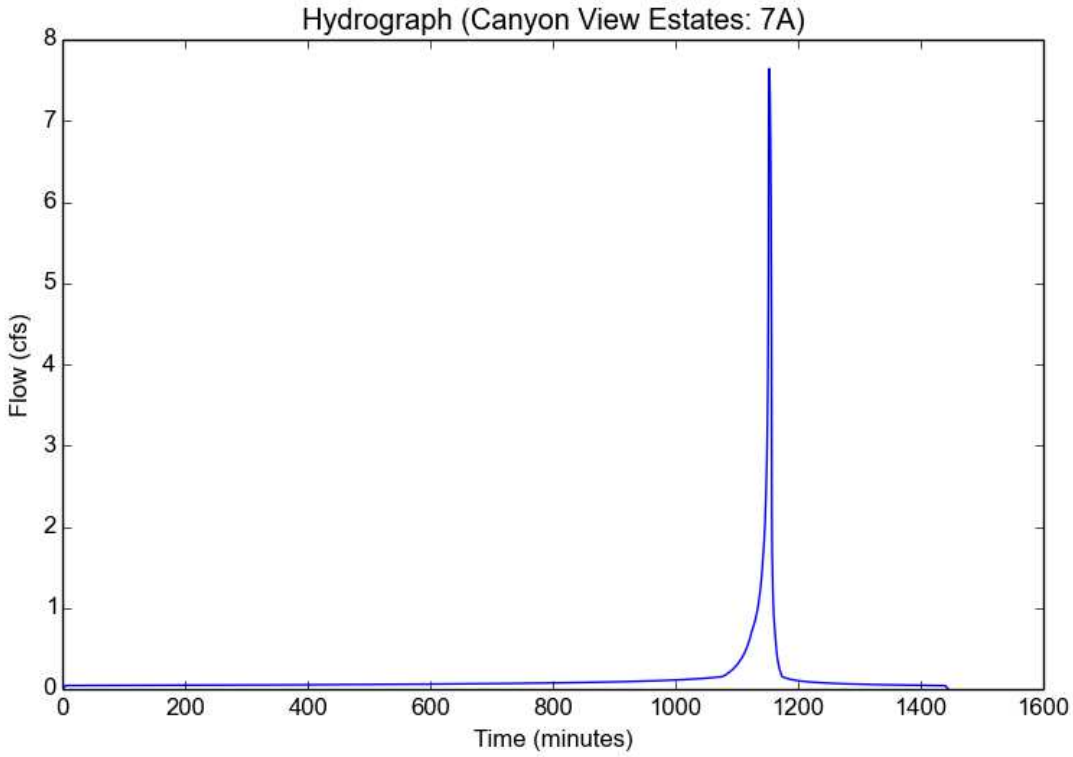
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	7A
Area (ac)	4.48
Flow Path Length (ft)	343.0
Flow Path Slope (vft/hft)	0.23
50-yr Rainfall Depth (in)	5.7
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	scr
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0698
Peak Intensity (in/hr)	2.4282
Undeveloped Runoff Coefficient (Cu)	0.7006
Developed Runoff Coefficient (Cd)	0.7026
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	7.6432
Burned Peak Flow Rate (cfs)	8.0629
24-Hr Clear Runoff Volume (ac-ft)	0.2656
24-Hr Clear Runoff Volume (cu-ft)	11567.4587



Peak Flow Hydrologic Analysis

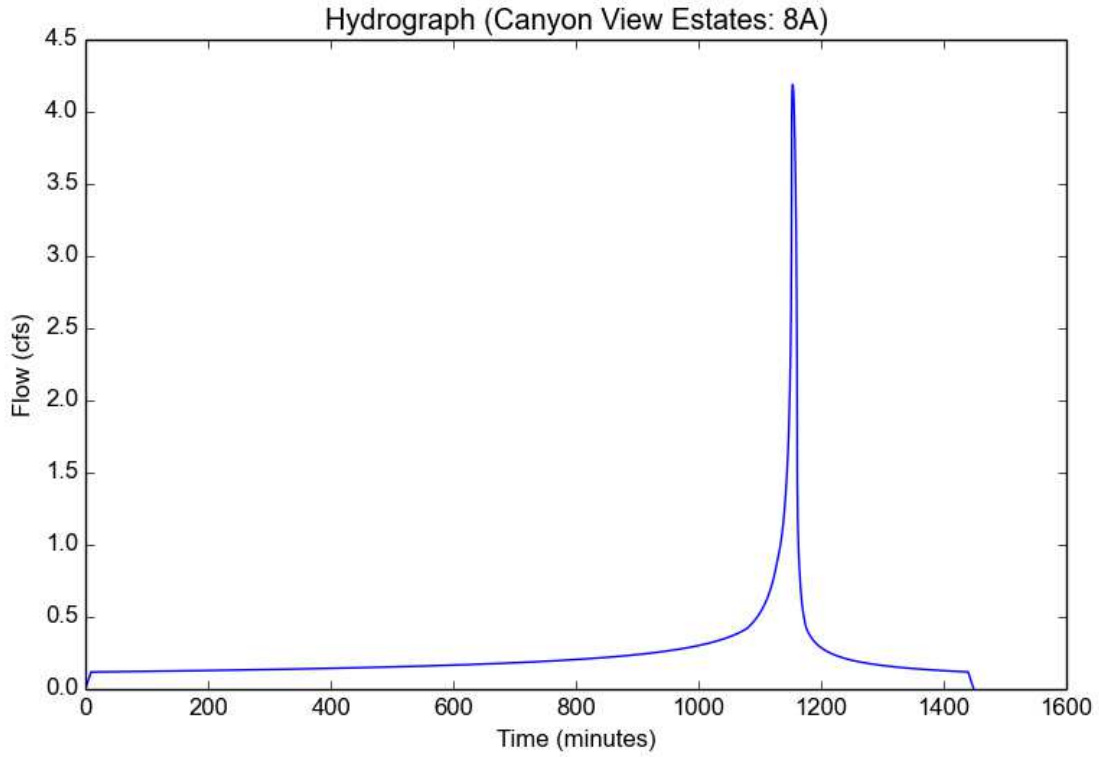
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	8A
Area (ac)	3.01
Flow Path Length (ft)	770.0
Flow Path Slope (vft/hft)	0.074
50-yr Rainfall Depth (in)	5.7
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0698
Peak Intensity (in/hr)	1.842
Undeveloped Runoff Coefficient (Cu)	0.6509
Developed Runoff Coefficient (Cd)	0.7555
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	4.1891
Burned Peak Flow Rate (cfs)	4.1891
24-Hr Clear Runoff Volume (ac-ft)	0.4815
24-Hr Clear Runoff Volume (cu-ft)	20971.9843



Peak Flow Hydrologic Analysis

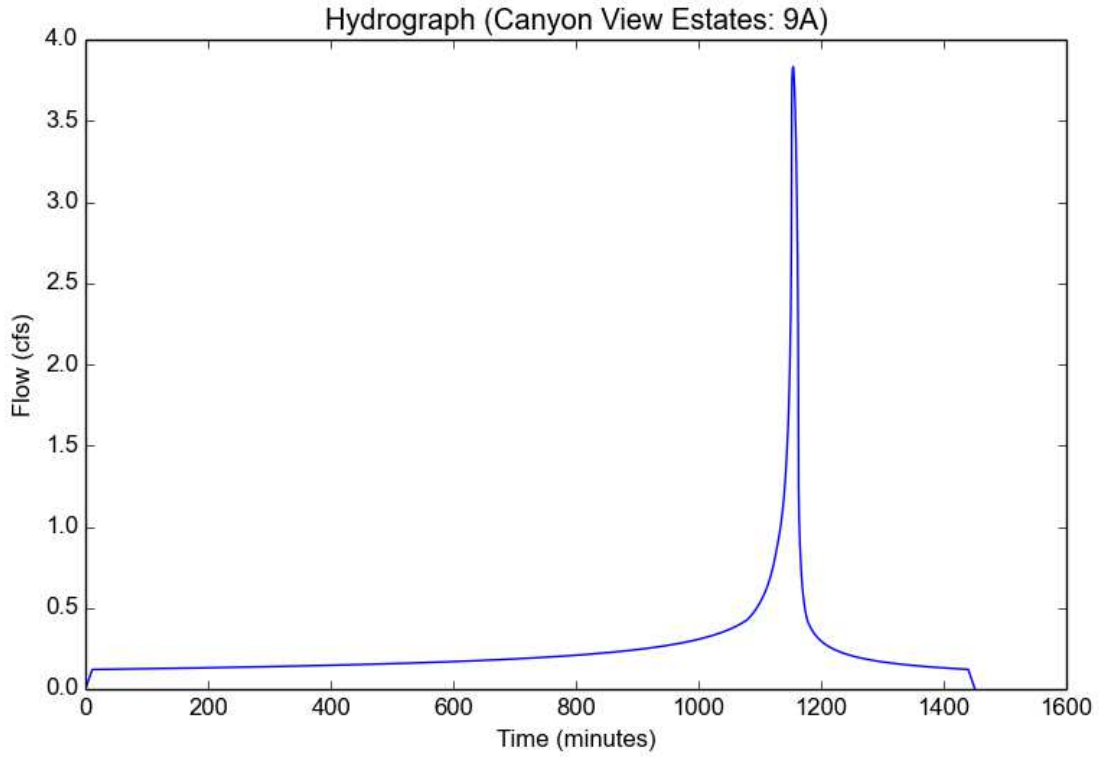
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	9A
Area (ac)	3.07
Flow Path Length (ft)	860.0
Flow Path Slope (vft/hft)	0.056
50-yr Rainfall Depth (in)	5.7
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0698
Peak Intensity (in/hr)	1.6762
Undeveloped Runoff Coefficient (Cu)	0.6325
Developed Runoff Coefficient (Cd)	0.7448
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	3.8329
Burned Peak Flow Rate (cfs)	3.8329
24-Hr Clear Runoff Volume (ac-ft)	0.4909
24-Hr Clear Runoff Volume (cu-ft)	21382.0561



Peak Flow Hydrologic Analysis

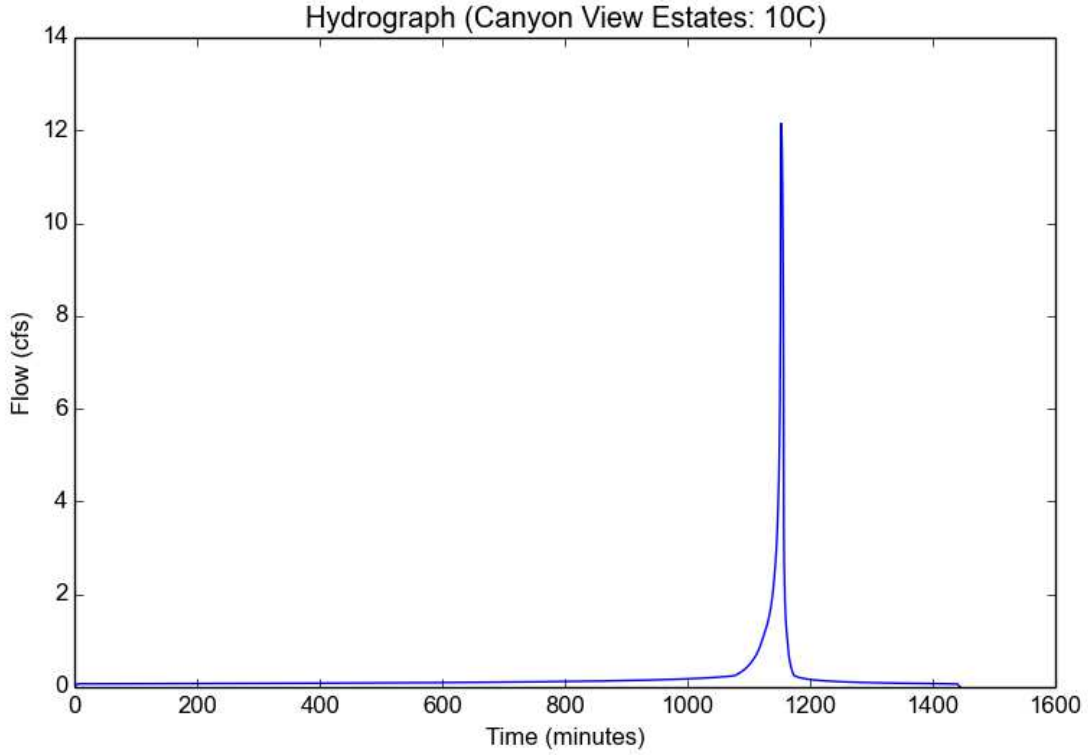
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	10C
Area (ac)	7.12
Flow Path Length (ft)	378.0
Flow Path Slope (vft/hft)	0.56
50-yr Rainfall Depth (in)	5.7
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	scr
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0698
Peak Intensity (in/hr)	2.4282
Undeveloped Runoff Coefficient (Cu)	0.7006
Developed Runoff Coefficient (Cd)	0.7026
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	12.1473
Burned Peak Flow Rate (cfs)	12.8143
24-Hr Clear Runoff Volume (ac-ft)	0.422
24-Hr Clear Runoff Volume (cu-ft)	18383.9968



Peak Flow Hydrologic Analysis

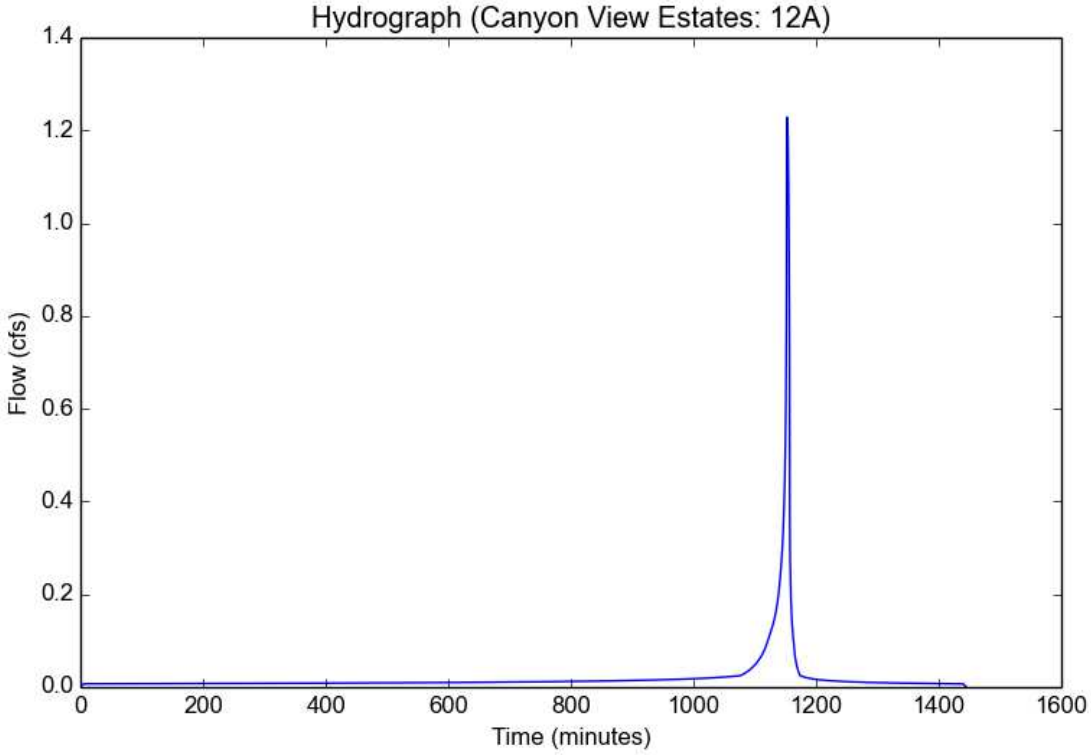
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	12A
Area (ac)	0.72
Flow Path Length (ft)	263.0
Flow Path Slope (vft/hft)	0.39
50-yr Rainfall Depth (in)	5.7
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	scr
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0698
Peak Intensity (in/hr)	2.4282
Undeveloped Runoff Coefficient (Cu)	0.7006
Developed Runoff Coefficient (Cd)	0.7026
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.2284
Burned Peak Flow Rate (cfs)	1.2958
24-Hr Clear Runoff Volume (ac-ft)	0.0427
24-Hr Clear Runoff Volume (cu-ft)	1859.0559



Peak Flow Hydrologic Analysis

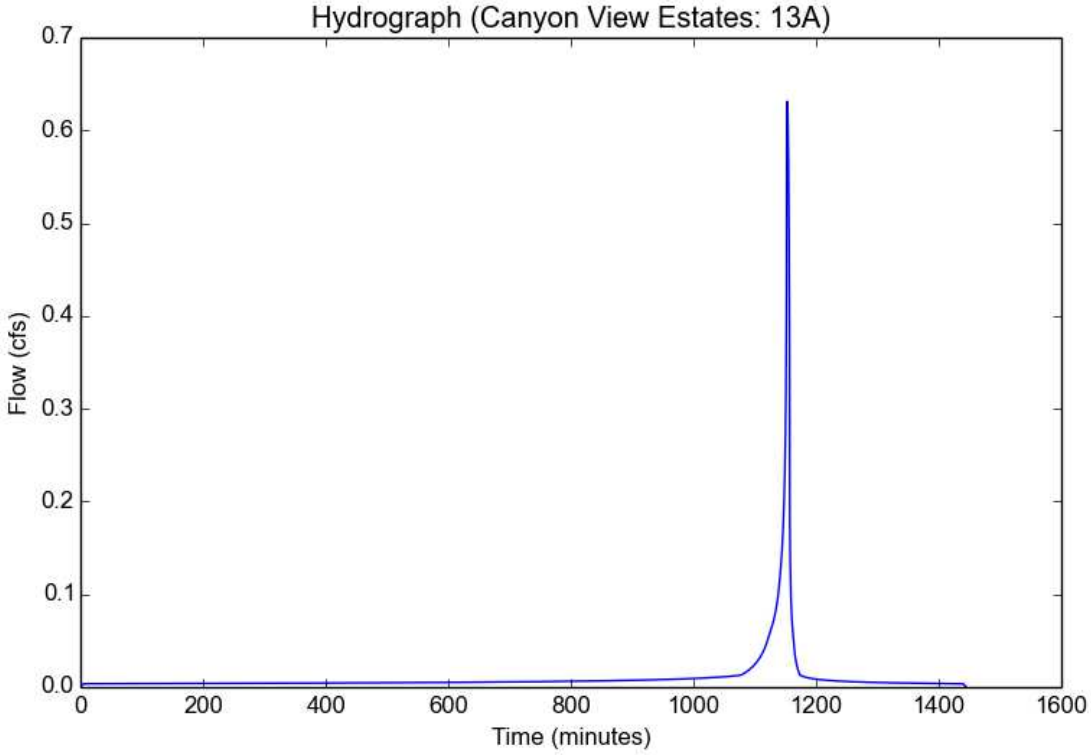
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	13A
Area (ac)	0.37
Flow Path Length (ft)	86.0
Flow Path Slope (vft/hft)	0.44
50-yr Rainfall Depth (in)	5.7
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	scr
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0698
Peak Intensity (in/hr)	2.4282
Undeveloped Runoff Coefficient (Cu)	0.7006
Developed Runoff Coefficient (Cd)	0.7026
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.6313
Burned Peak Flow Rate (cfs)	0.6659
24-Hr Clear Runoff Volume (ac-ft)	0.0219
24-Hr Clear Runoff Volume (cu-ft)	955.3481



Peak Flow Hydrologic Analysis

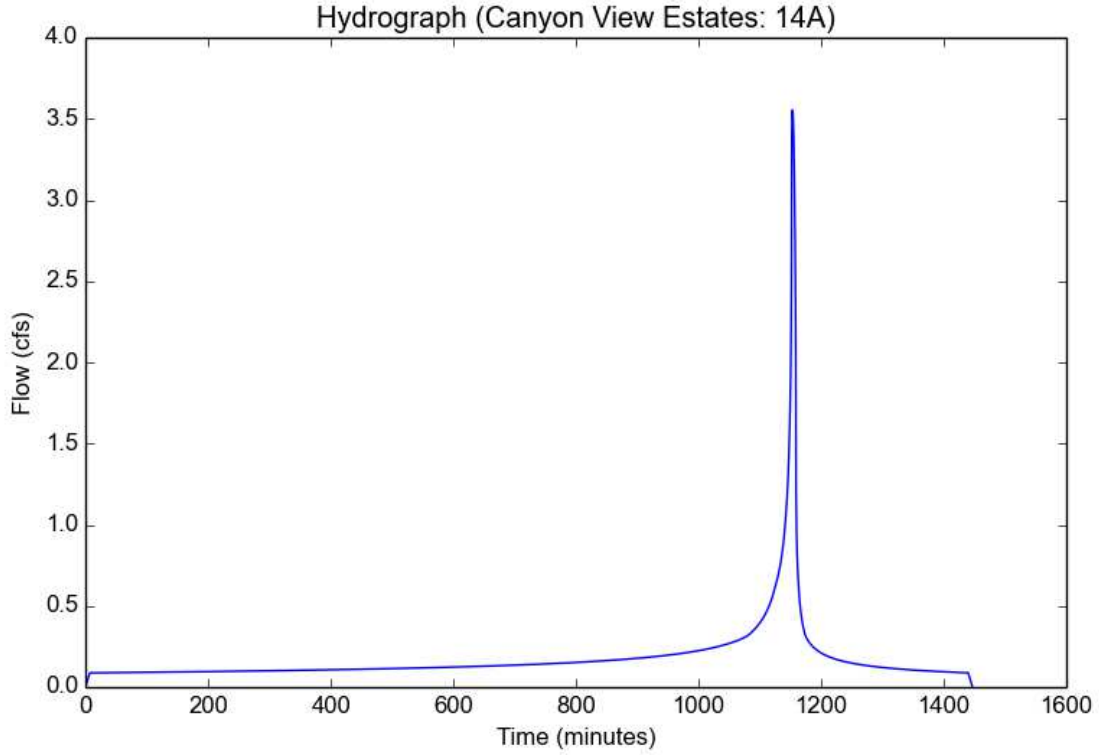
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	14A
Area (ac)	2.23
Flow Path Length (ft)	310.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.7
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0698
Peak Intensity (in/hr)	2.073
Undeveloped Runoff Coefficient (Cu)	0.674
Developed Runoff Coefficient (Cd)	0.7689
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	3.5546
Burned Peak Flow Rate (cfs)	3.5546
24-Hr Clear Runoff Volume (ac-ft)	0.3569
24-Hr Clear Runoff Volume (cu-ft)	15545.0214



Peak Flow Hydrologic Analysis

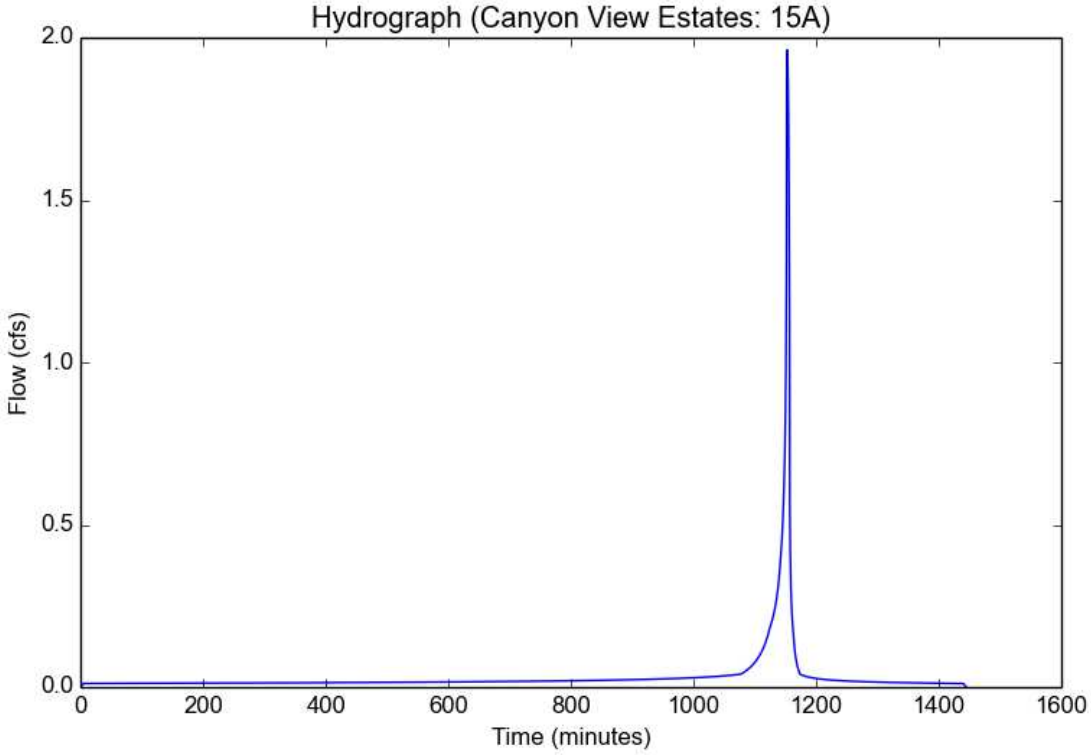
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	15A
Area (ac)	1.15
Flow Path Length (ft)	181.0
Flow Path Slope (vft/hft)	0.29
50-yr Rainfall Depth (in)	5.7
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	scr
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0698
Peak Intensity (in/hr)	2.4282
Undeveloped Runoff Coefficient (Cu)	0.7006
Developed Runoff Coefficient (Cd)	0.7026
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.962
Burned Peak Flow Rate (cfs)	2.0697
24-Hr Clear Runoff Volume (ac-ft)	0.0682
24-Hr Clear Runoff Volume (cu-ft)	2969.3253



Peak Flow Hydrologic Analysis

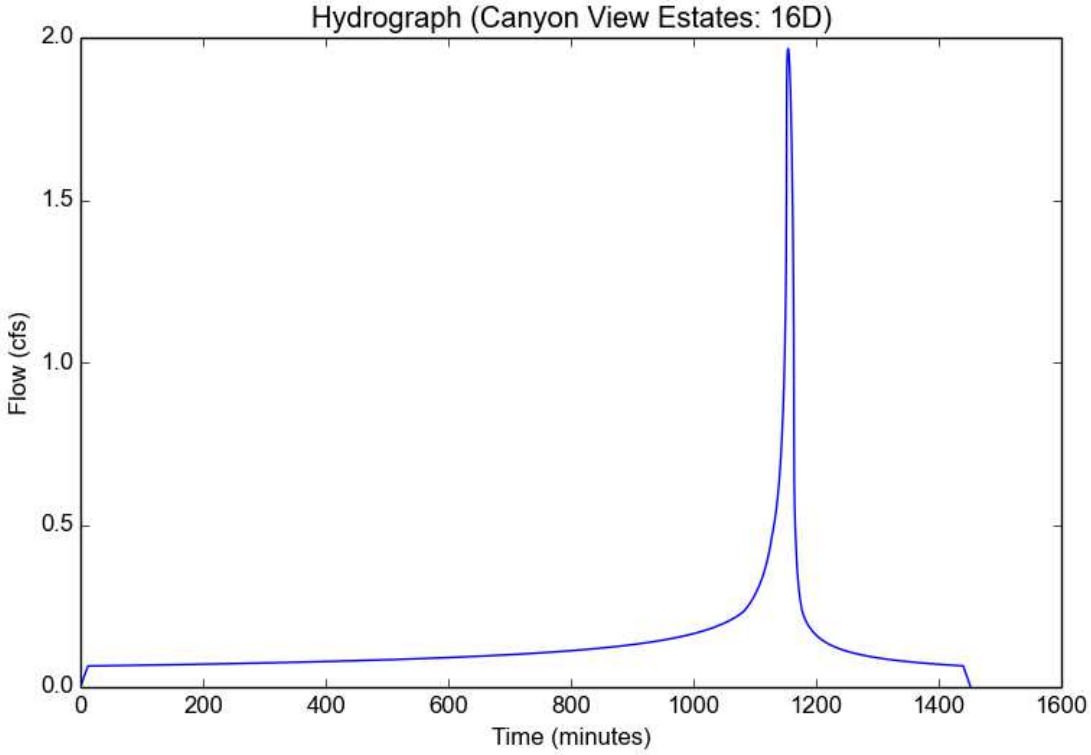
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	16D
Area (ac)	1.65
Flow Path Length (ft)	630.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.7
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0698
Peak Intensity (in/hr)	1.6091
Undeveloped Runoff Coefficient (Cu)	0.625
Developed Runoff Coefficient (Cd)	0.7405
Time of Concentration (min)	12.0
Clear Peak Flow Rate (cfs)	1.966
Burned Peak Flow Rate (cfs)	1.966
24-Hr Clear Runoff Volume (ac-ft)	0.2638
24-Hr Clear Runoff Volume (cu-ft)	11490.1237



Peak Flow Hydrologic Analysis

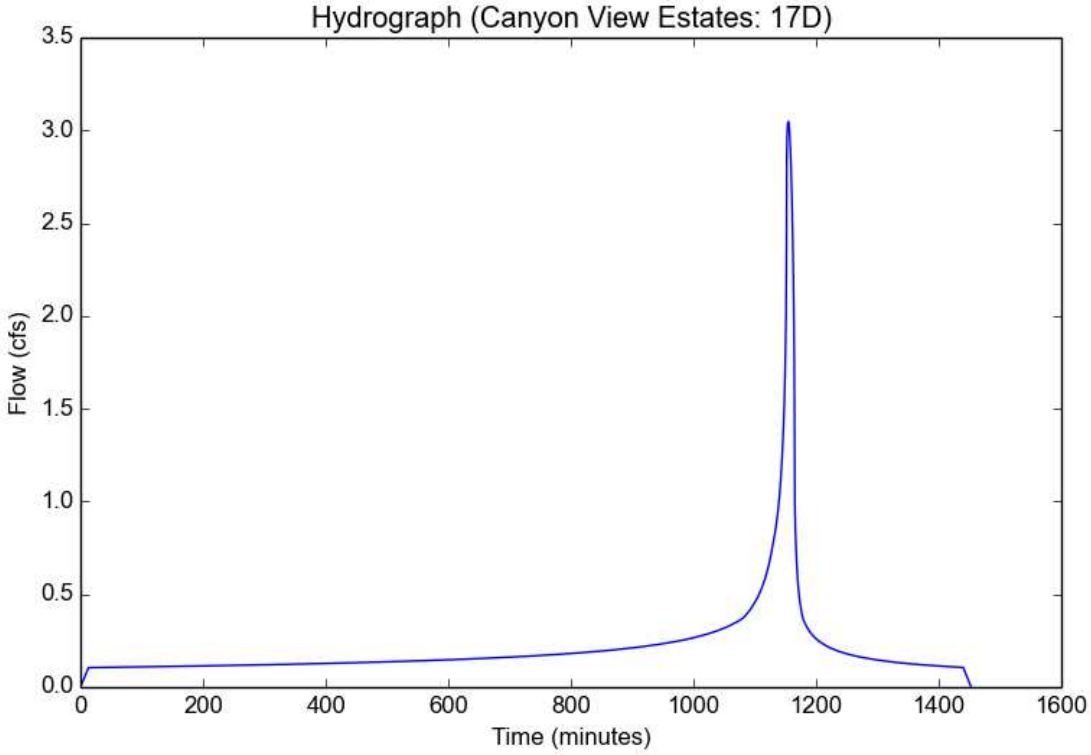
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	17D
Area (ac)	2.67
Flow Path Length (ft)	620.0
Flow Path Slope (vft/hft)	0.005
50-yr Rainfall Depth (in)	5.7
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0698
Peak Intensity (in/hr)	1.5497
Undeveloped Runoff Coefficient (Cu)	0.6183
Developed Runoff Coefficient (Cd)	0.7366
Time of Concentration (min)	13.0
Clear Peak Flow Rate (cfs)	3.0479
Burned Peak Flow Rate (cfs)	3.0479
24-Hr Clear Runoff Volume (ac-ft)	0.4268
24-Hr Clear Runoff Volume (cu-ft)	18589.9516



Peak Flow Hydrologic Analysis

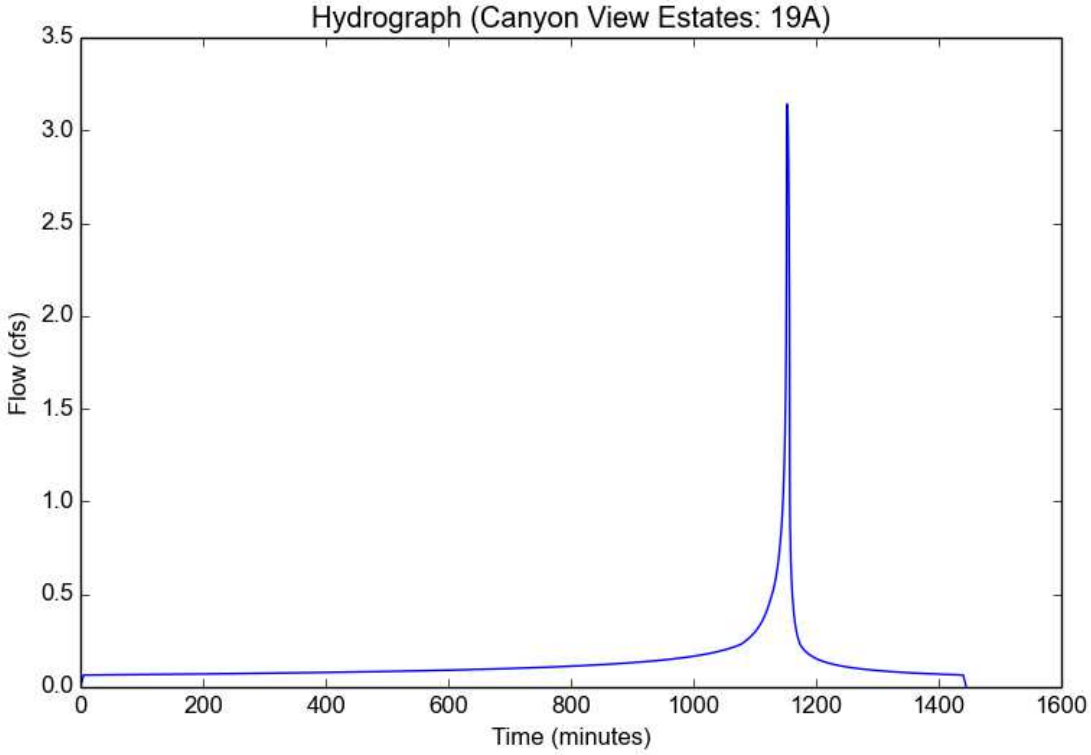
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	19A
Area (ac)	1.65
Flow Path Length (ft)	290.0
Flow Path Slope (vft/hft)	0.062
50-yr Rainfall Depth (in)	5.7
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0698
Peak Intensity (in/hr)	2.4282
Undeveloped Runoff Coefficient (Cu)	0.7006
Developed Runoff Coefficient (Cd)	0.7844
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.1425
Burned Peak Flow Rate (cfs)	3.1425
24-Hr Clear Runoff Volume (ac-ft)	0.2642
24-Hr Clear Runoff Volume (cu-ft)	11506.4946



Peak Flow Hydrologic Analysis

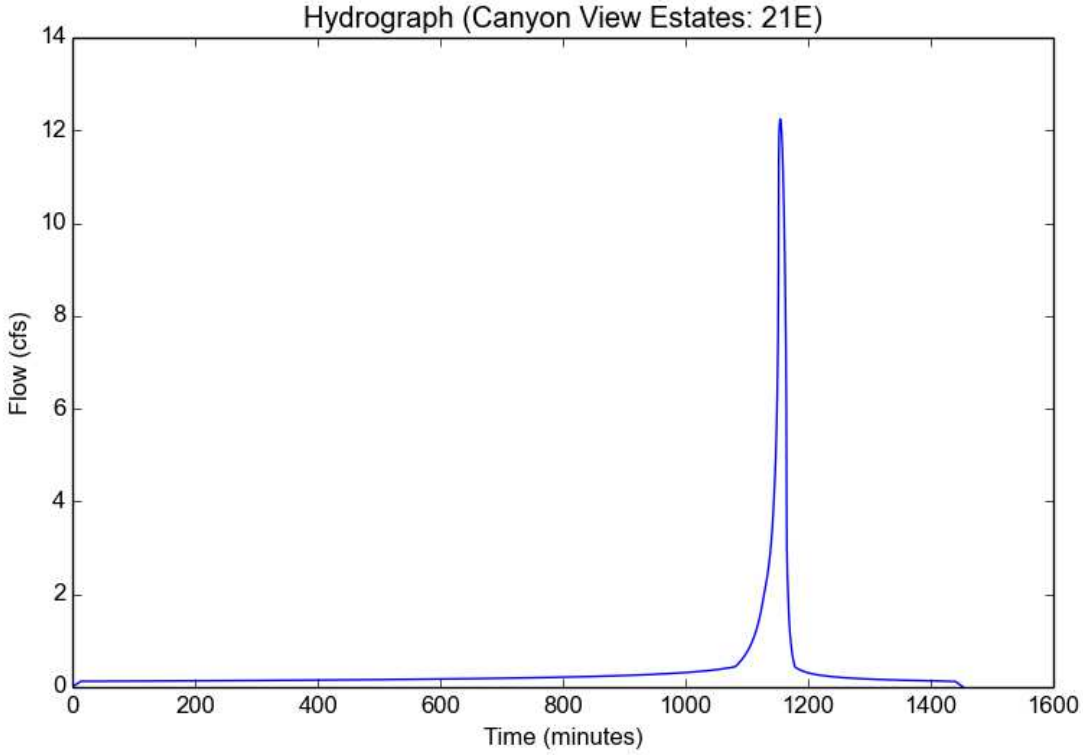
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	21E
Area (ac)	12.72
Flow Path Length (ft)	1394.0
Flow Path Slope (vft/hft)	0.18
50-yr Rainfall Depth (in)	5.7
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	scr
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0698
Peak Intensity (in/hr)	1.5497
Undeveloped Runoff Coefficient (Cu)	0.6183
Developed Runoff Coefficient (Cd)	0.6212
Time of Concentration (min)	13.0
Clear Peak Flow Rate (cfs)	12.2443
Burned Peak Flow Rate (cfs)	13.1395
24-Hr Clear Runoff Volume (ac-ft)	0.7484
24-Hr Clear Runoff Volume (cu-ft)	32602.0083



Peak Flow Hydrologic Analysis

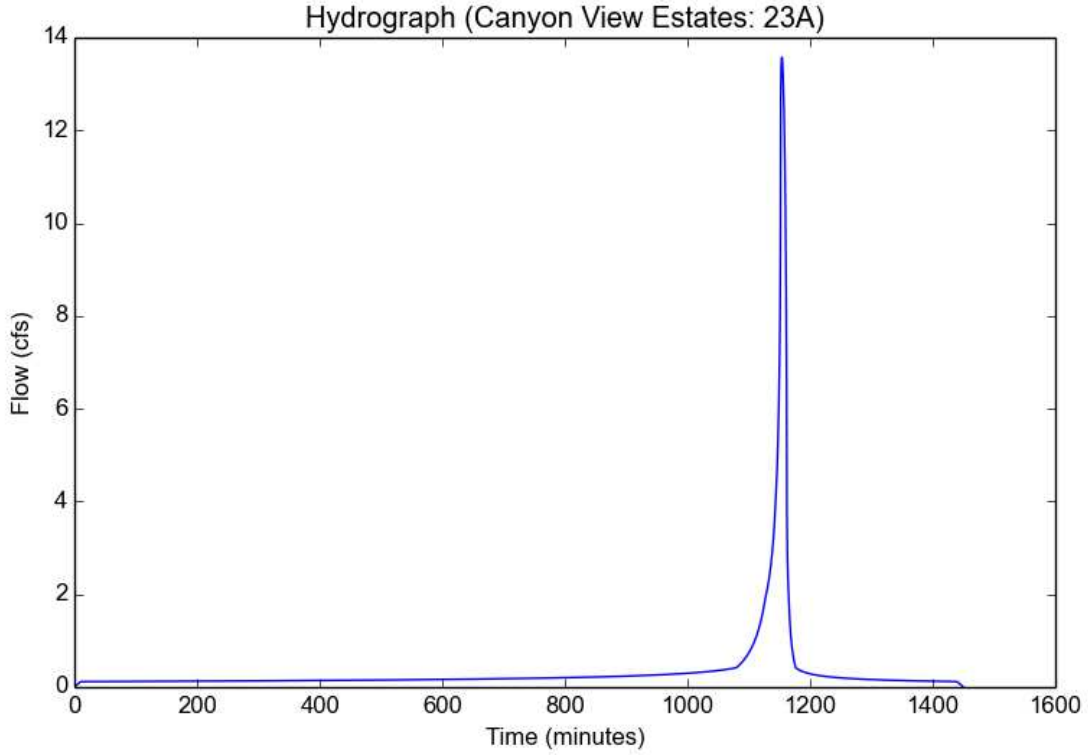
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	23A
Area (ac)	12.03
Flow Path Length (ft)	682.0
Flow Path Slope (vft/hft)	0.046
50-yr Rainfall Depth (in)	5.7
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	scr
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0698
Peak Intensity (in/hr)	1.753
Undeveloped Runoff Coefficient (Cu)	0.641
Developed Runoff Coefficient (Cd)	0.6436
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	13.5732
Burned Peak Flow Rate (cfs)	14.4948
24-Hr Clear Runoff Volume (ac-ft)	0.7095
24-Hr Clear Runoff Volume (cu-ft)	30905.7183



Peak Flow Hydrologic Analysis

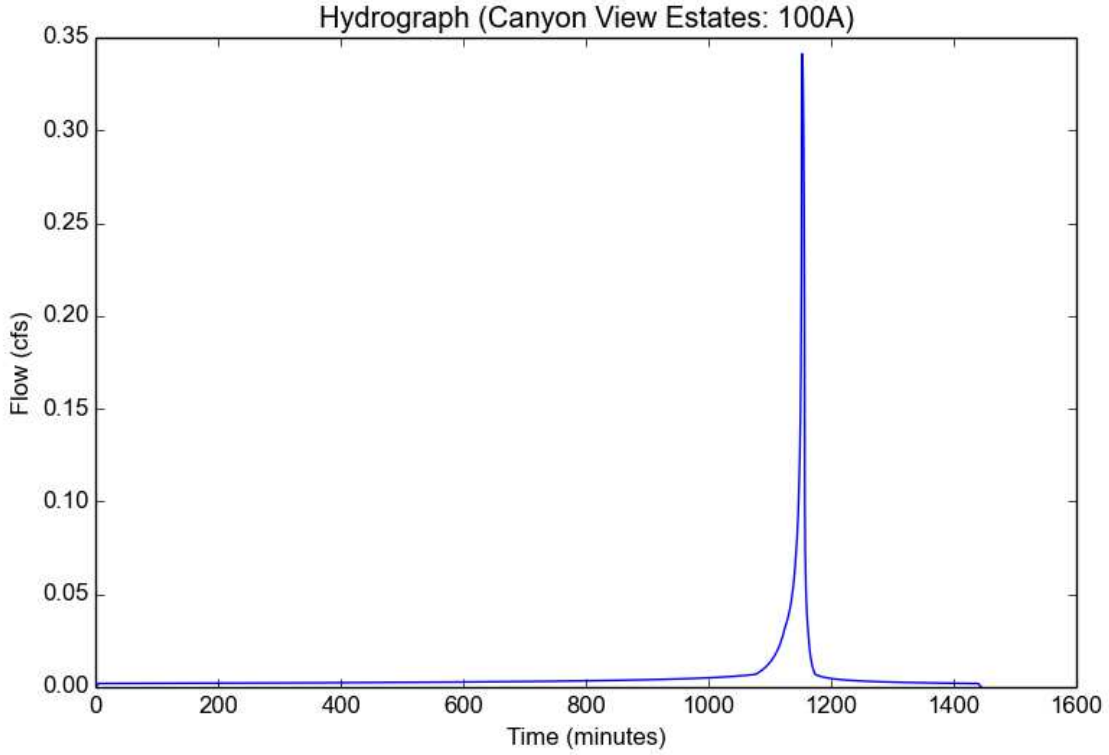
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	100A
Area (ac)	0.2
Flow Path Length (ft)	116.0
Flow Path Slope (vft/hft)	0.56
50-yr Rainfall Depth (in)	5.7
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	scr
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0698
Peak Intensity (in/hr)	2.4282
Undeveloped Runoff Coefficient (Cu)	0.7006
Developed Runoff Coefficient (Cd)	0.7026
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.3412
Burned Peak Flow Rate (cfs)	0.36
24-Hr Clear Runoff Volume (ac-ft)	0.0119
24-Hr Clear Runoff Volume (cu-ft)	516.4044



Peak Flow Hydrologic Analysis

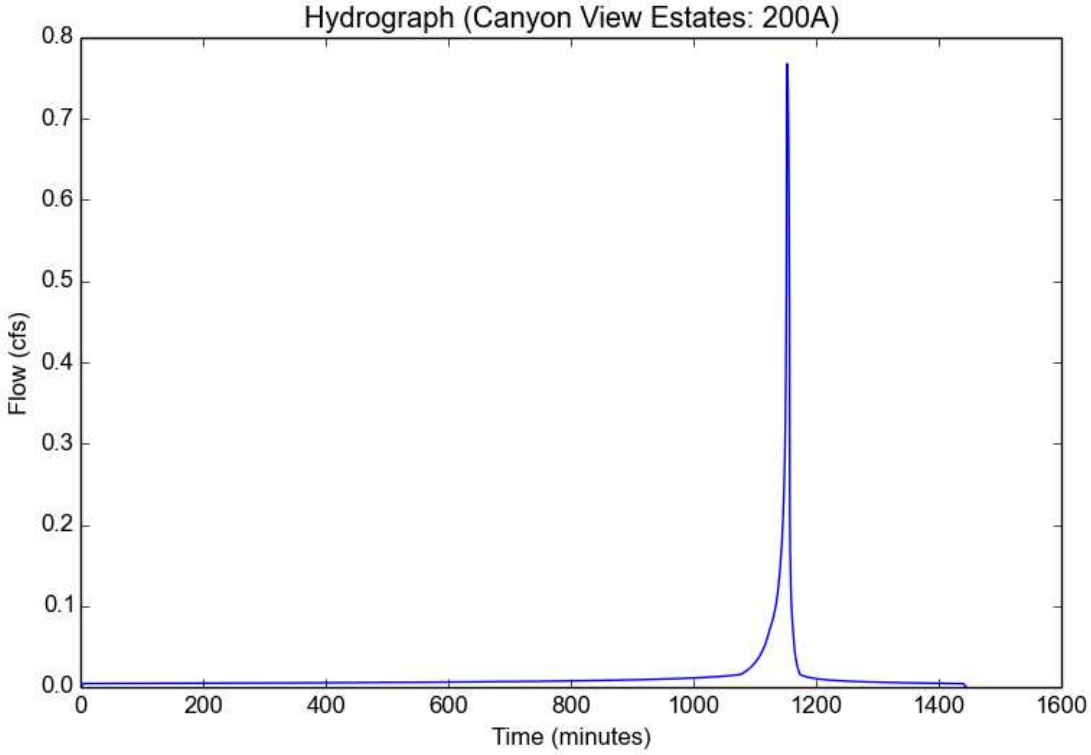
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	200A
Area (ac)	0.45
Flow Path Length (ft)	234.0
Flow Path Slope (vft/hft)	0.3
50-yr Rainfall Depth (in)	5.7
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0698
Peak Intensity (in/hr)	2.4282
Undeveloped Runoff Coefficient (Cu)	0.7006
Developed Runoff Coefficient (Cd)	0.7026
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.7677
Burned Peak Flow Rate (cfs)	0.7677
24-Hr Clear Runoff Volume (ac-ft)	0.0267
24-Hr Clear Runoff Volume (cu-ft)	1161.9099



Peak Flow Hydrologic Analysis

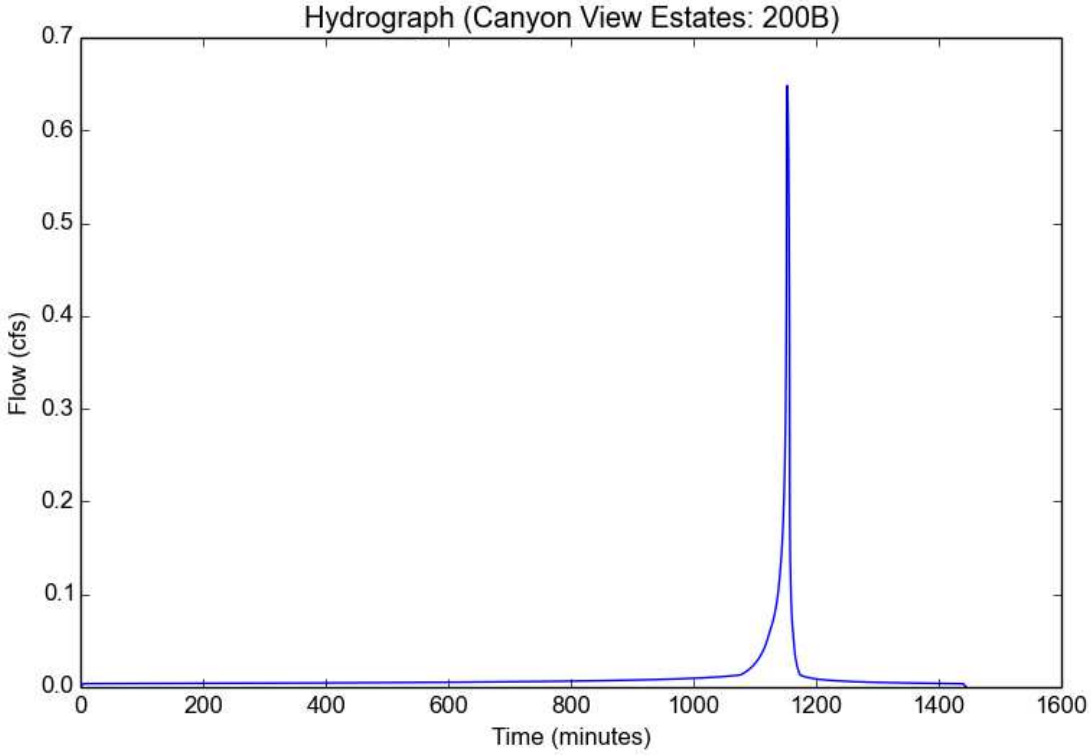
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	200B
Area (ac)	0.38
Flow Path Length (ft)	234.0
Flow Path Slope (vft/hft)	0.3
50-yr Rainfall Depth (in)	5.7
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.0698
Peak Intensity (in/hr)	2.4282
Undeveloped Runoff Coefficient (Cu)	0.7006
Developed Runoff Coefficient (Cd)	0.7026
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.6483
Burned Peak Flow Rate (cfs)	0.6483
24-Hr Clear Runoff Volume (ac-ft)	0.0225
24-Hr Clear Runoff Volume (cu-ft)	981.1684



Peak Flow Hydrologic Analysis

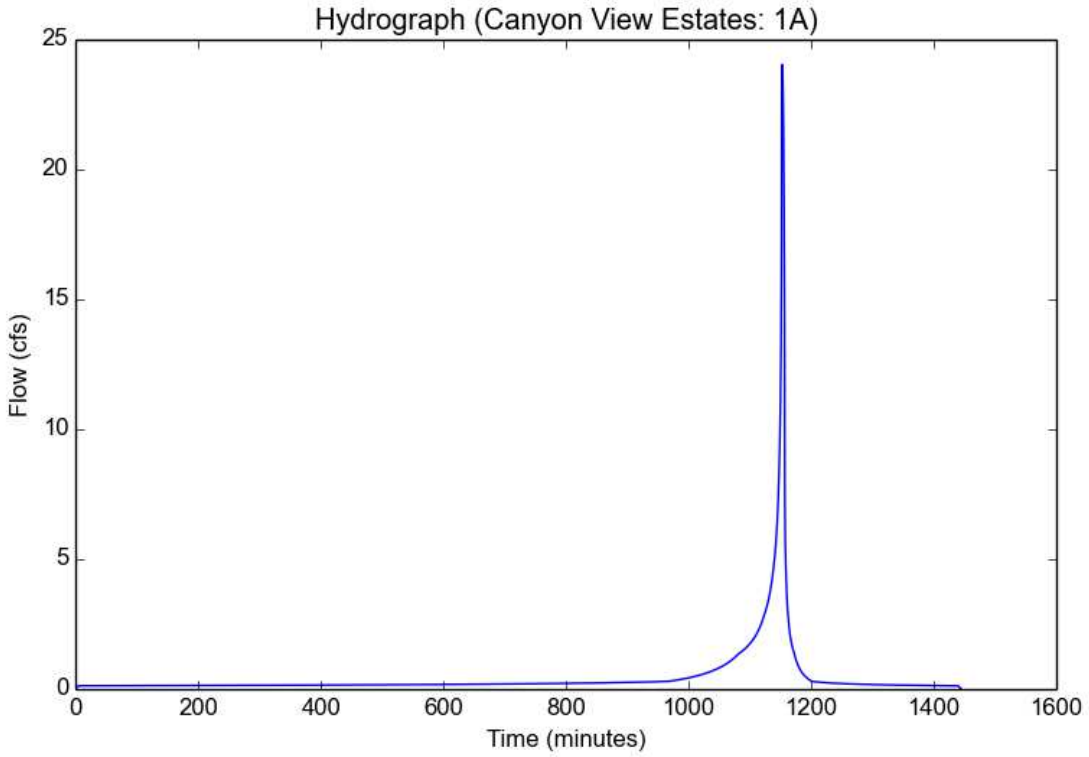
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	1A
Area (ac)	8.6
Flow Path Length (ft)	444.0
Flow Path Slope (vft/hft)	0.17
50-yr Rainfall Depth (in)	7.02
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	scr
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1636
Peak Intensity (in/hr)	3.6773
Undeveloped Runoff Coefficient (Cu)	0.7586
Developed Runoff Coefficient (Cd)	0.76
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	24.0367
Burned Peak Flow Rate (cfs)	25.0873
24-Hr Clear Runoff Volume (ac-ft)	0.9538
24-Hr Clear Runoff Volume (cu-ft)	41547.4796



Peak Flow Hydrologic Analysis

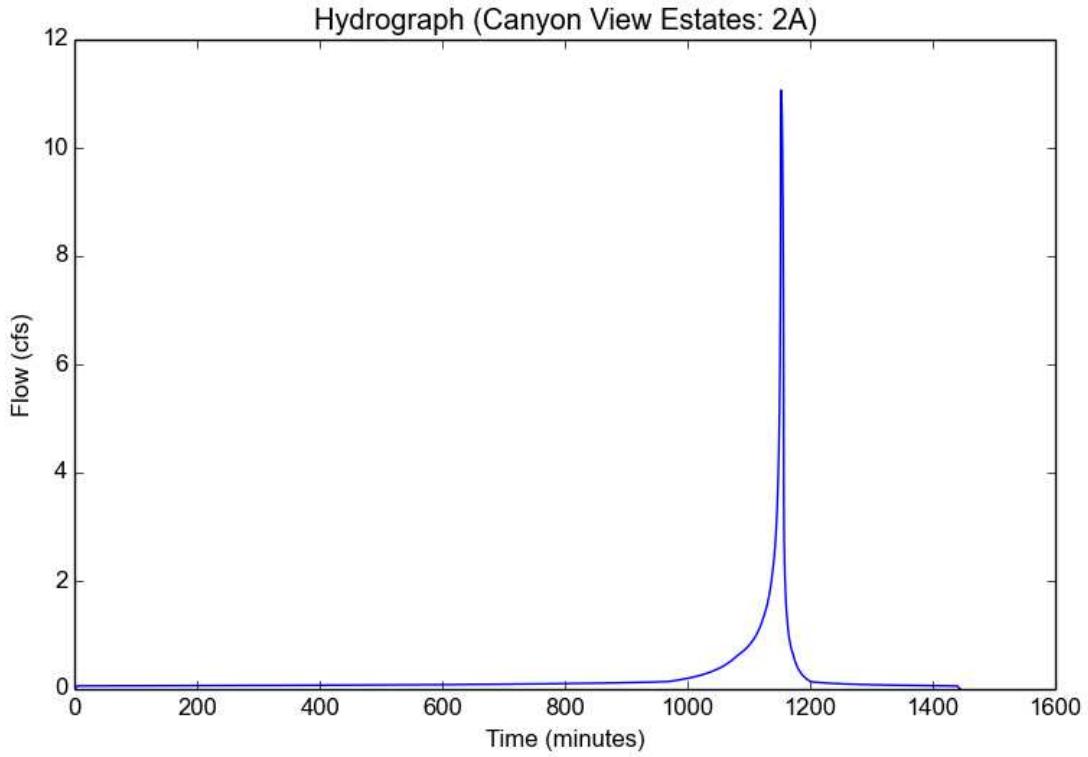
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	2A
Area (ac)	3.96
Flow Path Length (ft)	478.0
Flow Path Slope (vft/hft)	0.24
50-yr Rainfall Depth (in)	7.02
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	scr
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1636
Peak Intensity (in/hr)	3.6773
Undeveloped Runoff Coefficient (Cu)	0.7586
Developed Runoff Coefficient (Cd)	0.76
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	11.0681
Burned Peak Flow Rate (cfs)	11.5518
24-Hr Clear Runoff Volume (ac-ft)	0.4392
24-Hr Clear Runoff Volume (cu-ft)	19131.165



Peak Flow Hydrologic Analysis

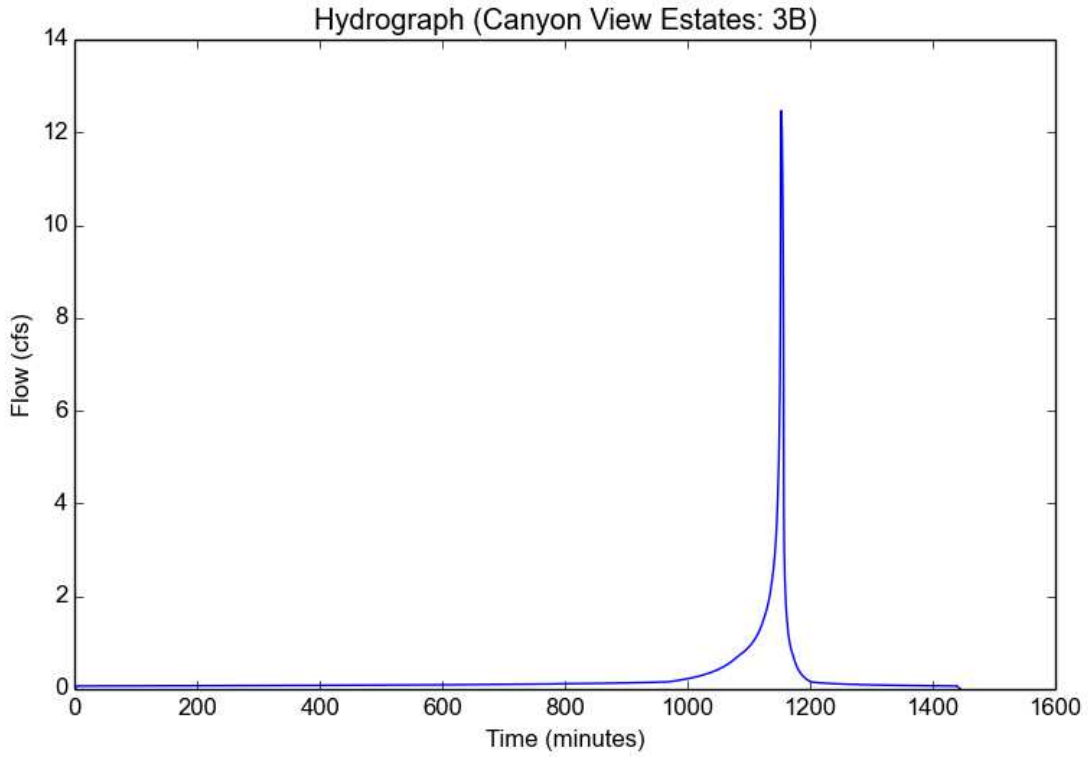
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	3B
Area (ac)	4.46
Flow Path Length (ft)	484.0
Flow Path Slope (vft/hft)	0.25
50-yr Rainfall Depth (in)	7.02
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	scr
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1636
Peak Intensity (in/hr)	3.6773
Undeveloped Runoff Coefficient (Cu)	0.7586
Developed Runoff Coefficient (Cd)	0.76
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	12.4655
Burned Peak Flow Rate (cfs)	13.0104
24-Hr Clear Runoff Volume (ac-ft)	0.4946
24-Hr Clear Runoff Volume (cu-ft)	21546.7162



Peak Flow Hydrologic Analysis

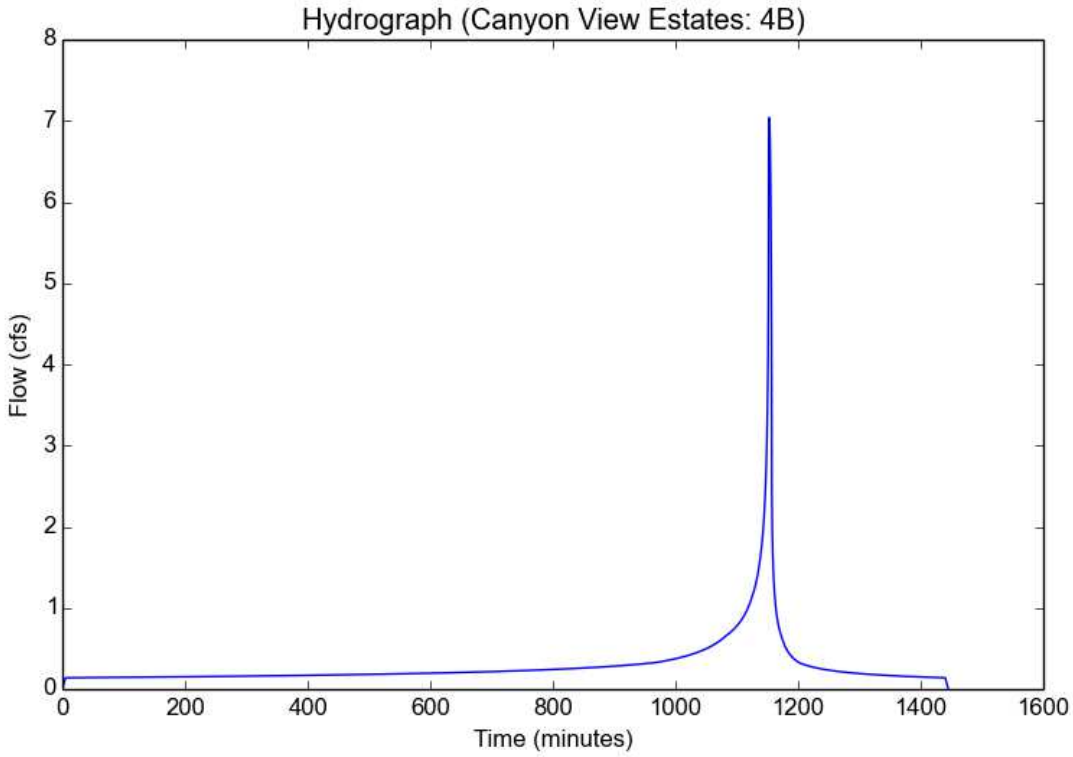
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	4B
Area (ac)	2.34
Flow Path Length (ft)	220.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	7.02
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1636
Peak Intensity (in/hr)	3.6773
Undeveloped Runoff Coefficient (Cu)	0.7586
Developed Runoff Coefficient (Cd)	0.818
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	7.039
Burned Peak Flow Rate (cfs)	7.039
24-Hr Clear Runoff Volume (ac-ft)	0.5963
24-Hr Clear Runoff Volume (cu-ft)	25975.69



Peak Flow Hydrologic Analysis

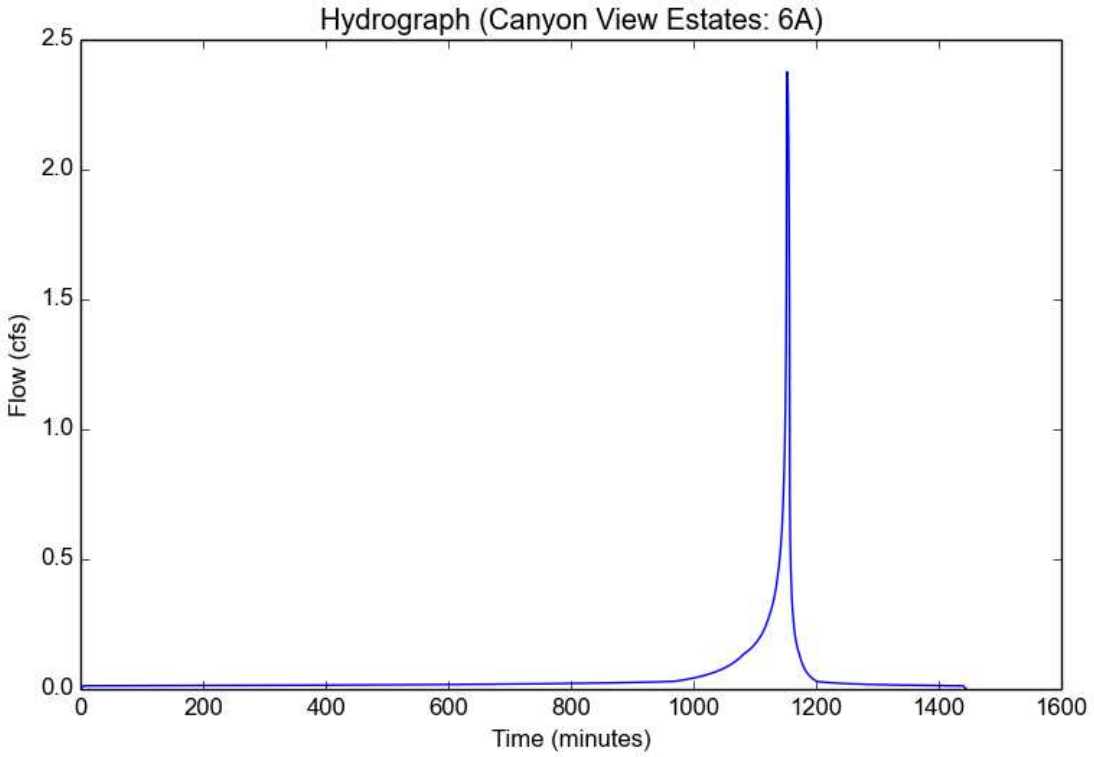
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	6A
Area (ac)	0.85
Flow Path Length (ft)	136.0
Flow Path Slope (vft/hft)	0.39
50-yr Rainfall Depth (in)	7.02
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	scr
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1636
Peak Intensity (in/hr)	3.6773
Undeveloped Runoff Coefficient (Cu)	0.7586
Developed Runoff Coefficient (Cd)	0.76
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.3757
Burned Peak Flow Rate (cfs)	2.4796
24-Hr Clear Runoff Volume (ac-ft)	0.0943
24-Hr Clear Runoff Volume (cu-ft)	4106.4369



Peak Flow Hydrologic Analysis

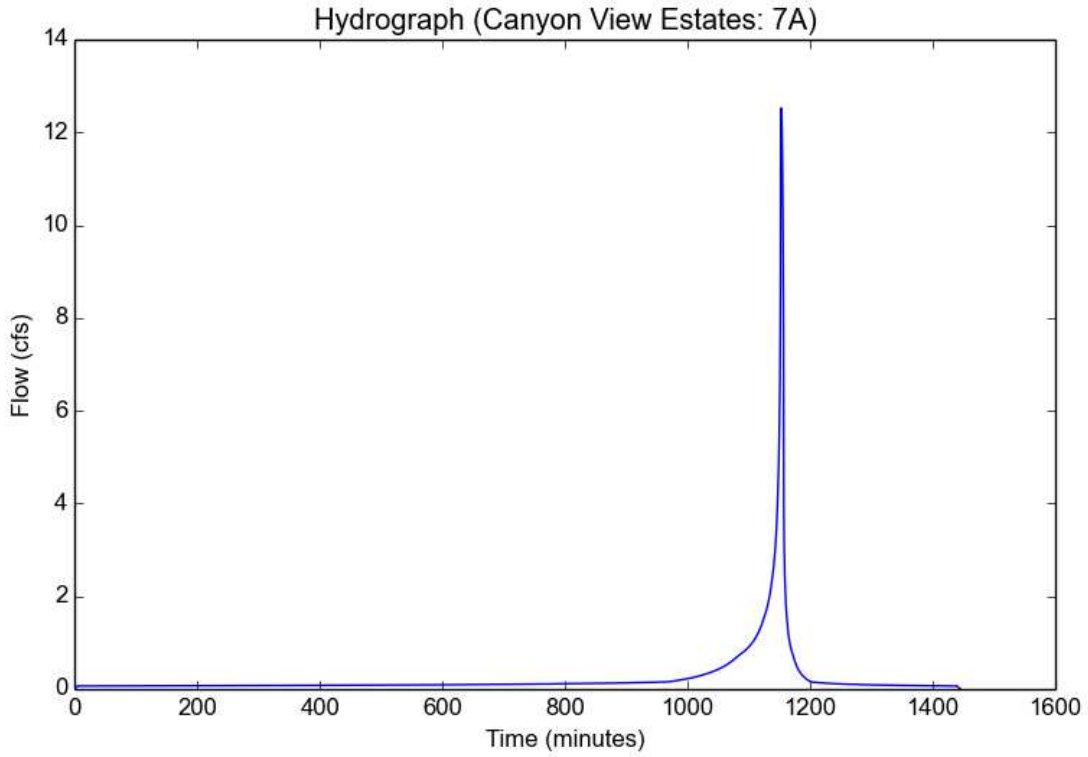
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	7A
Area (ac)	4.48
Flow Path Length (ft)	343.0
Flow Path Slope (vft/hft)	0.23
50-yr Rainfall Depth (in)	7.02
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	scr
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1636
Peak Intensity (in/hr)	3.6773
Undeveloped Runoff Coefficient (Cu)	0.7586
Developed Runoff Coefficient (Cd)	0.76
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	12.5214
Burned Peak Flow Rate (cfs)	13.0687
24-Hr Clear Runoff Volume (ac-ft)	0.4969
24-Hr Clear Runoff Volume (cu-ft)	21643.3382



Peak Flow Hydrologic Analysis

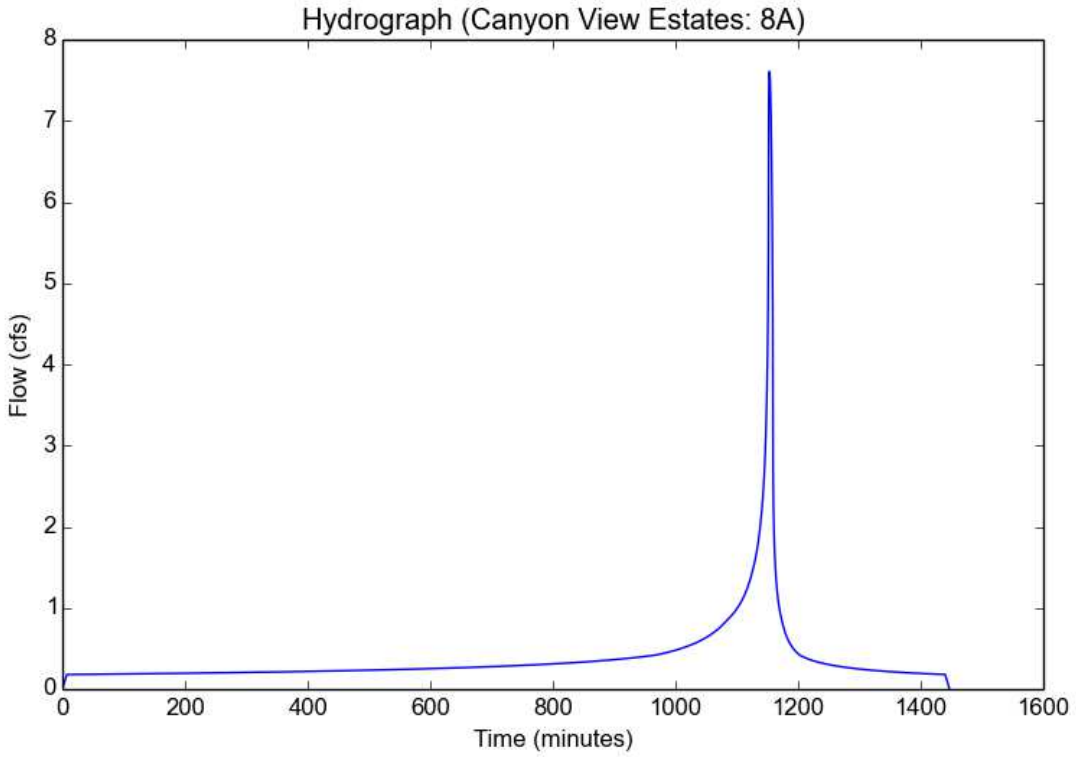
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	8A
Area (ac)	3.01
Flow Path Length (ft)	770.0
Flow Path Slope (vft/hft)	0.074
50-yr Rainfall Depth (in)	7.02
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1636
Peak Intensity (in/hr)	3.1395
Undeveloped Runoff Coefficient (Cu)	0.7364
Developed Runoff Coefficient (Cd)	0.8051
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	7.608
Burned Peak Flow Rate (cfs)	7.608
24-Hr Clear Runoff Volume (ac-ft)	0.7668
24-Hr Clear Runoff Volume (cu-ft)	33402.0327



Peak Flow Hydrologic Analysis

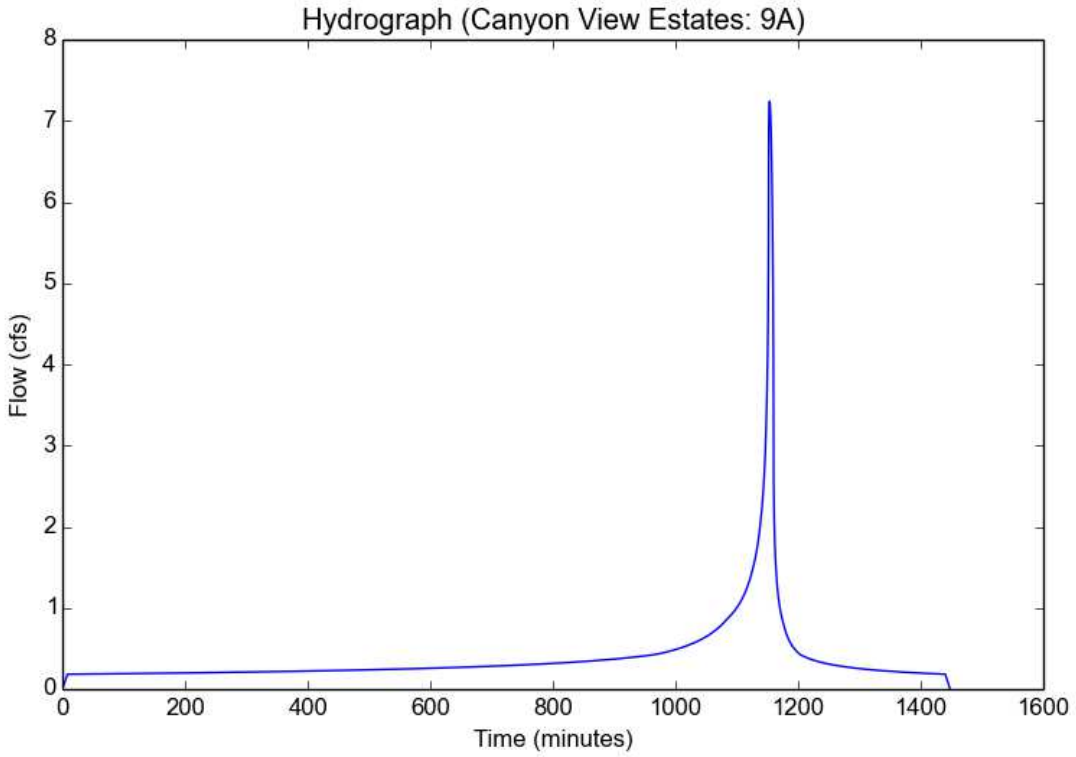
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	9A
Area (ac)	3.07
Flow Path Length (ft)	860.0
Flow Path Slope (vft/hft)	0.056
50-yr Rainfall Depth (in)	7.02
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1636
Peak Intensity (in/hr)	2.9485
Undeveloped Runoff Coefficient (Cu)	0.7273
Developed Runoff Coefficient (Cd)	0.7998
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	7.24
Burned Peak Flow Rate (cfs)	7.24
24-Hr Clear Runoff Volume (ac-ft)	0.782
24-Hr Clear Runoff Volume (cu-ft)	34063.6554



Peak Flow Hydrologic Analysis

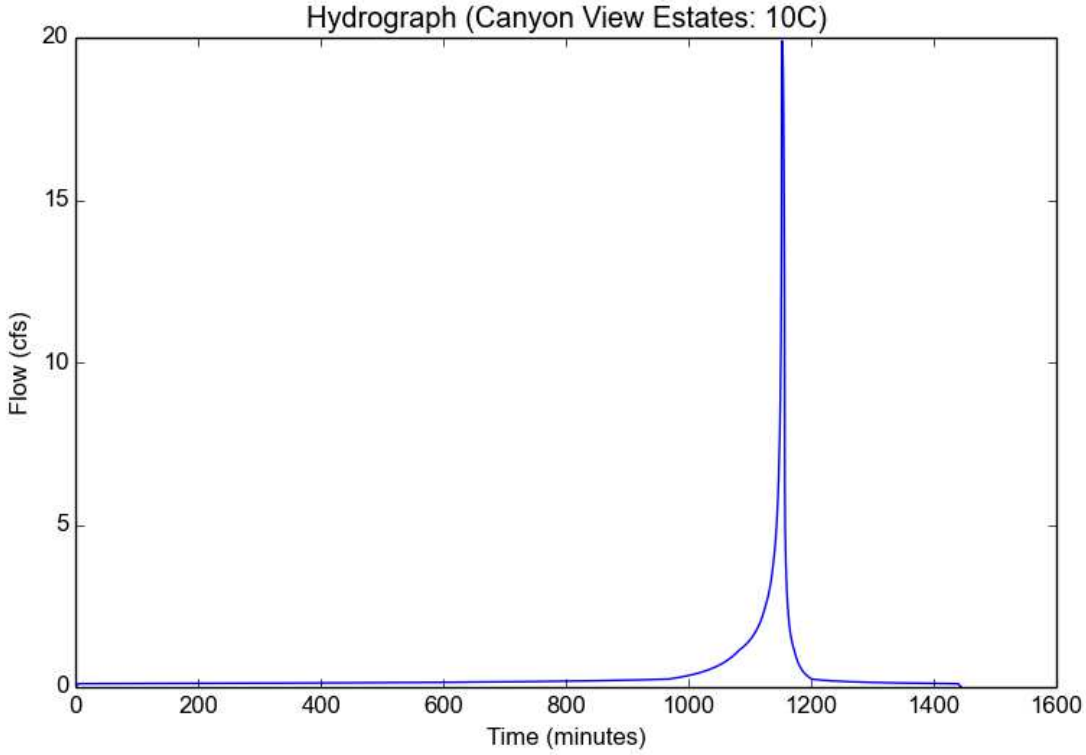
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	10C
Area (ac)	7.12
Flow Path Length (ft)	378.0
Flow Path Slope (vft/hft)	0.56
50-yr Rainfall Depth (in)	7.02
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	scr
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1636
Peak Intensity (in/hr)	3.6773
Undeveloped Runoff Coefficient (Cu)	0.7586
Developed Runoff Coefficient (Cd)	0.76
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	19.9002
Burned Peak Flow Rate (cfs)	20.77
24-Hr Clear Runoff Volume (ac-ft)	0.7897
24-Hr Clear Runoff Volume (cu-ft)	34397.4482



Peak Flow Hydrologic Analysis

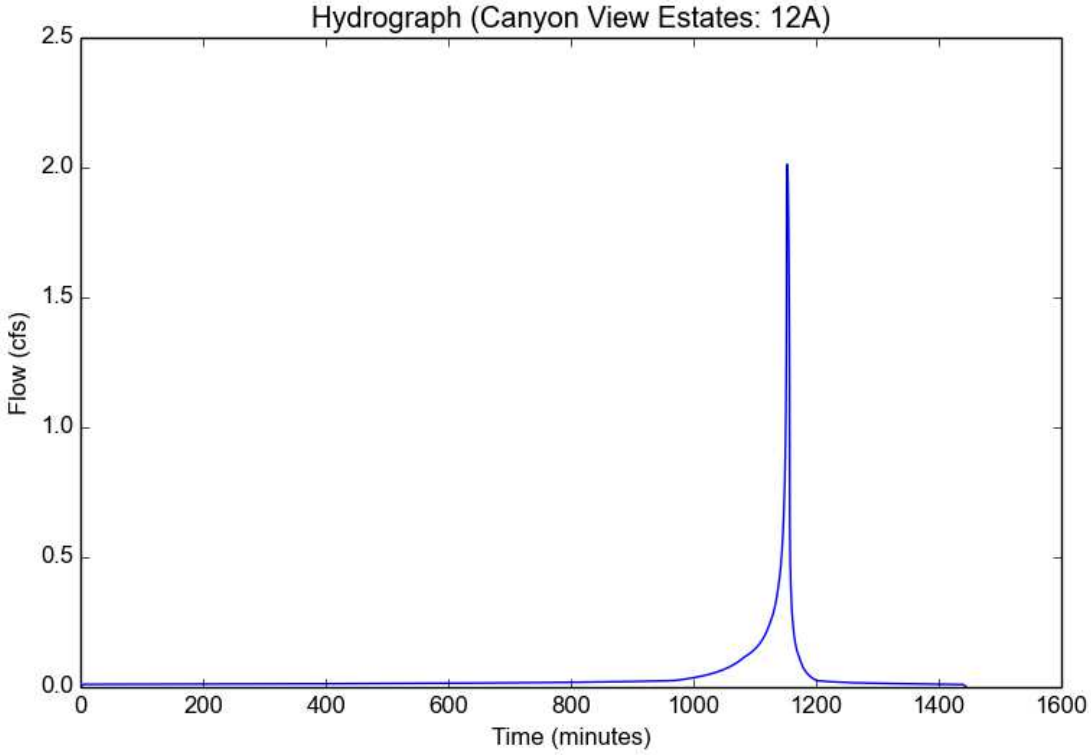
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	12A
Area (ac)	0.72
Flow Path Length (ft)	263.0
Flow Path Slope (vft/hft)	0.39
50-yr Rainfall Depth (in)	7.02
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	scr
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1636
Peak Intensity (in/hr)	3.6773
Undeveloped Runoff Coefficient (Cu)	0.7586
Developed Runoff Coefficient (Cd)	0.76
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.0124
Burned Peak Flow Rate (cfs)	2.1003
24-Hr Clear Runoff Volume (ac-ft)	0.0799
24-Hr Clear Runoff Volume (cu-ft)	3478.3936



Peak Flow Hydrologic Analysis

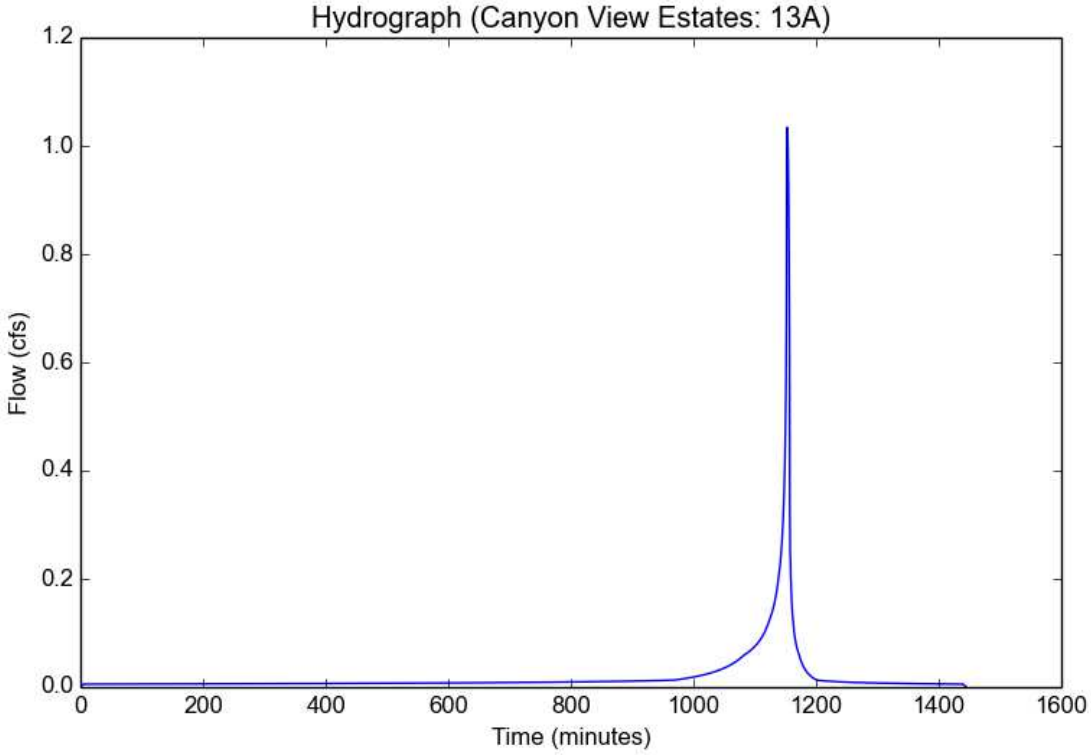
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	13A
Area (ac)	0.37
Flow Path Length (ft)	86.0
Flow Path Slope (vft/hft)	0.44
50-yr Rainfall Depth (in)	7.02
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	scr
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1636
Peak Intensity (in/hr)	3.6773
Undeveloped Runoff Coefficient (Cu)	0.7586
Developed Runoff Coefficient (Cd)	0.76
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.0341
Burned Peak Flow Rate (cfs)	1.0793
24-Hr Clear Runoff Volume (ac-ft)	0.041
24-Hr Clear Runoff Volume (cu-ft)	1787.5078



Peak Flow Hydrologic Analysis

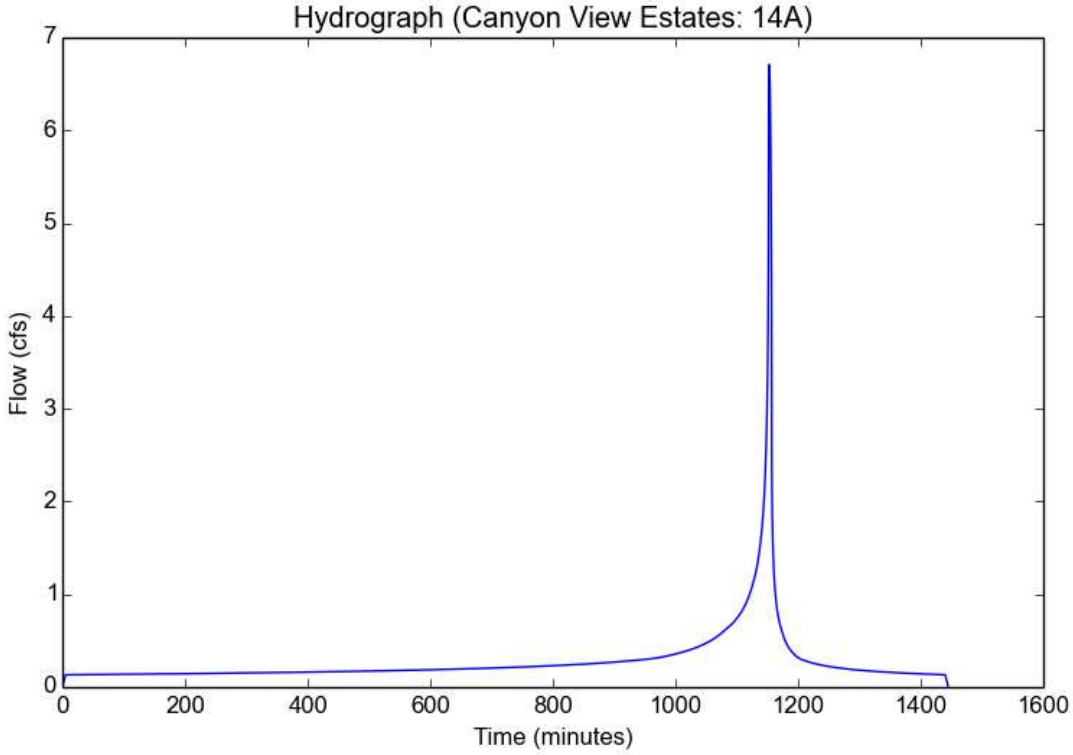
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	14A
Area (ac)	2.23
Flow Path Length (ft)	310.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	7.02
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1636
Peak Intensity (in/hr)	3.6773
Undeveloped Runoff Coefficient (Cu)	0.7586
Developed Runoff Coefficient (Cd)	0.818
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	6.7081
Burned Peak Flow Rate (cfs)	6.7081
24-Hr Clear Runoff Volume (ac-ft)	0.5683
24-Hr Clear Runoff Volume (cu-ft)	24754.6105



Peak Flow Hydrologic Analysis

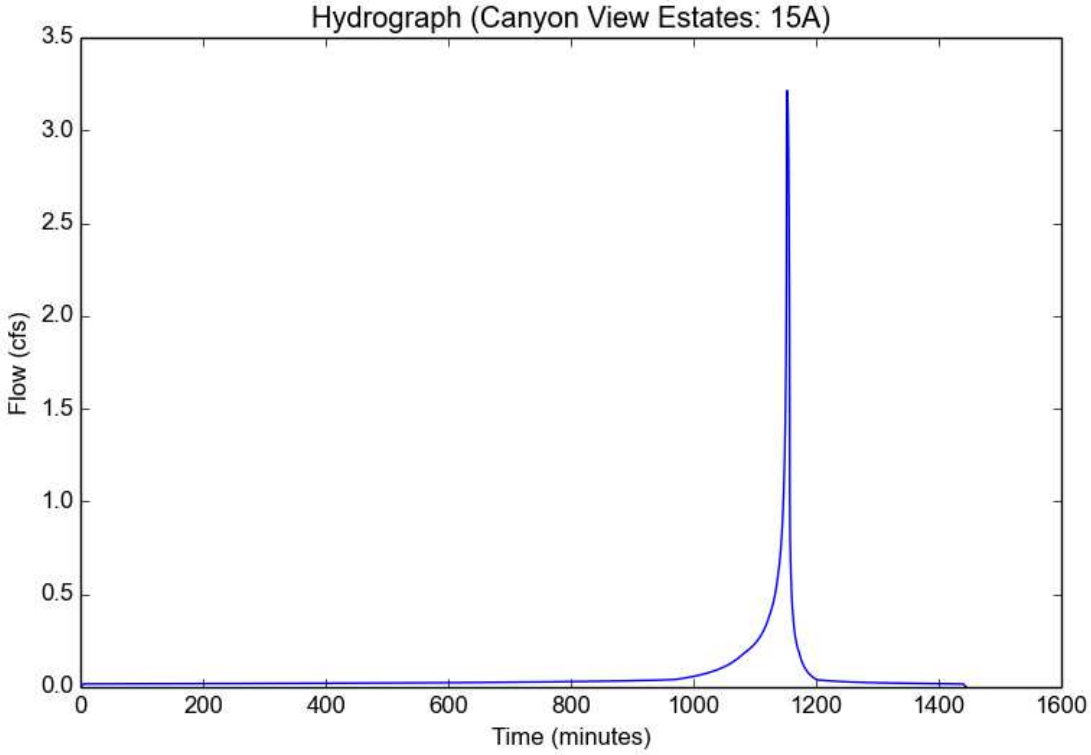
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	15A
Area (ac)	1.15
Flow Path Length (ft)	181.0
Flow Path Slope (vft/hft)	0.29
50-yr Rainfall Depth (in)	7.02
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	scr
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1636
Peak Intensity (in/hr)	3.6773
Undeveloped Runoff Coefficient (Cu)	0.7586
Developed Runoff Coefficient (Cd)	0.76
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.2142
Burned Peak Flow Rate (cfs)	3.3547
24-Hr Clear Runoff Volume (ac-ft)	0.1275
24-Hr Clear Runoff Volume (cu-ft)	5555.7676



Peak Flow Hydrologic Analysis

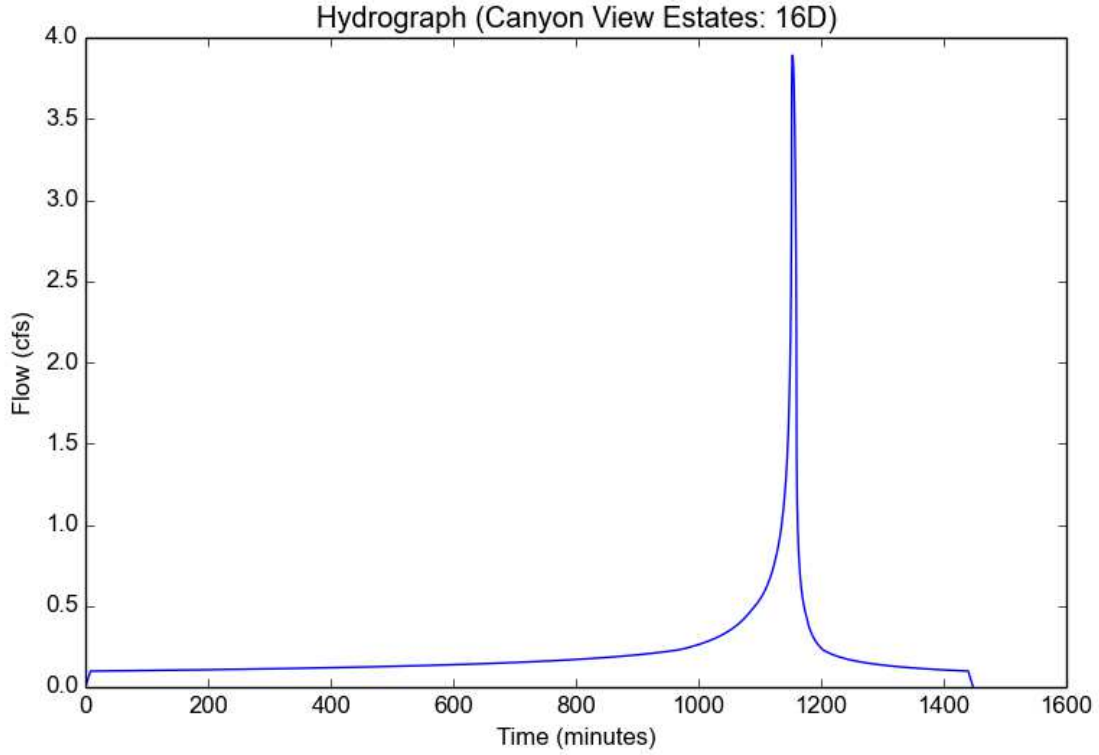
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	16D
Area (ac)	1.65
Flow Path Length (ft)	630.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	7.02
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1636
Peak Intensity (in/hr)	2.9485
Undeveloped Runoff Coefficient (Cu)	0.7273
Developed Runoff Coefficient (Cd)	0.7998
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	3.8912
Burned Peak Flow Rate (cfs)	3.8912
24-Hr Clear Runoff Volume (ac-ft)	0.4203
24-Hr Clear Runoff Volume (cu-ft)	18307.8278



Peak Flow Hydrologic Analysis

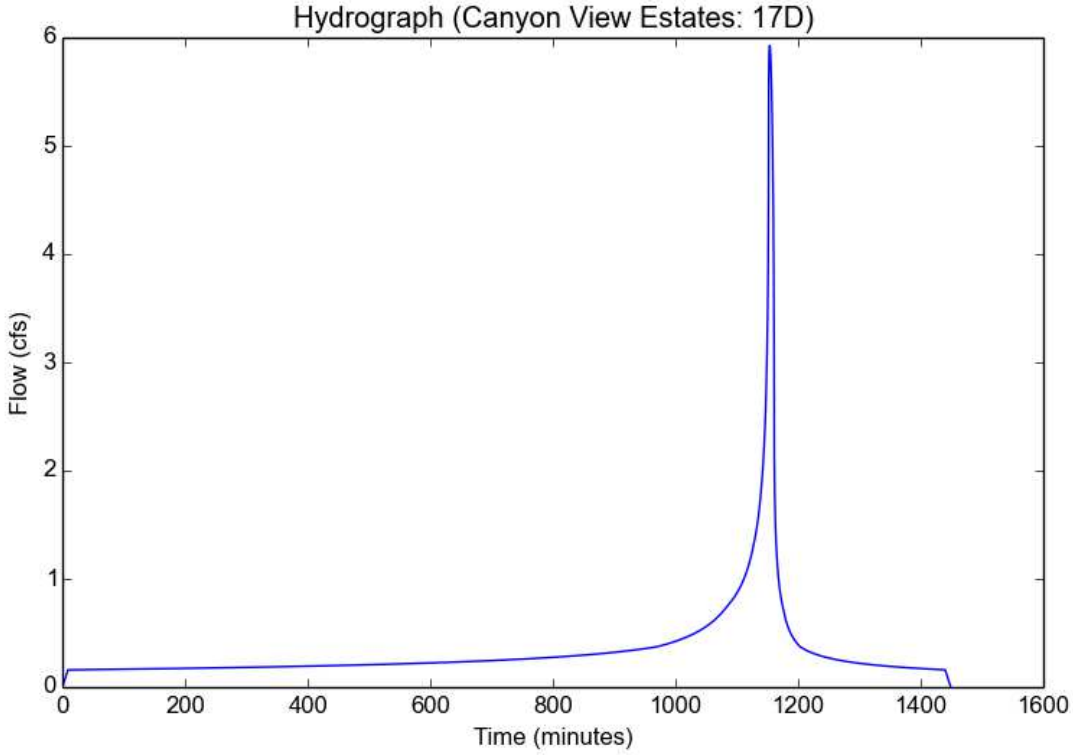
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	17D
Area (ac)	2.67
Flow Path Length (ft)	620.0
Flow Path Slope (vft/hft)	0.005
50-yr Rainfall Depth (in)	7.02
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1636
Peak Intensity (in/hr)	2.7897
Undeveloped Runoff Coefficient (Cu)	0.7198
Developed Runoff Coefficient (Cd)	0.7955
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	5.925
Burned Peak Flow Rate (cfs)	5.925
24-Hr Clear Runoff Volume (ac-ft)	0.68
24-Hr Clear Runoff Volume (cu-ft)	29622.6181



Peak Flow Hydrologic Analysis

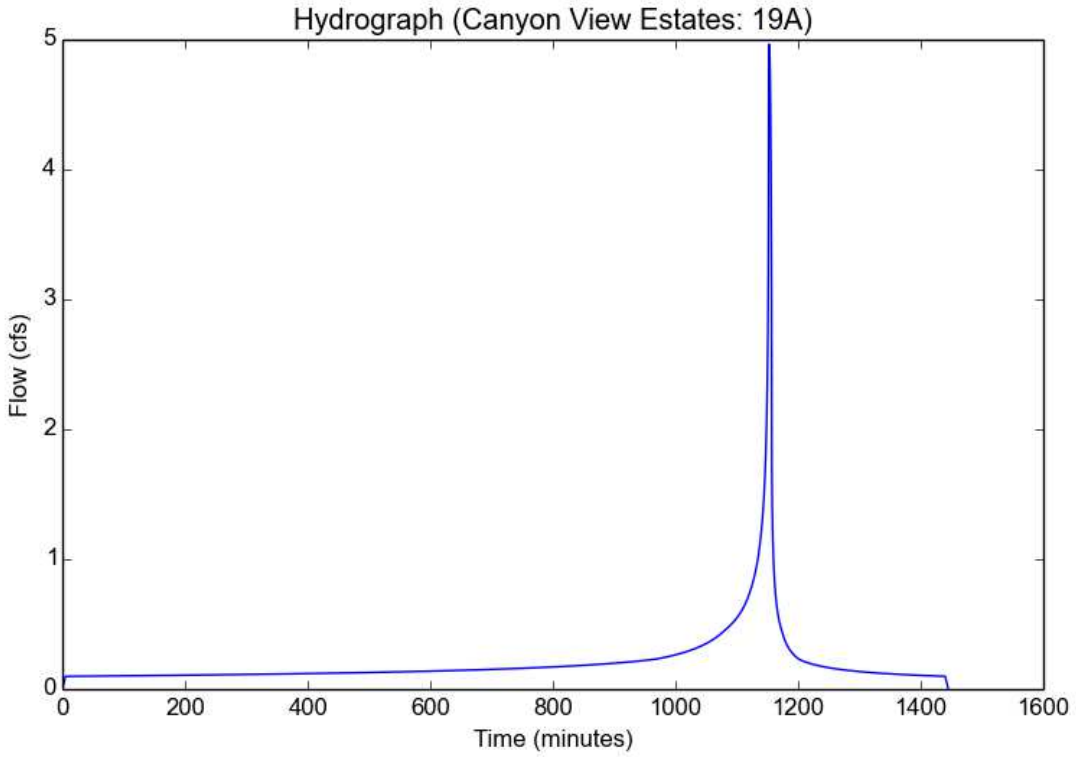
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	19A
Area (ac)	1.65
Flow Path Length (ft)	290.0
Flow Path Slope (vft/hft)	0.062
50-yr Rainfall Depth (in)	7.02
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1636
Peak Intensity (in/hr)	3.6773
Undeveloped Runoff Coefficient (Cu)	0.7586
Developed Runoff Coefficient (Cd)	0.818
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	4.9634
Burned Peak Flow Rate (cfs)	4.9634
24-Hr Clear Runoff Volume (ac-ft)	0.4205
24-Hr Clear Runoff Volume (cu-ft)	18316.1917



Peak Flow Hydrologic Analysis

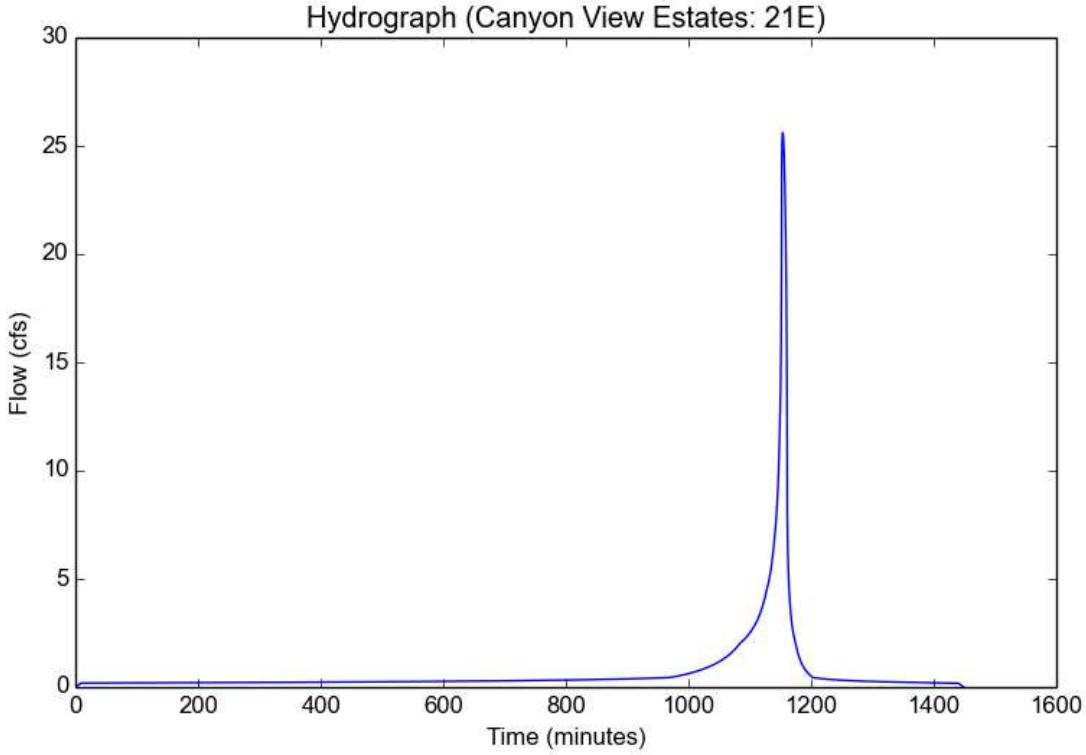
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	21E
Area (ac)	12.72
Flow Path Length (ft)	1394.0
Flow Path Slope (vft/hft)	0.18
50-yr Rainfall Depth (in)	7.02
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	scr
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1636
Peak Intensity (in/hr)	2.7897
Undeveloped Runoff Coefficient (Cu)	0.7198
Developed Runoff Coefficient (Cd)	0.7216
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	25.605
Burned Peak Flow Rate (cfs)	26.9159
24-Hr Clear Runoff Volume (ac-ft)	1.4077
24-Hr Clear Runoff Volume (cu-ft)	61318.8644



Peak Flow Hydrologic Analysis

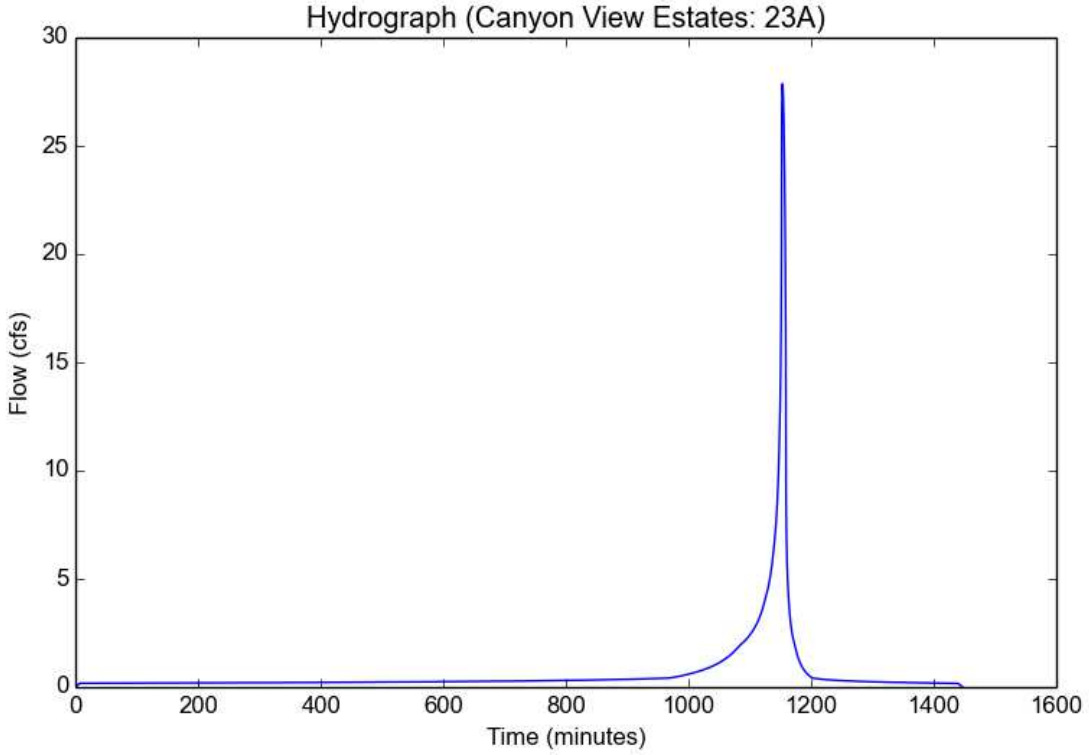
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	23A
Area (ac)	12.03
Flow Path Length (ft)	682.0
Flow Path Slope (vft/hft)	0.046
50-yr Rainfall Depth (in)	7.02
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	scr
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1636
Peak Intensity (in/hr)	3.1395
Undeveloped Runoff Coefficient (Cu)	0.7364
Developed Runoff Coefficient (Cd)	0.738
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	27.8731
Burned Peak Flow Rate (cfs)	29.2106
24-Hr Clear Runoff Volume (ac-ft)	1.3325
24-Hr Clear Runoff Volume (cu-ft)	58042.1051



Peak Flow Hydrologic Analysis

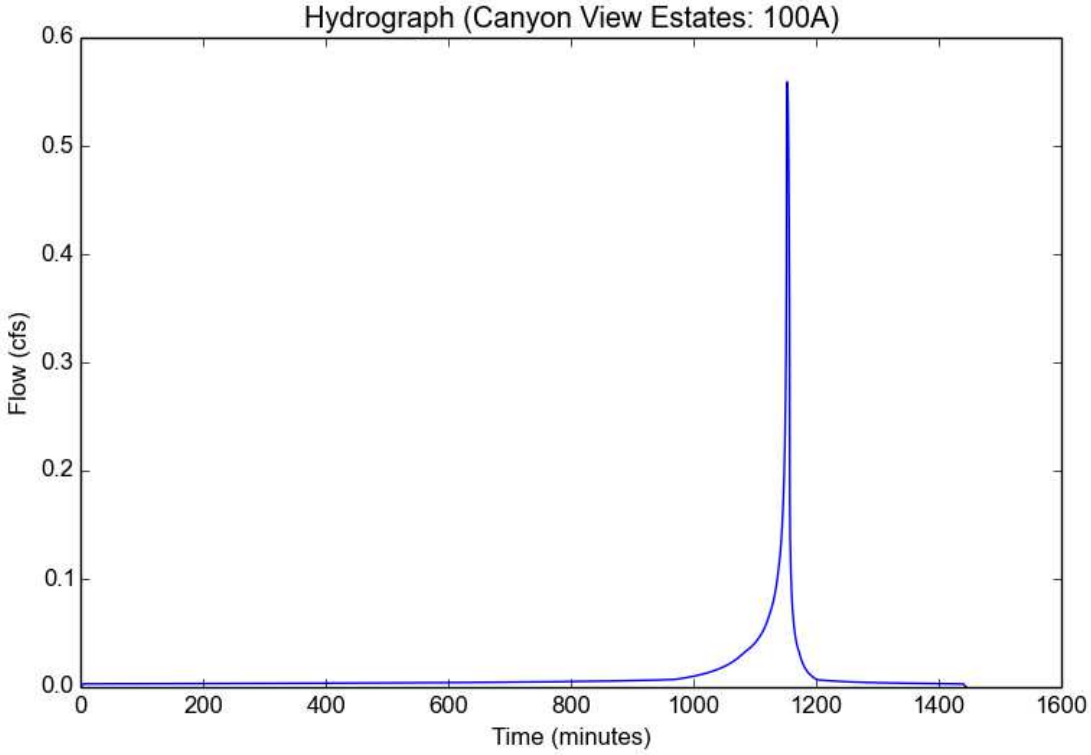
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	100A
Area (ac)	0.2
Flow Path Length (ft)	116.0
Flow Path Slope (vft/hft)	0.56
50-yr Rainfall Depth (in)	7.02
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	scr
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1636
Peak Intensity (in/hr)	3.6773
Undeveloped Runoff Coefficient (Cu)	0.7586
Developed Runoff Coefficient (Cd)	0.76
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.559
Burned Peak Flow Rate (cfs)	0.5834
24-Hr Clear Runoff Volume (ac-ft)	0.0222
24-Hr Clear Runoff Volume (cu-ft)	966.2205



Peak Flow Hydrologic Analysis

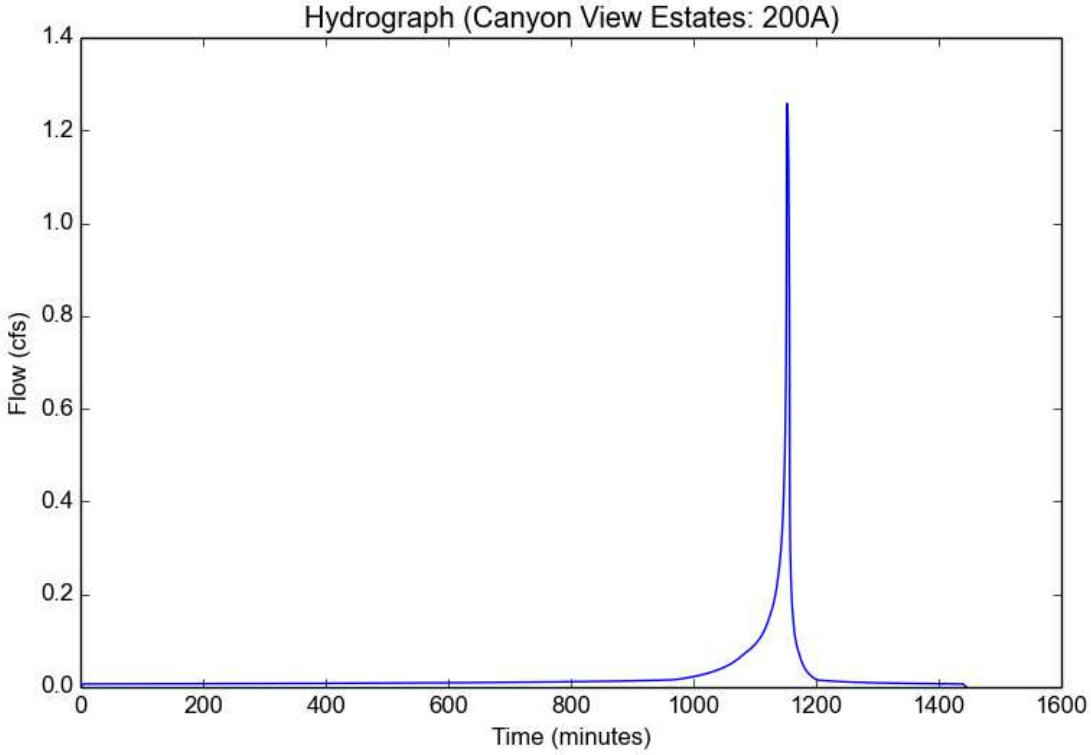
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	200A
Area (ac)	0.45
Flow Path Length (ft)	234.0
Flow Path Slope (vft/hft)	0.3
50-yr Rainfall Depth (in)	7.02
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1636
Peak Intensity (in/hr)	3.6773
Undeveloped Runoff Coefficient (Cu)	0.7586
Developed Runoff Coefficient (Cd)	0.76
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.2577
Burned Peak Flow Rate (cfs)	1.2577
24-Hr Clear Runoff Volume (ac-ft)	0.0499
24-Hr Clear Runoff Volume (cu-ft)	2173.996



Peak Flow Hydrologic Analysis

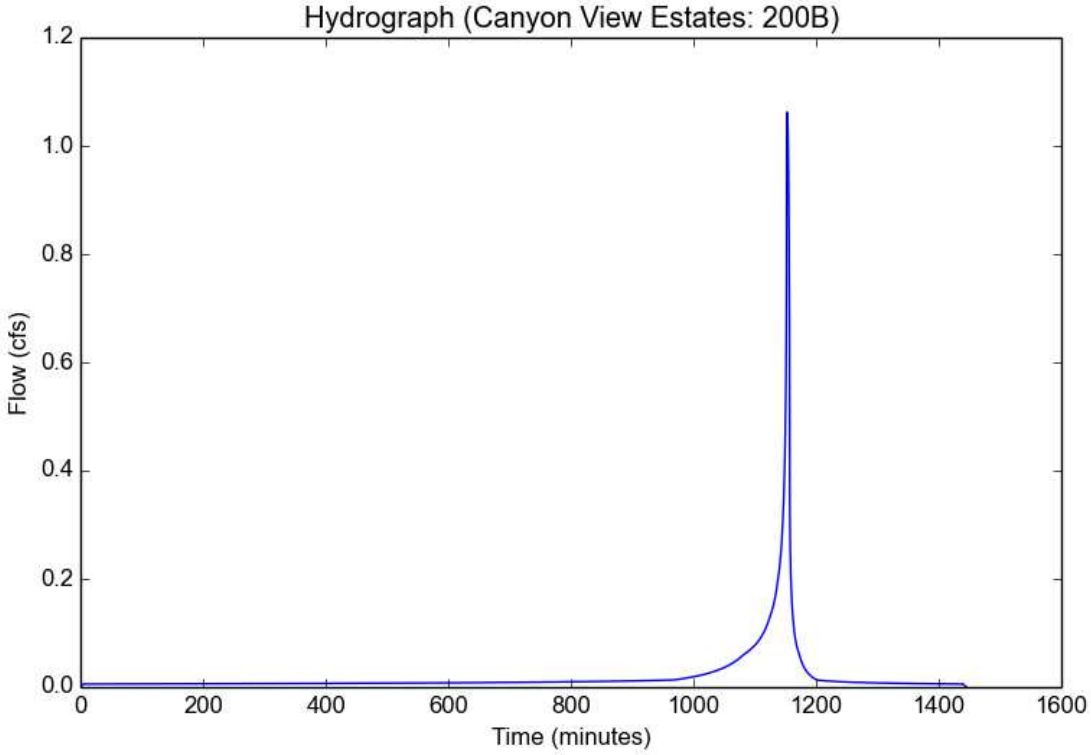
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	200B
Area (ac)	0.38
Flow Path Length (ft)	234.0
Flow Path Slope (vft/hft)	0.3
50-yr Rainfall Depth (in)	7.02
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.1636
Peak Intensity (in/hr)	3.6773
Undeveloped Runoff Coefficient (Cu)	0.7586
Developed Runoff Coefficient (Cd)	0.76
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.0621
Burned Peak Flow Rate (cfs)	1.0621
24-Hr Clear Runoff Volume (ac-ft)	0.0421
24-Hr Clear Runoff Volume (cu-ft)	1835.8189



Peak Flow Hydrologic Analysis

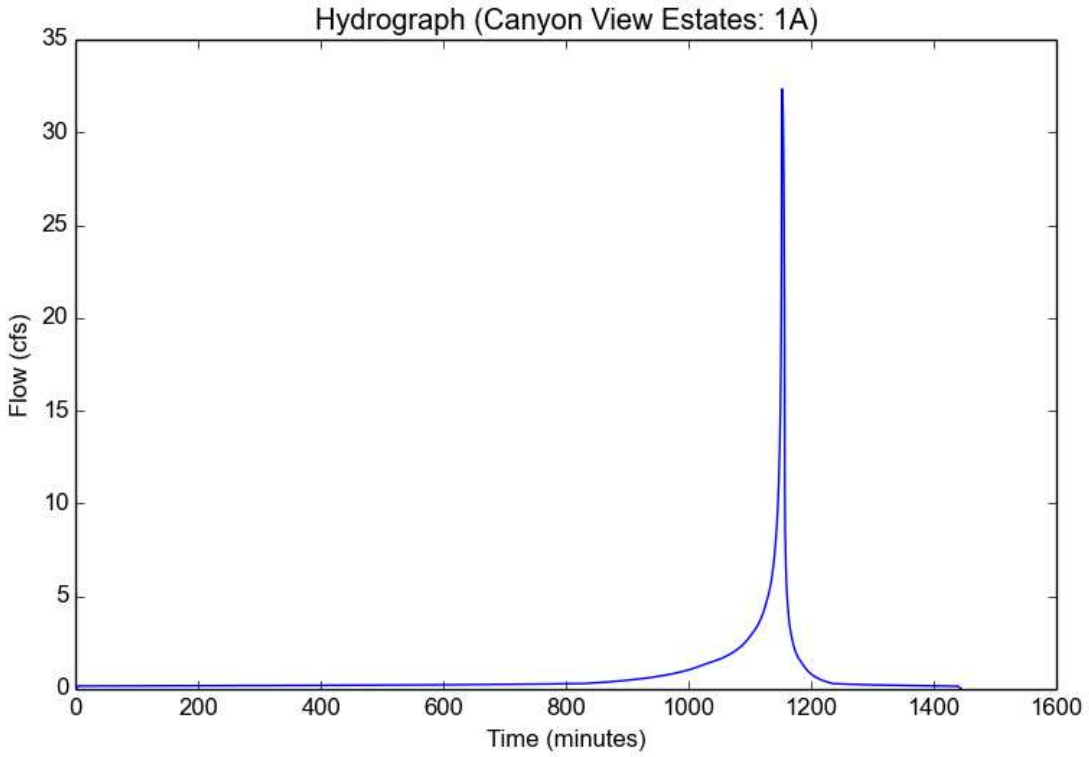
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	1A
Area (ac)	8.6
Flow Path Length (ft)	444.0
Flow Path Slope (vft/hft)	0.17
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	scr
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.773
Undeveloped Runoff Coefficient (Cu)	0.7868
Developed Runoff Coefficient (Cd)	0.7879
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	32.3412
Burned Peak Flow Rate (cfs)	33.5927
24-Hr Clear Runoff Volume (ac-ft)	1.453
24-Hr Clear Runoff Volume (cu-ft)	63294.3695



Peak Flow Hydrologic Analysis

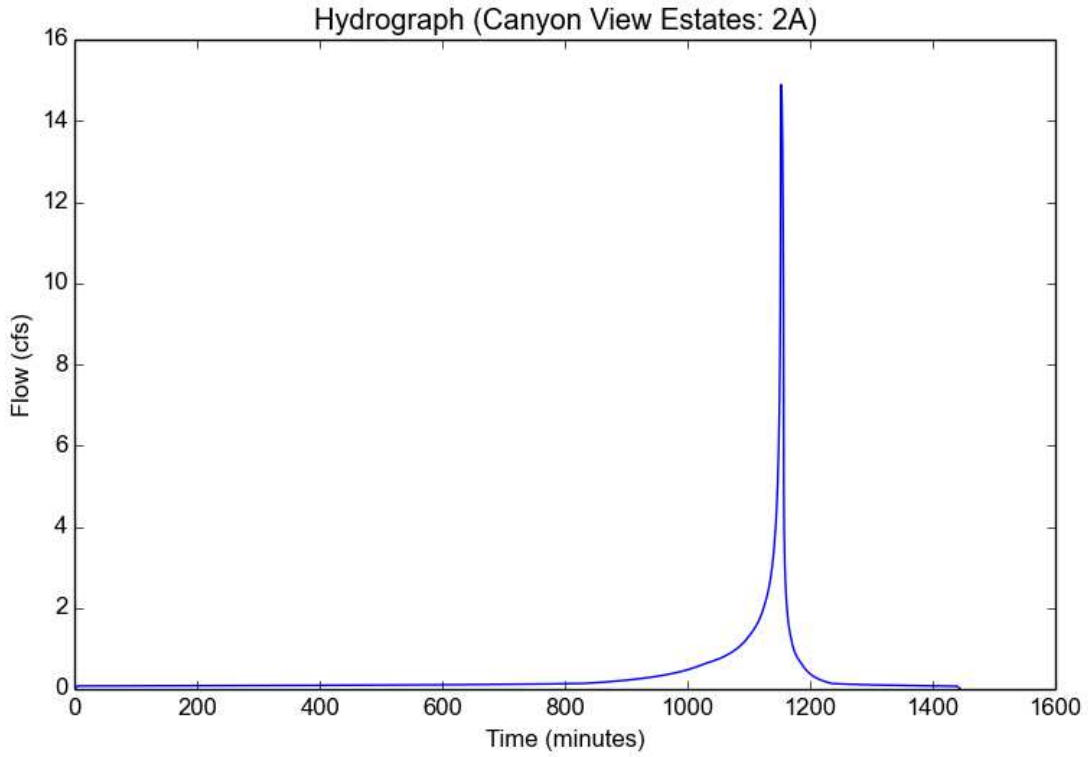
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	2A
Area (ac)	3.96
Flow Path Length (ft)	478.0
Flow Path Slope (vft/hft)	0.24
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	scr
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.773
Undeveloped Runoff Coefficient (Cu)	0.7868
Developed Runoff Coefficient (Cd)	0.7879
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	14.892
Burned Peak Flow Rate (cfs)	15.4683
24-Hr Clear Runoff Volume (ac-ft)	0.6691
24-Hr Clear Runoff Volume (cu-ft)	29144.8492



Peak Flow Hydrologic Analysis

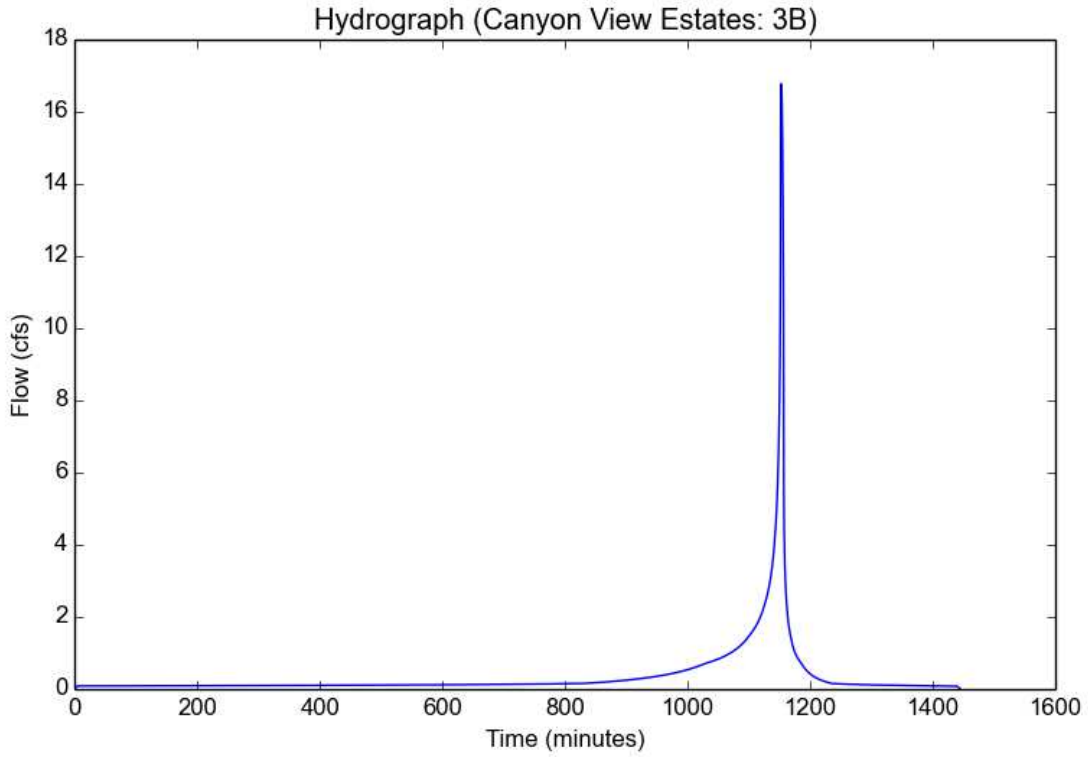
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	3B
Area (ac)	4.46
Flow Path Length (ft)	484.0
Flow Path Slope (vft/hft)	0.25
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	scr
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.773
Undeveloped Runoff Coefficient (Cu)	0.7868
Developed Runoff Coefficient (Cd)	0.7879
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	16.7723
Burned Peak Flow Rate (cfs)	17.4213
24-Hr Clear Runoff Volume (ac-ft)	0.7536
24-Hr Clear Runoff Volume (cu-ft)	32824.7544



Peak Flow Hydrologic Analysis

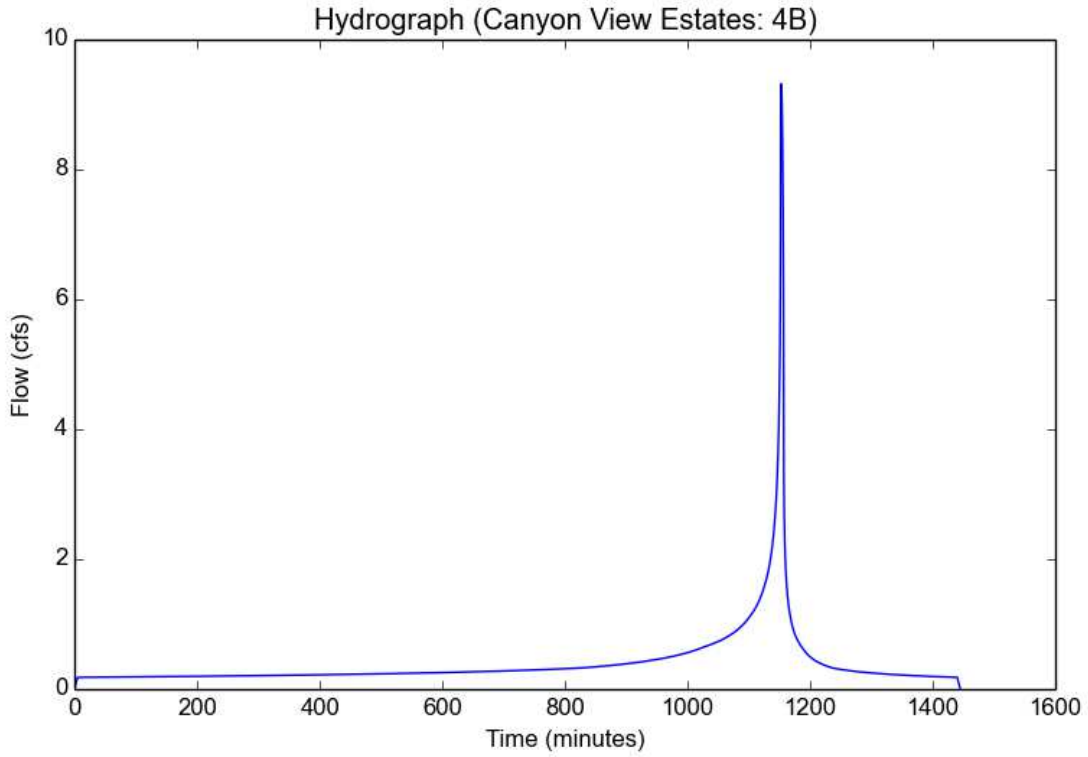
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	4B
Area (ac)	2.34
Flow Path Length (ft)	220.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.773
Undeveloped Runoff Coefficient (Cu)	0.7868
Developed Runoff Coefficient (Cd)	0.8343
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	9.3184
Burned Peak Flow Rate (cfs)	9.3184
24-Hr Clear Runoff Volume (ac-ft)	0.8083
24-Hr Clear Runoff Volume (cu-ft)	35208.4752



Peak Flow Hydrologic Analysis

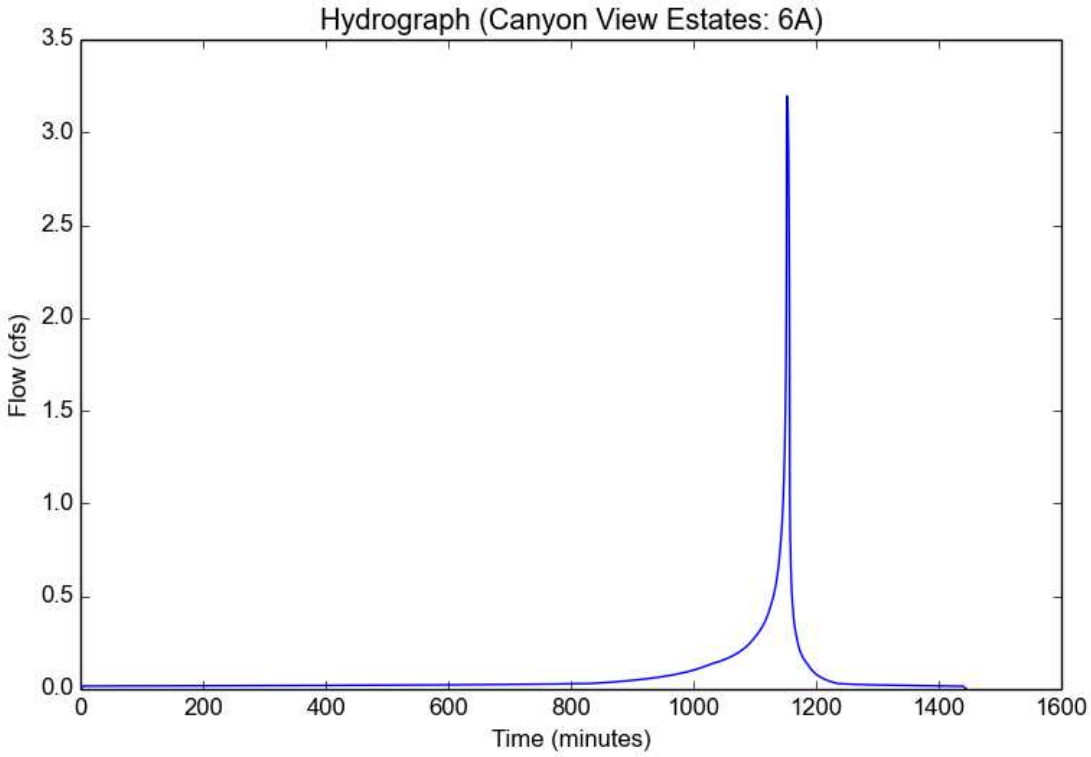
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	6A
Area (ac)	0.85
Flow Path Length (ft)	136.0
Flow Path Slope (vft/hft)	0.39
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	scr
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.773
Undeveloped Runoff Coefficient (Cu)	0.7868
Developed Runoff Coefficient (Cd)	0.7879
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.1965
Burned Peak Flow Rate (cfs)	3.3202
24-Hr Clear Runoff Volume (ac-ft)	0.1436
24-Hr Clear Runoff Volume (cu-ft)	6255.8388



Peak Flow Hydrologic Analysis

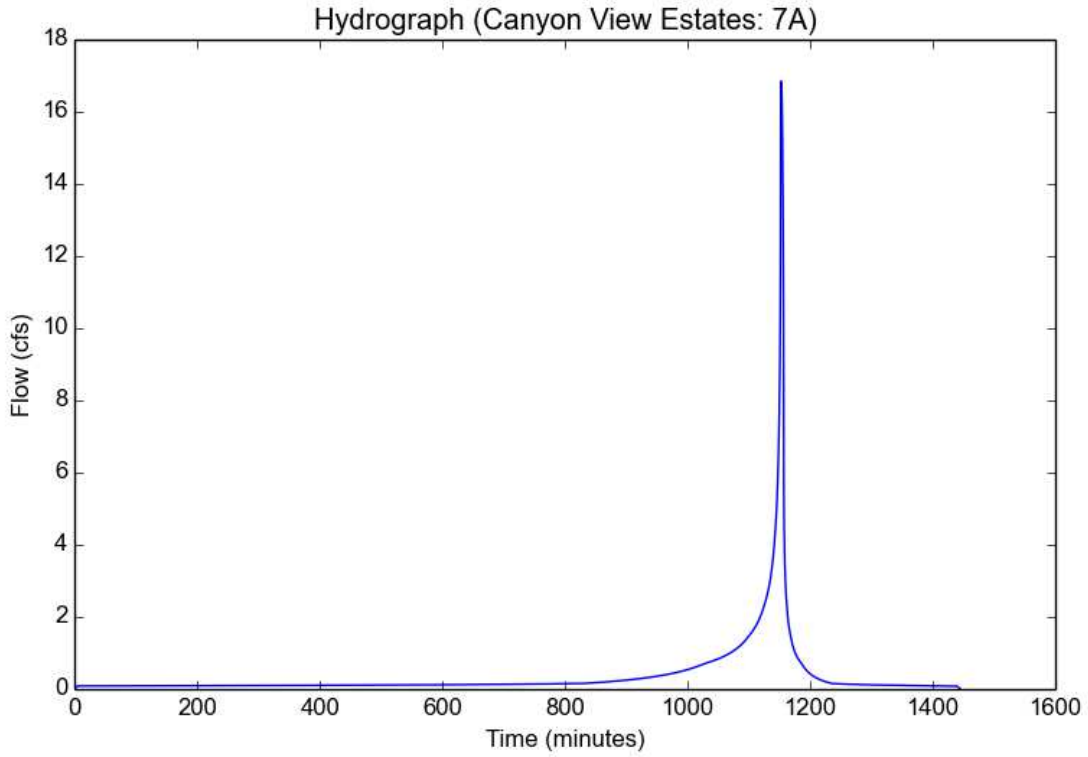
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	7A
Area (ac)	4.48
Flow Path Length (ft)	343.0
Flow Path Slope (vft/hft)	0.23
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	scr
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.773
Undeveloped Runoff Coefficient (Cu)	0.7868
Developed Runoff Coefficient (Cd)	0.7879
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	16.8475
Burned Peak Flow Rate (cfs)	17.4995
24-Hr Clear Runoff Volume (ac-ft)	0.7569
24-Hr Clear Runoff Volume (cu-ft)	32971.9506



Peak Flow Hydrologic Analysis

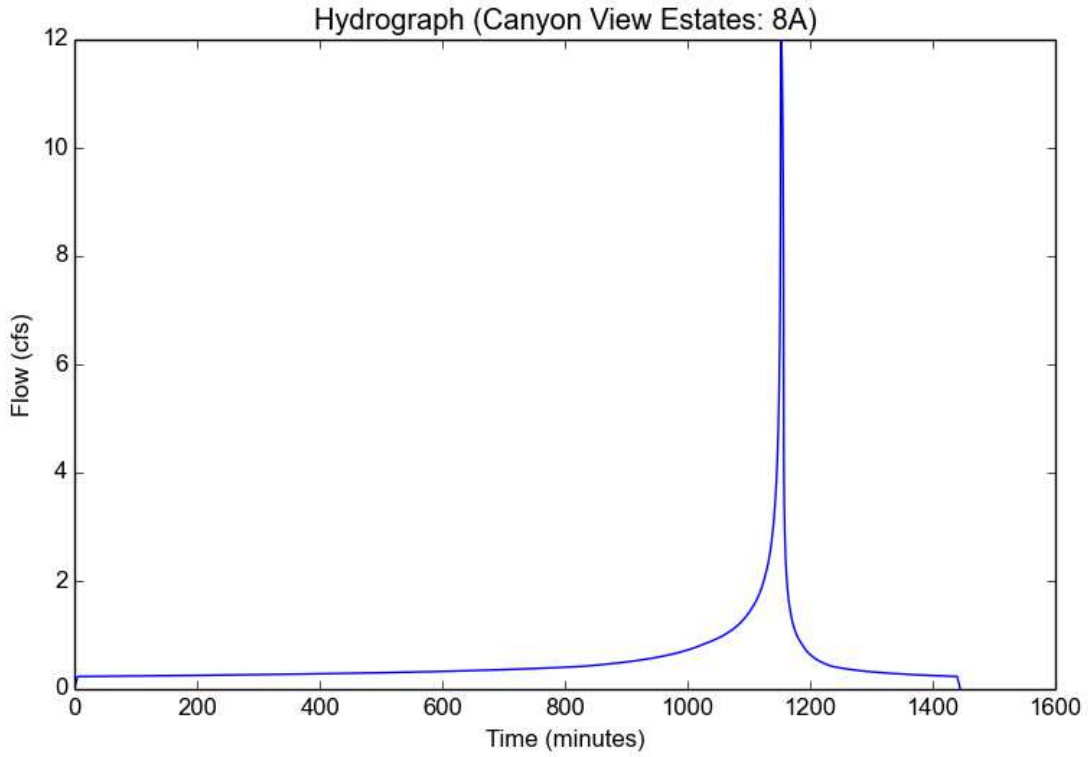
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	8A
Area (ac)	3.01
Flow Path Length (ft)	770.0
Flow Path Slope (vft/hft)	0.074
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.773
Undeveloped Runoff Coefficient (Cu)	0.7868
Developed Runoff Coefficient (Cd)	0.8343
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	11.9865
Burned Peak Flow Rate (cfs)	11.9865
24-Hr Clear Runoff Volume (ac-ft)	1.0397
24-Hr Clear Runoff Volume (cu-ft)	45289.5344



Peak Flow Hydrologic Analysis

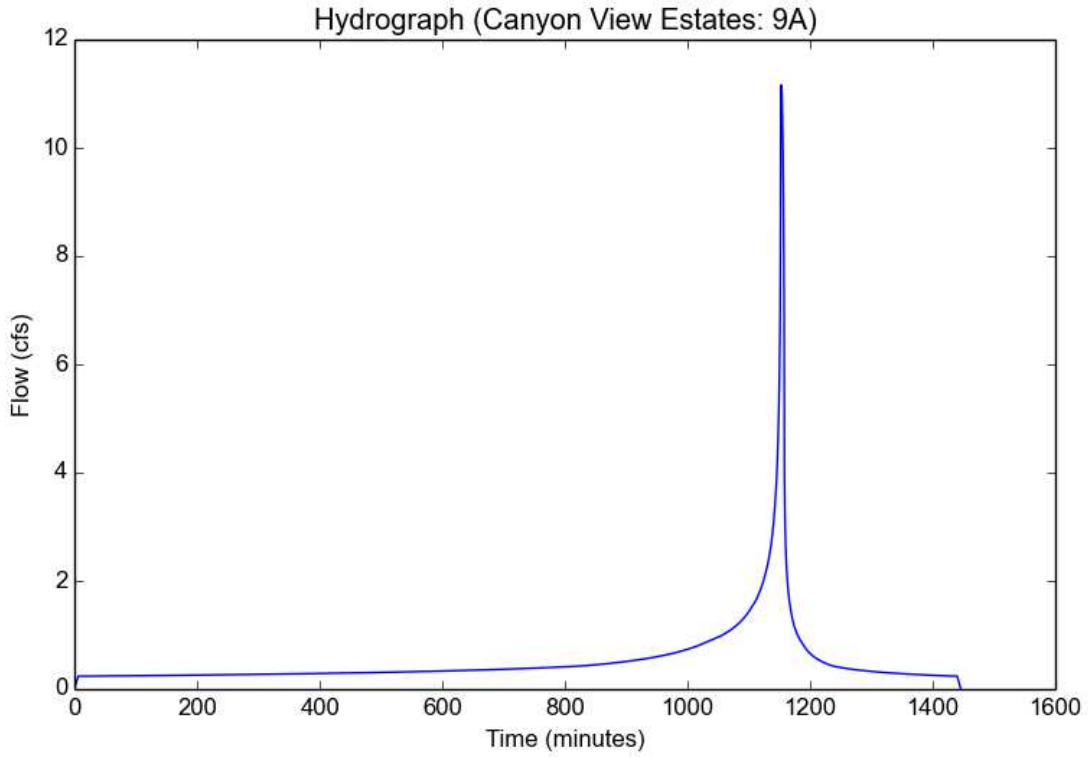
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	9A
Area (ac)	3.07
Flow Path Length (ft)	860.0
Flow Path Slope (vft/hft)	0.056
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.381
Undeveloped Runoff Coefficient (Cu)	0.779
Developed Runoff Coefficient (Cd)	0.8298
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	11.1611
Burned Peak Flow Rate (cfs)	11.1611
24-Hr Clear Runoff Volume (ac-ft)	1.0603
24-Hr Clear Runoff Volume (cu-ft)	46188.2191



Peak Flow Hydrologic Analysis

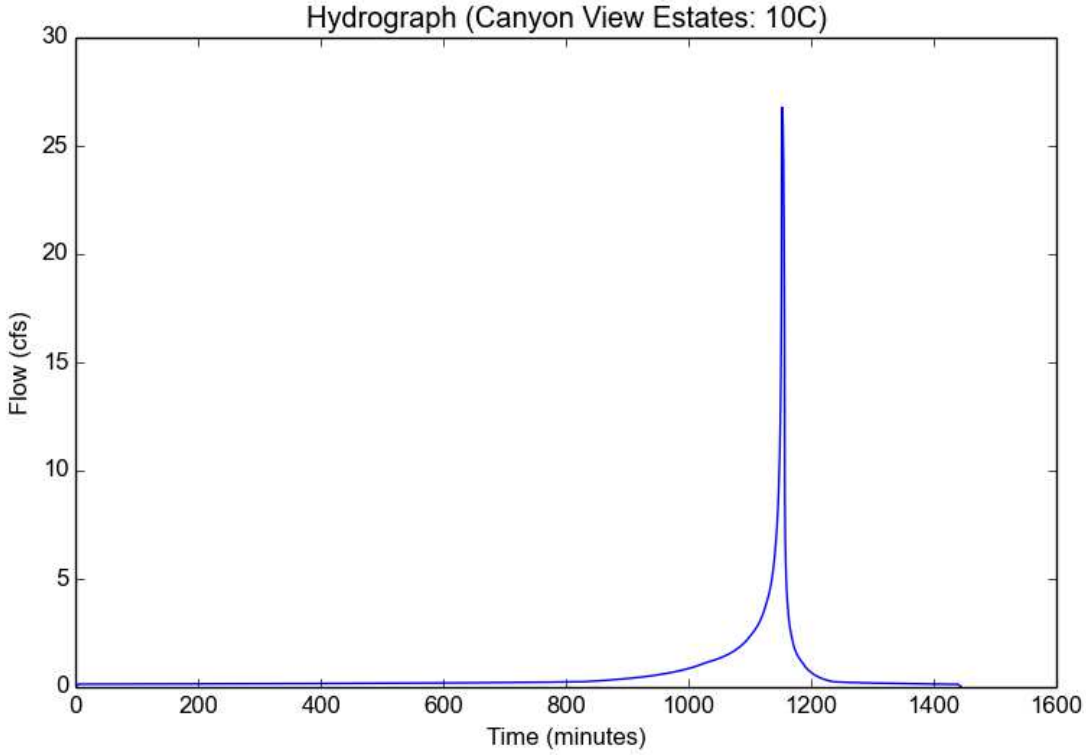
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	10C
Area (ac)	7.12
Flow Path Length (ft)	378.0
Flow Path Slope (vft/hft)	0.56
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	scr
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.773
Undeveloped Runoff Coefficient (Cu)	0.7868
Developed Runoff Coefficient (Cd)	0.7879
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	26.7755
Burned Peak Flow Rate (cfs)	27.8116
24-Hr Clear Runoff Volume (ac-ft)	1.203
24-Hr Clear Runoff Volume (cu-ft)	52401.8501



Peak Flow Hydrologic Analysis

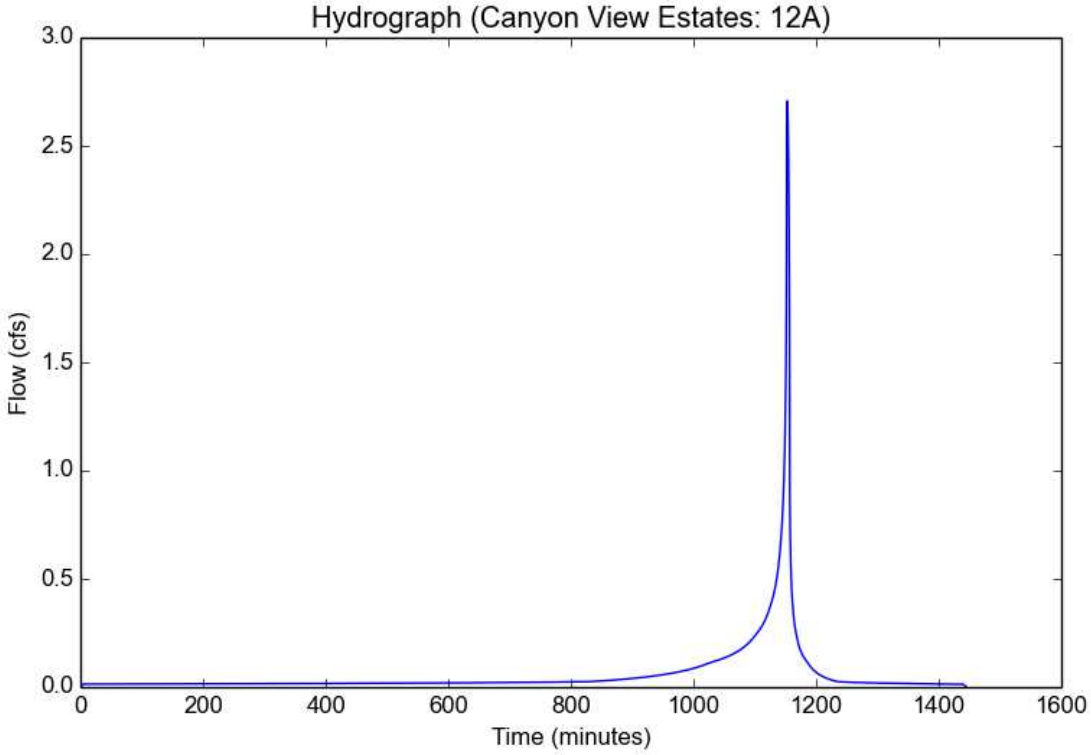
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	12A
Area (ac)	0.72
Flow Path Length (ft)	263.0
Flow Path Slope (vft/hft)	0.39
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	scr
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.773
Undeveloped Runoff Coefficient (Cu)	0.7868
Developed Runoff Coefficient (Cd)	0.7879
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.7076
Burned Peak Flow Rate (cfs)	2.8124
24-Hr Clear Runoff Volume (ac-ft)	0.1216
24-Hr Clear Runoff Volume (cu-ft)	5299.0635



Peak Flow Hydrologic Analysis

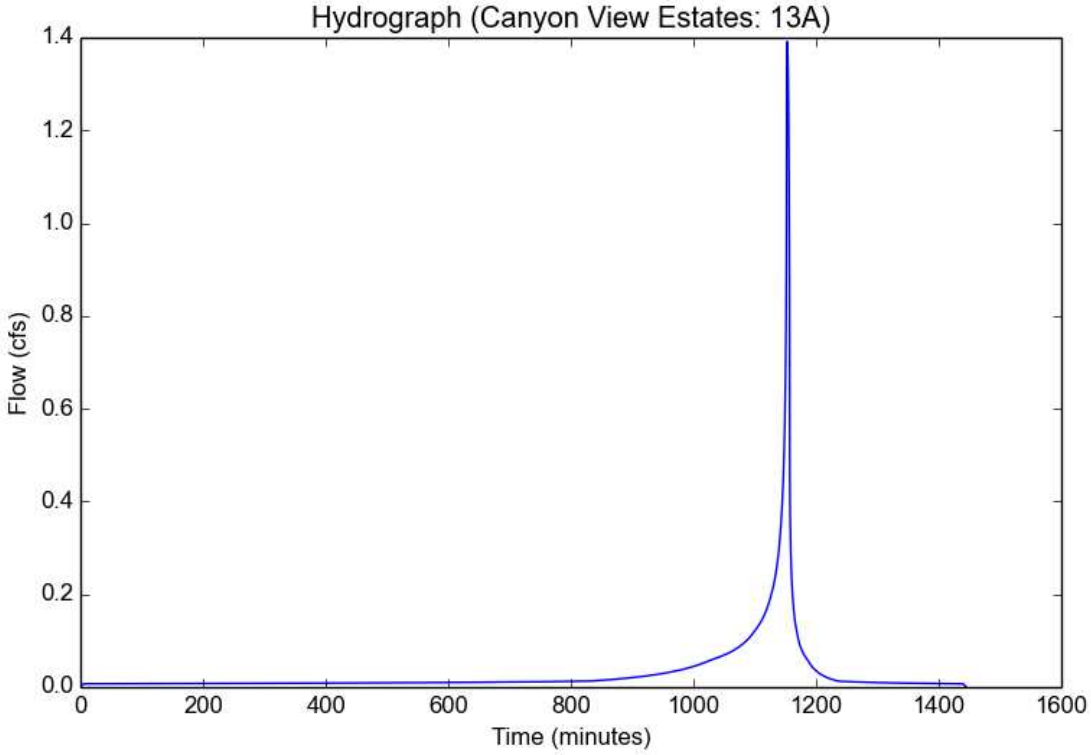
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	13A
Area (ac)	0.37
Flow Path Length (ft)	86.0
Flow Path Slope (vft/hft)	0.44
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	scr
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.773
Undeveloped Runoff Coefficient (Cu)	0.7868
Developed Runoff Coefficient (Cd)	0.7879
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.3914
Burned Peak Flow Rate (cfs)	1.4453
24-Hr Clear Runoff Volume (ac-ft)	0.0625
24-Hr Clear Runoff Volume (cu-ft)	2723.1298



Peak Flow Hydrologic Analysis

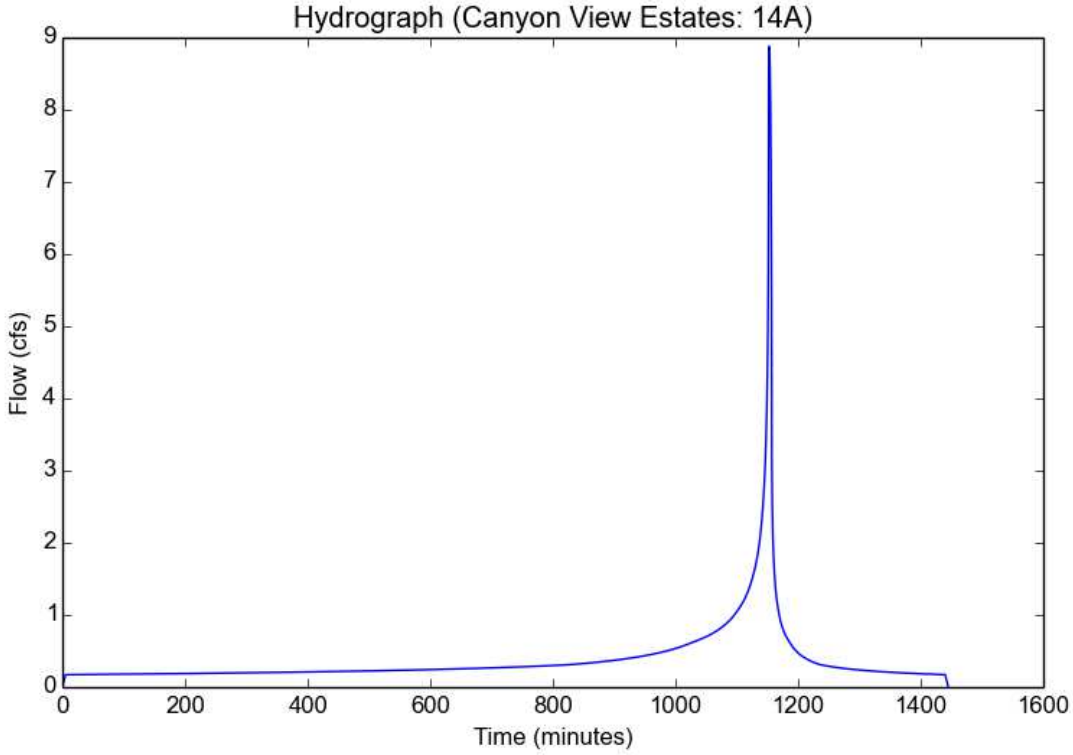
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	14A
Area (ac)	2.23
Flow Path Length (ft)	310.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.773
Undeveloped Runoff Coefficient (Cu)	0.7868
Developed Runoff Coefficient (Cd)	0.8343
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	8.8803
Burned Peak Flow Rate (cfs)	8.8803
24-Hr Clear Runoff Volume (ac-ft)	0.7703
24-Hr Clear Runoff Volume (cu-ft)	33553.376



Peak Flow Hydrologic Analysis

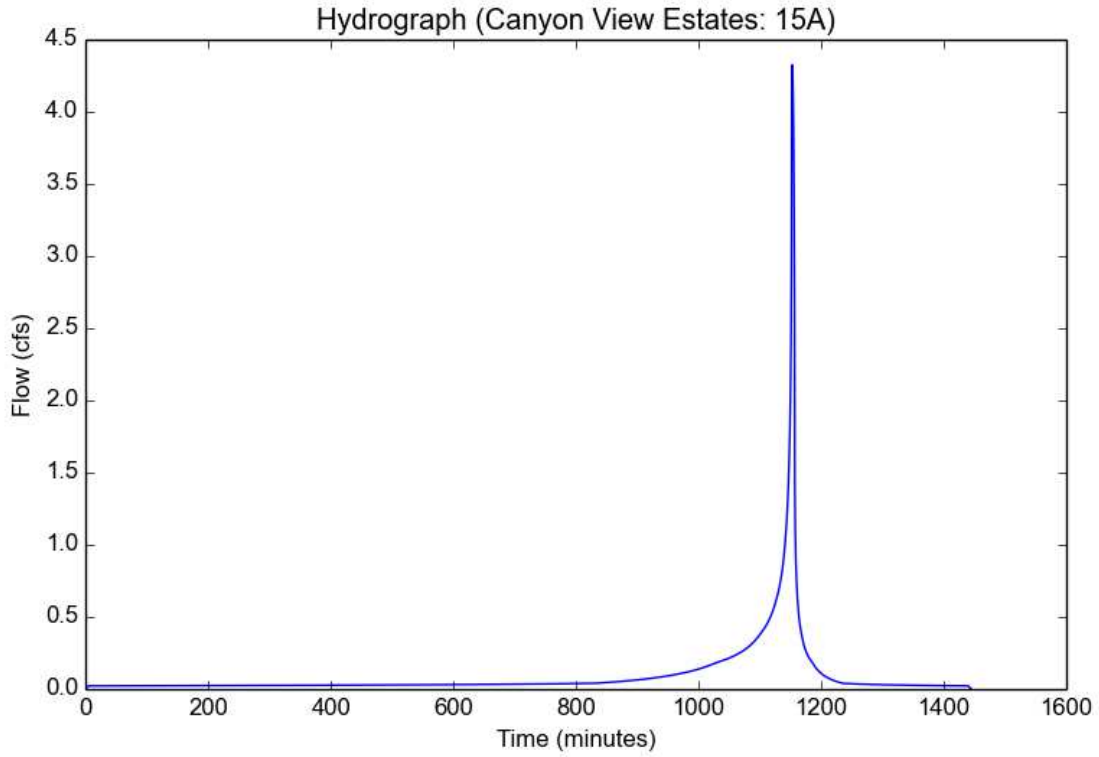
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	15A
Area (ac)	1.15
Flow Path Length (ft)	181.0
Flow Path Slope (vft/hft)	0.29
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	scr
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.773
Undeveloped Runoff Coefficient (Cu)	0.7868
Developed Runoff Coefficient (Cd)	0.7879
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	4.3247
Burned Peak Flow Rate (cfs)	4.492
24-Hr Clear Runoff Volume (ac-ft)	0.1943
24-Hr Clear Runoff Volume (cu-ft)	8463.782



Peak Flow Hydrologic Analysis

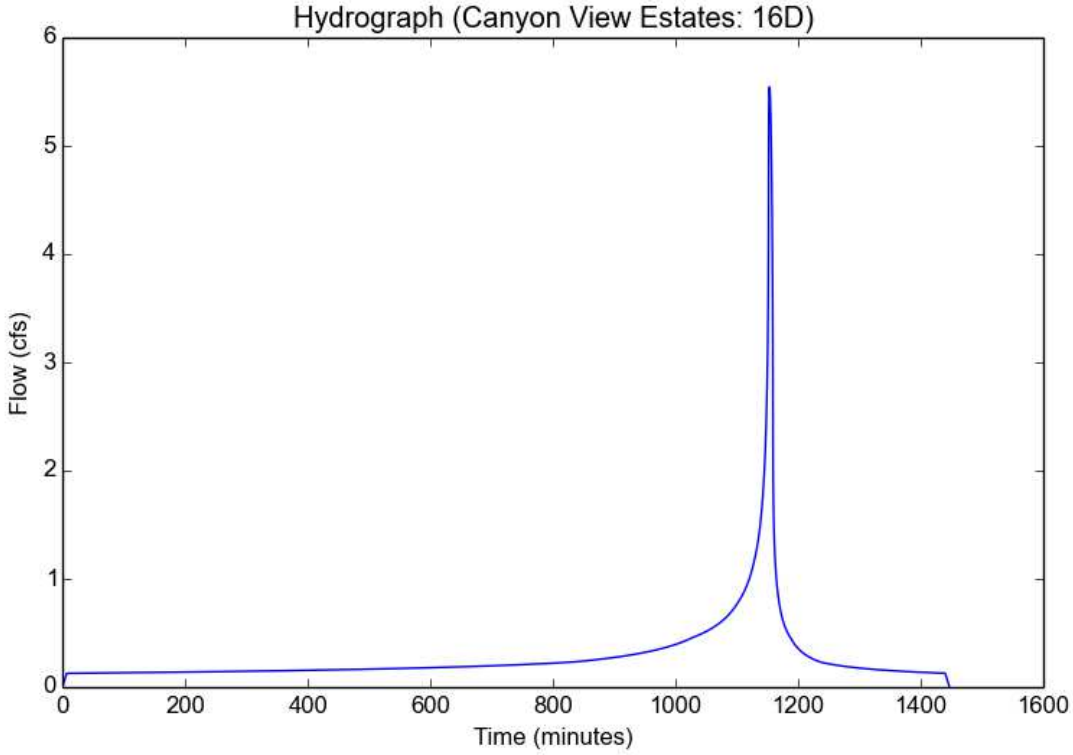
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	16D
Area (ac)	1.65
Flow Path Length (ft)	630.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.0749
Undeveloped Runoff Coefficient (Cu)	0.7701
Developed Runoff Coefficient (Cd)	0.8247
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	5.5448
Burned Peak Flow Rate (cfs)	5.5448
24-Hr Clear Runoff Volume (ac-ft)	0.5698
24-Hr Clear Runoff Volume (cu-ft)	24821.5313



Peak Flow Hydrologic Analysis

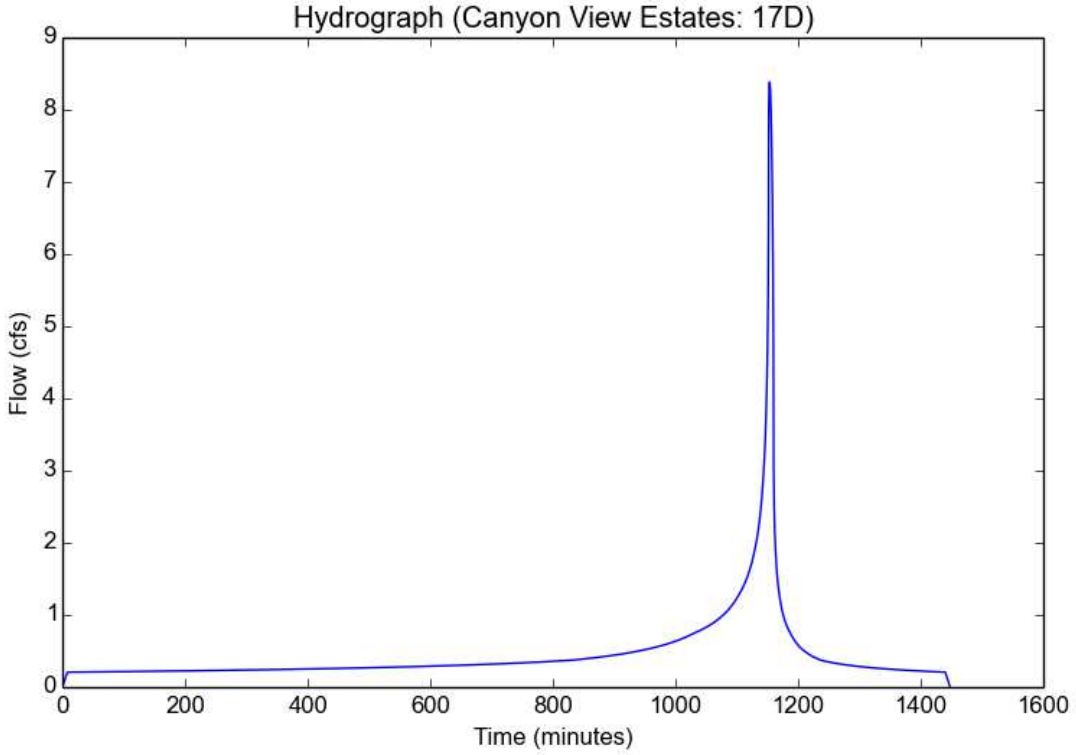
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	17D
Area (ac)	2.67
Flow Path Length (ft)	620.0
Flow Path Slope (vft/hft)	0.005
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	3.827
Undeveloped Runoff Coefficient (Cu)	0.763
Developed Runoff Coefficient (Cd)	0.8205
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	8.3841
Burned Peak Flow Rate (cfs)	8.3841
24-Hr Clear Runoff Volume (ac-ft)	0.922
24-Hr Clear Runoff Volume (cu-ft)	40162.2846



Peak Flow Hydrologic Analysis

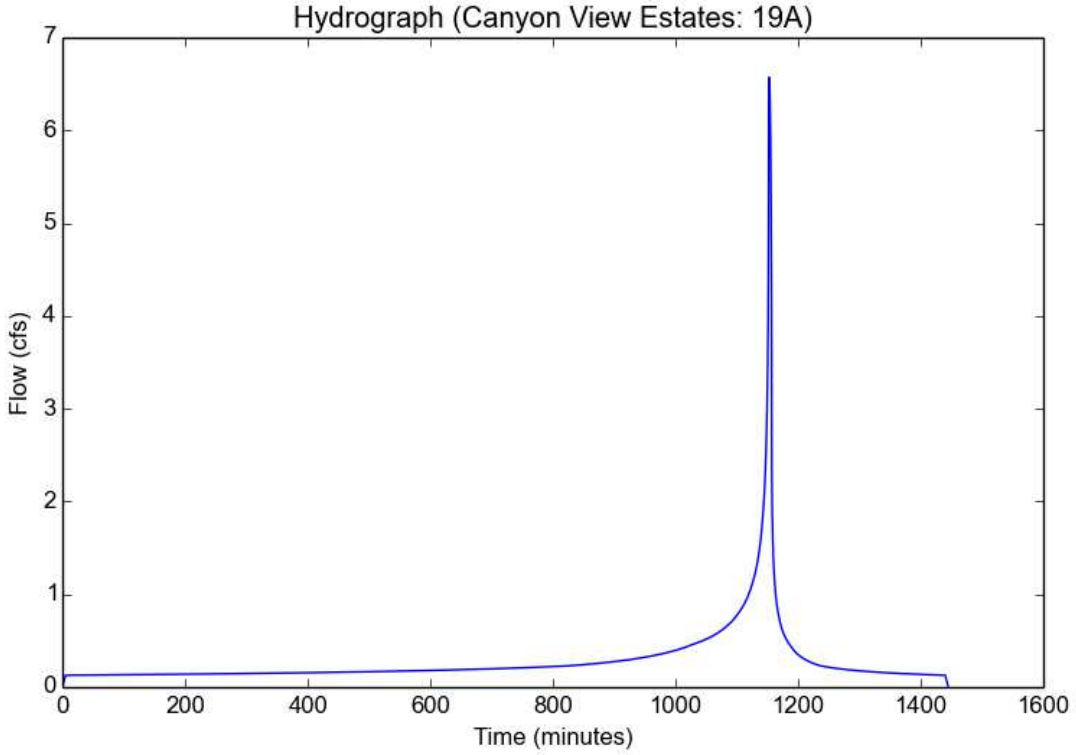
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	19A
Area (ac)	1.65
Flow Path Length (ft)	290.0
Flow Path Slope (vft/hft)	0.062
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.42
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.773
Undeveloped Runoff Coefficient (Cu)	0.7868
Developed Runoff Coefficient (Cd)	0.8343
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	6.5707
Burned Peak Flow Rate (cfs)	6.5707
24-Hr Clear Runoff Volume (ac-ft)	0.5699
24-Hr Clear Runoff Volume (cu-ft)	24826.4889



Peak Flow Hydrologic Analysis

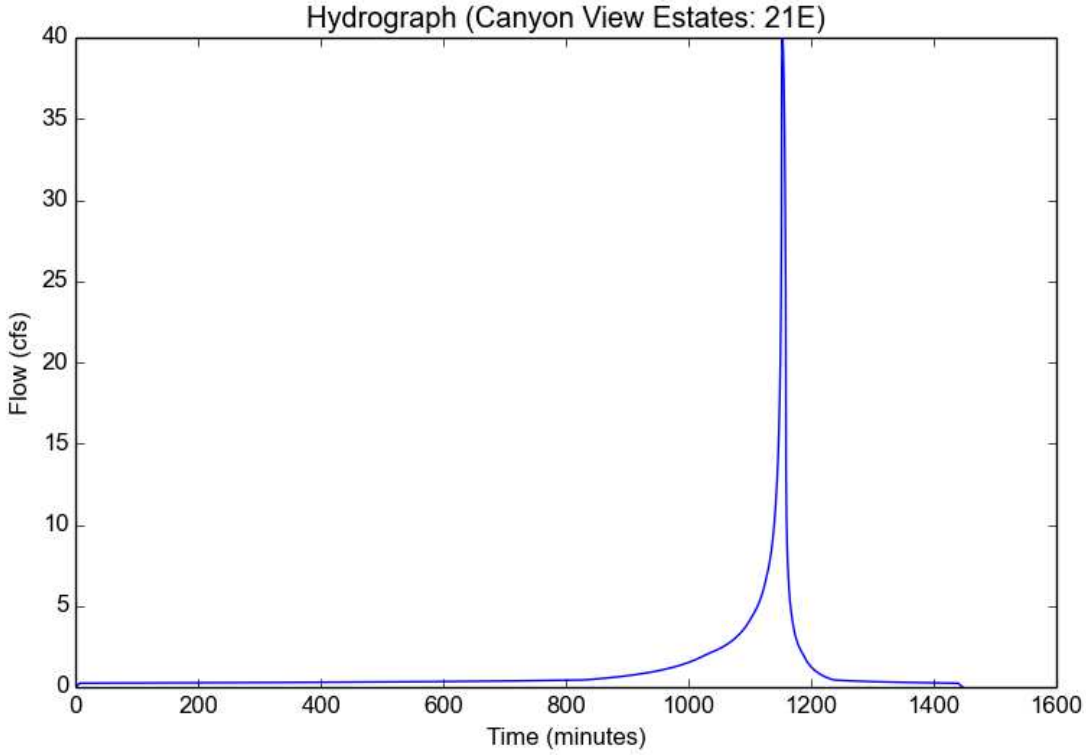
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	21E
Area (ac)	12.72
Flow Path Length (ft)	1394.0
Flow Path Slope (vft/hft)	0.18
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	scr
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.0749
Undeveloped Runoff Coefficient (Cu)	0.7701
Developed Runoff Coefficient (Cd)	0.7714
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	39.9858
Burned Peak Flow Rate (cfs)	41.6508
24-Hr Clear Runoff Volume (ac-ft)	2.1476
24-Hr Clear Runoff Volume (cu-ft)	93551.4819



Peak Flow Hydrologic Analysis

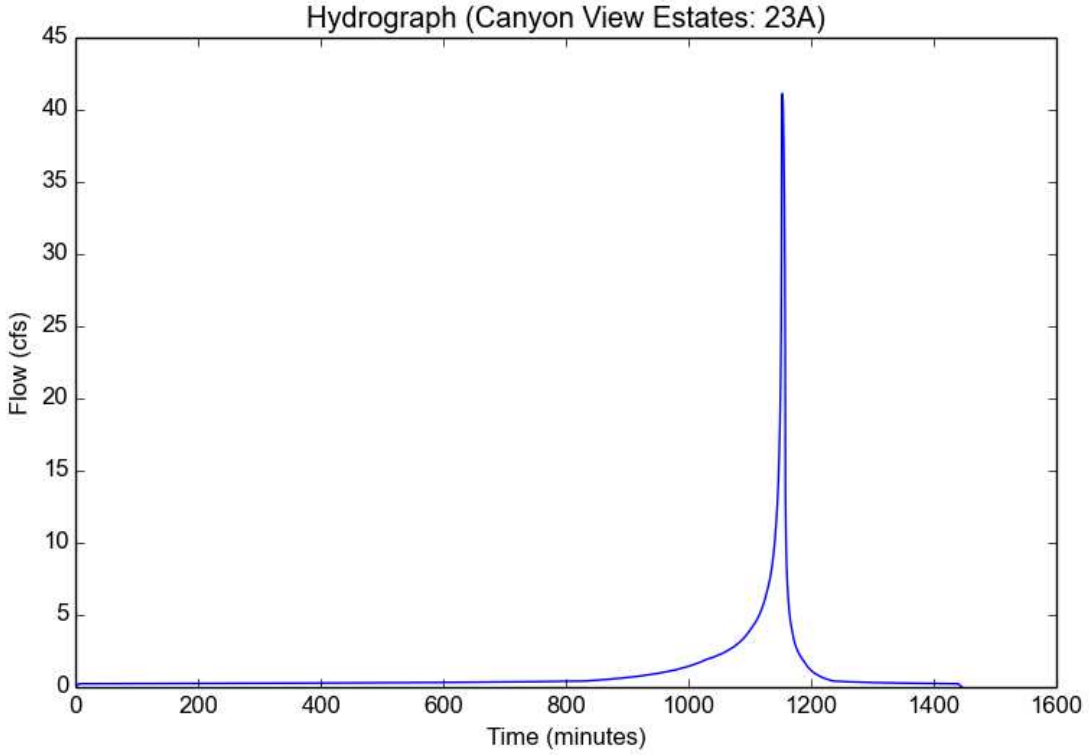
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	23A
Area (ac)	12.03
Flow Path Length (ft)	682.0
Flow Path Slope (vft/hft)	0.046
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	scr
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.381
Undeveloped Runoff Coefficient (Cu)	0.779
Developed Runoff Coefficient (Cd)	0.7802
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	41.1211
Burned Peak Flow Rate (cfs)	42.766
24-Hr Clear Runoff Volume (ac-ft)	2.0319
24-Hr Clear Runoff Volume (cu-ft)	88511.0877



Peak Flow Hydrologic Analysis

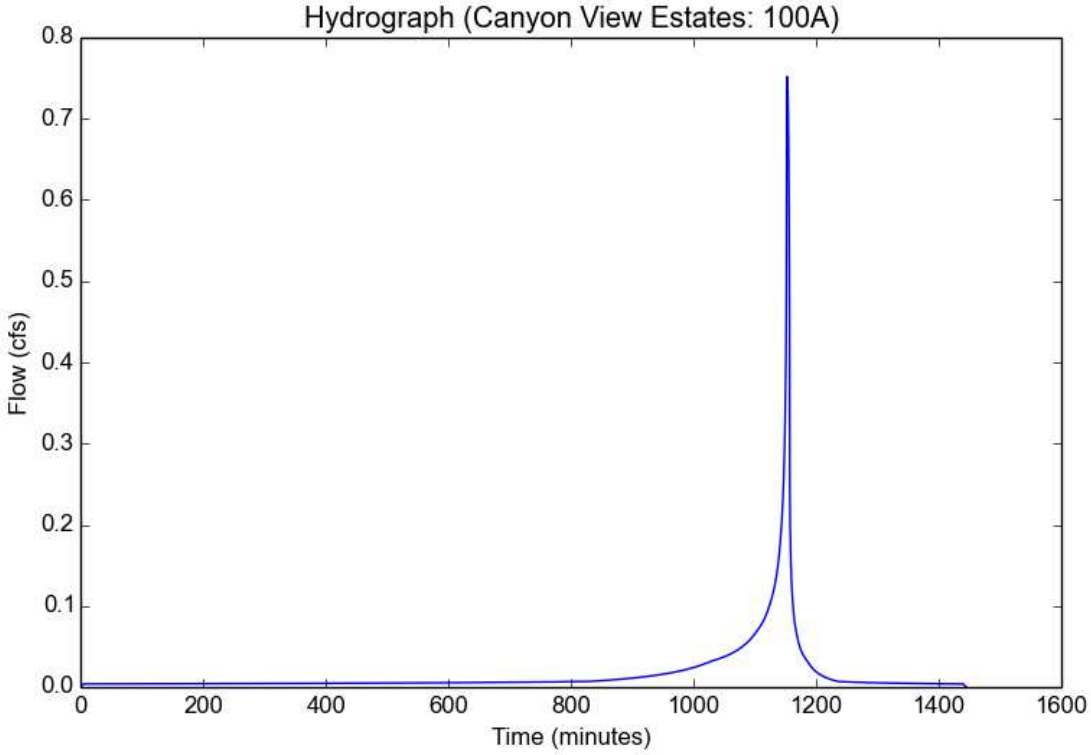
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	100A
Area (ac)	0.2
Flow Path Length (ft)	116.0
Flow Path Slope (vft/hft)	0.56
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	scr
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.773
Undeveloped Runoff Coefficient (Cu)	0.7868
Developed Runoff Coefficient (Cd)	0.7879
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.7521
Burned Peak Flow Rate (cfs)	0.7812
24-Hr Clear Runoff Volume (ac-ft)	0.0338
24-Hr Clear Runoff Volume (cu-ft)	1471.9621



Peak Flow Hydrologic Analysis

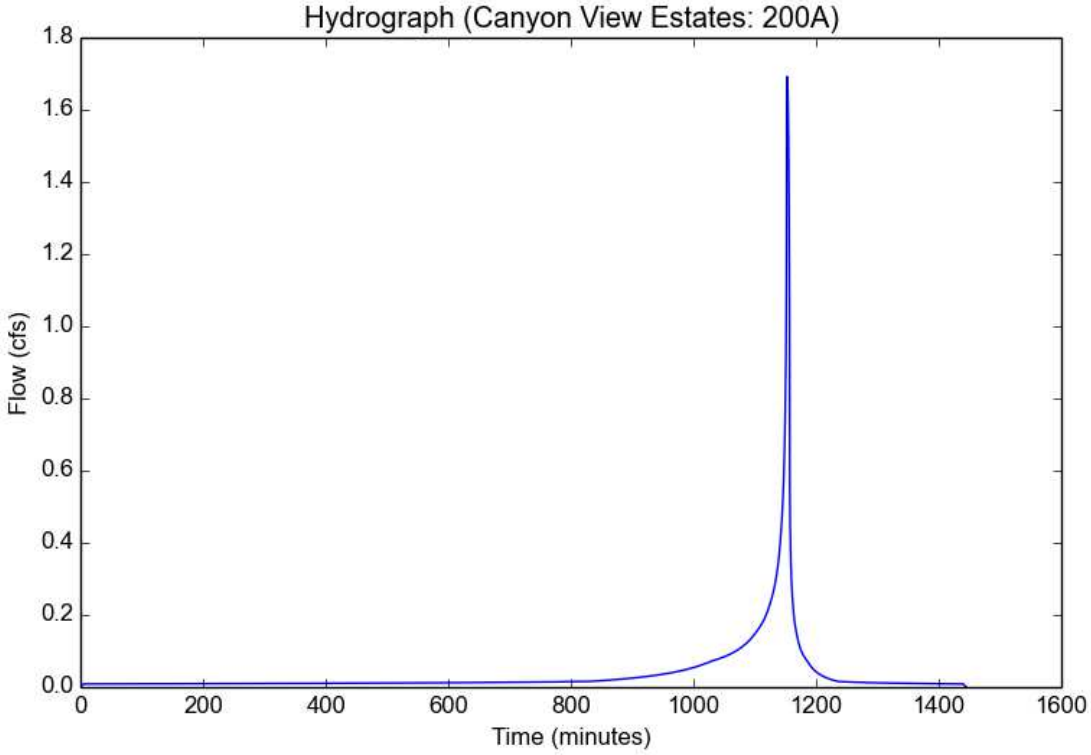
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	200A
Area (ac)	0.45
Flow Path Length (ft)	234.0
Flow Path Slope (vft/hft)	0.3
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.773
Undeveloped Runoff Coefficient (Cu)	0.7868
Developed Runoff Coefficient (Cd)	0.7879
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.6923
Burned Peak Flow Rate (cfs)	1.6923
24-Hr Clear Runoff Volume (ac-ft)	0.076
24-Hr Clear Runoff Volume (cu-ft)	3311.9147



Peak Flow Hydrologic Analysis

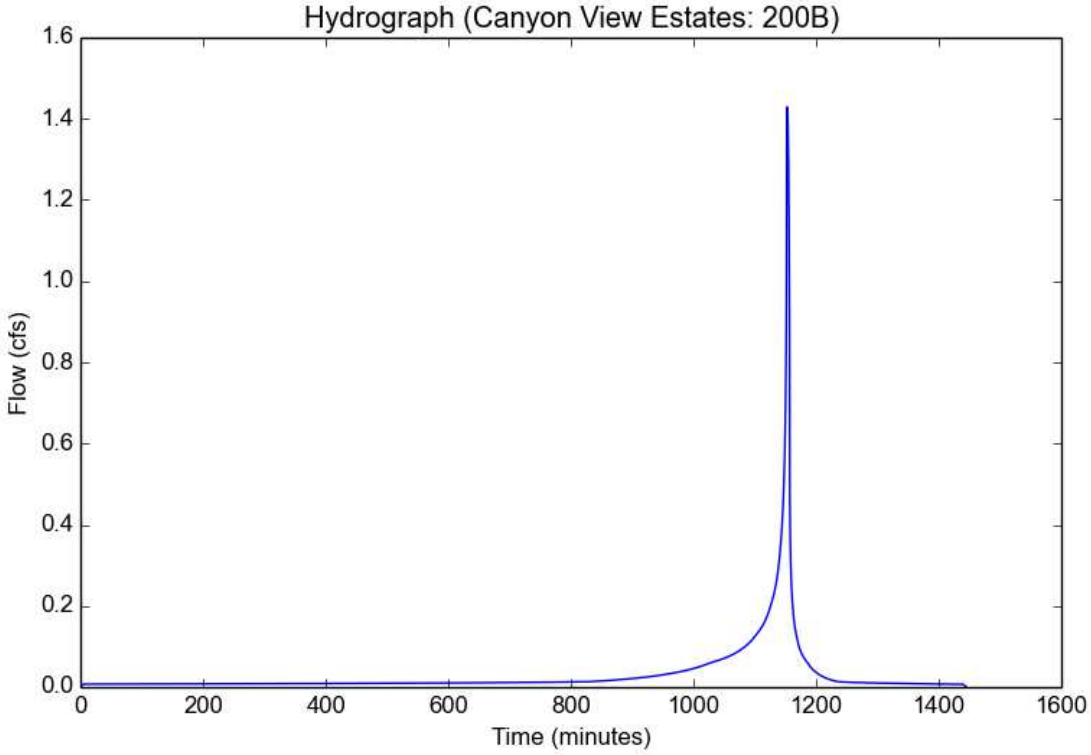
File location: H:/Oakridge/Hydrology/Analysis Data/Proposed Hydrology/Proposed 2-50yr Data.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Canyon View Estates
Subarea ID	200B
Area (ac)	0.38
Flow Path Length (ft)	234.0
Flow Path Slope (vft/hft)	0.3
50-yr Rainfall Depth (in)	8.0
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	8.0
Peak Intensity (in/hr)	4.773
Undeveloped Runoff Coefficient (Cu)	0.7868
Developed Runoff Coefficient (Cd)	0.7879
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.429
Burned Peak Flow Rate (cfs)	1.429
24-Hr Clear Runoff Volume (ac-ft)	0.0642
24-Hr Clear Runoff Volume (cu-ft)	2796.728



SECTION 7
WSPG @ RIP-RAP OUTLET
PROPOSED CONDITION

INPUT DATA

```
[REPORT]
COMPOSITE_ONLY

[NETWORK]
**TYPE           NAME
**-----          -------
Outlet           "Node10"
Reach            "RIP-RAP"
Transition       "CUVERT"
Transition       "Link7"
Headwork         "INLET"

**BRANCH DEFINITIONS

[OUTLET]
**NAME               STATION    INVERT     GROUND     CHANNEL     WATER SURFACE
**                              ELEV       ELEV       ID          ELEV (opt.)
**-------------      ---------  ---------- ---------- ----------  ----------
"Node10"             95         1445       1446       "RIP-RAP"   0

[HEADWORK]
**NAME               INVERT     GROUND     CHANNEL     FLOW       WATER SURFACE
**                   ELEV       ELEV       ID                     ELEV (opt.)
**-------------      ---------  ---------- ----------  ---------- ----------
"INLET"              1447       1450.5     "3.5ft"     75.33      0

[WALLENTRANCE]
**NAME               INVERT     GROUND     CHANNEL     LOSS
**                   ELEV       ELEV       ID          COEFFICIENT(opt.)
**-------------      ---------  ---------- ----------  --------------

[WALLEXIT]
**NAME               INVERT     GROUND     CHANNEL     LOSS
**                   ELEV       ELEV       ID          COEFFICIENT(opt.)
**-------------      ---------  ---------- ----------  --------------

[BRIDGEENTRANCE]
**NAME               INVERT     GROUND     CHANNEL     REDUCTION
**                   ELEV       ELEV       ID          FACTOR(opt.)
**-------------      ---------  ---------- ----------  --------------

[BRIDGEEXIT]
**NAME               INVERT     GROUND     CHANNEL     REDUCTION
**                   ELEV       ELEV       ID          FACTOR(opt.)
**-------------      ---------  ---------- ----------  --------------

[JOIN]
**NAME               INVERT     GROUND     CHANNEL     LENGTH     MANNINGS n NUMBER OF  CONFLUENCE
**                   ELEV       ELEV       ID                                BRANCHES   ANGLE
**-------------      ---------  ---------- ----------  ---------- ---------- ---------- ----------

[JUNCTION]
**Name               INVERT     GROUND     CHANNEL     LENGTH     MANNINGS n NUMBER OF  CONFLUENCE FLOW
**                   ELEV       ELEV       ID                                LATERALS   ANGLE
**-------------      ---------  ---------- ----------  ---------- ---------- ---------- ---------- ----------

[TRANSITION]
**NAME               INVERT     GROUND     CHANNEL     LENGTH     MANNINGS n
**                   ELEV       ELEV       ID
**-------------      ---------  ---------- ----------  ---------- ----------
"Link7"              1447       1451.5     "3.5ft"     54         0.013
"CUVERT"             1446.2     1453       "CULVERT"   10         0.015

[REACH]
**NAME               INVERT     GROUND     CHANNEL     LENGTH     MANNINGS n CURVE      ANGLE      NUMBER
**                   ELEV       ELEV       ID                                (opt)      POINT(opt) MANHOLES(opt)
**-------------      ---------  ---------- ----------  ---------- ---------- ---------- ---------- ----------
"RIP-RAP"            1446       1446.5     "RIP-RAP"   15         0.06       0          0          0
```

```
[CHANNEL]
**REGULAR TYPES 1-4
**ID       TYPE HEIGHT     WIDTH      LEFT       RIGHT      NUMBER     AVG PIER   INVERT
**                                    SLOPE      SLOPE      PIERS      WIDTH      CROSS FALL
**------   ---- ---------- ---------- ---------- ---------- ---------- ---------- ----------
"RIP-RAP"     2   0.5        10                               0          0          0
"3.5ft"       4   3.5        3.5
"CULVERT"     1   1          5          0.019      0.01       0          0          0

**IRREGULAR TYPES 5-6
**ID       TYPE NUMBER     AVG PIER   PIER1      PIER2      PIER3      PIER4      PIER5      PIER6      PIER7      PIER8      PIER9      PIER10
**             PIERS      WIDTH      ELEV       ELEV       ELEV       ELEV       ELEV       ELEV       ELEV       ELEV       ELEV       ELEV
**------   ---- ---------- ---------- ---------- ---------- ---------- ---------- ---------- ---------- ---------- ---------- ---------- ----------



[POINT]
**ID          XCOORD     YCOORD
**----------- ---------- ----------
```

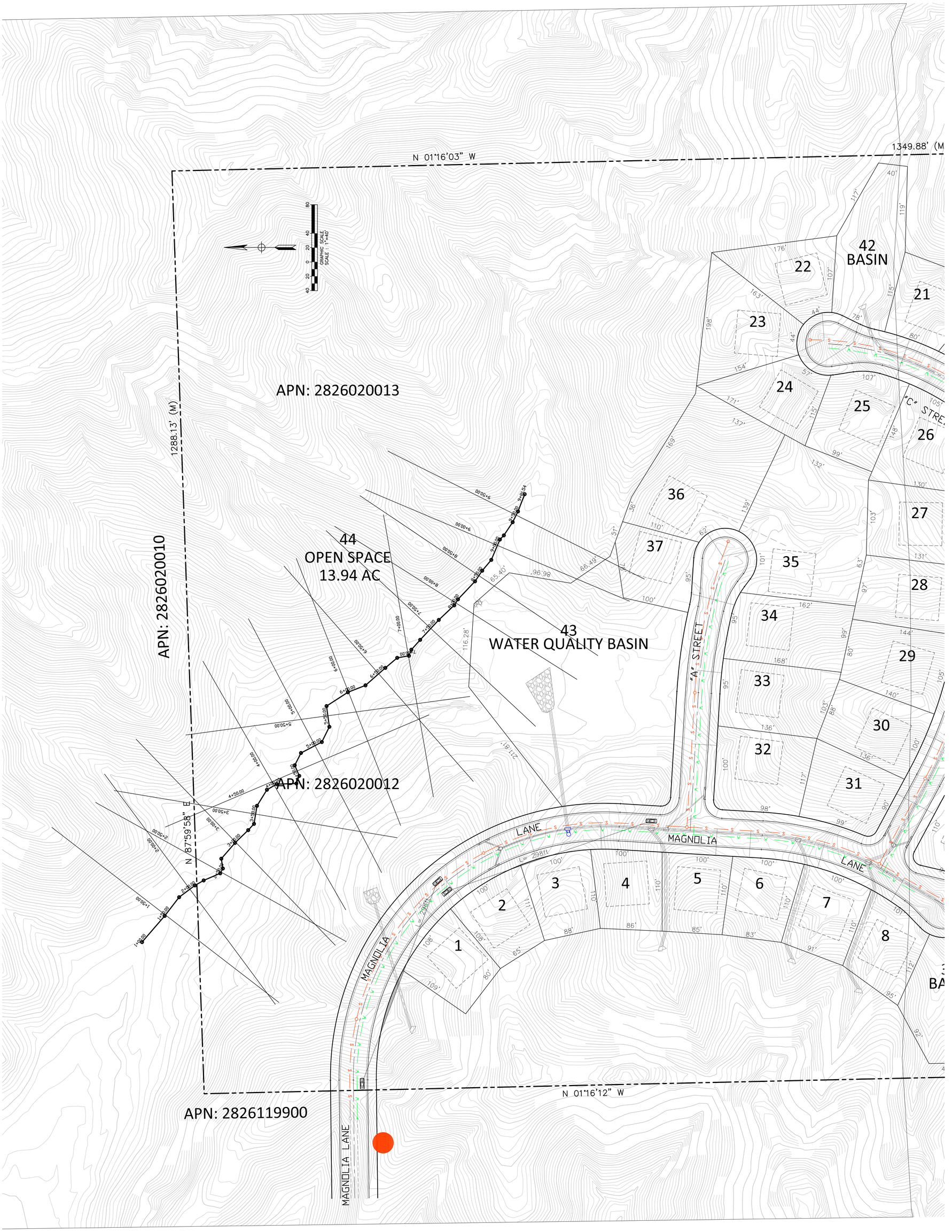
OUTPUT DATA


```
Water Surface Profile Gradient (WSPG)
XP WSPG
Engine Version 1.3         06/09/2010
XP Software        www.xpsoftware.com
************************************

INPUT FILE
************************************
H:\Oakridge\Hydrology\Hydraulic Calculation\WSPG\Storm Drain WSPG Discharge Outlet from Basin.wsx
Computed  05/01/18  11:42:07

TITLE INFORMATION
************************************

WARNING SUMMARY
************************************

RESULTS
************************************


============================================================
   Main Line
============================================================

 Composite Profile:
```

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																
"Node10"	Outlet	95.00	1445.00	1446.00	*1446.203	1.203	75.33	6.26	0.61	1446.81	0.000	1.208	0.000	0.00000	0.000	Rect.open
	"i.p."	100.05	1445.34	1446.34	*1446.539	1.203	75.33	6.26	0.61	1447.15	0.000	1.208	0.000	0.06667	1.203	Rect.open
	"i.p."	100.59	1445.37	1446.37	*1446.548	1.176	75.33	6.41	0.64	1447.19	0.000	1.208	0.000	0.06667	1.203	Rect.open
	"i.p."	101.45	1445.43	1446.43	*1446.551	1.121	75.33	6.72	0.70	1447.25	0.000	1.208	0.000	0.06667	1.203	Rect.open
	"i.p."	102.24	1445.48	1446.48	*1446.552	1.069	75.33	7.05	0.77	1447.32	0.000	1.208	0.000	0.06667	1.203	Rect.open
	"i.p."	102.98	1445.53	1446.53	*1446.551	1.019	75.33	7.39	0.85	1447.40	0.000	1.208	0.000	0.06667	1.203	Rect.open
	"i.p."	103.68	1445.58	1446.58	1446.551	0.972	75.33	7.75	0.93	1447.48	0.000	1.208	0.000	0.06667	1.203	Rect.open
	"i.p."	104.34	1445.62	1446.62	1446.550	0.927	75.33	8.13	1.03	1447.58	0.000	1.208	0.000	0.06667	1.203	Rect.open
	"i.p."	104.97	1445.66	1446.66	1446.548	0.884	75.33	8.53	1.13	1447.68	0.000	1.208	0.000	0.06667	1.203	Rect.open
	"i.p."	105.56	1445.70	1446.70	1446.547	0.842	75.33	8.94	1.24	1447.79	0.000	1.208	0.000	0.06667	1.203	Rect.open
	"i.p."	106.13	1445.74	1446.74	1446.545	0.803	75.33	9.38	1.37	1447.91	0.000	1.208	0.000	0.06667	1.203	Rect.open
	"i.p."	106.66	1445.78	1446.78	1446.543	0.766	75.33	9.84	1.50	1448.05	0.000	1.208	0.000	0.06667	1.203	Rect.open
	"i.p."	107.16	1445.81	1446.81	1446.541	0.730	75.33	10.32	1.65	1448.19	0.000	1.208	0.000	0.06667	1.203	Rect.open
	"i.p."	107.64	1445.84	1446.84	1446.539	0.696	75.33	10.82	1.82	1448.36	0.000	1.208	0.000	0.06667	1.203	Rect.open
	"i.p."	108.09	1445.87	1446.87	1446.536	0.664	75.33	11.35	2.00	1448.54	0.000	1.208	0.000	0.06667	1.203	Rect.open
	"i.p."	108.51	1445.90	1446.90	1446.534	0.633	75.33	11.90	2.20	1448.73	0.000	1.208	0.000	0.06667	1.203	Rect.open
	"i.p."	108.92	1445.93	1446.93	1446.531	0.603	75.33	12.48	2.42	1448.95	0.000	1.208	0.000	0.06667	1.203	Rect.open
	"i.p."	109.30	1445.95	1446.95	1446.529	0.575	75.33	13.09	2.66	1449.19	0.000	1.208	0.000	0.06667	1.203	Rect.open
	"i.p."	109.66	1445.98	1446.98	1446.526	0.549	75.33	13.73	2.93	1449.45	0.000	1.208	0.000	0.06667	1.203	Rect.open
"RIP-RAP"	Reach	110.00	1446.00	1446.50	*1446.523	0.523	75.33	14.40	3.22	1449.74	0.000	1.208	0.000	0.06667	1.203	Rect.open
"CUVERT"	Transition	120.00	1446.20	1453.00	1447.203	1.003	75.33	13.87	2.99	1450.19	0.000	1.160	0.000	0.02000	0.000	Trapez.open
"Link7"	Transition	174.00	1447.00	1451.50	1449.715	2.715	75.33	9.41	1.37	1451.09	0.000	2.716	1.001	0.01481	0.000	Pipe
"INLET"	Headwrk	174.00	1447.00	1451.50	1449.716	2.716	75.33	9.40	1.37	1451.09	0.000	2.716	0.000	0.00000	0.000	Pipe

```
 *) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
    i.p. = intermediate point processing results for reaches
```

SECTION 8
HEC-RAS DISCHARGE CALCULATION FOR EXISTING AND PROPOSED @ PROPERTY LINE


N 01°16'03" W
1349.88' (M
APN: 2826020013
1288.13' (M)
APN: 2826020010
N 87°59'58" E
APN: 2826020012
APN: 2826119900
N 01°16'12" W
GRAPHIC SCALE
SCALE : 1"=40'
42
BASIN
44
OPEN SPACE
13.94 AC
43
WATER QUALITY BASIN
"A" STREET
"C" STREET
MAGNOLIA LANE
MAGNOLIA
MAGNOLIA LANE
L= 298lf
22
23
24
25
26
27
28
29
30
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1
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3
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7
8
21

HEC-RAS_OUTPUT DATA FOR EXISTING AND PROPOSED

HEC-RAS Plan: Canyon2 River: Cnayon2 Reach: Alignment - (2) Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Alignment - (2)	950	PF 1	194.00	1455.87	1457.01	1457.01	1457.47	0.018847	5.39	35.97	40.15	1.00
Alignment - (2)	900	PF 1	194.00	1449.97	1452.37	1452.37	1453.07	0.017117	6.68	29.04	21.23	1.01
Alignment - (2)	850	PF 1	194.00	1446.00	1447.61	1447.61	1447.95	0.019672	4.73	40.98	57.69	0.99
Alignment - (2)	800	PF 1	194.00	1443.93	1445.91	1445.91	1446.43	0.017732	5.78	33.57	32.09	1.00
Alignment - (2)	750	PF 1	194.00	1441.12	1442.82	1442.82	1443.27	0.020052	5.33	36.37	42.74	1.02
Alignment - (2)	700	PF 1	194.00	1436.00	1438.27	1438.27	1438.84	0.019113	6.09	31.83	28.53	1.02
Alignment - (2)	650	PF 1	194.00	1433.28	1434.32	1434.32	1434.69	0.020306	4.86	39.92	55.36	1.01
Alignment - (2)	600	PF 1	194.00	1430.89	1431.99	1431.99	1432.34	0.020689	4.72	41.12	60.47	1.01
Alignment - (2)	550	PF 1	194.00	1428.72	1429.81	1429.81	1430.17	0.020522	4.79	40.46	57.73	1.01
Alignment - (2)	500	PF 1	194.00	1427.48	1428.59	1428.59	1428.97	0.020125	4.94	39.27	52.67	1.01
Alignment - (2)	450	PF 1	194.00	1423.44	1425.37		1425.40	0.001223	1.52	127.35	122.47	0.26
Alignment - (2)	400	PF 1	194.00	1423.82	1424.81	1424.81	1425.21	0.019741	5.05	38.43	49.26	1.01
Alignment - (2)	350	PF 1	194.00	1421.99	1423.38	1423.38	1423.80	0.019459	5.23	37.10	44.59	1.01
Alignment - (2)	300	PF 1	194.00	1420.13	1421.71	1421.71	1422.16	0.019261	5.38	36.04	41.14	1.01
Alignment - (2)	250	PF 1	194.00	1418.00	1419.64	1419.52	1419.98	0.013421	4.67	41.51	44.68	0.85
Alignment - (2)	200	PF 1	194.00	1417.90	1418.79	1418.79	1419.17	0.019915	4.92	39.40	52.78	1.00
Alignment - (2)	150	PF 1	194.00	1416.01	1417.38	1417.38	1417.80	0.019144	5.22	37.18	44.30	1.00

HEC-RAS Plan: Canyon2 River: Cnayon2 Reach: Alignment - (2) Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Alignment - (2)	950	PF 1	163.00	1455.87	1456.91	1456.91	1457.32	0.019698	5.14	31.69	39.28	1.01
Alignment - (2)	900	PF 1	163.00	1449.97	1452.17	1452.17	1452.83	0.017205	6.55	24.88	18.75	1.00
Alignment - (2)	850	PF 1	163.00	1446.00	1447.45	1447.45	1447.83	0.018399	4.95	32.96	41.30	0.98
Alignment - (2)	800	PF 1	163.00	1443.93	1445.76	1445.76	1446.26	0.018747	5.65	28.83	29.68	1.01
Alignment - (2)	750	PF 1	163.00	1441.12	1442.72	1442.72	1443.12	0.020692	5.09	32.00	41.30	1.02
Alignment - (2)	700	PF 1	163.00	1436.00	1438.12	1438.12	1438.66	0.019588	5.86	27.80	26.94	1.02
Alignment - (2)	650	PF 1	163.00	1433.28	1434.24	1434.24	1434.57	0.021041	4.61	35.36	54.52	1.01
Alignment - (2)	600	PF 1	163.00	1430.89	1431.90	1431.90	1432.22	0.021322	4.57	35.66	56.25	1.01
Alignment - (2)	550	PF 1	163.00	1428.72	1429.72	1429.72	1430.05	0.020832	4.58	35.59	55.03	1.00
Alignment - (2)	500	PF 1	163.00	1427.48	1428.51	1428.51	1428.85	0.020433	4.69	34.78	51.07	1.00
Alignment - (2)	450	PF 1	163.00	1423.44	1425.24		1425.27	0.001218	1.46	111.89	114.68	0.26
Alignment - (2)	400	PF 1	163.00	1423.82	1424.72	1424.72	1425.08	0.020341	4.81	33.89	47.77	1.01
Alignment - (2)	350	PF 1	163.00	1421.99	1423.27	1423.27	1423.66	0.019784	5.03	32.40	41.78	1.01
Alignment - (2)	300	PF 1	163.00	1420.13	1421.59	1421.59	1422.01	0.019614	5.17	31.52	38.73	1.01
Alignment - (2)	250	PF 1	163.00	1418.00	1419.55		1419.84	0.012512	4.35	37.49	42.67	0.82
Alignment - (2)	200	PF 1	163.00	1417.90	1418.70	1418.70	1419.04	0.020686	4.69	34.76	51.54	1.01
Alignment - (2)	150	PF 1	163.00	1416.01	1417.27	1417.27	1417.66	0.019895	5.03	32.40	41.97	1.01

SECTION 9

CDS INSTALLATION, INSPECTION AND MAINTENANCE PROCEDURES

Storm Water Treatment Device Access and Maintenance Plan

- Inspect CDS unit for standing water and excess sentiment, semi annually (see attached manual for inspection procedure)

- Maintain CDS unit prior to every rain season and after major storm events (see attached manual for inspection procedure)

CONTECH®
ENGINEERED SOLUTIONS

CDS Guide
Operation, Design, Performance and Maintenance



CDS®

Using patented continuous deflective separation technology, the CDS system screens, separates and traps debris, sediment, and oil and grease from stormwater runoff. The indirect screening capability of the system allows for 100% removal of floatables and neutrally buoyant material without blinding. Flow and screening controls physically separate captured solids, and minimize the re-suspension and release of previously trapped pollutants. Inline units can treat up to 6 cfs, and internally bypass flows in excess of 50 cfs (1416 L/s). Available precast or cast-in-place, offline units can treat flows from 1 to 300 cfs (28.3 to 8495 L/s). The pollutant removal capacity of the CDS system has been proven in lab and field testing.

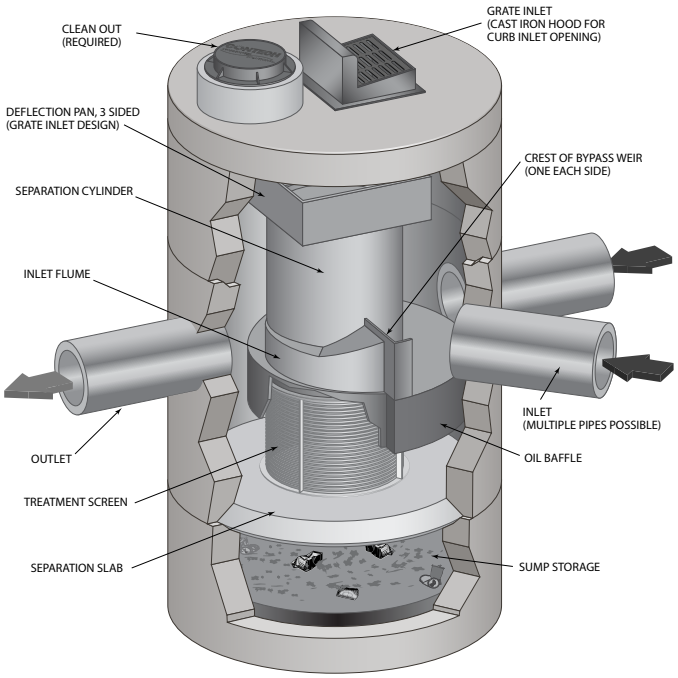
Operation Overview

Stormwater enters the diversion chamber where the diversion weir guides the flow into the unit's separation chamber and pollutants are removed from the flow. All flows up to the system's treatment design capacity enter the separation chamber and are treated.

Swirl concentration and screen deflection force floatables and solids to the center of the separation chamber where 100% of floatables and neutrally buoyant debris larger than the screen apertures are trapped.

Stormwater then moves through the separation screen, under the oil baffle and exits the system. The separation screen remains clog free due to continuous deflection.

During the flow events exceeding the treatment design capacity, the diversion weir bypasses excessive flows around the separation chamber, so captured pollutants are retained in the separation cylinder.



Design Basics

There are three primary methods of sizing a CDS system. The Water Quality Flow Rate Method determines which model size provides the desired removal efficiency at a given flow rate for a defined particle size. The Rational Rainfall Method™ or the and Probabilistic Method is used when a specific removal efficiency of the net annual sediment load is required.

Typically in the Unites States, CDS systems are designed to achieve an 80% annual solids load reduction based on lab generated performance curves for a gradation with an average particle size (d50) of 125 microns (μm). For some regulatory environments, CDS systems can also be designed to achieve an 80% annual solids load reduction based on an average particle size (d50) of 75 microns (μm) or 50 microns (μm).

Water Quality Flow Rate Method

In some cases, regulations require that a specific treatment rate, often referred to as the water quality design flow (WQQ), be treated. This WQQ represents the peak flow rate from either an event with a specific recurrence interval, e.g. the six-month storm, or a water quality depth, e.g. 1/2-inch (13 mm) of rainfall.

The CDS is designed to treat all flows up to the WQQ. At influent rates higher than the WQQ, the diversion weir will direct most flow exceeding the WQQ around the separation chamber. This allows removal efficiency to remain relatively constant in the separation chamber and eliminates the risk of washout during bypass flows regardless of influent flow rates.

Treatment flow rates are defined as the rate at which the CDS will remove a specific gradation of sediment at a specific removal efficiency. Therefore the treatment flow rate is variable, based on the gradation and removal efficiency specified by the design engineer.

Rational Rainfall Method™

Differences in local climate, topography and scale make every site hydraulically unique. It is important to take these factors into consideration when estimating the long-term performance of any stormwater treatment system. The Rational Rainfall Method combines site-specific information with laboratory generated performance data, and local historical precipitation records to estimate removal efficiencies as accurately as possible.

Short duration rain gauge records from across the United States and Canada were analyzed to determine the percent of the total annual rainfall that fell at a range of intensities. US stations' depths were totaled every 15 minutes, or hourly, and recorded in 0.01-inch increments. Depths were recorded hourly with 1-mm resolution at Canadian stations. One trend was consistent at all sites; the vast majority of precipitation fell at low intensities and high intensity storms contributed relatively little to the total annual depth.

These intensities, along with the total drainage area and runoff coefficient for each specific site, are translated into flow rates using the Rational Rainfall Method. Since most sites are relatively small and highly impervious, the Rational Rainfall Method is appropriate. Based on the runoff flow rates calculated for each intensity, operating rates within a proposed CDS system are

determined. Performance efficiency curve determined from full scale laboratory tests on defined sediment PSDs is applied to calculate solids removal efficiency. The relative removal efficiency at each operating rate is added to produce a net annual pollutant removal efficiency estimate.

Probabilistic Rational Method

The Probabilistic Rational Method is a sizing program Contech developed to estimate a net annual sediment load reduction for a particular CDS model based on site size, site runoff coefficient, regional rainfall intensity distribution, and anticipated pollutant characteristics.

The Probabilistic Method is an extension of the Rational Method used to estimate peak discharge rates generated by storm events of varying statistical return frequencies (e.g. 2-year storm event). Under the Rational Method, an adjustment factor is used to adjust the runoff coefficient estimated for the 10-year event, correlating a known hydrologic parameter with the target storm event. The rainfall intensities vary depending on the return frequency of the storm event under consideration. In general, these two frequency dependent parameters (rainfall intensity and runoff coefficient) increase as the return frequency increases while the drainage area remains constant.

These intensities, along with the total drainage area and runoff coefficient for each specific site, are translated into flow rates using the Rational Method. Since most sites are relatively small and highly impervious, the Rational Method is appropriate. Based on the runoff flow rates calculated for each intensity, operating rates within a proposed CDS are determined. Performance efficiency curve on defined sediment PSDs is applied to calculate solids removal efficiency. The relative removal efficiency at each operating rate is added to produce a net annual pollutant removal efficiency estimate.

Treatment Flow Rate

The inlet throat area is sized to ensure that the WQQ passes through the separation chamber at a water surface elevation equal to the crest of the diversion weir. The diversion weir bypasses excessive flows around the separation chamber, thus preventing re-suspension or re-entrainment of previously captured particles.

Hydraulic Capacity

The hydraulic capacity of a CDS system is determined by the length and height of the diversion weir and by the maximum allowable head in the system. Typical configurations allow hydraulic capacities of up to ten times the treatment flow rate. The crest of the diversion weir may be lowered and the inlet throat may be widened to increase the capacity of the system at a given water surface elevation. The unit is designed to meet project specific hydraulic requirements.

Performance

Full-Scale Laboratory Test Results

A full-scale CDS system (Model CDS2020-5B) was tested at the facility of University of Florida, Gainesville, FL. This CDS unit was evaluated under controlled laboratory conditions of influent flow rate and addition of sediment.

Two different gradations of silica sand material (UF Sediment & OK-110) were used in the CDS performance evaluation. The particle size distributions (PSDs) of the test materials were analyzed using standard method "Gradation ASTM D-422 "Standard Test Method for Particle-Size Analysis of Soils" by a certified laboratory.

UF Sediment is a mixture of three different products produced by the U.S. Silica Company: "Sil-Co-Sil 106", "#1 DRY" and "20/40 Oil Frac". Particle size distribution analysis shows that the UF Sediment has a very fine gradation (d50 = 20 to 30 μm) covering a wide size range (Coefficient of Uniformity, C averaged at 10.6). In comparison with the hypothetical TSS gradation specified in the NJDEP (New Jersey Department of Environmental Protection) and NJCAT (New Jersey Corporation for Advanced Technology) protocol for lab testing, the UF Sediment covers a similar range of particle size but with a finer d50 (d50 for NJDEP is approximately 50 μm) (NJDEP, 2003).

The OK-110 silica sand is a commercial product of U.S. Silica Sand. The particle size distribution analysis of this material, also included in Figure 1, shows that 99.9% of the OK-110 sand is finer than 250 microns, with a mean particle size (d50) of 106 microns. The PSDs for the test material are shown in Figure 1.

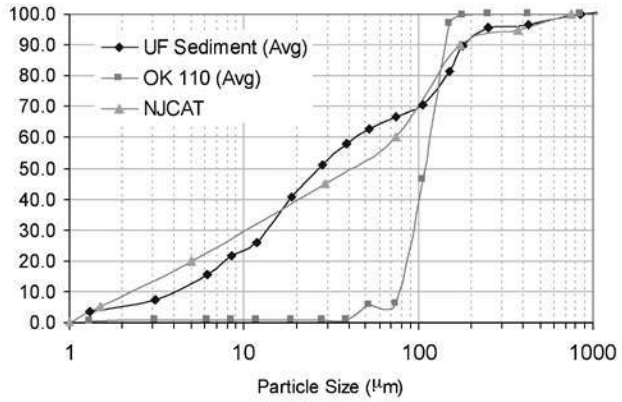


Figure 1. Particle size distributions

Tests were conducted to quantify the performance of a specific CDS unit (1.1 cfs (31.3-L/s) design capacity) at various flow rates, ranging from 1% up to 125% of the treatment design capacity of the unit, using the 2400 micron screen. All tests were conducted with controlled influent concentrations of approximately 200 mg/L. Effluent samples were taken at equal time intervals across the entire duration of each test run. These samples were then processed with a Dekaport Cone sample splitter to obtain representative sub-samples for Suspended Sediment Concentration (SSC) testing using ASTM D3977-97 "Standard Test Methods for Determining Sediment Concentration in Water Samples", and particle size distribution analysis.

Results and Modeling

Based on the data from the University of Florida, a performance model was developed for the CDS system. A regression analysis was used to develop a fitting curve representative of the scattered data points at various design flow rates. This model, which demonstrated good agreement with the laboratory data, can then be used to predict CDS system performance with respect

to SSC removal for any particle size gradation, assuming the particles are inorganic sandy-silt. Figure 2 shows CDS predictive performance for two typical particle size gradations (NJCAT gradation and OK-110 sand) as a function of operating rate.

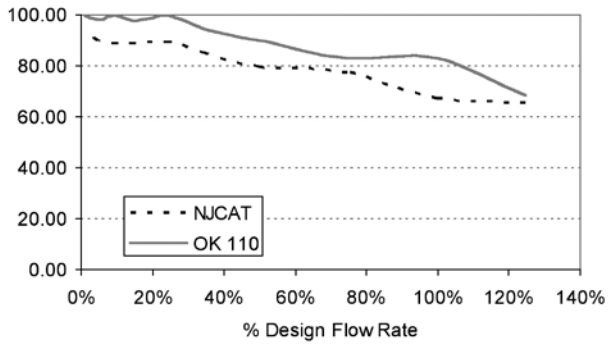


Figure 2. CDS stormwater treatment predictive performance for various particle gradations as a function of operating rate.

Many regulatory jurisdictions set a performance standard for hydrodynamic devices by stating that the devices shall be capable of achieving an 80% removal efficiency for particles having a mean particle size (d50) of 125 microns (e.g. Washington State Department of Ecology — WASDOE - 2008). The model can be used to calculate the expected performance of such a PSD (shown in Figure 3). The model indicates (Figure 4) that the CDS system with 2400 micron screen achieves approximately 80% removal at the design (100%) flow rate, for this particle size distribution (d50 = 125 μm).

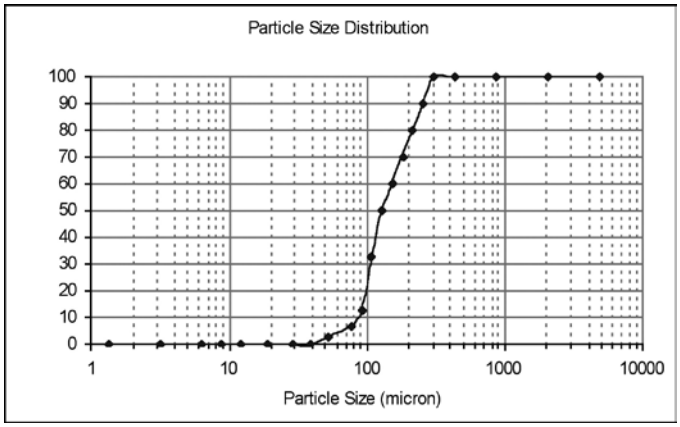


Figure 3. WASDOE PSD

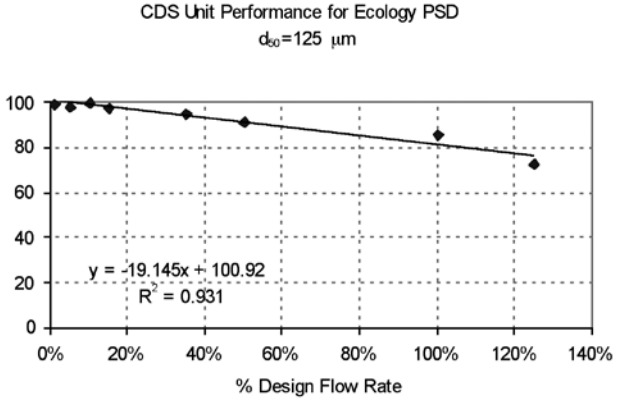


Figure 4. Modeled performance for WASDOE PSD.

Maintenance

The CDS system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend more heavily on site activities than the size of the unit. For example, unstable soils or heavy winter sanding will cause the grit chamber to fill more quickly but regular sweeping of paved surfaces will slow accumulation.

Inspection

Inspection is the key to effective maintenance and is easily performed. Pollutant transport and deposition may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (e.g. spring and fall) however more frequent inspections may be necessary in climates where winter sanding operations may lead to rapid accumulations, or in equipment washdown areas. Installations should also be inspected more frequently where excessive amounts of trash are expected.

The visual inspection should ascertain that the system components are in working order and that there are no blockages or obstructions in the inlet and separation screen. The inspection should also quantify the accumulation of hydrocarbons, trash, and sediment in the system. Measuring pollutant accumulation can be done with a calibrated dipstick, tape measure or other measuring instrument. If absorbent material is used for enhanced removal of hydrocarbons, the level of discoloration of the sorbent material should also be identified



during inspection. It is useful and often required as part of an operating permit to keep a record of each inspection. A simple form for doing so is provided.

Access to the CDS unit is typically achieved through two manhole access covers. One opening allows for inspection and cleanout of the separation chamber (cylinder and screen) and isolated sump. The other allows for inspection and cleanout of sediment captured and retained outside the screen. For deep units, a single manhole access point would allows both sump cleanout and access outside the screen.

The CDS system should be cleaned when the level of sediment has reached 75% of capacity in the isolated sump or when an appreciable level of hydrocarbons and trash has accumulated. If absorbent material is used, it should be replaced when significant discoloration has occurred. Performance will not be impacted until 100% of the sump capacity is exceeded however it is recommended that the system be cleaned prior to that for easier removal of sediment. The level of sediment is easily determined by measuring from finished grade down to the top of the sediment pile. To avoid underestimating the level of sediment in the chamber, the measuring device must be lowered to the top of the sediment pile carefully. Particles at the top of the pile typically offer less resistance to the end of the rod than consolidated particles toward the bottom of the pile. Once this measurement is recorded, it should be compared to the as-built drawing for the unit to determine weather the height of the sediment pile off the bottom of the sump floor exceeds 75% of the total height of isolated sump.

Cleaning

Cleaning of a CDS systems should be done during dry weather conditions when no flow is entering the system. The use of a vacuum truck is generally the most effective and convenient method of removing pollutants from the system. Simply remove the manhole covers and insert the vacuum hose into the sump. The system should be completely drained down and the sump fully evacuated of sediment. The area outside the screen should also be cleaned out if pollutant build-up exists in this area.

In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, the system should be cleaned out immediately in the event of an oil or gasoline spill. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use absorbent pads since they are usually less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Trash and debris can be netted out to separate it from the other pollutants. The screen should be cleaned to ensure it is free of trash and debris.

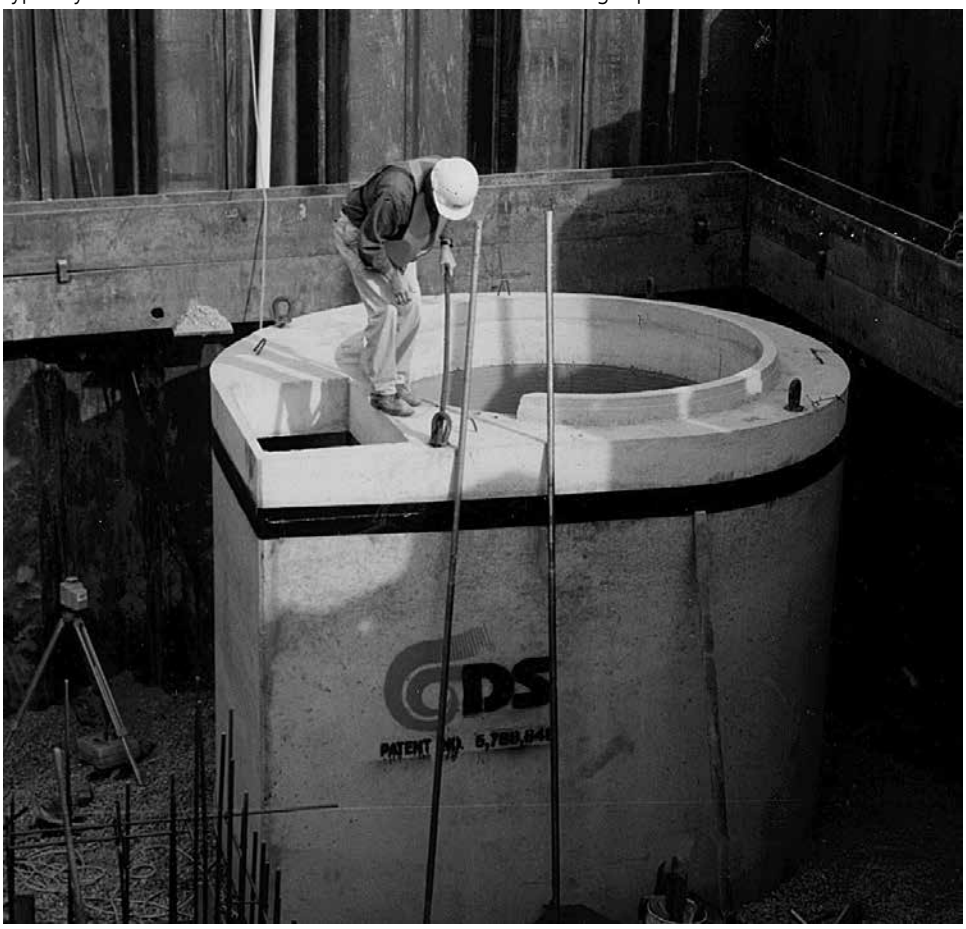
Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and also to ensure that proper safety precautions have been followed. Confined space entry procedures need to be followed if physical access is required. Disposal of all material removed from the CDS system should be done in accordance with local regulations. In many jurisdictions, disposal of the sediments may be handled in the same manner as the disposal of sediments removed from catch basins or deep sump manholes. Check your local regulations for specific requirements on disposal.



CDS Model	Diameter		Distance from Water Surface to Top of Sediment Pile		Sediment Storage Capacity	
	ft	m	ft	m	y^3	m^3
CDS1515	3	0.9	3.0	0.9	0.5	0.4
CDS2015	4	1.2	3.0	0.9	0.9	0.7
CDS2015	5	1.5	3.0	0.9	1.3	1.0
CDS2020	5	1.5	3.5	1.1	1.3	1.0
CDS2025	5	1.5	4.0	1.2	1.3	1.0
CDS3020	6	1.8	4.0	1.2	2.1	1.6
CDS3025	6	1.8	4.0	1.2	2.1	1.6
CDS3030	6	1.8	4.6	1.4	2.1	1.6
CDS3035	6	1.8	5.0	1.5	2.1	1.6
CDS4030	8	2.4	4.6	1.4	5.6	4.3
CDS4040	8	2.4	5.7	1.7	5.6	4.3
CDS4045	8	2.4	6.2	1.9	5.6	4.3
CDS5640	10	3.0	6.3	1.9	8.7	6.7
CDS5653	10	3.0	7.7	2.3	8.7	6.7
CDS5668	10	3.0	9.3	2.8	8.7	6.7
CDS5678	10	3.0	10.3	3.1	8.7	6.7

Table 1: CDS Maintenance Indicators and Sediment Storage Capacities

Note: To avoid underestimating the volume of sediment in the chamber, carefully lower the measuring device to the top of the sediment pile. Finer silty particles at the top of the pile may be more difficult to feel with a measuring stick. These finer particles typically offer less resistance to the end of the rod than larger particles toward the bottom of the pile.



CDS Inspection & Maintenance Log

CDS Model: _____ Location: _____

Date	Water depth to sediment[1]	Floatable Layer Thickness[2]	Describe Maintenance Performed	Maintenance Personnel	Comments

1. The water depth to sediment is determined by taking two measurements with a stadia rod: one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. If the difference between these measurements is less than the values listed in table 1 the system should be cleaned out. **Note: to avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile**.

2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.

SUPPORT

- Drawings and specifications are available at www.ContechES.com.
- Site-specific design support is available from our engineers.

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ENGINEERED SOLUTIONS
800-338-1122
www.ContechES.com

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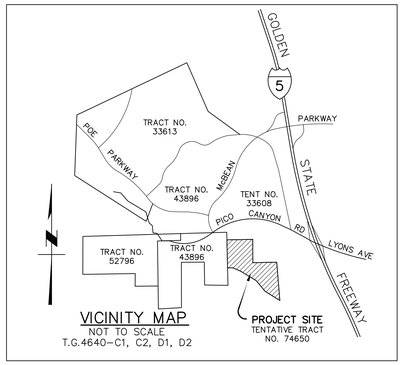
The product(s) described may be protected by one or more of the following US patents: 5,322,629; 5,624,576; 5,707,527; 5,759,415; 5,788,848; 5,985,157; 6,027,639; 6,350,374; 6,406,218; 6,641,720; 6,511,595; 6,649,048; 6,991,114; 6,998,038; 7,186,058; 7,296,692; 7,297,266; related foreign patents or other patents pending.

cds_manual 3/17 PDF

RECYCLED PAPER

MAP

VTTM 74650



EASEMENT PLOT
ORDER NO. 416240446
PROPERTY IN QUESTION

ITEM NO. 2 – INGRESS AND EGRESS
NOVEMBER 13, 1963 AS INSTRUMENT NO. 3337 O.R. TO REMAIN

ITEM NO. 3 – ROAD
MARCH 13, 1963 AS INSTRUMENT NO. 2385 O.R. TO BE ABANDONED

ITEM NO. 5 – DITCHES AND CANALS – UNLOCATABLE
BOOK 2896 PAGE 85 O.R.

ITEM NO. 7 – ROADWAYS – UNLOCATABLE
BOOK D3630 PAGE 466 O.R.

ITEM NO. 8 – INGRESS, EGRESS AND UTILITIES – UNLOCATABLE
APRIL 4, 1978 AS INSTRUMENT NO. 78-352178 AND
FEBRUARY 27, 1979 AS INSTRUMENT NO. 79-227247, BOTH OF O.R.

ITEM NO. 12 – WATER PIPE LINE
JULY 30, 1997 AS INSTRUMENT NO. 97-1153697 O.R. TO REMAIN

ITEM NO. 14 – INGRESS, EGRESS, UTILITIES AND COMMUNICATION FACILITIES – UNLOCATABLE
APRIL 8, 2008 AS INSTRUMENT NO. 2008-605413 O.R.

BENCHMARK L3026

RDBM TAG IN S CB 26' W/O BCR @ SW COR LYONS AVE & WILEY CYN RD 100' W & 40' S/O C/L INT (NR W END CB)

NEWHALL 2009 ELEV.=1265.354 (FEET)
ELE.= 385.681 (M)

LEGAL DESCRIPTION:

SEE SHEET 2 OF 2 FOR FULL LEGAL DESCRIPTION

RECORD OWNER:

PI PROPERTIES NO. 36 LLC
C/O POSITIVE INVESTMENTS, INC
610 N. SANTA ANITA AVE
ARCADIA, CA 91006

SUBDIVIDER:

PICO CANYON., LLC
1435 REYNOLDS CT.
THOUSAND OAKS, CA 91362
805-373-2860

PROJECT LOCATION:

MAGNOLIA LN & AUTUMN PL
SANTA CLARITA, CA 91381
THOMAS GUIDE PAGE NO. 4640-C-2
APN: 2826-020-012, 013 & 061

ENGINEER:

CIVIL DESIGN AND DRAFTING, INC.
IMAD ABOUJAWDAH
885 PATRIOT DR., UNIT C
MOORPARK, CA 93021
805-522-2622

NOTE:

OPEN SPACE AREAS TO BE DESIGNATED AS RESTRICTED USE AREAS ON THE FINAL MAP.

ALL EASEMENTS MARKED TO BE ABANDONED WILL TAKE EFFECT AT MAP RECORDATION.

LAND USE SUMMARY:

	ACRES	%	LOTS
SINGLE FAMILY	11.09	11.75	37
OPEN SPACE LOTS	74.79	79.24	2
OPEN SPACE PUBLIC FACILITY	2.85	3.02	5
OPEN SPACE HOA FACILITY	1.78	1.89	1
LESS:WATER TANK	-0.66	-0.7	
TOTAL OPEN SPACE	**78.76**	**83.45**	
PUBLIC STREETS	3.87	4.10	--
TOTAL	**94.38**	**100%**	--

CURVE DATA

CURVE	DELTA	RADIUS	LENGTH	TANGENT
C1	94°05'16"	350.00'	574.75'	375.91'
C2	15°59'08"	680.00'	189.72'	95.48'
C3	26°13'25"	400.00'	183.08'	93.17'
C4	32°09'11"	620.00'	347.93'	178.68'
C5	65°40'18"	281.00'	322.08'	181.34'
C6	28°40'19"	378.72'	189.52'	96.79'

NOTE:

WE HEREBY DEDICATE TO THE COUNTY OF LOS ANGELES A MULTI-USE(EQUESTRIAN BICYCLING, AND HIKING) OVERLAY TRAIL EASEMENT ACROSS OPEN SPACE LOT #44 AND #45 FOR FUTURE ALIGNMENTS OF THE PICO CANYON REGIONAL TRAIL.

UTILITIES & SERVICES:

SEWER	L.A. COUNTY SANITATION DISTRICT #32
WATER	SANTA CLARITA VALLEY WATER AGENCY (SCEWA)
GAS	SO. CALIFORNIA GAS CO.
ELECTRICAL	SO. CALIFORNIA EDISON CO.
TELEPHONE	PACIFIC TELEPHONE CO.
SCHOOLS	NEWHALL ELEMENTARY SCHOOL DISTRICT, HART HIGH SCHOOL DISTRICT
FIRE	L.A. COUNTY FIRE DEPARTMENT
POLICE	L.A. COUNTY SHERIFF'S DEPARTMENT
CABLE T.V.	STEVENSON RANCH CABLE

GENERAL NOTES:

- EXISTING AND PROPOSED ZONING A-2-2
- SANTA CLARITA GENERAL PLAN RL2
- ASSESSORS PARCEL NUMBERS: 2826-020-012, 2826-020-013, & 2826-020-061
- THOMAS BROS PAGE: 4640 GRID C2
- THIS PROJECT IS A DENSITY CONTROLLED DEVELOPMENT UNDER SECTION 22.56.205 OF TITLE 22 L.A. COUNTY ZONING CODE.

SITE DATA:

- SITE IS VACANT.
- GROSS ACREAGE=94.38 ACRES
- AVERAGE RESIDENTIAL LOT SIZE: 2.4 ACRES (DENSITY CONTROLLED DEVELOPMENT SECTION 22.56.205)
- TOTAL RESIDENTIAL LOTS: 37 (LOTS 1 THRU 37)
- OPEN SPACE & PUBLIC FACILITY LOTS 38 THRU 42, 44, AND 45.
- HOA FACILITY LOT: 43
- TOTAL: 45 LOTS
- MAXIMUM SLOPE GRADE: 2 FT HORIZONTAL TO 1 FT VERTICAL IN THE CUT SLOPE AND 2 FT HORIZONTAL TO 1FT VERTICAL IN FILL SLOPE
- OAK TREES TO REMOVED =1
- GRADING PROPOSED: RAW CUT=375,000 CUBIC YARDS
  RAW FILL=375,000 CUBIC YARDS
  OVER-EXCAVATION=73,000 CUBIC YARDS

CIRCULATION:

- ALL STREETS TO BE PUBLIC RIGHTS-OF-WAY.
- HOME OWNERS ASSOCIATION TO BE ESTABLISHED TO MAINTAIN ANY COMMON OPEN SPACE LOTS CREATED.
- DEVELOPER REQUESTS THE RIGHT TO ADJUST LOT LINES TO THE SATISFACTION OF THE COUNTY OF LOS ANGELES.
- REQUEST RIGHT TO CREATE ADDITIONAL OPEN SPACE LOTS PRIOR TO RECORDATION OF FINAL MAP(S).
- RIGHT OF WAY RETURN RADII OF 13 FEET AT ALL LOCAL STREET INTERSECTIONS.
- CUL-DE-SAC DESIGN PER L.A.C.O. STD. PLATE 12-01, 2-04
- OPEN SPACE AREAS TO BE DESIGNATED AS BUILDING RESTRICTION AREAS ON THE FINAL MAP AND THE FUTURE HOA SHALL MAINTAIN SAID OPEN SPACE AREAS UPON EXECUTION OF A MAINTENANCE AGREEMENT UNLESS THE PROPERTY IS TRANSFERRED TO THE COUNTY OR A LAND CONSERVANCY.

TYPICAL SECTION 64' R/W
(MAGNOLIA LANE)
(PUBLIC STREET)
NOT TO SCALE

TYPICAL SECTION 60' R/W
("A", "B" STREET)
(PUBLIC STREET)
NOT TO SCALE

TYPICAL SECTION 58' R/W
("C" STREET)
(PUBLIC STREET)
NOT TO SCALE

LOT AREA SUMMARY:

LOT NO.	NET AREA FT^2	GROSS AREA FT^2	TYPE
1	10,355	10,355	SINGLE FAMILY DETACHED
2	10,510	10,510	SINGLE FAMILY DETACHED
3	10,365	10,164	SINGLE FAMILY DETACHED
4	10,301	10,301	SINGLE FAMILY DETACHED
5	8,945	10,042	SINGLE FAMILY DETACHED
6	10,337	10,337	SINGLE FAMILY DETACHED
7	9,941	11,090	SINGLE FAMILY DETACHED
8	9,634	10,805	SINGLE FAMILY DETACHED
9	12,435	12,435	SINGLE FAMILY DETACHED
10	13,142	13,142	SINGLE FAMILY DETACHED
11	11,608	11,608	SINGLE FAMILY DETACHED
12	11,178	12,248	SINGLE FAMILY DETACHED
13	12,036	12,036	SINGLE FAMILY DETACHED
14	12,498	12,498	SINGLE FAMILY DETACHED
15	11,278	11,278	SINGLE FAMILY DETACHED
16	11,534	11,534	SINGLE FAMILY DETACHED
17	11,737	11,737	SINGLE FAMILY DETACHED
18	11,155	11,155	SINGLE FAMILY DETACHED
19	8,692	8,692	SINGLE FAMILY DETACHED
20	10,551	10,551	SINGLE FAMILY DETACHED
21	11,812	11,812	SINGLE FAMILY DETACHED
22	12,135	12,135	SINGLE FAMILY DETACHED
23	16,449	16,449	SINGLE FAMILY DETACHED
24	11,646	11,646	SINGLE FAMILY DETACHED
25	13,019	13,019	SINGLE FAMILY DETACHED
26	14,666	14,666	SINGLE FAMILY DETACHED
27	13,212	13,212	SINGLE FAMILY DETACHED
28	13,024	13,024	SINGLE FAMILY DETACHED
29	14,378	14,378	SINGLE FAMILY DETACHED
30	13,066	13,066	SINGLE FAMILY DETACHED
31	12,049	12,049	SINGLE FAMILY DETACHED
32	14,575	14,575	SINGLE FAMILY DETACHED
33	14,060	14,606	SINGLE FAMILY DETACHED
34	15,631	15,631	SINGLE FAMILY DETACHED
35	31,868	31,868	SINGLE FAMILY DETACHED
36	27,971	27,971	SINGLE FAMILY DETACHED
37	11,326	11,326	SINGLE FAMILY DETACHED
38	--	18,689	BASIN LOT
39	--	25,206	BASIN LOT
40	--	47,074	BASIN LOT
41	--	15,443	BASIN LOT
42	--	17,669	BASIN LOT
43	--	77,514	WATER QUALITY BASIN LOT
44	--	695,071	OPEN SPACE
45	--	2,562,832	OPEN SPACE
	--	168,620	PUBLIC STREET
TOTAL	615,371	4,111,330	

Plot Date: Mon, April 09, 2018

UNDERGROUND SERVICE ALERT
call TOLL FREE
1-800-422-4133
CALL TWO WORKING DAYS BEFORE YOU DIG

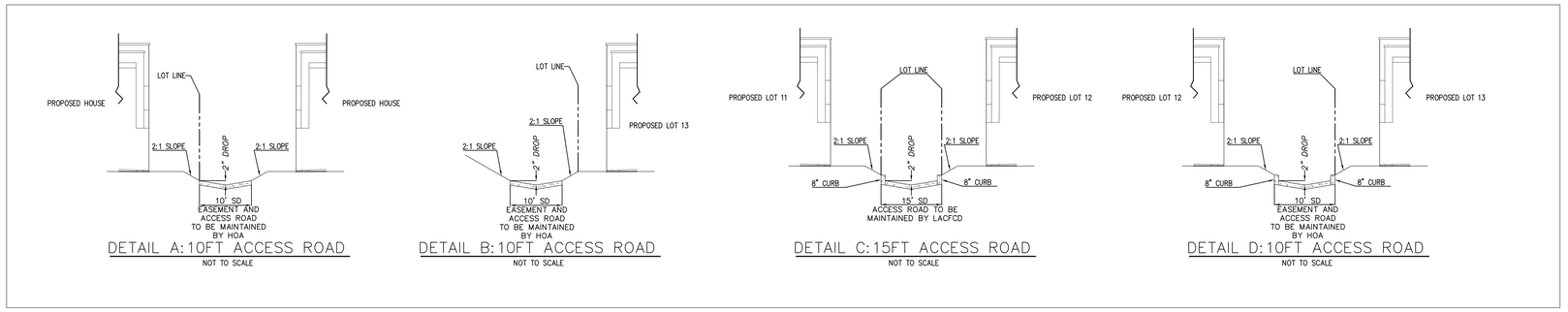
REVISION BLOCK

REV#	DESCRIPTION	APPR	DATE

PLAN CHK	CITY ENGR	APPR	DATE

PREPARED BY:
Design & Drafting Inc.
885 Patriot Drive, Unit C
Moorpark, CA 93021
Phone: 805-522-2622
Fax: 805-426-8016
email: CDD@civildesignanddrafting.com
IMAD ABOUJAWDAH R.C.E. 72799
DATE

CANYON VIEW ESTATES
MAJOR LAND DIVISION
VESTING TENTATIVE TRACT NO. 74650
LOCATED IN THE UNINCORPORATED TERRITORY OF THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA
SCALE: AS NOTED
SHEET 1 OF 2 SHTS



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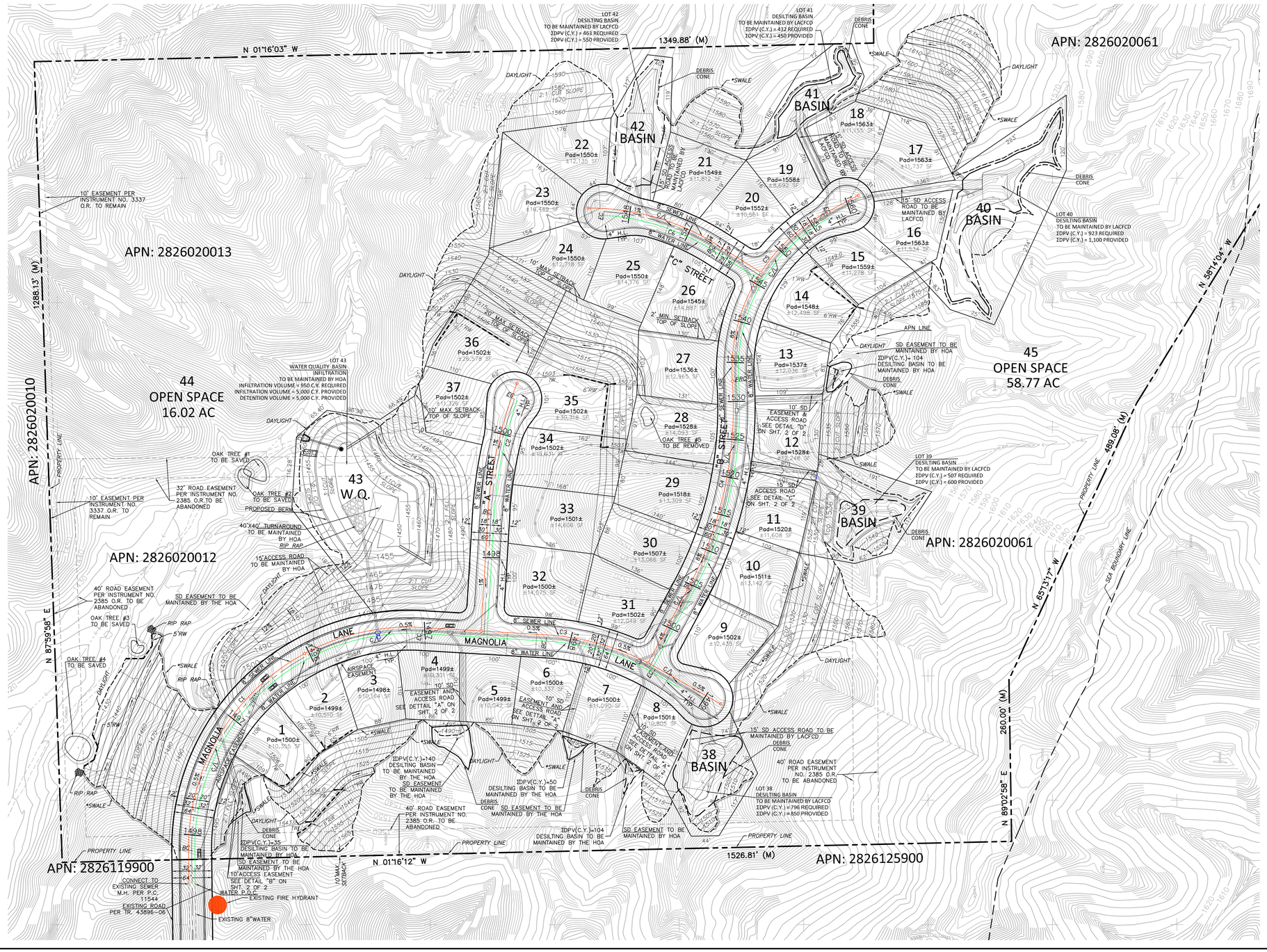
C4	32°09'11"	620.00'	347.93'	178.68'
C5	65°40'18"	281.00'	322.08'	181.34'
C6	28°40'19"	378.72'	189.52'	96.79'

NOTE:

* ALL SWALES SHOULD HAVE A MINIMUM OF 5% SLOPE FOR SELF CLEANING VELOCITY

NOTE:

WE HEREBY DEDICATE TO THE COUNTY OF LOS ANGELES A MULTI–USE(EQUESTRIAN BICYCLING, AND HIKING) OVERLAY TRAIL EASEMENT ACROSS OPEN SPACE LOT #44 AND #45 FOR FUTURE ALIGNMENTS OF THE PICO CANYON REGIONAL TRAIL.



Plot Date: Mon, April 09, 2018

LEGAL DESCRIPTION:

File No: 416240446

EXHIBIT "A"

ALL THAT CERTAIN REAL PROPERTY SITUATED IN THE COUNTY OF LOS ANGELES, STATE OF California, DESCRIBED AS FOLLOWS:

PARCEL 1:

THE WEST HALF OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF FRACTIONAL SECTION 5, TOWNSHIP 3 NORTH, RANGE 16 WEST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

EXCEPT THEREFROM ALL OIL, GAS, MINERALS AND HYDROCARBON SUBSTANCES BELOW A DEPTH OF 500 FEET BUT WITHOUT THE RIGHT OF SURFACE ENTRY TO REMOVE OR RECOVER SAME, AS RESERVED BY HESTER L. WILSON A WIDOW, AND ELSIE WILSON CASAD, A MARRIED WOMAN IN DEED RECORDED JUNE 17, 1966 AS INSTRUMENT NO. 1315

PARCEL 2:

THE EAST ONE HALF OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF FRACTIONAL SECTION 5, TOWNSHIP 3 NORTH, RANGE 16 WEST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

PARCEL 3:

THAT PORTION F THE SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 3 NORTH, RANGE 16 WEST, SAN BERNARDINO MERIDIAN IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, WHICH LIES WITHIN THE FOLLOWING DESCRIBED BOUNDARIES:

BEGINNING AT THE NORTHWESTERLY CORNER OF SAID SOUTHEAST QUARTER; THENCE ALONG THE WESTERLY LINE OF SAID SOUTHEAST QUARTER SOUTH 00° 57' 02" EAST 215.00 FEET; THENCE AT RIGHT ANGLES TO SAID WESTERLY LINE NORTH 89° 02' 58" EAST 260.00 FEET; THENCE SOUTH 65° 13' 17" EAST 489.08 FEET; THENCE SOUTH 58° 14' 04" EAST 859.43 FEET; THENCE SOUTH 38° 28' 44" EAST 713.00 FEET; THENCE SOUTH 56° 48' 53" EAST 905.37 FEET TO A POINT IN THE EASTERLY LINE OF SAID SOUTHEAST QUARTER DISTANT SOUTH 01° 29' 47" EAST 1938.44 FEET FROM THE SOUTHERLY BOUNDARY OF TRACT NO. 45308 AS PER MAP FILED IN BOOK 1222 PAGES 36 TO 45 INCLUSIVE OF MAPS, RECORDS OF SAID COUNTY; THENCE ALONG SAID EASTERLY LINE NORTH 01° 29' 47" WEST 1938.44 FEET TO THE SOUTHERLY BOUNDARY SAID SOUTHERLY BOUNDARY ALSO BEING THE NORTHERLY LINE OF SAID SOUTHEAST QUARTER; THENCE ALONG THE NORTHERLY LINE OF SAID SOUTHEAST QUARTER SOUTH 89° 38' 47" WEST 2589.06 TO THE POINT OF BEGINNING, SAID LAND IS SHOWN AS PARCEL 1 OF THAT CERTAIN CERTIFICATE OF COMPLIANCE RECORDED NOVEMBER 15, 2002 AS INSTRUMENT NO. 02-2765315 OF OFFICIAL RECORDS

EXCEPT THEREFROM AN UNDIVIDED TWO PERCENT OF ALL OIL, GAS, GOLD, SILVER, AND OTHER PRECIOUS METALS, MINERALS AND MINERAL SUBSTANCES IN AND UNDER AND THAT MAY BE PRODUCED FROM SAID LAND, TOGETHER WITH THE RIGHT OF INGRESS AND EGRESS AT ALL TIMES FOR THE PURPOSES OF MINING, DRILLING AND EXPLORING SAID LANDS FOR ANY AND ALL OIL, GAS, MINERAL AND MINERALS SUBSTANCES AND REMOVING THE SAME THEREFROM; TOGETHER WITH ALL THE DIPS, SPURS AND ANGLES AND ALSO ALL THE METALS, ORES, GOLD AND SILVERBEARING QUARTZ, ROCK AND EARTH, MINERAL AND MINERAL SUBSTANCES THEREIN AND ALL RIGHTS, PRIVILEGES AND ADVANTAGES THERETO INCIDENT, APPENDANT AND APPURTENANT OR THEREWITH USUALLY HAD AND ENJOYED AS GRANTED TO R. A. GANAHL, A SINGLE MAN IN DEED RECORDED JUNE 14, 1937 IN BOOK 15045 PAGE 173 OF OFFICIAL RECORDS

CLTA Preliminary Report Form – Modified (11-17-06)

Page 3

File No: 416240446

ALSO EXCEPT THEREFROM AN UNDIVIDED ONE PERCENT OF ALL OIL, GAS AND OTHER HYDROCARBON SUBSTANCES AND MINERAL WHICH MAY LIE, IN, ON, UNDER OR BE HEREAFTER PRODUCED, SAVED OR SOLD FROM SAID LAND WITH THE RIGHT OF INGRESS AND EGRESS THERETO AS GRANTED TO JOSEPH W. AIDLIN, IN DEED RECORDED JANUARY 16, 1940 IN BOOK 17241 PAGE 29 OF OFFICIAL RECORDS

ALSO EXCEPT THEREFROM 1/4™ OF AN UNDIVIDED PERCENT OF ALL OIL, GAS AND OTHER HYDROCARBON SUBSTANCES AND MINERALS WHICH MAY LIE, IN, ON, UNDER OR BE HEREAFTER PRODUCED, SAVED OR SOLD FROM SAID LAND WITH THE RIGHT OF INGRESS AND EGRESS THERETO AS GRANTED TO JOSEPH W. AIDLIN AND MARY AIDLIN, HUSBAND AND WIFE AS JOINT TENANTS IN DEED RECORDED APRIL 6, 1948 IN BOOK 25965 PAGE 77 OF OFFICIAL RECORDS

BY AN AGREEMENT DATED OCTOBER 1, 1959 AND RECORDED DECEMBER 31, 1959 AS INSTRUMENT NO. 4607 IN BOOK M420 PAGE 171 OF OFFICIAL RECORDS. THE HOLDERS OF THE ABOVE INTEREST WAIVED AND RELINQUISHED ANY RIGHT TO ENTER UPON THE SURFACE O/L SUBSURFACE TO A DEPTH OF 500 FEET MEASURED VERTICALLY FROM THE SURFACE OF SAID LAND FOR ANY PART THEREOF, FOR THE PURPOSE OF EXERCISING ANY OF THEIR SAID RESPECTIVE RIGHTS.

PARCEL 4:

ANY AND ALL EASEMENTS, RIGHTS AND RIGHTS OF WAY, FOR ACCESS, INSTALLATION AND MAINTENANCE OF UTILITIES OR COMMUNICATION SERVICES OF RECORD, APPURTENANT OR ATTACHED TO OR UTILIZED BY ANY OF THE AFORESAID PARCELS.

APN'S: 2826-020-032, 2826-020-033 AND 2826-020-035

CLTA Preliminary Report Form – Modified (11-17-06)

Page 4

UNDERGROUND SERVICE ALERT call TOLL FREE 1-800-422-4133

CALL TWO WORKING DAYS BEFORE YOU DIG

REVISION BLOCK						
	DATE	REVISION DESCRIPTION	PLAN CHK	CITY ENGR	APPR	DATE
1			APPR			
2						
3						
4						
5						
6						
7						
8						
9						
10						

PREPARED BY:

Design & Drafting Inc.
IMAD ABOUJAMRAH R.C.E. 72599
885 Patriot Drive, Unit C
Moorpark, CA 93021
Phone: 805-523-2832
Fax: 805-428-8016
email: CDD@eastlosangeles.com

DATE

CANYON VIEW ESTATES

MAJOR LAND DIVISION

VESTING TENTATIVE TRACT NO. 74650

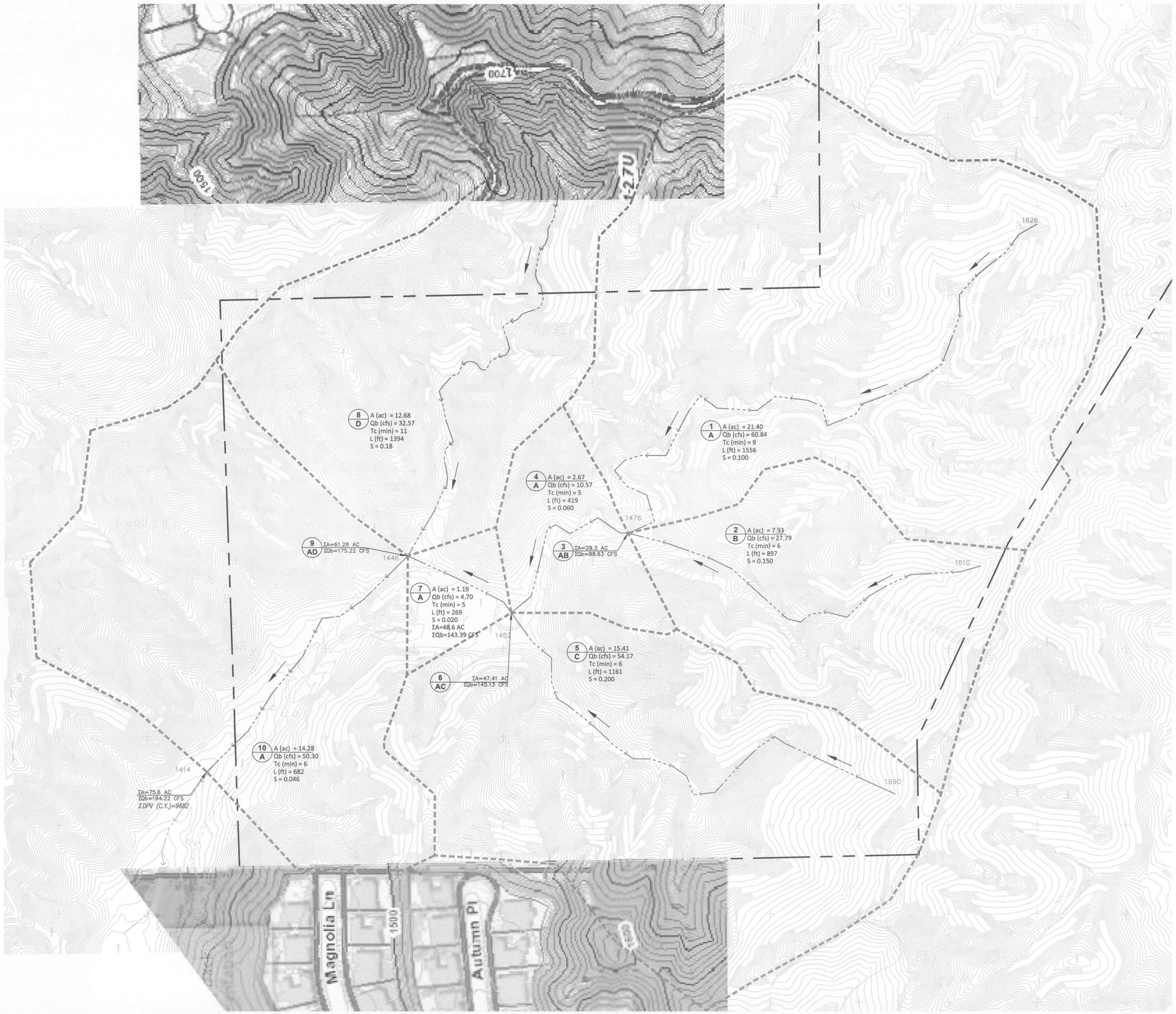
LOCATED IN THE UNINCORPORATED TERRITORY OF THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

SCALE: AS NOTED

SHEET 2 OF 2 SHTS

EXISTING HYDROLOGY MAP

TENTATIVE TRACT No. 74650
CANYON VIEW ESTATES
EXISTING HYDROLOGY MAP



80 40 0 40 80 160
GRAPHIC SCALE
SCALE : 1"=80'

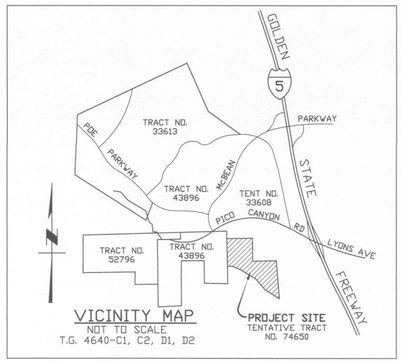
HYDROLOGY CRITERIA:

DPA ZONE = 5
BASIN NAME = SANTA CLARA
SOIL TYPE NUMBER = 097
PEAK BULKING FACTOR = 1.465 (FOR AREAS 64 AC OR UNDER)
DEBRIS PRODUCTION RATE = 128.0 CY/AC (FOR AREAS 64 AC OR UNDER)
ISOHYETS = 8.0" (50-YR, 24-HOUR)
1% IMPERVIOUSNESS FOR UNDEVELOPED/NATURAL AREAS

LEGEND:

- *TRIBUTARY SUBAREA*
- *DIRECTION OF FLOW*
- *TRACT BOUNDARY*
- *FLOW PATH*
- 14 A — *LOCATION NAMES*

Qb 50-YR, BURNED DESIGN FLOW IN CUBIC FEET PER SECOND, CFS
ΣDPV DEBRIS PRODUCTION VOLUME IN CUBIC YARDS, CY



civil Design & Drafting inc.
885 Patriot Drive, Unit C
Moorpark, CA 93021
Phone: 805-522-2622
Fax: 805-426-8016
CDD@civildesignanddrafting.com

05-02-2018
IMAD ABOUJAWDAH R.C.E. C51299 DATE

REGISTERED PROFESSIONAL ENGINEER
IMAD ABOUJAWDAH
No. 51299
Exp. 6-30-20
CIVIL
STATE OF CALIFORNIA

REV#	RECORD RCE APPR.	RECORD RCE DATE	REVISIONS DESCRIPTION	CITY PLAN CHK. APPR.	CITY ENGR. APPR.	CITY ENGR. DATE
△						

RECORD DRAWING

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RECORD ENGINEER DATE
CITY STAFF DATE
CITY ENGINEER DATE

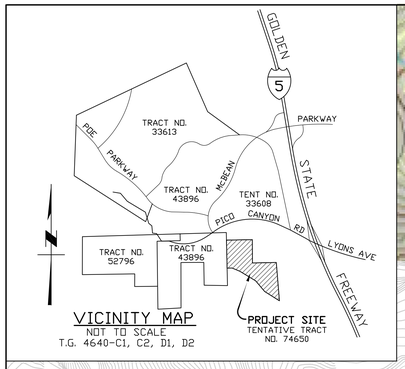
COUNTY OF LOS ANGELES
HYDROLOGY STUDY
TENTATIVE TRACT No. 74650
EXISTING CONDITIONS

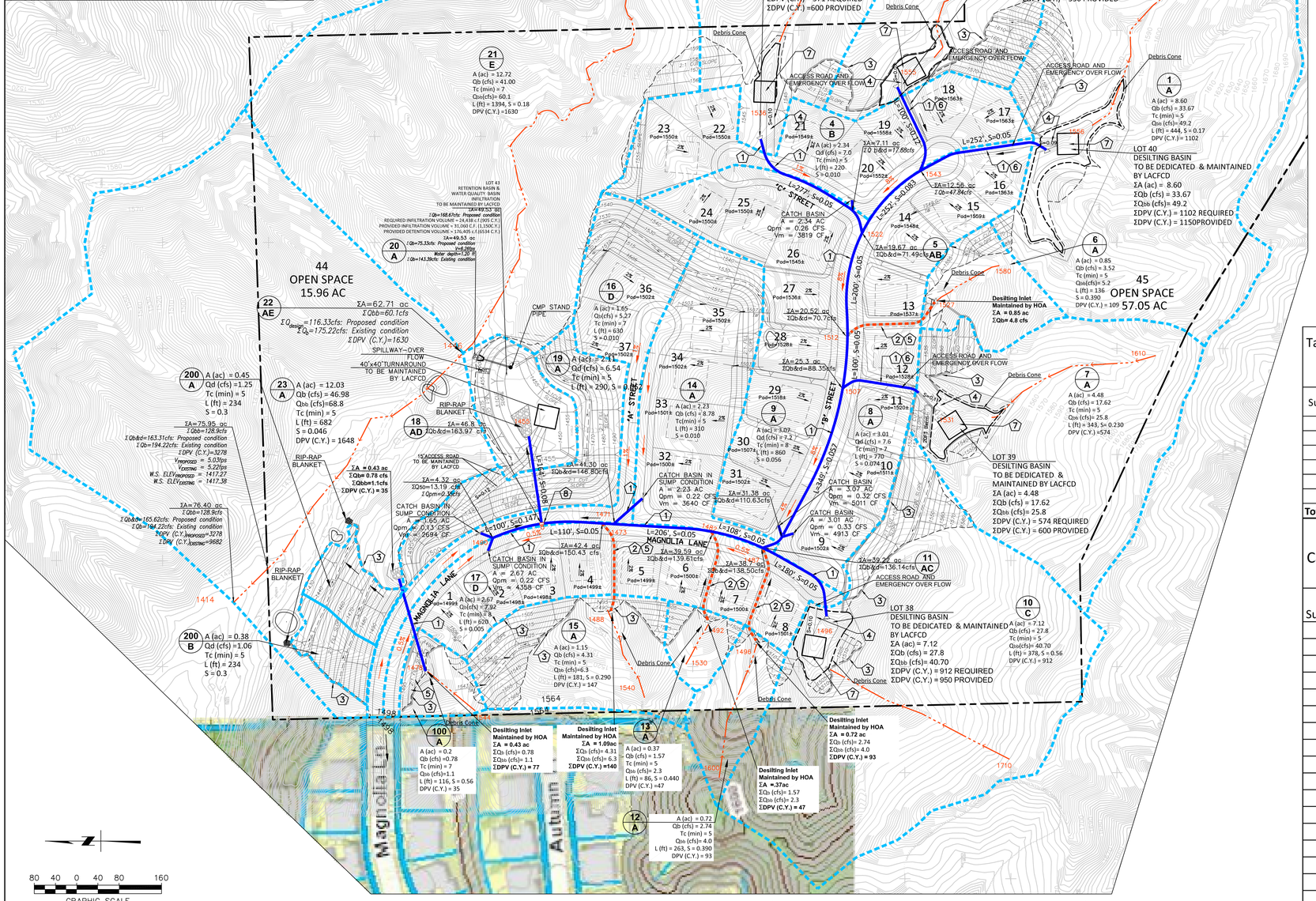
PLOT DATE: 05-02-2018

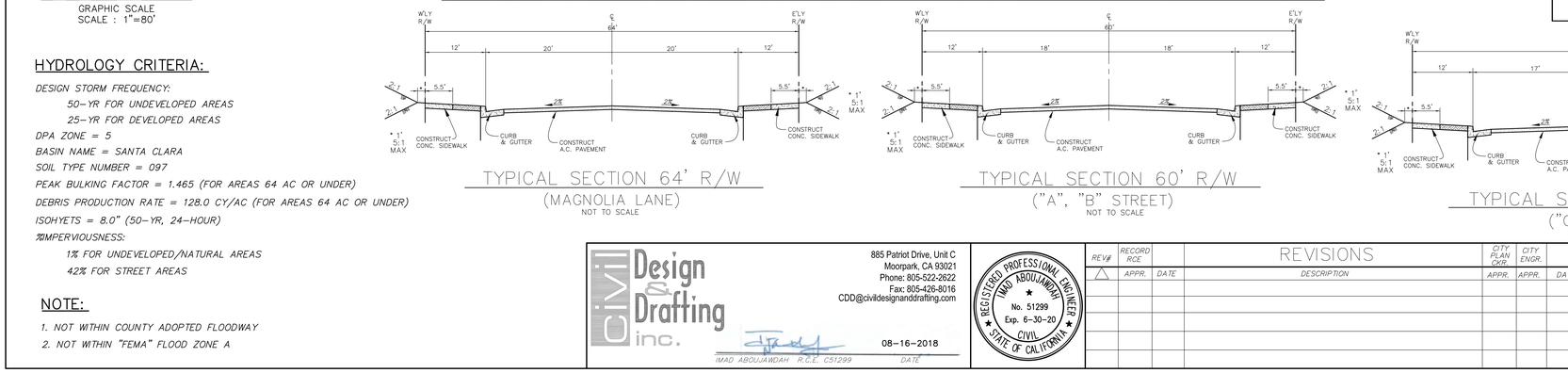
SCALE: AS SHOWN
DESIGNED:
DRAWN:
CHECKED:
SHEET NO. 1 OF 1

PROPOSED HYDROLOGY MAP

TTM No. 74650
CANYON VIEW ESTATES
PROPOSED HYDROLOGY MAP







80 40 0 40 80 160
GRAPHIC SCALE
SCALE : 1"=80'

HYDROLOGY CRITERIA:

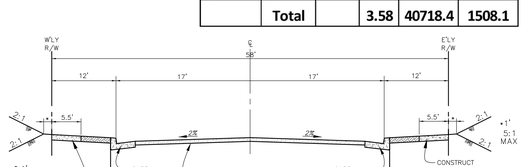
DESIGN STORM FREQUENCY:
50-YR FOR UNDEVELOPED AREAS
25-YR FOR DEVELOPED AREAS
DPA ZONE = 5
BASIN NAME = SANTA CLARA
SOIL TYPE NUMBER = 097
PEAK BULKING FACTOR = 1.465 (FOR AREAS 64 AC OR UNDER)
DEBRIS PRODUCTION RATE = 128.0 CY/AC (FOR AREAS 64 AC OR UNDER)
ISOHYETS = 8.0" (50-YR, 24-HOUR)
%IMPERVIOUSNESS:
1% FOR UNDEVELOPED/NATURAL AREAS
42% FOR STREET AREAS

NOTE:

1. NOT WITHIN COUNTY ADOPTED FLOODWAY
2. NOT WITHIN "FEMA" FLOOD ZONE A

TYPICAL SECTION 64' R/W
(MAGNOLIA LANE)
NOT TO SCALE

TYPICAL SECTION 60' R/W
("A", "B" STREET)
NOT TO SCALE



TYPICAL SECTION 58' R/W
("C" STREET)
NOT TO SCALE

DETETION/RETENTION BASIN #43
VOLUME CALCULATION

Elevation	Area(sq-ft)	Volume(cf)	TOTAL(C.F)	TOTAL(C.Y.)
1460	26410	25445	176405	**6534**
1459	24480	23540	150960	5591
1458	22600	21700	127420	4719
1457	20800	19925	105720	3916
1456	19050	18210	85795	3178
1455	17370	16560	67585	2503
1454	15750	14975	51025	1890
1453	14200	13455	36050	1335
1452	12710	11995	22595	837
1451	11280	10600	10600	393
1450	9920	0	0	

Tract No. 74650 - Discharge Volume for Existing and Proposed Condition

Proposed Volume At Sub-Area "20A"(HYDROCALC)				Existing Volume At Sub-Area "7A" (HYDROCALC)
Storm Drain Event	Total Proposed Volume @ "20A" (C.Y.)	Detention volume (C.Y.)	Total Volume Discharge @ Sub-Area "20A"(C.Y.)	Total Discharge Volume @ Sub-Area "7A"(C.Y.)
2-yrs	1,713	6,534	0	838
5-yr	4,511	6,534	0	2,608
10-yr	7,319	6,534	785	4,626
25-yr	12,505	6,534	5,971	8,686
50-yr	17,904	6,534	11,370	13,238

Total Provided Volume: 6,500 C.Y.

Tract No. 74650 - Discharge Flow Rate for Existing and Proposed Condition

Existing Condition @ Sub-Area 7A (LAR04)		Proposed Condition @ Sub-Area 20A (RETARD)	
Frequency	Flow Rate (cfs)	Frequency	Flow Rate (cfs)
2yrs	19.8	2yrs	12.76
5yrs	50.23	5yrs	44.32
10yrs	75.2	10yrs	66.72
25yrs	112.87	25yrs	91.86
50yrs	143.39	50yrs	109.99

Table 2: Table 2-Onsite LID Calcualtion Summary-85th Percentile, 24-hour Rainfall Event (Non-Burn)

Subarea	Area (Acres)	Tc (min)	Qpm (cfs)	Volume (cu.ft)	Volume (C.Y.)
4B	2.34	33	0.26	3819.8	141.5
8A	3.01	34	0.33	4913.6	182.0
9A	3.07	39	0.32	5011.5	185.6
14A	2.23	42	0.22	3640.3	134.8
16D	1.65	65	0.13	2693.6	99.8
17D	2.67	65	0.22	4358.7	161.4
Total		**14.97**	**1.48**	**24437.5**	**905.1**

Table 4: Onsite and Offsite LID Calculation Summary-85th Percentile, 24-hour Rainfall Event

Subarea	Area (Acres)	Tc (min)	Qpm (cfs)	Volume (cu.ft)	Volume (C.Y.)
1A	8.6	54	0.29	3477.6	128.8
2A	3.96	54	0.13	1601.3	59.3
3B	4.46	54	0.15	1803.5	66.8
4B	2.34	22	0.31	3819.8	141.5
6A	0.85	22	0.47	343.7	12.7
7A	4.48	44	0.17	1811.5	67.1
8A	3.01	34	0.33	4913.6	182.0
9A	3.07	39	0.31	5011.5	185.6
10C	7.12	40	0.28	2879.0	106.6
12A	0.72	34	0.03	291.1	10.8
13A	0.37	8	0.07	162.5	6.0
14A	2.23	28	0.27	3640.3	134.8
15A	1.15	28	0.06	465.0	17.2
16D	1.65	43	0.16	2693.5	99.8
17D	2.67	49	0.25	4358.6	161.4
19A	2.11	19	0.31	3446.0	127.6
	Total		**3.58**	**40718.4**	**1508.1**

Table 3-Preliminary BMP Calculation to Show 96 Hours Drawdown Time

Infiltration Location	Design Infiltration Rate (in/hr)	Max Water Depth(ft)	Drawdown Time (Hours)
Lot 143	0.5	3.0	72.0

WATER QUALITY BASIN # 43
REQUIRED INFILTRATION VOLUME =950 C.Y.

ELEVATION	AREA(SF)	AVG. AREA(SF)	VOLUME(CY)	Σ VOLUME(CY)
1450	0			
1451	11269	5635	209	209
1452	12697	11983	444	653
1453	14188	13443	498	1150

Tract No. 74650 - Discharge Volume Calculation

Frequency (Years)	Existing Volume (C.Y.)	Proposed Volume(C.Y.)	Difference(C.Y.)	Provided Storage (C.Y.)
2-yrs	838	1,713	874	6,534
5-yr	2,608	4,511	1,902	6,534
10-yr	4,626	7,319	2,693	6,534
25-yr	8,686	12,505	3,819	6,534
50-yr	13,238	17,904	4,666	6,534

LEGEND:

- *TRIBUTARY SUBAREA*
- *SD MAIN LINE (LACFCD)*
- *SD LATERALS (HOA) – LID*
- *DIRECTION OF FLOW*
- *TRACT BOUNDARY*
- *FLOW PATH*
- (14 A) *LOCATION NAMES*

Qd 25-YR, DESIGN FLOW IN CUBIC FEET PER SECOND, CFS
Qb 50-YR, BURNED DESIGN FLOW IN CUBIC FEET PER SECOND, CFS
ΣDPV DEBRIS PRODUCTION VOLUME IN CUBIC YARDS, CY
Qpm PEAK MITIGATION FLOW IN CUBIC FEET PER SECOND, CFS
Vm MITIGATION VOLUME IN CUBIC FEET, CF

1. *PROPOSED STORM DRAIN SYSTEM – TO BE MAINTAINED BY LACFCD*
2. *PROPOSED STORM DRAIN SYSTEM – TO BE MAINTAINED BY THE HOA*
3. *PROPOSED CONCRETE SWALE – DESIGN WITH SELF-CLEANING VELOCITY*
4. *PROPOSED ACCESS ROAD TO BE MAINTAINED BY LACFCD*
5. *PROPOSED 10' ACCESS ROAD EASEMENT TO THE HOA FOR SD MAINTENANCE PURPOSES*
6. *PROPOSED 15' ACCESS ROAD TO BE MAINTAINED BY LACFCD*
7. *PROPOSED 40'x40' ACCESS TURN-AROUND TO BE MAINTAINED BY LACFCD*
8. *SD INLINE CDS TO BE MAINTAINED BT LACFCD*

civil Design & Drafting inc.
885 Patriot Drive, Unit C
Moorpark, CA 93021
Phone: 805-522-2622
Fax: 805-426-8016
CDD@civildesignanddrafting.com
IMAD ABOUJAWDAH R.C.E. C51299
08-16-2018
DATE

REGISTERED PROFESSIONAL ENGINEER
IMAD ABOUJAWDAH
No. 51299
Exp. 6-30-20
CIVIL
STATE OF CALIFORNIA

REV#	RECORD RCE APPR.	DATE	REVISIONS DESCRIPTION	CITY PLAN CKR. APPR.	CITY ENGR. APPR.	DATE

RECORD DRAWING
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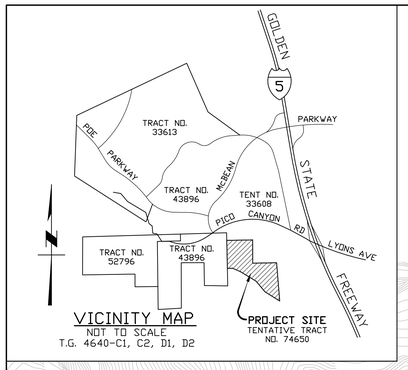
RECORD ENGINEER DATE
CITY STAFF DATE
CITY ENGINEER DATE

COUNTY OF LOS ANGELES
HYDROLOGY STUDY
TTM No. 74650
PROPOSED CONDITIONS
PLOT DATE: 08-16-2018

SCALE: AS SHOWN
DESIGNED:
DRAWN:
CHECKED:
SHEET NO. 1 OF 1

LID
HYDROLOGY MAPS

TTM No. 74650
CANYON VIEW ESTATES
LID HYDROLOGY MAP



VICINITY MAP
NOT TO SCALE
T.G. 4640-C1, C2, D1, D2

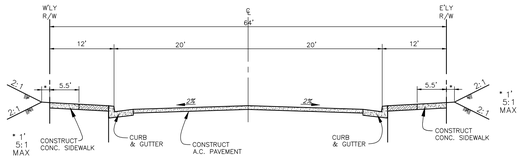
80 40 0 40 80 160
GRAPHIC SCALE
SCALE : 1"=80'

HYDROLOGY CRITERIA:

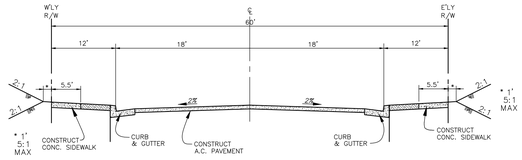
DESIGN STORM FREQUENCY:
50-YR FOR UNDEVELOPED AREAS
25-YR FOR DEVELOPED AREAS
DPA ZONE = 5
BASIN NAME = SANTA CLARA
SOIL TYPE NUMBER = 097
PEAK BULKING FACTOR = 1.465 (FOR AREAS 64 AC OR UNDER)
DEBRIS PRODUCTION RATE = 128.0 CY/AC (FOR AREAS 64 AC OR UNDER)
ISOHYETS = 8.0" (50-YR, 24-HOUR)
%IMPERVIOUSNESS:
1% FOR UNDEVELOPED/NATURAL AREAS
42% FOR STREET AREAS

NOTE:

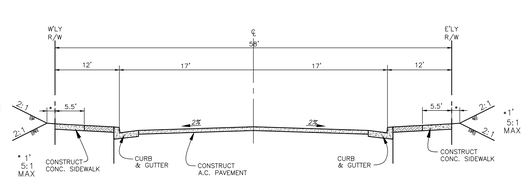
1. NOT WITHIN COUNTY ADOPTED FLOODWAY
2. NOT WITHIN "FEMA" FLOOD ZONE A



TYPICAL SECTION 64' R/W
(MAGNOLIA LANE)
NOT TO SCALE



TYPICAL SECTION 60' R/W
("A", "B" STREET)
NOT TO SCALE



TYPICAL SECTION 58' R/W
("C" STREET)
NOT TO SCALE

Table 1: Table 1-Onsite LID Calcualtion-85th Percentile, 24-hour Rainfall Event (Non-Burn)

Subarea	Area (Acres)	Length (ft)	Slope	Isohyet Depth (in)	% Impervio	Soil Type	Frequency	Fire	Flowrate (cfs)	Tc (min)
4B	2.34	220	0.010	1.04	0.42	97	85th	0	0.26	33
8A	3.01	770	0.074	1.04	0.42	97	85th	0	0.33	34
9A	3.07	860	0.056	1.04	0.42	97	85th	0	0.32	39
14A	2.23	310	0.010	1.04	0.42	97	85th	0	0.22	42
16D	1.65	630	0.010	1.04	0.42	97	85th	0	0.13	65
17D	2.67	620	0.005	1.04	0.42	97	85th	0	0.22	65
									1.48	

Table 2: Table 2-Onsite LID Calcualtion Summary-85th Percentile, 24-hour Rainfall Event (Non-Burn)

Subarea	Area (Acres)	Tc (min)	Qpm (cfs)	Volume (cu.ft)	Volume (C.Y.)
4B	2.34	33	0.26	3819.8	141.5
8A	3.01	34	0.33	4913.6	182.0
9A	3.07	39	0.32	5011.5	185.6
14A	2.23	42	0.22	3640.3	134.8
16D	1.65	65	0.13	2693.6	99.8
17D	2.67	65	0.22	4358.7	161.4
Total		**14.97**	**1.48**	**24437.5**	**905.1**

Table 3-Preliminary BMP Calculation to Show 96 Hours Drawdown Time

Infiltration Location	Design Infiltration Rate (in/hr)	Max Water Depth(ft)	Drawdown Time (Hours)
Lot 143	0.5	3.0	72.0

WATER QUALITY BASIN # 43
REQUIRED INFILTRATION VOLUME =950 C.Y.

ELEVATION	AREA(SF)	AVG. AREA(SF)	VOLUME(CY)	Σ VOLUME(CY)
1450	0			
1451	11269	5635	209	209
1452	12697	11983	444	653
1453	14188	13443	498	1150

Table 4: Onsite and Offsite LID Calculation Summary-85th Percentile, 24-hour Rainfall Event

Subarea	Area (Acres)	Tc (min)	Qpm (cfs)	Volume (cu.ft)	Volume (C.Y.)
1A	8.6	54	0.29	3477.6	128.8
2A	3.96	54	0.13	1601.3	59.3
3B	4.46	54	0.15	1803.5	66.8
4B	2.34	22	0.31	3819.8	141.5
6A	0.85	22	0.47	343.7	12.7
7A	4.48	44	0.17	1811.5	67.1
8A	3.01	34	0.33	4913.6	182.0
9A	3.07	39	0.31	5011.5	185.6
10C	7.12	40	0.28	2879.0	106.6
12A	0.72	34	0.03	291.1	10.8
13A	0.37	8	0.07	162.5	6.0
14A	2.23	28	0.27	3640.3	134.8
15A	1.15	28	0.06	465.0	17.2
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17D	2.67	49	0.25	4358.6	161.4
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	Total		**3.58**	**40718.4**	**1508.1**

LEGEND:

- TRIBUTARY SUBAREA
- SD MAIN LINE (LACFCD)
- SD LATERALS (HOA) – LID
- DIRECTION OF FLOW
- TRACT BOUNDARY
- FLOW PATH
- 14 / A — LOCATION NAMES

Qd 25-YR, DESIGN FLOW IN CUBIC FEET PER SECOND, CFS
Qb 50-YR, BURNED DESIGN FLOW IN CUBIC FEET PER SECOND, CFS
ΣDPV DEBRIS PRODUCTION VOLUME IN CUBIC YARDS, CY
Qpm PEAK MITIGATION FLOW IN CUBIC FEET PER SECOND, CFS
Vm MITIGATION VOLUME IN CUBIC FEET, CF

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IMAD ABOUJAWDAH R.C.E. C51299 DATE 08-16-2018
REGISTERED PROFESSIONAL ENGINEER IMAD ABOUJAWDAH No. 51299 Exp. 6-30-20 CIVIL STATE OF CALIFORNIA

REV#	RECORD RCE APPR.	DATE	REVISIONS DESCRIPTION	CITY PLAN CKR. APPR.	CITY ENGR. APPR.	DATE
△						

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COUNTY OF LOS ANGELES
HYDROLOGY STUDY
TTM No. 74650
LOW IMPACT DEVELOPMENT(LID)
PLOT DATE: 08-16-2018

SCALE: AS SHOWN
DESIGNED:
DRAWN:
CHECKED:
SHEET NO. 1 OF 1

APPENDIX 6

NOISE STUDY

Noise Impact Analysis for the Casad Residential Tentative Tract Map 52905 in the County of Los Angeles, California.
Prepared by Giroux & Associates, September 29, 2005.

Giroux & Associates
Environmental Consultants

NOISE IMPACT ANALYSIS

CASAD RESIDENTIAL
TENTATIVE TRACT MAP 52905

COUNTY OF LOS ANGELES, CALIFORNIA

Prepared for:

Envicom Corporation
Attn: Laura Kaufman
28328 Agoura Road
Agoura Hills, California 91301

Date:

September 29, 2005

Project No.: P05-081

NOISE SETTING

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is commonly defined as unwanted sound. Sound is characterized by various parameters that describe the rate of oscillation of sound waves, the distance between successive troughs or crests, the speed of propagation, and the pressure level or energy content of a given sound wave. In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level.

The unit of sound pressure ratioed to the level barely detectable by a young person with good auditory acuity is called a decibel (dB). Because sound or noise can vary in intensity by over one million times within the range of human hearing, a logarithmic loudness scale similar to the Richter Scale for earthquake magnitude is used to keep sound intensity numbers at a convenient and manageable level. Since the human ear is not equally sensitive to all sound frequencies within the entire spectrum, noise levels at maximum human sensitivity are factored more heavily into sound descriptions in a process called "A-weighting" written as "dB." Any further reference to decibels written as "dB" should be understood to be A-weighted.

Time variations in noise exposure are typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called Leq), or, alternately, as a statistical description of the sound level that is exceeded over some fraction of a given observation period. Finally, because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, state law requires that, for planning purposes, an artificial dB increment be added to quiet time noise levels in a 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL).

An interior CNEL of 45 dB is mandated by multiple family dwellings in Title 24 of the California Code of Regulations. In 1988, the State Building Standards Commission recommended that the 45 dB CNEL interior standard be expanded to include all habitable rooms for all residential occupancy, including single-family. The County of Los Angeles requires a 45 dB CNEL interior standard for all residential occupancies. Since typical noise attenuation within residential structures with closed windows is about 20 dB, an exterior noise exposure of 65 dB CNEL is generally the noise/land use compatibility guideline for new residential dwellings in California. A 65 dB CNEL exterior level is also the noise threshold where noise begins to substantially interfere with enjoyment of any outdoor recreational amenity such as a yard, patio, spa/pool, etc. Mitigation of exterior noise to at least 65 dB CNEL is normally required for residential projects in Los Angeles County for any usable outdoor space. A level of 65 dB CNEL exterior and 45 dB CNEL interior is therefore the applicable noise standard for the proposed Casad Tentative Tract Map 52905 (TTM 52905) residential project.

Existing noise levels around the project site derive mainly from the surrounding arterial roadways. The distant Interstate 5 (I-5 or Golden State) freeway may create some low background "hum" in the project vicinity. The project site itself is undeveloped and vacant, except for an existing helicopter pad which is used by the Los Angeles Fire Department on an emergency-only basis. Magnolia Lane, which accesses the proposed project site, is a 64-foot interior collector street which dead-ends into a cul-de-sac within the proposed development. All other streets within the proposed residential development are also interior streets which dead-end

into cul-de-sacs within the development. The surrounding area land uses include undeveloped land to the north, east, south and west of the site; partially developed or developing residential land uses to the east, west and north of the site, and the Santa Susana Mountains located to the south of the site as shown in Figure 1. Noise constraints to the proposed project development will be minimal.

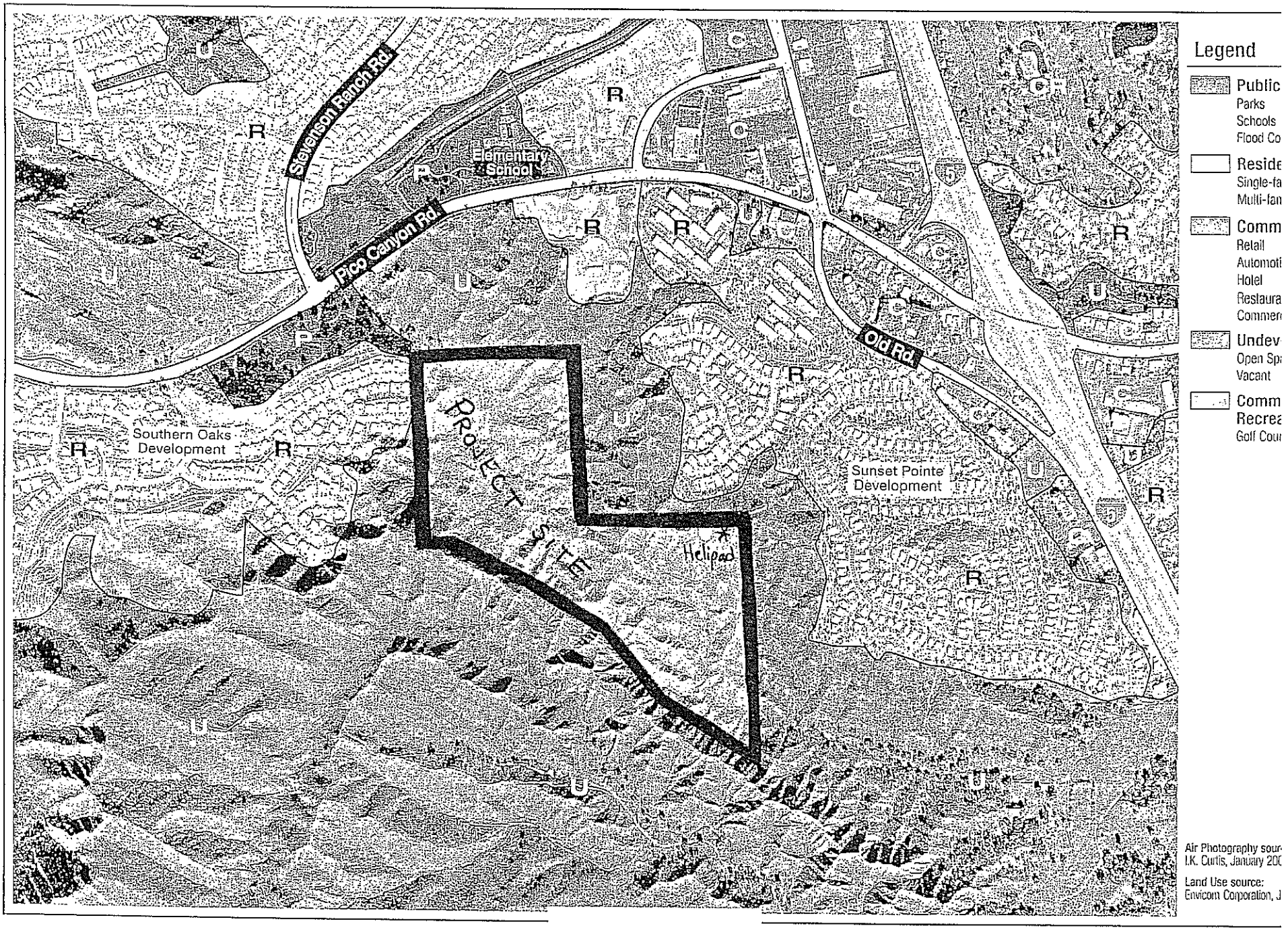


Figure 1

Surrounding Land Uses – Casad Residential

FEET 0 500 1,000

NOISE IMPACTS

Standards of Significance

CEQA Guidelines identify significant impacts as those that cause standards to be exceeded where they are currently met. An impact is also considered significant if it substantially worsens an existing unacceptable noise environment. The tests for potential noise impact significance include the following criteria:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels; and
- For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.

There are no airports or airstrips within the project vicinity. There is, however, an on-site helipad which is used by the Los Angeles County Fire Department for emergency uses only. Potential impacts would derive from any violation of applicable standards for noise or vibration, or for any substantial increases above background conditions.

CEQA Guidelines are considered general measures for noise. Los Angeles County has specific noise standards as discussed in following sections.

"Substantial" is not defined in any guidelines. The accuracy of sound level meters and of sound propagation computer models is no better than ±1 dB. This is also the human loudness difference discrimination level under ideal laboratory conditions. Most people cannot distinguish a change in the noise environment that differs by 3 dB or less between the pre- and post-project exposure if the change occurs under ambient conditions. For the purposes of this analysis, an increase greater than +3 dB, or one that creates or worsens an area of noise/land use incompatibility, would be considered a significant degradation of noise quality.

Temporary noise sources, such as from construction, are generally allowed a greater deviation from the background in defining "substantial." Most jurisdictions limit the hours of noise generation to hours of least sensitivity. If a numerical standard is applied, it is typically a property line noise performance standard. Los Angeles County has adopted both time limits and performance standards in establishing impact significance. A violation of either criterion would be considered significant.

For construction activities, the Los Angeles County Noise Ordinance (Section 12.08.440 of the County Code) limits the hours of allowable construction activities and establishes noise performance standards at the nearest residential structures. Section 12.08.440(A) limits the allowable hours of construction activities to 7:00 a.m. to 7:00 p.m. on Monday through Saturday except in an emergency. The noise performance standards in Section 12.08.440(B) of the Code restrict noise at affected structures.

The Los Angeles County Code, Section 12.08.440(B) states as follows:

Noise Restrictions at Affected Structures. The contractor shall conduct construction activities in such a manner that the maximum noise levels at the affected buildings will not exceed those listed in the following schedule:

1. At Residential Structures.

    a. Mobile Equipment. Maximum noise levels for non-scheduled, intermittent, short-term operation (less than 10 days) of mobile equipment:

	Single-Family Residential	Multi-Family Residential	Semi-Residential/ Commercial
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	75 dB	80 dB	85 dB
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	60 dB	65 dB	70 dB

Noise levels exceeding 75 dB would be significant at the nearest homes to the project site. Stationary emissions sources have more stringent noise performance standards. As per County definition, equipment to be used to develop building pads, construct slopes, excavate utilities, pour foundations, etc. are all considered "mobile equipment."

Types of Impact

Upon completion, project-related traffic will cause an incremental increase in area-wide noise levels throughout the project area. Traffic noise impacts are typically analyzed both to insure that a project will not adversely impact the acoustic environment of the surrounding community, as well as to insure that the project site is not exposed to an unacceptable level of noise resulting from the ambient noise environment acting upon the project. Typically, project-related, off-site noise impacts are evaluated as part of area-wide (community plan or specific plan) development planning. However, traffic noise impacts at levels causing noise compatibility standards to be exceeded are almost always cumulative from all overall development and not from any single project.

While individual project-related traffic noise impacts are normally less-than-significant, the impact of the ambient acoustic environment on a particular project may actually be of greater concern. The impact of the environment as a constraint on project development, rather than the project on the environment, may be the principal noise impact analysis issue for the Casad residential site.

Temporary construction noise will also result during site preparation and building assembly. Such sources are short-term and will not affect the long-term noise exposure in the project vicinity.

Construction Noise Impacts

Temporary construction noise impacts vary markedly because the noise strength of construction equipment ranges widely as a function of the equipment used, and short-term variations are strongly influenced by topographical factors that may somewhat change during the course of the project. Construction noise tends to occur in discrete phases dominated initially by earth-moving sources and later for finish construction. The heavy equipment noise typically ranges up to about 90 dB at 50 feet from the source. Figure 2 summarizes the noise generation for typical construction activities. The higher levels on the noise spectrum from each type of source tends to be the short-term maximum. The lower part of the range reflects the longer-term average.

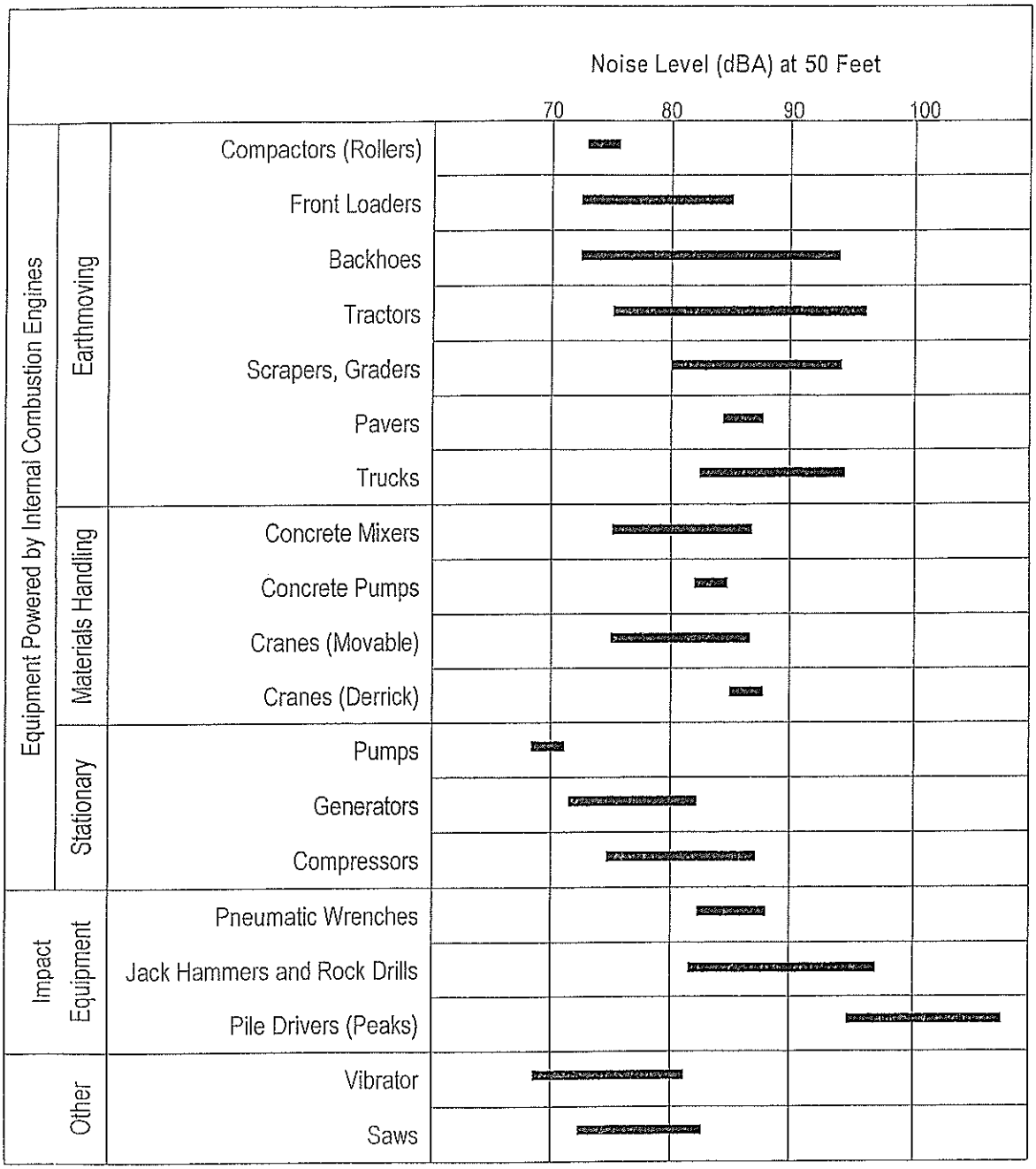
Point sources of noise emissions are atmospherically attenuated by a factor of six dB per doubling of distance. The loudest construction will require more than 1,000 feet of distance between the source and a nearby receiver to reduce the 90 dB source strength to a generally acceptable 65 dB exterior exposure level. Project construction noise could be audible at the partially developed residential tract adjacent to and west of the proposed project site. For purposes of analysis, and as a worst-case scenario, only the nearest residences were analyzed for construction noise impacts. Any mitigation required to reduce noise impacts at the nearest residential units and implemented at other residences will offer a greater benefit of noise reduction for the residences at greater distances.

The residences closest to the project site grading/construction activities are the homes located west of the proposed site. The existing residences back up to proposed residential Lot 4 and recreation Lot 50. The existing closest occupied home in the Southern Oaks development adjacent to proposed Lot 4 is approximately 30 feet from the presumed grading area of this lot. The maximum noise impact will derive from grading activities associated with Lot 4.

The noise performance/significance standard is based upon a peak noise level (Lmax). Several pieces of equipment may operate on a building pad or slope. However, only one piece at a time will typically be operating at full throttle at any location closest to any off-site homes, and only one piece can occupy a given small area at any point in time. One very loud piece of construction equipment operating at full throttle close to any outdoor residential usable space was used as a prototype noise impact source.

Figure 2

Typical Construction Equipment Noise Generation Levels



Source: EPA PB 206717, Environmental Protection Agency, December 31, 1971, "Noise from Construction Equipment and Operations."

A bulldozer with a 90 dB noise maximum was presumed to be the peak noise generator during grading activities. The peak noise impact levels for grading activity associated with the building pads are as follows:

Peak Equipment Noise Level at 50 ft. (dB)	Distance to Residence (feet)	Peak Noise Level at Residence (dB)	Mitigation Required (dB)
Bulldozer-90	Side yard to Grading Area 30	92*	-17
*Exceeds L.A. County Noise Performance Standards.			

As indicated above, the peak noise levels associated with the grading of Lot 4 could exceed the County standards at the nearest residence. The above peak noise levels are the single loudest noise event associated with grading activities, and would typically occur only a few times per day, as single event "spikes." Grading activities next to Lot 4 may last up to one week. The setback needed to not exceed the 75 dB performance standard at the nearest residence from heavy equipment operations under direct line-of-sight conditions is 300 feet. Grading will be required within 300 feet of some off-site residences, and the 75 dB noise ordinance standard will be exceeded. Although this is a temporary event, it is a significant noise impact, unless mitigated.

Operational Noise Impacts

Local Roadway Noise Impact

The proposed development will generate 417 vehicle trips per day (Traffic Impact Analysis, Overland Traffic Consultants, Inc. November 2004). Traffic noise changes on area-wide roadways were calculated using the Federal Highway Administration (FHWA) Highway Traffic Noise Model (FHWA-RD-77-108) initialized with traffic input parameters (i.e., traffic volumes) supplied by the traffic consultant. The 24-hour CNEL for five scenarios (Existing, Existing with Ambient, Existing with Ambient with Project, Existing with Ambient with Related, and Existing with Ambient with Related with Project) in dB CNEL at 50 feet from the roadway centerline is as shown in Table 1. The corresponding distance from the roadway centerline to the residential exposure standard (65 dB CNEL) is shown in Table 2.

The proposed project will create a maximum traffic noise impact of +0.7 dB above the no project (ambient growth) contribution along Southern Oaks Drive, south of Pico Canyon Road. Noise level changes of less than 1.5 dB are undetectable by the human ear. The proposed project is too small to have a significant traffic noise impact given the baseline levels of traffic and associated noise already present in the area. Project traffic will contribute to an incremental degradation of noise quality along roadways in the area, but the project-related noise increment will be individually undetectable.

Table 1

Traffic Noise Impact Analysis
(dB CNEL at 50 feet from Roadway Centerline)

Segment	Existing	Existing w/Ambient	Existing w/Ambient w/ Project	Existing w/Ambient w/ Related	Existing w/Ambient w/ Related w/ Project
Pico Canyon Road:					
West of Southern Oaks Drive	58.7	59.1	59.1	61.7	61.7
Southern Oaks-Stevenson Ranch	63.3	63.7	64.1	65.0	65.3
Stevenson Ranch-Constitution	68.5	68.9	69.0	69.3	69.4
Constitution-The Old Road	68.6	69.0	69.1	69.6	69.7
The Old Road-Marriott Way	71.9	72.3	72.3	72.6	72.7
Marriott Way - I-5 SB Ramps	72.8	73.2	73.2	73.4	73.5
Lyons Avenue:					
I-5 SB Ramps - I-5 NB Ramps	72.7	73.1	73.1	73.3	73.4
East of I-5 NB Ramps	72.9	73.3	73.3	73.3	73.4
Southern Oaks Drive:					
South of Pico Canyon	61.4	61.8	62.5	62.2	62.9
Stevenson Ranch Parkway:					
North of Pico Canyon	67.9	68.3	68.4	68.6	68.6
Constitution Avenue:					
North of Pico Canyon	61.2	61.6	61.6	62.9	62.9
The Old Road:					
North of Pico Canyon	71.7	72.1	72.1	72.5	72.5
South of Pico Canyon	68.4	68.8	68.8	69.4	69.4
Marriott Way:					
South of Pico Canyon	62.0	62.4	62.4	62.4	62.4

Table 2

Traffic Noise Impact Analysis
(Distance to the 65 dB CNEL [feet] from Roadway Centerline)

Segment	Existing	Existing w/Ambient	Existing w/Ambient w/ Project	Existing w/Ambient w/ Related	Existing w/Ambient w/ Related w/ Project
Pico Canyon Road:					
West of Southern Oaks Drive	<50	<50	<50	<50	<50
Southern Oaks-Stevenson Ranch	<50	<50	<50	50	55
Stevenson Ranch-Constitution	85	90	90	95	100
Constitution-The Old Road	90	95	95	100	105
The Old Road-Marriott Way	145	155	155	160	165
Marriott Way - I-5 SB Ramps	165	175	175	185	185
Lyons Avenue:					
I-5 SB Ramps - I-5 NB Ramps	165	175	175	180	180
East of I-5 NB Ramps	170	180	180	180	180
Southern Oaks Drive:					
South of Pico Canyon	<50	<50	<50	<50	<50
Stevenson Ranch Parkway:					
North of Pico Canyon	80	85	85	85	85
Constitution Avenue:					
North of Pico Canyon	<50	<50	<50	<50	<50
The Old Road:					
North of Pico Canyon	140	150	150	155	160
South of Pico Canyon	95	90	90	100	100
Marriott Way:					
South of Pico Canyon	<50	<50	<50	<50	<50

Exterior Noise Standard Compliance

Usable outdoor space typically refers to backyards in residential developments. The source receiver area is usually measured at 10 feet inside the rear property line, or when there is slope, at ten feet inside the top or bottom of slope. All homes in the Casad TTM 52905 residential tract face interior residential streets that end in cul-de-sacs within the development. The rear yards do not back up to or abut any major roadways. The homes themselves shield any local traffic noise to the backyards. Therefore, there are no traffic noise impacts to usable outdoor space in homes within the Casad development and no mitigation is required.

Interior Noise Compliance

Interior noise compliance refers to habitable rooms such as bedrooms. Bedrooms are typically located on the rear façade of the residential structure. The homes in the Casad residential project do not back up to or abut any major roadway. There are no interior noise impacts associated with traffic at any residential building façade in the proposed TTM 52905 residential tract. No structural mitigation measures are required for interior noise compliance.

On-Site Noise Generation

Helicopter Landing Pad

The proposed residential development contains an existing helipad which is used by the Los Angeles Fire Department on an emergency-only basis. The helipad is located near the eastern-most boundary, on the far side of an existing water tank. Staff at the County Fire Department indicate there are two different types of helicopters used, both being similar military-style helicopters. While staff was reluctant to estimate the number of times a year the helipad is operational, they did state usage was contingent upon emergencies.

On-site noise generation from the emergency use of the helipad by fire department helicopters may be audible to residents in the proposed residential development. The existing helipad is more than 300 feet from the nearest proposed residential lot, Lot 16, and more than 400 feet from the remaining proposed homes within the development. The surrounding terrain is irregular and hilly and the helipad is located on the far side of an existing water tank.

Helicopters produce noise both from the propulsion system as well as from the rotors. In certain cases, the blades make a distinct whirling noise called "blade slap." Blade slap is somewhat a function of design. Helicopters with high blade tip speeds and a large turbulence wake, such as large military craft, are much more prone to rattling windows than smaller civilian craft.

A worst-case pad use of two flights per day was assumed as a basis for estimating noise levels from emergency helipad use. Noise from two flights of an MD500 helicopter were calculated using the FAA Helicopter Noise Model (HNM). Two flights per day are not enough to generate a noise contour exceeding 65 dB CNEL outside the landing pad area itself. Not even the most stringent 60 dB CNEL standard is violated by two flights in/out per day. Single-event levels above 65 dB will occur out to approximately 600 feet from the flight track. The nearest proposed homes are located between 300-400 feet from the existing helipad. The limited helicopter access (emergency basis only), irregular terrain, the water tank and distance will

reduce any noticeable noise from helicopter site access. It is recommended that the fire department emergency helipad location and potential for noise intrusion from emergency operations be disclosed to all potential residents.

Recreation Lot 50

The Casad residential development includes a recreational lot. Lot 50, the proposed recreational lot, is located along Magnolia Lane, at the entrance to the residential tract, between the existing homes from a partially developed residential tract and proposed Lots 1 and 4 of TTM 52905. The recreation lot will not be open after dusk nor before daylight, and only low-lighting for safety purposes will be used. Because the recreation lot will be turf only and will not host planned sports activities such as baseball and/or soccer games, and because it is proposed for daytime-use only, there will be no significant noise impacts from the recreation activities onto either existing or proposed residential uses.

CUMULATIVE NOISE IMPACTS

The maximum cumulative project noise level increase (Existing with Ambient with Related with Project), along Pico Canyon Road, west of Southern Oaks Drive, is +3.0 dB above existing conditions. An increase greater than +3.0 dB would be considered significant if the increase worsened or created an area of noise/land use incompatibility. The +3.0 dB increase does not create land use incompatibility because even with the increase, the traffic noise levels at 50 feet from the roadway centerline remain below 65 dB CNEL along this roadway segment. There are no impacts to any noise-sensitive receptors with this increase. This project noise contribution to the cumulative +3.0 dB CNEL increase is zero dB. Traffic noise impacts from the proposed project would be both individually, as well as cumulatively, less-than-significant.

MITIGATION MEASURES

Temporary construction noise could impact the nearest residence and may be excessive at homes near the project site. Construction noise impacts will be minimized by compliance with County Noise Ordinance Section 12.08.440 limiting allowable hours of construction activities and prohibiting the creation of any excessively loud, unnecessary or unusual equipment noise. However, grading within 300 feet within full view of any occupied residence will cause the short-term noise standard of 75 dB to be exceeded. Impacts will be temporary, but significant without mitigation. Mitigation measures identified as necessary to help attenuate noise impacts include:

1. Measures shall be taken by the applicant to notify adjacent homeowners of the time and dates that construction activities will occur at the project site.

2. Grading and construction equipment with the least noise output available shall be required for use on Lots 4 and 50, and grading and construction equipment used on these lots shall have enhanced mufflers for noise reduction.

3. Grading and construction on Lots 4 and 50 shall only occur from 8:00 a.m. to 5:00 p.m., Monday through Friday, except on legal holidays.

4. The applicant shall notify potential homeowners of the emergency helipad location and the potential for noise intrusion from emergency operations.

There are no operational noise impacts associated with implementation of the Casad residential project. The Los Angeles County exterior and interior standards for residential uses are met without the usage of mitigation measures.

SIGNIFICANT PROJECT IMPACTS AFTER MITIGATION

Significant noise impacts during construction activities will be reduced to less-than-significant by the above mitigation measures.

URBAN CROSSROADS

41 Corporate Park | Suite 300 | Irvine, CA 92606 | (949) 660-1994
www.urbanXroads.com

April 6, 2017

Mr. Jon Friedman
JEMSTREET PROPERTIES, INC.
1435 Reynolds Court
Thousand Oaks, CA 91362

SUBJECT: CANYON VIEW ESTATES (TT 52905) FOCUSED ACCESS TRAFFIC EVALUATION

Dear Mr. Jon Friedman:

Urban Crossroads, Inc. is pleased to provide the Canyon View Estates (TT 52905) Focused Access Traffic Evaluation. The project site location is shown on Exhibit A. The project is located south of Pico Canyon Road and east of the extension of Stevenson Ranch Parkway. Access to the proposed project will be via an extension of Magnolia Lane. The project consists of 37 detached residential dwelling units. The project site plan is shown on Exhibit B.

The purpose of this work effort is to document existing traffic conditions in the vicinity of the proposed project. The study area is presented on Exhibit C. Traffic operations have been evaluated at the following 3 intersections that will be most affected by project traffic:

- Stevenson Ranch Parkway (NS) at Pico Canyon Road (EW)
- Southern Oaks Drive (NS) at Pico Canyon Road (EW)
- Southern Oaks Drive (NS) at Magnolia Lane (EW)

Analysis has been performed for the following scenarios:

- Existing Conditions
- Existing Plus Project (E+P) Conditions
- Existing Plus Project Plus Cumulative Project (E+P+C) Conditions

TRAFFIC OPERATIONS ANALYSIS METHODOLOGY

Traffic operations of roadway facilities are described using the term "Level of Service" (LOS). LOS is a qualitative description of traffic flow based on several factors such as speed, travel time, delay, and freedom to maneuver. Six levels are typically defined ranging from LOS A, representing completely free-flow conditions, to LOS F, representing breakdown in flow resulting in stop-and-go conditions. LOS E represents operations at or near capacity, an unstable level where vehicles are operating with the minimum spacing for maintaining uniform flow.

EXHIBIT A: PROJECT LOCATION MAP

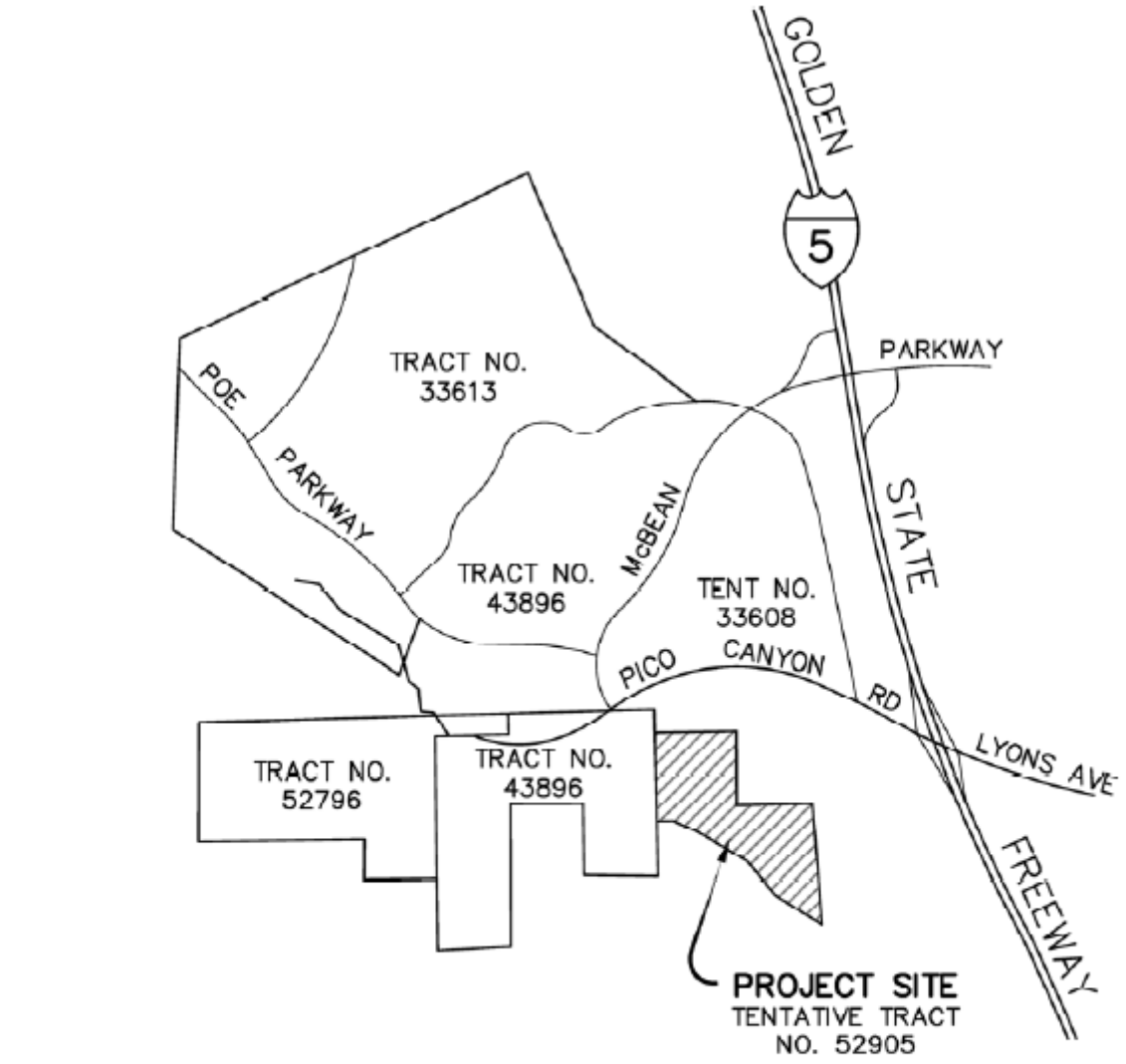


EXHIBIT B: PROJECT SITE PLAN

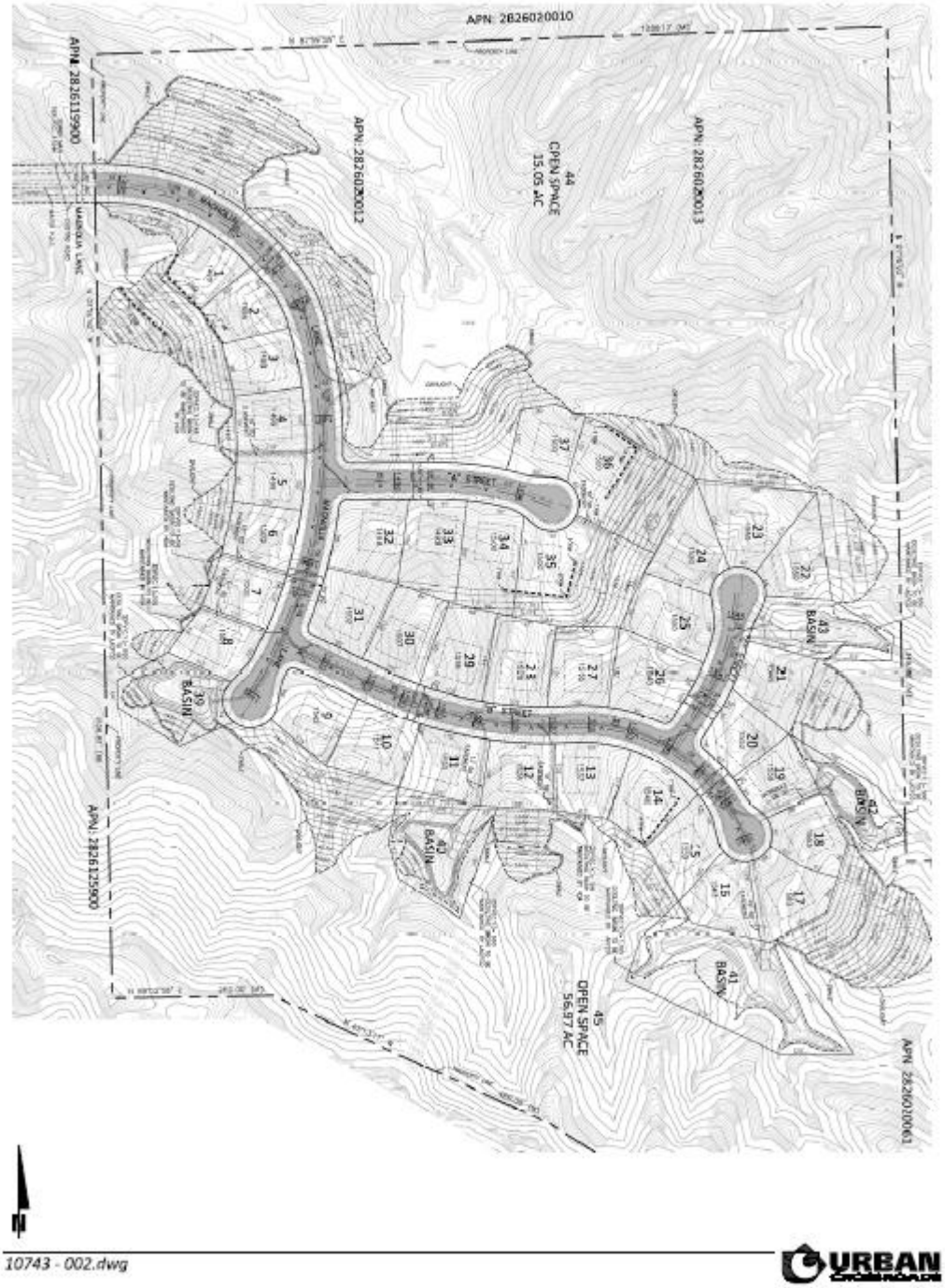
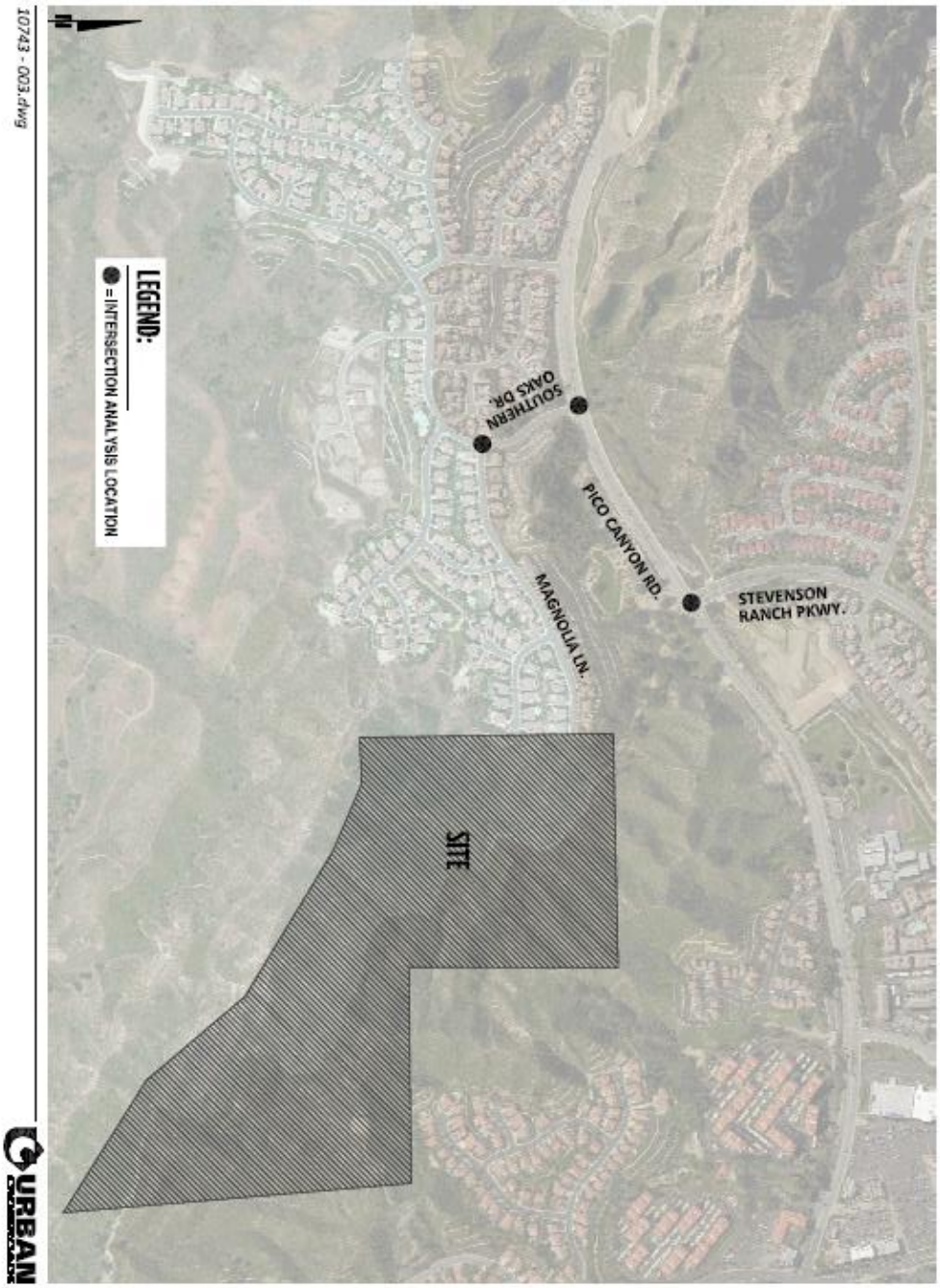


EXHIBIT C: STUDY AREA



Per the Los Angeles County TIA Report Guidelines, study area intersections must be analyzed using the Intersection Capacity Utilization (ICU) technique. To calculate an ICU, the volume of traffic using the intersection is compared with the capacity of the intersection. ICU is usually expressed as a volume to capacity (V/C) ratio. The V/C represents that portion of the hour required to provide sufficient capacity to accommodate all intersection traffic if all approaches operate at capacity.

A maximum saturation flow rate of 1,600 vehicles per hour of green (vphg) per lane was utilized in this study, except for dual left turn lanes, in which case a capacity of 2,880 vehicles per hour has been used as the combined capacity for dual left turn lanes. A 10 percent yellow clearance cycle has also been included. The ICU analysis has been performed using the Traffix software (Version 8.0 R1). The ICU V/C ratio and corresponding Level of Service (LOS) are shown on Table 1.

TABLE 1: LEVEL OF SERVICE CRITERIA

Level of Service	Critical Volume To Capacity Ratio
A	0.00 - 0.60
B	0.61 - 0.70
C	0.71 - 0.80
D	0.81 - 0.90
E	0.91 - 1.00
F	>1.00

SIGNIFICANT IMPACT THRESHOLD

For intersections, the impact is considered significant if the project related increase in the volume to capacity (V/C) ratio equals or exceeds the thresholds shown on Table 2.

TABLE 2:IMPACT SIGNIFICANCE THRESHOLDS

INTERSECTIONS		
Preproject		Project V/C Increase
LOS	V/C	
C	0.71 to 0.80	0.04 or more
D	0.81 to 0.90	0.02 or more
E/F	0.91 or more	0.01 or more

PROJECT TRAFFIC

Project traffic has been developed based on the estimated trip generation and trip distribution characteristics of the proposed project. Trip generation represents the amount of traffic which is both attracted to and produced by a development. Traffic generation rates for the proposed Project have been derived from the informational document Institute of Transportation Engineers (ITE) Trip Generation (9th Edition, 2012). The proposed project is a single family detached residential development. Table 3 presents the trip rates obtained from the ITE Trip Generation manual and Table 4 presents the resulting trip generation estimates for the proposed project.

Table 3: Project Trip Generation Rates

Land Use[1]	Units[2]	ITE LU Code	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Actual Vehicle Trip Generation Rates									
Single Family Detached	DU	210	0.19	0.56	0.75	0.63	0.37	1.00	9.52

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Ninth Edition (2012).

[2] DU = Occupied Dwelling Units

Table 4: Project Trip Generation Summary

Land Use	Quantity	Units[1]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Single Family Detached	37.	DU	7	21	28	23	14	37	352

[1] DU = Occupied Dwelling Units

The proposed project is expected to generate 352 vehicle trips on a daily basis, with a total of 28 vehicles per hour (VPH) during the AM peak hour (21 outbound vehicles and 7 inbound vehicles) and 37 VPH during the PM peak hour (23 inbound vehicles and 14 outbound vehicles). The Los Angeles County Traffic Study Guidelines state that a traffic study is generally required if a project generates over 500 trips per day. Although a formal traffic study is not required for this project (as it falls below the 500 trips per day threshold), this focused access evaluation has been prepared to confirm that the local roadway system in the immediate vicinity of the project will operate acceptably with the addition of project traffic.

The project trip distribution has been estimated based on the trip distribution for a similar residential project located further west on Pico Canyon Road (Aidlin Hills VTTM 52796 Traffic Impact Analysis, Stantec, November 24, 2014). The project trip distribution is presented on Exhibit D. Project traffic is expected to enter and leave the neighborhood via Southern Oaks Drive and travel to/from the east on Pico Canyon Road. At Stevenson Ranch Parkway, 52% of the project traffic is projected to travel to/from the north on Stevenson Ranch Parkway, while the remaining 48% will continue to travel to/from the east on Pico Canyon Road.

The project only traffic volumes are presented on Exhibit E. Project traffic will utilize Magnolia Lane and Southern Oaks Drive to travel to and from Pico Canyon Road to access regional destinations.

EXISTING CONDITIONS

Exhibit F presents the existing number of through lanes and intersection geometry and traffic control devices. Pico Canyon Road and Stevenson Ranch Parkway are four lane divided roadways. Southern Oaks Drive and Magnolia Lane are two lane undivided roadways. The intersection of Stevenson Ranch Parkway at Pico Canyon Road is controlled by a traffic signal. The other two intersections (Southern Oaks Drive at Pico Canyon Road and Southern Oaks Drive at Magnolia Lane) are cross street STOP controlled intersections.

Existing traffic volume data was collected in January, 2017. AM and PM peak period turning movement counts were conducted at each of the study area intersections. A 24 hour directional traffic volume machine count was also conducted on Magnolia Lane east of Southern Oaks Drive The traffic count data worksheets are included in Attachment A. The existing hour traffic volumes are summarized on Exhibit G.

EXHIBIT D: PROJECT TRIP DISTRIBUTION

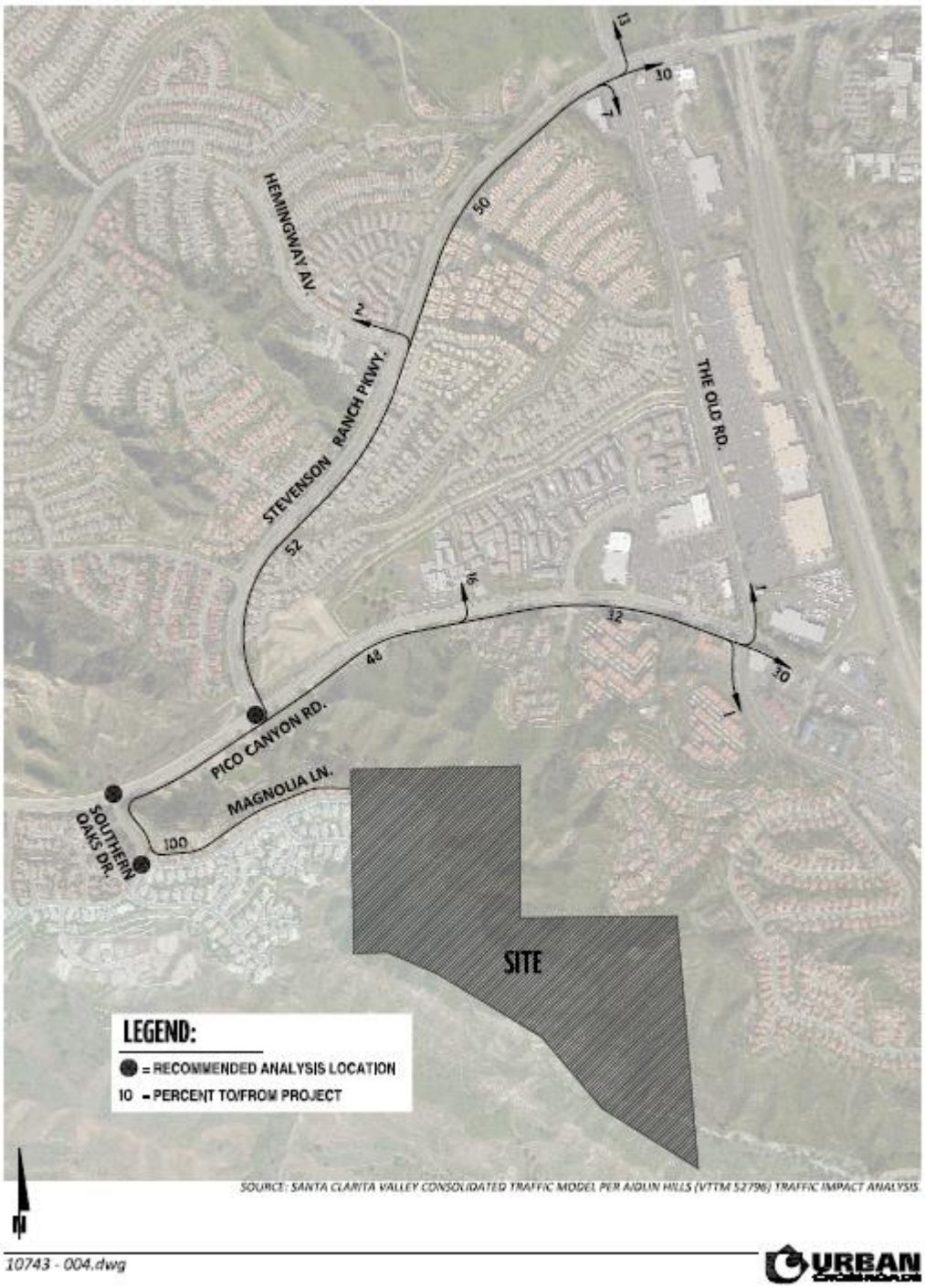


EXHIBIT E: PROJECT ONLY TRAFFIC VOLUMES

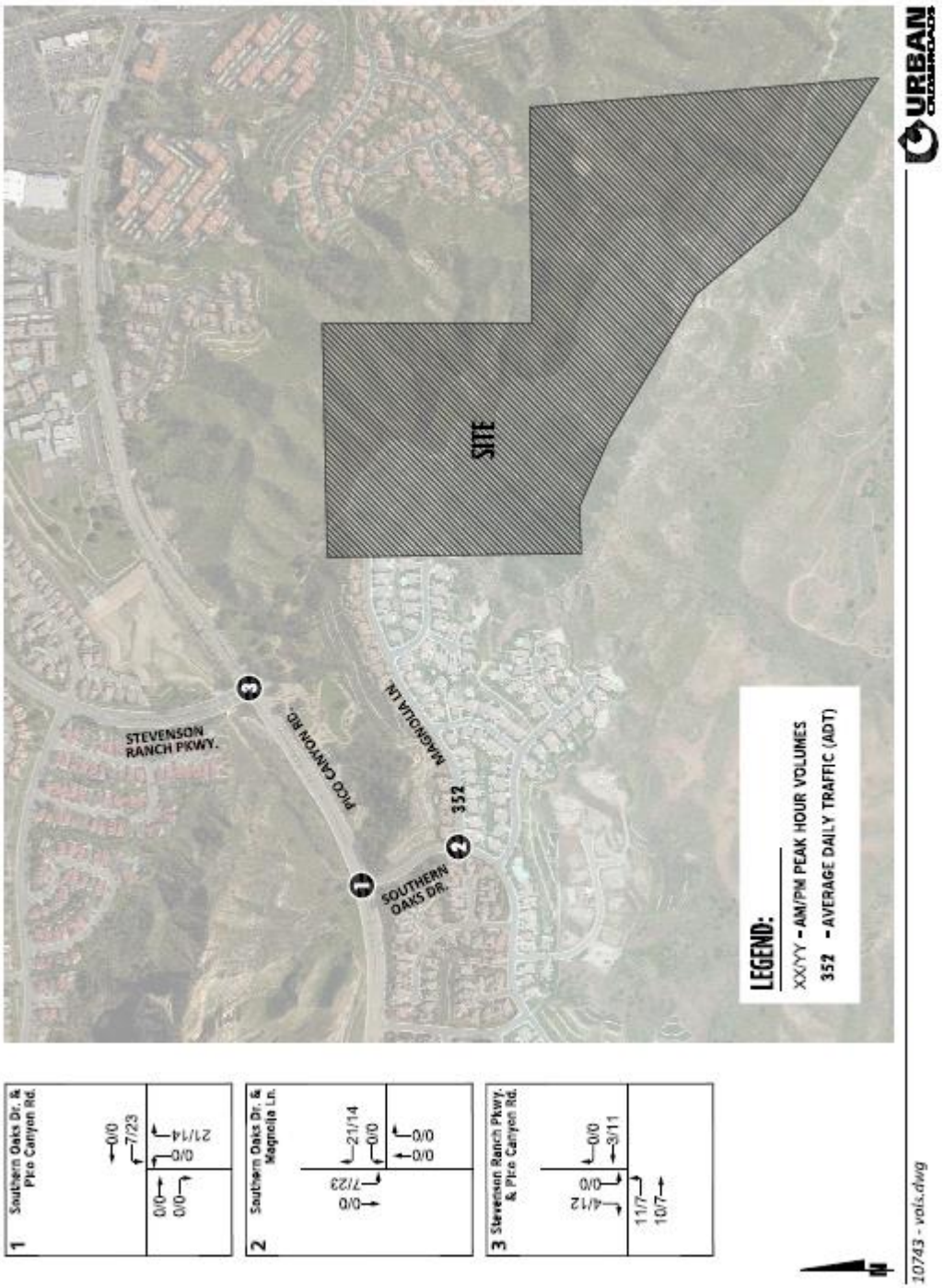


EXHIBIT F: EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROL DEVICES

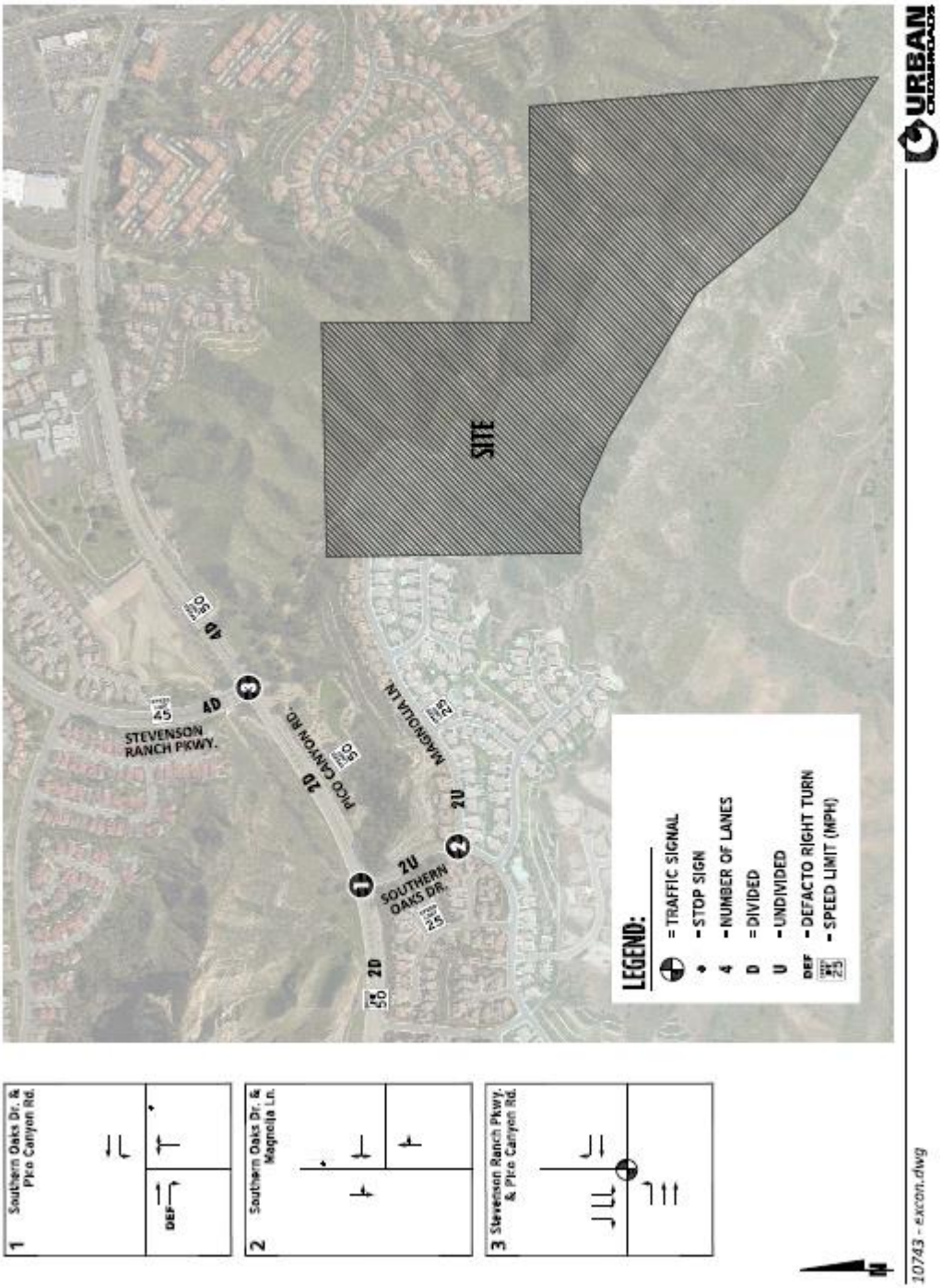
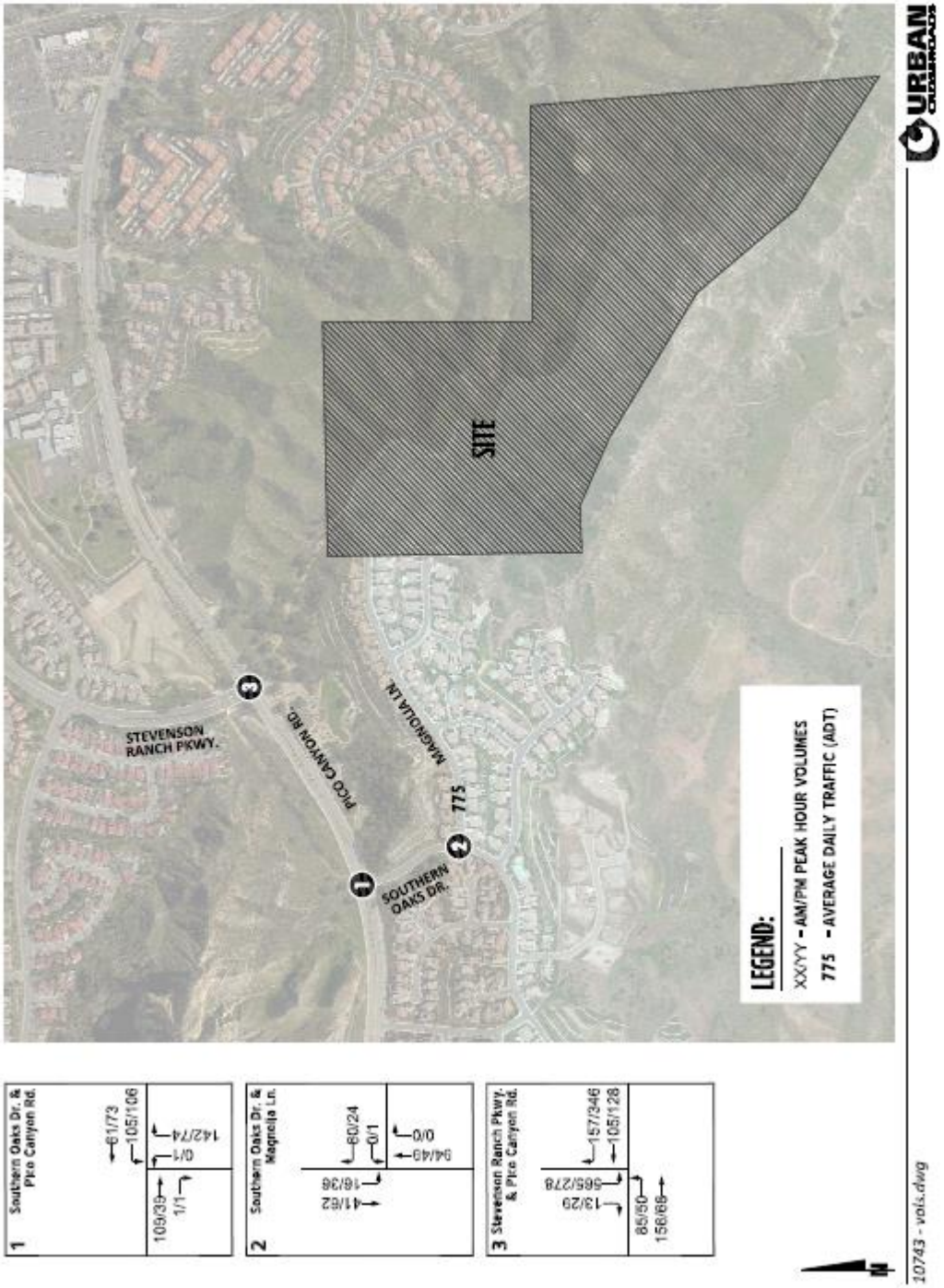


EXHIBIT G: EXISTING TRAFFIC VOLUMES



The Existing conditions roadway geometry and traffic volumes have been used to evaluate the Existing conditions intersection operations at each of the study area intersections. The results of the analysis are summarized on Table 5. The Existing conditions operations analysis worksheets are contained in Attachment B.

TABLE 5: EXISTING CONDITIONS OPERATIONS ANALYSIS SUMMARY

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1] NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R	ICU[2] AM	ICU[2] PM	Level of Service AM	Level of Service PM
1	Southern Oaks Dr. / Pico Canyon Rd.	CSS	0	1!	0	0	0	0	1	1	0	0	1	1	0.417	0.257	A	A
2	Southern Oaks Dr. / Magnolia Ln.	CSS	0	1!	0	0	1!	0	0	1!	0	0	0	0	0.220	0.195	A	A
3	Stevenson Ranch Pkwy. / Pico Canyon Rd.	TS	0	0	0	2	0	1	0	1	1	1	1	0	0.535	0.451	A	A

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right
1! = Where turns occur and only a through lane is provided, the turning vehicles use the through lane

[2] Per the Los Angeles County Traffic Study Guidelines, the Intersection Capacity Utilization (ICU) planning method has been use to determine the level of service for intersections.

[3] CSS = Cross Street Stop, TS = Traffic Signal

As shown on Table 5, all of the study area intersections operate at acceptable levels of service (LOS) traffic operations under Existing conditions.

EXISTING PLUS PROJECT CONDITIONS

The project only volumes have been combined with the Existing traffic volumes to develop Existing Plus Project conditions traffic volumes. The Existing Plus Project volumes are presented on Exhibit H. These volumes have been used to evaluate Existing Plus Project (E + P) peak hour intersection operations.

The results of the analysis are summarized on Table 6. The E+P conditions operations analysis worksheets are contained in Attachment C. The E+P conditions intersection operations analysis results indicate that all of the study area intersections operate at acceptable levels of service (LOS) traffic operations under E+P conditions.

EXHIBIT H: EXISTING PLUS PROJECT TRAFFIC VOLUMES

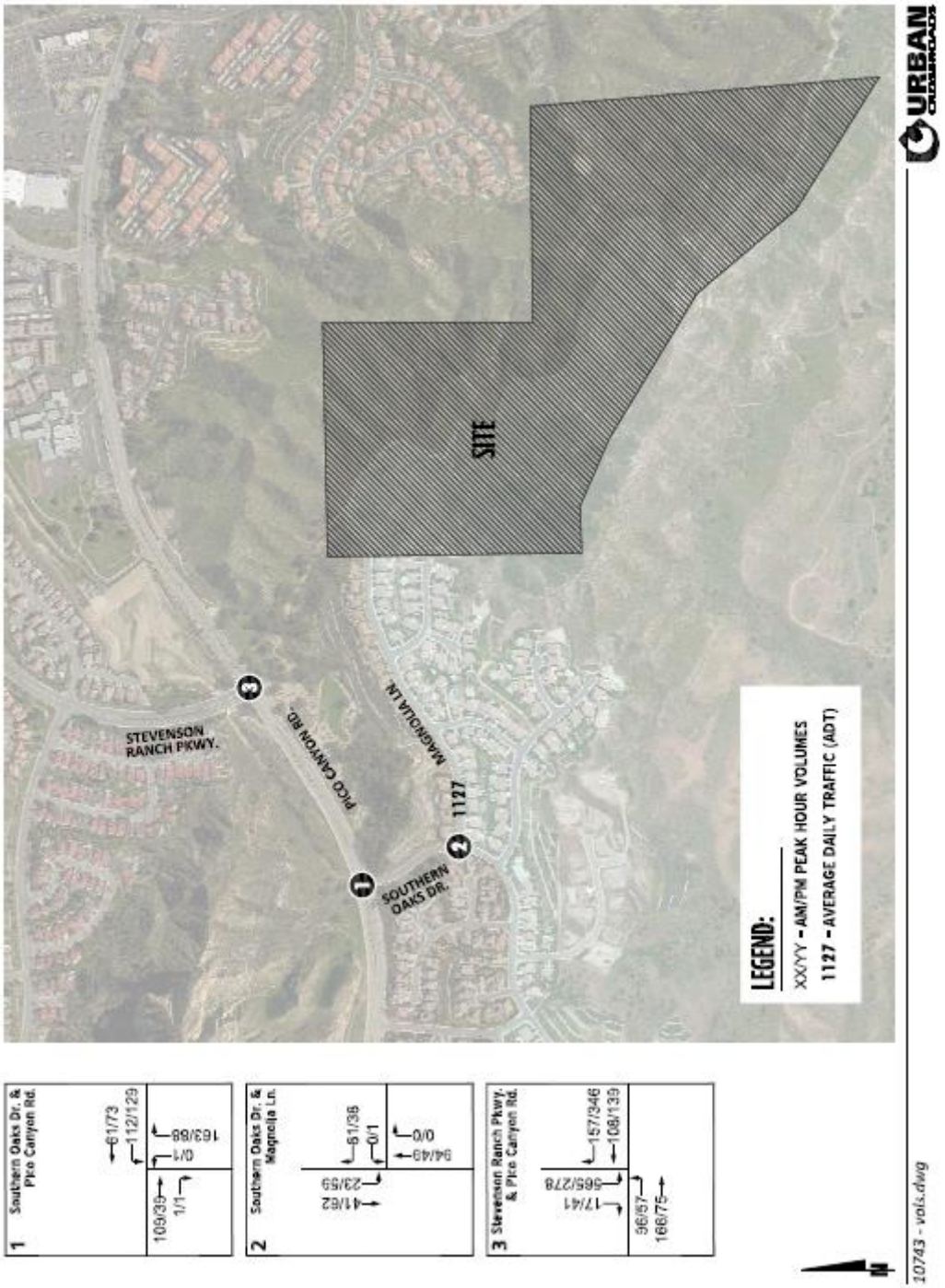


TABLE 6: EXISTING PLUS PROJECT CONDITIONS OPERATIONS ANALYSIS SUMMARY

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1] NB L T R	NB	NB	SB L T R	SB	SB	EB L T R	EB	EB	WB L T R	WB	WB	ICU[2] AM	ICU[2] PM	Level of Service AM	Level of Service PM
1	Southern Oaks Dr. / Pico Canyon Rd.	CSS	0	1!	0	0	0	0	1	1	0	0	1	1	0.440	0.284	A	A
2	Southern Oaks Dr. / Magnolia Ln.	CSS	0	1!	0	0	1!	0	0	1!	0	0	0	0	0.206	0.223	A	A
3	Stevenson Ranch Pkwy. / Pico Canyon Rd.	TS	0	0	0	2	0	1	0	1	1	1	1	0	0.535	0.455	A	A

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right
1! = Where turns occur and only a through lane is provided, the turning vehicles use the through lane

[2] Per the Los Angeles County Traffic Study Guidelines, the Intersection Capacity Utilization (ICU) planning method has been use to determine the level of service for intersections.

[3] CSS = Cross Street Stop, TS = Traffic Signal

EXISTING PLUS PROJECT PLUS CUMULATIVE PROJECT CONDITIONS

The final scenario evaluated in this report is Existing Plus Project Plus Cumulative Projects (E+P+C) conditions. Potential cumulative projects were identified through a review of the Los Angeles County geographic information system (GIS) database. Three pending projects were identified that could potentially contribute additional traffic to the study area at the time of full project occupancy, which is expected in 2020. The three pending projects are TR 061911, TR 061996, and VTTM 52796.

The Los Angeles County website includes an area ("Case & Hearing Information") that provides data regarding the project description and project status. Data for each of the three pending projects was reviewed (and is included in Attachment D of this report), yielding the following information:

- TR 061911 – This project, also referred to as Portrero Village, is an approximately 2,500 acre project. The proposed land uses include 4,385 dwelling units, 245,000 square feet of commercial development, and various other supporting uses. The last activity on this project occurred in 2015, and the status of the project per the County database is "pending/holds not cleared". Therefore, no development is anticipated by 2020 for this project.
- TR 061996 – This project, also referred to as Legacy Village, is an approximately 1,760 acre project. The proposed land uses include 3,457 dwelling units, 839,000 square feet of commercial development, and various other supporting uses. The last activity on this project also occurred in 2015, and the status of the project per the County database is "pending/holds not cleared". Therefore, no development is anticipated by 2020 for this project.

- VTTN 52796 – This project, also known as Aidlin Hills, consists of 102 single family residential units on approximately 230 acres. The project is located south of Pico Canyon Road and east of Southern Oaks Drive. Access to the project is via Pico Canyon Road. This project was recently approved and has therefore been included as a cumulative project in this analysis.

The project trip generation, trip distribution, and project only traffic volumes for the Aidlin Hills project were obtained directly from the traffic study report that was prepared for this project. This information is also included in Attachment D.

The resulting cumulative project only traffic volumes are presented on Exhibit I. The cumulative project only volumes were combined with the previously presented Existing Plus Project volumes, resulting in traffic volumes representing Existing Plus Project Plus Cumulative Project (E+P+C) conditions. The E+P+C conditions traffic volumes are presented on Exhibit J.

The E+P+C volumes were then used to evaluate E+P+C peak hour intersection operations. The results of the analysis are summarized on Table 7. The E+P conditions operations analysis worksheets are contained in Attachment E. The E+P+C conditions intersection operations analysis results indicate that all of the study area intersections operate at acceptable levels of service (LOS) traffic operations under E+P+C conditions.

TABLE 7: EXISTING PLUS PROJECT PLUS CUMULATIVE PROJECT CONDITIONS OPERATIONS ANALYSIS SUMMARY

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1] NB L T R	SB L T R	EB L T R	WB L T R	ICU[2] AM	ICU[2] PM	Level of Service AM	Level of Service PM
1	Southern Oaks Dr. / Pico Canyon Rd.	CSS	0 1! 0	0 0 0	1 1 0	0 1 1	0.490	0.311	A	A
2	Southern Oaks Dr. / Magnolia Ln.	CSS	0 1! 0	0 1! 0	0 1! 0	0 0 0	0.220	0.223	A	A
3	Stevenson Ranch Pkwy. / Pico Canyon Rd.	TS	0 0 0	2 0 1	0 1 1	1 1 0	0.558	0.468	A	A

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right
1! = Where turns occur and only a through lane is provided, the turning vehicles use the through lane

[2] Per the Los Angeles County Traffic Study Guidelines, the Intersection Capacity Utilization (ICU) planning method has been use to determine the level of service for intersections.

[3] CSS = Cross Street Stop, TS = Traffic Signal

EXHIBIT I: CUMULATIVE PROJECT ONLY TRAFFIC VOLUMES

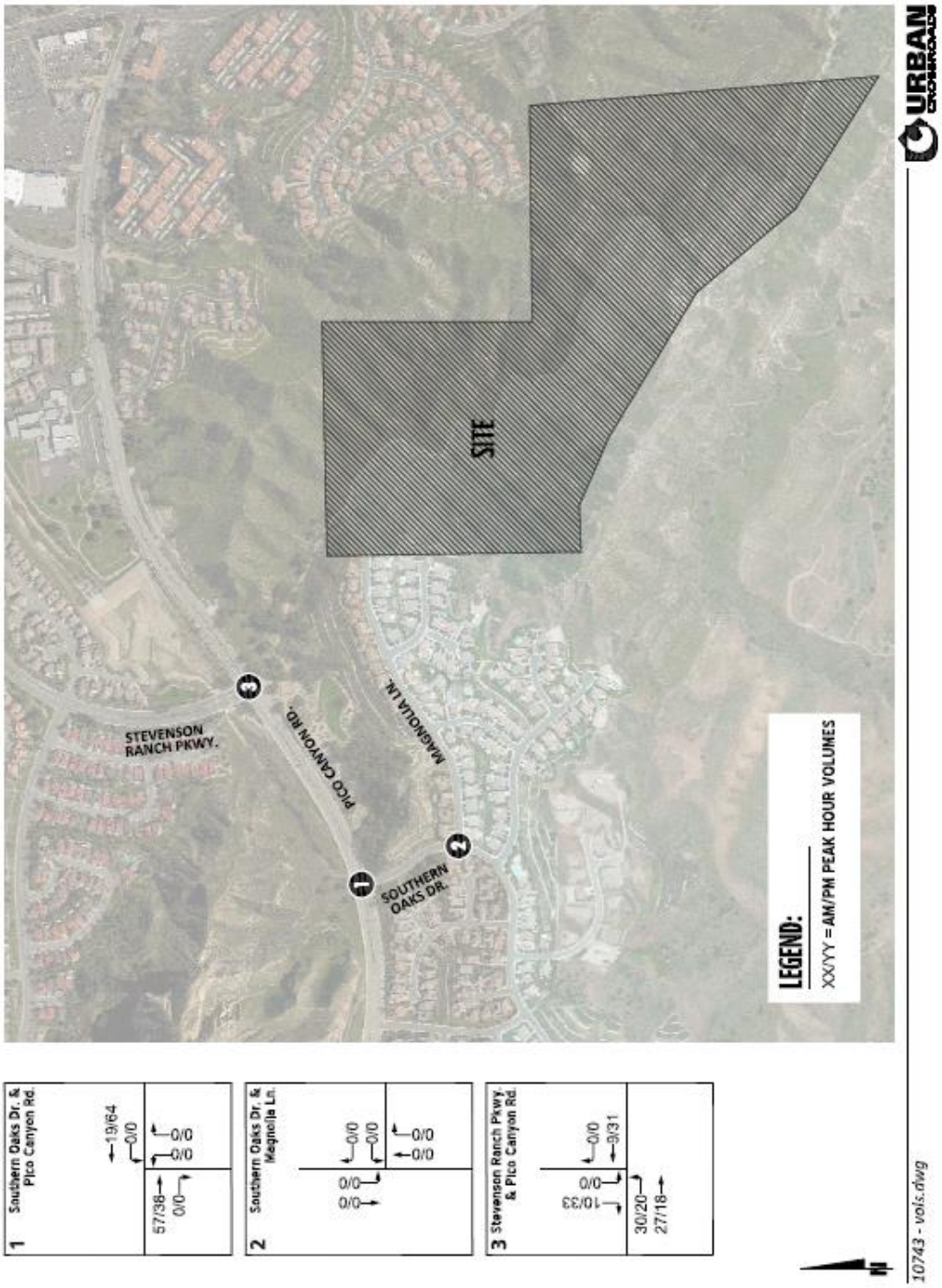
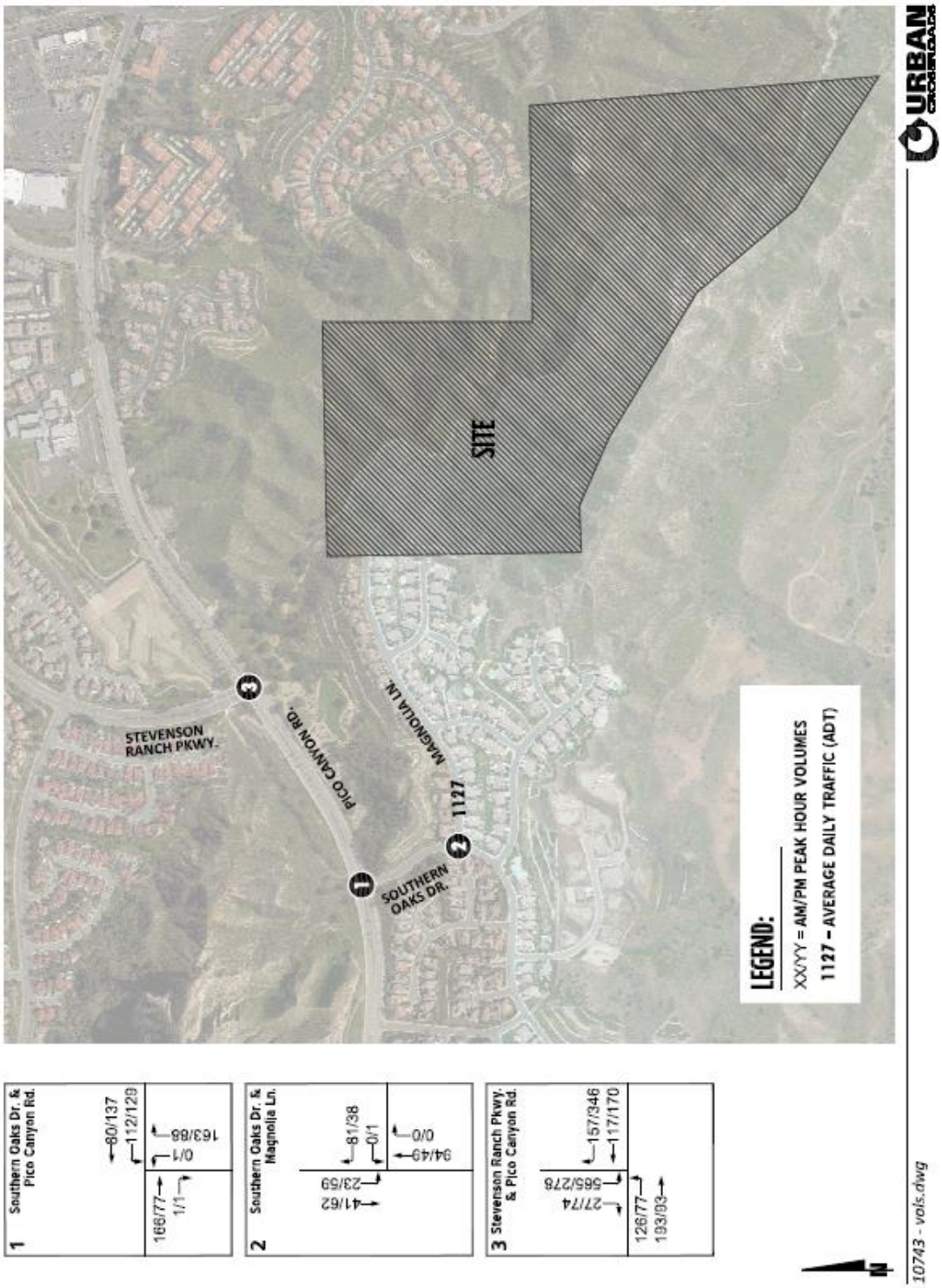


EXHIBIT J: EXISTING PLUS PROJECT PLUS CUMULATIVE PROJECT TRAFFIC VOLUMES



SUMMARY & CONCLUSIONS

The focused access evaluation presented in this report considers Existing conditions, project traffic and cumulative development anticipated to occur by the time of full occupancy of the proposed project in 2020. Scenarios evaluated include Existing Conditions, Existing Plus Project Conditions, and Existing Plus Project Plus Cumulative Project Conditions.

The proposed project is expected to generate 352 vehicle trips on a daily basis, with a total of 28 vehicles per hour (VPH) during the AM peak hour (21 outbound vehicles and 7 inbound vehicles) and 37 VPH during the PM peak hour (23 inbound vehicles and 14 outbound vehicles). The Los Angeles County Traffic Study Guidelines state that a traffic study is generally required if a project generates over 500 trips per day. Although a formal traffic study is not required for this project (as it falls below the 500 trips per day threshold), this focused access evaluation has been prepared to confirm that the local roadway system in the immediate vicinity of the project will operate acceptably with the addition of project traffic.

The project trip distribution has been estimated based on the trip distribution for a similar residential project located further west on Pico Canyon Road (Aidlin Hills VTTM 52796 Traffic Impact Analysis, Stantec, November 24, 2014). The project trip distribution is presented on Exhibit D. Project traffic is expected to enter and leave the neighborhood via Southern Oaks Drive and travel to/from the east on Pico Canyon Road. At Stevenson Ranch Parkway, 52% of the project traffic is projected to travel to/from the north on Stevenson Ranch Parkway, while the remaining 48% will continue to travel to/from the east on Pico Canyon Road.

Based in the results of the peak hour intersection operations analysis, all of the study area intersections are anticipated to experience acceptable (LOS A) operating conditions during the AM and PM peak hours for each of the scenarios evaluated. The project will have no negative impact at any of the intersections evaluated.

Urban Crossroads, Inc. is pleased to provide this focused access evaluation for your use. If you have any questions, please contact me directly at (949) 336-5981.

Respectfully submitted,

URBAN CROSSROADS, INC.

Carleton Waters, P.E.
Senior Transportation Engineer

ATTACHMENT A:

EXISTING CONDITIONS TRAFFIC COUNT WORKSHEETS

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Counts Unlimited, Inc.

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

County of Los Angeles
Magnolia Lane
E/ Southern Oaks Drive
24 Hour Directional Volume Count

CLAMAESO
Site Code: 051-17027

Start	1/18/2017	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
Time	Wed	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		1	6			0	6				
12:15		1	6			0	6				
12:30		0	7			0	7				
12:45		0	9	2	28	0	3	0	22	2	50
01:00		1	6			0	9				
01:15		0	7			0	6				
01:30		0	2			0	7				
01:45		0	5	1	20	0	**9**	0	31	1	51
02:00		0	4			0	**9**				
02:15		0	7			0	**4**				
02:30		1	5			0	**13**				
02:45		0	7	1	23	0	9	0	35	1	58
03:00		0	**13**			0	7				
03:15		0	**9**			0	3				
03:30		1	**14**			0	6				
03:45		0	**10**	1	46	0	3	0	19	1	65
04:00		0	8			0	4				
04:15		0	7			2	3				
04:30		1	5			1	3				
04:45		0	11	1	31	1	8	4	18	5	49
05:00		0	11			0	7				
05:15		1	12			2	8				
05:30		1	8			5	3				
05:45		1	5	3	36	1	7	8	25	11	61
06:00		2	9			1	4				
06:15		1	5			2	7				
06:30		2	8			3	5				
06:45		2	8	7	30	11	5	17	21	24	51
07:00		4	6			8	3				
07:15		3	6			7	4				
07:30		3	8			**20**	3				
07:45		4	7	14	27	**13**	2	48	12	62	39
08:00		**7**	6			**12**	6				
08:15		**2**	5			**15**	5				
08:30		**5**	9			8	2				
08:45		**6**	7	20	27	13	2	48	15	68	42
09:00		3	3			4	4				
09:15		4	3			5	0				
09:30		2	4			1	1				
09:45		6	7	15	17	7	1	17	6	32	23
10:00		2	2			6	1				
10:15		4	3			2	2				
10:30		3	1			5	0				
10:45		3	2	12	8	8	0	21	3	33	11
11:00		4	1			2	0				
11:15		3	0			0	1				
11:30		2	0			6	0				
11:45		9	0	18	1	7	0	15	1	33	2
Total		95	294	95	294	178	208	178	208	273	502
Combined Total		389		389		386		386		775	
AM Peak	-	08:00	-	-	-	07:30	-	-	-	-	-
Vol.	-	20	-	-	-	60	-	-	-	-	-
P.H.F.		0.714				0.750					
PM Peak	-	-	03:00	-	-	-	01:45	-	-	-	-
Vol.	-	-	46	-	-	-	35	-	-	-	-
P.H.F.			0.821				0.673				
Percentage		24.4%	75.6%			46.1%	53.9%				
ADT/AADT		ADT 775		AADT 775							

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Los Angeles
N/S: Southern Oaks Drive
E/W: Pico Canyon Road
Weather: Clear

File Name : CLASOPIAM
Site Code : 05117027
Start Date : 1/18/2017
Page No : 1

Groups Printed- Total Volume

	Pico Canyon Road Westbound				Southern Oaks Drive Northbound				Pico Canyon Road Eastbound				
Start Time	Left	Thru	U-Turns	App. Total	Left	Right	U-Turns	App. Total	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	11	9	2	22	0	19	0	19	8	0	0	8	49
07:15 AM	10	7	5	22	0	20	0	20	9	0	0	9	51
07:30 AM	11	12	0	23	0	51	0	51	0	0	0	0	74
07:45 AM	25	22	6	53	0	42	0	42	53	0	0	53	148
Total	57	50	13	120	0	132	0	132	70	0	0	70	322
08:00 AM	20	17	19	56	0	43	0	43	15	0	0	15	114
08:15 AM	14	10	1	25	0	31	0	31	14	0	0	14	70
08:30 AM	13	12	7	32	0	26	0	26	27	1	0	28	86
08:45 AM	10	12	4	26	0	31	0	31	21	0	0	21	78
Total	57	51	31	139	0	131	0	131	77	1	0	78	348
Grand Total	114	101	44	259	0	263	0	263	147	1	0	148	670
Apprch %	44	39	17		0	100	0		99.3	0.7	0		
Total %	17	15.1	6.6	38.7	0	39.3	0	39.3	21.9	0.1	0	22.1	

	Pico Canyon Road Westbound				Southern Oaks Drive Northbound				Pico Canyon Road Eastbound				
Start Time	Left	Thru	U-Turns	App. Total	Left	Right	U-Turns	App. Total	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	**25**	**22**	6	53	0	42	0	42	**53**	0	0	**53**	**148**
08:00 AM	20	17	**19**	**56**	0	**43**	0	**43**	15	0	0	15	114
08:15 AM	14	10	1	25	0	31	0	31	14	0	0	14	70
08:30 AM	13	12	7	32	0	26	0	26	27	**1**	0	28	86
Total Volume	72	61	33	166	0	142	0	142	109	1	0	110	418
% App. Total	43.4	36.7	19.9		0	100	0		99.1	0.9	0		
PHF	.720	.693	.434	.741	.000	.826	.000	.826	.514	.250	.000	.519	.706

Counts Unlimited
PO Box 1178
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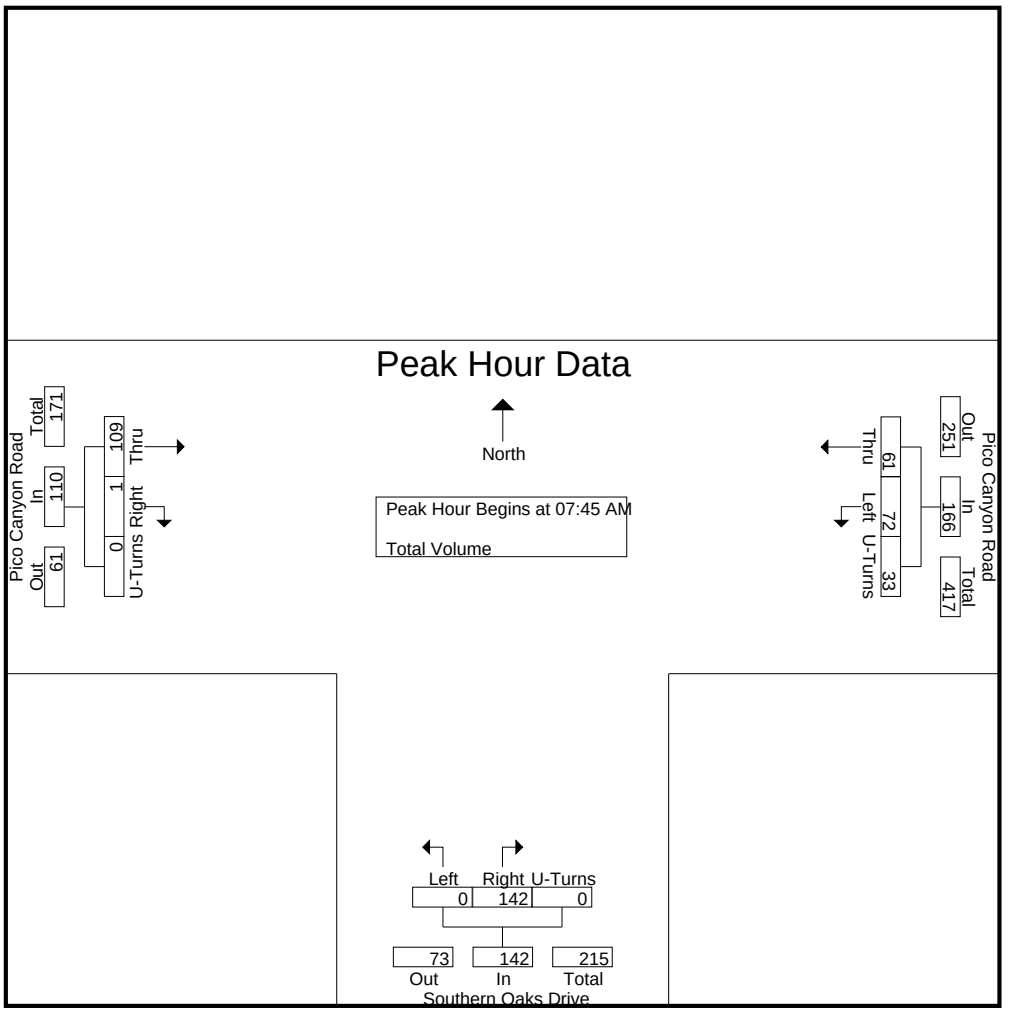
County of Los Angeles
N/S: Southern Oaks Drive
E/W: Pico Canyon Road
Weather: Clear

File Name : CLASOPIAM
Site Code : 05117027
Start Date : 1/18/2017
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:30 AM				07:45 AM			
+0 mins.	**25**	**22**	6	53	0	**51**	0	**51**	**53**	0	0	**53**
+15 mins.	20	17	**19**	**56**	0	42	0	42	15	0	0	15
+30 mins.	14	10	1	25	0	43	0	43	14	0	0	14
+45 mins.	13	12	7	32	0	31	0	31	27	**1**	0	28
Total Volume	72	61	33	166	0	167	0	167	109	1	0	110
% App. Total	43.4	36.7	19.9		0	100	0		99.1	0.9	0	
PHF	.720	.693	.434	.741	.000	.819	.000	.819	.514	.250	.000	.519

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County of Los Angeles
N/S: Southern Oaks Drive
E/W: Pico Canyon Road
Weather: Clear

File Name : CLASOPIPM
Site Code : 05117027
Start Date : 1/18/2017
Page No : 1

Groups Printed- Total Volume

	Pico Canyon Road Westbound				Southern Oaks Drive Northbound				Pico Canyon Road Eastbound				
Start Time	Left	Thru	U-Turns	App. Total	Left	Right	U-Turns	App. Total	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	22	15	7	44	1	14	0	15	12	1	0	13	72
04:15 PM	22	14	1	37	0	13	0	13	13	0	0	13	63
04:30 PM	23	14	4	41	0	13	0	13	16	0	0	16	70
04:45 PM	26	16	5	47	0	15	0	15	10	1	0	11	73
Total	93	59	17	169	1	55	0	56	51	2	0	53	278
05:00 PM	28	15	5	48	0	14	0	14	10	0	0	10	72
05:15 PM	21	20	2	43	1	19	0	20	7	0	0	7	70
05:30 PM	22	22	1	45	0	14	0	14	9	0	0	9	68
05:45 PM	27	16	0	43	0	27	0	27	13	1	0	14	84
Total	98	73	8	179	1	74	0	75	39	1	0	40	294
Grand Total	191	132	25	348	2	129	0	131	90	3	0	93	572
Apprch %	54.9	37.9	7.2		1.5	98.5	0		96.8	3.2	0		
Total %	33.4	23.1	4.4	60.8	0.3	22.6	0	22.9	15.7	0.5	0	16.3	

	Pico Canyon Road Westbound				Southern Oaks Drive Northbound				Pico Canyon Road Eastbound				
Start Time	Left	Thru	U-Turns	App. Total	Left	Right	U-Turns	App. Total	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	**28**	15	**5**	**48**	0	14	0	14	10	0	0	10	72
05:15 PM	21	20	2	43	**1**	19	0	20	7	0	0	7	70
05:30 PM	22	**22**	1	45	0	14	0	14	9	0	0	9	68
05:45 PM	27	16	0	43	0	**27**	0	**27**	**13**	**1**	0	**14**	**84**
Total Volume	98	73	8	179	1	74	0	75	39	1	0	40	294
% App. Total	54.7	40.8	4.5		1.3	98.7	0		97.5	2.5	0		
PHF	.875	.830	.400	.932	.250	.685	.000	.694	.750	.250	.000	.714	.875

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County of Los Angeles
N/S: Southern Oaks Drive
E/W: Pico Canyon Road
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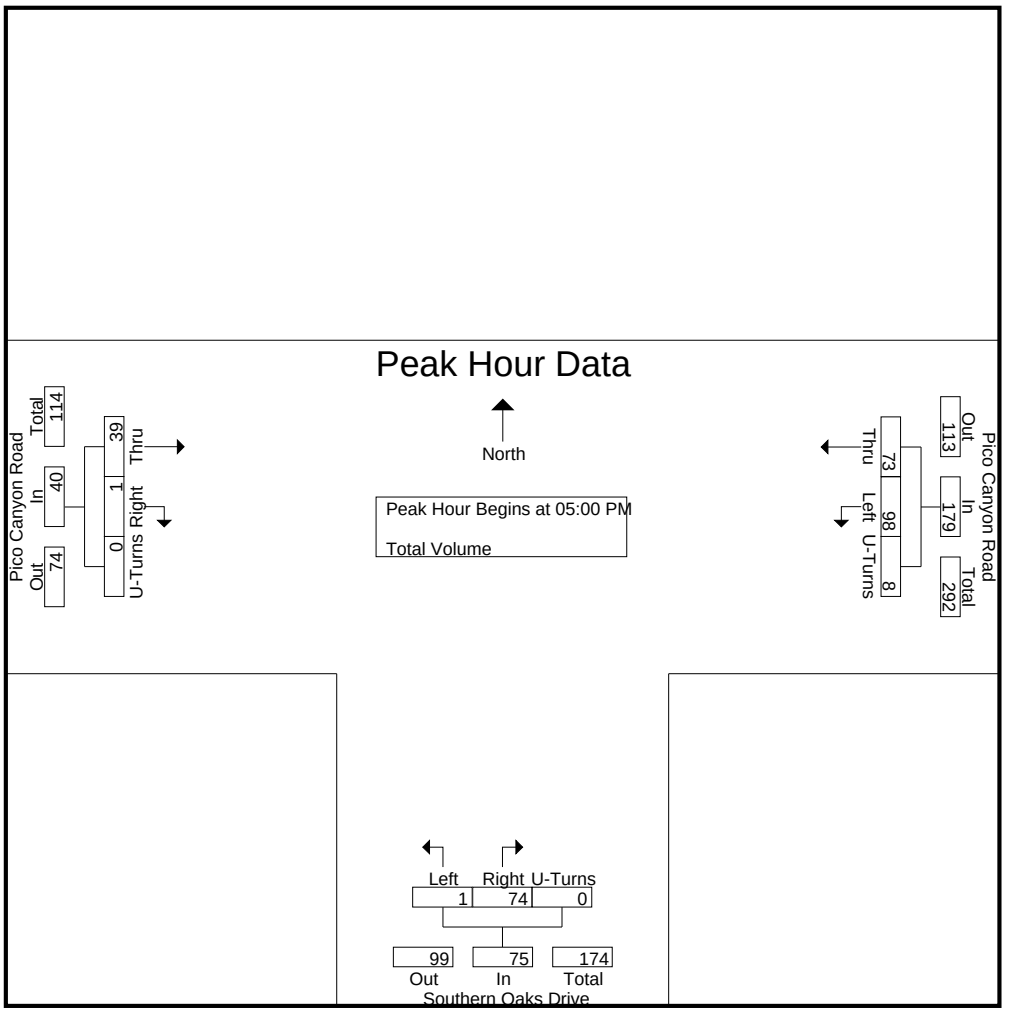
Start Date : 1/18/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				05:00 PM				04:00 PM			
+0 mins.	26	16	**5**	47	0	14	0	14	12	**1**	0	13
+15 mins.	**28**	15	5	**48**	**1**	19	0	20	13	0	0	13
+30 mins.	21	20	2	43	0	14	0	14	**16**	0	0	**16**
+45 mins.	22	**22**	1	45	0	**27**	0	**27**	10	1	0	11
Total Volume	97	73	13	183	1	74	0	75	51	2	0	53
% App. Total	53	39.9	7.1		1.3	98.7	0		96.2	3.8	0	
PHF	.866	.830	.650	.953	.250	.685	.000	.694	.797	.500	.000	.828

Counts Unlimited
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Corona, CA 92878
(951) 268-6268

County of Los Angeles
N/S: Southern Oaks Drive
E/W: Magnolia Lane
Weather: Clear

File Name : CLASOMAAM
Site Code : 05117027
Start Date : 1/18/2017
Page No : 1

Groups Printed- Total Volume

	Southern Oaks Drive Southbound			Magnolia Lane Westbound			Southern Oaks Drive Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	4	5	9	0	8	8	11	0	11	28
07:15 AM	3	2	5	0	7	7	13	0	13	25
07:30 AM	3	7	10	0	20	20	28	0	28	58
07:45 AM	4	12	16	0	13	13	29	0	29	58
Total	14	26	40	0	48	48	81	0	81	169
08:00 AM	7	8	15	0	12	12	22	0	22	49
08:15 AM	2	14	16	0	15	15	15	0	15	46
08:30 AM	5	7	12	0	8	8	20	0	20	40
08:45 AM	6	9	15	1	12	13	18	0	18	46
Total	20	38	58	1	47	48	75	0	75	181
Grand Total	34	64	98	1	95	96	156	0	156	350
Apprch %	34.7	65.3		1	99		100	0		
Total %	9.7	18.3	28	0.3	27.1	27.4	44.6	0	44.6	

	Southern Oaks Drive Southbound			Magnolia Lane Westbound			Southern Oaks Drive Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	3	7	10	0	**20**	**20**	28	0	28	**58**
07:45 AM	4	12	**16**	0	13	13	**29**	0	**29**	58
08:00 AM	**7**	8	15	0	12	12	22	0	22	49
08:15 AM	2	**14**	16	0	15	15	15	0	15	46
Total Volume	16	41	57	0	60	60	94	0	94	211
% App. Total	28.1	71.9		0	100		100	0		
PHF	.571	.732	.891	.000	.750	.750	.810	.000	.810	.909

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County of Los Angeles
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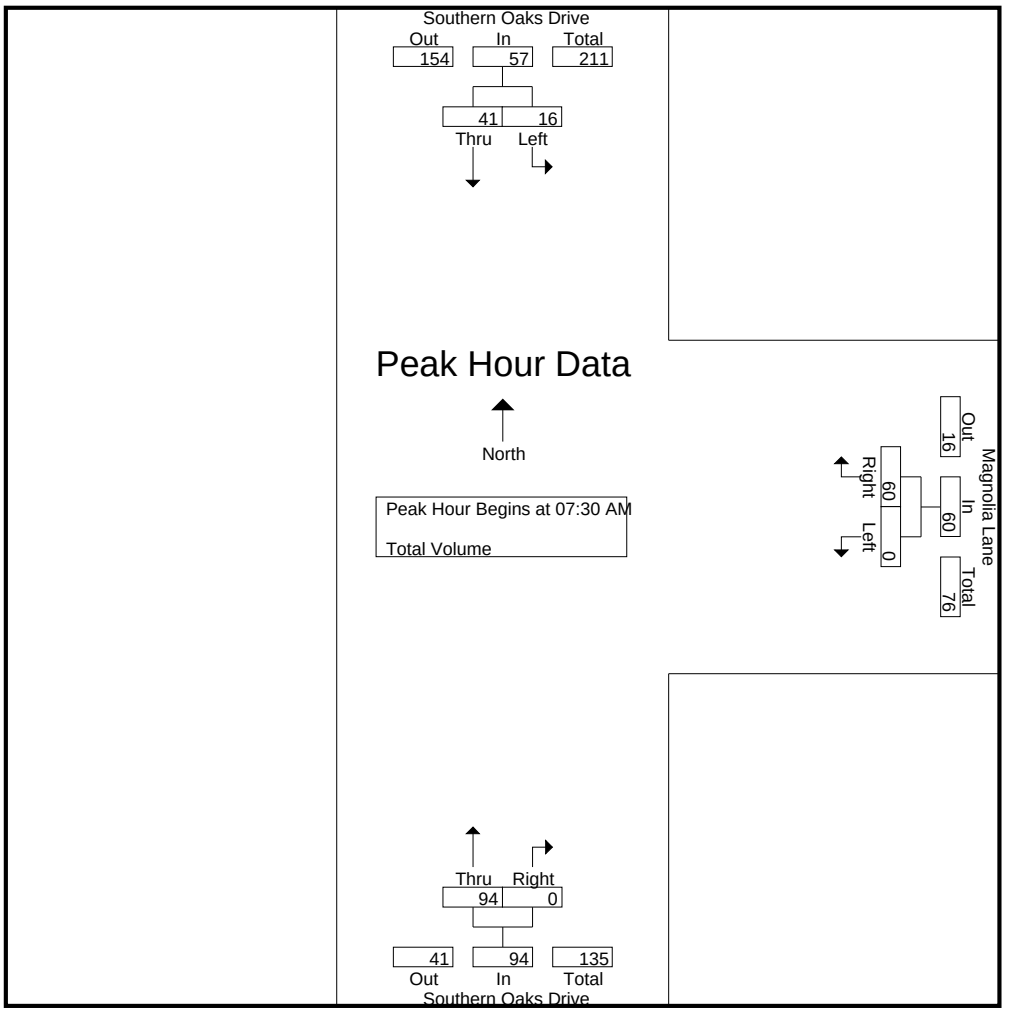
E/W: Magnolia Lane
Weather: Clear

File Name : CLASOMAAM
Site Code : 05117027
Start Date : 1/18/2017
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM			07:30 AM			07:30 AM		
+0 mins.	4	12	**16**	0	**20**	**20**	28	0	28
+15 mins.	**7**	8	15	0	13	13	**29**	0	**29**
+30 mins.	2	**14**	16	0	12	12	22	0	22
+45 mins.	5	7	12	0	15	15	15	0	15
Total Volume	18	41	59	0	60	60	94	0	94
% App. Total	30.5	69.5		0	100		100	0	
PHF	.643	.732	.922	.000	.750	.750	.810	.000	.810

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County of Los Angeles
N/S: Southern Oaks Drive
E/W: Magnolia Lane
Weather: Clear

File Name : CLASOMAPM
Site Code : 05117027
Start Date : 1/18/2017
Page No : 1

Groups Printed- Total Volume

	Southern Oaks Drive Southbound			Magnolia Lane Westbound			Southern Oaks Drive Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	8	8	16	0	4	4	10	0	10	30
04:15 PM	6	11	17	0	3	3	11	1	12	32
04:30 PM	5	13	18	0	3	3	11	0	11	32
04:45 PM	10	14	24	0	8	8	8	1	9	41
Total	29	46	75	0	18	18	40	2	42	135
05:00 PM	11	13	24	1	6	7	6	0	6	37
05:15 PM	12	13	25	0	8	8	13	0	13	46
05:30 PM	8	14	22	0	3	3	11	0	11	36
05:45 PM	5	22	27	0	7	7	19	0	19	53
Total	36	62	98	1	24	25	49	0	49	172
Grand Total	65	108	173	1	42	43	89	2	91	307
Apprch %	37.6	62.4		2.3	97.7		97.8	2.2		
Total %	21.2	35.2	56.4	0.3	13.7	14	29	0.7	29.6	

	Southern Oaks Drive Southbound			Magnolia Lane Westbound			Southern Oaks Drive Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	11	13	24	**1**	6	7	6	0	6	37
05:15 PM	**12**	13	25	0	**8**	**8**	13	0	13	46
05:30 PM	8	14	22	0	3	3	11	0	11	36
05:45 PM	5	**22**	**27**	0	7	7	**19**	0	**19**	**53**
Total Volume	36	62	98	1	24	25	49	0	49	172
% App. Total	36.7	63.3		4	96		100	0		
PHF	.750	.705	.907	.250	.750	.781	.645	.000	.645	.811

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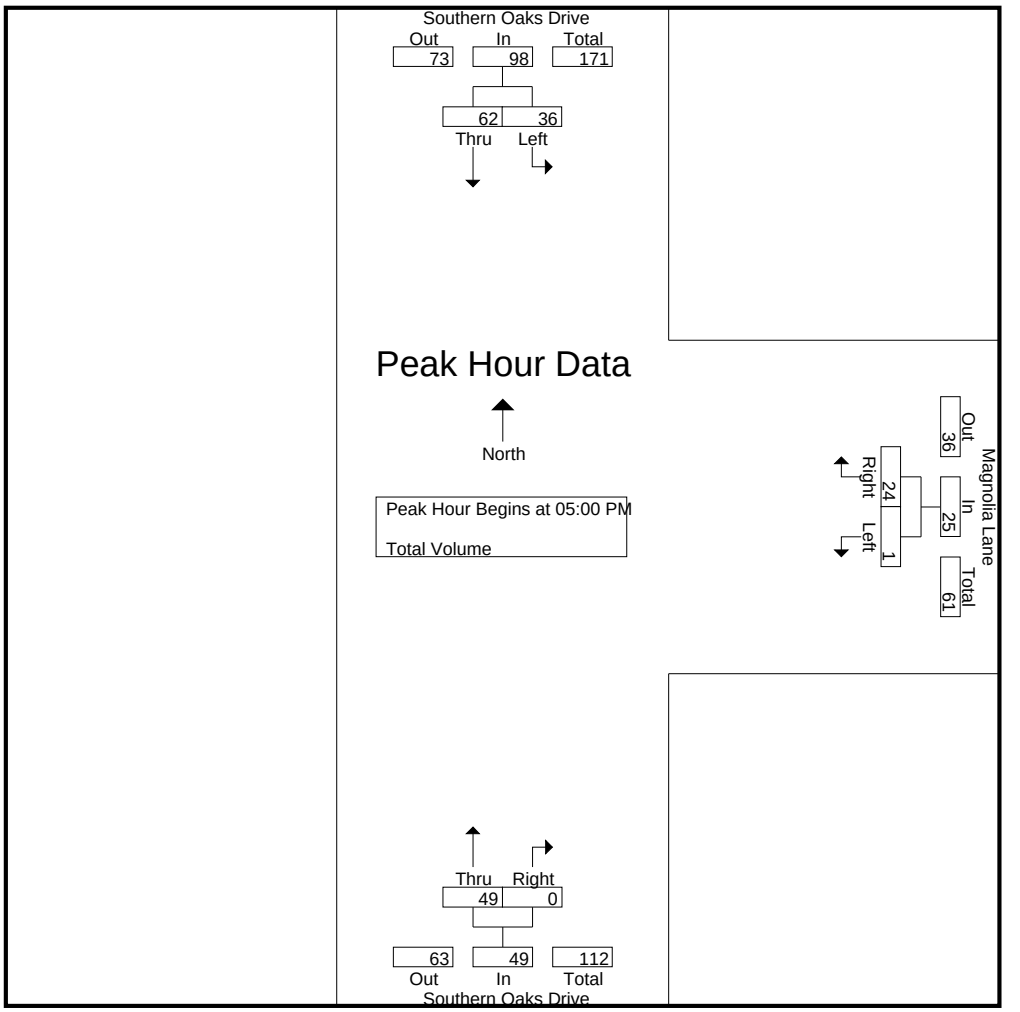
County of Los Angeles
N/S: Southern Oaks Drive
E/W: Magnolia Lane
Weather: Clear

File Name : CLASOMAPM
Site Code : 05117027
Start Date : 1/18/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			04:30 PM			05:00 PM		
+0 mins.	11	13	24	0	3	3	6	0	6
+15 mins.	**12**	13	25	0	**8**	**8**	13	0	13
+30 mins.	8	14	22	**1**	6	7	11	0	11
+45 mins.	5	**22**	**27**	0	8	8	**19**	0	**19**
Total Volume	36	62	98	1	25	26	49	0	49
% App. Total	36.7	63.3		3.8	96.2		100	0	
PHF	.750	.705	.907	.250	.781	.813	.645	.000	.645

Counts Unlimited
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County of Los Angeles
N/S: Stevenson Ranch Parkway
E/W: Pico Canyon Road
Weather: Clear

File Name : CLASTPIAM
Site Code : 05117027
Start Date : 1/18/2017
Page No : 1

Groups Printed- Total Volume

	Stevenson Ranch Parkway Southbound			Pico Canyon Road Westbound			Pico Canyon Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	100	1	101	14	15	29	7	21	28	158
07:15 AM	89	4	93	12	20	32	7	23	30	155
07:30 AM	133	1	134	20	36	56	19	34	53	243
07:45 AM	165	1	166	38	39	77	27	62	89	332
Total	487	7	494	84	110	194	60	140	200	888
08:00 AM	154	6	160	36	59	95	20	39	59	314
08:15 AM	113	5	118	11	23	34	19	21	40	192
08:30 AM	92	9	101	15	20	35	29	20	49	185
08:45 AM	101	8	109	13	22	35	37	24	61	205
Total	460	28	488	75	124	199	105	104	209	896
Grand Total	947	35	982	159	234	393	165	244	409	1784
Apprch %	96.4	3.6		40.5	59.5		40.3	59.7		
Total %	53.1	2	55	8.9	13.1	22	9.2	13.7	22.9	

	Stevenson Ranch Parkway Southbound			Pico Canyon Road Westbound			Pico Canyon Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	133	1	134	20	36	56	19	34	53	243
07:45 AM	**165**	1	**166**	**38**	39	77	**27**	**62**	**89**	**332**
08:00 AM	154	**6**	160	36	**59**	**95**	20	39	59	314
08:15 AM	113	5	118	11	23	34	19	21	40	192
Total Volume	565	13	578	105	157	262	85	156	241	1081
% App. Total	97.8	2.2		40.1	59.9		35.3	64.7		
PHF	.856	.542	.870	.691	.665	.689	.787	.629	.677	.814

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County of Los Angeles
N/S: Stevenson Ranch Parkway
E/W: Pico Canyon Road
Weather: Clear

File Name : CLASTPIAM
Site Code : 05117027
Start Date : 1/18/2017
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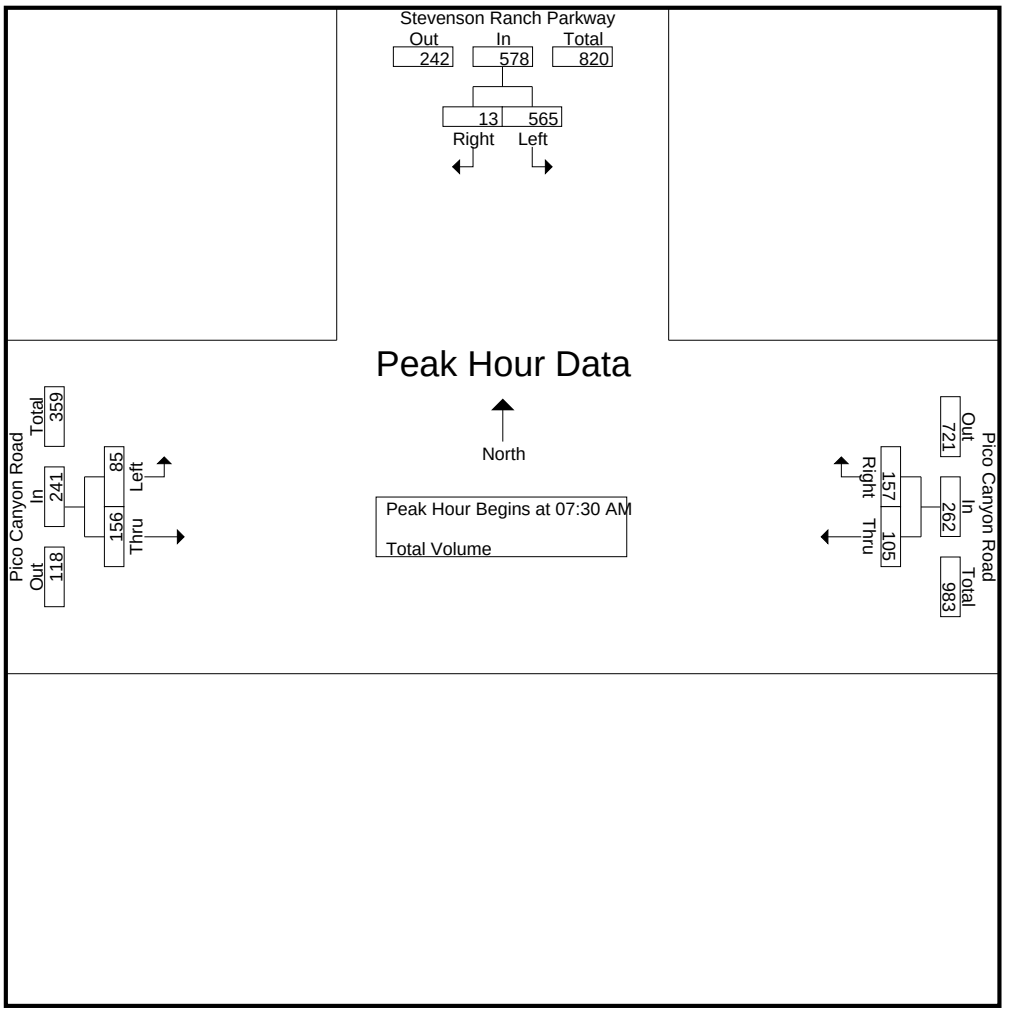

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:30 AM			07:30 AM		
+0 mins.	133	1	134	20	36	56	19	34	53
+15 mins.	**165**	1	**166**	**38**	39	77	**27**	**62**	**89**
+30 mins.	154	**6**	160	36	**59**	**95**	20	39	59
+45 mins.	113	5	118	11	23	34	19	21	40
Total Volume	565	13	578	105	157	262	85	156	241
% App. Total	97.8	2.2		40.1	59.9		35.3	64.7	
PHF	.856	.542	.870	.691	.665	.689	.787	.629	.677

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County of Los Angeles
N/S: Stevenson Ranch Parkway
E/W: Pico Canyon Road
Weather: Clear

File Name : CLASTPIPM
Site Code : 05117027
Start Date : 1/18/2017
Page No : 1

Groups Printed- Total Volume

	Stevenson Ranch Parkway Southbound			Pico Canyon Road Westbound			Pico Canyon Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	68	9	77	27	80	107	12	13	25	209
04:15 PM	54	9	63	28	73	101	14	15	29	193
04:30 PM	78	6	84	30	63	93	13	19	32	209
04:45 PM	71	6	77	36	75	111	14	20	34	222
Total	271	30	301	121	291	412	53	67	120	833
05:00 PM	73	8	81	32	84	116	9	23	32	229
05:15 PM	60	11	71	28	99	127	11	13	24	222
05:30 PM	74	4	78	32	88	120	16	12	28	226
05:45 PM	67	5	72	34	77	111	20	17	37	220
Total	274	28	302	126	348	474	56	65	121	897
Grand Total	545	58	603	247	639	886	109	132	241	1730
Apprch %	90.4	9.6		27.9	72.1		45.2	54.8		
Total %	31.5	3.4	34.9	14.3	36.9	51.2	6.3	7.6	13.9	

	Stevenson Ranch Parkway Southbound			Pico Canyon Road Westbound			Pico Canyon Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	71	6	77	**36**	75	111	14	20	**34**	222
05:00 PM	73	8	**81**	32	84	116	9	**23**	32	**229**
05:15 PM	60	**11**	71	28	**99**	**127**	11	13	24	222
05:30 PM	**74**	4	78	32	88	120	**16**	12	28	226
Total Volume	278	29	307	128	346	474	50	68	118	899
% App. Total	90.6	9.4		27	73		42.4	57.6		
PHF	.939	.659	.948	.889	.874	.933	.781	.739	.868	.981

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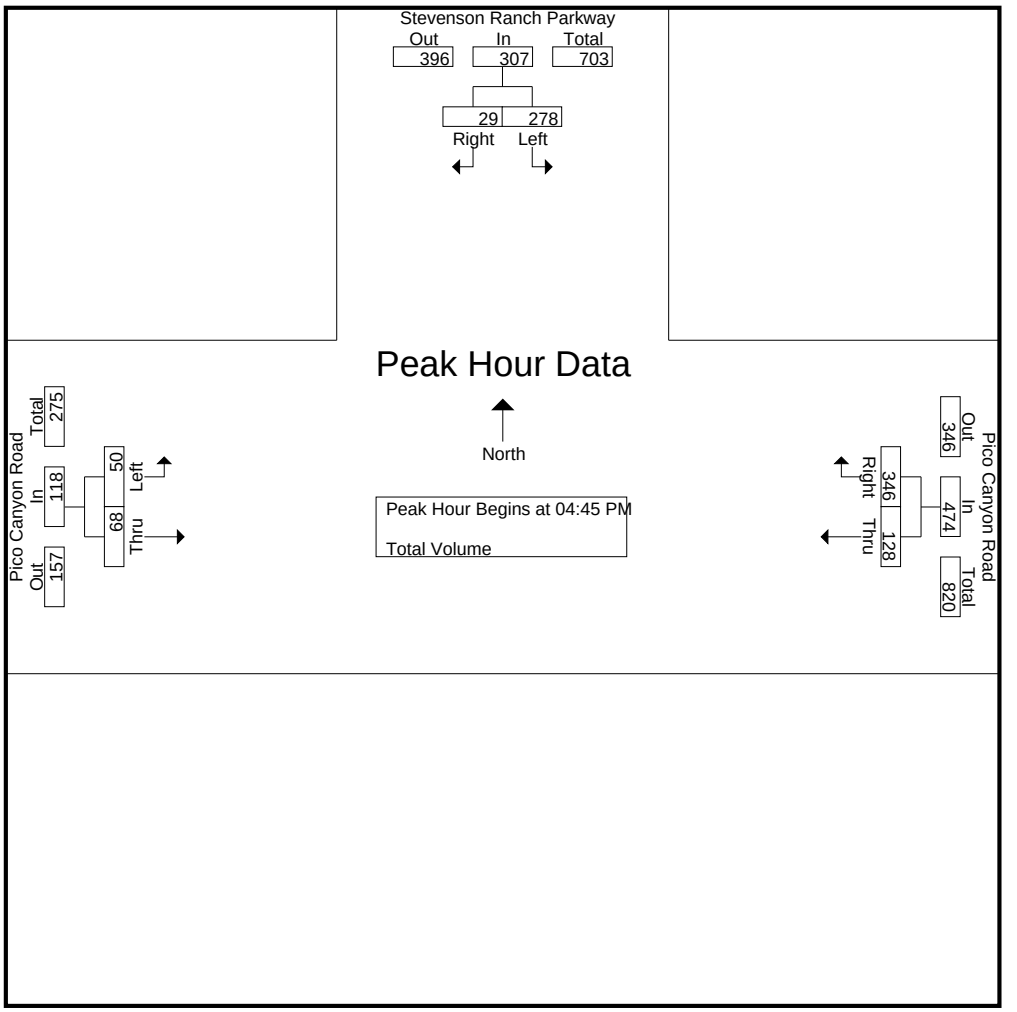
County of Los Angeles
N/S: Stevenson Ranch Parkway
E/W: Pico Canyon Road
Weather: Clear

File Name : CLASTPIPM
Site Code : 05117027
Start Date : 1/18/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			04:45 PM			04:15 PM		
+0 mins.	**78**	6	**84**	**36**	75	111	**14**	15	29
+15 mins.	71	6	77	32	84	116	13	19	32
+30 mins.	73	8	81	28	**99**	**127**	14	20	**34**
+45 mins.	60	**11**	71	32	88	120	9	**23**	32
Total Volume	282	31	313	128	346	474	50	77	127
% App. Total	90.1	9.9		27	73		39.4	60.6	
PHF	.904	.705	.932	.889	.874	.933	.893	.837	.934

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ATTACHMENT B:

EXISTING CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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JN:10734 Canyon Hills Estates
Existing Conditions
AM PEAK HOUR

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #6 Southern Oaks (NS) at Pico Cyn (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.415
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	60	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 1	0 0	0	0 0	0 0	1	0 1	1 0	1	0 0
Volume Module:												
Base Vol:	0	0	142	0	0	0	0	109	1	105	61	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	142	0	0	0	0	109	1	105	61	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
PHF Volume:	0	0	201	0	0	0	0	154	1	149	86	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	201	0	0	0	0	154	1	149	86	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	201	0	0	0	0	154	1	149	86	0
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00
Final Sat.:	0	0	1600	0	0	0	0	1600	1600	1600	1600	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.10	0.00	0.09	0.05	0.00
Crit Moves:			****					****		****		

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JN:10734 Canyon Hills Estates
Existing Conditions
AM PEAK HOUR

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #3 Southern Oaks Dr (NS) at Magnolia Ln (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.206
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	60	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	1 0	0	0	1 0	0 0	0	0 0	0 0	0	0 0	0 1
Volume Module:												
Base Vol:	0	94	0	16	41	0	0	0	0	0	0	60
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	94	0	16	41	0	0	0	0	0	0	60
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	0	103	0	18	45	0	0	0	0	0	0	66
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	103	0	18	45	0	0	0	0	0	0	66
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	103	0	18	45	0	0	0	0	0	0	66
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	1.00	0.00	0.28	0.72	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Final Sat.:	0	1600	0	449	1151	0	0	0	0	0	0	1600
Capacity Analysis Module:												
Vol/Sat:	0.00	0.06	0.00	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.04
Crit Moves:		****										****

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JN:10734 Canyon Hills Estates
Existing Conditions
AM PEAK HOUR

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #7 Stevenson Ranch Pkwy (NS) at Pico Canyon Rd (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.527
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	60	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	0	2	0	0	1	0	1	0	1	0
Volume Module:												
Base Vol:	0	0	0	565	0	13	85	156	0	0	105	157
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	565	0	13	85	156	0	0	105	157
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
PHF Volume:	0	0	0	694	0	16	104	192	0	0	129	193
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	694	0	16	104	192	0	0	129	193
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	694	0	16	104	192	0	0	129	193
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	2.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	2880	0	1600	1600	1600	0	0	1600	1600
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.24	0.00	0.01	0.07	0.12	0.00	0.00	0.08	0.12
Crit Moves:				****			****					****

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JN:10734 Canyon Hills Estates
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Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #6 Southern Oaks (NS) at Pico Cyn (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.257
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	60	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1! 0	0	0	0	0	0	1	0	1	1	0	1	0	0
Volume Module:												
Base Vol:	1	0	74	0	0	0	0	39	1	106	73	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	0	74	0	0	0	0	39	1	106	73	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	1	0	85	0	0	0	0	45	1	121	83	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	1	0	85	0	0	0	0	45	1	121	83	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	1	0	85	0	0	0	0	45	1	121	83	0
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.01	0.00	0.99	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00
Final Sat.:	21	0	1579	0	0	0	0	1600	1600	1600	1600	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.03	0.00	0.08	0.05	0.00
Crit Moves:			****					****		****		

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Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #3 Southern Oaks Dr (NS) at Magnolia Ln (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.195
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	60	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	1	0 0	0	1 0	0 0	0	0 0	0 0	0	0	1! 0 0
Volume Module:												
Base Vol:	0	49	0	36	62	0	0	0	0	1	0	24
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	49	0	36	62	0	0	0	0	1	0	24
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
PHF Volume:	0	60	0	44	76	0	0	0	0	1	0	30
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	60	0	44	76	0	0	0	0	1	0	30
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	60	0	44	76	0	0	0	0	1	0	30
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	1.00	0.00	0.37	0.63	0.00	0.00	0.00	0.00	0.04	0.00	0.96
Final Sat.:	0	1600	0	588	1012	0	0	0	0	64	0	1536
Capacity Analysis Module:												
Vol/Sat:	0.00	0.04	0.00	0.03	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Crit Moves:	****			****								****

JN:10734 Canyon Hills Estates
Existing Conditions
PM PEAK HOUR

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #7 Stevenson Ranch Pkwy (NS) at Pico Canyon Rd (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.451
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	60	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	0	2	0	0	1	0	1	0	1	0
Volume Module:												
Base Vol:	0	0	0	278	0	29	50	68	0	0	128	346
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	278	0	29	50	68	0	0	128	346
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
PHF Volume:	0	0	0	283	0	30	51	69	0	0	130	353
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	283	0	30	51	69	0	0	130	353
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	283	0	30	51	69	0	0	130	353
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	2.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	2880	0	1600	1600	1600	0	0	1600	1600
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.10	0.00	0.02	0.03	0.04	0.00	0.00	0.08	0.22
Crit Moves:				****			****					****

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ATTACHMENT C:

EXISTING PLUS PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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JN:10734 Canyon Hills Estates
Existing Plus Project Conditions
AM PEAK HOUR

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #6 Southern Oaks (NS) at Pico Cyn (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.440
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	60	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 1	0 0	0	0 0	0 0	1	0 1	1 0	1	0 0
Volume Module:												
Base Vol:	0	0	163	0	0	0	0	109	1	112	61	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	163	0	0	0	0	109	1	112	61	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
PHF Volume:	0	0	231	0	0	0	0	154	1	159	86	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	231	0	0	0	0	154	1	159	86	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	231	0	0	0	0	154	1	159	86	0
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00
Final Sat.:	0	0	1600	0	0	0	0	1600	1600	1600	1600	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.05	0.00
Crit Moves:			****					****		****		

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JN:10734 Canyon Hills Estates
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Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #3 Southern Oaks Dr (NS) at Magnolia Ln (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.220
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	60	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	1 0	0	0	1 0	0 0	0	0 0	0 0	0	0 0	1
Volume Module:												
Base Vol:	0	94	0	23	41	0	0	0	0	0	0	81
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	94	0	23	41	0	0	0	0	0	0	81
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	0	103	0	25	45	0	0	0	0	0	0	89
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	103	0	25	45	0	0	0	0	0	0	89
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	103	0	25	45	0	0	0	0	0	0	89
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	1.00	0.00	0.36	0.64	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Final Sat.:	0	1600	0	575	1025	0	0	0	0	0	0	1600
Capacity Analysis Module:												
Vol/Sat:	0.00	0.06	0.00	0.02	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.06
Crit Moves:		****										****

JN:10734 Canyon Hills Estates
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Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #7 Stevenson Ranch Pkwy (NS) at Pico Canyon Rd (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.535
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	60	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	2 0	0	0 1	1 0	1	0 0	0 0	1	0 1
Volume Module:												
Base Vol:	0	0	0	565	0	17	96	166	0	0	108	157
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	565	0	17	96	166	0	0	108	157
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
PHF Volume:	0	0	0	694	0	21	118	204	0	0	133	193
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	694	0	21	118	204	0	0	133	193
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	694	0	21	118	204	0	0	133	193
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	2.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	2880	0	1600	1600	1600	0	0	1600	1600
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.24	0.00	0.01	0.07	0.13	0.00	0.00	0.08	0.12
Crit Moves:				****			****					****

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JN:10734 Canyon Hills Estates
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Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #6 Southern Oaks (NS) at Pico Cyn (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.284
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	60	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1! 0	0	0	0	0	0	1	0	1	1	0	1	0	0
Volume Module:												
Base Vol:	1	0	88	0	0	0	0	39	1	129	73	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	0	88	0	0	0	0	39	1	129	73	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	1	0	101	0	0	0	0	45	1	147	83	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	1	0	101	0	0	0	0	45	1	147	83	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	1	0	101	0	0	0	0	45	1	147	83	0
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.01	0.00	0.99	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00
Final Sat.:	18	0	1582	0	0	0	0	1600	1600	1600	1600	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.03	0.00	0.09	0.05	0.00
Crit Moves:			****					****		****		

JN:10734 Canyon Hills Estates
Existing Plus Project Conditions
PM PEAK HOUR

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #3 Southern Oaks Dr (NS) at Magnolia Ln (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.223
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	60	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	1 0	0	0	1 0	0 0	0	0 0	0 0	0	0 1!	0 0
Volume Module:												
Base Vol:	0	49	0	59	62	0	0	0	0	1	0	38
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	49	0	59	62	0	0	0	0	1	0	38
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
PHF Volume:	0	60	0	73	76	0	0	0	0	1	0	47
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	60	0	73	76	0	0	0	0	1	0	47
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	60	0	73	76	0	0	0	0	1	0	47
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	1.00	0.00	0.49	0.51	0.00	0.00	0.00	0.00	0.03	0.00	0.97
Final Sat.:	0	1600	0	780	820	0	0	0	0	41	0	1559
Capacity Analysis Module:												
Vol/Sat:	0.00	0.04	0.00	0.05	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Crit Moves:	****				****							****

JN:10734 Canyon Hills Estates
Existing Plus Project Conditions
PM PEAK HOUR

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #7 Stevenson Ranch Pkwy (NS) at Pico Canyon Rd (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.455
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	60	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	2 0	0	0 1	1 0	1	0 0	0 0	1	0 1
Volume Module:												
Base Vol:	0	0	0	278	0	41	57	75	0	0	139	346
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	278	0	41	57	75	0	0	139	346
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
PHF Volume:	0	0	0	283	0	42	58	76	0	0	142	353
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	283	0	42	58	76	0	0	142	353
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	283	0	42	58	76	0	0	142	353
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	2.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	2880	0	1600	1600	1600	0	0	1600	1600
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.10	0.00	0.03	0.04	0.05	0.00	0.00	0.09	0.22
Crit Moves:				****			****					****

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ATTACHMENT D:

CUMULATIVE PROJECT INFORMATION

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Department *of* Regional Planning
320 West Temple Street
Los Angeles, California 90012

PROJECT NUMBER
R2013-01790-(5)

HEARING DATE
Pending/holds not cleared

REQUESTED ENTITLEMENTS
Vesting Tentative Tract Map No. TR061911
Conditional Use Permit No. 201300091
Oak Tree Permit No. 201300024
Environmental Assessment No. 201300154

SUBDIVISION COMMITTEE REPORT

OWNER / APPLICANT	MAP/EXHIBIT DATE:	SCM REPORT DATE:	SCM DATE:
Newhall Land and Farming Company (W. Corey Harpole)	April 15, 2015	May 21, 2015	May 28, 2015

PROJECT OVERVIEW

The proposed project, "Potrero Village," consists of a mixed use development with 4,385 dwelling units (1,614 SFR units and 3,221 MF/Condo units), three (3) parks totaling 190 acres, five (5) recreation centers, an elementary school, a fire station, a visitor center, a 14.8 acre spineflower reserve, 1,463 acres of open space, and 245,000 square feet of commercial development on a 26.9-acre site (gross).

Subdivision: To create 1,198 residential lots (1,164 single-family lots and 36 multi-family/condominium lots), 3 commercial lots (245,000 sf), 1 school lot (11.5 ac), 1 fire station lot (1.5 ac), 5 recreation center lots (8.9 ac), 1 visitor center lot (36.6 ac), 1 spineflower preserve lot (14.8 ac), 7 park lots (191 ac), (329 open space lots (1,463 ac), and 29 public facility lots (including a fire station, debris basins, water quality basins, and an SCE Substation), 40 private drive lots (1,616 total lots).

The project will require other infrastructure improvements such as debris basins, electrical transfer station, water quality basins and an internal circulation system consisting of trails, driveways, streets and highways. The property is located within the boundary of the adopted Newhall Ranch Specific Plan and the irregular-shaped property consists of slopping topography, with flat agricultural lands along the Santa Clara River to the south with step and rolling hills to the north. Portion of the property is located within a designated floodplain, SEA 20 is within the southerly portion of the project site and off-site improvements may be located within SEA 23. The development of the project requires approximately 35 million cubic yards of grading (cut and fill) to be balanced on-site and the encroachment and removal of yet to be determined number of oak trees.

CUP: For development within an SEA and onsite grading in excess of 100,000 cubic yards.
To authorize the development of second units on single-family lots located within the Estate (E) and Low Residential (L) land use designations pursuant to Section 3.9 of the Newhall Ranch Specific Plan.

Oak Tree Permit: For the removal of ___ oak trees and encroachment into the protected zone of __ oak trees. There are ___ heritage-status oak trees onsite and ___ are proposed to be encroached upon/removed.

MAP STAGE

Tentative: ☒ Revised: ☐ Amendment: ☐ Amended : ☐ Exhibit ñAò Modification to : ☐ Recorded Map Other: ☐

MAP STATUS

Initial: ☐ 1st Revision: ☐ 2nd Revision: ☐ Additional Revisions (requires a fee): ☒

LOCATION

South of Route 126, approx. one mile west of I-5, east of Barranca Drive and west of the terminus of Magic Mountain Parkway.

ACCESS

Future extension of Magic Mountain Parkway (TR061105 & TR060678) and Long Canyon Road (TR53108 & TR060678). Both are mapped secondary highways.

ASSESSORS PARCEL NUMBER(S)

APNs. 2826-123-003, 2826-001-034 2826-123-001; and 2826-122-001, 002, 005, 006, 007 and 008

SITE AREA

2,500.0 Acres

GENERAL PLAN / LOCAL PLAN **ZONED DISTRICT** **SUP DISTRICT**

Newhall Ranch Specific Plan	Newhall	5th

LAND USE DESIGNATION	**ZONE**	**CSD**
Specific Plan (Newhall Ranch SP)	Specific Plan	N/A (adjacent to Castaic CSD)

PROPOSED UNITS (DU)	**MAX DENSITY/UNITS (DU)**	**GRADING, CUBIC YARDS (CUT/FILL, IMPORT/EXPORT, ONSITE/OFFSITE)**
1.75 du/ac or 4,385 du/2,500 ac	TBD by SP consistency analysis (pending)	Cut: 35,200,000 cyds Fill: 35,200,000 cyds Grading to be balanced on-site.

ENVIRONMENTAL DETERMINATION (CEQA)

EIR is required.

SUBDIVISION COMMITTEE DEPARTMENT CLEARANCE

Department	Status	Contact
Regional Planning	Hold	Diane Aranda (213) 974-1522 daranda@planning.lacounty.gov
Public Works	Hold	Henry Wong (626) 458-4961 hwong@dpw.lacounty.gov
Fire	Hold	Juan Padilla (323) 890-4243 jpadilla@fire.lacounty.gov
Parks & Recreation	Hold	Clement Lau (213) 351-5120 clau@parks.lacounty.gov
Public Health	Hold	Thao Komura (626) 430-5581 tkomura@ph.lacounty.gov

SUBDIVISION COMMITTEE STATUS

Tentative Map Revision Required: ☒
Exhibit Map/Exhibit ñAò Revision Required: ☒
Revised Application Required: ☒
Reschedule for Subdivision Committee Meeting: ☒
Reschedule for Subdivision Committee Reports Only: ☐
Other Holds (see below): ☒

REGIONAL PLANNING ADDITIONAL COMMENTS AND HOLDS

Case Status/Recommendation: At this time, Regional Planning does not recommend approval of the tentative map. Please read below for further details.

Land Use Policy:

Clear ☐ Hold ☒

1. Under Review

Tentative Map:

Clear ☐ Hold ☒

(Sheet 1)

1. Include a description for the Substantial Conformance Review request
2. Revise General Note no. 5 to state, ñ*Permission **is** requested to file "Large Lot" Tract Maps of 20 Acres or More (Without Improvements) as specified in the County Subdivision Code."*
3. Revise no. 6, 7 and 8 to add ñto the satisfaction of DRP and DPW as depictedò

(Sheet 2)

4. All street sections must comply with the Healthy Design Ordinance (see HDO code summary and guidelines).

(Sheet 3)

5. Lots 22, 25, 23, 24, 40, 41 and 44 are < 40ô Are some of these lots proposed to be flag lots?
6. Lot 65 is missing. Not clear on where it is located.
7. The table lists that Lot 84 is within Area A7 although the lot is located adjacent to A2, A3 and A4. Organize/label lots to be located within the correct area.
8. Unclear if area adjacent to lot 167 is part of lot 167 or is it a lot without a designated number.

(Sheet 4)

9. Add pedestrian connection between 218/219 (comment from previous report)
10. Lots 242 and 243 (open space) are within the A 8 area on the map but are listed in the table as being in Area 9. Revise table and map to be consistent
11. Label for lot 65 is cluttered/unclear.
12. Insert pedestrian connection between lots 99 and 100.
13. Lot 136 lot frontage < 40ô
14. Area between lot 139 and 138 does not have a designated lot number.
15. Lot 89 and 147 (open space) is missing
16. Insert pedestrian access from condos to adjacent recreation center

(Sheet 5)

17. Lot 435 is missing
18. Lot 455 should be in Area B10 instead of B3.

(Sheet 6)

19. Lots 294, 295, 296, and 297 have lot frontage <40ôas required in Title 21.
20. Lot 466 (park) is located within the Area B6 on the map although it is listed in the table as being in Area B11. Revise table/map to be consistent.
21. Lots 725 and 726 have lot frontage < 40ôas required by Title 21.
22. Lot 667 (park) is listed in the table as being in Area C3 although the map shows that itôs in the C5 area. Revise map/table to be consistent.
23. Lots 668 and 669 are missing

(Sheet 7)

24. Lot 881 (park) is located in Area D8 although the table says that it is in the D3 area. The table does not have an Area D8.
25. Provide a pedestrian access from condo lot 880 to the adjacent park lot 881.

(Sheet 10)

26. Lots 532, 548, and 549 have lot frontage <40ôas required in Title 21.

(Sheet 11)

27. Lot 932 has lot frontage <40ôas required in Title 21.
28. Condo lot 1539 is landlocked; provide access to ROW.

(Sheet 12)

29. A condition shall limit residential development to 300 dwelling units where there is only a single means of access, until a second means of access is provided through future development.

(Global Comments)

30. Eliminate/redesign irregular and curvilinear lot lines where appropriate.
31. Provide typical access width for flag lots or identify the width of each flag lot strip (15ô, 20ôand 24ôfor single, dual and greater than three, respectively). Not clear on which lots are flag.
32. Provide separate oak tree exhibit.
33. Private drives shall be designed per the Westside Communities Private Drive and Traffic Calming Design Guidelines as consistent with Healthy Design Ordinance (see previously provided HDO summary and scaled cross section sample). Include scaled cross-section typicals in planning handbook.
34. Only ñstandardò road cross sections shall be used, per HDO, no ñalternateò sections.
35. All common pedestrian walkways (such as for cul-de-sac thru-connections) should either be located on separate common private lots, or, have easements (HDO requirement).
36. Provide a statistical Substantial Conformance summary table illustrating how the proposed project is in substantial conformance with the Specific Plan.
37. Provide a substantial conformance analysis illustrating how the proposed areas overlay on the existing specific plan land use designations.

<u>Exhibit Map/Exhibit ñAò</u>

Clear ☐ Hold ☒

(Sheet 1)

38. Add ñto the satisfaction of DRP and DPW as depictedò to General Notes nos. 6, 7 and 8.
39. Please provide the ñStreet Tree Noteò to illustrate compliance with the Healthy Design Ordinance. (Section 21.32.160 (street) and 21.32.195 (onsite) (total linear frontage / 25 = total trees required). Pursuant to section 2.32.160 street trees are required; 21.32.195 onsite trees are required with 25-foot spacing and required street trees may be utilized as part of count.

(Sheet 2)

40. Include bicycle parking note to comply with bicycle parking requirement. Long term bicycle parking shall be provided per LA County Code requirements (Section 22.52.1225.4.(b)). The required space shall be provided within an enclosed garage or other appropriate location(s) to the satisfaction of DRP.
41. Add internal pedestrian walkway standards for residential and commercial condo projects, minimum five-foot width and with a four-foot wide planting strip for residential projects with a density of 12 du/ac or more.
42. Main condo unit (pedestrian) entrances are to take access from a landscaped common area (i.e. courtyard or paseo). Main pedestrian access is prohibited from a fire lane shared by garages (secondary access allowed) **(Sheet 3)**
43. Include bicycle parking note to comply with bicycle parking requirement. Long term bicycle parking shall be provided per LA County Code requirements (Section 22.52.1225.4.(b)). The required space shall be provided within an enclosed garage or other appropriate location(s) to the satisfaction of DRP.
44. Add internal pedestrian walkway standards for residential and commercial condo projects, minimum five-foot width and with a four-foot wide planting strip for residential projects with a density of 12 du/ac or more.
45. Main condo unit (pedestrian) entrances are to take access from a landscaped common area (i.e. courtyard or paseo). Main pedestrian access is prohibited from a fire lane shared by garages (secondary access allowed) **(Sheet 4)**
46. Include bicycle parking note to comply with bicycle parking requirement. Long term bicycle parking shall be provided per LA County Code requirements (Section 22.52.1225.4.(b)). The required space shall be provided within an enclosed garage or other appropriate location(s) to the satisfaction of DRP.
47. Add internal pedestrian walkway standards for residential and commercial condo projects, minimum five-foot width and with a four-foot wide planting strip for residential projects with a density of 12 du/ac or more.
48. Main condo unit (pedestrian) entrances are to take access from a landscaped common area (i.e. courtyard or paseo). Main pedestrian access is prohibited from a fire lane shared by garages (secondary access allowed)
49. Illustrate pedestrian pathway from condo lot 68 to open space lot 84. **(Sheet 5)**
50. Include bicycle parking note to comply with bicycle parking requirement. Long term bicycle parking shall be provided per LA County Code requirements (Section 22.52.1225.4.(b)). The required space shall be provided within an enclosed garage or other appropriate location(s) to the satisfaction of DRP.
51. Add internal pedestrian walkway standards for residential and commercial condo projects, minimum five-foot width and with a four-foot wide planting strip for residential projects with a density of 12 du/ac or more. **(Sheet 6)**
52. Revise guest/street parking to be located outside of the fire lane.
53. Include bicycle parking note to comply with bicycle parking requirement. Long term bicycle parking shall be provided per LA County Code requirements (Section 22.52.1225.4.(b)). The required space shall be provided within an enclosed garage or other appropriate location(s) to the satisfaction of DRP.
54. Add internal pedestrian walkway standards for residential and commercial condo projects, minimum five-foot width and with a four-foot wide planting strip for residential projects with a density of 12 du/ac or more. **(Sheet 7)**
55. Illustrate pedestrian pathway to ñshared recreation centerò
56. Include bicycle parking note to comply with bicycle parking requirement. Long term bicycle parking shall be provided per LA County Code requirements (Section 22.52.1225.4.(b)). The required space shall be provided within an enclosed garage or other appropriate location(s) to the satisfaction of DRP.
57. Add internal pedestrian walkway standards for residential and commercial condo projects, minimum five-foot width and with a four-foot wide planting strip for residential projects with a density of 12 du/ac or more. **(Sheet 8)**
58. Include bicycle parking note to comply with bicycle parking requirement. Long term bicycle parking shall be provided per LA County Code requirements (Section 22.52.1225.4.(b)). The required space shall be provided within an enclosed garage or other appropriate location(s) to the satisfaction of DRP.
59. Add internal pedestrian walkway standards for residential and commercial condo projects, minimum five-foot width and with a four-foot wide planting strip for residential projects with a density of 12 du/ac or more. **(Sheet 9)**
60. Illustrate pedestrian access connection from lot 465 to lot 466.
61. Include bicycle parking note to comply with bicycle parking requirement. Long term bicycle parking shall be provided per LA County Code requirements (Section 22.52.1225.4.(b)). The required space shall be provided within an enclosed garage or other appropriate location(s) to the satisfaction of DRP.
62. Add internal pedestrian walkway standards for residential and commercial condo projects, minimum five-foot width and with a four-foot wide planting strip for residential projects with a density of 12 du/ac or more. **(Sheet 10)**

63. Include bicycle parking note to comply with bicycle parking requirement. Long term bicycle parking shall be provided per LA County Code requirements (Section 22.52.1225.4.(b)). The required space shall be provided within an enclosed garage or other appropriate location(s) to the satisfaction of DRP.
64. Add internal pedestrian walkway standards for residential and commercial condo projects, minimum five-foot width and with a four-foot wide planting strip for residential projects with a density of 12 du/ac or more. **(Sheet 11)**
65. Include bicycle parking note to comply with bicycle parking requirement. Long term bicycle parking shall be provided per LA County Code requirements (Section 22.52.1225.4.(b)). The required space shall be provided within an enclosed garage or other appropriate location(s) to the satisfaction of DRP. **(Sheet 12)**
66. Include bicycle parking note to comply with bicycle parking requirement. Long term bicycle parking shall be provided per LA County Code requirements (Section 22.52.1225.4.(b)). The required space shall be provided within an enclosed garage or other appropriate location(s) to the satisfaction of DRP.
67. Add internal pedestrian walkway standards for residential and commercial condo projects, minimum five-foot width and with a four-foot wide planting strip for residential projects with a density of 12 du/ac or more. **(Sheet 13)**
68. Include bicycle parking note to comply with bicycle parking requirement. Long term bicycle parking shall be provided per LA County Code requirements (Section 22.52.1225.4.(b)). The required space shall be provided within an enclosed garage or other appropriate location(s) to the satisfaction of DRP.
69. Add internal pedestrian walkway standards for residential and commercial condo projects, minimum five-foot width and with a four-foot wide planting strip for residential projects with a density of 12 du/ac or more. **(Sheet 14)**
70. Include bicycle parking note to comply with bicycle parking requirement. Long term bicycle parking shall be provided per LA County Code requirements (Section 22.52.1225.4.(b)). The required space shall be provided within an enclosed garage or other appropriate location(s) to the satisfaction of DRP.
71. Add internal pedestrian walkway standards for residential and commercial condo projects, minimum five-foot width and with a four-foot wide planting strip for residential projects with a density of 12 du/ac or more.
72. Provide a pedestrian connection from condo lot to park. **(Sheet 15)**
73. Include bicycle parking note to comply with bicycle parking requirement. Long term bicycle parking shall be provided per LA County Code requirements (Section 22.52.1225.4.(b)). The required space shall be provided within an enclosed garage or other appropriate location(s) to the satisfaction of DRP.
74. Add internal pedestrian walkway standards for residential and commercial condo projects, minimum five-foot width and with a four-foot wide planting strip for residential projects with a density of 12 du/ac or more. **(Sheet 16)**
75. Include bicycle parking note to comply with bicycle parking requirement. Long term bicycle parking shall be provided per LA County Code requirements (Section 22.52.1225.4.(b)). The required space shall be provided within an enclosed garage or other appropriate location(s) to the satisfaction of DRP.
76. Add internal pedestrian walkway standards for residential and commercial condo projects, minimum five-foot width and with a four-foot wide planting strip for residential projects with a density of 12 du/ac or more.
77. Condo lot 899 does not illustrate guest parking. Revise to show required guest parking. **(Sheet 17)**
78. Include bicycle parking note to comply with bicycle parking requirement. Long term bicycle parking shall be provided per LA County Code requirements (Section 22.52.1225.4.(b)). The required space shall be provided within an enclosed garage or other appropriate location(s) to the satisfaction of DRP.
79. Add internal pedestrian walkway standards for residential and commercial condo projects, minimum five-foot width and with a four-foot wide planting strip for residential projects with a density of 12 du/ac or more. **(Sheet 18)**
80. Include bicycle parking note to comply with bicycle parking requirement. Long term bicycle parking shall be provided per LA County Code requirements (Section 22.52.1225.4.(b)). The required space shall be provided within an enclosed garage or other appropriate location(s) to the satisfaction of DRP.
81. Add internal pedestrian walkway standards for residential and commercial condo projects, minimum five-foot width and with a four-foot wide planting strip for residential projects with a density of 12 du/ac or more. **(Sheet 19)**
82. Include bicycle parking note to comply with bicycle parking requirement. Long term bicycle parking shall be provided per LA County Code requirements (Section 22.52.1225.4.(b)). The required space shall be provided within an enclosed garage or other appropriate location(s) to the satisfaction of DRP.
83. Add internal pedestrian walkway standards for residential and commercial condo projects, minimum five-foot

width and with a four-foot wide planting strip for residential projects with a density of 12 du/ac or more.
(Sheet 20)

84. Include bicycle parking note to comply with bicycle parking requirement. Long term bicycle parking shall be provided per LA County Code requirements (Section 22.52.1225.4.(b)). The required space shall be provided within an enclosed garage or other appropriate location(s) to the satisfaction of DRP.
85. Add internal pedestrian walkway standards for residential and commercial condo projects, minimum five-foot width and with a four-foot wide planting strip for residential projects with a density of 12 du/ac or more.
(Sheet 21)
86. Condo lot 1565 does not illustrate the required handicap guest parking spaces. Revise to show the required handicap parking spaces.
87. Include bicycle parking note to comply with bicycle parking requirement. Long term bicycle parking shall be provided per LA County Code requirements (Section 22.52.1225.4.(b)). The required space shall be provided within an enclosed garage or other appropriate location(s) to the satisfaction of DRP.
88. Add internal pedestrian walkway standards for residential and commercial condo projects, minimum five-foot width and with a four-foot wide planting strip for residential projects with a density of 12 du/ac or more.

(Global Comments)

89. Provide typical garage layout for double and tandem option.
90. Clarify unit identification for each MF lots.
91. Indicate MF lots with townhouse, detached and attached options.

Plan Amendment:
(N/A)

Zone Change:
(N/A)

Variance
(N/A)

Conditional Use Permit:
Clear ☐ Hold ☒

92. SEATAC review required.
93. Provide burden of proof for SEA CUP.
94. Provide general slope density analysis and grading exhibit for SP as discussed.

Housing Permit:
(N/A)

Parking Permit:
(N/A)

Oak Tree Permit:
Clear ☐ Hold ☒

95. Additional information required. Provide full scale oak tree exhibit and two copies of revised Oak Tree Report.
96. Revised OTP burden of proof to include information for number of impacted trees.

Environmental Determination:
Clear ☐ Hold ☒

97. EIR Required. Prepare an Initial Study and Notice of Preparation.

Community Standards District:
(N/A)

Healthy Design Ordinance (ñHDOò):
Clear ☐ Hold ☒

98. Provide a table listing HDO project features such as: cul-de-sac pedestrian connections; use of the standard road cross section (not the ñalternateò cross section); scaled road cross sections; bicycle parking; and parking lot walkways and landscaping.

99. Final Map Condition: The onsite tree planting requirement will be one tree per each 25 feet of existing and proposed street frontage located within the subject property. Based on the project total of ___ linear feet of street frontage, a total of ___ tree plantings shall be required for the project and indicated on a tree planting plan to be approved by Regional Planning prior to final map recordation.

Administrative/Other:

Clear ☐ Hold ☒

100. Burdens of Proof: Under review.
101. Specific Plan consistency: Under review.
102. Provide updated Planning Notebook depicting typical units.
103. Provide notarized ownership and consent affidavit for land division, OTP and CUP applications.
104. One copy of 1000-foot radius land use map.
105. Parking permit is needed for share and reciprocal parking.
106. IEC approval for elimination of Potrero Valley Road.
107. Pending DEIR preparation and completion.
108. Provide internal circulation exhibit that include vehicular (public and private streets, internal driveways) and pedestrian access (include existing and proposed trail system).
109. Provide open space exhibit (can be combine with other pertinent exhibits).
110. Demonstrate compliance with SP Affordable Housing Program.
111. Provide updated land use statistical table along with Planning Notebook for Phase IV.
112. Pending WSA and litigation for Phases I & II.
113. Status of construction of Newhall Ranch WRP (possible condition similar to Phases I & II).
114. Clarification on status of permits needed for off-site improvements.
115. See attached report for holds from DPR (park improvement & design), FD (planning, access & circulation), and DPW (hydrology, soil, geo tech, grading, road, sewer, water supply & traffic).
116. Check SP (Ch 5.2) for consistency with note 1.
117. Need building permit history for existing building to remain.
118. Provide a statistical Substantial Conformance summary table illustrating how the proposed project is in substantial conformance with the Specific Plan.
119. Provide a substantial conformance analysis illustrating how the proposed areas overlay on the existing specific plan land use designations.
120. Provide Planning Notebook-
    - Land Use Statistical Comparison and Substantial Conformance Summary
    - Annotated Land Use Plan Statistical table
    - Landscape plan
    - Circulation Plan
    - Annotated Trails and Infrastructure table
    - List off-site improvements

RESUBMITTAL INSTRUCTIONS

If a map revision is required, please submit the following items:

- *A completed and signed Land Division application*
- *A signed and dated cover letter describing all changes made to the map*
- *Six (6) folded and collated copies of Tract/Parcel Map and Exhibit Map/Exhibit "A"*
- *A digital (CD or Flash drive) copy of the map/exhibit in PDF format*
- *Revision fee payment (for the 3rd revision and thereafter)*
- *Any other additional materials requested by the case planner*

NOTE: An appointment is required for resubmittal. You must call Land Divisions Section at 213-974-6433 to schedule the appointment. Prior to scheduling, you are strongly encouraged to contact the case planner and discuss the map revision and other materials.

Department *of* Regional Planning
320 West Temple Street
Los Angeles, California 90012

SUBDIVISION COMMITTEE REPORT

PROJECT NUMBER
TR061996 (Legacy Village)

HEARING DATE
Pending/holds not cleared

REQUESTED ENTITLEMENTS

Vesting Tentative Tract Map No.061996
Zone Change No. 200500012
Plan Amendment No. 200500008 *Pending*
Conditional Use Permit No. 200500122
Oak Tree Permit No. 200600072
Parking Permit No. *Pending*
Housing Permit No. 200600002
Highway Realignment No. 200500001
Environmental Assessment No. 200500137
EIR SCH No.: *Pending*

OWNER / APPLICANT	MAP/EXHIBIT DATE:	SCM REPORT DATE:	SCM DATE:
Newhall Land and Farming (Miles Helfrich)	11/19/14	12/16/14	1/08/15
Additional Contacts: Hunsaker & Associates (Jeannine Giem); Psomas (Ellen Fiztgerald)			

PROJECT OVERVIEW

The proposed project, "Legacy Village" (1,758.6-acre site (gross)), consists of a mixed use development with 3,457 dwelling units (1,011 SFR units and 2,446 MF/Condo units, a senior assisted living facility (342 beds)), 30.2 acres of public and private recreation areas, a 3.0-acre fire station, and 839,000 square feet of commercial development (including 337,000 square feet for a senior assisted living facility).

Subdivision: To create 1,472 lots including 1,032 residential lots (1,011 single-family lots (180.6 acres) and 21 multi-family/condominium lots (152.3 acres)); 7 commercial lots (6 retail commercial (30.2 acres) 502,000 sf and1 senior assisted living facility (12.0 acres) 337,000 sf); 311 open space lots (1,104.6 acres); 1 public park lot (20.9 acres); 3 private recreation lots (9.3 acres); 52 public facility lots (125.4 acres including a fire station, sewer lift station, electrical substation, drainage, water quality, debris basins, and water tanks), and 66 private drive lots (123.3 acres).

Primary access to the site will require the extensions of Valencia Boulevard (on-site) and Magic Mountain Parkway (external map improvement); both are mapped as highways. The existing portion of Poe Parkway located within VTTM 061996 will require upgrading to Secondary Highway to match the existing roadway which is already constructed to secondary highway standards, and the proposed northerly extension of Poe Parkway would be constructed as a collector street and private drive. The project will require infrastructure improvements such as electrical, sewer, water, water quality basins, and an internal circulation system consisting of trails, driveways, streets and connections to highways. The property is located within the Santa Clarita Valley Area Plan, 2012 planning area (and not located within the boundary of the Newhall Ranch Specific Plan area). The irregularly-shaped property consists of hilly and sloping topography. The development of the project requires approximately 25.9 million cubic yards of grading (25.9 million cubic yards of cut and 25.9 million cubic yards of fill) to be balanced on-site with minor boundary contour grading linkages with adjacent properties owned by the applicant.

General Plan Amendment: [Pending Plan of Highways determination]

Highway Realignment: To realign Valencia Boulevard from the easterly boundary of VTTM 061996 to the westerly boundary of VTTM 061996 (on-site) and to realign Magic Mountain Parkway located north of the north boundary of VTTM 061996 at adjacent VTTM 061105 to the northeast and VTTM 060678 to the northwest (external map improvement).

Zone Change: To change R-1 zoning within the H2 land use classification area to RPD-5000-2.4U for the residential areas proposed and to C-2 for the commercial areas proposed; to change R-1 zoning within the H-5 land use classification area to RPD-5000-4.8U for the residential areas proposed and OS for the undisturbed open space areas proposed; and to change A-2-2 zoning within the RL5 land use classification area to OS.

CUP: To authorize development within an SEA; development within a hillside management area; residential development within a residential planned development (RPD) zone; senior housing density bonus (20%) and discretionary housing permit; onsite grading in excess of 100,000 cubic yard; and construction of water tanks.

Housing Permit: To authorize a discretionary housing permit for a maximum density bonus of 20 percent (354 dwelling units allowed; 349 units proposed) with a developer set-aside of 1,455 units for senior housing and 342 beds for senior assisted living, and modification of front yard setbacks from 20 feet to 10 feet and rear yard setbacks from 15 feet to 10 feet, and modification of lot area from 5,000 minimum square feet to 4,875 minimum square feet on the lesser of 100 total single-family residence lots or 10 percent of total single-family residence lots in Planning Areas A and C inclusive of lots with reduced frontage,

Oak Tree Permit: To authorize removal of 60 on-site oak trees (4 heritage) and 38 off-site oak trees (3 heritage) and encroachment into the protected zone of 1 on-site oak tree (not heritage) and 34 off-site oak trees (4 heritage). *(Pending revised Oak Tree Report)*

Parking Permit: To authorize shared and reciprocal parking across commercial office and retail lots and shared and reciprocal parking across multi-family residential lots. (*Pending application*)

MAP STAGE

Tentative: ☒ Revised: ☐ Amendment: ☐ Amended : ☐ Exhibit "A" Modification to : ☐ Recorded Map Other: ☐

MAP STATUS

Initial: ☐ 1st Revision: ☐ 2nd Revision: ☐ 6th Revision: ☒

LOCATION

West of the terminus of Valencia Blvd., north of the terminus of Pico Canyon Rd., east of Newhall Ranch SP area, west of Westridge / Stevenson Ranch communities

ACCESS

Magic Mountain Parkway on the north, northeast, and northwest; Valencia Blvd. on the east and west, Poe Parkway on the southeast

ASSESSORS PARCEL NUMBER(S)

2826-009-050, 052, 053, 086, 104, 105
2826-116-023, 025
2826-070-019

SITE AREA

Gross: 1,758.6 acres
Net: 1,692.5 acres

GENERAL PLAN / LOCAL PLAN

Santa Clarita Valley Area Plan:
One Valley One Vision 2012

ZONED DISTRICT

Newhall

SUP DISTRICT

5th

LAND USE DESIGNATION

Existing (existing to remain):

H2 (Residential 2), H5 (Residential 5), RL5 (Rural Land 5)

ZONE

Existing: R-1, A-2-2
Proposed: RPD 5000-2.4U, RPD 5000-4.8U, C-2, OS

CSD

None

PROPOSED UNITS (DU)

3,457 du
(plus 342 beds senior assisted living)

MAX DENSITY/UNITS (DU)

H2: 2 DU/AC
H5: 5 DU/AC
RL5: 1 DU/5AC

GRADING, CUBIC YARDS (CUT/FILL, IMPORT/EXPORT, ONSITE/OFFSITE)

Cut: 25,900,000 cyds
Fill: 25,900,000 cyds
Grading to be balanced on-site

ENVIRONMENTAL DETERMINATION (CEQA)

EIR

SUBDIVISION COMMITTEE DEPARTMENT CLEARANCE

Department	Status	Contact
Regional Planning	Cleared/Hold	Kim Szalay (213) 974-4876 kszalay@planning.lacounty.gov
Public Works	Cleared/Hold	Henry Wong (626) 458-4961 hwong@dpw.lacounty.gov John Chin (626) 458-4921 jchin@dpw.lacounty.gov

Fire	Cleared/Hold	Juan Padilla (323) 890-4243 jpadilla@fire.lacounty.gov
Parks & Recreation	Cleared/Hold	Clement Lau (213) 351-5120 clau@parks.lacounty.gov Sheela Mathai (213) 351-5121 maths@parks.lacounty.gov
Public Health	Cleared/Hold	Michelle Tsiebos (626) 430-5382 mtsiebos@ph.lacounty.gov

SUBDIVISION COMMITTEE STATUS

Tentative Map Revision Required: ☒
Exhibit Map/Exhibit "A" Revision Required: ☒
Revised Application Required: ☒
Reschedule for Subdivision Committee Meeting: ☒
Reschedule for Subdivision Committee Reports Only: ☐
Other Holds (see below): ☒

REGIONAL PLANNING ADDITIONAL COMMENTS AND HOLDS

Case Status/Recommendation: At this time, Regional Planning does not recommend approval of the tentative map. EIR preparation, revised Tentative and Exhibit/Exhibit "A" Maps, Zone Change, pending Plan Amendment determination, CUP, Parking Permit, Oak Tree Permit and County Forester clearance, Housing Permit, SEATAC. Please read below for further details.

Land Use Policy:

Clear ☐ Hold ☒

1. Under Review.

Tentative Map:

Clear ☐ Hold ☒

(Sheet 1)

2. General Notes (by Note No.):
   - 17. Add Parking Permit and Highway Re-alignment entitlement requests
   - 18. Verify Oak tree removal/encroachment numbers – updated report required to support the numbers.
   - 21. Read, "Valencia Blvd. (on-site) and Magic Mountain Parkway (external map improvements) require I.E.C. approval."
   - 23. Identify designated areas for flexibility requested and revise note to read, "Within designated areas _____, ____, and _____ flexibility in future design is permitted….. changes are depicted on a Revised Exhibit Map to the satisfaction of Regional Planning and Public Works ,or, if required a Revised or Amended VTTM according to required procedures pursuant to the Zoning and Subdivision Codes ."
   - 25. Indicates structures to be removed must have development standard compliance – revise to correct this. It is presumed that only structures that are to remain must have standards compliance, not those removed.
   - 26. Read: Summary of Highway re-alignments:
     - Valencia Boulevard and Magic Mountain Parkway I.E.C. alignment approval required
   - 28. Pending Highway Plan determination: If amendment required add note, "Summary of Highway Plan Amendments:
     - Pico Canyon Road removed from Highway Plan
     - Poe Parkway existing portion upgraded to Secondary Highway"
   - Add Note 29: request for reduced street frontage from 50 feet to not less than 45 feet on non-cul-de-sac SFR lots and from 40 feet to not less than 30 feet on cul-de-sac SFR lots not to exceed 100 total SFR lots in Areas A and C or 10 percent of SFR lots in Areas A and C, whichever is less inclusive of lots with reduced lot area (21.24.040).
   - Add Note 30: request for a modification of minimum required lot area from 5,000 square feet to a minimum of 4,875 square feet on 100 SFR lots total in Areas A and C or 10 percent of SFR lots total in Areas A and C, whichever is less, inclusive of lots with reduced lot frontage, pursuant to a discretionary housing permit (22.52.1860 & 22.52.1870).
   - Add Note 31: request for modification of front yard setbacks from 20 feet to 10 feet and rear yard setbacks from 15 feet to 10 feet on the lesser of 100 total SFR lots or 10 percent of total SFR lots in Planning Areas A and C pursuant to a discretionary housing permit (22.52.1860 & 22.52.1870).

3. Special Notes: add No. 4. Density transfer explanation note including how it applies to current proposal.

4. Add a table showing density transfer areas in relationship to where transfer is from and to.
5. Project Summary: Revise the list of requested entitlements as follows:
   - Add Project No. TR061996 to top of list
   - No dashes in case nos.
   - Add: Submit application for Parking Permit with LDCC
   - Add: Plan Amendment (on file) pending highway plan determination

6. Project Table:
   - Area A "Type" column identifies the Private Drives as "Street (Private and Future)". Correct label.

(Sheet 2)

7. Section "Private Drive" "A", "C" Drive (North of Gate) - show gate on associated sheet.
8. Section "Modified Residential Collector (94' R/W) – label North & West over left R/W and South & East over right R/W.
9. Section Modified Residential Collector (64' R/W) "A" Street - from Lot 1365 to VTTM 060678 – Sheet 7 shows this section as 16' on the northerly and westerly ROW and 8' on south and easterly – correct section to match.
10. Section Residential Local (60' R/W) (Private Drives) – "K" drive label referenced is missing on Sheet 4 – and there are two "L" Drives on Sheet 4. Correct labels on Sheet 4.

(Sheet 3)

11. Delineate and label trails including cul-de-sac connections where applicable and include in legend.
12. Lot 613 is labeled in legend as drainage access road – is this intended to be a trail with Lot 614 connection?
13. Label location of gates as applicable.
14. Correct "FF" and "GG" Drives labels/pointers.
15. Complete Lot 704 drainage access road depiction.

(Sheet 4)

16. Depict driveway access point for Lot 584.
17. "T" Drive: is this Lot 776? No Lot No. is depicted.
18. Is Lot 793 "K" Drive? Correct from duplicate "L" Drive if so.
19. Correct undersized lot area (less than 5,000 sf) on SFR lots 361, 329, 334, and 335 or make specific request for number/percent of undersized lots.
20. Correct frontage below 40' for Lot 493 or include in request for reduced frontage.
21. Call out frontage dimensions for Lots 510 and 511.
22. Depict and label trail and end of cul-de-sac trail connections where applicable.

(Sheet 7)

23. Correct undersized lot area (less than 5,000 sf) on SFR lots 1210, 1211, 1177, 1178, and 1179, or make request for number cap/percent of undersized lots.
24. Correct or make a request for number cap/percent of undersized lot frontages (less than 50 ft. and less than 40 ft. cul-de-sacs) for Lots 1173-1174, 1177-1179, 1189-1194,1199-1211, 1214-1215, 1235, 1249-1251, 1255-1259, 1262-1264.
25. Call out 2nd access on "A" Street.

(Sheet 8)

26. Depict and label trail and end of cul-de-sac trail connections where applicable (eg. along "A" Street?).
27. Depict G/2 Section for trail shown on this sheet.
28. Correct acreage label for Lot 1410 Private Park.

(Sheet 9)

29. Clarify two trail connections along the southwesterly boundary in relationship to trails at Potrero project boundary with Legacy.

30. Pending Highway Plan determination – correct changes to Pico Canyon Road planned ROW.

(Sheet 10)

31. Label proposed Magic Mountain Parkway.

(Sheet 11)

32. Delete "Lot No. __" in parentheses under each major Phase heading on both Large Lot Parcel Map and Unit Phasing Map. Current headings confuse the nomenclature.

(Othe VTTM Re ements)

33. Identify any lots intended to have easements granted to a conservation entity or entities.
34. Provide conceptual landscaping plan for common areas, commercial 10 percent, and rights of way.
35. For all Sheets with trails, include trails in legend.

Exhibit Map/Exhibit "A":

Clear ☐ Hold ☒

(Sheet 1)

36. Entitlements Requested: Revise the list of requested entitlements as follows:
    - Add Project No. TR0619996 to top of list
    - No dashes in case nos.
    - Add: Submit application for Parking Permit with LDCC
    - Pending highway plan determination, add: Plan Amendment (highway plan is on file)

37. Single-Family Lots Table:
    - Limit request for SFR lots with between 4,875 and 5,000 sf of area to to maximum of 100 lots or 10% of total SFR lots in Areas A and C inclusive of lots with reduced lot frontage.
    - Limit SFR lots with between 50 and 45 feet standard frontage or between 40 and 30 feet cul-de-sac to maximum of 100 SFR lots or 10% of total SFR lots in Areas A and C inclusive of lots with reduced lot area.

38. Label A, B, and C Drives, X Street, Poe Parkway, and Valencia Blvd.
39. Parking Table: Correct parking table for assisted living site, required and provided (see Section 22.52.1120) consistent with table on Sheet 7. Add PA-6 parking required and provided (Sheet 4 incorrectly labeled it PA-7).

(Sheet 2)

40. General Notes: Correct Notes 17, 18, 21, 23, 25, and 26 to revised language same as VTTM.
41. General Notes: Add Note 29 same as VTTM additional Note 28.
42. Add additional request notes 30, 31, 32 same as VTTM additional Notes 29, 30, 31
43. Depict trails sections within Exhibit Map:
    - Show cross-section for trail on PA-5 Sheet 3.
    - Take off Sections H and G if those trails are not intended to be depicted on Exhibit Map.

(Sheet 3)

44. Show trail on legend on this Sheet 3 and trail section on Sheet 2.

(Sheet 4)

45. Label the Recreation/Open Space on the map to be consistent with how they were labeled on the VTTM: "PA-6" and Lot 588 (incorrectly labeled PA-7 and Lot 583).

(Sheet 9)

46. Provide perimeter park trail shared with SD access and additional connection if feasible. [Item for discussion.]

(Sheet 11)

47. Show breakdown for covered and uncovered parking provided for PB-7. Current allocation shows potentially inadequate covered parking per code (Code: 1.5 covered and .5 uncovered for 2BR, 1.5 covered 1 BR, and 1 covered Bachelor)

(Sheet 12)

48. Show walkway connection from Poe Parkway to westerly entrance to private drive for PB-9.

(Sheet 15)

49. Provide trail section and legend for trail above PC-6.
50. Correct title name to Project Summary for PC-6.
51. Correct title name to Project Summary from incorrect PA-7 (Lot 583) to PC-7 (Lot 1409).
52. Show breakdown for covered and uncovered parking provided for PC-5 Project Summary. Current allocation shows potentially inadequate covered parking per code (Code: 1.5 covered and .5 uncovered for 2BR, 1.5 covered 1 BR, and 1 covered Bachelor).

(Global Comments)

53. All applicable sheets: Provide note to provide bicycle parking areas per Code; read, "Bicycle Parking to be provided pursuant to Section 22.52.1225" and call out shower facilities location for commercial buildings 75,000 sf and greater.
54. Provide trail legend for sheets with trails.
55. Provide retaining wall sections for walls proposed in excess of 6 feet in ht. if any.
56. Site potential Farmer's Market and/or Community Garden locations.
57. No potential living suites are proposed. Clarify it none intended or if pending pursuant to living suites ordinance.

Plan Amendment:

Clear ☐ Hold ☒

58. Pending Highway Plan determination.

Zone Change:

Clear ☐ Hold ☒

59. Additional information required. Provide existing and proposed zoning exhibit(s).

Conditional Use Permit:

Clear ☐ Hold ☒

60. SEATAC review required.

Housing Permit:

Clear ☐ Hold ☒

61. Additional information required regarding modification requests in map notes.

Parking Permit

Clear ☐ Hold ☒

62. Submit application for reciprocal and shared parking commercial and multi-family where applicable.

Oak Tree Permit:

Clear ☐ Hold ☒

63. Additional information required. Provide full scale oak tree exhibit and two copies of revised Oak Tree Report.

Environmental Determination:

Clear ☐ Hold ☒

64. Revised Initial Study and Notice of Preparation required.

Community Standards District

(N/A)

Healthy Design Ordinance ("HDO"):

Clear ☐ Hold ☒

65. Final Map Condition: The onsite tree planting requirement will be one tree per each 25 feet of existing and proposed street frontage located within the subject property. Based on the project total of 81,931 linear feet of street frontage, a total of 3,277 tree plantings shall be required for the project subject to modification by Regional Planning, and indicated on a tree planting plan to be approved by Regional Planning prior to final map recordation.

Administrative/Other:

Clear ☐ Hold ☒

66. Provide updated Planning Notebook depicting typical units, elevations, and other design features.
67. Provide updated Slope Density map with existing SCVAP 2012 land use overlay and density transfer areas.
68. Tree Planting Ordinance pending Board of Supervisors action.

RESUBMITTAL INSTRUCTIONS

If a map revision is required, please submit the following items:

- *A completed and signed Land Division application*
- *A signed and dated cover letter describing all changes made to the map*
- *Six (6) folded and collated copies of Tract/Parcel Map and Exhibit Map/Exhibit "A"*
- *A digital (CD or Flash drive) copy of the map/exhibit in PDF format*
- *Revision fee payment (for the 3rd revision and thereafter)*
- *Any other additional materials requested by the case planner*

NOTE: An appointment is required for resubmittal. You must call Land Divisions Section at 213-974-6433 to schedule the appointment. Prior to scheduling, you are strongly encouraged to contact the case planner and discuss the map revision and other materials.

Aidlin Hills VTTM 52796 Traffic Impact Analysis

Los Angeles County



Prepared for:
Lennar Homes

Prepared by:
Stantec Consulting Services Inc.

November 24, 2014

1.0 INTRODUCTION

Aidlin Hills VTTM 52796 is a proposed residential community within unincorporated Los Angeles County in the westernmost portion of the Santa Clarita Valley. More specifically, VTTM 52796 is located south of Pico Canyon Road and west of existing/builtout VTTM 43896 in Stevenson Ranch.

1.1 PROPOSED PROJECT

Figure 1-1 illustrates the location of the project site. The proposed project consists of 102 single family dwelling units on approximately 230 acres. The proposed site plan is provided in Figure 1-2.

Access to the project will be provided by a single entry from Pico Canyon Road. Secondary emergency vehicle access will be provided by a connection to Whispering Oaks Road or Southern Oaks Drive via Tulip Grove Road and Verandah Court to the east.

The site is currently undeveloped, but at buildout the development will result in approximately 970 daily trip ends. Detailed trip generation and trip distribution data is provided in Chapter 3.0, Project Description.

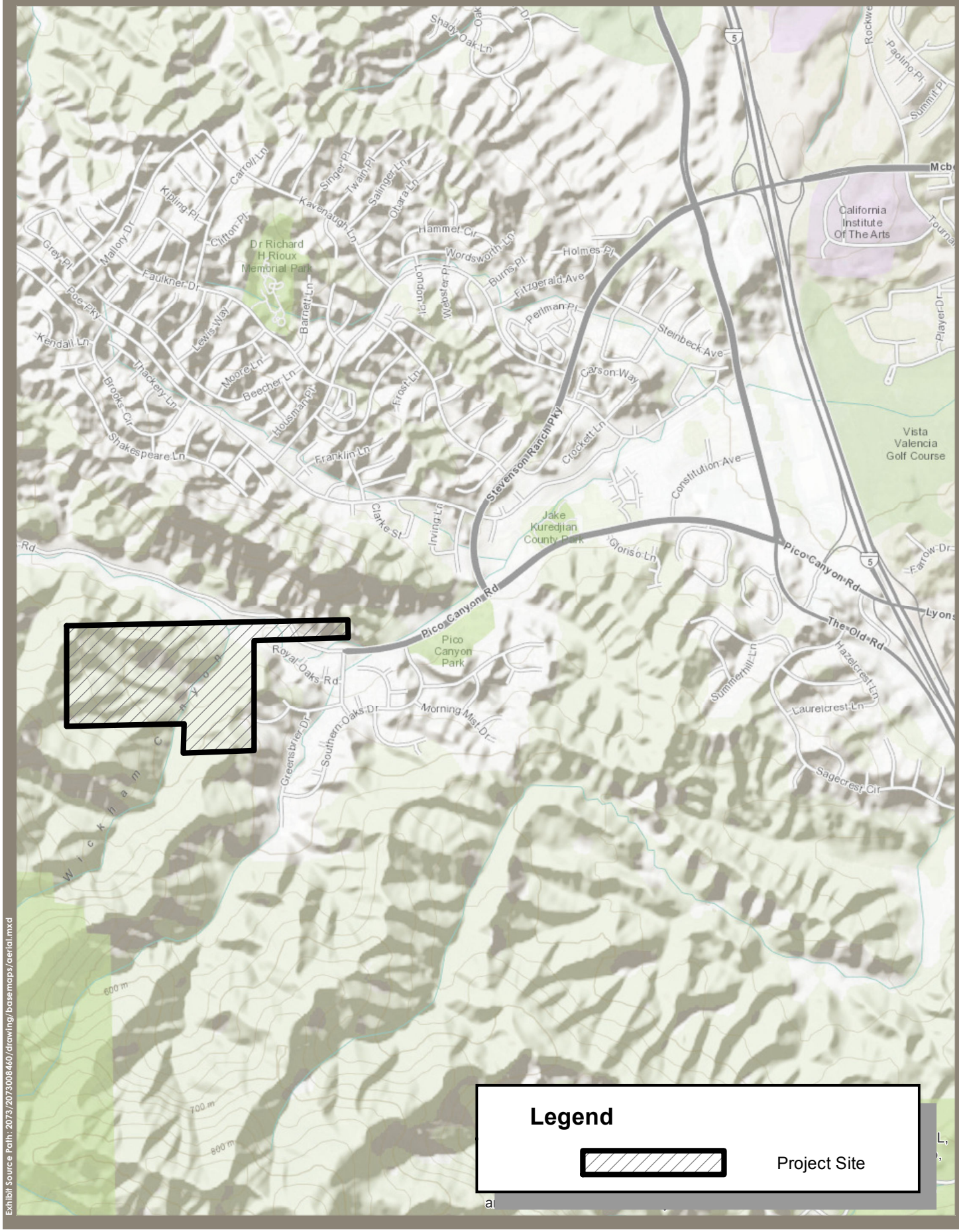
1.2 STUDY AREA

Based in part upon consultation with the Los Angeles County Department of Public Works (DPW), the study area includes the roadways and intersections within the project site as well as locations off-site where project-generated traffic could potentially cause a significant impact. The study area is presented in Figure 1-3.

1.3 METHODOLOGY

The Los Angeles County DPW has established guidelines for the analysis of traffic impacts based on project opening year and cumulative conditions. These guidelines specify that project impacts are to be evaluated based on opening year traffic conditions, and cumulative impacts are evaluated based on opening year with related (i.e., cumulative) projects to determine the project's fair share of future improvements.

The area to the northwest of the project site is largely undeveloped; however, there are no related projects in the vicinity that will be constructed by the project's build out date of 2017. Therefore, the DPW has specified that the project impacts are to be identified based on an existing plus project analysis. This methodology is also consistent with a ground to plan analysis in accordance with the California Environmental Quality Act (CEQA).



Stantec

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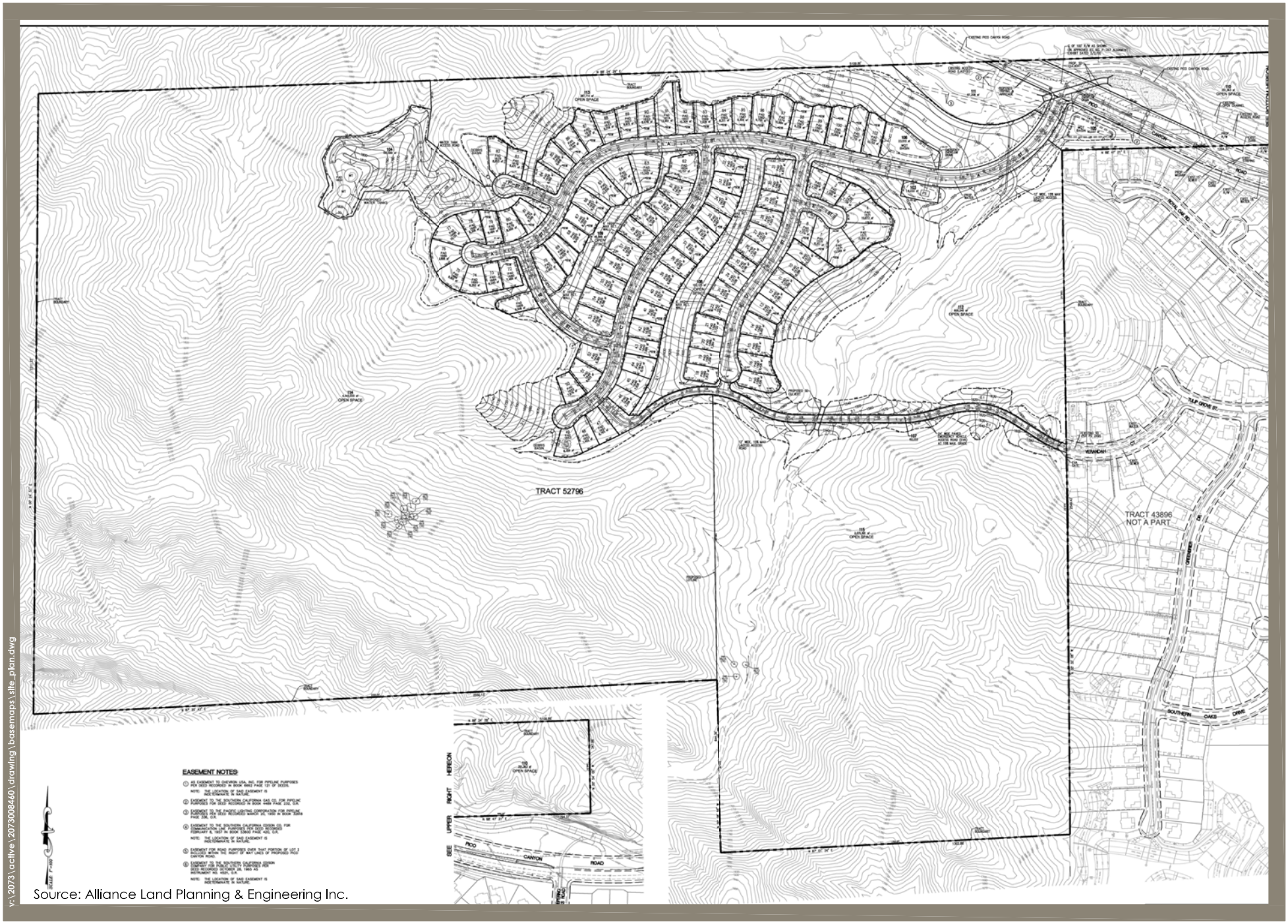
Figure 1-1
Project Site Location
1.2



Source: Alliance Land Planning & Engineering Inc.

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Stantec

N

Figure 1-2

Project Site Plan

1.3

3.0 PROJECT DESCRIPTION

This section describes the project site in terms of its transportation characteristics. Trip generation is summarized and the distribution of project trips on the adjoining roadway network is presented.

3.1 PROJECT OVERVIEW

The proposed project consists of 102 single family dwelling units. Site access will be provided by a single entry from Pico Canyon Road.

3.2 PROJECT TRIP GENERATION

Trip generation rates for the proposed residential project were obtained from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition (see Reference 1 in Section 1.5). The trip rates used for this analysis and the resulting trip generation estimates are listed in Table 3-1. As shown, the project would generate approximately 971 average daily tripends, with approximately 76 tripends during the AM peak hour and 102 tripends during the PM peak hour.

Table 3-1 Land Use and Trip Generation Summary

Category	Amount	Units	AM Peak Hour			PM Peak Hour			Average Daily Tripends
			In	Out	Total	In	Out	Total	
Trip Generation									
Single Family Detached	102	DU	19	57	76	64	38	102	971
Trip Rates									
Single Family Detached (ITE 210)		DU	.19	.56	.75	.63	.37	1.00	9.52
Source: "Trip Generation Manual, 9th Edition", Institute of Transportation Engineers DU = Dwelling unit									

3.3 PROJECT TRIP DISTRIBUTION

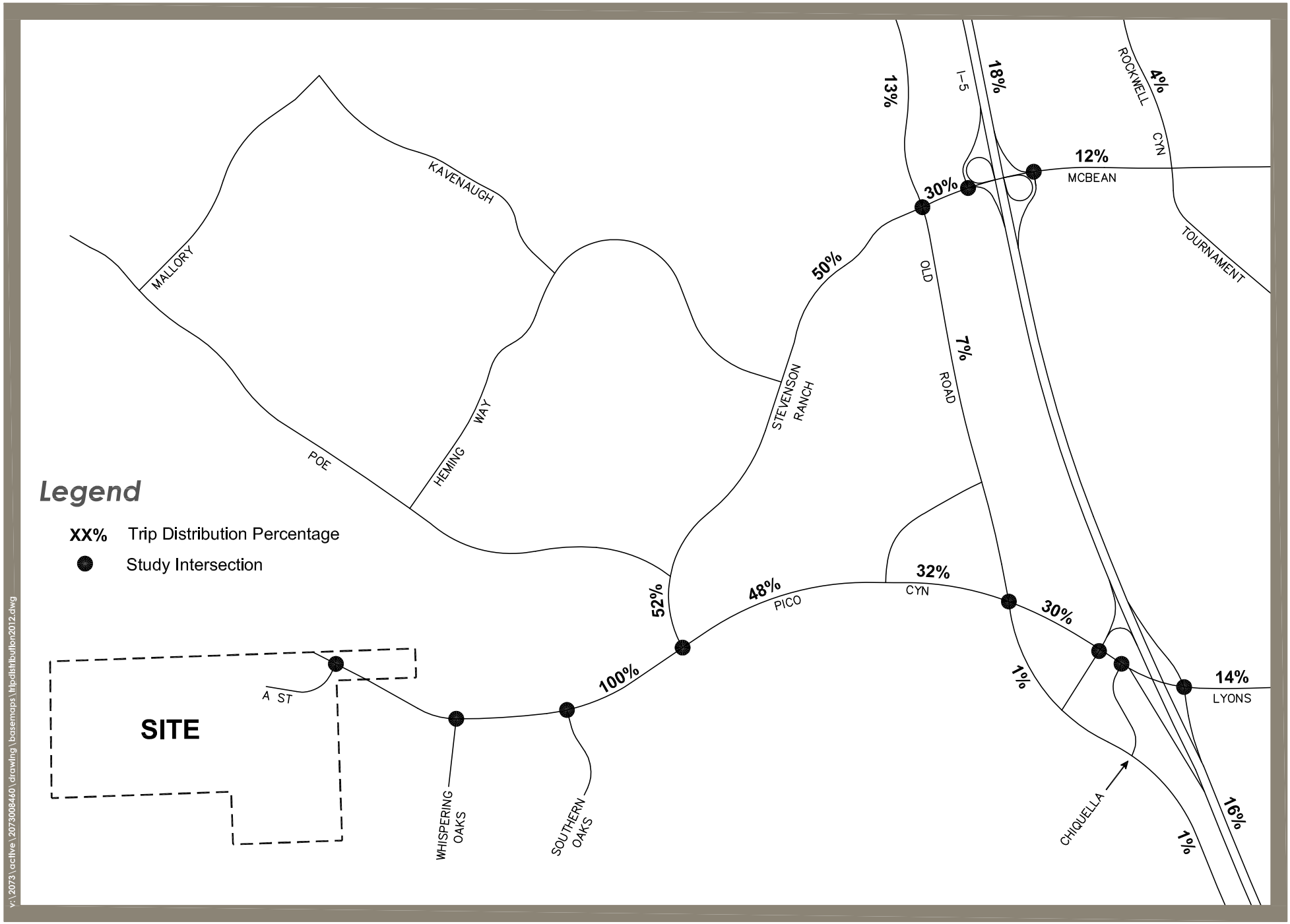
The geographic distribution of project-generated trips was derived by the SCVCTM. The SCVCTM is a computerized travel demand model that utilizes a sophisticated trip distribution function to derive the distribution of vehicle trips, and which has previously been calibrated to the existing conditions of the Santa Clarita Valley. The SCVCTM is jointly maintained by City of Santa Clarita and County of Los Angeles staff, and is utilized for all major transportation planning efforts within the Santa Clarita Valley. Production and attraction trip data is generated by the model based on five separate trip purposes, and trip distribution patterns are then derived by the model. As a final step, the model assigns these trips to the roadway network based on the derived distribution patterns.

Illustrations of the project's trip distribution patterns are provided in Figure 3-1 based on the SCVCTM select zone run. Approximately 52 percent of the project's traffic is distributed to Stevenson Ranch Road northeast of the project site, and approximately 48 percent is distributed to Pico Canyon Road east of the project site. Approximately 34 percent of the project's traffic is distributed to I-5 Freeway (18 percent to the north and 16 percent to the south).

3.4 PROJECT TRAFFIC FORECASTS

Project generated ADT volumes are provided in Figure 3-2, and the corresponding project generated peak hour turning movement volumes are provided in Figure 3-3 for the AM peak hour and in Figure 3-4 for the PM peak hour.

The project is forecast to add less than 200 ADT and less than 12 peak hour trips (by direction) to the I-5 freeway.



Stantec

Figure 3-1

Project Trip Distribution

3.3

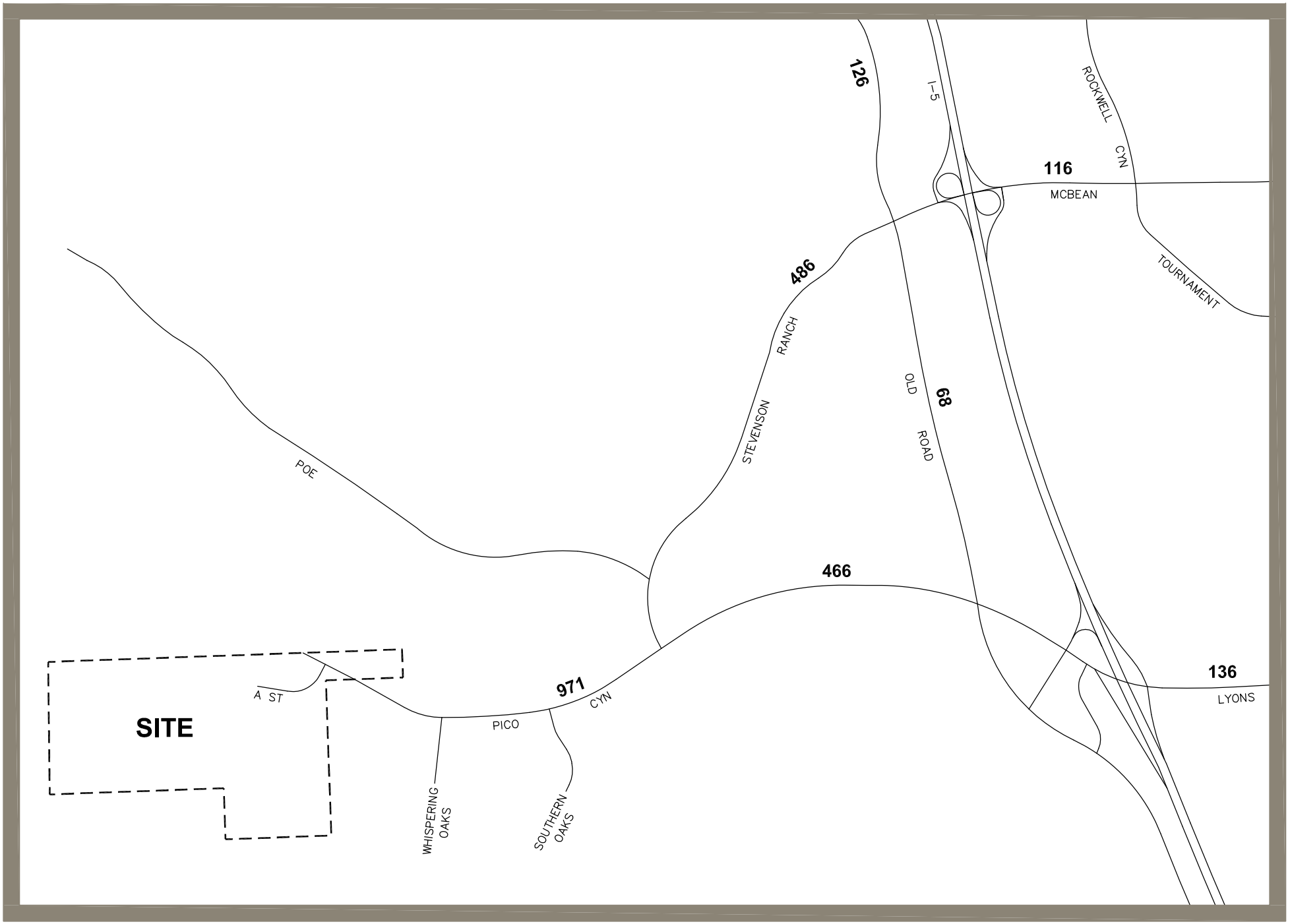


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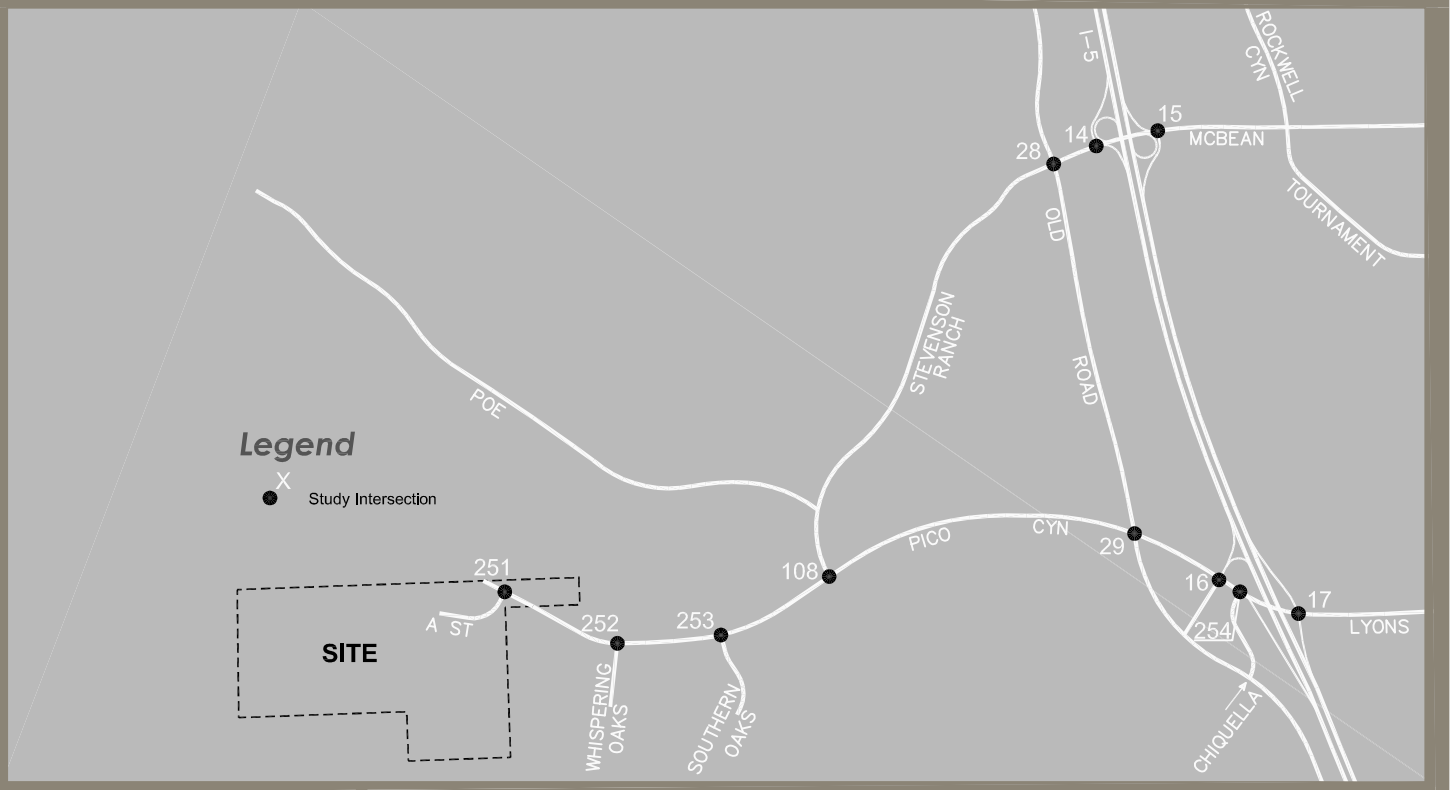
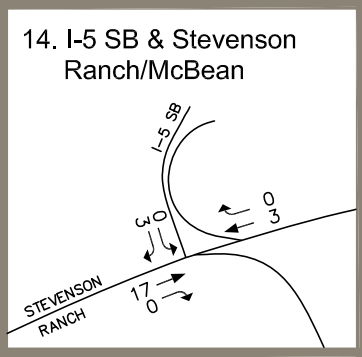
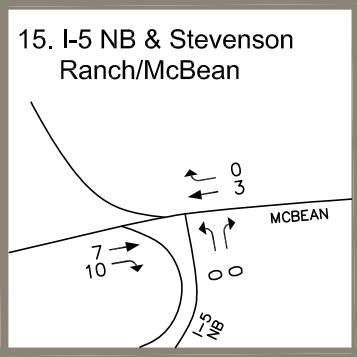
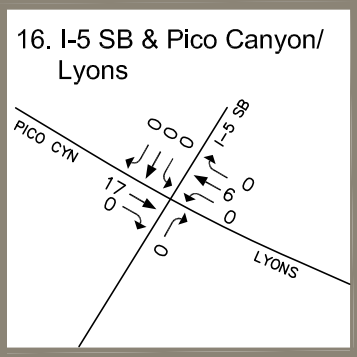
Figure 3-2

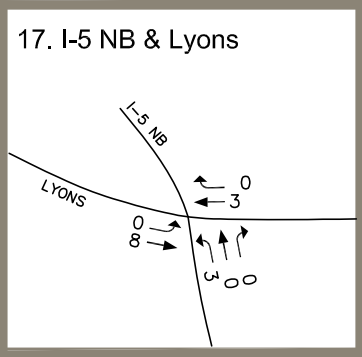
ADT Volumes - Project Only

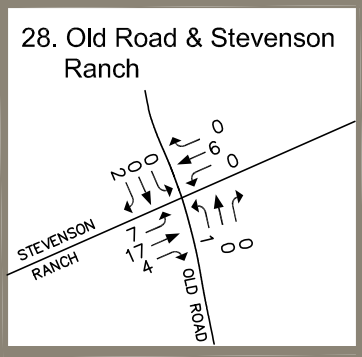


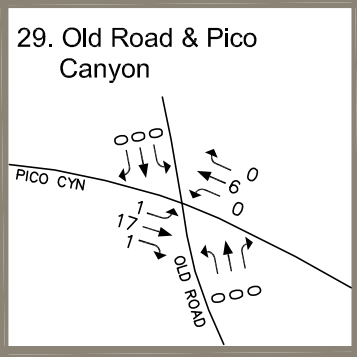


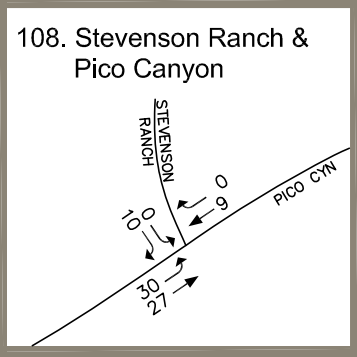


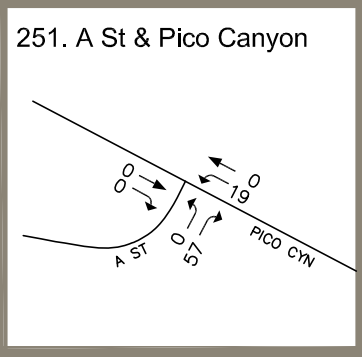


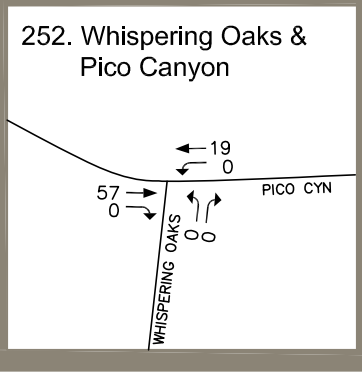


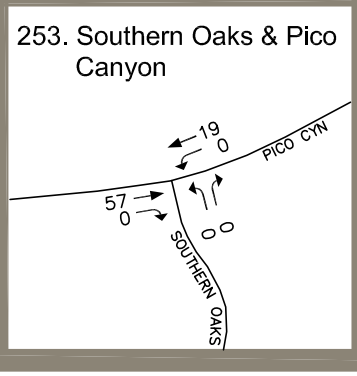












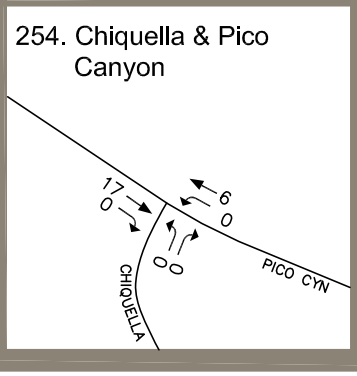


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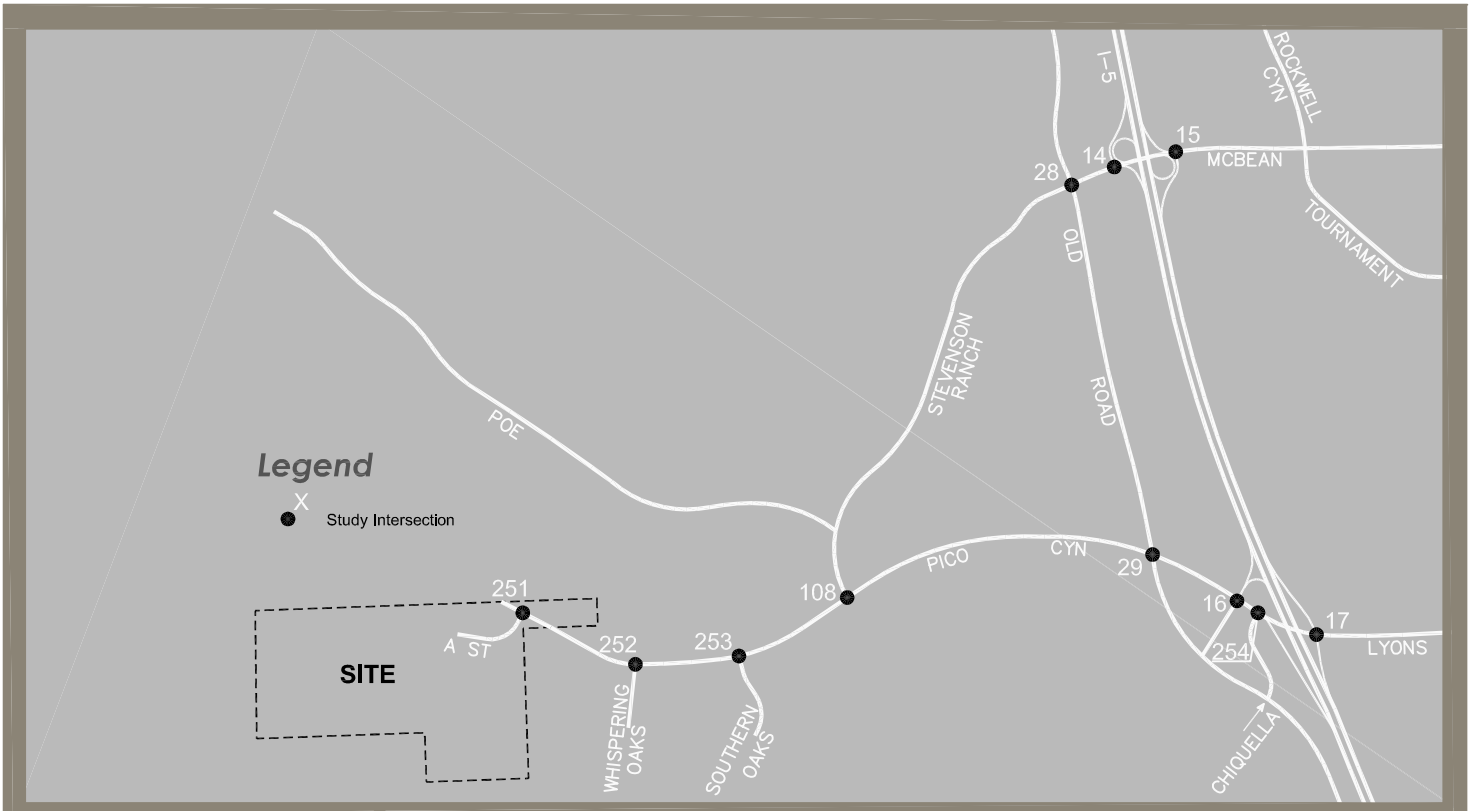
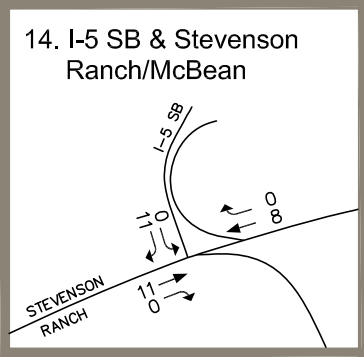
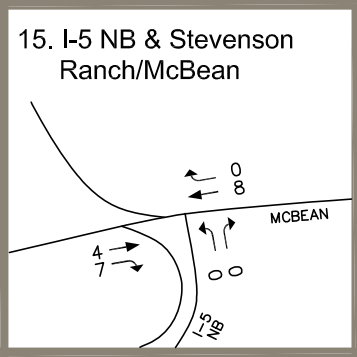
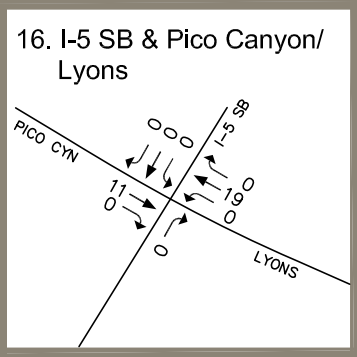
Figure 3-3

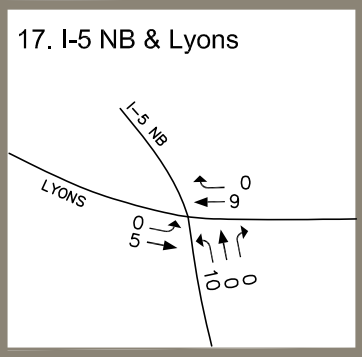
AM Peak Hour Volumes - Project Only

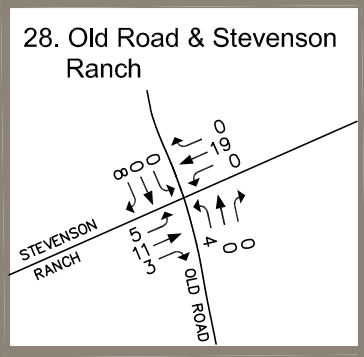


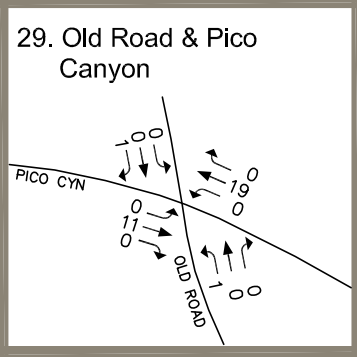


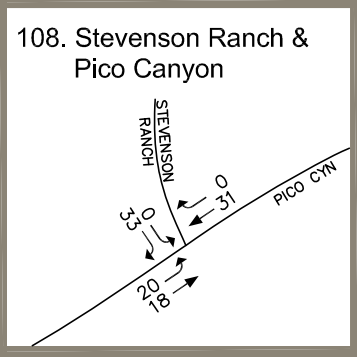


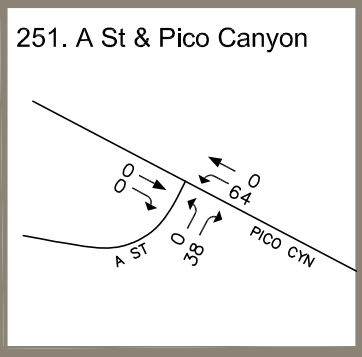


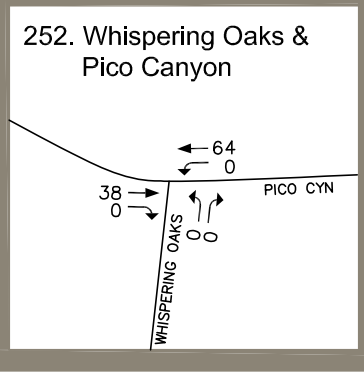


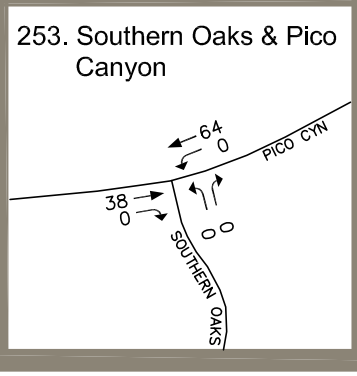












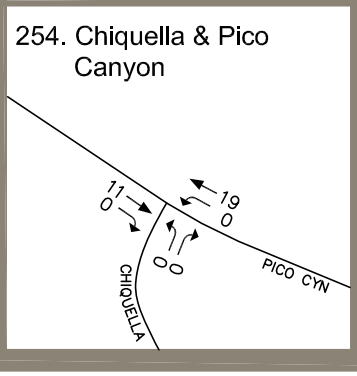


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Figure 3-4

PM Peak Hour Volumes - Project Only

ATTACHMENT E:

EXISTING PLUS PROJECT PLUS CUMULATIVE PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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JN:10734 Canyon Hills Estates
Existing + Project + Cumulative Projects Conditions
AM PEAK HOUR

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #6 Southern Oaks (NS) at Pico Cyn (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.490
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	60	Level Of Service:	A

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Permitted				Permitted				Permitted				Protected			
Rights:	Include				Include				Include				Include			
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	0	0 1	0	0	0	0 0	0	0	1	0 1	1	0	1	0 0
Volume Module:																
Base Vol:	0	0	163	0	0	0	0	166	1	112	80	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	0	0	163	0	0	0	0	166	1	112	80	0				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71				
PHF Volume:	0	0	231	0	0	0	0	235	1	159	113	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
Reduced Vol:	0	0	231	0	0	0	0	235	1	159	113	0				
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
FinalVolume:	0	0	231	0	0	0	0	235	1	159	113	0				
Saturation Flow Module:																
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600				
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Lanes:	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00				
Final Sat.:	0	0	1600	0	0	0	0	1600	1600	1600	1600	0				
Capacity Analysis Module:																
Vol/Sat:	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.15	0.00	0.10	0.07	0.00				
Crit Moves:			****					****		****						

JN:10734 Canyon Hills Estates
Existing + Project + Cumulative Projects Conditions
AM PEAK HOUR

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #3 Southern Oaks Dr (NS) at Magnolia Ln (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.220
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	60	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	1 0	0	0	1 0	0 0	0	0 0	0 0	0	0 0	1
Volume Module:												
Base Vol:	0	94	0	23	41	0	0	0	0	0	0	81
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	94	0	23	41	0	0	0	0	0	0	81
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	0	103	0	25	45	0	0	0	0	0	0	89
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	103	0	25	45	0	0	0	0	0	0	89
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	103	0	25	45	0	0	0	0	0	0	89
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	1.00	0.00	0.36	0.64	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Final Sat.:	0	1600	0	575	1025	0	0	0	0	0	0	1600
Capacity Analysis Module:												
Vol/Sat:	0.00	0.06	0.00	0.02	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.06
Crit Moves:		****										****

JN:10734 Canyon Hills Estates
Existing + Project + Cumulative Projects Conditions
AM PEAK HOUR

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #7 Stevenson Ranch Pkwy (NS) at Pico Canyon Rd (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.558
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	60	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	0	2	0	0	1	0	1	0	1	0
Volume Module:												
Base Vol:	0	0	0	565	0	27	126	193	0	0	117	157
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	565	0	27	126	193	0	0	117	157
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
PHF Volume:	0	0	0	694	0	33	155	237	0	0	144	193
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	694	0	33	155	237	0	0	144	193
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	694	0	33	155	237	0	0	144	193
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	2.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	2880	0	1600	1600	1600	0	0	1600	1600
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.24	0.00	0.02	0.10	0.15	0.00	0.00	0.09	0.12
Crit Moves:				****			****					****

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JN:10734 Canyon Hills Estates
Existing Plus Project Plus Cumulative Projects Conditions
PM PEAK HOUR

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #6 Southern Oaks (NS) at Pico Cyn (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.311
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	60	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1! 0	0	0	0	0	0	1	0	1	1	0	1	0	0
Volume Module:												
Base Vol:	1	0	88	0	0	0	0	77	1	129	137	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	0	88	0	0	0	0	77	1	129	137	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	1	0	101	0	0	0	0	88	1	147	157	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	1	0	101	0	0	0	0	88	1	147	157	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	1	0	101	0	0	0	0	88	1	147	157	0
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.01	0.00	0.99	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00
Final Sat.:	18	0	1582	0	0	0	0	1600	1600	1600	1600	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.06	0.00	0.09	0.10	0.00
Crit Moves:			****					****		****		

JN:10734 Canyon Hills Estates
Existing Plus Project Plus Cumulative Projects Conditions
PM PEAK HOUR

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #3 Southern Oaks Dr (NS) at Magnolia Ln (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.223
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	60	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	1	0 0	0	1 0	0 0	0 0	0	0 0	0 0	1! 0	0
Volume Module:												
Base Vol:	0	49	0	59	62	0	0	0	0	1	0	38
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	49	0	59	62	0	0	0	0	1	0	38
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
PHF Volume:	0	60	0	73	76	0	0	0	0	1	0	47
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	60	0	73	76	0	0	0	0	1	0	47
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	60	0	73	76	0	0	0	0	1	0	47
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	1.00	0.00	0.49	0.51	0.00	0.00	0.00	0.00	0.03	0.00	0.97
Final Sat.:	0	1600	0	780	820	0	0	0	0	41	0	1559
Capacity Analysis Module:												
Vol/Sat:	0.00	0.04	0.00	0.05	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Crit Moves:	****				****							****

JN:10734 Canyon Hills Estates
Existing Plus Project Plus Cumulative Projects Conditions
PM PEAK HOUR

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #7 Stevenson Ranch Pkwy (NS) at Pico Canyon Rd (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.468
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	60	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	2 0	0	0 1	1 0	1	0 0	0 0	1	0 1
Volume Module:												
Base Vol:	0	0	0	278	0	74	77	93	0	0	170	346
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	278	0	74	77	93	0	0	170	346
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
PHF Volume:	0	0	0	283	0	75	78	95	0	0	173	353
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	283	0	75	78	95	0	0	173	353
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	283	0	75	78	95	0	0	173	353
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	2.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	2880	0	1600	1600	1600	0	0	1600	1600
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.10	0.00	0.05	0.05	0.06	0.00	0.00	0.11	0.22
Crit Moves:				****			****					****

Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to URBAN CROSSROADS, IRVINE

Sewer Area Study
ESTU2016000099
PC 12338AS
SAS17-00001

Tract Map No. 74650

Prepared by:

Civil Design and Drafting, Inc.

885 PATRIOT DR., UNIT C
MOORPARK, CA 93021
(805) 522-2622

February 2018

SEWER AREA STUDY
CONCEPTUAL APPROVAL OF Q ONLY

APPROVED BY:_____RCE NO._____DATE 03/12/2018

CHECKED BY:_____DATE 03/12/2018

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

THIS CONCEPTUAL APPROVAL IS CONTINGENT UPON OUTLET APPROVAL FROM CITY OF SANTA CLARITA.

PLEASE NOTE THAT THE COUNTY OF LOS ANGELES ONLY REVIEWED AND APPROVED DISCHARGES AND CAPACITIES FROM FACILITIES WITHIN UNINCORPORATED AREAS. SEWER CAPACITIES FOR EXISTING SEWER LINES LYING WITHIN CITY JURISDICTION SHALL BE CHECKED BY SAID CITY.

REGISTERED PROFESSIONAL ENGINEER
IMAD ABOUJAWDAH
C51299
EXP. 06/30/18
CIVIL
STATE OF CALIFORNIA

Imad Aboujawdah, P.E. — Date 3/8/18

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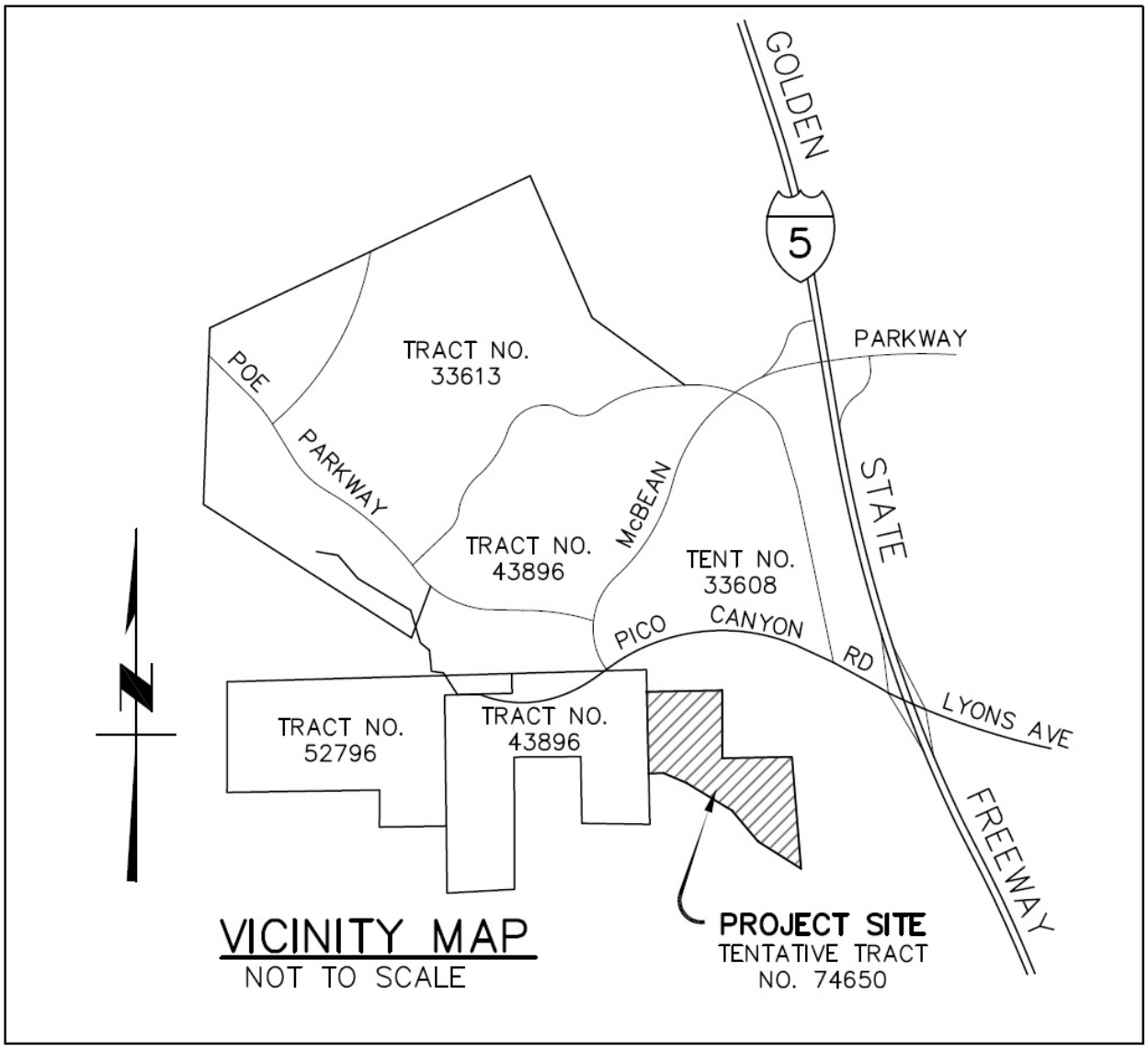
VICINITY MAP



INTRODUCTION

Civil Design and Drafting Inc., has performed a sewer area study for the proposed development (Tract No. 74650) located in the unincorporated area of Los Angeles County, east of Magnolia Lane and Autumn Place. The site is zoned A-2-2 per Los Angeles County GIS-NET3 – Planning and Zoning. The purpose of this study is to provide capacity analysis for the proposed sewer line that will convey the flow from the proposed project through the existing county sewer line at Magnolia Lane. The existing county sewer line capacity from the connection will join the existing sewer line of Santa Clarita at the city boundary. The city of Santa Clarita will continue the direction of the flow to the sanitation district trunk sewer located in Orchard Village Road and Mill Valley Street. This study will also determine the pipe size necessary for sewer line extension and any upgrade of existing sewer lines.

SITE DESCRIPTION

The proposed site is located in the unincorporated area of Los Angeles County, at the east corner of Magnolia Lane and Autumn Place. The project consists of 37 single family dwellings under Vesting Tentative Tract Map No. 74650.

PROJECT DESCRIPTION

The proposed development consists of single family residential lots and encompasses a total of 37 units. The site also includes open spaces, hardscape, and landscape areas.

SEWER PIPE CAPACITY ANALYSIS

The proposed sewer pipes in Magnolia Lane, “A” Street, “B” Street, and “C” Street were designed using S-C4 standard per County of Los Angeles. The project consists of 37 units and generates a 0.037 cfs. This flow was used to calculate the existing site sewer discharge.

The future development – Sub Area 2B-2O, 2R-2Y, & 4A-4B as seen on Sewer Area Study Map, consists of 680.20 acres and generates a 0.399 cfs.

The existing flow beginning at Magnolia Lane in Los Angeles County and ending at the City of Santa Clarita Boundary have been calculated using Kutter’s Formula per County of Los Angeles. Tributary areas shown on the map have been determined by using as built data from the County of Los Angeles. The capacity of the entire sewer line within the project tributary area was analyzed per County of Los Angeles standard S-C4 for a maximum design depth of half full. The zoning map for each of the tributary

areas was found in GIS-NET3 from the Department of Regional Planning-County of Los Angeles. See Table 1 below for the summary of the total flow of the existing, proposed, and future development.

Table 1: Total flow of the existing, proposed, and future development

SUMMARY		Sub Area	Area		Calculated Flow (cfs)	Approved Q (cfs)
LA County	Proposed	1A	37	DU	0.037	6.238 from LA County
	Future	2B - 2O, 2R-2Y, & 4A- 4B	680.20	Acres	0.399	
	Existing	1B, 2P, 2Q, 3A - 3C, 4C, 5A, 7A -7C, 8A - 8E, 9A, & 10A – 10Z	212.19	Acres	5.801	
			2766	DU		
			1784	Students		
City of Santa Clarita	Existing	11A-11B, 12A, 13A-13B, 14A, 15A-15E, 16A-16B, & 17A-17E	138.39	Acres	1.823	1.823 from City of Santa Clarita
			1558	DU		
			2097	Students		

METHODOLOGY

Kutter's formula was used in the analysis of the pipe segments with the corresponding proposed slopes. A value of n=0.013 was used in the analysis and a spreadsheet program was used to run the flow depth for circular pipes. This program was obtained from the County program library.

CONCLUSION

Based on the sewer area study prepared for the project, the existing sewer line was analyzed to determine the minimum line capacity of the proposed development. The existing line was divided into 17 junctions, and the flow rate of each was calculated based on the tributary areas coming into each reach. This sewer area study shows the mitigation in Summary Table 2 and the Sewer Area Study Map (Please see Section and Map). Based on the results in Summary Table 2, the mitigation will require the downstream sewer lines to be upgraded from manhole # 17-16-14-13-12-11-10-9-7-2-1 and 171-169.

SECTION

SUMMARY TABLE 2: CAPACITY OF EXISTING PIPES FOR FULL TRIBUTARY DEVELOPMENT AREA (INCLUDING EXISTING, PROPOSED, AND FUTURE DEVELOPMENT)

Street Name	Segment		Pipe		*Capacity (cfs)		Area No.	Area (Acres, DU, Student)	Zoning Coeff.	Calculated Flow (cfs)	** Cumulative Calculated Flow (cfs)	PC or CI Construction Plan #	RESULTS	% Full
	M.H. #	M.H. #	Size (in)	Slope (%)	1/2 Full (<15")	3/4 Full (≥15")								Comulative Flow/ Capacity
LA COUNTY	6	5	8	2.00										
	5	4	8	2.00										
	4	3	8	2.00										
	3	2	8	0.40										
	2	1	8	0.40										
	1	597	8	0.40	0.35		1A	37	0.0010	0.037	0.037		OK	10.6%
	597	596	8	1.88	0.76						0.037	P.C. 11544	OK	4.9%
	596	595	8	0.40	0.35						0.037	P.C. 11544	OK	10.6%
	595	594	8	0.56	0.41		1B	50	0.0010	0.050	0.087	P.C. 11544	OK	21.1%
	594	593	8	36.0	3.32						0.087	P.C. 11544	OK	2.6%
	593	592	8	5.40	1.29						0.087	P.C. 11545	OK	6.8%
	592	575	8	7.00	1.47						0.087	P.C. 11544	OK	5.9%
							2A	117.50	0.0000	0.000	0.087			
							2B	12.45	0.0005	0.006	0.093			
							2C	11.74	0.0005	0.006	0.099			
							2D	57.00	0.0005	0.029	0.128			
							2E	95.41	0.0005	0.048	0.175			
							2F	10.01	0.0005	0.005	0.180			
							2G	10.00	0.0005	0.005	0.185			
							2H	40.00	0.0005	0.020	0.205			
							2I	20.00	0.0005	0.010	0.215			
							2J	15.00	0.0005	0.008	0.223			
							2K	5.00	0.0005	0.003	0.225			
							2L	14.86	0.0005	0.007	0.233			
							2M	33.00	0.0005	0.017	0.249			
							2N	40.00	0.0005	0.020	0.269			
							2O	39.53	0.0005	0.020	0.289			
							2P	19	0.0010	0.019	0.308			
							2R	9.27	0.0005	0.005	0.313			
							2S	38.00	0.0005	0.019	0.332			
							2T	18.92	0.0005	0.009	0.341			
							2U	18.92	0.0005	0.009	0.351			
							2V	11.30	0.0005	0.006	0.356			

SUMMARY TABLE 2: CAPACITY OF EXISTING PIPES FOR FULL TRIBUTARY DEVELOPMENT AREA (INCLUDING EXISTING, PROPOSED, AND FUTURE DEVELOPMENT)

Street Name	Segment		Pipe		*Capacity (cfs)		Area No.	Area (Acres, DU, Student)	Zoning Coeff.	Calculated Flow (cfs)	** Cumulative Calculated Flow (cfs)	PC or CI Construction Plan #	RESULTS	% Full
	M.H. #	M.H. #	Size (in)	Slope (%)	1/2 Full (<15")	3/4 Full (≥15")								Comulative Flow/ Capacity
LA COUNTY							2X	9.49	0.0005	0.005	0.361			
							2Y	10.66	0.0005	0.005	0.366			
	575	574	15	7.00		8.24	2Q	231.00	0.0010	0.231	0.597	P.C. 11544	OK	7.2%
	574	157	15	0.52		4.19					0.597	P.C. 11464	OK	14.3%
							3A	243	0.0010	0.243	0.840			
							3B	173	0.0010	0.173	1.013			
	157	158	18	0.40		6.04	3C	195	0.0010	0.195	1.208	P.C. 10462-A	OK	20.0%
	158	160	18	0.52		6.90					1.208	P.C. 10462-A	OK	17.5%
	160	163	15	1.20		6.38					1.208	P.C. 10462-A	OK	18.9%
	163	650	15	1.80		7.82					1.208	P.C. 10462-A	OK	15.5%
							4A	9.40	0.0005	0.005	1.213			
							4B	22.40	0.0060	0.134	1.347			
	650	165	15	2.40		9.03	4C	10.34	0.0030	0.031	1.378	P.C. 10462-A	OK	15.3%
	165	166	15	1.40		6.89	5A	969	0.000039	0.037	1.416	P.C. 10462-A	OK	20.5%
	166	167	15	1.30		6.64					1.416	P.C. 10462-A	OK	21.3%
	167	168	12	4.36		6.60					1.416	P.C. 10462-A	OK	39.8%
	168	169	15	1.00		5.82					1.416	P.C. 10462-A	OK	24.3%
	169	170	15	1.60		7.37					1.416	P.C. 10462-A	OK	19.2%
							7A	5.67	0.010	0.057	1.473			
							7B	11.00	0.032	0.352	1.825			
	170	171	15	1.60		7.37	7C	14.32	0.015	0.215	2.039	P.C. 10462-A	OK	27.7%
	171	35	15	2.92		9.96					2.039	P.C. 10462-A	OK	20.5%
							8A	27.33	0.012	0.328	2.367			
							8B	11.08	0.015	0.166	2.534			
							8C	3.17	0.015	0.048	2.581			
							8D	2.60	0.015	0.039	2.620			
	35	26	18	0.40		6.04	8E	4.67	0.015	0.070	2.690	P.C. 10462-A	OK	44.5%
	26	365	21	0.81		13.10	9A	9.20	0.032	0.294	2.985	P.C. 10445	OK	22.8%
							10A	138	0.001	0.138	3.123			
							10B	815	0.000039	0.032	3.154			
							10C	4.07	0.016	0.065	3.219			
							10D	4.60	0.016	0.074	3.293			
							10E	267	0.001	0.267	3.560			

SUMMARY TABLE 2: CAPACITY OF EXISTING PIPES FOR FULL TRIBUTARY DEVELOPMENT AREA (INCLUDING EXISTING, PROPOSED, AND FUTURE DEVELOPMENT)

Street Name	Segment		Pipe		*Capacity (cfs)		Area No.	Area (Acres, DU, Student)	Zoning Coeff.	Calculated Flow (cfs)	** Cumulative Calculated Flow (cfs)	PC or CI Construction Plan #	RESULTS	% Full
	M.H. #	M.H. #	Size (in)	Slope (%)	1/2 Full (<15")	3/4 Full (≥15")								Comulative Flow/ Capacity
LA COUNTY							10F	80	0.001	0.080	3.640			
							10G	75	0.001	0.075	3.715			
							10H	140	0.001	0.140	3.855			
							10J	184	0.001	0.184	4.039			
							10K	81	0.001	0.081	4.120			
							10L	17.14	0.006	0.103	4.223			
							10M	16.16	0.016	0.259	4.481			
							10N	23.36	0.006	0.140	4.621			
							10P	14.27	0.016	0.228	4.850			
							10R	5.07	0.015	0.076	4.926			
							10S	28.14	0.015	0.422	5.348			
							10T	298	0.001	0.298	5.646			
							10V	178	0.001	0.178	5.824			
							10X	116	0.001	0.116	5.940			
							10Y	171	0.001	0.171	6.111			
	365	367	21	0.81		13.10	10Z	127	0.001	0.127	6.238	P.C. 10445	OK	47.6%
	367	79	18	1.00		9.57					6.238	P.C. 10445	OK	65.1%
CITY OF SANTA CLARITA	79	78	18	1.40		11.33					6.238	P.C. 10445	OK	55.0%
	78	76	18	1.00		9.57					6.238	P.C. 10445	OK	65.1%
	76	17	18	1.12		10.13					6.238	P.C. 10445	OK	61.6%
	17	12	18	0.20		4.26					6.238	P.C. 885401	UPGRADE	146.5%
							11A	73	0.001	0.073	6.311			
	12	7	18	0.20		4.26	11B	126	0.0002	0.025	6.336	P.C. 8769, 8855	UPGRADE	148.8%
	7	2	18	0.32		5.40					6.336	P.C. 876091	UPGRADE	117.3%
	2	1	18	0.24		4.67					6.336	P.C. 876091	UPGRADE	135.7%
	1	171	18	1.36		11.17					6.336	P.C. 876091	OK	56.7%
	171	169	18	0.32		5.40					6.336	P.C. 876091	UPGRADE	117.3%
	169	168	12	8.00	4.82						6.336	P.C. 876091	OK	131.4%
	168	165	15	1.40		6.89	12A	95	0.001	0.095	6.431	P.C. 8583	OK	93.3%
							13A	269	0.001	0.269	6.700			
	165	150	15	1.52		7.18	13B	142	0.001	0.142	6.842	P.C. 8146R01	OK	95.3%
	150	149	18	1.48		11.65					6.842	P.C. 8146R01	OK	58.7%
	149	148	18	1.52		11.81	14A	82	0.001	0.082	6.924	P.C. 8146R01	OK	58.6%

SUMMARY TABLE 2: CAPACITY OF EXISTING PIPES FOR FULL TRIBUTARY DEVELOPMENT AREA (INCLUDING EXISTING, PROPOSED, AND FUTURE DEVELOPMENT)

Street Name	Segment		Pipe		*Capacity (cfs)		Area No.	Area (Acres, DU, Student)	Zoning Coeff.	Calculated Flow (cfs)	** Cumulative Calculated Flow (cfs)	PC or CI Construction Plan #	RESULTS	% Full
	M.H. #	M.H. #	Size (in)	Slope (%)	1/2 Full (<15")	3/4 Full (≥15")								Comulative Flow/ Capacity
CITY OF SANTA CLARITA	148	145	18	1.48		11.65					6.924	P.C. 8146R01	OK	59.4%
	145	144	18	1.52		11.81					6.924	P.C. 8146R01	OK	58.6%
							15A	1471	0.000077	0.114	7.038			
							15B	307	0.001	0.307	7.345			
							15C	6.65	0.015	0.100	7.444			
							15D	2.22	0.001	0.024	7.469			
	144	129	18	1.00		9.57	15E	126	0.001	0.126	7.595	P.C. 8146R01	OK	79.3%
	129	43	18	1.00		9.57	16A	76	0.001	0.076	7.671	P.C. 8146R01	OK	80.1%
	43	32	18	1.00		9.57	16B	626	0.000039	0.024	7.695	P.C. 8146R01	OK	80.4%
	32	31	18	2.12		13.95					7.695	P.C. 8146R01	OK	55.2%
							17A	62	0.001	0.062	7.757			
							17B	70	0.001	0.070	7.827			
							17C	6	0.001	0.006	7.833			
							17D	115	0.001	0.115	7.948			
								6.12	0.0002	0.001	7.949			
	31	TRUNK	18	1.24		10.66	17E	111	0.001	0.111	8.060	P.C. 10445	OK	75.6%

* Calculated using Kutter's Formula with n=0.013 (as in S-C4 graph in PC Procedural Manual)

** Based on current land use and coefficients per LA County, (Attach supporting calculations)

TRACT NO. 74650 - SEWER AREA STUDY
JUNCTION CALCULATION - EXISTING - PROPOSED - FUTURE

				AREA			Zoning Coefficient	Commulative Flow
	Tract #	Sub Area	Zoning	Acres	DU	Students	(cfs/acre)	(cfs)
	74650	1A	A-2-2		37		0.0010	**0.037**
	43896-06	1B	R-A-10000		40		0.0010	0.040
	43896-02		R-A-10000		10		0.0010	0.010
REACH 1								**0.087**
		2A	O-S	117.50			0.0000	0.000
	2826-70	2B	A-2-2	12.45			0.0005	0.006
	2826-9	2C	A-2-2	11.74			0.0005	0.006
	2826-9	2D	A-2-2	57.00			0.0005	0.029
	2826-9	2E	A-2-2	95.41			0.0005	0.048
	2826-20	2F	A-2-2	10.01			0.0005	0.005
	2826-20	2G	A-2-2	10.00			0.0005	0.005
	2826-20	2H	A-2-2	40.00			0.0005	0.020
	2826-20	2I	A-2-2	20.00			0.0005	0.010
	2826-20	2J	A-2-2	15.00			0.0005	0.008
	2826-20	2K	A-2-2	5.00			0.0005	0.003
	2826-20	2L	A-2-2	14.86			0.0005	0.007
	2826-20	2M	A-2-2	33.00			0.0005	0.017
	2826-20	2N	A-2-2	40.00			0.0005	0.020
	2826-20	2O	A-2-2	39.53			0.0005	0.020
	52908	2P	A-2-2		19		0.0010	0.019
	2826-20	2R	A-2-2	9.27			0.0005	0.005
	2826-20	2S	A-2-2	38.00			0.0005	0.019
	2826-20	2T	A-2-2	18.92			0.0005	0.009
	2826-20	2U	A-2-2	18.92			0.0005	0.009
	2826-20	2V	A-2-2	11.30			0.0005	0.006
	2826-97	2X	A-2-2	9.49			0.0005	0.005
	43896-01	2Y	A-2-2	10.66			0.0005	0.005
	43896-02	2Q	R-A-10000		45		0.0010	0.045
	43896-03		R-A-10000		13		0.0010	0.013
	43896-04		R-A-10000		32		0.0010	0.032
	43896-05		R-A-10000		22		0.0010	0.022
	43896-07		R-A-10000		66		0.0010	0.066
	43896		R-A-10000		53		0.0010	0.053
REACH 2								**0.597**
	49761	3A	R-1-5000		243		0.0010	0.243
	49760	3B	R-1-5000		173		0.0010	0.173
	33698	3C	RPD-5000-6U		195		0.0010	0.195
REACH 3								**1.208**
	2826-20	4A	A-2-2	9.40			0.0005	0.005
	2826-20	4B	RPD-5000-6U	22.40			0.006	0.134
	48208	4C	RPD-1-3.3U	10.34			0.003	0.031

TRACT NO. 74650 - SEWER AREA STUDY
JUNCTION CALCULATION - EXISTING - PROPOSED - FUTURE

				AREA			Zoning Coefficient	Commulative Flow
	Tract #	Sub Area	Zoning	Acres	DU	Students	(cfs/acre)	(cfs)
REACH 4								**1.378**
		5A	S			969	0.000039	0.037
REACH 5								**1.416**
REACH 6	NOT IN USE							
	33608-04	7A	RPD-5000-10U	5.67			0.0100	0.057
	33608-03	7B	RPD-5000-32U	11.00			0.0320	0.352
	44806	7C	C-3-DP	14.32			0.0150	0.215
REACH 7								**2.039**
	45638	8A	R-3-DP	27.33			0.0120	0.328
	2826-63	8B	C-3	11.08			0.0150	0.166
	2826-10	8C	C-3	3.17			0.0150	0.048
	2826-63	8D	C-3	2.60			0.0150	0.039
	44806	8E	C-3-DP	4.67			0.0150	0.070
REACH 8								**2.690**
	33608-01	9A	RPD-5000-32U	9.20			0.0320	0.294
REACH 9								**2.985**
	49100	10A	R-1-5000		138		0.0010	0.138
		10B	S			815	0.000039	0.032
	44337	10C	RPD-1-16U	4.07			0.0160	0.065
	44336	10D	RPD-1-16U	4.60			0.0160	0.074
	33698	10E	RPD-5000-6U		267		0.0010	0.267
	44353	10F	RPD-1-16U		80		0.0010	0.080
	44340	10G	RPD-1-28U		75		0.0010	0.075
	33608-02	10H	RPD-5000-26U		140		0.0010	0.140
	49762	10Y	RPD-5000-6U		171		0.0010	0.171
	49099	10J	RPD-1-11U		184		0.0010	0.184
	33698	10K	RPD-5000-6U		81		0.0010	0.081
	33698	10L	RPD-5000-6U	17.14			0.0060	0.103
	44338	10M	RPD-1-16U	16.16			0.0160	0.259
	33698	10N	RPD-5000-6U	23.36			0.0060	0.140
	44339	10P	RPD-1-16U	14.27			0.0160	0.228
	33698	10R	C-3	5.07			0.0150	0.076
	2826-95	10S	C-3-DP	9.04			0.0150	0.136
	2826-96		C-3-DP	19.10			0.0150	0.287
	33613	10T	R-1-5000		298		0.0010	0.298
	49761	10V	R-1-5000		178		0.0010	0.178
	49760	10X	R-1-5000		116		0.0010	0.116
	49099	10Z	RPD-5000-6U		127		0.0010	0.127
REACH 10								**6.238**
	27567	11A	UR3		44		0.0010	0.044
	27288		UR3		29		0.0010	0.029

TRACT NO. 74650 - SEWER AREA STUDY
JUNCTION CALCULATION - EXISTING - PROPOSED - FUTURE

				AREA			Zoning Coefficient	Commulative Flow
	Tract #	Sub Area	Zoning	Acres	DU	Students	(cfs/acre)	(cfs)
		11B	OS	125.62			0.0002	0.025
REACH 11								**6.336**
	27567	12A	UR3		33		0.0010	0.033
	27566		UR3		62		0.0010	0.062
REACH 12								**6.431**
	35768	13A	UR3		32		0.0010	0.032
	27568		UR3		1		0.0010	0.001
	27703		UR3		4		0.0010	0.004
	35769		UR3		232		0.0010	0.232
	27288	13B	UR3		45		0.0010	0.045
	27265		UR3		86		0.0010	0.086
	27266		UR3		11		0.0010	0.011
REACH 13								**6.842**
	27703	14A	UR3		82		0.0010	0.082
REACH 14								**6.924**
		15A	U			1471	0.000077	0.114
	36300	15B	UR5 (18DU/AC)		71		0.0010	0.071
	44427		UR5 (18DU/AC)		236		0.0010	0.236
	PM 83-31-33	15C	CN	0.96			0.0150	0.014
	31116		CN	5.69			0.0150	0.085
	41416	15D	UR3 (11DU/AC)	2.22	24		0.0010	0.024
	28670	15E	UR2		126		0.0010	0.126
REACH 15								**7.595**
	28673	16A	UR2		76		0.0010	0.076
		16B	S			626	0.000039	0.024
REACH 16								**7.695**
	31342	17A	UR2		62		0.0010	0.062
	28672	17B	UR2		70		0.0010	0.070
	28673	17C	UR2		6		0.0010	0.006
	28671	17D	UR2		115		0.0010	0.115
	28671		OS	6.12			0.0002	0.001
	28670	17E	UR2		111		0.0010	0.111
REACH 17	TRUNK							**8.060**

TRACT NO. 74650 - SEWER AREA STUDY
JUNCTION CALCULATION - EXISTING - PROPOSED - FUTURE

Sample Calculation							Zoning	Commulative
		AREA					Coefficient	Flow
Sub Area	Zoning	Acres	DU	Students			(cfs/acre)	(cfs)
2O	A-2-2	39.53			x	0.001/2 =		0.020
2P	A-2-2		19		x	0.001 =		0.019
2Q	R-A-10000		231		x	0.001 =		0.231
3B	R-1-5000		173		x	0.001 =		0.173
3C	RPD-5000-6U		195		x	0.001 =		0.195
4B	RPD-5000-6U	22.40			x	0.006 =		0.134
4C	RPD-1-3.3U	10.34			x	0.003 =		0.031
7A	RPD-5000-10U	5.67			x	0.010 =		0.057
7B	RPD-5000-32U	11.00			x	0.032 =		0.352
7C	C-3-DP	14.32			x	0.015 =		0.215
8B	C-3	11.08			x	0.015 =		0.166
10C	RPD-1-16U	4.07			x	0.016 =		0.065
11A	UR3		73		x	0.001 =		0.073
13A	UR3 (11DU/AC)		269		x	0.001 =		0.269
15B	UR5 (18DU/AC)		307		x	0.001 =		0.307
15C	CN	6.65			x	0.015 =		0.100
15D	UR2		24		x	0.001 =		0.024
17B	S			626	x	S =		0.024

$$S = \frac{10\ \text{gal/student}}{\text{Day}} \times 2.5 \times \frac{1\ \text{cf}}{7.48\ \text{gal}} \times \frac{1\text{day}}{24\text{h} \times 60\text{min} \times 60\text{s}}$$

S = Elemenatary or Jr. High

DU = Dwelling Units

SUMMARY		Sub Area	Area		Calculated Flow (cfs)	Approved Q (cfs)
LA County	Proposed	1A	37	DU	0.037	6.238 from LA County
	Future	2B - 2O, 2R-2Y, & 4A- 4B	680.20	Acres	0.399	
	Existing	1B, 2P, 2Q, 3A - 3C, 4C, 5A, 7A -7C, 8A - 8E, 9A, & 10A – 10Z	212.19	Acres	5.801	
			2766	DU		
			1784	Students		
City of Santa Clarita	Existing	11A-11B, 12A, 13A-13B, 14A, 15A-15E, 16A-16B, & 17A-17E	138.39	Acres	1.823	1.823 from City of Santa Clarita
			1558	DU		
			2097	Students		

MH # 1-597

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**0.037**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0040**		*<== Slope V:H*
r=	**0.333**	ft	*<== Radius*

TRIAL DEPTH:

h=	**1.335**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.111	ft	

CACULATIONS:

beta=	48.25	degree
R=	0.068	ft
C=	58.465	
V=	0.966	ft/sec
A=	0.038	sq. ft.
Q_{assume}=	0.037	cfs
$Q_{halffull}$ =	**0.35**	**cfs**
$Q_{3/4full}$ =	**0.65**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% <======== **OK**

Flow Depth (in) =	**1.335**
Capacity d/r =	**33.41%**
$Q_{capacity}$ =	**0.348 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**10.62%**

($Q_{halffull}$ =	0.35	**cfs**	**($Q_{3/4full}$ =**	0.65	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.167	ft	$R_{3/4full}$=	0.201	ft
$C_{halffull}$ =	77.391	ft	$C_{3/4full}$=	81.524	ft
$A_{halffull}$ =	0.174	sq. ft.	$A_{3/4full}$=	0.280	sq. ft.
$V_{halffull}$ =	2.000	ft/sec)	$V_{3/4full}$=	2.311	ft/sec)

PC # 11544
MH # 597-596

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**0.037**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0188**		*<== Slope V:H*
r=	**0.333**	ft	*<== Radius*

TRIAL DEPTH:

h=	**0.943**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.079	ft	

CACULATIONS:

beta=	40.18	degree
R=	0.049	ft
C=	52.598	
V=	1.604	ft/sec
A=	0.023	sq. ft.
Q_{assume}=	0.037	cfs
$Q_{halffull}$ =	**0.76**	**cfs**
$Q_{3/4full}$ =	**1.41**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**0.943**
Capacity d/r =	**23.60%**
$Q_{capacity}$ =	**0.759 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**4.88%**

($Q_{halffull}$ =	0.76	**cfs**	**($Q_{3/4full}$ =**	1.41	**cfs**
beta $_{halffull}$=	90.000	degree	beta $_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.167	ft	$R_{3/4full}$=	0.201	ft
$C_{halffull}$ =	77.738	ft	$C_{3/4full}$=	81.865	ft
$A_{halffull}$ =	0.174	sq. ft.	$A_{3/4full}$=	0.280	sq. ft.
$V_{halffull}$ =	4.356	ft/sec)	$V_{3/4full}$=	5.031	ft/sec)

PC # 11544
MH # 596 - 595

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**0.037**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0040**		*<== Slope V:H*
r=	**0.333**	ft	*<== Radius*

TRIAL DEPTH:

h=	**1.337**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.111	ft	

CACULATIONS:

beta=	48.29	degree
R=	0.068	ft
C=	58.492	
V=	0.967	ft/sec
A=	0.038	sq. ft.
Q_{assume}=	0.037	cfs
$Q_{halffull}$ =	**0.35**	**cfs**
$Q_{3/4full}$ =	**0.65**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**1.337**
Capacity d/r =	**33.46%**
$Q_{capacity}$ =	**0.348 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**10.62%**

($Q_{halffull}$ =	0.35	**cfs**	**($Q_{3/4full}$ =**	0.65	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.167	ft	$R_{3/4full}$=	0.201	ft
$C_{halffull}$ =	77.391	ft	$C_{3/4full}$=	81.524	ft
$A_{halffull}$ =	0.174	sq. ft.	$A_{3/4full}$=	0.280	sq. ft.
$V_{halffull}$ =	2.000	ft/sec)	$V_{3/4full}$=	2.311	ft/sec)

PC # 11544
MH # 595 - 594

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**0.087**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0056**		*<== Slope V:H*
r=	**0.333**	ft	*<== Radius*

TRIAL DEPTH:

h=	**1.830**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.153	ft	

CACULATIONS:

beta=	57.18	degree
R=	0.091	ft
C=	64.313	
V=	1.448	ft/sec
A=	0.060	sq. ft.
Q_{assume}=	0.087	cfs
$Q_{halffull}$ =	**0.41**	**cfs**
$Q_{3/4full}$ =	**0.77**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**1.830**
Capacity d/r =	**45.80%**
$Q_{capacity}$ =	**0.413 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**21.07%**

($Q_{halffull}$ =	0.41	**cfs**	**($Q_{3/4full}$ =**	0.77	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.167	ft	$R_{3/4full}$=	0.201	ft
$C_{halffull}$ =	77.516	ft	$C_{3/4full}$=	81.647	ft
$A_{halffull}$ =	0.174	sq. ft.	$A_{3/4full}$=	0.280	sq. ft.
$V_{halffull}$ =	2.371	ft/sec)	$V_{3/4full}$=	2.739	ft/sec)

PC # 11544
MH # 594 - 593

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**0.087**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.3600**		*<== Slope V:H*
r=	**0.333**	ft	*<== Radius*

TRIAL DEPTH:

h=	**0.718**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.060	ft	

CACULATIONS:

beta=	34.88	degree
R=	0.038	ft
C=	47.991	
V=	5.628	ft/sec
A=	0.015	sq. ft.
Q_{assume}=	0.087	cfs
$Q_{halffull}$ =	**3.32**	**cfs**
$Q_{3/4full}$ =	**6.18**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**0.718**
Capacity d/r =	**17.97%**
$Q_{capacity}$ =	**3.324 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**2.62%**

($Q_{halffull}$ =	3.32	**cfs**	**($Q_{3/4full}$ =**	6.18	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.167	ft	$R_{3/4full}$=	0.201	ft
$C_{halffull}$ =	77.828	ft	$C_{3/4full}$=	81.953	ft
$A_{halffull}$ =	0.174	sq. ft.	$A_{3/4full}$=	0.280	sq. ft.
$V_{halffull}$ =	19.083	ft/sec)	$V_{3/4full}$=	22.041	ft/sec)

PC # 11544
MH # 593 - 592

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**0.087**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0540**		*<== Slope V:H*
r=	**0.333**	ft	*<== Radius*

TRIAL DEPTH:

h= **1.090** in *<== Vary this depth to get Q_{assume} = Q_{given}*
0.091 ft

CACULATIONS:

beta=	43.35	degree			
R=	0.057	ft			
C=	55.221				
V=	3.054	ft/sec			
A=	0.029	sq. ft.			
Q_{assume}=	0.087	cfs			
$Q_{halffull}$ =	**1.29**	**cfs**	**$Q_{3/4full}$ =**	**2.39**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% <======== **OK**

Flow Depth (in) =	**1.090**				
Capacity d/r =	**27.28%**				
$Q_{capacity}$ =	**1.287**	**cfs**			
Capacity $Q_{given}/Q_{capacity}$ =	**6.76%**				
($Q_{halffull}$ =	1.29	**cfs**	**($Q_{3/4full}$ =**	2.39	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.167	ft	$R_{3/4full}$=	0.201	ft
$C_{halffull}$ =	77.800	ft	$C_{3/4full}$=	81.926	ft
$A_{halffull}$ =	0.174	sq. ft.	$A_{3/4full}$=	0.280	sq. ft.
$V_{halffull}$ =	7.388	ft/sec)	$V_{3/4full}$=	8.534	ft/sec)

PC # 11544
MH # 592 - 575

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**0.087**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0700**		*<== Slope V:H*
r=	**0.333**	ft	*<== Radius*

TRIAL DEPTH:

h=	**1.030**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.086	ft	

CACULATIONS:

beta=	42.08	degree
R=	0.054	ft
C=	54.221	
V=	3.325	ft/sec
A=	0.026	sq. ft.
Q_{assume}=	0.087	cfs
$Q_{halffull}$ =	**1.47**	**cfs**
$Q_{3/4full}$ =	**2.72**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**1.030**
Capacity d/r =	**25.78%**
$Q_{capacity}$ =	**1.465 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**5.94%**

($Q_{halffull}$ =	1.47	**cfs**	**($Q_{3/4full}$ =**	2.72 **cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00 degree
$R_{halffull}$ =	0.167	ft	$R_{3/4full}$=	0.201 ft
$C_{halffull}$ =	77.807	ft	$C_{3/4full}$=	81.933 ft
$A_{halffull}$ =	0.174	sq. ft.	$A_{3/4full}$=	0.280 sq. ft.
$V_{halffull}$ =	8.413	ft/sec)	$V_{3/4full}$=	9.717 ft/sec)

PC # 11544
MH # 575 - 574

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**0.597**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0200**		*<== Slope V:H*
r=	**0.625**	ft	*<== Radius*

TRIAL DEPTH:

h= **2.740** in *<== Vary this depth to get Q_{assume} = Q_{given}*
0.228 ft

CACULATIONS:

beta=	50.60	degree			
R=	0.139	ft			
C=	73.696				
V=	3.885	ft/sec			
A=	0.153	sq. ft.			
Q_{assume}=	0.596	cfs			
$Q_{halffull}$ =	**4.46**	**cfs**	**$Q_{3/4full}$ =**	**8.24**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% <======== **OK**

Flow Depth (in) =	**2.740**				
Capacity d/r =	**36.53%**				
$Q_{capacity}$ =	**8.239**	**cfs**			
Capacity $Q_{given}/Q_{capacity}$ =	**7.25%**				
($Q_{halffull}$ =	4.46	**cfs**	**($Q_{3/4full}$ =**	8.24	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.313	ft	$R_{3/4full}$=	0.377	ft
$C_{halffull}$ =	91.878	ft	$C_{3/4full}$=	96.089	ft
$A_{halffull}$ =	0.614	sq. ft.	$A_{3/4full}$=	0.987	sq. ft.
$V_{halffull}$ =	7.269	ft/sec)	$V_{3/4full}$=	8.345	ft/sec)

PC # 11464
MH # 574 - 157

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**0.597**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0052**		*<== Slope V:H*
r=	**0.625**	ft	*<== Radius*

TRIAL DEPTH:

h=	**3.770**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.314	ft	

CACULATIONS:

beta=	60.18	degree
R=	0.184	ft
C=	79.667	
V=	2.465	ft/sec
A=	0.242	sq. ft.
Q_{assume}=	0.596	cfs
$Q_{halffull}$ =	**2.27**	**cfs**
$Q_{3/4full}$ =	**4.19**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**3.770**
Capacity d/r =	**50.27%**
$Q_{capacity}$ =	**4.191 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**14.25%**

($Q_{halffull}$ =	2.27	**cfs**	**($Q_{3/4full}$ =**	4.19	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.313	ft	$R_{3/4full}$=	0.377	ft
$C_{halffull}$ =	91.649	ft	$C_{3/4full}$=	95.871	ft
$A_{halffull}$ =	0.614	sq. ft.	$A_{3/4full}$=	0.987	sq. ft.
$V_{halffull}$ =	3.697	ft/sec)	$V_{3/4full}$=	4.245	ft/sec)

PC # 10462-A
MH # 157 - 158

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**1.208**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0040**		*<== Slope V:H*
r=	**0.750**	ft	*<== Radius*

TRIAL DEPTH:

h= **5.320** in *<== Vary this depth to get Q_{assume} = Q_{given}*
0.443 ft

CACULATIONS:

beta=	65.86	degree			
R=	0.253	ft			
C=	86.752				
V=	2.761	ft/sec			
A=	0.437	sq. ft.			
Q_{assume}=	1.206	cfs			
$Q_{halffull}$ =	**3.27**	**cfs**	**$Q_{3/4full}$ =**	**6.04**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% <======== **OK**

Flow Depth (in) =	**5.320**				
Capacity d/r =	**59.11%**				
$Q_{capacity}$ =	**6.042**	**cfs**			
Capacity $Q_{given}/Q_{capacity}$ =	**20.00%**				
($Q_{halffull}$ =	3.27	**cfs**	**($Q_{3/4full}$ =**	6.04	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.375	ft	$R_{3/4full}$=	0.453	ft
$C_{halffull}$ =	95.656	ft	$C_{3/4full}$=	99.898	ft
$A_{halffull}$ =	0.884	sq. ft.	$A_{3/4full}$=	1.422	sq. ft.
$V_{halffull}$ =	3.705	ft/sec)	$V_{3/4full}$=	4.250	ft/sec)

PC # 10462-A
MH # 158 - 159 -160

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**1.208**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0052**		*<== Slope V:H*
r=	**0.750**	ft	*<== Radius*

TRIAL DEPTH:

h=	**4.980**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.415	ft	

CACULATIONS:

beta=	63.47	degree
R=	0.240	ft
C=	85.603	
V=	3.022	ft/sec
A=	0.398	sq. ft.
Q_{assume}=	1.204	cfs
$Q_{halffull}$ =	**3.74**	**cfs**
$Q_{3/4full}$ =	**6.90**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**4.980**
Capacity d/r =	**55.33%**
$Q_{capacity}$ =	**6.895 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**17.52%**

($Q_{halffull}$ =	3.74	**cfs**	**($Q_{3/4full}$ =**	6.90	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.375	ft	$R_{3/4full}$=	0.453	ft
$C_{halffull}$ =	95.744	ft	$C_{3/4full}$=	99.981	ft
$A_{halffull}$ =	0.884	sq. ft.	$A_{3/4full}$=	1.422	sq. ft.
$V_{halffull}$ =	4.228	ft/sec)	$V_{3/4full}$=	4.850	ft/sec)

PC # 10462-A
MH # 160 - 161 -162 - 163

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**1.208**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0120**		*<== Slope V:H*
r=	**0.625**	ft	*<== Radius*

TRIAL DEPTH:

h=	**4.330**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.361	ft	

CACULATIONS:

beta=	65.00	degree
R=	0.207	ft
C=	82.479	
V=	4.111	ft/sec
A=	0.293	sq. ft.
Q_{assume}=	1.206	cfs
$Q_{halffull}$ =	**3.45**	**cfs**
$Q_{3/4full}$ =	**6.38**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**4.330**
Capacity d/r =	**57.73%**
$Q_{capacity}$ =	**6.378 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**18.94%**

($Q_{halffull}$ =	3.45	**cfs**	**($Q_{3/4full}$ =**	6.38	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.313	ft	$R_{3/4full}$=	0.377	ft
$C_{halffull}$ =	91.824	ft	$C_{3/4full}$=	96.038	ft
$A_{halffull}$ =	0.614	sq. ft.	$A_{3/4full}$=	0.987	sq. ft.
$V_{halffull}$ =	5.628	ft/sec)	$V_{3/4full}$=	6.461	ft/sec)

PC # 10462-A
MH # 163 - 650

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**1.208**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0180**		*<== Slope V:H*
r=	**0.625**	ft	*<== Radius*

TRIAL DEPTH:

h=	**3.920**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.327	ft	

CACULATIONS:

beta=	61.49	degree
R=	0.190	ft
C=	80.651	
V=	4.721	ft/sec
A=	0.255	sq. ft.
Q_{assume}=	1.206	cfs
$Q_{halffull}$ =	**4.23**	**cfs**
$Q_{3/4full}$ =	**7.82**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**3.920**
Capacity d/r =	**52.27%**
$Q_{capacity}$ =	**7.815 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**15.46%**

($Q_{halffull}$ =	4.23	**cfs**	**($Q_{3/4full}$ =**	7.82 **cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00 degree
$R_{halffull}$ =	0.313	ft	$R_{3/4full}$=	0.377 ft
$C_{halffull}$ =	91.869	ft	$C_{3/4full}$=	96.081 ft
$A_{halffull}$ =	0.614	sq. ft.	$A_{3/4full}$=	0.987 sq. ft.
$V_{halffull}$ =	6.896	ft/sec)	$V_{3/4full}$=	7.916 ft/sec)

PC # 10462-A
MH # 650 - 165

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**1.378**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0240**		*<== Slope V:H*
r=	**0.625**	ft	*<== Radius*

TRIAL DEPTH:

h= **3.900** in *<== Vary this depth to get Q_{assume} = Q_{given}*
0.325 ft

CACULATIONS:

beta=	61.31	degree			
R=	0.190	ft			
C=	80.578				
V=	5.435	ft/sec			
A=	0.254	sq. ft.			
Q_{assume}=	1.378	cfs			
$Q_{halffull}$ =	**4.89**	**cfs**	**$Q_{3/4full}$ =**	**9.03**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% <======== **OK**

Flow Depth (in) =	**3.900**				
Capacity d/r =	**52.00%**				
$Q_{capacity}$ =	**9.026**	**cfs**			
Capacity $Q_{given}/Q_{capacity}$ =	**15.27%**				
($Q_{halffull}$ =	4.89	**cfs**	**($Q_{3/4full}$ =**	9.03	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.313	ft	$R_{3/4full}$=	0.377	ft
$C_{halffull}$ =	91.892	ft	$C_{3/4full}$=	96.102	ft
$A_{halffull}$ =	0.614	sq. ft.	$A_{3/4full}$=	0.987	sq. ft.
$V_{halffull}$ =	7.964	ft/sec)	$V_{3/4full}$=	9.143	ft/sec)

PC # 10462-A
MH # 165 - 166

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**1.416**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0140**		*<== Slope V:H*
r=	**0.625**	ft	*<== Radius*

TRIAL DEPTH:

h= **4.500** in *<== Vary this depth to get Q_{assume} = Q_{given}*
0.375 ft

CACULATIONS:

beta=	66.42	degree
R=	0.214	ft
C=	83.216	
V=	4.551	ft/sec
A=	0.310	sq. ft.
Q_{assume}=	1.409	cfs
$Q_{halffull}$ =	**3.73**	**cfs**
$Q_{3/4full}$ =	**6.89**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% <======== **OK**

Flow Depth (in) =	**4.500**
Capacity d/r =	**60.00%**
$Q_{capacity}$ =	**6.891 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**20.55%**

($Q_{halffull}$ =	3.73	**cfs**	**($Q_{3/4full}$ =**	6.89 **cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00 degree
$R_{halffull}$ =	0.313	ft	$R_{3/4full}$=	0.377 ft
$C_{halffull}$ =	91.844	ft	$C_{3/4full}$=	96.056 ft
$A_{halffull}$ =	0.614	sq. ft.	$A_{3/4full}$=	0.987 sq. ft.
$V_{halffull}$ =	6.080	ft/sec)	$V_{3/4full}$=	6.979 ft/sec)

PC # 10462-A
MH # 166 - 167

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**1.416**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0130**		*<== Slope V:H*
r=	**0.625**	ft	*<== Radius*

TRIAL DEPTH:

h= **4.600** in *<== Vary this depth to get Q_{assume} = Q_{given}*
0.383 ft

CACULATIONS:

beta=	67.25	degree			
R=	0.218	ft			
C=	83.612				
V=	4.447	ft/sec			
A=	0.319	sq. ft.			
Q_{assume}=	1.419	cfs			
$Q_{halffull}$ =	**3.59**	**cfs**	**$Q_{3/4full}$ =**	**6.64**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% <======== **OK**

Flow Depth (in) =	**4.600**				
Capacity d/r =	**61.33%**				
$Q_{capacity}$ =	**6.639**	**cfs**			
Capacity $Q_{given}/Q_{capacity}$ =	**21.33%**				
($Q_{halffull}$ =	3.59	**cfs**	**($Q_{3/4full}$ =**	6.64	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.313	ft	$R_{3/4full}$=	0.377	ft
$C_{halffull}$ =	91.835	ft	$C_{3/4full}$=	96.048	ft
$A_{halffull}$ =	0.614	sq. ft.	$A_{3/4full}$=	0.987	sq. ft.
$V_{halffull}$ =	5.858	ft/sec)	$V_{3/4full}$=	6.725	ft/sec)

PC # 10462-A
MH # 167 - 168

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**1.416**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0436**		*<== Slope V:H*
r=	**0.500**	ft	*<== Radius*

TRIAL DEPTH:

h= **3.700** in *<== Vary this depth to get Q_{assume} = Q_{given}*
0.308 ft

CACULATIONS:

beta=	67.46	degree			
R=	0.175	ft			
C=	78.809				
V=	6.880	ft/sec			
A=	0.206	sq. ft.			
Q_{assume}=	1.416	cfs			
$Q_{halffull}$ =	**3.56**	**cfs**	**$Q_{3/4full}$ =**	**6.60**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% <======== **OK**

Flow Depth (in) =	**3.700**				
Capacity d/r =	**61.67%**				
$Q_{capacity}$ =	**3.560**	**cfs**			
Capacity $Q_{given}/Q_{capacity}$ =	**39.77%**				
($Q_{halffull}$ =	3.56	**cfs**	**($Q_{3/4full}$ =**	6.60	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.250	ft	$R_{3/4full}$=	0.302	ft
$C_{halffull}$ =	86.839	ft	$C_{3/4full}$=	91.089	ft
$A_{halffull}$ =	0.393	sq. ft.	$A_{3/4full}$=	0.632	sq. ft.
$V_{halffull}$ =	9.066	ft/sec)	$V_{3/4full}$=	10.447	ft/sec)

PC # 10462-A
MH # 168 - 535 - 169

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**1.416**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0100**		*<== Slope V:H*
r=	**0.625**	ft	*<== Radius*

TRIAL DEPTH:

h=	**4.900**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.408	ft	

CACULATIONS:

beta=	69.72	degree
R=	0.229	ft
C=	84.726	
V=	4.054	ft/sec
A=	0.348	sq. ft.
Q_{assume}=	1.412	cfs
$Q_{halffull}$ =	**3.15**	**cfs**
$Q_{3/4full}$ =	**5.82**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**4.900**
Capacity d/r =	**65.33%**
$Q_{capacity}$ =	**5.821 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**24.32%**

($Q_{halffull}$ =	3.15	**cfs**	**($Q_{3/4full}$ =**	5.82	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.313	ft	$R_{3/4full}$=	0.377	ft
$C_{halffull}$ =	91.798	ft	$C_{3/4full}$=	96.013	ft
$A_{halffull}$ =	0.614	sq. ft.	$A_{3/4full}$=	0.987	sq. ft.
$V_{halffull}$ =	5.136	ft/sec)	$V_{3/4full}$=	5.896	ft/sec)

PC # 10462-A
MH # 169 - 170

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**1.416**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0160**		*<== Slope V:H*
r=	**0.625**	ft	*<== Radius*

TRIAL DEPTH:

h= **4.360** in *<== Vary this depth to get Q_{assume} = Q_{given}*
0.363 ft

CACULATIONS:

beta=	65.25	degree			
R=	0.208	ft			
C=	82.644				
V=	4.770	ft/sec			
A=	0.296	sq. ft.			
Q_{assume}=	1.413	cfs			
$Q_{halffull}$ =	**3.99**	**cfs**	**$Q_{3/4full}$ =**	**7.37**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% <======== **OK**

Flow Depth (in) =	**4.360**				
Capacity d/r =	**58.13%**				
$Q_{capacity}$ =	**7.367**	**cfs**			
Capacity $Q_{given}/Q_{capacity}$ =	**19.22%**				
($Q_{halffull}$ =	3.99	**cfs**	**($Q_{3/4full}$ =**	7.37	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.313	ft	$R_{3/4full}$=	0.377	ft
$C_{halffull}$ =	91.858	ft	$C_{3/4full}$=	96.070	ft
$A_{halffull}$ =	0.614	sq. ft.	$A_{3/4full}$=	0.987	sq. ft.
$V_{halffull}$ =	6.501	ft/sec)	$V_{3/4full}$=	7.462	ft/sec)

PC # 10462-A
MH # 170 - 171

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**2.039**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0160**		*<== Slope V:H*
r=	**0.625**	ft	*<== Radius*

TRIAL DEPTH:

h=	**5.250**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.438	ft	

CACULATIONS:

beta=	72.54	degree
R=	0.242	ft
C=	86.024	
V=	5.351	ft/sec
A=	0.383	sq. ft.
Q_{assume}=	2.048	cfs

$Q_{halffull}$ =	**3.99**	**cfs**	**$Q_{3/4full}$ =** **7.37** **cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**5.250**
Capacity d/r =	**70.00%**
$Q_{capacity}$ =	**7.367 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**27.68%**

($Q_{halffull}$ =	3.99	**cfs**	**($Q_{3/4full}$ =**	7.37	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.313	ft	$R_{3/4full}$=	0.377	ft
$C_{halffull}$ =	91.858	ft	$C_{3/4full}$=	96.070	ft
$A_{halffull}$ =	0.614	sq. ft.	$A_{3/4full}$=	0.987	sq. ft.
$V_{halffull}$ =	6.501	ft/sec)	$V_{3/4full}$=	7.462	ft/sec)

PC # 10462-A
MH # 171 - 35

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**2.039**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0292**		*<== Slope V:H*
r=	**0.625**	ft	*<== Radius*

TRIAL DEPTH:

h= **4.500** in *<== Vary this depth to get Q_{assume} = Q_{given}*

0.375 ft

CACULATIONS:

beta=	66.42	degree
R=	0.214	ft
C=	83.280	
V=	6.578	ft/sec
A=	0.310	sq. ft.
Q_{assume}=	2.037	cfs
$Q_{halffull}$ =	**5.39**	**cfs**
$Q_{3/4full}$ =	**9.96**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**4.500**
Capacity d/r =	**60.00%**
$Q_{capacity}$ =	**9.957 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**20.48%**

($Q_{halffull}$ =	5.39	**cfs**	**($Q_{3/4full}$ =**	9.96 **cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00 degree
$R_{halffull}$ =	0.313	ft	$R_{3/4full}$=	0.377 ft
$C_{halffull}$ =	91.904	ft	$C_{3/4full}$=	96.114 ft
$A_{halffull}$ =	0.614	sq. ft.	$A_{3/4full}$=	0.987 sq. ft.
$V_{halffull}$ =	8.786	ft/sec)	$V_{3/4full}$=	10.086 ft/sec)

PC # 10462-A
MH # 35 - 33 - 26

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**2.690**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0040**		*<== Slope V:H*
r=	**0.750**	ft	*<== Radius*

TRIAL DEPTH:

h=	**8.050**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.671	ft	

CACULATIONS:

beta=	83.94	degree
R=	0.348	ft
C=	93.971	
V=	3.507	ft/sec
A=	0.765	sq. ft.
Q_{assume}=	2.683	cfs
$Q_{halffull}$ =	**3.27**	**cfs**
$Q_{3/4full}$ =	**6.04**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**8.050**
Capacity d/r =	**89.44%**
$Q_{capacity}$ =	**6.042 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**44.52%**

($Q_{halffull}$ =	3.27	**cfs**	**($Q_{3/4full}$ =**	6.04	**cfs**
beta $_{halffull}$=	90.000	degree	beta $_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.375	ft	$R_{3/4full}$=	0.453	ft
$C_{halffull}$ =	95.656	ft	$C_{3/4full}$=	99.898	ft
$A_{halffull}$ =	0.884	sq. ft.	$A_{3/4full}$=	1.422	sq. ft.
$V_{halffull}$ =	3.705	ft/sec)	$V_{3/4full}$=	4.250	ft/sec)

PC # 10445
MH # 26 - 366 - 365

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**2.985**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0081**		*<== Slope V:H*
r=	**0.875**	ft	*<== Radius*

TRIAL DEPTH:

h=	**6.600**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.550	ft	

CACULATIONS:

beta=	68.20	degree
R=	0.311	ft
C=	91.596	
V=	4.595	ft/sec
A=	0.647	sq. ft.
Q_{assume}=	2.974	cfs
$Q_{halffull}$ =	**7.12**	**cfs**
$Q_{3/4full}$ =	**13.10**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**6.600**
Capacity d/r =	**62.86%**
$Q_{capacity}$ =	**13.100 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**22.78%**

($Q_{halffull}$ =	7.12	**cfs**	**($Q_{3/4full}$ =**	13.10	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.438	ft	$R_{3/4full}$=	0.528	ft
$C_{halffull}$ =	99.348	ft	$C_{3/4full}$=	103.521	ft
$A_{halffull}$ =	1.203	sq. ft.	$A_{3/4full}$=	1.935	sq. ft.
$V_{halffull}$ =	5.918	ft/sec)	$V_{3/4full}$=	6.770	ft/sec)

PC # 10445
MH # 365 - 367

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**6.238**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0081**		*<== Slope V:H*
r=	**0.875**	ft	*<== Radius*

TRIAL DEPTH:

h= **9.750** in *<== Vary this depth to get Q_{assume} = Q_{given}*
0.813 ft

CACULATIONS:

beta=	85.90	degree			
R=	0.417	ft			
C=	98.228				
V=	5.707	ft/sec			
A=	1.093	sq. ft.			
Q_{assume}=	6.240	cfs			
$Q_{halffull}$ =	**7.12**	**cfs**	**$Q_{3/4full}$ =**	**13.10**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) = 9.750

Capacity d/r = 92.86%

$Q_{capacity}$ = 13.100 cfs

Capacity $Q_{given}/Q_{capacity}$ = 47.62%

($Q_{halffull}$ =	7.12	**cfs**	**($Q_{3/4full}$ =**	13.10	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.438	ft	$R_{3/4full}$=	0.528	ft
$C_{halffull}$ =	99.348	ft	$C_{3/4full}$=	103.521	ft
$A_{halffull}$ =	1.203	sq. ft.	$A_{3/4full}$=	1.935	sq. ft.
$V_{halffull}$ =	5.918	ft/sec)	$V_{3/4full}$=	6.770	ft/sec)

PC # 10445
MH # 367 - 79

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**6.238**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0100**		*<== Slope V:H*
r=	**0.750**	ft	*<== Radius*

TRIAL DEPTH:

h=	**10.050**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.838	ft	

CACULATIONS:

beta=	96.70	degree
R=	0.401	ft
C=	97.384	
V=	6.165	ft/sec
A=	1.015	sq. ft.
Q_{assume}=	6.254	cfs
$Q_{halffull}$ =	**5.19**	**cfs**
$Q_{3/4full}$ =	**9.57**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**10.050**
Capacity d/r =	**111.67%**
$Q_{capacity}$ =	**9.575 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**65.15%**

($Q_{halffull}$ =	5.19	**cfs**	**($Q_{3/4full}$ =**	9.57	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.375	ft	$R_{3/4full}$=	0.453	ft
$C_{halffull}$ =	95.886	ft	$C_{3/4full}$=	100.114	ft
$A_{halffull}$ =	0.884	sq. ft.	$A_{3/4full}$=	1.422	sq. ft.
$V_{halffull}$ =	5.872	ft/sec)	$V_{3/4full}$=	6.735	ft/sec)

PC # 10445
MH # 79 - 78

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**6.238**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0140**		*<== Slope V:H*
r=	**0.750**	ft	*<== Radius*

TRIAL DEPTH:

h=	**9.100**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.758	ft	

CACULATIONS:

beta=	90.64	degree
R=	0.378	ft
C=	96.088	
V=	6.987	ft/sec
A=	0.896	sq. ft.
Q_{assume}=	6.261	cfs
$Q_{halffull}$ =	**6.14**	**cfs**
$Q_{3/4full}$ =	**11.33**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**9.100**
Capacity d/r =	**101.11%**
$Q_{capacity}$ =	**11.333 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**55.04%**

($Q_{halffull}$ =	6.14	**cfs**	**($Q_{3/4full}$ =**	11.33	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.375	ft	$R_{3/4full}$=	0.453	ft
$C_{halffull}$ =	95.930	ft	$C_{3/4full}$=	100.156	ft
$A_{halffull}$ =	0.884	sq. ft.	$A_{3/4full}$=	1.422	sq. ft.
$V_{halffull}$ =	6.951	ft/sec)	$V_{3/4full}$=	7.972	ft/sec)

PC # 10445
MH # 78 - 77 - 76

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**6.238**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0100**		*<== Slope V:H*
r=	**0.750**	ft	*<== Radius*

TRIAL DEPTH:

h=	**10.050**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.838	ft	

CACULATIONS:

beta=	96.70	degree
R=	0.401	ft
C=	97.384	
V=	6.165	ft/sec
A=	1.015	sq. ft.
Q_{assume}=	6.254	cfs
$Q_{halffull}$ =	**5.19**	**cfs**
$Q_{3/4full}$ =	**9.57**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**10.050**
Capacity d/r =	**111.67%**
$Q_{capacity}$ =	**9.575 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**65.15%**

($Q_{halffull}$ =	5.19	**cfs**	**($Q_{3/4full}$ =**	9.57	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.375	ft	$R_{3/4full}$=	0.453	ft
$C_{halffull}$ =	95.886	ft	$C_{3/4full}$=	100.114	ft
$A_{halffull}$ =	0.884	sq. ft.	$A_{3/4full}$=	1.422	sq. ft.
$V_{halffull}$ =	5.872	ft/sec)	$V_{3/4full}$=	6.735	ft/sec)

PC # 10445
MH # 76 - 17

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**6.238**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0112**		*<== Slope V:H*
r=	**0.750**	ft	*<== Radius*

TRIAL DEPTH:

h=	**9.700**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.808	ft	

CACULATIONS:

beta=	94.46	degree
R=	0.393	ft
C=	96.939	
V=	6.428	ft/sec
A=	0.971	sq. ft.
Q_{assume}=	6.242	cfs
$Q_{halffull}$ =	**5.49**	**cfs**
$Q_{3/4full}$ =	**10.13**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**9.700**
Capacity d/r =	**107.78%**
$Q_{capacity}$ =	**10.134 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**61.55%**

($Q_{halffull}$ =	5.49	**cfs**	**($Q_{3/4full}$ =**	10.13	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.375	ft	$R_{3/4full}$=	0.453	ft
$C_{halffull}$ =	95.902	ft	$C_{3/4full}$=	100.130	ft
$A_{halffull}$ =	0.884	sq. ft.	$A_{3/4full}$=	1.422	sq. ft.
$V_{halffull}$ =	6.215	ft/sec)	$V_{3/4full}$=	7.128	ft/sec)

PC # 885401
MH # 17-16-14-13-12

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**6.238**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0020**		*<== Slope V:H*
r=	**0.750**	ft	*<== Radius*

TRIAL DEPTH:

h=	**17.200**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	1.433	ft	

CACULATIONS:

beta=	155.66	degree
R=	0.427	ft
C=	98.218	
V=	2.870	ft/sec
A=	1.739	sq. ft.
Q_{assume}=	4.992	cfs

$Q_{halffull}$ = 2.31 cfs **$Q_{3/4full}$ = 4.26 cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 20% <======== **Not Good**

(Increase h)

Flow Depth (in) = Try another h

Capacity d/r = No Result

$Q_{capacity}$ = 4.257 cfs

Capacity $Q_{given}/Q_{capacity}$ = 146.52%

($Q_{halffull}$ =	2.31	**cfs**	**($Q_{3/4full}$ =**	4.26	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.375	ft	$R_{3/4full}$=	0.453	ft
$C_{halffull}$ =	95.278	ft	$C_{3/4full}$=	99.541	ft
$A_{halffull}$ =	0.884	sq. ft.	$A_{3/4full}$=	1.422	sq. ft.
$V_{halffull}$ =	2.609	ft/sec)	$V_{3/4full}$=	2.995	ft/sec)

PC # 885501-876091
MH # 12-11-10-9-7

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**6.336**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0020**		*<== Slope V:H*
r=	**0.750**	ft	*<== Radius*

TRIAL DEPTH:

h= **16.900** in *<== Vary this depth to get Q_{assume} = Q_{given}*

1.408 ft

CACULATIONS:

beta=	151.38	degree
R=	0.435	ft
C=	98.631	
V=	2.908	ft/sec
A=	1.723	sq. ft.
Q_{assume}=	5.010	cfs
$Q_{halffull}$ =	**2.31**	**cfs**
$Q_{3/4full}$ =	**4.26**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 21% <======== **Not Good**

(Increase h)

Flow Depth (in) = Try another h

Capacity d/r = No Result

$Q_{capacity}$ = 4.257 cfs

Capacity $Q_{given}/Q_{capacity}$ = 148.82%

($Q_{halffull}$ =	2.31	**cfs**	**($Q_{3/4full}$ =**	4.26	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.375	ft	$R_{3/4full}$=	0.453	ft
$C_{halffull}$ =	95.278	ft	$C_{3/4full}$=	99.541	ft
$A_{halffull}$ =	0.884	sq. ft.	$A_{3/4full}$=	1.422	sq. ft.
$V_{halffull}$ =	2.609	ft/sec)	$V_{3/4full}$=	2.995	ft/sec)

PC # 876091
MH # 7-2

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**6.336**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0032**		*<== Slope V:H*
r=	**0.750**	ft	*<== Radius*

TRIAL DEPTH:

h=	**17.100**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	1.425	ft	

CACULATIONS:

beta=	154.16	degree
R=	0.430	ft
C=	98.640	
V=	3.658	ft/sec
A=	1.734	sq. ft.
Q_{assume}=	6.343	cfs
$Q_{halffull}$ =	**2.92**	**cfs**
$Q_{3/4full}$ =	**5.40**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**17.100**
Capacity d/r =	**190.00%**
$Q_{capacity}$ =	**5.400 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**117.34%**

($Q_{halffull}$ =	2.92	**cfs**	**($Q_{3/4full}$ =**	5.40	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.375	ft	$R_{3/4full}$=	0.453	ft
$C_{halffull}$ =	95.561	ft	$C_{3/4full}$=	99.808	ft
$A_{halffull}$ =	0.884	sq. ft.	$A_{3/4full}$=	1.422	sq. ft.
$V_{halffull}$ =	3.310	ft/sec)	$V_{3/4full}$=	3.798	ft/sec)

PC # 876091
MH # 2-1

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**6.336**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0024**		*<== Slope V:H*
r=	**0.750**	ft	*<== Radius*

TRIAL DEPTH:

h=	**16.900**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	1.408	ft	

CACULATIONS:

beta=	151.38	degree
R=	0.435	ft
C=	98.751	
V=	3.190	ft/sec
A=	1.723	sq. ft.
Q_{assume}=	5.495	cfs

$Q_{halffull}$ = 2.53 cfs **$Q_{3/4full}$ = 4.67 cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 13% <======== **Not Good**

(Increase h)

Flow Depth (in) = Try another h

Capacity d/r = No Result

$Q_{capacity}$ = 4.669 cfs

Capacity $Q_{given}/Q_{capacity}$ = 135.70%

($Q_{halffull}$ =	2.53	**cfs**	**($Q_{3/4full}$ =**	4.67	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.375	ft	$R_{3/4full}$=	0.453	ft
$C_{halffull}$ =	95.403	ft	$C_{3/4full}$=	99.659	ft
$A_{halffull}$ =	0.884	sq. ft.	$A_{3/4full}$=	1.422	sq. ft.
$V_{halffull}$ =	2.862	ft/sec)	$V_{3/4full}$=	3.284	ft/sec)

PC # 876091
MH # 1-171

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**6.336**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0136**		*<== Slope V:H*
r=	**0.750**	ft	*<== Radius*

TRIAL DEPTH:

h=	**9.250**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.771	ft	

CACULATIONS:

beta=	91.59	degree
R=	0.382	ft
C=	96.315	
V=	6.938	ft/sec
A=	0.915	sq. ft.
Q_{assume}=	6.347	cfs
$Q_{halffull}$ =	**6.05**	**cfs**
$Q_{3/4full}$ =	**11.17**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**9.250**
Capacity d/r =	**102.78%**
$Q_{capacity}$ =	**11.170 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**56.72%**

($Q_{halffull}$ =	6.05	**cfs**	**($Q_{3/4full}$ =**	11.17	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.375	ft	$R_{3/4full}$=	0.453	ft
$C_{halffull}$ =	95.927	ft	$C_{3/4full}$=	100.153	ft
$A_{halffull}$ =	0.884	sq. ft.	$A_{3/4full}$=	1.422	sq. ft.
$V_{halffull}$ =	6.851	ft/sec)	$V_{3/4full}$=	7.857	ft/sec)

PC # 876091
MH # 171-169

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**6.336**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0032**		*<== Slope V:H*
r=	**0.750**	ft	*<== Radius*

TRIAL DEPTH:

h=	**17.000**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	1.417	ft	

CACULATIONS:

beta=	152.73	degree
R=	0.432	ft
C=	98.777	
V=	3.674	ft/sec
A=	1.729	sq. ft.
Q_{assume}=	6.350	cfs
$Q_{halffull}$ =	**2.92**	**cfs**
$Q_{3/4full}$ =	**5.40**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**17.000**	
Capacity d/r =	**188.89%**	
$Q_{capacity}$ =	**5.400**	**cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**117.34%**	

($Q_{halffull}$ =	2.92	**cfs**	**($Q_{3/4full}$ =**	5.40	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.375	ft	$R_{3/4full}$=	0.453	ft
$C_{halffull}$ =	95.561	ft	$C_{3/4full}$=	99.808	ft
$A_{halffull}$ =	0.884	sq. ft.	$A_{3/4full}$=	1.422	sq. ft.
$V_{halffull}$ =	3.310	ft/sec)	$V_{3/4full}$=	3.798	ft/sec)

PC # 876091
MH # 169-168

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**6.336**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0800**		*<== Slope V:H*
r=	**0.500**	ft	*<== Radius*

TRIAL DEPTH:

h=	**7.050**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.588	ft	

CACULATIONS:

beta=	100.08	degree
R=	0.275	ft
C=	88.983	
V=	13.190	ft/sec
A=	0.480	sq. ft.
Q_{assume}=	6.328	cfs
$Q_{halffull}$ =	**4.82**	**cfs**
$Q_{3/4full}$ =	**8.94**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**7.050**
Capacity d/r =	**117.50%**
$Q_{capacity}$ =	**4.824 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**131.35%**

($Q_{halffull}$ =	4.82	**cfs**	**($Q_{3/4full}$ =**	8.94	**cfs**
beta $_{halffull}$=	90.000	degree	beta $_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.250	ft	$R_{3/4full}$=	0.302	ft
$C_{halffull}$ =	86.857	ft	$C_{3/4full}$=	91.106	ft
$A_{halffull}$ =	0.393	sq. ft.	$A_{3/4full}$=	0.632	sq. ft.
$V_{halffull}$ =	12.283	ft/sec)	$V_{3/4full}$=	14.154	ft/sec)

PC # 8583
MH # 168-167-166-165

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**6.431**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0140**		*<== Slope V:H*
r=	**0.625**	ft	*<== Radius*

TRIAL DEPTH:

h=	**10.650**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.888	ft	

CACULATIONS:

beta=	114.83	degree
R=	0.372	ft
C=	95.744	
V=	6.909	ft/sec
A=	0.932	sq. ft.
Q_{assume}=	6.438	cfs
$Q_{halffull}$ =	**3.73**	**cfs**
$Q_{3/4full}$ =	**6.89**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**10.650**
Capacity d/r =	**142.00%**
$Q_{capacity}$ =	**6.891 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**93.33%**

($Q_{halffull}$ =	3.73	**cfs**	**($Q_{3/4full}$ =**	6.89 **cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00 degree
$R_{halffull}$ =	0.313	ft	$R_{3/4full}$=	0.377 ft
$C_{halffull}$ =	91.844	ft	$C_{3/4full}$=	96.056 ft
$A_{halffull}$ =	0.614	sq. ft.	$A_{3/4full}$=	0.987 sq. ft.
$V_{halffull}$ =	6.080	ft/sec)	$V_{3/4full}$=	6.979 ft/sec)

PC # 8146R01
MH # 165-150

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**6.842**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0152**		*<== Slope V:H*
r=	**0.625**	ft	*<== Radius*

TRIAL DEPTH:

h=	**10.800**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.900	ft	

CACULATIONS:

beta=	116.10	degree
R=	0.373	ft
C=	95.844	
V=	7.221	ft/sec
A=	0.946	sq. ft.
Q_{assume}=	6.830	cfs
$Q_{halffull}$ =	**3.89**	**cfs**
$Q_{3/4full}$ =	**7.18**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% <======== **OK**

Flow Depth (in) =	**10.800**
Capacity d/r =	**144.00%**
$Q_{capacity}$ =	**7.181 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**95.28%**

($Q_{halffull}$ =	3.89	**cfs**	**($Q_{3/4full}$ =**	7.18	**cfs**
beta $_{halffull}$=	90.000	degree	beta $_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.313	ft	$R_{3/4full}$=	0.377	ft
$C_{halffull}$ =	91.853	ft	$C_{3/4full}$=	96.065	ft
$A_{halffull}$ =	0.614	sq. ft.	$A_{3/4full}$=	0.987	sq. ft.
$V_{halffull}$ =	6.336	ft/sec)	$V_{3/4full}$=	7.273	ft/sec)

PC # 8146R01
MH # 150-149

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**6.842**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0148**		*<== Slope V:H*
r=	**0.750**	ft	*<== Radius*

TRIAL DEPTH:

h=	**9.450**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.788	ft	

CACULATIONS:

beta=	92.87	degree
R=	0.387	ft
C=	96.620	
V=	7.308	ft/sec
A=	0.940	sq. ft.
Q_{assume}=	6.868	cfs
$Q_{halffull}$ =	**6.31**	**cfs**
$Q_{3/4full}$ =	**11.65**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**9.450**
Capacity d/r =	**105.00%**
$Q_{capacity}$ =	**11.653 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**58.71%**

($Q_{halffull}$ =	6.31	**cfs**	**($Q_{3/4full}$ =**	11.65	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.375	ft	$R_{3/4full}$=	0.453	ft
$C_{halffull}$ =	95.936	ft	$C_{3/4full}$=	100.161	ft
$A_{halffull}$ =	0.884	sq. ft.	$A_{3/4full}$=	1.422	sq. ft.
$V_{halffull}$ =	7.147	ft/sec)	$V_{3/4full}$=	8.197	ft/sec)

PC # 8146R01
MH # 149-148

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**6.924**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0152**		*<== Slope V:H*
r=	**0.750**	ft	*<== Radius*

TRIAL DEPTH:

h=	**9.400**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.783	ft	

CACULATIONS:

beta=	92.55	degree
R=	0.385	ft
C=	96.550	
V=	7.389	ft/sec
A=	0.934	sq. ft.
Q_{assume}=	6.898	cfs
$Q_{halffull}$ =	**6.40**	**cfs**
$Q_{3/4full}$ =	**11.81**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**9.400**
Capacity d/r =	**104.44%**
$Q_{capacity}$ =	**11.810 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**58.63%**

($Q_{halffull}$ =	6.40	**cfs**	**($Q_{3/4full}$ =**	11.81	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.375	ft	$R_{3/4full}$=	0.453	ft
$C_{halffull}$ =	95.939	ft	$C_{3/4full}$=	100.164	ft
$A_{halffull}$ =	0.884	sq. ft.	$A_{3/4full}$=	1.422	sq. ft.
$V_{halffull}$ =	7.243	ft/sec)	$V_{3/4full}$=	8.307	ft/sec)

PC # 8146R01
MH # 148-145

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**6.924**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0148**		*<== Slope V:H*
r=	**0.750**	ft	*<== Radius*

TRIAL DEPTH:

h=	**9.520**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.793	ft	

CACULATIONS:

beta=	93.31	degree
R=	0.388	ft
C=	96.721	
V=	7.332	ft/sec
A=	0.949	sq. ft.
Q_{assume}=	6.955	cfs
$Q_{halffull}$ =	**6.31**	**cfs**
$Q_{3/4full}$ =	**11.65**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**9.520**
Capacity d/r =	**105.78%**
$Q_{capacity}$ =	**11.653 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**59.42%**

($Q_{halffull}$ =	6.31	**cfs**	**($Q_{3/4full}$ =**	11.65	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.375	ft	$R_{3/4full}$=	0.453	ft
$C_{halffull}$ =	95.936	ft	$C_{3/4full}$=	100.161	ft
$A_{halffull}$ =	0.884	sq. ft.	$A_{3/4full}$=	1.422	sq. ft.
$V_{halffull}$ =	7.147	ft/sec)	$V_{3/4full}$=	8.197	ft/sec)

PC # 8146R01
MH # 145-144

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**6.924**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0152**		*<== Slope V:H*
r=	**0.750**	ft	*<== Radius*

TRIAL DEPTH:

h=	**9.400**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.783	ft	

CACULATIONS:

beta=	92.55	degree
R=	0.385	ft
C=	96.550	
V=	7.389	ft/sec
A=	0.934	sq. ft.
Q_{assume}=	6.898	cfs
$Q_{halffull}$ =	**6.40**	**cfs**
$Q_{3/4full}$ =	**11.81**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**9.400**
Capacity d/r =	**104.44%**
$Q_{capacity}$ =	**11.810 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**58.63%**

($Q_{halffull}$ =	6.40	**cfs**	**($Q_{3/4full}$ =**	11.81	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.375	ft	$R_{3/4full}$=	0.453	ft
$C_{halffull}$ =	95.939	ft	$C_{3/4full}$=	100.164	ft
$A_{halffull}$ =	0.884	sq. ft.	$A_{3/4full}$=	1.422	sq. ft.
$V_{halffull}$ =	7.243	ft/sec)	$V_{3/4full}$=	8.307	ft/sec)

PC # 8146R01
MH # 144-129

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**7.595**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0100**		*<== Slope V:H*
r=	**0.750**	ft	*<== Radius*

TRIAL DEPTH:

h=	**11.400**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.950	ft	

CACULATIONS:

beta=	105.47	degree
R=	0.427	ft
C=	98.830	
V=	6.461	ft/sec
A=	1.180	sq. ft.
Q_{assume}=	7.624	cfs
$Q_{halffull}$ =	**5.19**	**cfs**
$Q_{3/4full}$ =	**9.57**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**11.400**
Capacity d/r =	**126.67%**
$Q_{capacity}$ =	**9.575 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**79.32%**

($Q_{halffull}$ =	5.19	**cfs**	**($Q_{3/4full}$ =**	9.57	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.375	ft	$R_{3/4full}$=	0.453	ft
$C_{halffull}$ =	95.886	ft	$C_{3/4full}$=	100.114	ft
$A_{halffull}$ =	0.884	sq. ft.	$A_{3/4full}$=	1.422	sq. ft.
$V_{halffull}$ =	5.872	ft/sec)	$V_{3/4full}$=	6.735	ft/sec)

PC # 8146R01
MH # 129-130-131-132-133-46-43

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**7.671**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0100**		*<== Slope V:H*
r=	**0.750**	ft	*<== Radius*

TRIAL DEPTH:

h=	**11.420**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.952	ft	

CACULATIONS:

beta=	105.60	degree
R=	0.428	ft
C=	98.848	
V=	6.464	ft/sec
A=	1.182	sq. ft.
Q_{assume}=	7.644	cfs
$Q_{halffull}$ =	**5.19**	**cfs**
$Q_{3/4full}$ =	**9.57**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**11.420**				
Capacity d/r =	**126.89%**				
$Q_{capacity}$ =	**9.575**	**cfs**			
Capacity $Q_{given}/Q_{capacity}$ =	**80.12%**				
($Q_{halffull}$ =	5.19	**cfs**	**($Q_{3/4full}$ =**	9.57	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.375	ft	$R_{3/4full}$=	0.453	ft
$C_{halffull}$ =	95.886	ft	$C_{3/4full}$=	100.114	ft
$A_{halffull}$ =	0.884	sq. ft.	$A_{3/4full}$=	1.422	sq. ft.
$V_{halffull}$ =	5.872	ft/sec)	$V_{3/4full}$=	6.735	ft/sec)

PC # 8146R01
MH # 43-32

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**7.695**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0100**		*<== Slope V:H*
r=	**0.750**	ft	*<== Radius*

TRIAL DEPTH:

h=	**11.500**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.958	ft	

CACULATIONS:

beta=	106.13	degree
R=	0.429	ft
C=	98.918	
V=	6.479	ft/sec
A=	1.192	sq. ft.
Q_{assume}=	7.723	cfs
$Q_{halffull}$ =	**5.19**	**cfs**

$Q_{3/4full}$ = 9.57 cfs

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**11.500**
Capacity d/r =	**127.78%**
$Q_{capacity}$ =	**9.575 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**80.37%**

($Q_{halffull}$ =	5.19	**cfs**	**($Q_{3/4full}$ =**	9.57	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.375	ft	$R_{3/4full}$=	0.453	ft
$C_{halffull}$ =	95.886	ft	$C_{3/4full}$=	100.114	ft
$A_{halffull}$ =	0.884	sq. ft.	$A_{3/4full}$=	1.422	sq. ft.
$V_{halffull}$ =	5.872	ft/sec)	$V_{3/4full}$=	6.735	ft/sec)

PC # 8146R01
MH # 32-31

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**7.695**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0212**		*<== Slope V:H*
r=	**0.750**	ft	*<== Radius*

TRIAL DEPTH:

h=	**9.100**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.758	ft	

CACULATIONS:

beta=	90.64	degree
R=	0.378	ft
C=	96.125	
V=	8.601	ft/sec
A=	0.896	sq. ft.
Q_{assume}=	7.707	cfs

$Q_{halffull}$ = 7.56 cfs **$Q_{3/4full}$ = 13.95 cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% <======= **OK**

Flow Depth (in) = 9.100

Capacity d/r = 101.11%

$Q_{capacity}$ = 13.951 cfs

Capacity $Q_{given}/Q_{capacity}$ = 55.16%

($Q_{halffull}$ =	7.56	**cfs**	**($Q_{3/4full}$ =**	13.95	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.375	ft	$R_{3/4full}$=	0.453	ft
$C_{halffull}$ =	95.967	ft	$C_{3/4full}$=	100.191	ft
$A_{halffull}$ =	0.884	sq. ft.	$A_{3/4full}$=	1.422	sq. ft.
$V_{halffull}$ =	8.557	ft/sec)	$V_{3/4full}$=	9.813	ft/sec)

PC # 10445
MH # 31-TRUNK

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**8.060**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0124**		*<== Slope V:H*
r=	**0.750**	ft	*<== Radius*

TRIAL DEPTH:

h=	**11.000**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.917	ft	

CACULATIONS:

beta=	102.84	degree
R=	0.420	ft
C=	98.483	
V=	7.109	ft/sec
A=	1.131	sq. ft.
Q_{assume}=	8.044	cfs

$Q_{halffull}$ = 5.78 cfs **$Q_{3/4full}$ = 10.66 cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% <======== **OK**

Flow Depth (in) = 11.000

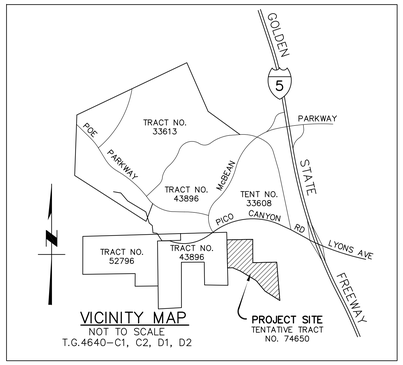
Capacity d/r = 122.22%

$Q_{capacity}$ = 10.665 cfs

Capacity $Q_{given}/Q_{capacity}$ = 75.58%

($Q_{halffull}$ =	5.78	**cfs**	**($Q_{3/4full}$ =**	10.66	**cfs**
beta $_{halffull}$=	90.000	degree	beta $_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.375	ft	$R_{3/4full}$=	0.453	ft
$C_{halffull}$ =	95.916	ft	$C_{3/4full}$=	100.142	ft
$A_{halffull}$ =	0.884	sq. ft.	$A_{3/4full}$=	1.422	sq. ft.
$V_{halffull}$ =	6.541	ft/sec)	$V_{3/4full}$=	7.502	ft/sec)

MAP



EASEMENT PLOT
ORDER NO. 416240446
PROPERTY IN QUESTION

ITEM NO. 2 – INGRESS AND EGRESS
NOVEMBER 13, 1963 AS INSTRUMENT NO. 3337 O.R. TO BE ABANDONED

ITEM NO. 3 – ROAD
MARCH 13, 1963 AS INSTRUMENT NO. 2385 O.R. TO BE ABANDONED

ITEM NO. 4 – INGRESS, EGRESS AND PUBLIC UTILITY – AFFECTS PARCEL 4 ONLY
AUGUST 5, 1969 AS INSTRUMENT NO. 2831 O.R. TO BE ABANDONED

ITEM NO. 5 – DITCHES AND CANALS – UNLOCATABLE
BOOK 2896 PAGE 85 O.R.

ITEM NO. 7 – ROADWAYS – UNLOCATABLE
BOOK D3630 PAGE 466 O.R.

ITEM NO. 8 – INGRESS, EGRESS AND UTILITIES – UNLOCATABLE
APRIL 4, 1978 AS INSTRUMENT NO. 78-352178 AND
FEBRUARY 27, 1979 AS INSTRUMENT NO. 79-227247, BOTH OF O.R.

ITEM NO. 11 – INGRESS AND EGRESS – AFFECTS PARCEL 4 ONLY
OCTOBER 1, 1985 AS INSTRUMENT NO. 85-1147318 O.R. TO BE ABANDONED

ITEM NO. 12 – WATER PIPE LINE
JULY 30, 1997 AS INSTRUMENT NO. 97-1153697 O.R. TO BE REMAIN

ITEM NO. 14 – INGRESS, EGRESS, UTILITIES AND COMMUNICATION FACILITIES – UNLOCATABLE
APRIL 8, 2008 AS INSTRUMENT NO. 2008-605413 O.R.

BENCHMARK L3026

RDBM TAG IN S CB 26' W/O BCR @ SW COR LYONS AVE & WILEY CYN RD 100' W & 40' S/O C/L INT (NR W END CB)

NEWHALL 2009 ELEV.=1265.354 (FEET)
ELE.= 385.681 (M)

LEGAL DESCRIPTION:

SEE SHEET 2 OF 2 FOR FULL LEGAL DESCRIPTION

LAND USE SUMMARY:

	ACRES	%	LOTS
SINGLE FAMILY	9.35	9.91	37
OPEN SPACE LOTS	76.64	81.20	2
PUBLIC FACILITY	2.74	2.90	5
HOA FACILITY	1.78	1.89	1
PUBLIC STREETS	3.87	4.10	--
TOTAL	94.38	100%	--

CURVE DATA

CURVE	DELTA	RADIUS	LENGTH	TANGENT
C1	94°05'16"	350.00'	574.75'	375.91'
C2	15°59'08"	680.00'	189.72'	95.48'
C3	26°13'25"	400.00'	183.08'	93.17'
C4	32°09'11"	620.00'	347.93'	178.68'
C5	65°40'18"	281.00'	322.08'	181.34'
C6	28°40'19"	378.72'	189.52'	96.79'

RECORD OWNER:

PI PROPERTIES NO. 36 LLC
C/O POSITIVE INVESTMENTS, INC
610 N. SANTA ANITA AVE
ARCADIA, CA 91006

SUBDIVIDER:

PICO CANYON., LLC
1435 REYNOLDS CT.
THOUSAND OAKS, CA 91362
805-373-2860

ENGINEER:

CIVIL DESIGN AND DRAFTING, INC.
IMAD ABOUJAWDAH
885 PATRIOT DR., UNIT C
MOORPARK, CA 93021
805-522-2622

PROJECT LOCATION:

MAGNOLIA LN & AUTUMN PL
SANTA CLARITA, CA 91381
THOMAS GUIDE PAGE NO. 4640-C-2
APN: 2826-020-012, 013 & 061

NOTE:

OPEN SPACE AREAS TO BE DESIGNATED AS RESTRICTED USE AREAS ON THE FINAL MAP.

ALL EASEMENTS MARKED TO BE ABANDONED WILL TAKE EFFECT AT MAP RECORDATION.

UTILITIES & SERVICES:

SEWER	L.A. COUNTY SANITATION DISTRICT #32
WATER	VALENCIA WATER COMPANY
GAS	SO. CALIFORNIA GAS CO.
ELECTRICAL	SO. CALIFORNIA EDISON CO.
TELEPHONE	PACIFIC TELEPHONE CO.
SCHOOLS	NEWHALL ELEMENTARY SCHOOL DISTRICT, HART HIGH SCHOOL DISTRICT
FIRE	L.A. COUNTY FIRE DEPARTMENT
POLICE	L.A. COUNTY SHERIFF'S DEPARTMENT
CABLE T.V.	STEVENSON RANCH CABLE

GENERAL NOTES:

- EXISTING AND PROPOSED ZONING A-2-2
- SANTA CLARITA GENERAL PLAN RL2
- ASSESSORS PARCEL NUMBERS: 2826-020-012, 2826-020-013, & 2826-020-061
- THOMAS BROS PAGE: 4640 GRID C2
- THIS PROJECT IS A DENSITY CONTROLLED DEVELOPMENT UNDER SECTION 22.56.205 OF TITLE 22 L.A. COUNTY ZONING CODE.

SITE DATA:

- SITE IS VACANT.
- GROSS ACREAGE=94.38 ACRES
- AVERAGE RESIDENTIAL LOT SIZE: 2.4 ACRES (DENSITY CONTROLLED DEVELOPMENT SECTION 22.56.205)
- TOTAL RESIDENTIAL LOTS: 37 (LOTS 1 THRU 37)
- OPEN SPACE & PUBLIC FACILITY LOTS 38 THRU 42, 44, AND 45.
- HOA FACILITY LOT: 43
- TOTAL: 45 LOTS
- MAXIMUM SLOPE GRADE: 2 FT HORIZONTAL TO 1 FT VERTICAL AND 1.75 FT HORIZONTAL TO 1FT VERTICAL IN FILL SLOPE
- 66456.1 CALIFORNIA GOVT. CODE (SUBDIVISION MAP ACT)
- OAK TREES TO REMOVED =1
- GRADING PROPOSED: RAW CUT=375,000 CUBIC YARDS
  RAW FILL=375,000 CUBIC YARDS
  OVER-EXCAVATION=73,000 CUBIC YARDS

CIRCULATION:

- ALL STREETS TO BE PUBLIC RIGHTS-OF-WAY.
- HOME OWNERS ASSOCIATION TO BE ESTABLISHED TO MAINTAIN ANY COMMON OPEN SPACE LOTS CREATED.
- DEVELOPER REQUESTS RIGHT TO ADJUST LOT LINES TO THE SATISFACTION OF THE COUNTY OF LOS ANGELES.
- REQUEST RIGHT TO CREATE ADDITIONAL OPEN SPACE LOTS PRIOR TO RECORDATION OF FINAL MAP(S).
- RIGHT OF WAY RETURN RADII OF 13 FEET AT ALL LOCAL STREET INTERSECTIONS.
- CUL-DE-SAC DESIGN PER L.A.C.O. STD. PLATE 12-01, 2-04
- OPEN SPACE AREAS TO BE DESIGNATED AS BUILDING RESTRICTION AREAS ON THE FINAL MAP AND THE FUTURE HOA SHALL MAINTAIN SAID OPEN SPACE AREAS UPON EXECUTION OF A MAINTENANCE AGREEMENT UNLESS THE PROPERTY IS TRANSFERRED TO THE COUNTY OR A LAND CONSERVANCY.

TYPICAL SECTION 64' R/W
(MAGNOLIA LANE)
(PUBLIC STREET)
NOT TO SCALE

TYPICAL SECTION 60' R/W
("A", "B" STREET)
(PUBLIC STREET)
NOT TO SCALE

TYPICAL SECTION 58' R/W
("C" STREET)
(PUBLIC STREET)
NOT TO SCALE

LOT AREA SUMMARY:

LOT NO.	NET AREA ㎡	GROSS AREA ㎡	TYPE
1	10355	10355	SINGLE FAMILY DETACHED
2	10510	10510	SINGLE FAMILY DETACHED
3	10365	10364	SINGLE FAMILY DETACHED
4	10301	10301	SINGLE FAMILY DETACHED
5	8945	10042	SINGLE FAMILY DETACHED
6	10337	10337	SINGLE FAMILY DETACHED
7	9941	11090	SINGLE FAMILY DETACHED
8	9634	10805	SINGLE FAMILY DETACHED
9	12435	12435	SINGLE FAMILY DETACHED
10	13142	13142	SINGLE FAMILY DETACHED
11	11608	11608	SINGLE FAMILY DETACHED
12	11178	12250	SINGLE FAMILY DETACHED
13	12036	12036	SINGLE FAMILY DETACHED
14	12498	12498	SINGLE FAMILY DETACHED
15	11278	11278	SINGLE FAMILY DETACHED
16	11534	11534	SINGLE FAMILY DETACHED
17	11737	11737	SINGLE FAMILY DETACHED
18	11155	11155	SINGLE FAMILY DETACHED
19	8692	10176	SINGLE FAMILY DETACHED
20	10551	10551	SINGLE FAMILY DETACHED
21	11812	11812	SINGLE FAMILY DETACHED
22	12135	12135	SINGLE FAMILY DETACHED
23	16449	16449	SINGLE FAMILY DETACHED
24	12718	12718	SINGLE FAMILY DETACHED
25	14176	14176	SINGLE FAMILY DETACHED
26	14887	14887	SINGLE FAMILY DETACHED
27	12962	12965	SINGLE FAMILY DETACHED
28	14093	14093	SINGLE FAMILY DETACHED
29	13309	13309	SINGLE FAMILY DETACHED
30	13066	13066	SINGLE FAMILY DETACHED
31	12049	12049	SINGLE FAMILY DETACHED
32	14575	14575	SINGLE FAMILY DETACHED
33	14060	14606	SINGLE FAMILY DETACHED
34	15631	15631	SINGLE FAMILY DETACHED
35	30318	30318	SINGLE FAMILY DETACHED
36	26578	26578	SINGLE FAMILY DETACHED
37	11326	11326	SINGLE FAMILY DETACHED
38	--	24867	BASIN LOT
39	--	25205	BASIN LOT
40	--	47074	BASIN LOT
41	--	13959	BASIN LOT
42	--	17669	BASIN LOT
43	--	77514	WATER QUALITY BASIN LOT
44	--	695071	OPEN SPACE
45	--	2643229	OPEN SPACE
	--	168577	PUBLIC STREET
TOTAL	478897	4111193	

Plot Date: Mon, January 08, 2018

UNDERGROUND SERVICE ALERT
call TOLL FREE
1-800-422-4133
CALL TWO WORKING DAYS BEFORE YOU DIG

REVISION BLOCK

REV#	APPR	DATE	REVISION DESCRIPTION

PLAN CHK	CITY ENGR	APPR	APPR	DATE

PREPARED BY:
Design & Drafting inc.
IMAD ABOUJAWDAH R.C.E. C57299
885 Patriot Drive, Unit C
Moorpark, CA 93021
Phone: 805-522-2622
Fax: 805-426-8016
email: CDD@civildesignanddrafting.com
DATE

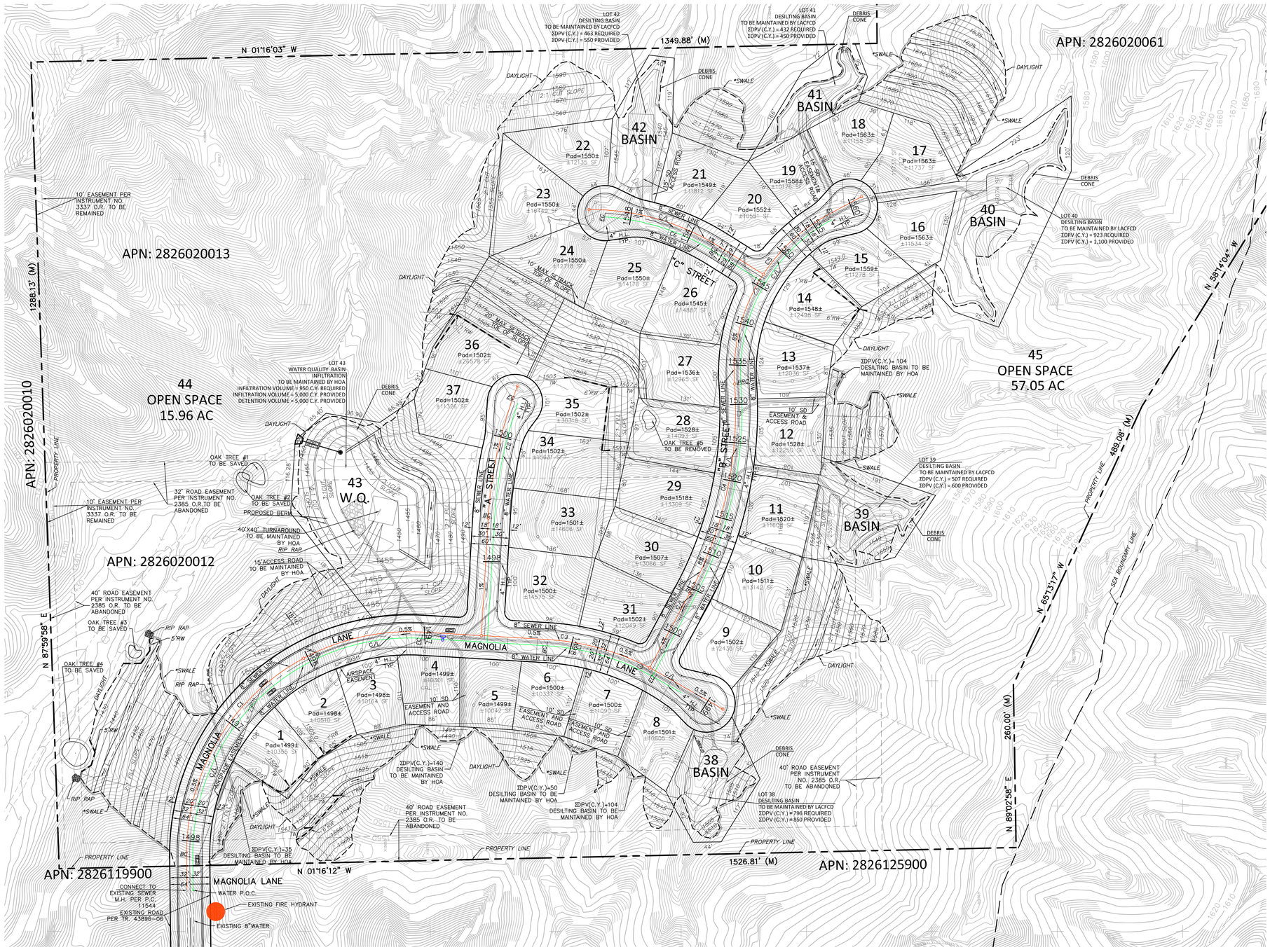
CANYON VIEW ESTATES
MAJOR LAND DIVISION
VESTING TENTATIVE TRACT NO. 74650
LOCATED IN THE UNINCORPORATED TERRITORY OF THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA
SCALE: AS NOTED
SHEET 1 OF 2 SHTS

CURVE DATA

CURVE	DELTA	RADIUS	LENGTH	TANGENT
C1	94°05'16"	350.00'	574.75'	375.91'
C2	15°59'08"	680.00'	189.72'	95.48'
C3	26°13'25"	400.00'	183.08'	93.17'
C4	32°09'11"	620.00'	347.93'	178.68'
C5	65°40'18"	281.00'	322.08'	181.34'
C6	28°40'19"	378.72'	189.52'	96.79'

NOTE

* ALL SWALES SHOULD HAVE A MINIMUM OF 5% SLOPE FOR SELF CLEANING VELOCITY



LEGAL DESCRIPTION:

File No: 416240446

EXHIBIT "A"

ALL THAT CERTAIN REAL PROPERTY SITUATED IN THE COUNTY OF LOS ANGELES, STATE OF California, DESCRIBED AS FOLLOWS:

PARCEL 1:

THE WEST HALF OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF FRACTIONAL SECTION 5, TOWNSHIP 3 NORTH, RANGE 16 WEST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

EXCEPT THEREFROM ALL OIL, GAS, MINERALS AND HYDROCARBON SUBSTANCES BELOW A DEPTH OF 500 FEET BUT WITHOUT THE RIGHT OF SURFACE ENTRY TO REMOVE OR RECOVER SAME, AS RESERVED BY HESTER L. WILSON A WIDOW, AND ELSIE WILSON CASAD, A MARRIED WOMAN IN DEED RECORDED JUNE 17, 1966 AS INSTRUMENT NO. 1315

PARCEL 2:

THE EAST ONE HALF OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF FRACTIONAL SECTION 5, TOWNSHIP 3 NORTH, RANGE 16 WEST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

PARCEL 3:

THAT PORTION F THE SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 3 NORTH, RANGE 16 WEST, SAN BERNARDINO MERIDIAN IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, WHICH LIES WITHIN THE FOLLOWING DESCRIBED BOUNDARIES:

BEGINNING AT THE NORTHWESTERLY CORNER OF SAID SOUTHEAST QUARTER; THENCE ALONG THE WESTERLY LINE OF SAID SOUTHEAST QUARTER SOUTH 00° 57' 02" EAST 215.00 FEET; THENCE AT RIGHT ANGLES TO SAID WESTERLY LINE NORTH 89° 02' 58" EAST 260.00 FEET; THENCE SOUTH 65° 13' 17" EAST 489.08 FEET; THENCE SOUTH 58° 14' 04" EAST 859.43 FEET; THENCE SOUTH 38° 28' 44" EAST 713.00 FEET; THENCE SOUTH 56° 48' 53" EAST 905.37 FEET TO A POINT IN THE EASTERLY LINE OF SAID SOUTHEAST QUARTER DISTANT SOUTH 01° 29' 47" EAST 1938.44 FEET FROM THE SOUTHERLY BOUNDARY OF TRACT NO. 45308 AS PER MAP FILED IN BOOK 1222 PAGES 36 TO 45 INCLUSIVE OF MAPS, RECORDS OF SAID COUNTY; THENCE ALONG SAID EASTERLY LINE NORTH 01° 29' 47" WEST 1938.44 FEET TO THE SOUTHERLY BOUNDARY SAID SOUTHERLY BOUNDARY ALSO BEING THE NORTHERLY LINE OF SAID SOUTHEAST QUARTER; THENCE ALONG THE NORTHERLY LINE OF SAID SOUTHEAST QUARTER SOUTH 89° 38' 47" WEST 2589.06 TO THE POINT OF BEGINNING, SAID LAND IS SHOWN AS PARCEL 1 OF THAT CERTAIN CERTIFICATE OF COMPLIANCE RECORDED NOVEMBER 15, 2002 AS INSTRUMENT NO. 02-2765315 OF OFFICIAL RECORDS

EXCEPT THEREFROM AN UNDIVIDED TWO PERCENT OF ALL OIL, GAS, GOLD, SILVER, AND OTHER PRECIOUS METALS, MINERALS AND MINERAL SUBSTANCES IN AND UNDER AND THAT MAY BE PRODUCED FROM SAID LAND, TOGETHER WITH THE RIGHT OF INGRESS AND EGRESS AT ALL TIMES FOR THE PURPOSES OF MINING, DRILLING AND EXPLORING SAID LANDS FOR ANY AND ALL OIL, GAS, MINERAL AND MINERALS SUBSTANCES AND REMOVING THE SAME THEREFROM; TOGETHER WITH ALL THE DIPS, SPURS AND ANGLES AND ALSO ALL THE METALS, ORES, GOLD AND SILVERBEARING QUARTZ, ROCK AND EARTH, MINERAL AND MINERAL SUBSTANCES THEREIN AND ALL RIGHTS, PRIVILEGES AND ADVANTAGES THERETO INCIDENT, APPENDANT AND APPURTENANT OR THEREWITH USUALLY HAD AND ENJOYED AS GRANTED TO R. A. GANAHL, A SINGLE MAN IN DEED RECORDED JUNE 14, 1937 IN BOOK 15045 PAGE 173 OF OFFICIAL RECORDS

File No: 416240446

ALSO EXCEPT THEREFROM AN UNDIVIDED ONE PERCENT OF ALL OIL, GAS AND OTHER HYDROCARBON SUBSTANCES AND MINERAL WHICH MAY LIE, IN, ON, UNDER OR BE HEREAFTER PRODUCED, SAVED OR SOLD FROM SAID LAND WITH THE RIGHT OF INGRESS AND EGRESS THERETO AS GRANTED TO JOSEPH W. AIDLIN, IN DEED RECORDED JANUARY 19, 1940 IN BOOK 17241 PAGE 29 OF OFFICIAL RECORDS

ALSO EXCEPT THEREFROM 1/4TH OF AN UNDIVIDED PERCENT OF ALL OIL, GAS, AND OTHER HYDROCARBON SUBSTANCES AND MINERALS WHICH MAY LIE, IN, ON, UNDER OR BE HEREAFTER PRODUCED, SAVED OR SOLD FROM SAID LAND WITH THE RIGHT OF INGRESS AND EGRESS THERETO AS GRANTED TO JOSEPH W. AIDLIN AND MARY AIDLIN, HUSBAND AND WIFE AS JOINT TENANTS IN DEED RECORDED APRIL 6, 1948 IN BOOK 26865 PAGE 77 OF OFFICIAL RECORDS

BY AN AGREEMENT DATED OCTOBER 1, 1959 AND RECORDED DECEMBER 31, 1959 AS INSTRUMENT NO. 4607 IN BOOK M420 PAGE 171 OF OFFICIAL RECORDS, THE HOLDERS OF THE ABOVE INTEREST WAIVED AND RELINQUISHED ANY RIGHT TO ENTER UPON THE SURFACE OR SUBSURFACE TO A DEPTH OF 500 FEET MEASURED VERTICALLY FROM THE SURFACE OF SAID LAND FOR ANY PART THEREOF, FOR THE PURPOSE OF EXERCISING ANY OF THEIR SAID RESPECTIVE RIGHTS

PARCEL 4:

ANY AND ALL EASEMENTS, RIGHTS AND RIGHTS OF WAY, FOR ACCESS, INSTALLATION AND MAINTENANCE OF UTILITIES OR COMMUNICATION SERVICES OF RECORD, APPURTENANT OR ATTACHED TO OR UTILIZED BY ANY OF THE AFORESAID PARCELS

APN'S: 2826-020-012, 2826-020-013 AND 2826-020-061

UNDERGROUND SERVICE ALERT call TOLL FREE 1-800-422-4133
CALL TWO WORKING DAYS BEFORE YOU DIG

REVISION BLOCK

REV#	APPR	DATE	REVISION DESCRIPTION	PLAN CHK	APPR	DATE
				CITY ENGR	APPR	DATE

PREPARED BY:
Design Drafting inc.
IMAD ABOULMOUAH R.C.E. C51299
885 Patriot Drive, Unit C
Moorpark, CA 93021
Phone: 805.523.2632
Fax: 805.426.8016
email: DDI@weddesigndrafting.com
DATE

CANYON VIEW ESTATES
MAJOR LAND DIVISION
VESTING TENTATIVE TRACT NO. 74650
LOCATED IN THE UNINCORPORATED TERRITORY OF THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA
SCALE: AS NOTED

SHEET 2 OF 2 SHTS

Plot Date: Mon, January 08, 2018

SEWER AREA STUDY-TRACT 74650

AREA SERVED FULL TRIBUTARY DEVELOPMENT AREA
(INCLUDING EXISTING, PROPOSED, AND FUTURE DEVELOPMENT)

SUMMARY		Sub Area	Area		Calculated Flow (cfs)	Approved Q (cfs)
LA County	Proposed	1A	37	DU	0.037	6.238 from LA County
	Future	2B - 2O, 2R-2Y, & 4A- 4B	680.20	Acres	0.399	
	Existing	1B, 2P, 2Q, 3A - 3C, 4C, 5A, 7A -7C, 8A - 8E, 9A, & 10A – 10Z	212.19	Acres	5.801	
			2766	DU		
			1784	Students		
City of Santa Clarita	Existing	11A-11B, 12A, 13A-13B, 14A, 15A-15E, 16A-16B, & 17A-17E	138.39	Acres	1.823 from City of Santa Clarita	
			1558	DU		
			2097	Students		

TRACT NO. 74650 - SEWER AREA STUDY
JUNCTION CALCULATION - EXISTING - PROPOSED - FUTURE

				AREA			Zoning Coefficient	Commula Flow	EXISTING Cumulative Flow
	Tract #	Sub Area	Zoning	Acres	DU	Students	(cfs/acre)	(cfs)	(cfs)
	74650	1A	A-2-2		37		0.0010	**0.037**	
	43896-06	1B	R-A-10000		40		0.0010	0.040	0.040
	43896-02		R-A-10000		10		0.0010	0.010	0.010
REACH 1								**0.087**	**0.050**
		2A	O-S	117.50			0.0000	0.000	
	2826-70	2B	A-2-2	12.45			0.0005	0.006	
	2826-9	2C	A-2-2	11.74			0.0005	0.006	
	2826-9	2D	A-2-2	57.00			0.0005	0.029	
	2826-9	2E	A-2-2	95.41			0.0005	0.048	
	2826-20	2F	A-2-2	10.01			0.0005	0.005	
	2826-20	2G	A-2-2	10.00			0.0005	0.005	
	2826-20	2H	A-2-2	40.00			0.0005	0.020	
	2826-20	2I	A-2-2	20.00			0.0005	0.010	
	2826-20	2J	A-2-2	15.00			0.0005	0.008	
	2826-20	2K	A-2-2	5.00			0.0005	0.003	
	2826-20	2L	A-2-2	14.86			0.0005	0.007	
	2826-20	2M	A-2-2	33.00			0.0005	0.017	
	2826-20	2N	A-2-2	40.00			0.0005	0.020	
	2826-20	2O	A-2-2	39.53			0.0005	0.020	
	52908	2P	A-2-2		19		0.0010	0.019	0.019
	2826-20	2R	A-2-2	9.27			0.0005	0.005	
	2826-20	2S	A-2-2	38.00			0.0005	0.019	
	2826-20	2T	A-2-2	18.92			0.0005	0.009	
	2826-20	2U	A-2-2	18.92			0.0005	0.009	
	2826-20	2V	A-2-2	11.30			0.0005	0.006	
	2826-97	2X	A-2-2	9.49			0.0005	0.005	
	43896-01	2Y	A-2-2	10.66			0.0005	0.005	
	43896-02	2Q	R-A-10000		45		0.0010	0.045	0.045
	43896-03		R-A-10000		13		0.0010	0.013	0.013
	43896-04		R-A-10000		32		0.0010	0.032	0.032
	43896-05		R-A-10000		22		0.0010	0.022	0.022
	43896-07		R-A-10000		66		0.0010	0.066	0.066
	43886		R-A-10000		53		0.0010	0.053	0.053
REACH 2								**0.597**	**0.300**
	49761	3A	R-1-5000		243		0.0010	0.243	0.243
	49760	3B	R-1-5000		173		0.0010	0.173	0.173
	33698	3C	RPD-5000-6U		195		0.0010	0.195	0.195
REACH 3								**1.308**	**0.911**
	2826-20	4A	A-2-2	9.40			0.0005	0.005	
	2826-20	4B	RPD-5000-6U	22.40			0.006	0.134	
	48208	4C	RPD-1-3.3U	10.34			0.003	0.031	0.031
REACH 4								**1.378**	**0.942**
		5A	S			969	0.000039	0.037	0.037
REACH 5								**1.416**	**0.980**
REACH 6			NOT IN USE						
	33608-04	7A	RPD-5000-10U	5.67			0.0100	0.057	0.057
	33608-03	7B	RPD-5000-32U	11.00			0.0320	0.352	0.352
	44806	7C	C-3-DP	14.32			0.0150	0.215	0.215
REACH 7								**2.039**	**1.603**
	45638	8A	R-3-DP	27.33			0.0120	0.328	0.328
	2826-63	8B	C-3	11.08			0.0150	0.166	0.166
	2826-10	8C	C-3	3.17			0.0150	0.048	0.048
	2826-63	8D	C-3	2.60			0.0150	0.039	0.039
	44806	8E	C-3-DP	4.67			0.0150	0.070	0.070
REACH 8								**2.698**	**2.254**
	33608-01	9A	RPD-5000-32U	9.20			0.0320	0.294	0.294
REACH 9								**2.985**	**2.548**
	49100	10A	R-1-5000		138		0.0010	0.138	0.138
		10B	S			815	0.000039	0.032	0.032
	44337	10C	RPD-1-16U	4.07			0.0160	0.065	0.065
	44336	10D	RPD-1-16U	4.60			0.0160	0.074	0.074
	33698	10E	RPD-5000-6U		267		0.0010	0.267	0.267
	44353	10F	RPD-1-16U		80		0.0010	0.080	0.080
	44340	10G	RPD-1-2SU		75		0.0010	0.075	0.075
	33608-02	10H	RPD-5000-20U		140		0.0010	0.140	0.140
	49762	10Y	RPD-5000-6U		171		0.0010	0.171	0.171
	49099	10J	RPD-1-11U		184		0.0010	0.184	0.184
	33698	10K	RPD-5000-6U		81		0.0010	0.081	0.081
	33698	10L	RPD-5000-6U	17.14			0.0060	0.103	0.103
	44338	10M	RPD-1-16U	16.16			0.0160	0.259	0.259
	33698	10N	RPD-5000-6U	23.36			0.0060	0.140	0.140
	44339	10P	RPD-1-16U	14.27			0.0160	0.228	0.228
	33698	10R	C-3	5.07			0.0150	0.076	0.076
	2826-95	10S	C-3-DP	9.04			0.0150	0.136	0.136
	2826-96		C-3-DP	19.10			0.0150	0.287	0.287
	33613	10T	R-1-5000		298		0.0010	0.298	0.298
	49761	10V	R-1-5000		178		0.0010	0.178	0.178
	49760	10X	R-1-5000		116		0.0010	0.116	0.116
	49099	10Z	RPD-5000-6U		127		0.0010	0.127	0.127
REACH 10								**6.238**	**5.801**
	27567	11A	UR3		44		0.0010	0.044	0.044
	27288		UR3		29		0.0010	0.029	0.029
		11B	OS	125.62			0.0002	0.025	0.025
REACH 11								**6.336**	**5.900**
	27567	12A	UR3		33		0.0010	0.033	0.033
	27566		UR3		62		0.0010	0.062	0.062
REACH 12								**6.431**	**5.995**
	35768	13A	UR3		32		0.0010	0.032	0.032
	27568		UR3		1		0.0010	0.001	0.001
	27703		UR3		4		0.0010	0.004	0.004
	35769		UR3		232		0.0010	0.232	0.232
	27288		UR3		45		0.0010	0.045	0.045
	27265	13B	UR3		86		0.0010	0.086	0.086
	27266		UR3		11		0.0010	0.011	0.011
REACH 13								**6.842**	**6.406**
	27703	14A	UR3		82		0.0010	0.082	0.082
REACH 14								**6.924**	**6.488**
		15A	U			1471	0.000077	0.114	0.114
	36300	15B	UR5 (3DU/AC)		71		0.0010	0.071	0.071
	44427		UR5 (3DU/AC)		236		0.0010	0.236	0.236
	PM 83-31-33	15C	CN	0.96			0.0150	0.014	0.014
	31116		CN	5.69			0.0150	0.085	0.085
	41416	15D	UR3 (11DU/AC)	2.22	24		0.0010	0.024	0.024
	28670	15E	UR2		126		0.0010	0.126	0.126
REACH 15								**7.595**	**7.159**
	28673	16A	UR2		76		0.0010	0.076	0.076
		16B	S			626	0.000039	0.024	0.024
REACH 16								**7.695**	**7.259**
	31342	17A	UR2		62		0.0010	0.062	0.062
	28672	17B	UR2		70		0.0010	0.070	0.070
	28673	17C	UR2		6		0.0010	0.006	0.006
	28671	17D	UR2		115		0.0010	0.115	0.115
	28671		OS	6.12			0.0002	0.001	0.001
	28670	17E	UR2		111		0.0010	0.111	0.111
REACH 1	TRUNK							**8.060**	**7.624**

LEGEND:

- EXISTING SEWER LINE
- UPGRADE
- PROPOSED SEWER LINE
- TRIBUTARY AREA
- RIDGE LINE
- TRACT BOUNDARY
- SEWER FLOW DIRECTION
- FLOW DIRECTION OR STREAM
- EXISTING SEWER MANHOLE
- PROPOSED SEWER MANHOLE
- (1) REACH NODE

SUB AREA — 1B | 50 | 0.050 — AREA (ACRES, UNITS, # OF STUDENTS)
ZONING DISTRICT ID — A-2-2 — AVG. DAILY FLOW (CFS)

400 200 0 200 400 800
GRAPHIC SCALE
SCALE : 1"=400'

PREPARE FOR :
JON FRIEDMAN
1435 REYNOLDS COURT
THOUSAND OAKS, CA 91362
PHONE: 805-373-2860

REVIEWED LAND DEVELOPMENT DIVISION
BY _____
ROAD AND GRADING SECTION DATE

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE

REGISTERED PROFESSIONAL ENGINEER — TAREK ABOUZAHRAH — No. 51299 — Exp. 6-30-18 — CIVIL — STATE OF CALIFORNIA

PROJECT ENGINEER DATE

CANYON VIEW ESTATES–TRACT NO. 74650
SEWER AREA STUDY – PC 12338AS

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

civil Design & Drafting inc.
885 Patriot Drive, Unit C
Moorpark, California 93021
Phone: 805-522-2622
Fax: 805-426-8016
email: CDD@civildesignanddrafting.com

SHEET 1 OF 1

PLOT DATE: 2-21-2018

\\CDD-NETWORK\Projects\Oakridge\Sewer Area Study\Sewer Area Study Map.dwg
16:35:39 02 / 21 / 2018

Los Angeles County General Plan

SANTA CLARITA VALLEY AREA PLAN

Zoning Map

LEGEND

- R-1 - Single-family residence
- R-2 - Two-family residence
- R-3-(U) - Limited multiple residence
- R-4-(U) - Unlimited residence
- R-A - Residential agriculture
- RPD - Residential planned development
- A-1 - Light agriculture
- A-2 - Heavy agriculture
- C-H - Commercial highway
- C-1 - Restricted business
- C-2 - Neighborhood commercial
- C-3 - Unlimited commercial
- C-M - Commercial manufacturing
- CPD - Commercial planned development
- C-R - Commercial recreation
- M-1 - Light manufacturing
- M-2 - Heavy manufacturing
- M-3 - Unclassified
- M-4 - Unlimited manufacturing
- M-2.5 - Aircraft, heavy industrial
- MPD - Manufacturing industrial planned development
- D-2 - Desert-Mountain
- IT - Institutional
- SP - Specific Plan
- B-1 - Buffer strip
- B-2 - Corner buffer
- R-R - Resort and recreation
- W - Watershed
- P-R - Restricted parking
- SR-D - Scientific research and development
- O-S - Open space
- A-C - Arts and crafts
- MXD - Mixed use development

Base Features

- Parcels
- City / Unincorporated Community Boundary
- Surrounding City
- Surrounding Unincorporated Community
- Water Feature
- National Forest

Overlays

- Significant Ecological Areas

Transit Lines

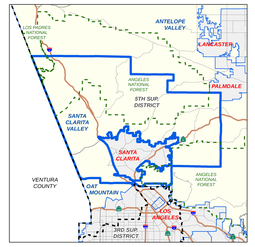
- Metrolink Stations
- Metro Rail Stations
- Metrolink
- Transitways
- Light Rail - Existing
- Light Rail - Proposed
- Light Rail - Under Construction

NOTES:

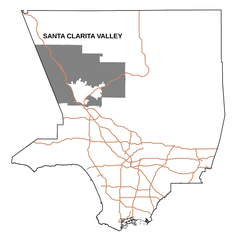
The location of zoning boundaries is as accurate as can be portrayed at this scale. For more precise boundary locations, please contact the Land Development Coordinating Center (LDCC) at (213) 974-6411.

Parcel boundaries are from the parcel database maintained by the Department of Public Works and the Assessor's Office. Parcels shown on the map reflect the most recent update from the Assessor's Office as of February 2012.

VICINITY MAP:



KEY MAP:



Current as of: September 2012

LOS ANGELES COUNTY
Department of Regional Planning
320 W. Temple St.
Los Angeles, CA 90012

Scale in Feet

0 3,500 7,000 10,500 14,000

City of Santa Clarita

Zoning Map

Last Update: September 2015

Urban Residential
- UR1 = 2.0 du/a
- UR2 = 5.0 du/a
- UR3 = 11.0 du/a
- UR4 = 18.0 du/a
- UR5 = min. 18 du/a - max. 30.0 du/a

Non-Urban Residential
- NU1 = 0.05 du/a
- NU2 = 0.1 du/a
- NU3 = 0.2 du/a
- NU4 = 0.5 du/a
- NU5 = 1.0 du/a

Commercial
- CC - Community Commercial
- CN - Neighborhood Commercial
- CR - Regional Commercial

Open Space
- OS-NF - Open Space—National Forest
- OS-A - Open Space—Agriculture
- OS - Open Space
- OS-BLM - Open Space—Bureau of Land Management

Mixed Use
- CP - Corridor Plan
- MX-C - Mixed Use - Corridor
- MX-N - Mixed Use - Neighborhood

Industrial
- BP - Business Park
- I - Industrial

Other
- PI - Public/Institutional

Specific Plan
- SP

Boundaries
- City Boundary
- Zoning Boundary

N

0 0.25 0.5 Miles

Map reproduced with permission granted by Rand McNally (Copyright 2015).

The City of Santa Clarita does not warrant the accuracy of the data and assumes no liability for any errors or omissions.

Map prepared by: City of Santa Clarita GIS Division

Q:\PROJECTS\MASTERZONING\mxd\UDC_zoning_lite.mxd

REFERENCES

COUNTY SANITATION DISTRICTS
OF LOS ANGELES COUNTY

1955 Workman Mill Road, Whittier, CA 90601-1400
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
Telephone: (562) 699-7411, FAX: (562) 699-5422
www.lacsd.org

GRACE ROBINSON HYDE
Chief Engineer and General Manager

November 17, 2017

Ref. Doc. No.: 4354110

Mr. Imad Aboujawdah, President
Civil Design and Drafting, Inc.
885 Patriot Drive, Unit C
Moorpark, CA 91302

Dear Mr. Aboujawdah:

Will Serve Letter Update for Tract Map No. 74650

The Santa Clarita Valley Sanitation District (District) received your will serve letter request for the subject project on October 30, 2017. The proposed project is located within the jurisdictional boundaries of the District. Previous comments submitted by the Districts in correspondence dated December 7, 2016 (copy enclosed) still apply the subject project with the following updated information:

1. The Santa Clarita Valley Joint Sewerage System currently produces an average recycled water flow of 17.9 million gallons per day.

2. All other information concerning Districts' facilities and sewerage service stated in the enclosed copy is current.

If you have any questions, please contact the undersigned at (562) 908-4288, extension 2717.

Very truly yours,

FOR:

Adriana Raza
Customer Service Specialist
Facilities Planning Department

AR:ar

cc: M. Sullivan
M. Tatalovich

DOC: #4354385.SCVD99

WATER RECLAMATION
SOLID WASTE MANAGEMENT

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY

1955 Workman Mill Road, Whittier, CA 90601-1400
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
Telephone: (562) 699-7411, FAX: (562) 699-5422
www.lacsd.org

GRACE ROBINSON HYDE
Chief Engineer and General Manager

December 7, 2016

Ref File No.: 3967008

Ms. Samantha Kenewell
Civil Design and Drafting, Inc.
885 Patriot Drive, Unit C
Moorpark, CA 93021

Dear Ms. Kenewell:

Will Serve Letter for Tract Map No. 74650

This is in response to your request for a will serve letter for the subject project, which was received by the Santa Clarita Valley Sanitation District (District) on November 10, 2016. We offer the following comments regarding sewerage service:

1. The project area is outside the jurisdictional boundaries of the District and will require annexation into the District before sewerage service can be provided to the proposed development. For a copy of the District's Annexation Information and Processing Fee sheets, go to www.lacsd.org, Wastewater & Sewer Systems, Will Serve Program, and click on the appropriate link. For more specific information regarding the annexation procedure and fees, please contact Ms. Donna Curry at (562) 908-4288, extension 2708.

2. The wastewater flow originating from the proposed project will discharge to a local sewer line, which is not maintained by the District, for conveyance to either or both the District's Valencia Trunk Sewer, located in Orcharge Village Road east of Wiley Canyon Road, or the District No. 32 Main Trunk Sewer, located in a private right of way northeast of the intersection of Wiley Canyon Road and Orchard Village Road. The District's 24-inch diameter Valencia Trunk Sewer has a capacity of 5.5 million gallons per day (mgd) and conveyed a peak flow of 4.3 mgd when last measured in 2016. The District's 18-inch diameter District No. 32 Main Trunk Sewer has a capacity of 3.3 mgd and conveyed a peak flow of 2 mgd when last measured in 2013.

3. The District operates two water reclamation plants (WRPs), the Saugus WRP and the Valencia WRP, which provide wastewater treatment in the Santa Clarita Valley. These facilities have a combined capacity of 28.1 mgd and currently process an average flow of 18.2 mgd.

4. The expected average wastewater flow from the proposed project, described in the application as 37 proposed single family homes, is 9,620 gallons per day. For a copy of the District's average wastewater generation factors, go to www.lacsd.org, Wastewater & Sewer Systems, click on Will Serve Program, and click on the Table 1, Loadings for Each Class of Land Use link.

5. The District is empowered by the California Health and Safety Code to charge a fee for the privilege of connecting (directly or indirectly) to the District's Sewerage System or for increasing the strength or quantity of wastewater discharged from connected facilities. This connection fee is a capital facilities fee that is imposed in an amount sufficient to construct an incremental expansion of the Sewerage System to accommodate the proposed project. Payment of a connection fee will be required before a permit to connect to the sewer is issued. For more information and a copy of the Connection Fee Information Sheet, go to www.lacsd.org, Wastewater & Sewer Systems, click on Will Serve Program, and search for the appropriate link. In determining the impact to the Sewerage System and applicable connection fees, the District's Chief Engineer will determine the user category (e.g. Condominium, Single Family home, etc.) that best represents the actual or anticipated use of the parcel or facilities on the parcel. For more specific information regarding the connection fee application procedure and fees, please contact the Connection Fee Counter at (562) 908-4288, extension 2727.

6. In order for the District to conform to the requirements of the Federal Clean Air Act (CAA), the design capacities of District wastewater treatment facilities are based on the regional growth forecast adopted by the Southern California Association of Governments (SCAG). Specific policies included in the development of the SCAG regional growth forecast are incorporated into clean air plans, which are prepared by the South Coast and Antelope Valley Air Quality Management Districts in order to improve air quality in the South Coast and Mojave Desert Air Basins as mandated by the CCA. All expansions of District facilities must be sized and service phased in a manner that will be consistent with the SCAG regional growth forecast for the counties of Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial. The available capacity of District treatment facilities will, therefore, be limited to levels associated with the approved growth identified by SCAG. As such, this letter does not constitute a guarantee of wastewater service, but is to advise you that the District intends to provide this service up to the levels that are legally permitted and to inform you of the currently existing capacity and any proposed expansion of District facilities.

If you have any questions, please contact the undersigned at (562) 908-4288, extension 2717.

Very truly yours,

Adriana Raza
Customer Service Specialist
Facilities Planning Department

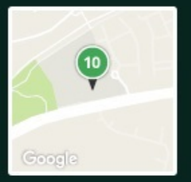
AR:dc

cc: D. Curry

DOC: #3966937.SCVD99

Pico Canyon Elementary School

Follow



K-6 | Public district | Newhall | 969 students

25255 Pico Canyon Road Stevenson Ranch, CA 91381-1658 | Contact info

10 out of 10 GreatSchools Rating

Schools serving similar student populations most often got a: **9**

SCORES ARE FROM 1 TO 10

9 Test scores for low-income students

English Proficiency (state avg 44%)	Math Proficiency (state avg 33%)
83%	68%



ADVERTISEMENT

Report Card Quicklinks: Test scores, College readiness, Scores by student groups

School Details Quicklinks: Student demographics, Programs, Classes, Extracurriculars, Teachers

Reviews Quicklinks: Parent reviews, Student reviews, Write a review

Resources: Understand your child's **SBAC score report**

Contact this school

School leader: Laura Banda
25255 Pico Canyon Road

See this school's attendance zone

CalArts Fact Sheet

Established in 1961 by Walt and Roy Disney, California Institute of the Arts (CalArts) is the nation's first higher education institute to offer undergraduate and graduate degrees in both the visual and performing arts. CalArts is dedicated to training and nurturing the next generation of professional artists, fostering brilliance and innovation within the broadest context possible. Admission to CalArts is competitive and considered mainly on the basis of demonstrated talent, creativity and commitment. Other important considerations include educational records, recommendations and artist's statement.

Current Students

Total headcount enrollment: 1,471 students

- Undergraduate students (BFA, Certificate): 946 (64.3%)
- Graduate students (MFA, MA, DMA, Advanced Certificate): 501 (34.1%)
- Special non-degree students: 24 (1.6%)

Areas of Study (Métiers)

- 21.3% School of Art
- 3.3% School of Critical Studies
- 6.3% The Sharon Disney Lund School of Dance
- 27.1% School of Film/Video
- 19.1% The Herb Alpert School of Music
- 22.9% School of Theater

Gender

- 55.7% Female
- 44.3% Male

Geographic and National Representation

- United States: 1,168 students (79.4%) from 45 states and the District of Columbia, Puerto Rico, Guam, and the Virgin Islands
- International: 303 students (20.6%) from 47 countries

Meadows Elementary School

Follow



K-6 | Public district | Newhall | 626 students

25577 North Fedala Road Valencia, CA 91355-2536 | Contact info

9 out of 10 GreatSchools Rating

Schools serving similar student populations most often got a: **9**

SCORES ARE FROM 1 TO 10

5 Test scores for low-income students

English Proficiency (state avg 44%)	Math Proficiency (state avg 33%)
64%	51%

Tax-deferred saving opportunity.
Compound interest potential.
Low minimum contribution to start.

ADVERTISEMENT

Report Card Quicklinks: Test scores, College readiness, Scores by student groups

School Details Quicklinks: Student demographics, Programs, Classes, Extracurriculars, Teachers

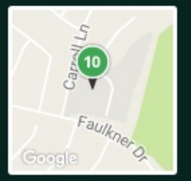
Reviews Quicklinks: Parent reviews, Student reviews, Write a review

Resources: Understand your child's **SBAC score report**

Contact this school

Stevenson Ranch Elementary School

Follow



K-6 | Public district | Newhall | 815 students

25820 North Carroll Lane Stevenson Ranch, CA 91381-1100 | Contact info

10 out of 10 GreatSchools Rating

Schools serving similar student populations most often got a: **10**

SCORES ARE FROM 1 TO 10

10 Test scores for low-income students

English Proficiency (state avg 44%)	Math Proficiency (state avg 33%)
86%	71%

Report Card Quicklinks: Test scores, College readiness, Scores by student groups

School Details Quicklinks: Student demographics, Programs, Classes, Extracurriculars, Teachers

Reviews Quicklinks: Parent reviews, Student reviews, Write a review

Resources: Understand your child's **SBAC score report**



ADVERTISEMENT

Contact this school

School leader: Staci Block

25820 North Carroll Lane

See this school's attendance zone

Estimated Average Daily Sewage Flows for Various Occupancies

Occupancy	Abbreviation	*Average daily flow	
Apartment Buildings:			
Bachelor or Single dwelling units	Apt	100	gal/D.U. → 150
1 bedroom dwelling units	Apt	150	gal/D.U. → 200
2 bedroom dwelling units	Apt	200	gal/D.U. → 250
3 bedroom or more dwelling units	Apt	250	gal/D.U. → use 300 GPD per SMD
Auditoriums, churches, etc.	Aud	5	gal/seat
Automobile parking	P	25	gal/1000 sq ft gross floor area
Bars, cocktails lounges, etc.	Bar	20	gal/seat
Commercial Shops & Stores	CS	100	gal/1000 sq ft gross floor area
Hospitals (surgical)	HS	500	gal/bed
Hospitals (convalescent)	HC	85	gal/bed
Hotels	H	150	gal/room
Medical Buildings	MB	300	gal/1000 sq ft gross floor area
Motels	M	150	gal/unit
Office Buildings	Off	200	gal/1000 sq ft gross floor area
Restaurants, cafeterias, etc.	R	50	gal/seat
Schools:			
Elementary or Jr. High	S	10	gal/student
High Schools	HS	15	gal/student
Universities or Colleges	U	20	gal/student
College Dormitories	CD	85	gal/student

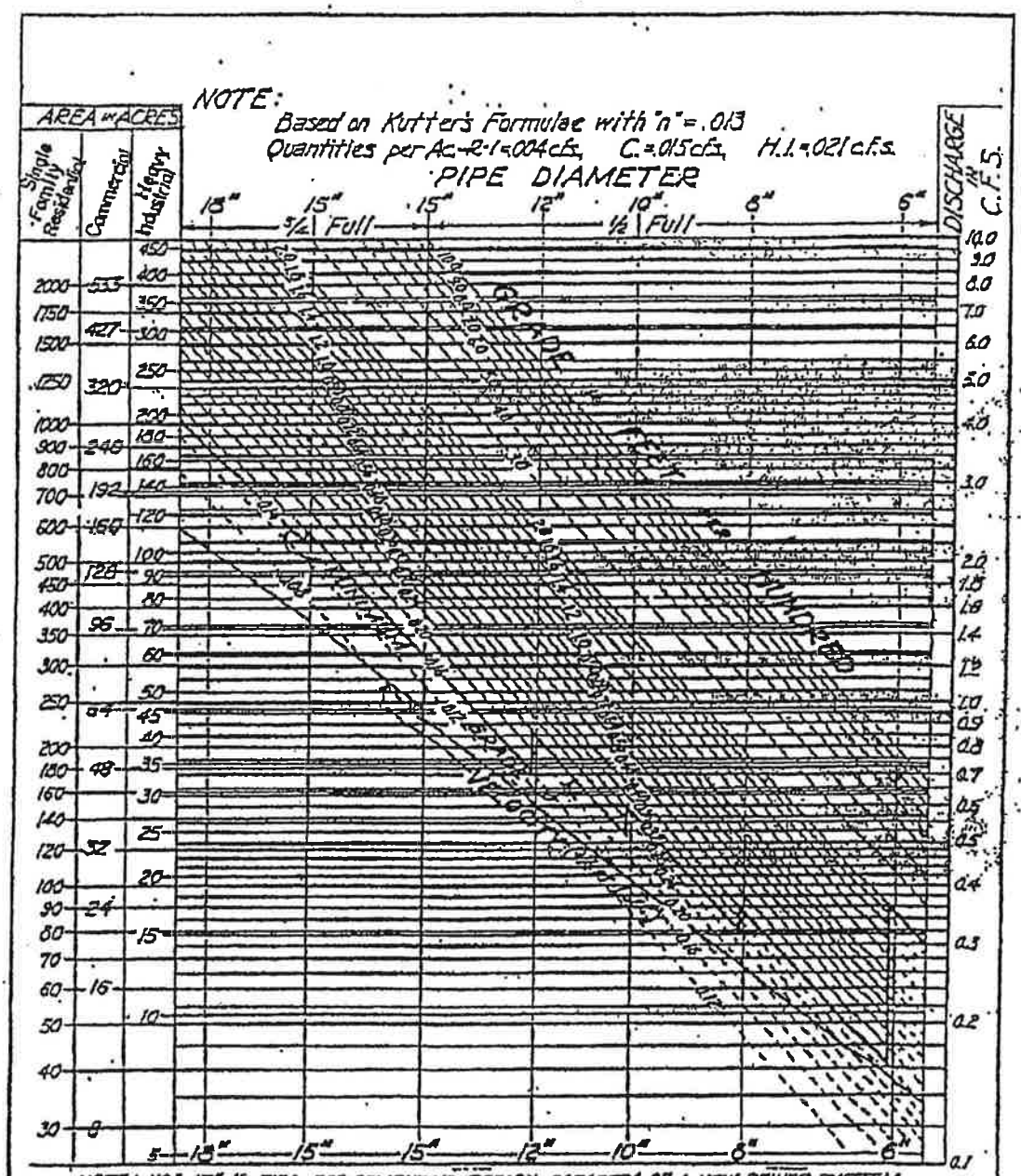
*Multiply the average daily flow by 2.5 to obtain the peak flow

Zoning Coefficients

Zone	Coefficient (cfs/Acre)
Agriculture	**0.001**
Residential+:	
R-1	**0.004**
R-2	**0.008**
R-3	**0.012**
R-4	**0.016***
Commercial:	
C-1 through C-4	**0.015***
Heavy Industrial:	
M1 through M-4	**0.021***

***Individual building, commercial or industrial plant capacities shall be the determining factor when they exceed the coefficients shown**

+ Use 0.001 (cfs/unit) for condominiums only



FLOW DIAGRAM FOR THE DESIGN OF CIRCULAR SANITARY SEWERS

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

COUNTY ENGINEER

COUNTY ENGINEER STANDARD S-C4

DATE: 3/80

DESIGN RCE 10043

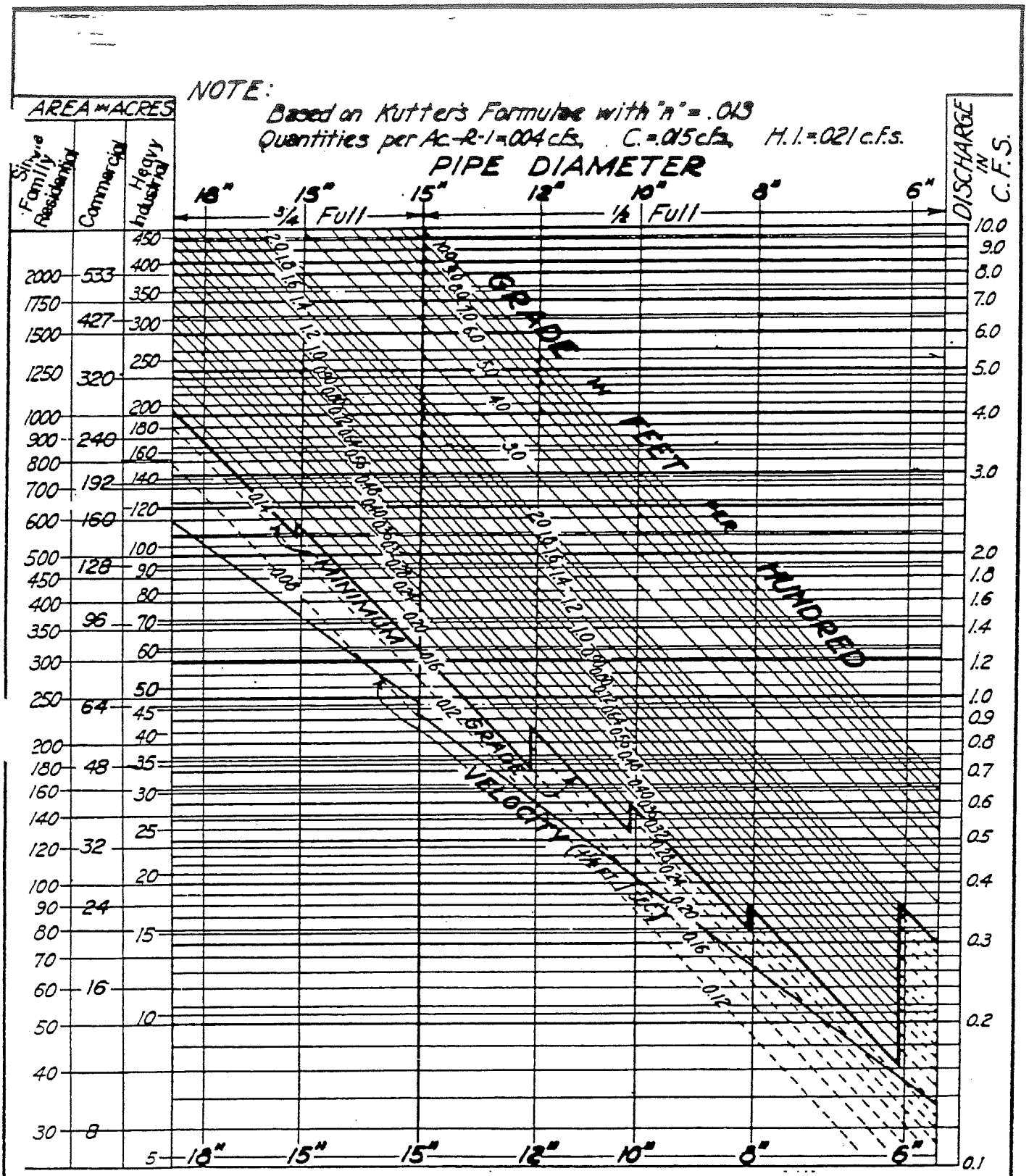
City of Santa Clarita
Development Services Division

SEWAGE FLOW COEFFICIENTS

ZONING	DESCRIPTION	COEFFICIENT (cfs/gross acreage)	COEFFICIENT (cfs/dwelling unit)
OS	Open Space	0.0002	-------
A	Agricultural - 1 single family home/ legal lot	0.0002	-------
RE	Residential Estate – large custom single family homes on uniquely configured lots	0.00075	-------
RVL	Residential Very Low Density - 1 DU/AC	0.001	0.001
RL	Residential Low Density – 2.2 DU/AC	0.0015	0.00068
RS	Residential Suburban - 5 DU/AC	0.005	0.001
RM	Residential Moderate – 11 DU/AC	0.012	0.00109
RMH	Residential Medium High – 20 DU/AC	0.015	0.00075
RH	Residential High – 28 DU/AC	0.023	0.00082
CTC	Commercial Town Center	0.015	-------
CC	Community Commercial	0.015	-------
CN	Commercial Neighborhood	0.015	-------
CO	Commercial Office	0.015	-------
VSR	Visitor Serving/Resort	0.021	-------
BP	Business Park	0.021	-------
IC	Industrial Commercial	0.021	-------
I	Industrial	0.021	-------

Notes:

- The coefficient to be used for any zoned area not listed in this table will be determined by the City Engineer based upon the intended development and use.
- Open space coefficient: this coefficient is to account for water infiltration into sewer pipe.
- Coefficients in cfs/gross acreage shall be used for areas that are not yet developed and not yet entitled.
- Coefficients in cfs/dwelling unit shall be used for developed areas and areas that are entitled.



NOTE: USE 15"- 1/2 FULL FOR COMPUTING DESIGN CAPACITY OF A NEW SEWER SYSTEM. USE 15"- 3/4" FULL FOR CHECKING CAPACITY OF EXIST. SEWER SYSTEM.

FLOW DIAGRAM FOR THE DESIGN OF CIRCULAR SANITARY SEWERS

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

COUNTY ENGINEER

COUNTY ENGINEER STANDARD S-C4

DATE: 3/80

DESIGN RCE 10443

SEE SHT. NO. 1218

THIS MAP IS INTENDED FOR USE ONLY AS OPERATIONS MAP BY LOS ANGELES COUNTY SEWER MAINTENANCE DISTRICTS. LOS ANGELES COUNTY EXPRESSLY DISCLAIMS ANY LIABILITY FOR ANY INACCURACIES WHICH MAY BE PRESENT IN THIS MAP.

AUTOMATED GRAPHICS

METERS
0 50 100 200 250
0 200 400 600 800
FEET

LEGEND

- CLAY SEWERS MAINTAINED BY SMD. 8" UNLESS OTHERWISE NOTED
- PLASTIC SEWERS
- CONCRETE SEWERS
- CLAY SEWERS, LINED
- CEMENT SEWERS, LINED
- SEWERS NOT MAINTAINED BY SMD
- TRUNK SEWERS
- CITY BOUNDARY
- STANDARD MANHOLE
- DROP MANHOLE
- SHALLOW MANHOLE
- TRAP MANHOLE
- WEIR MANHOLE
- C.O. CLEANOUT
- L.H. LAMP HOLE

TOTAL MH'S THIS MAP: 84

MAP REV
01-18-06

DATA BASE REV
02-12-03

CONSOLIDATED S.M.D.

N-1219

SEE SHT. NO. N-1257

A-42
A-47

THIS MAP IS INTENDED FOR USE ONLY AS OPERATIONS MAP BY LOS ANGELES COUNTY SEWER MAINTENANCE DISTRICTS. LOS ANGELES COUNTY EXPRESSLY DISCLAIMS ANY LIABILITY FOR ANY INACCURACIES WHICH MAY BE PRESENT IN THIS MAP.

SEE SHT. NO. 1219

SEE SHT. NO. N-1297

SEE SHT. NO. N-1259

Project Site

E 4.107.000

N 4.249.000

AUTOMATED GRAPHICS

METERS
0 50 100 200 250
0 200 400 600 800
FEET

LEGEND

- CLAY SEWERS MAINTAINED BY SMD, 8" UNLESS OTHERWISE NOTED
- PLASTIC SEWERS
- CONCRETE SEWERS
- CLAY SEWERS, LINED
- CEMENT SEWERS, LINED
- FORCE MAINS
- SEWERS NOT MAINTAINED BY SMD
- TRUNK SEWERS
- CITY BOUNDARY
- STANDARD MANHOLE
- DROP MANHOLE
- SHALLOW MANHOLE
- TRAP MANHOLE
- WEIR MANHOLE
- C.O. CLEANOUT
- L.H. LAMP HOLE
- PUMP STATION

TOTAL MH'S THIS MAP: 748

MAP REV
05-05-14

DATA BASE REV
05-16-88

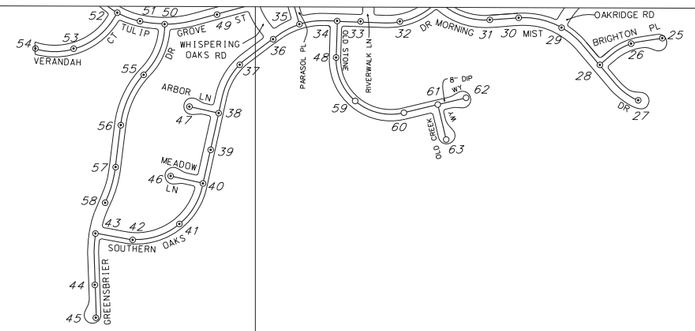
CONSOLIDATED S.M.D.

N-1258

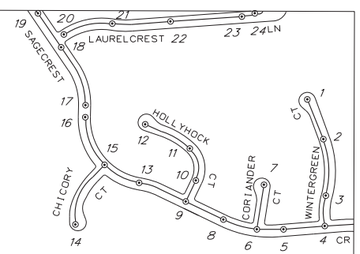
T: 4550 C-7

2307.2409.1258

SEE SHT. NO. N-1258



Project Site



A-25
A-42

THIS MAP IS INTENDED FOR USE ONLY AS OPERATIONS MAP BY LOS ANGELES COUNTY SEWER MAINTENANCE DISTRICTS. LOS ANGELES COUNTY EXPRESSLY DISCLAIMS ANY LIABILITY FOR ANY INACCURACIES WHICH MAY BE PRESENT IN THIS MAP.

LOS *ANGELES* *COUNTY*

SEE SHT. NO. N-1298

AUTOMATED GRAPHICS

METERS
0 50 100 200 250
0 200 400 600 800
FEET

LEGEND

- CLAY SEWERS MAINTAINED BY SMD, 8" UNLESS OTHERWISE NOTED
- PLASTIC SEWERS
- CONCRETE SEWERS
- CLAY SEWERS, LINED
- CEMENT SEWERS, LINED
- FORCE MAINS
- SEWERS NOT MAINTAINED BY SMD
- TRUNK SEWERS
- CITY BOUNDARY
- STANDARD MANHOLE
- DROP MANHOLE
- SHALLOW MANHOLE
- TRAP MANHOLE
- WEIR MANHOLE
- C.O. CLEANOUT
- L.H. LAMP HOLE
- PUMP STATION

TOTAL MH'S THIS MAP: 63

CITY OF SANTA CLARITA

1220

E 4,107,000

N 4,241,500

MAP REV
10-26-09

DATA BASE REV
08-01-88

CONSOLIDATED S.M.D.

N-1259

T: 4640 E-3

2307.2309.1259

SEE SHT. NO. N-1296

A-41
A-42
A-47
A-48
X-48

THIS MAP IS INTENDED FOR USE ONLY AS OPERATIONS MAP BY LOS ANGELES COUNTY SEWER MAINTENANCE DISTRICTS. LOS ANGELES COUNTY EXPRESSLY DISCLAIMS ANY LIABILITY FOR ANY INACCURACIES WHICH MAY BE PRESENT IN THIS MAP.

SEE SHT. NO. N-1258

SEE SHT. NO. N-1336

SEE SHT. NO. N-1298

N 4,249,000
E 4,117,000

AUTOMATED GRAPHICS

METERS
0 50 100 200 250
0 200 400 600 800
FEET

LEGEND

- CLAY SEWERS MAINTAINED BY SMD, 8" UNLESS OTHERWISE NOTED
- PLASTIC SEWERS
- CONCRETE SEWERS
- CLAY SEWERS, LINED
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- CITY BOUNDARY
- STANDARD MANHOLE
- DROP MANHOLE
- SHALLOW MANHOLE
- TRAP MANHOLE
- WEIR MANHOLE
- C.O. CLEANOUT
- L.H. LAMP HOLE
- PUMP STATION

TOTAL MH'S THIS MAP: 919

MAP REV
03-19-14

DATA BASE REV
06-02-88

CONSOLIDATED S.M.D.

N-1297

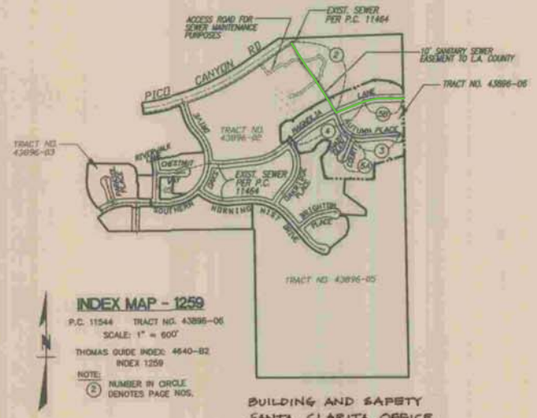
T: 4550 F-7

2311-2411-1297

BENCH MARK: L 3026

RDBM TAG IN S CB 8.2 M WO BCR @
SH COR LYONS AVE & HILEY GTN RD
30.5M WO & 12.2M SO C/L INT (NR W END CB)

NEWHALL 1995 ELEV.= 1265.296



INDEX MAP - 1259

P.C. 11544 TRACT NO. 43896-06
SCALE: 1" = 600'
THOMAS GUIDE INDEX: 4640-B2
INDEX 1259

NOTE:
(2) NUMBER IN CIRCLE DENOTES PAGE NOS.

BUILDING AND SAFETY
SANTA CLARITA OFFICE

STORMWATER POLLUTION CONTROL REQUIREMENTS FOR SEWER CONSTRUCTION

1. Eroded sediments and other pollutants must be retained on site and may not be transported from the site via sheet flow, swales, area drains, natural drainage courses, or wind.
2. Stockpiles of earth and other construction related materials must be protected from being transported from the site by the forces of wind or water.
3. Fuels, oils, solvents, and other toxic materials must be stored in accordance with their listing and are not to contaminate the soil and surface waters. All approved storage containers are to be protected from the weather. Spills must be cleaned up immediately and disposed of in a proper manner. Spills may not be washed into the drainage system.
4. Excess or waste concrete may not be washed into the public way or any other drainage system. Provisions shall be made to retain concrete wastes on site until they can be disposed of as solid waste.
5. Trash and construction-related solid wastes must be deposited into a covered receptacle to prevent contamination of rainwater and dispersal by wind.
6. Sediments and other materials may not be tracked from the site by vehicle traffic. The construction entrance roadways must be stabilized so as to inhibit sediments from being deposited into the public way. Accidental depositions must be swept up immediately and may not be washed down by rain or other means.
7. Any slopes with disturbed soils or denuded of vegetation must be stabilized so as to inhibit erosion by wind and water.

CA001 – DEWATERING OPERATIONS
CA002 – PAVING OPERATIONS
CA003 – STRUCTURE CONSTRUCTION AND PAINTING
CA010 – MATERIAL DELIVERY AND STORAGE
CA020 – SOLID WASTE MANAGEMENT
CA021 – HAZARDOUS WASTE MANAGEMENT
CA023 – CONCRETE WASTE MANAGEMENT
CA024 – SANITARY/SEPTIC WASTE MANAGEMENT
CA030 – VEHICLE AND EQUIPMENT CLEANING
CA031 – VEHICLE AND EQUIPMENT FUELING
CA032 – VEHICLE AND EQUIPMENT MAINTENANCE
ES001 – SCHEDULING
ES002 – PRESERVATION OF EXISTING VEGETATION
ESC10 – SEEDING AND PLANTING
ESC11 – MULCHING
ESC20 – GEOTEXTILES AND MATS
ESC21 – DUST CONTROLS
ESC22 – TEMPORARY STREAM CROSSING
ESC23 – CONSTRUCTION ROAD STABILIZATION
ESC24 – STABILIZED CONSTRUCTION ENTRANCE
ESC54 – STORM DRAIN INLET PROTECTION

STANDARD PLANS

THE FOLLOWING LATEST REVISED STANDARD PLANS ON FILE IN THE OFFICE OF THE FOLLOWING DEPARTMENT SHALL APPLY IN THE CONSTRUCTION OF THIS PROJECT:

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

APWA 208-0 BREAKING INTO EXISTING MANHOLES
APWA 221-1 PIPE ANCHORS AND BACKFILL STABILIZERS
APWA 222-0 HOUSE CONNECTION SEWER
APWA 223-0 HOUSE CONNECTION REMODELING
APWA 320-1 CHIMNEYS
2000-0 LEGEND FOR SANITARY SEWER PLANS AND PROFILES AND DISTRICT MAPS.
2021-0 BEDDING FOR SEWER PIPE
2024-0 WYE OR TEE SUPPORT
2027-0 ALLOWABLE TRENCH WIDTHS
2033-1 GRADING & ENCASEMENT

THIS SEWER PRIVATE CONTRACT ACCEPTED FOR PUBLIC USE
06/14/2005
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS LAND DEVELOPMENT DIVISION

NOTE:
ISSUE NO HOUSE LATERAL CONNECTION PERMITS UNTIL OUTLET P.C. 11464 IS ACCEPTED FOR PUBLIC USE BY THE COUNTY OF LOS ANGELES.

NO CONNECTION FOR THE DISPOSAL OF INDUSTRIAL WASTES SHALL BE MADE TO SEWERS SHOWN ON THESE DRAWINGS UNTIL A PERMIT FOR INDUSTRIAL WASTEWATER DISCHARGE HAS BEEN ISSUED BY THE SANITATION DISTRICTS FOR SAID CONNECTION.

BEFORE BREAKING INTO OR CONSTRUCTION ON A COUNTY SANITATION DISTRICT SEWER AND PRIOR TO FINAL ACCEPTANCE OF THE PROJECT, SANITATION DISTRICT INSPECTOR SHALL BE NOTIFIED BY PHONE (562) 256-4683 SO THAT REQUIRED INSPECTION CAN BE MADE.

PRIVATE CONTRACT SEWER GENERAL NOTES

The following general notes are to be included on Page 1 of all Private Contract Sewer Plans:

1. A sewer construction permit shall be obtained and a fee paid for construction inspection and record plans to the Department of Public Works at the Permit Counter, 900 South Fremont Avenue, 8th Floor, Alhambra, at least 72 hours prior to starting work under this permit. Copies of all other required permits, such as Road Excavation, Caltrans, etc., must be filed with the permit application.
2. Prior to issuance of any permit, the contractor shall file a permit for excavations and trenches from the State of California Division of Industrial Safety, and a Certificate of Worker's Compensation Insurance with the Department of Public Works named as the Certificate Holder to be notified 30 days prior to cancellation of policy.
3. If work is done in a State Highway, a permit must be obtained from the State of California Division of Highways, 120 South Spring Street, Los Angeles, California.
4. When work is within a contract city, the contractor must contact the Director of Public Works of that city, to determine the location to pay the inspection fee.
5. The contractor shall contact the district office listed on the "Application for Construction Permit" to arrange for an acceptable construction start date.
6. Approval of this plan by the County of Los Angeles does not constitute a representation as to accuracy of the location of or the existence or non-existence of any underground utility pipe or structure within the limits of this project. This note applies to all pages.
7. All work shall be in accordance with the latest approved edition of the "Standard Specifications for Public Works Construction, including supplements and the latest Special Provisions for the Construction of Sanitary Sewers and shall be prosecuted only in the presence of the Department of Public Works
8. The contractor's attention is directed to Section 7-10.4.1 of the Standard Specifications for Public Works Construction in regard to safety orders and shall conform to the "Minimum Public Safety Requirements" as shown on Los Angeles Department of Public Works' Standard S-2.
9. Elevations are in feet above U.S.C. & G.S. sea level datum of 1929.
10. No revisions shall be made in these plans without the approval of the Director of Public Works.
11. No representative of the Department of Public Works will survey or lay out any portion of the work.
12. Grades to which this improvement is to be constructed are shown on plans and profiles. Grade points for top of curbs, centerline of streets, or centerline of alleys, are shown by circles on profiles of all points between designated points. The grade shall be established so as to conform to a straight line drawn between said designated points.
13. The private engineer shall furnish the Department of Public Works with grade sheets and stationing for all house laterals and "Y" or "T" branches and shall provide stakes for them at their proper locations with stationing plainly marked. All house laterals shall be constructed in a straight alignment at right angles from the main line sewer except as shown on the plans. House laterals from chimneys shall not have an angle of less than 45 degrees with the M.L. sewer. Any change in alignment shall be requested in writing by the private engineer.
14. The private engineer shall furnish the house lateral depth at the property line below the top of curb elevation for each house lateral on the grade sheet.

CONSTRUCTION NOTES

1. Provide survey stakes on the property line or property lines produced at right angles to the sewer line at the centerline of each manhole.
2. Vitrified clay pipe joints shall be type "O" or "C" per standard specifications section 208-2.
3. If a powerpole is within three feet of the sewer, the sewer shall be encased per standard plan S-23, case II, two feet on each side from the point of interference.
4. All joints between cast iron pipe and vitrified clay pipe shall be made with a rubber sleeve joint, type "O" (with bushing if necessary) per standard specifications section 208-2.
5. House laterals to be constructed with inverts at the property line 6 feet below curb grade except as noted.
6. Wye or tee branches may be used for connections to the mainline sewers except as noted.
7. If during the course of construction, it is determined that there is less than four feet of cover over the top of a mainline or house lateral V.C.P. sewer which is not indicated on the plans, the pipes shall be encased per standard plan S-23, case II, unless otherwise approved by the director of Public Works.
8. All structures shall be either brick sewer manholes per standard plan S-3 or precast concrete sewer manholes per standard plan S-38, or reinforced precast concrete manhole per standard plan S-6, except as noted.
9. resurface all trenches within paved areas to meet Los Angeles County Public Works or California State Highway requirements in accordance with the permits.
10. Full compliance with section 306-1.3.4. of the standard specification will be required for backfill in street certification of backfill compaction and sand equivalents by a qualified civil engineer shall be provided by the permitee prior to the issuance of a certificate of partial acceptance.
11. All backfill and fills outside of the street right of way shall be compacted to 90% of the maximum density as determined by ASTM soil compaction test D 1557-78 method "D" unless otherwise specified. This shall be certified by a qualified civil engineer. This certification shall be submitted to the Construction Division of the Department of Public Works prior to the acceptance of the work by the county.
12. Manhole tops in unimproved rights of way to be six inches above finished grade.
13. Sewers to be tested for leakage per section 306-1/4 of the standard specifications and special provisions.

RECORD PLANS

PS006844

PROFILE, ALIGNMENT AND GRADE OF SANITARY SEWERS

TO BE CONSTRUCTED IN

TRACT NO. 43896-06 PC NO. 11544

3 SHEETS 5 PAGES

COUNTY OF LOS ANGELES CALIFORNIA

INDEX 1259

JAMES A. NOYES DIRECTOR OF PUBLIC WORKS

APPROVED BY LAND DEVELOPMENT DIVISION

BY: Thomas W. Hoagland ASSISTANT DIVISION ENGINEER 4/12/01 DATE

SUBMITTED BY: SUBDIVISION PLAN CHECKING SECTION 4/11/01 DATE

APPROVED: COUNTY SANITATION DISTRICT OF LOS ANGELES CALIF. 56250

JAMES F. STAHL – CHIEF ENGINEER and GENERAL MANAGER

COUNTY SANITATION DISTRICT NO. 32

BY: OFFICE ENGINEER DATE: 4/13/01

PRIVATE ENGINEERS NOTICE TO CONTRACTORS

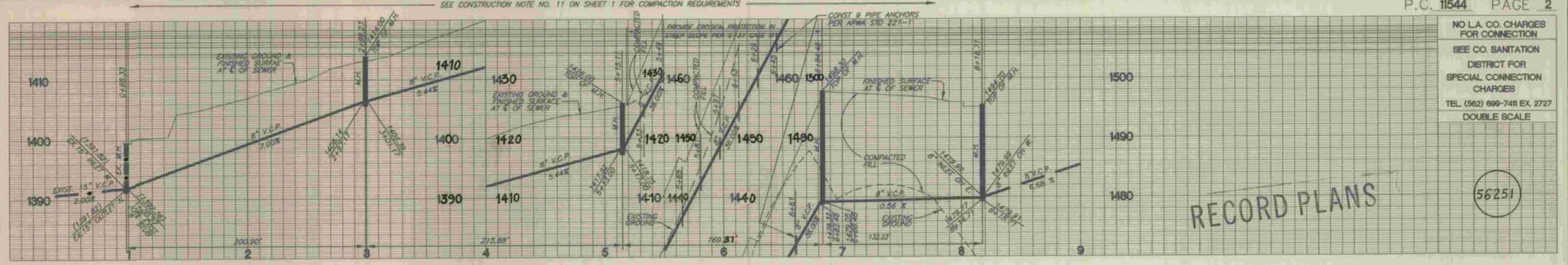
THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS IS REQUIRED BY A SEARCH OF AVAILABLE RECORDS TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO EXISTING UTILITIES EXCEPT AS SHOWN ON THIS MAP. THE CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER LINES NOT OF RECORD OR NOT SHOWN ON THIS DRAWING. PRIOR TO EXCAVATION THE CONTRACTOR SHALL CALL TOLL FREE 1-800-422-4133 TO VERIFY THE UNDERGROUND LOCATION OF GAS AND TELEPHONE LINES. THE CONTRACTOR SHALL ALSO CALL MR. RAY CUMMINGS OF GENERAL TELEPHONE COMPANY AT 1-805-948 4671 SO THAT THEY CAN MARK THE LOCATION OF UNDERGROUND TELEPHONE LINES.

Warren Schmidt Apr. 10, 2001
RCE NO. 13818 DATE

NO.	REVISION	REVISED BY	APPROVED BY	DATE

SEE CONSTRUCTION NOTE NO. 11 ON SHEET 1 FOR COMPACTION REQUIREMENTS

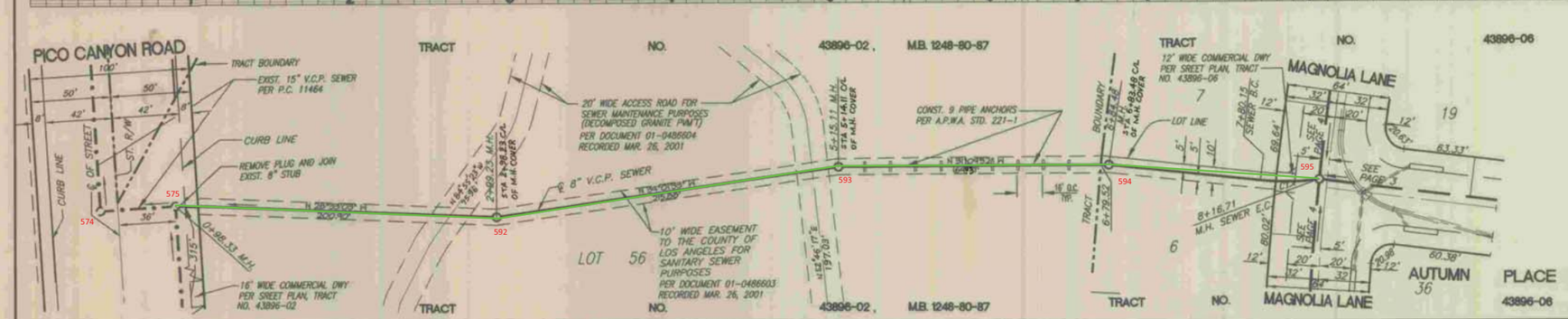
P.C. 11544 PAGE 2



NO L.A. CO. CHARGES FOR CONNECTION
SEE CO. SANITATION DISTRICT FOR SPECIAL CONNECTION CHARGES
TEL. (562) 699-7411 EX. 2727
DOUBLE SCALE

56251

RECORD PLANS



CURVE DATA:

CURVE	DELTA	RADIUS	LENGTH	TANGENT
C1	13°57'56"	150.00'	36.56'	18.37'

PLAN
SCALE: 1" = 40'

REGISTERED PROFESSIONAL ENGINEER WARREN L. SMITH No. 13818 Exp. 3-31-05 CIVIL STATE OF CALIFORNIA

Warren Schmidt 4-10-01
PROJECT ENGINEER DATE

SANITARY SEWER PLANS IN TRACT NO. 43896-06 PC NO. 11544

REVIEWED BY LAND DEVELOPMENT DIVISION

BY M.D Esq 4-11-01
SUBDIVISION PLAN CHECKING SECTION DATE

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

SR CONSULTANTS, INC.
ENGINEERING LAND PLANNING LAND SURVEYING
2698 MATARO STREET
PASADENA, CALIFORNIA 91107-3112
Phone : (626) 683-0430

TRACT NO. 43896-06

FILE J:\PROJECTS\891-001 ACB_SN\SEWER\TR43896-06\Sheet1.dwg
REV. 03-29-01

TRACT NO. 43896-06 PC NO. 11544

P.C. 11544 PAGE 3

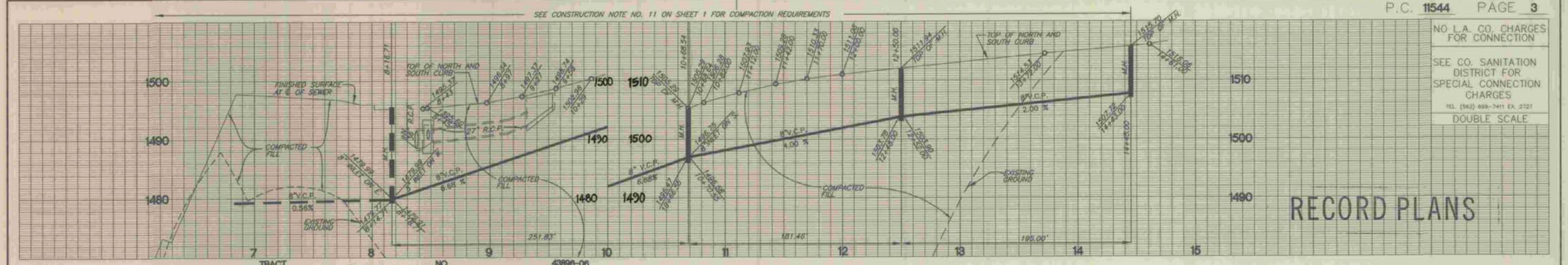
SEE CONSTRUCTION NOTE NO. 11 ON SHEET 1 FOR COMPACTION REQUIREMENTS

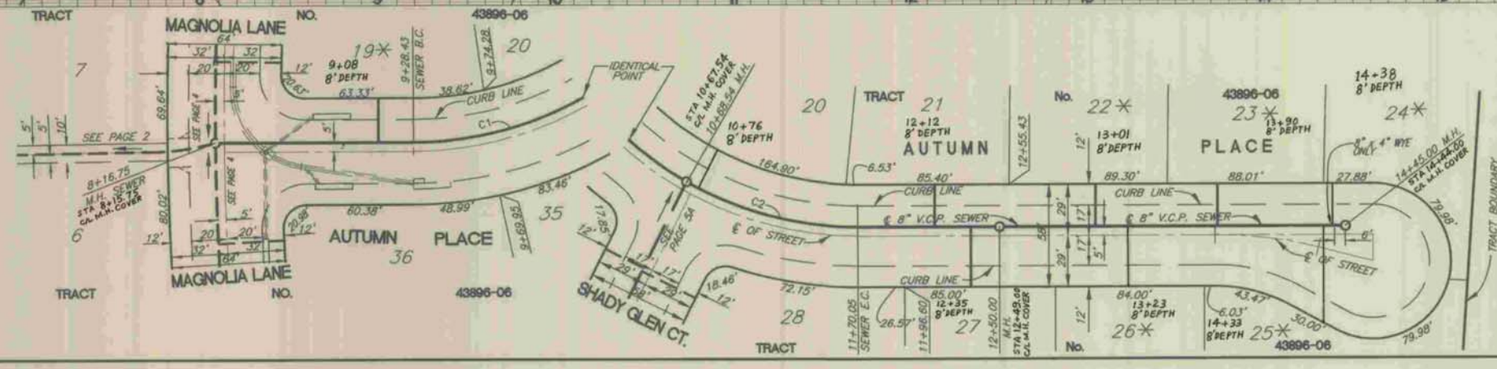
NO L.A. CO. CHARGES FOR CONNECTION

SEE CO. SANITATION DISTRICT FOR SPECIAL CONNECTION CHARGES
TEL. (562) 699-7411 EX. 2727

DOUBLE SCALE

RECORD PLANS





PLAN
SCALE: 1" = 40'

CURVE DATA:

CURVE	DELTA	RADIUS	LENGTH	TANGENT
C1	41°10'18"	195.00'	140.11'	73.24'
C2	29°49'15"	195.00'	101.50'	51.92'

56252

REGISTERED PROFESSIONAL ENGINEER WARREN L. SMITH No. 13818 Exp. 3-31-05 CIVIL STATE OF CALIFORNIA

4-10-01

REVIEWED BY LAND DEVELOPMENT DIVISION
BY M.Q. Espinoza 4-11-01
SUBDIVISION PLAN CHECKING SECTION DATE

* INDICATES BACKWATER VALVES MAYBE REQUIRED FOR THESE LOTS.

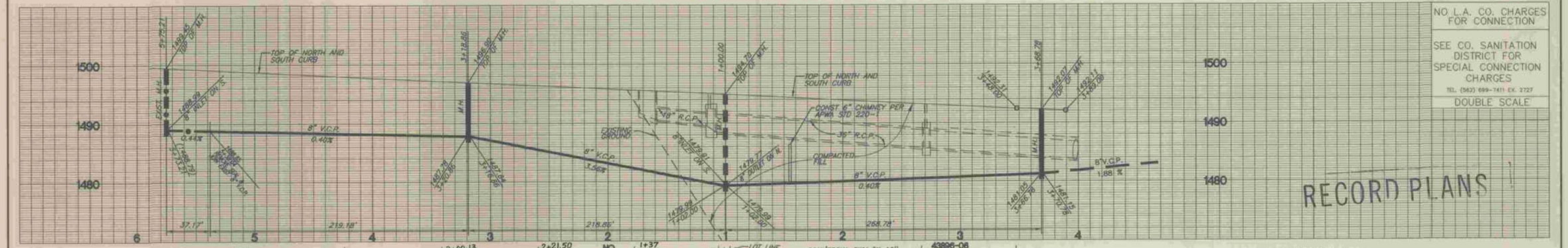
P.C. 11544 PAGE 4

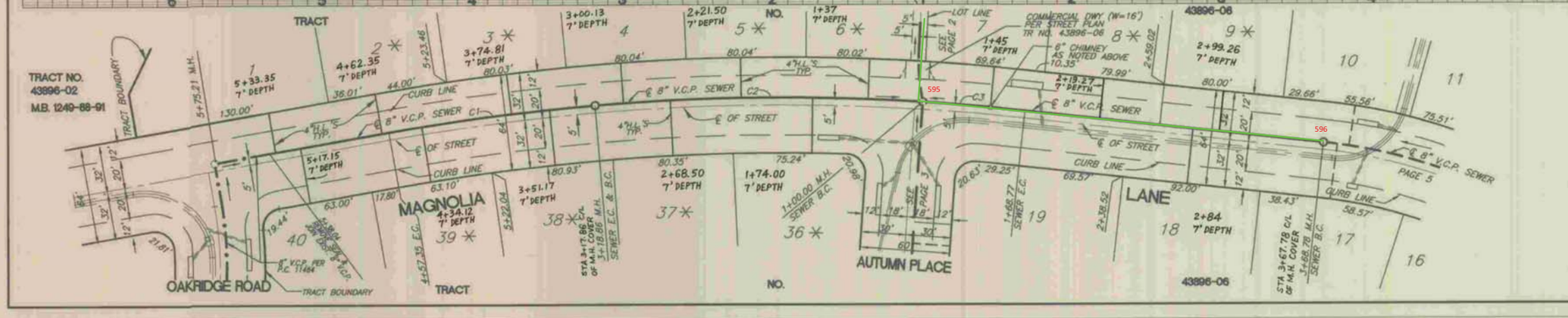
NO L.A. CO. CHARGES FOR CONNECTION

SEE CO. SANITATION DISTRICT FOR SPECIAL CONNECTION CHARGES
TEL. (562) 699-7411 EX. 2727

DOUBLE SCALE

RECORD PLANS





PLAN
SCALE: 1" = 40'

CURVE DATA:

CURVE	DELTA	RADIUS	LENGTH	TANGENT
C1	05°16'20"	1505.00'	138.49'	69.29'
C2	08°20'02"	1505.00'	218.86'	109.65'
C3	02°37'01"	1505.00'	68.77'	34.37'

56253

REGISTERED PROFESSIONAL ENGINEER WARREN L. SMITH No. 13818 Exp. 3-31-05 CIVIL STATE OF CALIFORNIA

4-10-01

REVIEWED BY LAND DEVELOPMENT DIVISION
BY M.Q. Espinoza 4-11-01
SUBDIVISION PLAN CHECKING SECTION DATE

FILE I:\PROJECTS\1891-001 AUBURN\SEWER\TR43896-06\Sheet2.dwg
REV. 03-28-01

P.C. 11544 .ON TCART

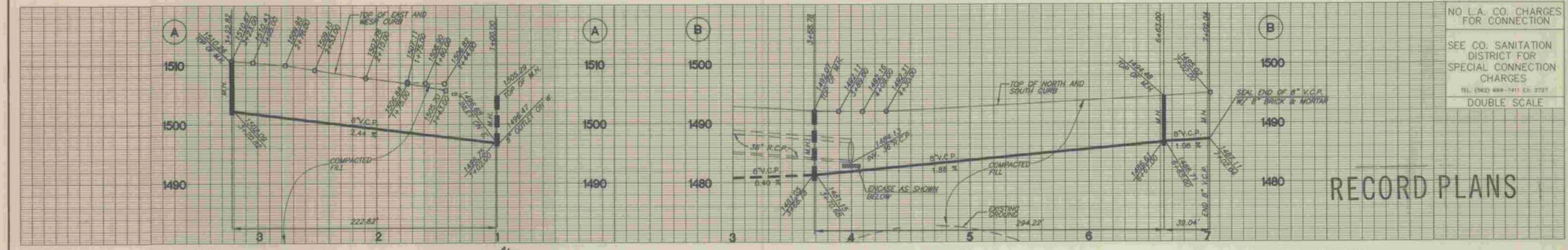
P.C. 11544 PAGE 5

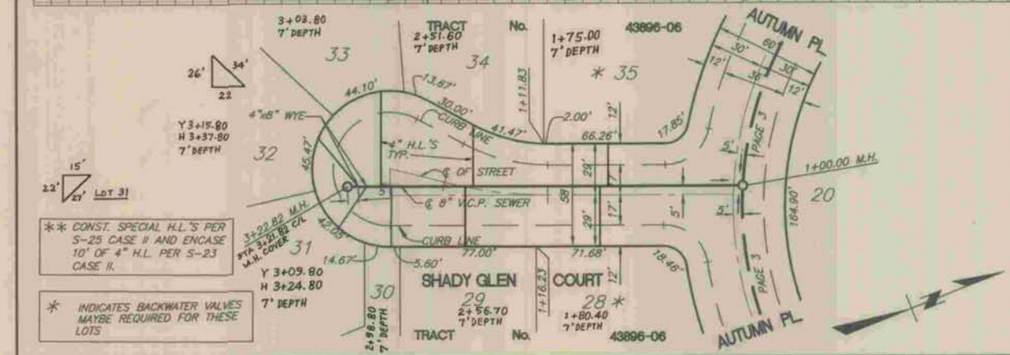
NO L.A. CO. CHARGES FOR CONNECTION

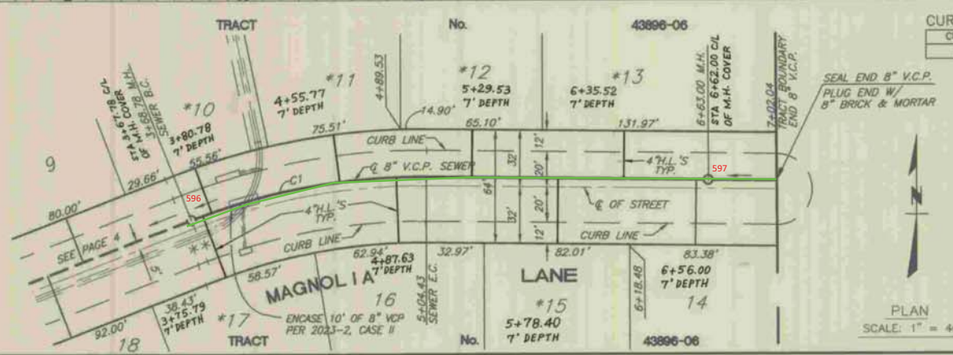
SEE CO. SANITATION DISTRICT FOR SPECIAL CONNECTION CHARGES
TEL. (562) 699-7411 EX. 2727

DOUBLE SCALE

RECORD PLANS







CURVE DATA:

CURVE	DELTA	RADIUS	LENGTH	TANGENT
C1	21°53'38"	355.00'	135.65'	68.66'

PLAN
SCALE: 1" = 40'

56254

REGISTERED PROFESSIONAL ENGINEER KRISTEN L. SMITH No. 13818 Exp. 3-31-05 CIVIL STATE OF CALIFORNIA

4-10-01

REVIEWED BY LAND DEVELOPMENT DIVISION
BY
SUBDIVISION PLAN CHECKING SECTION DATE

P.C. _____ PAGE _____

NO L.A. CO. CHARGES FOR CONNECTION

SEE CO. SANITATION DISTRICT FOR SPECIAL CONNECTION CHARGES
TEL. (562) 699-7411 EX. 2727

DOUBLE SCALE

VOID

REVIEWED BY LAND DEVELOPMENT DIVISION
BY
SUBDIVISION PLAN CHECKING SECTION DATE

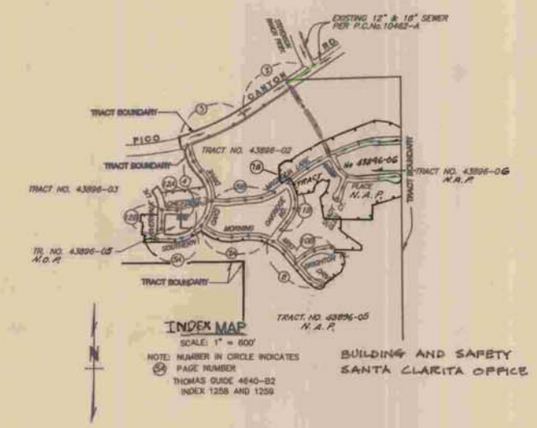
FILE D:\PROJECTS\1891-001 AD&LDH-SEWER\TR43896-05\Sheet3.dwg
REV. 02-08-01

P.C. 11544 PAGE 5 TRACT NO. 43896-06

BENCH MARK L 3026

RDBM TAG IN S GB 8.2 M W/O BCR @
SW COR LYONS AVE & WILEY CYN RD
30.5M W/O & 12.2M S/O C/L INT (NR W END CB)

NEWHALL MAP ELEV.= 1265.246



NO CONNECTION FOR DISPOSAL OF INDUSTRIAL WAISTS SHALL BE MAID TO SEWERS SHOWN ON THESE DRAWINGS UNTIL A PERMIT FOR INDUSTRIAL WASTE WATER DISCHARGE HAS BEEN ISSUED BY THE SANITATION DISTRICTS FOR SAID CONNECTION.

NO.	REVISION	REVISED BY	APPROVED BY	DATE
1	REVISED INDEX MAP; ADDED LOT LINES & LOT NOS. ON PAGE 4; LOT LINES & LOT NOS. ON PAGE 5; ADDED STA. & OFFSET ALONG MAIN LINE ON PAGE 5B FROM STA. 15+00.00 TO STA. 19+50.00; ADDED STA. & OFFSET ALONG MAIN LINE ON PAGE 6 FROM STA. 0+15.00 TO STA. 3+48.00; ADD PLAN & PROFILE LINE 8 OF PAGE 7	S.R. CONSULTANTS R.E.No. 13818		6/14/00
2	ADD H.L. ON PAGE 4 AND 7 (FOR RECREATION LOT No 23 FUTURE TRACT NO. 43896-05)	S.R. CONSULTANTS R.E. No. 13818		8/17/00

STORMWATER POLLUTION CONTROL REQUIREMENTS FOR SEWER CONSTRUCTION

1. Eroded sediments and other pollutants must be retained on site and may not be transported from the site via sheet flow, swales, area drains, natural drainage courses, or wind.
2. Stockpiles of earth and other construction related materials must be protected from being transported from the site by the forces of wind or water.
3. Fuels, oils, solvents, and other toxic materials must be stored in accordance with their listing and are not to contaminate the soil and surface waters. All approved storage containers are to be protected from the weather. Spills must be cleaned up immediately and disposed of in a proper manner. Spills may not be washed into the drainage system.
4. Excess or waste concrete may not be washed into the public way or any other drainage system. Provisions shall be made to retain concrete wastes on site until they can be disposed of as solid waste.
5. Trash and construction-related solid wastes must be deposited into a covered receptacle to prevent contamination of rainwater and dispersal by wind.
6. Sediments and other materials may not be tracked from the site by vehicle traffic. The construction entrance roadways must be stabilized so as to inhibit sediments from being deposited into the public way. Accidental depositions must be swept up immediately and may not be washed down by rain or other
7. Any slopes with disturbed soils or denuded of vegetation must be stabilized so as to inhibit erosion by wind and water.

CA001 – DEWATERING OPERATIONS	ESC10 – SEEDING AND PLANTING
CA002 – PAVING OPERATIONS	ESC11 – MULCHING
CA003 – STRUCTURE CONSTRUCTION AND PAINTING	ESC20 – GEOTEXTILES AND MATS
CA010 – MATERIAL DELIVERY AND STORAGE	ESC21 – DUST CONTROLS
CA020 – SOLID WASTE MANAGEMENT	ESC22 – TEMPORARY STREAM CROSSING
CA021 – HAZARDOUS WASTE MANAGEMENT	ESC23 – CONSTRUCTION ROAD STABILIZATION
CA023 – CONCRETE WASTE MANAGEMENT	ESC24 – STABILIZED CONSTRUCTION ENTRANCE
CA024 – SANITARY/SEPTIC WASTE MANAGEMENT	ESC54 – STORM DRAIN INLET PROTECTION
CA030 – VEHICLE AND EQUIPMENT CLEANING	
CA031 – VEHICLE AND EQUIPMENT FUELING	
CA032 – VEHICLE AND EQUIPMENT MAINTENANCE	
ESC01 – SCHEDULING	
ESC02 – PRESERVATION OF EXISTING VEGETATION	

STANDARD PLANS:

THE FOLLOWING LATEST REVISED STANDARD PLANS ON FILE IN THE OFFICE OF THE FOLLOWING DEPARTMENT SHALL APPLY IN THE CONSTRUCTION OF THIS PROJECT.

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

APWA 208-0	BREAKING INTO EXISTING MANHOLES
APWA 220-1	CHIMNEYS
APWA 221-1	PIPE ANCHORS
APWA 222-0	HOUSE CONNECTION SEWER
APWA 223-0	HOUSE CONNECTION REMODELING
2000-0	LEGEND FOR SANITARY SEWER PLANS AND PROFILES AND DISTRICT MAPS.
2021-0	BEDDING FOR SEWER PIPE
2024-0	WYE OR TEE SUPPORT
2027-0	ALLOWABLE TRENCH WIDTHS
2023-1	CRADLING AND ENCASEMENT

BEFORE BREAKING INTO OR CONSTRUCTION ON A COUNTY SANITATION DISTRICT SEWER AND PRIOR ACCEPTANCE OF THE PROJECT. A SANITATION DISTRICT INSPECTOR SHALL BE NOTIFIED BY PHONE (805) 947-5027 SO THAT REQUIRED INSPECTION CAN BE MADE.

LOT 56 IS RESTRICTED TO NO CONSTRUCTION OF RESIDENTIAL BUILDINGS AND WILL NOT BE SERVED BY THIS SEWER.

THIS SEWER PRIVATE CONTRACT ACCEPTED FOR PUBLIC USE
6/14/2000
COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

NOTE: ISSUE NO H.L. CONNECTION PERMITS FOR LOTS FROM ~~44~~ TO 19 & FROM 32 TO 35 UNTIL OUTLET P.C. 11544 IS ACCEPTED FOR PUBLIC USE BY THE COUNTY OF LOS ANGELES.

PRIVATE CONTRACT SEWER GENERAL NOTES

The following general notes are to be included on Page 1 of all Private Contract Sewer Plans:

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13. Sewers to be tested for leakage per section 306-1/4 of the standard specifications and special provisions.

RECORD PLANS

PROFILE, ALIGNMENT AND GRADE OF SANITARY SEWERS

54946

TO BE CONSTRUCTED IN

TRACT NO. 43896-02 PC NO. 11464

6 SHEETS 12 PAGES

COUNTY OF LOS ANGELES CALIFORNIA
INDEX 1258 AND 1259

HARRY W. STONE DIRECTOR OF PUBLIC WORKS

APPROVED BY LAND DEVELOPMENT DIVISION

BY _____ 2-1-00
ASSISTANT DIVISION ENGINEER DATE

SUBMITTED BY _____ 1/31/2000
SUBDIVISION PLAN CHECKING SECTION DATE

APPROVED: COUNTY SANITATION DISTRICT OF LOS ANGELES CALIF.
CHARLES W. CARRY – CHIEF ENGINEER and GENERAL MANAGER

COUNTY SANITATION DISTRICT NO. 32

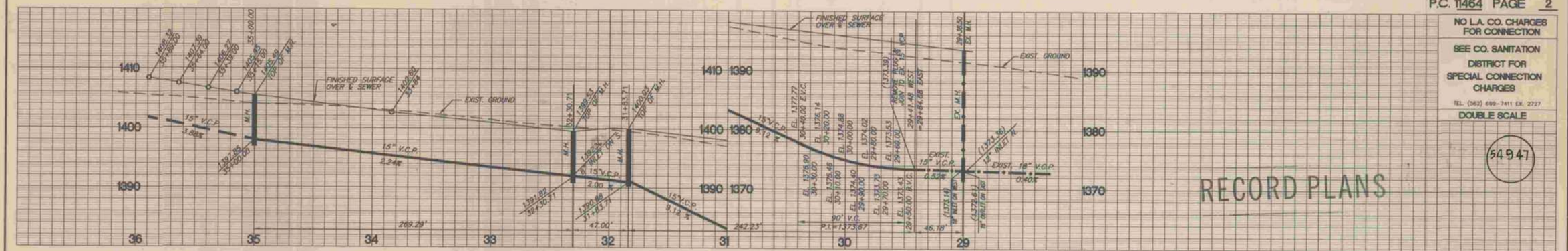
BY _____ DATE: 2/1/2000
DEPUTY ENGINEER

PRIVATE ENGINEERS NOTICE TO CONTRACTORS

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS IS REQUIRED BY A SEARCH OF AVAILABLE RECORDS TO THE BEST OF OUR KNOWLEDGE. THERE ARE NO EXISTING UTILITIES EXCEPT AS SHOWN ON THIS MAP. THE CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER LINES NOT OF RECORD OR NOT SHOWN ON THIS DRAWING. PRIOR TO EXCAVATION THE CONTRACTOR SHALL CALL TOLL FREE 1-800-422-4133 TO VERIFY THE UNDERGROUND LOCATION OF GAS AND TELEPHONE LINES. THE CONTRACTOR SHALL ALSO CALL MR. RAY CUMMINGS OF GENERAL TELEPHONE COMPANY AT 1-805-948 4871 SO THAT THEY CAN MARK THE LOCATION OF UNDERGROUND TELEPHONE LINES.

_____ 1-27-00
RCE NO. C13818 DATE

P.C. 11464 PAGE 2



NO L.A. CO. CHARGES FOR CONNECTION

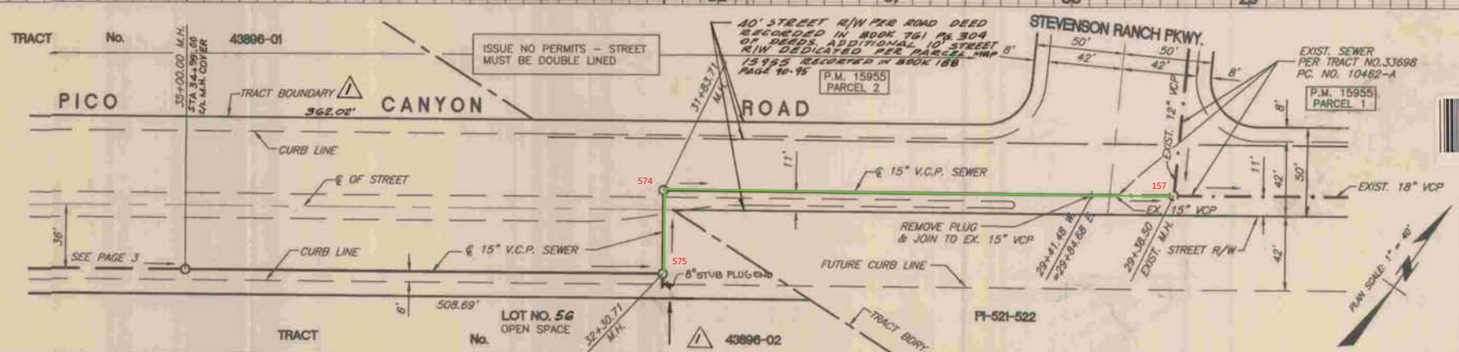
SEE CO. SANITATION DISTRICT FOR SPECIAL CONNECTION CHARGES

TEL. (562) 699-7411 EX. 2727

DOUBLE SCALE

54947

RECORD PLANS



40' 20' 0' 20' 40' 80'
GRAPHIC SCALE
SCALE : 1"= 40'

PS006837

SANITARY SEWER PLANS IN TRACT NO. 43896-02 PC NO. 11464 JRD

REVIEWED BY LAND DEVELOPMENT DIVISION
BY _____ 1/31/00
SUBDIVISION PLAN CHECKING SECTION DATE

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

REGISTERED PROFESSIONAL ENGINEER WARREN L. SMITH No. 13818 Exp. 3-31-01 CIVIL STATE OF CALIFORNIA

_____ 1-27-00
PROJECT ENGINEER DATE

SR CONSULTANTS

SR CONSULTANTS, INC.
ENGINEERING • LAND PLANNING • LAND SURVEYING
2658 MATARO STREET
PASADENA , CALIFORNIA 91107-3112
Phone : (626) 683-0430

DWG.

FILE I:\PROJECTS\891-881\TR43896\TR43896-02-SEWER\PP331.dwg
01-26-00

1

4841 P.C. 94 SO-88834 ON TRACT

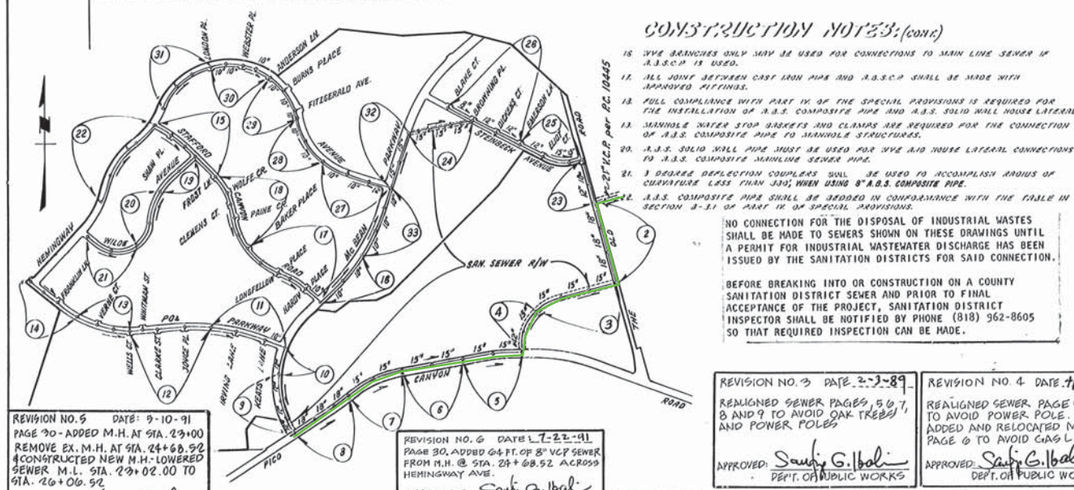
B.M. CL 3960 ELEV. 262.866

ROBM TAG IN CONC BASE OF EDISON PP #1827406E 60 FT S & 67 FT E C/L INT LYONS AVE & WILEY CN RD

VEWHALL QUAD. 19 83

CONTRACTOR MUST MAINTAIN FLOW AT ALL TIMES.

DOUBLE SCALE



INDEX MAP
TRACT Nº 33698
P.C. Nº 10462-A
Scale: 1"=800'

CONSTRUCTION NOTES: (cont)

15. WYE BRANCHES ONLY MAY BE USED FOR CONNECTIONS TO MAIN LINE SEWER IF A.S.S.C.P. IS USED.
17. ALL JOINT BETWEEN CAST IRON PIPE AND A.S.S.C.P. SHALL BE MADE WITH APPROVED FITTINGS.
18. FULL COMPLIANCE WITH PART IV OF THE SPECIAL PROVISIONS IS REQUIRED FOR THE INSTALLATION OF A.S.S. COMPOSITE PIPE AND A.S.S. SOLID WALL HOUSE LATERALS.
19. MANHOLE WATER STOP GASKETS AND CLAMPS ARE REQUIRED FOR THE CONNECTION OF A.S.S. COMPOSITE PIPE TO MANHOLE STRUCTURES.
20. A.S.S. SOLID WALL PIPE MUST BE USED FOR WYE AND HOUSE LATERAL CONNECTIONS TO A.S.S. COMPOSITE MAINLINE SEWER PIPE.
21. 3 DEGREE DEFLECTION COUPLERS SHALL BE USED TO ACCOMPLISH RADIUS OF CURVATURES LESS THAN 300' WHEN USING 8" A.S.S. COMPOSITE PIPE.
22. A.S.S. COMPOSITE PIPE SHALL BE BEDDED IN CONFORMANCE WITH THE TABLE IN SECTION 3-3.1 OF PART IV OF SPECIAL PROVISIONS.

NO CONNECTION FOR THE DISPOSAL OF INDUSTRIAL WASTES SHALL BE MADE TO SEWERS SHOWN ON THESE DRAWINGS UNTIL A PERMIT FOR INDUSTRIAL WASTEWATER DISCHARGE HAS BEEN ISSUED BY THE SANITATION DISTRICTS FOR SAID CONNECTION.

BEFORE BREAKING INTO OR CONSTRUCTION ON A COUNTY SANITATION DISTRICT SEWER AND PRIOR TO FINAL ACCEPTANCE OF THE PROJECT, SANITATION DISTRICT INSPECTOR SHALL BE NOTIFIED BY PHONE (818) 962-8605 SO THAT REQUIRED INSPECTION CAN BE MADE.

REVISION NO. 5 DATE: 9-10-91
PAGE 30 - ADDED M.H. AT STA. 23+00
REMOVE EX. M.H. AT STA. 24+68.52 & CONSTRUCTED NEW M.H.: LOWERED SEWER M.L. STA. 23+02.00 TO STA. 26+06.52
APPROVED: Sanjiv G. Ibali 9/30/91 DEPT. OF PUBLIC WORKS

REVISION NO. 1 DATE: 5/12/88
Change Pipe Size from 15" to 18" on Page 2. Lower Main Line and Eliminate "Shallow Manholes" on Pages 2, 3, 4 and 23.
APPROVED: Sanjiv G. Ibali DEPT. OF PUBLIC WORKS

REVISION NO. 6 DATE: 7-22-91
PAGE 30, ADDED 64 FT. OF 8" VCP SEWER FROM M.H. @ STA. 24+68.52 ACROSS HEMINGWAY AVE.
APPROVED: Sanjiv G. Ibali DEPT. OF PUBLIC WORKS

REVISION NO. 2 DATE: 12/1/88
Added 8" Inlet, Pg. 26 @ Manhole Sta. 11+68.85; Added Manhole & 8" Inlets Pg. 24 Sta. 6+91.20 & Sta. 2+66.92; Added Angle on Stub Pg. 24 Sta. 6+00.00
APPROVED: Sanjiv G. Ibali DEPT. OF PUBLIC WORKS

REVISION NO. 3 DATE: 2-2-89
REALIGNED SEWER PAGES 5, 6, 7, 8 AND 9 TO AVOID OAK TREES AND POWER POLES
APPROVED: Sanjiv G. Ibali DEPT. OF PUBLIC WORKS

REVISION NO. 4 DATE: 7/2/89
REALIGNED SEWER PAGE 5 TO AVOID POWER POLE. ADDED AND RELOCATED M.H. PAGE 6 TO AVOID GAS LINE
APPROVED: Sanjiv G. Ibali DEPT. OF PUBLIC WORKS

ISSUE NO H.L. PERMITS UNTIL OUTLET SEWER P.C. 10445 IS ACCEPTED FOR PUBLIC USE BY THE COUNTY OF LOS ANGELES.

LOTS 555, 556, 557, 559 THRU 572, 574 THRU 579, 581, 582, 583, 585, 586, 587 AND 591 ARE OPEN SPACE LOTS RESTRICTED TO NO CONSTRUCTION AND WILL NOT BE SERVED BY THIS SEWER.

GENERAL NOTES:

1. ELEVATIONS ARE IN FEET ABOVE U.S.C. & G.S. SEA LEVEL DATUM OF 1929.
2. NO REVISIONS SHALL BE MADE IN THESE PLANS WITHOUT THE APPROVAL OF THE DIRECTOR OF PUBLIC WORKS.
3. NO REPRESENTATIVE OF THE DEPT. OF PUBLIC WORKS WILL SURVEY OR LAY OUT ANY PORTION OF THE WORK.
4. GRADES TO WHICH THIS IMPROVEMENT IS TO BE CONSTRUCTED ARE SHOWN ON PLANS AND PROFILES. GRADE POINTS FOR TOP OF CURBS, CENTER LINE OF STREETS, OR CENTER LINE OF ALLEYS ARE SHOWN BY CIRCLES ON PROFILES. AT ALL POINTS BETWEEN DESIGNATED POINTS THE GRADE SHALL BE ESTABLISHED SO AS TO CONFORM TO A STRAIGHT LINE DRAWN BETWEEN SAID DESIGNATED POINTS.
5. THE PRIVATE ENGINEER SHALL FURNISH THE DEPT. OF PUBLIC WORKS WITH GRADE SHEETS AND STATIONING FOR ALL HOUSE LATERALS AND "Y" OR "T" BRANCHES AND SHALL PROVIDE STAKES FOR THEM AT THEIR PROPER LOCATIONS WITH STATIONING PLAINLY MARKED. ALL HOUSE LATERALS SHALL BE CONSTRUCTED IN A STRAIGHT ALIGNMENT AT RIGHT ANGLES FROM THE MAIN LINE SEWER EXCEPT AS SHOWN ON THE PLANS. HOUSE LATERALS FROM CHIMNEYS SHALL NOT HAVE AN ANGLE OF LESS THAN 45° WITH THE MAIN LINE SEWER. ANY CHANGE IN ALIGNMENT SHALL BE REQUESTED IN WRITING BY THE PRIVATE ENGINEER.
6. THE PRIVATE ENGINEER SHALL FURNISH THE HOUSE LATERAL DEPTH AT THE PROPERTY LINE BELOW THE TOP OF CURB ELEVATION FOR EACH HOUSE LATERAL ON THE GRADE SHEET.
7. BEFORE WORK CAN BE STARTED, THE CONTRACTOR MUST OBTAIN A PERMIT TO EXCAVATE IN COUNTY STREETS FROM THE CONSTRUCTION DIVISION OF THE L.A. CO. DEPT. OF PUBLIC WORKS, DISTRICT OFFICE "6", AND PAY A FEE TO THE DIRECTOR OF PUBLIC WORKS, 300 S. FREMONT AVE. ALHAMBRA, CA. 91803, 8TH FLOOR TO COVER THE COST OF CONSTRUCTION INSPECTION AND RECORD PLANS.
8. IF WORK IS TO BE DONE IN A STATE HIGHWAY, A PERMIT MUST BE OBTAINED FROM THE STATE OF CALIFORNIA, DIVISION OF HIGHWAYS, 120 SOUTH SPRING STREET, LOS ANGELES, CALIFORNIA.
9. APPROVAL OF THIS PLAN BY THE COUNTY OF LOS ANGELES DOES NOT CONSTITUTE A REPRESENTATION AS TO THE ACCURACY OF THE LOCATION OF OR THE EXISTENCE OR NON-EXISTENCE OF ANY UNDERGROUND UTILITY PIPE, OR STRUCTURE WITHIN THE LIMITS OF THIS PROJECT. THIS NOTE APPLIES TO ALL PAGES.
10. REFER TO SECTION 7.10.1 OF THE STANDARD SPECIFICATIONS, REGARDING SAFETY ORDERS.
11. PRIOR TO THE ISSUANCE OF THE REQUIRED SEWER CONSTRUCTION PERMIT, THE CONTRACTOR SHALL OBTAIN AND FILE WITH THE DEPT. OF PUBLIC WORKS COPIES OF A PERMIT TO EXCAVATE IN COUNTY STREETS FROM THE ROAD ELEMENT AT THE DEPT. OF PUBLIC WORKS A PERMIT FOR EXCAVATIONS AND TRENCHES FROM THE STATE OF CALIFORNIA, DIVISION OF INDUSTRIAL SAFETY AND A CERTIFICATE OF WORKER'S COMPENSATION INSURANCE WITH THE DEPT. OF PUBLIC WORKS, 300 S. FREMONT AVE. ALHAMBRA, CA. 91803, 8TH FLOOR NAMED AS THE CERTIFICATE HOLDER TO BE NOTIFIED 30 DAYS PRIOR TO CANCELLATION OF POLICY.

CONSTRUCTION NOTES:

1. WORK SHALL BE CONSTRUCTED ACCORDING TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (1985 EDITION WITH 1988 SUPPLEMENT) & DEPT. OF PUBLIC WORKS SPECIAL PROVISIONS FOR THE CONSTRUCTION OF SANITARY SEWER OVER 36" DIAMETER AND SHALL BE PROSECUTED ONLY IN THE PRESENCE OF THE DIRECTOR OF PUBLIC WORKS.
2. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION DIVISION BY TELEPHONE, (818) 458-3 25 AT LEAST TWENTY - FOUR HOURS BEFORE STARTING ANY WORK UNDER THIS CONTRACT.
3. HOUSE LATERALS TO BE CONSTRUCTED WITH INVERTS AT PROPERTY LINE 6 FEET BELOW CURB GRADE EXCEPT AS NOTED.
4. WYE OR TEE BRANCHES MAY BE USED FOR CONNECTIONS TO MAINLINE SEWERS EXCEPT AS NOTED.
5. ALL STRUCTURES SHALL BE EITHER BRICK SEWER MANHOLES PER S-3 OR PRE-CAST CONCRETE MANHOLES PER S-36 EXCEPT AS NOTED.
6. PROVIDE STAKES ON THE PROPERTY LINE OR PROPERTY LINES PRODUCED AT RIGHT ANGLES TO THE SEWER LINE AT THE CENTER LINE OF EACH MANHOLE.
7. MANHOLE TOPS IN UNIMPROVED RIGHTS OF WAY TO BE SIX INCHES ABOVE FINISHED GRADE.
8. VITRIFIED CLAY PIPE JOINTS SHALL BE TYPE "O" OR "G" PER STANDARD SPECIFICATIONS SECTION 208.2.
9. IF A POWER POLE IS WITHIN THREE FEET OF THE SEWER, THE SEWER SHALL BE ENCASED, PER S-23, CASE II, TWO FEET ON EACH SIDE FROM THE POINT OF INTERFERENCE.
10. IF DURING THE COURSE OF CONSTRUCTION IT IS DETERMINED THAT THERE IS LESS THAN FOUR FEET OF COVER OVER THE TOP OF A MAIN LINE OR HOUSE LATERAL SEWER WHICH IS NOT INDICATED ON THE PLANS, THE PIPE SHALL BE ENCASED PER S-23, CASE II UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.
11. ALL JOINTS BETWEEN CAST IRON PIPE AND VITRIFIED CLAY PIPE SHALL BE MADE WITH A RUBBER SLEEVE JOINT, TYPE "C" OR "D", (WITH BUSHING IF NECESSARY) PER STANDARD SPECIFICATIONS, SECTION 208.2.
12. SEWERS TO BE TESTED FOR LEAKAGE PER SECTION 306-1.4 OF THE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.
13. INSURANCE ALL TRENCHES WITHIN PAVED AREAS TO MEET L.A. COUNTY PUBLIC WORKS OR CALIFORNIA STATE HIGHWAY REQUIREMENTS IN ACCORDANCE WITH PERMITS.
14. FULL COMPLIANCE WITH SECTION 306-1.3.5 OF THE STD. SPECIFICATIONS WILL BE REQUIRED FOR BACKFILL IN STREETS. CERTIFICATION OF BACKFILL COMPACTION AND SAND EQUIVALENTS BY A QUALIFIED, REGISTERED TESTING LABORATORY SHALL BE PROVIDED BY THE PERMITTEE PRIOR TO THE ISSUANCE OF A CERTIFICATE OF PARTIAL ACCEPTANCE.
15. SPECIAL BACKFILL IN EASEMENT CONSTRUCTION (A) BACKFILL TRENCH AND REPLACE OTHER EARTH SO AS TO ACHIEVE THE NATURAL OR FINISHED GRADES AND SLOPES SHOWN ON THE GRADING PLAN APPROVED FOR THIS DEVELOPMENT BY THE LAND DEVELOPMENT DIVISION. (B) ALL BACKFILL AND EARTH REPLACED SHALL BE COMPACTED TO A MINIMUM OF 90% OF MAXIMUM DENSITY PER A.S.T.M. STD. METHOD OF TEST D698 ST AS MODIFIED. ACCEPTABLE CERTIFICATION OF SUCH COMPACTION SHALL BE SUBMITTED TO THE CONSTRUCTION DIVISION - PUBLIC WORKS DEPT.

PROFILE, ALIGNMENT AND GRADE OF PAGE 1

SANITARY SEWERS

TO BE CONSTRUCTED IN

TRACT Nº 33698

PRIVATE CONTRACT NO. 10462-A

INDEX A-42

17 SHEETS, 33 PAGES

SCALE: VERT. 1"=5' HORIZ. 1"=50' DECEMBER, 1985

PREPARED IN THE OFFICES OF
ENGINEERING SERVICE CORPORATION
6047 BRISTOL PARKWAY • CULVER CITY, CALIFORNIA
(213) 641-1000 (714) 751-1551

BY: J. K. Mauldin
REG. C. E. No. 13095

PROFESSIONAL ENGINEER — No. 13095 — Exp. 3-31-89 — CIVIL — STATE OF CALIFORNIA

THE FOLLOWING LATEST REVISED STANDARD PLANS ON FILE IN THE OFFICE OF THE COUNTY ENGINEER SHALL APPLY IN THE CONSTRUCTION OF THIS PROJECT.

LEGEND	S-1
MINIMUM PUBLIC SAFETY REQUIREMENTS	S-2
BRICK SEWER MANHOLE	S-3
STANDARD MANHOLE STEP	S-17
BEDDING FOR SEWER PIPE	S-21
CRADLING AND ENCASEMENT	S-23
WYE OR TEE SUPPORT	S-26
ADJUSTABLE TRENCH WIDTHS	S-33
LOCKING MANHOLE FRAME AND COVER	S-35
NON-REINFORCED PRECAST CONCRETE SEWER MANHOLE	S-36
CHIMNEY PIPE & BASE	S-47
RECTANGULAR SHALLOW MANHOLE	S-7
RECTANGULAR MANHOLE FRAME & COVERS	S-16
PRECAST CONCRETE SHALLOW MANHOLE	S-38
SPECIAL HOUSE LATERALS	S-25
EROSION PROTECTION IN STEEP SLOPES	S-31

COUNTY OF LOS ANGELES, CALIFORNIA

THOMAS A. TIDEMANSON, DIRECTOR OF PUBLIC WORKS CHARLES W. CARRY, CHIEF ENGINEER

CO. SAN. DIST. NO. 32

APPROVED Dean Efstathiou 1/11/88 (DATE) APPROVED for Jerry A. Caves 6/12/97 OFFICE ENGINEER

CHECKED Sanjiv G. Ibali 1-11-88 (DATE)

REG. C.E. NO. 33134

SANTA CLARITA VALLEY BLDG. DIST. 32

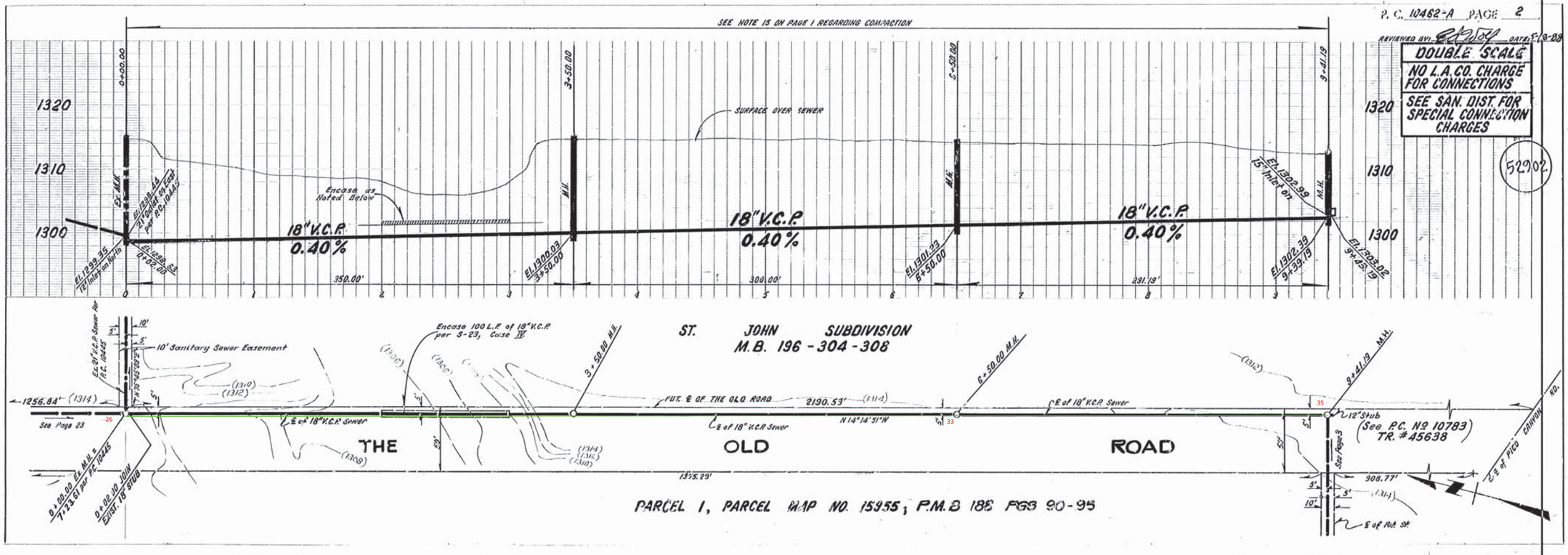
52901

P. C. 10462-A PAGE 2

REVIEWED BY: [illegible] DATE: 5-18-88

DOUBLE SCALE
NO L.A.CO. CHARGE FOR CONNECTIONS
SEE SAN. DIST. FOR SPECIAL CONNECTION CHARGES

52902



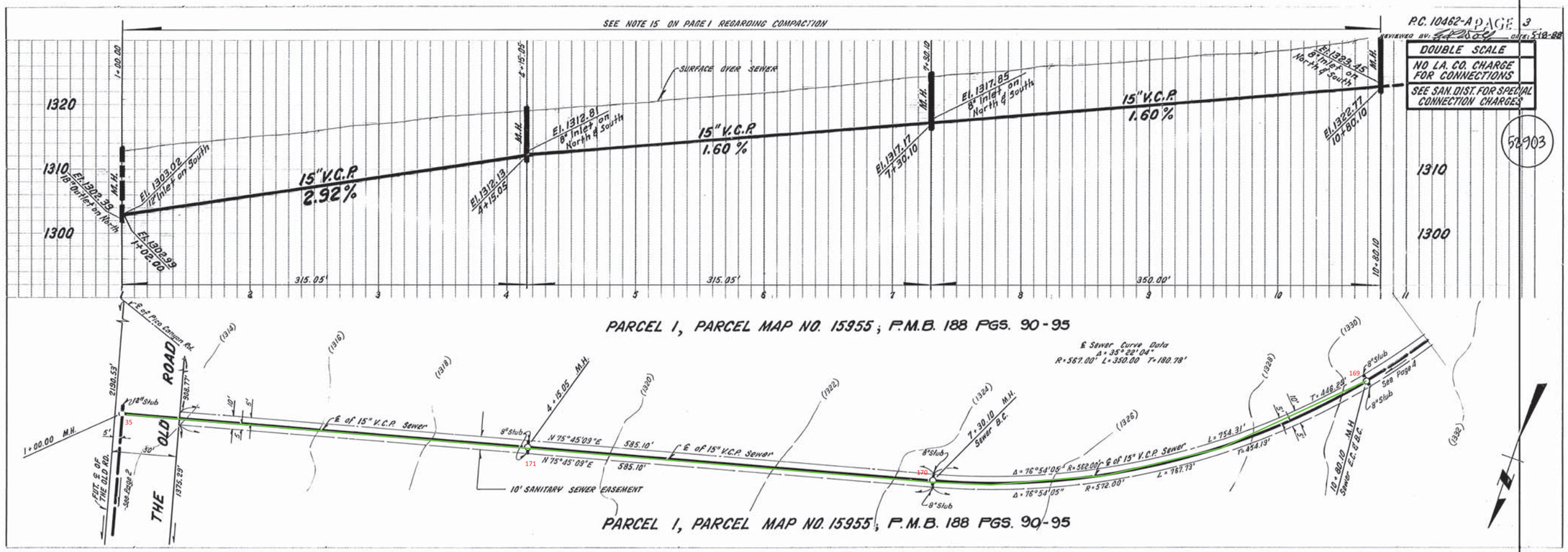
1 A-52901 P.C. 10462 & 33698 TRACT

SEE NOTE 15 ON PAGE 1 REGARDING COMPACTION

P.C. 10462-A PAGE 3
REVIEWED BY: [signature] DATE: 5-18-88

DOUBLE SCALE
NO L.A. CO. CHARGE FOR CONNECTIONS
SEE SAN. DIST. FOR SPECIAL CONNECTION CHARGES

52903



PARCEL 1, PARCEL MAP NO. 15955; P.M.B. 188 PGS. 90-95

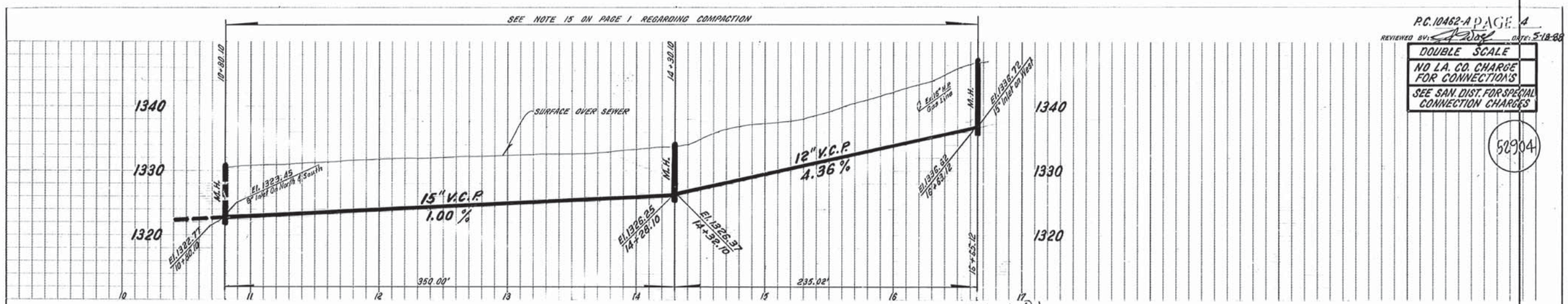
PARCEL 1, PARCEL MAP NO. 15955; P.M.B. 188 PGS. 90-95

SEE NOTE 15 ON PAGE 1 REGARDING COMPACTION

P.C. 10462-A PAGE 4
REVIEWED BY: [signature] DATE: 5-18-88

DOUBLE SCALE
NO L.A. CO. CHARGE FOR CONNECTIONS
SEE SAN. DIST. FOR SPECIAL CONNECTION CHARGES

52904



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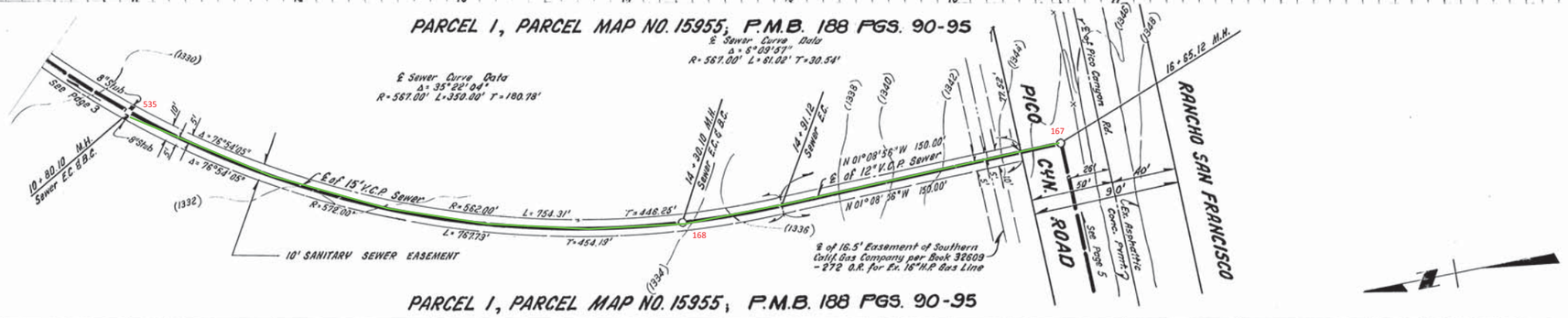

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S
LASCL Vo 33228 5/6 10/85 A

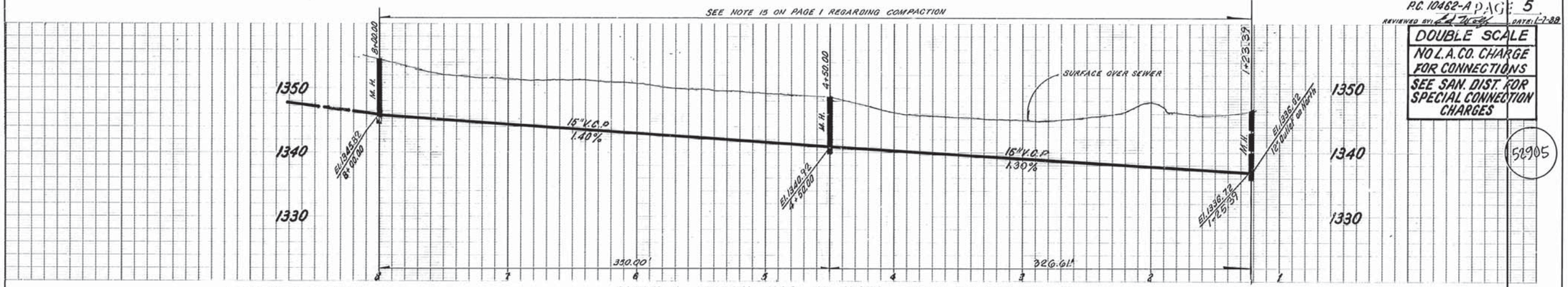
P.C. 10462-A PAGE 5

REVIEWED BY: [illegible] DATE: 1-7-88

DOUBLE SCALE
NO L.A.CO. CHARGE FOR CONNECTIONS
SEE SAN. DIST. FOR SPECIAL CONNECTION CHARGES

58905

SEE NOTE 15 ON PAGE 1 REGARDING COMPACTION



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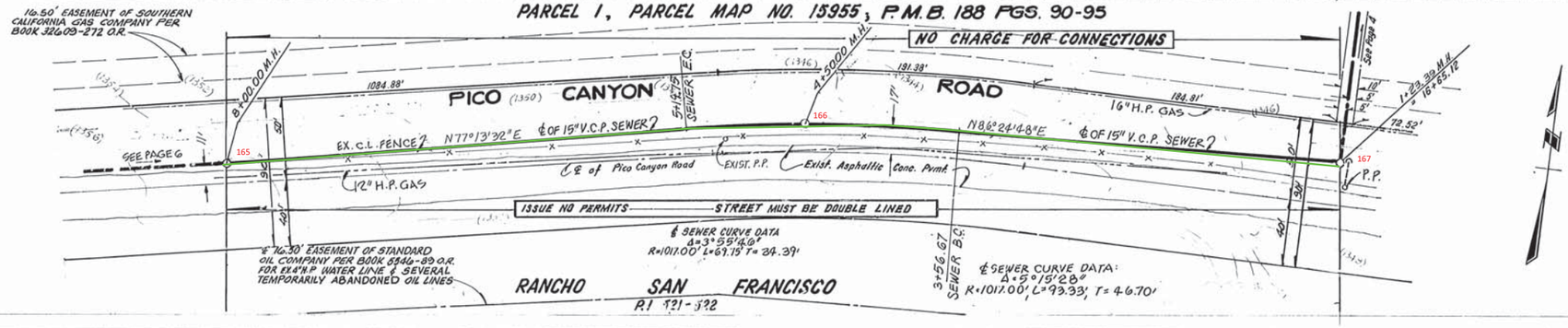


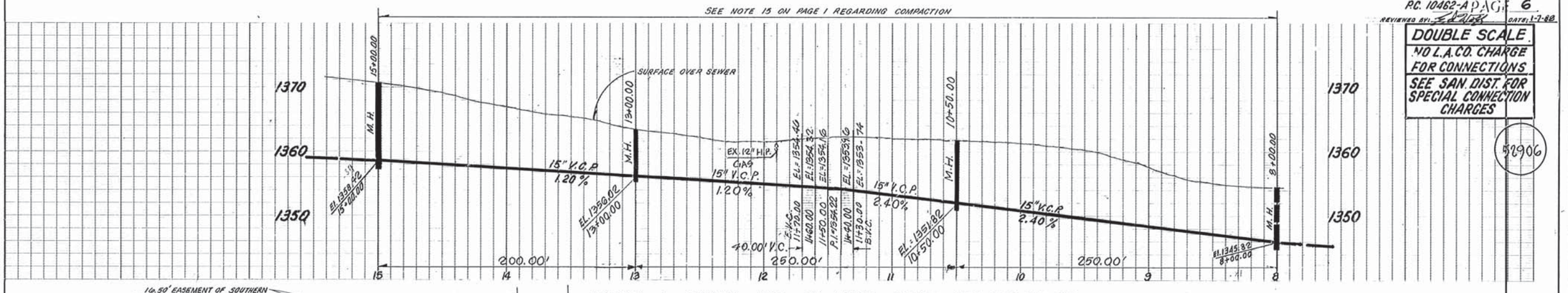
P.C. 10462-A PAGE 6

REVIEWED BY: [illegible] DATE: 1-7-88

DOUBLE SCALE
NO L.A.CO. CHARGE FOR CONNECTIONS
SEE SAN. DIST. FOR SPECIAL CONNECTION CHARGES

58906

SEE NOTE 15 ON PAGE 1 REGARDING COMPACTION



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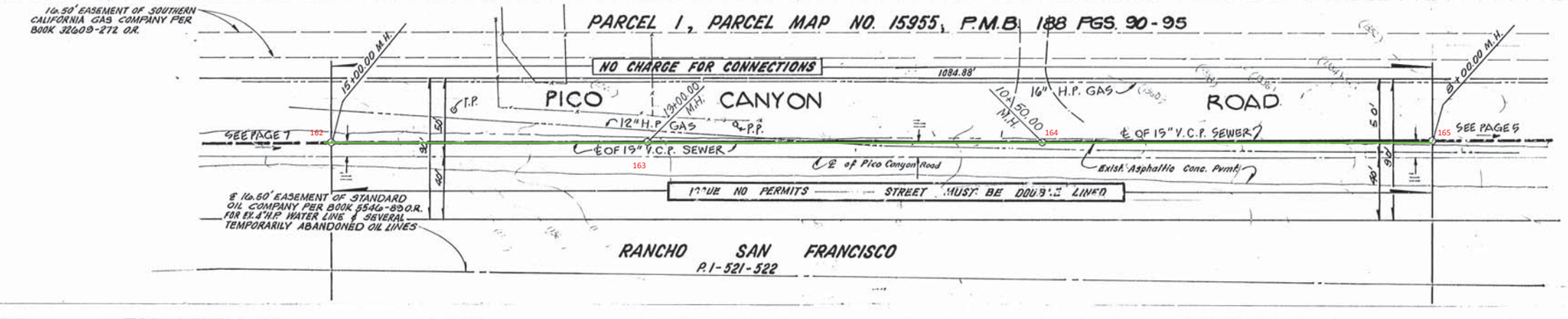


ESGH

A-5201 P.C. 33238 TRACT

3

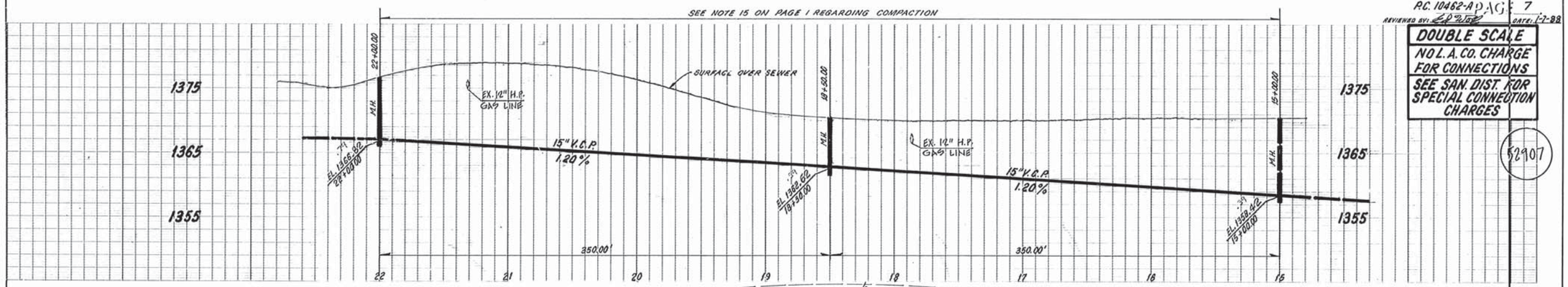
P.C. 10462-A PAGE 7

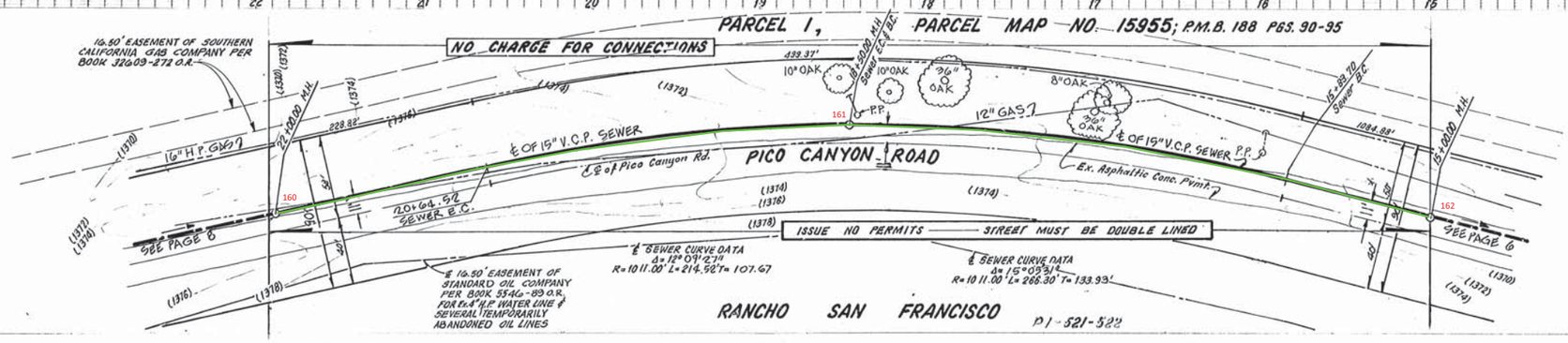
REVIEWED BY: [signature] DATE: 1-7-88

SEE NOTE 15 ON PAGE 1 REGARDING COMPACTION

DOUBLE SCALE
NO L.A.CO. CHARGE FOR CONNECTIONS
SEE SAN. DIST. FOR SPECIAL CONNECTION CHARGES

52907





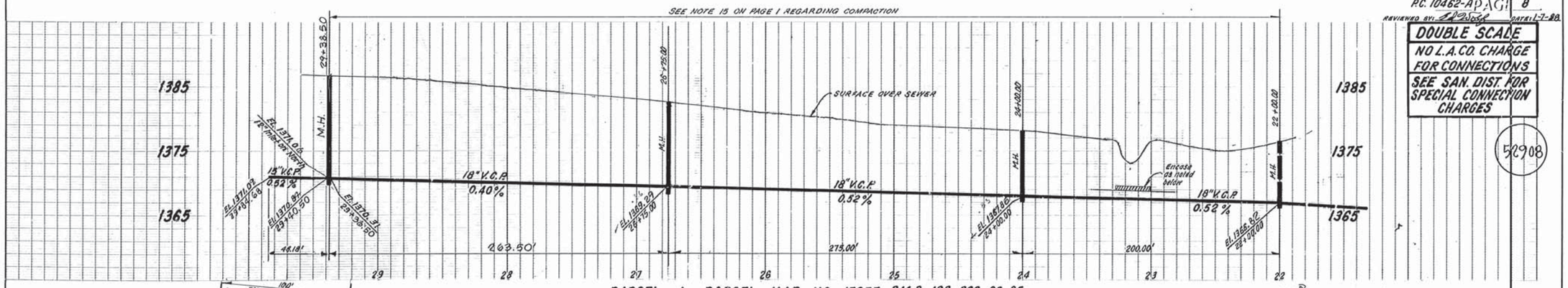
P.C. 10462-A PAGE 8

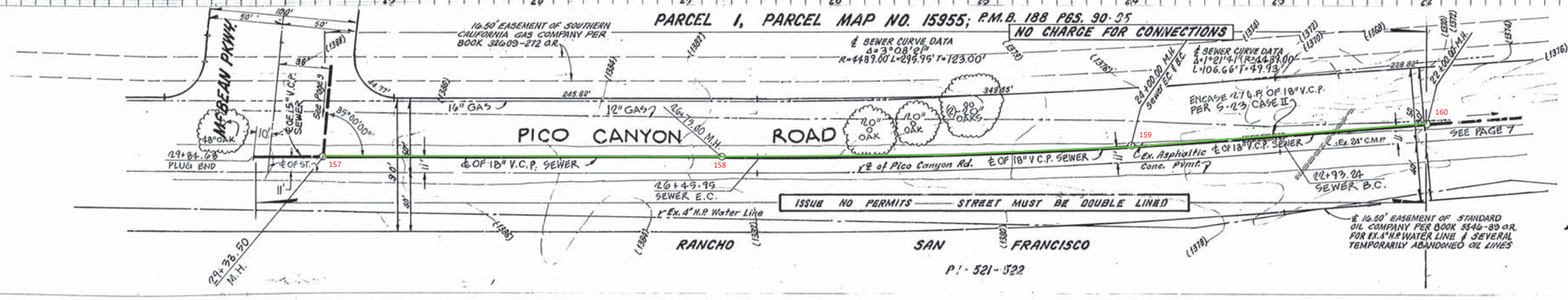
REVIEWED BY: [signature] DATE: 1-7-88

SEE NOTE 15 ON PAGE 1 REGARDING COMPACTION

DOUBLE SCALE
NO L.A.CO. CHARGE FOR CONNECTIONS
SEE SAN. DIST. FOR SPECIAL CONNECTION CHARGES

52908



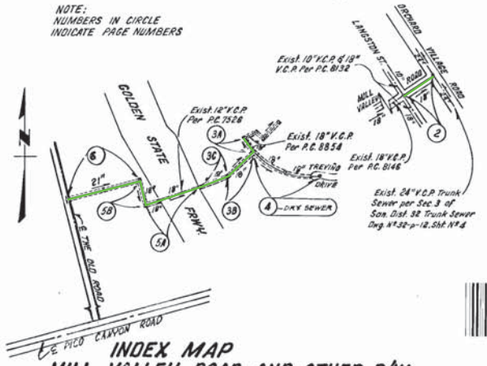


B.M. CL 5087 ELEV. 1259.970

ROBM TAG IN E CURB 3 FT. S/O BCR AT S.E'LY COR. TOURNAMENT RD. & GOLF COURSE RD. 48 FT. S. & 20 FT. E/O ℄ INT.

NEWHALL QUAD. 19 78

NOTE:
NUMBERS IN CIRCLE
INDICATE PAGE NUMBERS



INDEX MAP
MILL VALLEY ROAD AND OTHER R/W
P.C. Nº 10445
Scale: 1"=600'

DOUBLE SCALE

CONSTRUCTION NOTES: (cont)

16. A/B BRANCHES ONLY MAY BE USED FOR CONNECTIONS TO MAIN LINE SEWER IF A/B S.C.P.'S USED.
17. TEE JOINT SEWERS CAST IRON PIPE AND A/B S.C.P. SHALL BE MADE WITH SPECIALLY CUT "Y".
18. FULL CIRCLE RUBBER GASKET AS PER THE SPECIAL PROVISIONS IS REQUIRED FOR THE INSTALLATION OF A/B.S. COMPOSITE PIPE AND A/B.S. SOLID WALL HOUSE LATERALS
19. MANHOLE WATER STOP GASKETS AND ELBOWS ARE REQUIRED FOR THE CONNECTION OF A/B.S. COMPOSITE PIPE TO MANHOLE STRUCTURES.
20. A.B.S. SOLID WALL PIPE MUST BE USED FOR WYE AND HOUSE LATERAL CONNECTIONS TO A/B.S. COMPOSITE MANHOLE SEWER PIPE.
21. 8 DEGREE DEFLECTION COUPLERS WILL BE USED TO ACCOMPLISH ANGLES OF COLLECTOR LESS THAN 22½°.
22. A/B.S. COMPOSITE PIPE SHALL BE SPECIFIED IN CONFORMANCE WITH THE TABLE IN SECTION 8.31. OF PART "A" OF SPECIAL PROVISIONS.

THE CONTRACTOR MUST MAINTAIN SERVICE AT ALL TIME DURING THE CONSTRUCTION PERIOD.

NO CONNECTION FOR THE DISPOSAL OF INDUSTRIAL WASTES SHALL BE MADE TO SEWERS SHOWN ON THESE DRAWINGS UNTIL A PERMIT FOR INDUSTRIAL WASTEWATER DISCHARGE HAS BEEN ISSUED BY THE SANITATION DISTRICTS FOR SAID CONNECTION.

BEFORE BREAKING INTO OR CONSTRUCTION ON A COUNTY SANITATION DISTRICT SEWER AND PRIOR TO FINAL ACCEPTANCE OF THE PROJECT, SANITATION DISTRICT INSPECTOR SHALL BE NOTIFIED BY PHONE (818) 962-8605 SO THAT REQUIRED INSPECTION CAN BE MADE.

* REVISION NO. 1 DATE: 9/14/87
REVISED STA. & EL. @ STA. A+75.00 ON PAGE 3C
REVISED STA., EL. & SLOPE FROM STA. A+75.00 TO STA. 3+03.47 ON PAGE 5A.
APPROVED: Sanly G. Ibali 9/18/87
DEPARTMENT OF PUBLIC WORKS

REVISION NO. 2 DATE:
REVISED STA. & EL. @ STA. 7+23.61 AND REVISED PIPE SIZE & SLOPE FROM STA. 0+70.00 TO STA. 7+23.61 ON PAGE 6
APPROVED: Sanly G. Ibali 5/4/88
DEPARTMENT OF PUBLIC WORKS

GENERAL NOTES:

1. ELEVATIONS ARE IN FEET ABOVE U.S.C. & G.S. SEA LEVEL DATUM OF 1929
2. NO REVISIONS SHALL BE MADE IN THESE PLANS WITHOUT THE APPROVAL OF THE **DIRECTOR OF PUBLIC WORKS.**
3. NO REPRESENTATIVE **OF THE DEPT. OF PUBLIC WORKS WILL SURVEY OR** LAY OUT ANY PORTION OF THE WORK.
4. GRADES TO WHICH THIS IMPROVEMENT IS TO BE CONSTRUCTED ARE SHOWN ON PLANS AND PROFILES. GRADE POINTS CONSIST OF CURB, CENTER LINE OF STREETS OR CENTER LINE OF ALLEYS ARE SHOWN BY CURVES ON PROFILES. AT ALL POINTS BETWEEN DESIGNATED POINTS THE GRADE SHALL BE ESTABLISHED SO AS TO CONFORM TO A STRAIGHT LINE DRAWN BETWEEN SAID DESIGNATED POINTS.
5. THE PRIVATE ENGINEER SHALL FURNISH **THE DEPT. OF PUBLIC WORKS WITH GRADE** SHEETS AND STATIONING FOR ALL HOUSE LATERALS AND "Y OR T" BRANCHES AND SHALL PROVIDE STAKES FOR THE MATTHEW PROPER LOCATIONS WITH STATION VS PLAN MARKED. ALL HOUSE LATERALS SHALL BE CONSTRUCTED IN A STRAIGHT ALIGNMENT AT RIGHT ANGLES TO THE MAIN, UNLESS AT EXCEPT AS SHOWN ON THE PLANS. HOUSE LATERALS FROM MANHOLES SHALL NOT HAVE AN ANGLE OF LESS THAN 45° WITH THE MAIN LINE SEWER. ANY CHANGE IN ALIGNMENT SHALL BE REQUESTED IN WRITING BY THE PRIVATE ENGINEER.
6. THE PRIVATE ENGINEER SHALL FURNISH THE HOUSE LATERAL DEPTH AT THE PROPERTY LINE BELOW THE TOP OF CURB ELEVATION FOR EACH HOUSE LATERAL ON THE GRADE SHEET.
7. NO WORK CAN BE STARTED THE CONTRACTOR MUST OBTAIN A PERMIT TO EXCAVATE IN COUNTY STREETS FROM THE **CONST. DIV. OF THE L.A. DEP. OF PUBLIC WORKS; PERMIT** OFFICE NO 6 AND PAY A FEE TO THE **DIRECTOR OF PUBLIC WORKS. 1550 ALCAZAR ST.** LOS ANGELES, CA. AN **$3** TO COVER THE COST OF CONSTRUCTION INSPECTION AND RECORD PLANS.
8. IF WORK IS TO BE DONE NEAR STATE HIGHWAY A PERMIT MUST BE OBTAINED FROM THE STATE OF CALIFORNIA DIVISION OF HIGHWAYS 120 SOUTH SPRING STREET, LOS ANGELES, CALIFORNIA.
9. APPROVAL OF THIS PLAN BY THE COUNTY OF LOS ANGELES DOES NOT CONSTITUTE A REPRESENTATION AS TO THE ACCURACY OF THE LOCATION OR THE EXISTENCE OR NON-EXISTENCE OF ANY UNDERGROUND UTILITY PIPE OR STRUCTURE WITHIN THE LIMITS OF THIS PROJECT. THIS NOTE APPLIES TO ALL PAGES.
10. REFER TO SECTION 7.1.4.1 OF THE STANDARD SPECIFICATIONS REGARDING SAFETY ORDERS.
11. PRIOR TO THE ISSUANCE OF THE REQUIRED SEWER CONSTRUCTION PERMIT, THE CONTRACTOR SHALL OBTAIN AND FILE WITH THE COUNTY ENGINEER COPIES OF A PERMIT TO EXCAVATE IN COUNTY STREETS FROM THE **CONST. DIV. OF THE DEPT. OF PUBLIC WORKS,** A PERMIT FOR EXCAVATIONS AND TUNNELS FROM THE STATE OF CALIFORNIA, DIVISION OF INDUSTRIAL SAFETY AND EVIDENCE OF WORKMEN'S COMPENSATION INSURANCE WITH THE DEPARTMENT OF **PUBLIC WORKS, 2250 ALCAZAR STREET,** RM **A240,** LOS ANGELES, CALIFORNIA AN **$5** NAMED AS THE CERTIFICATE HOLDER TO BE NOTIFIED 10 DAYS PRIOR TO CANCELLATION OF POLICY.

CONSTRUCTION NOTES:

1. WORK SHALL BE CONSTRUCTED ACCORDING TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION 1988 EDITION **WITH 1988 SUPPLEMENT UNDER OF PUBLIC WORKS SPECIAL PROVISIONS** FOR THE CONSTRUCTION OF SANITARY SEWERS DATED SEPTEMBER 21, 1964 AND SHALL BE EXECUTED TO THE SATISFACTION OF THE COUNTY ENGINEER **OF THE DEPT. OF PUBLIC WORKS.**
2. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION DIVISION – PUBLIC WORKS BY TELEPHONE (213) 258-8181, AT LEAST 24 HOURS BEFORE STARTING ANY WORK UNDER THIS CONTRACT.
3. HOUSE LATERALS TO BE CONSTRUCTED WITH INVERTS AT PROPERTY LINE 5 FEET BELOW CURB GRADE EXCEPT AS NOTED.
4. WYE OR TEE BRANCHES MAY BE USED FOR CONNECTIONS TO MAIN LINE SEWERS EXCEPT AS NOTED.
5. ALL STRUCTURES SHALL BE EITHER BRICK MANHOLES PER S.D. OR PRECAST CONCRETE MANHOLES PER S.D. EXCEPT AS NOTED.
6. PROVIDE STAKES ON THE PROPERTY LINE OR PROPERTY LINES PROJECTED AT RIGHT ANGLES TO THE SEWER LINE AT THE CENTER LINE OF EACH MANHOLE.
7. MANHOLE TOPS SHALL MATCH VEE RIGHTS OF AAA TO BE SIX INCHES ABOVE FINISHED SCALE.
8. VITRIFIED CLAY PIPE JOINTS SHALL BE TYPE "D" OR "I" PER STANDARD SPECIFICATIONS SECTION 208.2.
9. IF A POWER POLE IS WITHIN THREE FEET OF THE SEWER, THE TRENCH SHALL BE EXCAVATED TWO FEET EASIER THAN THE BOTTOM OF THE POLE FOUNDATION.
10. IF DURING THE COURSE OF CONSTRUCTION, IT IS DETERMINED THAT THERE IS LESS THAN FOUR FEET OF COVER OVER THE TOP OF A MAIN LINE OR HOUSE LATERAL SEWER WHICH IS NOT INDICATED ON THE PLANS, THE PIPE SHALL BE ENCASED PER S.D. CASE II UNLESS OTHERWISE APPROVED BY THE **DIRECTOR OF PUBLIC WORKS.**
11. ALL JOINTS BETWEEN CAST IRON PIPE AND STRUCTURES SHALL BE MADE WITH A RUBBER SLEEVE JOINT, TYPE "D OR U" WITH BUSHING IF NECESSARY, PER STANDARD SPECIFICATIONS SECTION 208.2.
12. SEWERS TO BE TESTED FOR LEAKAGE PER SECTION 306.4 OF THE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.
13. RESURFACE ALL TRENCHES WITHIN PAVED AREAS TO MEET L.A. COUNTY ROAD DEPT. OR CALIFORNIA STATE HIGHWAY REQUIREMENTS AS APPROPRIATE WITH THE PERMITS.
14. FOR COMPLIANCE WITH SECTION 306.1.5.2 OF THE **STANDARD SPECIFICATION** WILL BE REQUIRED FOR BACKFILL IN STREETS. CERTIFICATION OF BACKFILL COMPACTION AND SAND EQUIVALENCY BY A QUALIFIED, REGISTERED TESTING LABORATORY SHALL BE PROVIDED BY THE PERMITTEE PRIOR TO THE ISSUANCE OF A CERTIFICATE OF PARTIAL ACCEPTANCE.
15. SPECIAL BACKFILL IN PAVEMENT CONSTRUCTION: ALL BACKFILL TRENCH AND VERTICAL OTHER EARTH SO AS TO ACHIEVE THE NATURAL OR VARIED GRADES AND SLOPES SHOWN ON THE GRADING PLAN APPROVED BY THIS DEVELOPMENT BY THE **LAND DEVELOPMENT** DIVISION. ALL BACKFILL AND EARTH REPLACED SHALL BE COMPACTED TO A MINIMUM OF 90% OF MAXIMUM DENSITY PER A.S.T.M. D1557 METHOD OF TEST, LATEST AS MODIFIED. ACCEPTABLE CERTIFICATION OF SUCH COMPACTION SHALL BE SUBMITTED TO THE **CONSTRUCTION DIVISION, DEPT. OF PUBLIC WORKS.**

PROFILE, ALIGNMENT AND GRADE OF

PAGE 1 CB&S

SANITARY SEWERS

TO BE CONSTRUCTED IN

MILL VALLEY ROAD AND OTHER R/W

PRIVATE CONTRACT NO. 10445

INDEX A-42
3 SHEETS; 6 PAGES
SCALE: VERT. 1"=8' HORZ 1"=40'
JUNE, 1988
PREPARED IN THE OFFICES OF
ENGINEERING SERVICE CORPORATION
6219 BRISTOL PARKWAY, CULVER CITY, CA 90230 (213) 417-7559
BY: J.K. Kennedy
REG. C. E. No. 13095

53415

REGISTERED PROFESSIONAL ENGINEER JOHN KENNEY NEWVILLE No. 13095 Exp. 9-31-89 CIVIL STATE OF CALIFORNIA

THE FOLLOWING LATEST REVISED STANDARD PLANS ON FILE IN THE OFFICE OF THE **DEPT. OF PUBLIC WORKS SHALL APPLY** IN THE CONSTRUCTION OF THIS PROJECT.

LEGEND	S 1
MINIMUM PUBLIC SAFETY REQUIREMENTS	S 2
BRICK MANHOLE	S 3
STANDARD MANHOLE STEP	S 17
BEDDING FOR SEWER PIPE	S 21
CRADLING AND ENCASEMENT	S 23
WYE OR TEE BRANCH	S 26
EASEMENT WIDTHS	S 33
LOCKING MANHOLE FRAME AND COVER	S 35
NON-REINFORCED PRECAST CONCRETE MANHOLE	S 36
STANDARD MANHOLE TYPE "D"	S-1-204
STANDARD 24" MANHOLE FRAME & COVERS	S-1-207

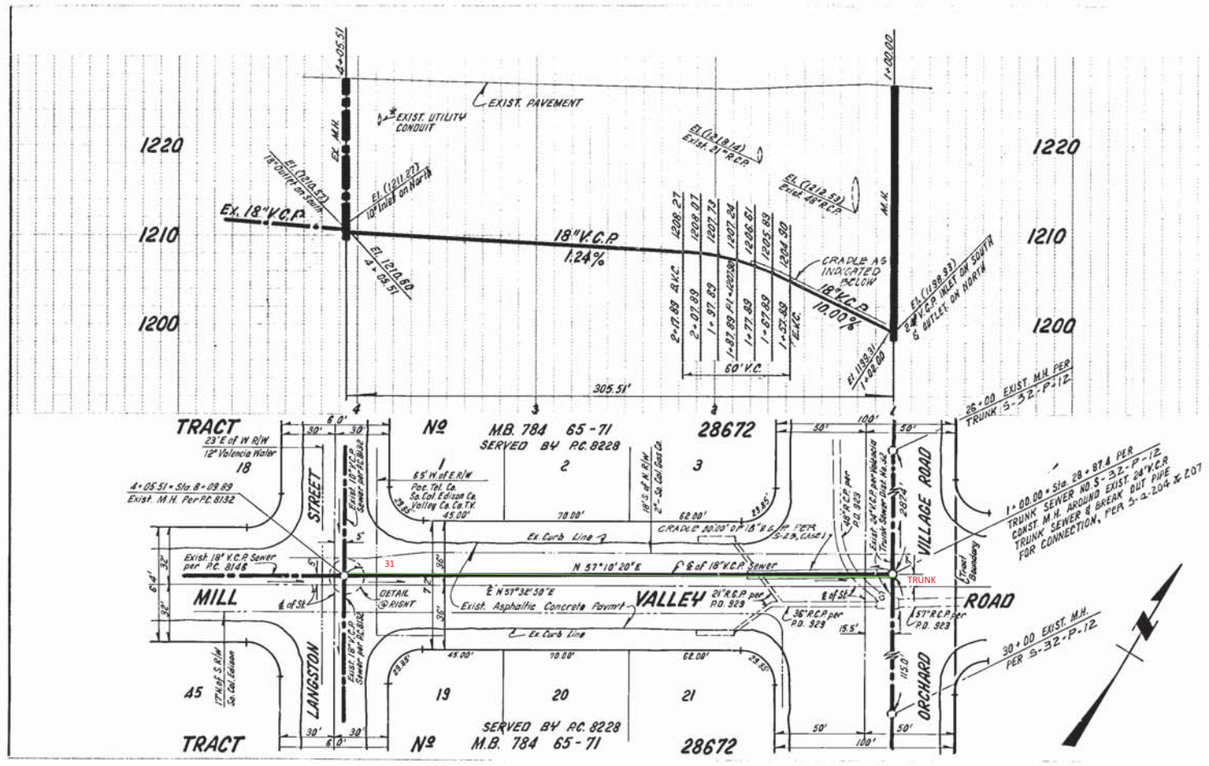
IN ADDITION THE FOLLOWING COUNTY SANITATION DISTRICT STANDARDS SHALL APPLY TO THE CONSTRUCTION OF THIS PROJECT.

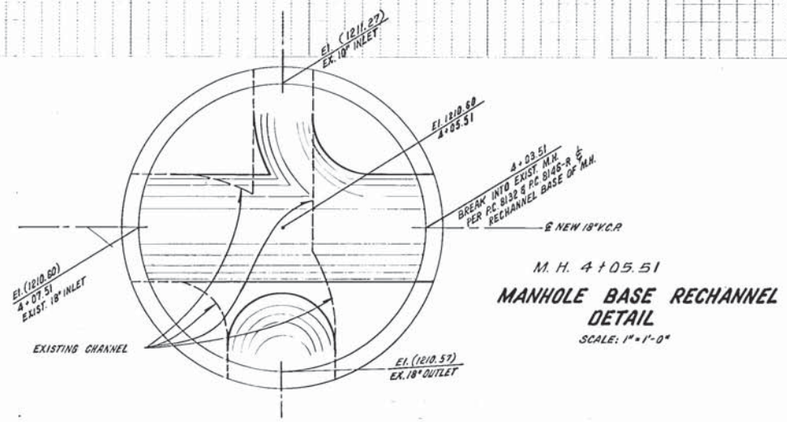
COUNTY OF LOS ANGELES, CALIFORNIA
THOMAS A. TIDEMANSON, DIRECTOR OF PUBLIC WORKS CHARLES W. CARRY, CHIEF ENGINEER

APPROVED Dean Efstathiou 8-3-87 (DATE) APPROVED Chas Glazer for CHIEF ENGINEER 8/6/87 (DATE) CO. DIST. 32
CHECKED F. Kenny Miller 7/30/87 (DATE)
I.D.C.E. NO. 16841
SANTA CLARITA VALLEY BLDG. DIST. 32

P. C. 10445 PAGE 2 CB&S
REVIEWED BY: Sanly G. Ibali DATE: 7/23/87

DOUBLE SCALE
NO L.A. CO. CHARGE FOR CONNECTIONS
SEE SAN. DIST. FOR SPECIAL CONNECTION CHARGES





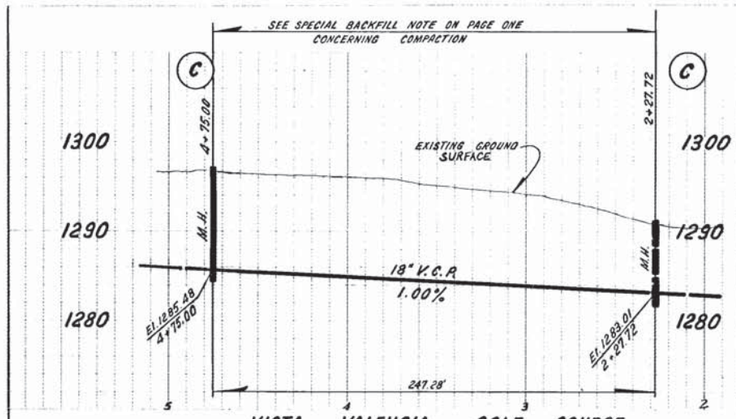
M. H. 4+05.51

MANHOLE BASE RECHANNEL DETAIL

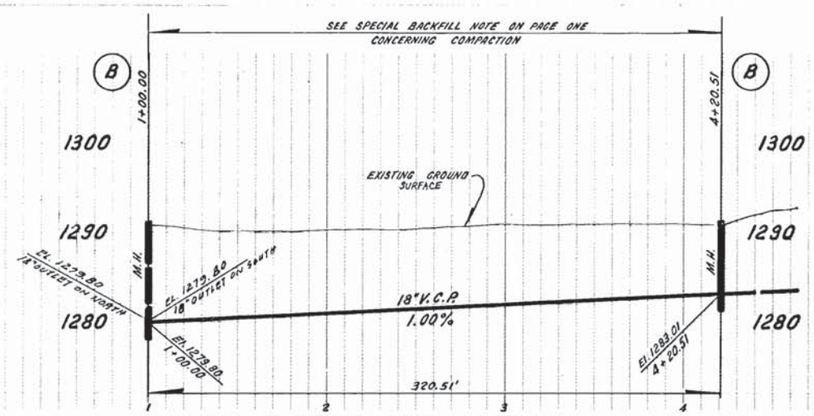
SCALE: 1"=1'-0"

BOARD MAP CONTROL

DOUBLE SCALE
NO L.A. CO. CHARGE FOR CONNECTIONS
SEE SAN. DIST. FOR SPECIAL CONNECTION CHARGES



VISTA VALENCIA GOLF COURSE
LOT 5 ST JOHN SUBDIVISION M.B. 196/304 - 308



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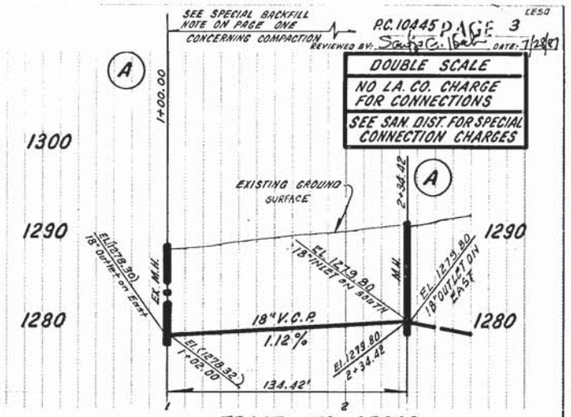
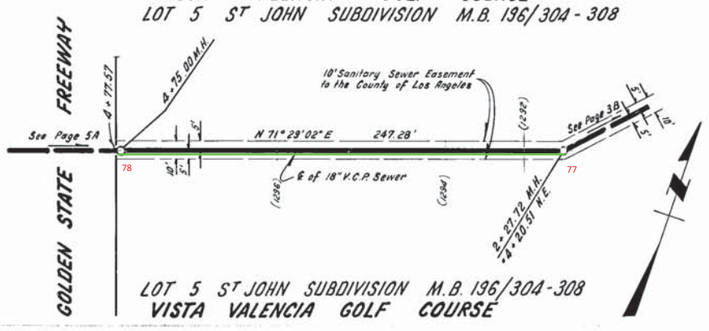
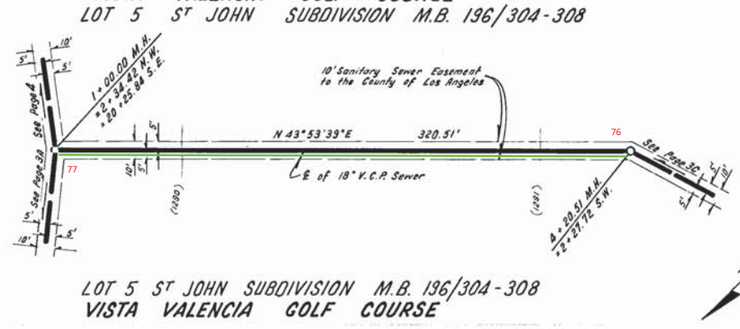


TRACT Nº 27288
M.B. 829/51-53



LOT 5 ST JOHN SUBDIVISION M.B. 196/304-308
VISTA VALENCIA GOLF COURSE

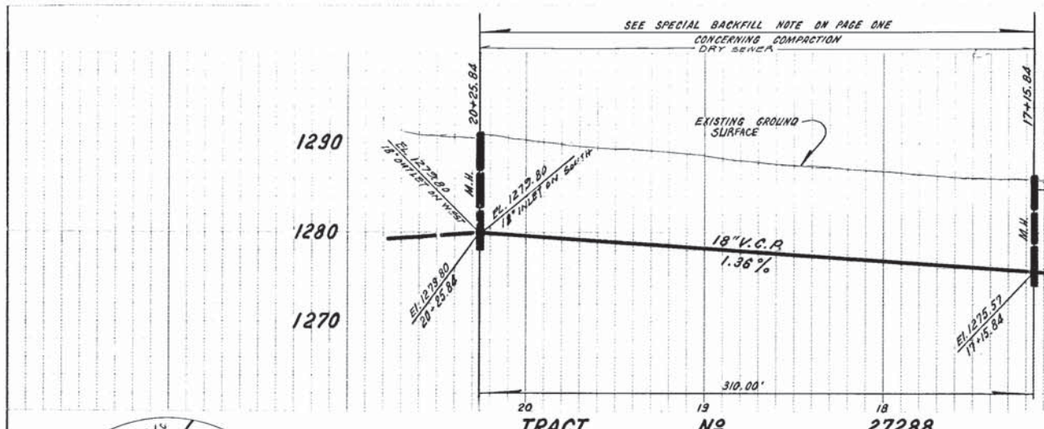


LOT 5 ST JOHN SUBDIVISION M.B. 196/304-308
VISTA VALENCIA GOLF COURSE



LOT 5 ST JOHN SUBDIVISION M.B. 196/304-308
VISTA VALENCIA GOLF COURSE

DOUBLE SCALE
NO L.A. CO. CHARGE FOR CONNECTIONS
SEE SAN. DIST. FOR SPECIAL CONNECTION CHARGES



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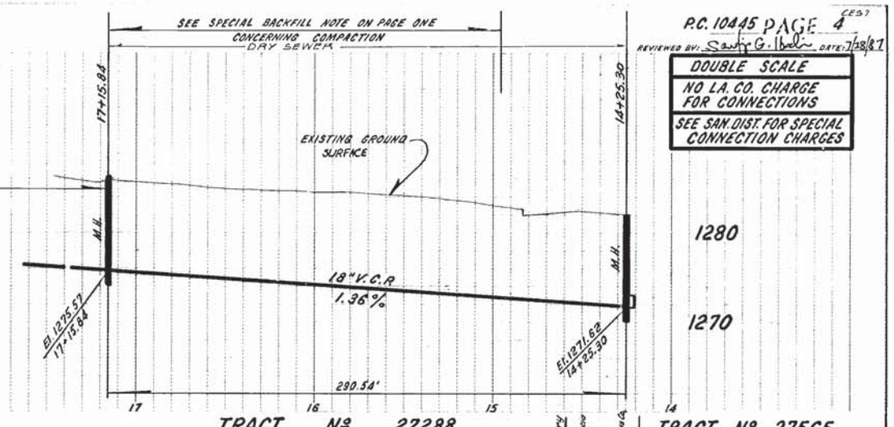
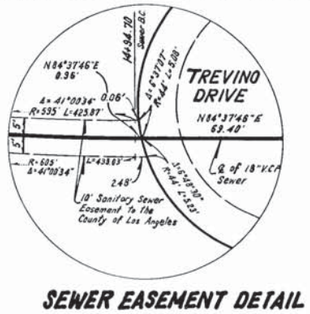


TRACT Nº 27288
M.B. 829/51-53

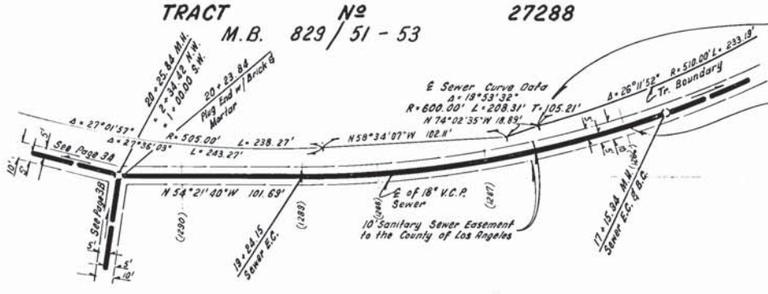
IDENTICAL POINTS

TRACT Nº 27288
M.B. 829/51-53

TRACT Nº 27565
M.B. 817/21-25

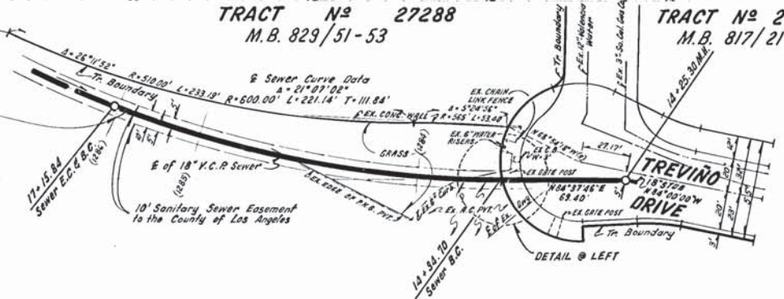


SEWER EASEMENT DETAIL
NO SCALE



LOT 5 ST JOHN SUBDIVISION M.B. 196/304-308
VISTA VALENCIA GOLF COURSE

"DRY SEWERS"

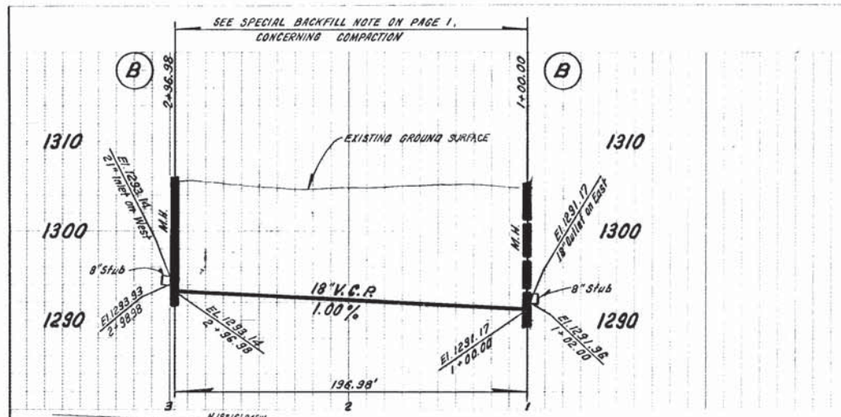


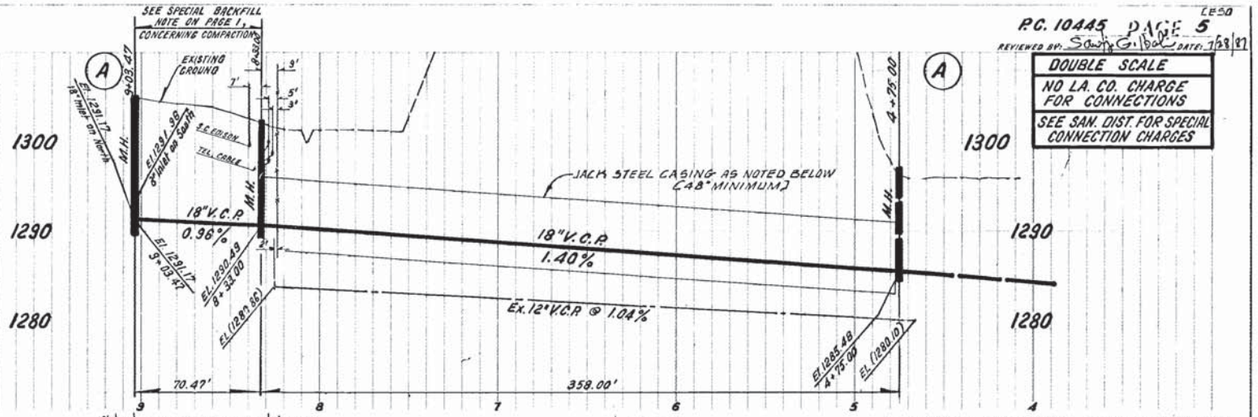
LOTS 5 & 8 ST JOHN SUBDIVISION M.B. 196/304-308
VISTA VALENCIA GOLF COURSE

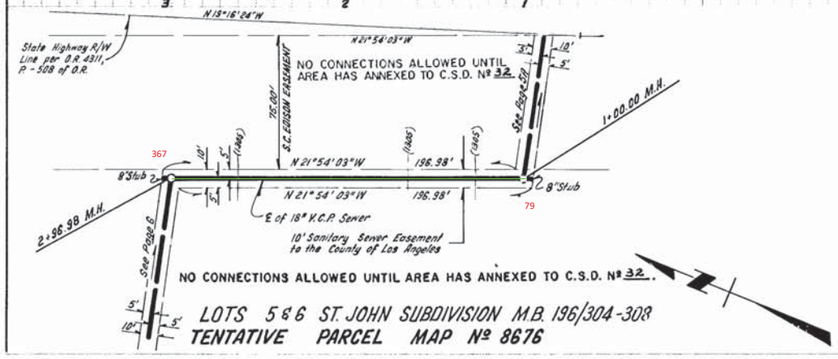
P.C. 10445 PAGE 5 LE50

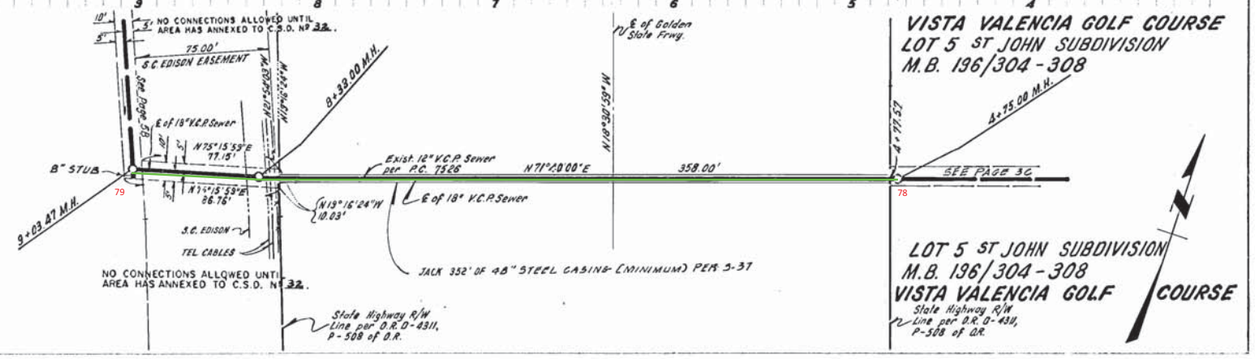
REVIEWED BY: Sandy G. Bol DATE: 7/28/87

DOUBLE SCALE
NO LA. CO. CHARGE FOR CONNECTIONS
SEE SAN. DIST. FOR SPECIAL CONNECTION CHARGES





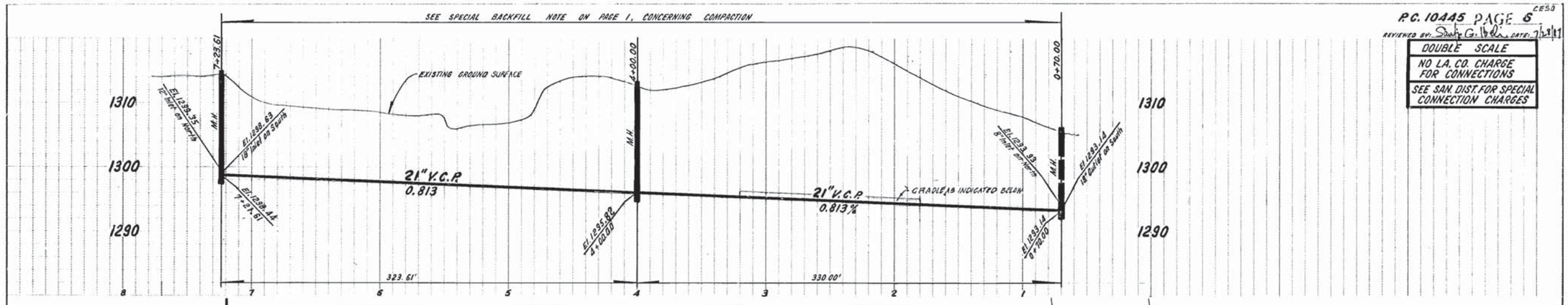


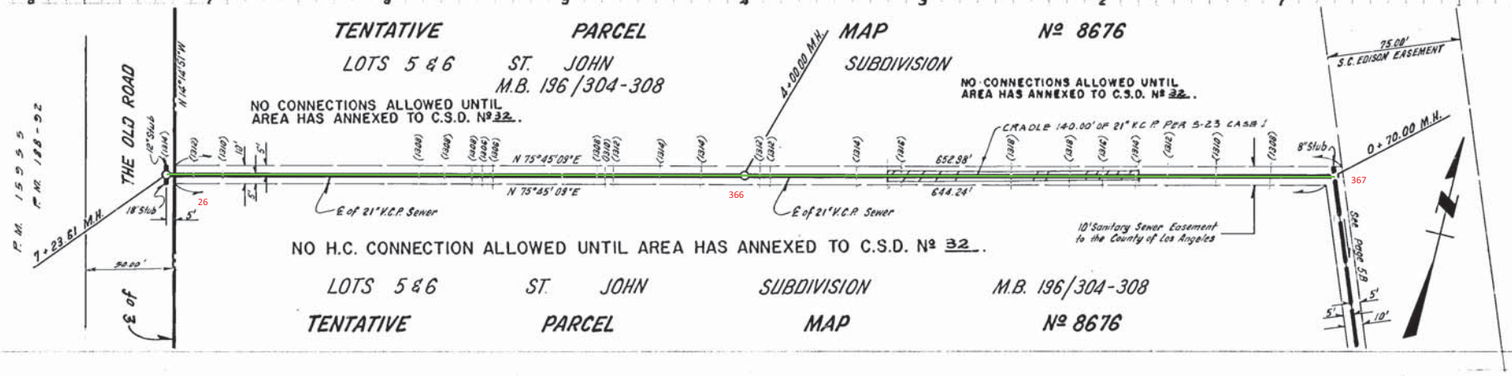


P.C. 10445 PAGE 6 LE50

REVIEWED BY: Sandy G. Bol DATE: 7/28/87

DOUBLE SCALE
NO LA. CO. CHARGE FOR CONNECTIONS
SEE SAN. DIST. FOR SPECIAL CONNECTION CHARGES





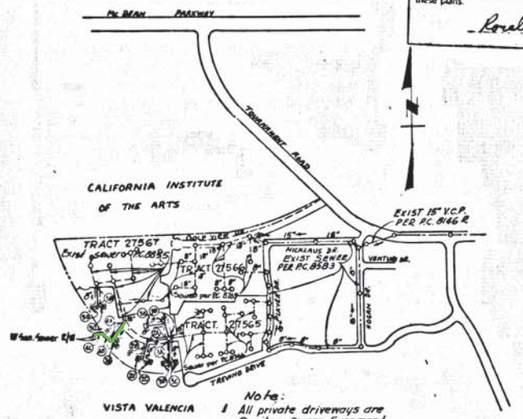
27288

B.M. B.L. 642 ELEV. 1262.066
Rd. Dept. B.M. tag in N. side of Conc. base @ I.T.E. cor. Balboa Tower, N 173,373.3, 35' S. of ℄ of Lyons Ave & 30' E. of ℄ of Whitley Cyn. Rd.
Newhall QUAD. 1965

NOTICE TO CONTRACTOR

The existence and location of any underground utility pipes or structures shown on these plans are obtained by a search of the available records. To the best of my knowledge there are no existing utilities except as shown on these plans.
The contractor is required to take due precautionary measures to protect the utility lines shown and any other lines not on record or not shown on these plans.

Ronald R. Horn 16913 R.C.E.



Note:
1. All private driveways are Sanitary Sewer Easement.
2. Numbers in circle indicate page number

LOT 75 NOT SERVED, COMMON LOT FOR SLOPE ONLY

LOT 76 IS SERVED BY P.C. 8855

(PAGES 4 & 5) ISSUE NO PERMITS UNTIL P.C. 8855 AND P.C. 8760 ARE ACCEPTED

GENERAL NOTES:

1. ELEVATIONS ARE IN FEET ABOVE U.S.C. & G.S. SEA LEVEL DATUM OF 1929.
2. NO REVISIONS SHALL BE MADE IN THESE PLANS WITHOUT THE APPROVAL OF THE COUNTY ENGINEER.
3. NO REPRESENTATIVE OF THE COUNTY ENGINEER WILL SURVEY OR LAY OUT ANY PORTION OF THE WORK.
4. GRADES TO WHICH THIS IMPROVEMENT IS TO BE CONSTRUCTED ARE SHOWN ON PLANS AND PROFILES. GRADE POINTS FOR TOP OF CURBS, CENTER LINE OF STREETS, OR CENTER LINE OF ALLEYS ARE SHOWN BY CIRCLES ON PROFILES. AT ALL POINTS BETWEEN DESIGNATED POINTS THE GRADE SHALL BE ESTABLISHED SO AS TO CONFORM TO A STRAIGHT LINE DRAWN BETWEEN SAID DESIGNATED POINTS.
5. THE PRIVATE ENGINEER SHALL FURNISH THE COUNTY ENGINEERS WITH GRADE SHEETS AND STATIONING FOR ALL HOUSE LATERALS AND "Y" OR "T" BRANCHES AND SHALL PROVIDE STAKES PLACE THEM AT THEIR PROPER LOCATIONS WITH STATIONING PLAINLY MARKED. ALL HOUSE LATERALS SHALL BE CONSTRUCTED IN A STRAIGHT ALIGNMENT AT RIGHT ANGLES FROM THE MAIN LINE SEWER EXCEPT AS SHOWN ON THE PLANS. HOUSE LATERALS FROM CHIMNEYS SHALL NOT HAVE AN ANGLE OF LESS THAN 45° WITH THE MAIN LINE SEWER. ANY CHANGE IN ALIGNMENT SHALL BE REQUESTED IN WRITING BY THE PRIVATE ENGINEER.
6. THE PRIVATE ENGINEER SHALL FURNISH THE HOUSE LATERAL DEPTH AT THE PROPERTY LINE BELOW THE TOP OF CURB ELEVATION FOR EACH HOUSE LATERAL ON THE GRADE SHEET. 20' ℄ OF ALLEY
7. BEFORE WORK CAN BE STARTED, THE CONTRACTOR MUST PAY A FEE TO THE COUNTY ENGINEER, SANITATION DISTRICT WITH HE 9950 E. IMPERIAL HIGHWAY, DOWNEY OR NEWHALL REGIONAL OFFICE, TO COVER THE COST OF CONSTRUCTION INSPECTION AND RECORD PLANS.
8. IF WORK IS TO BE DONE IN A STATE HIGHWAY, A PERMIT MUST BE OBTAINED FROM THE STATE OF CALIFORNIA, DIVISION OF HIGHWAYS, 120 SOUTH SPRING STREET, LOS ANGELES, CALIFORNIA.
9. APPROVAL OF THIS PLAN BY THE COUNTY OF LOS ANGELES DOES NOT CONSTITUTE A REPRESENTATION AS TO THE ACCURACY OF THE LOCATION OF OR THE EXISTENCE OR NON-EXISTENCE OF ANY UNDERGROUND UTILITY PIPE, OR STRUCTURE WITHIN THE LIMITS OF THIS PROJECT. THIS NOTE APPLIES TO ALL PAGES.
10. REFER TO SECTION 7-10.6.3 OF THE STANDARD SPECIFICATIONS, REGARDING SAFETY ORDERS.

County Sanitation Districts shall be notified prior to the following so that required inspection can be made (Phone 337-1025 x # 538-1161)

Acceptance of the project.

No connections for the disposal of industrial wastes shall be made to sewers shown on these drawings without written permission from the Chief Engineer and General Manager of the County Sanitation Districts.

CONSTRUCTION NOTES:

1. WORK SHALL BE CONSTRUCTED ACCORDING TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (1970 EDITION WITH 1971/1972 SUPPLEMENTS) AND COUNTY ENGINEER SPECIAL PROVISIONS FOR THE CONSTRUCTION OF SANITARY SEWERS DATED APRIL 10, 1972, AND SHALL BE PROSECUTED ONLY IN THE PRESENCE OF THE COUNTY ENGINEER.
2. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION DIVISION BY TELEPHONE, ALHAMBRA 9-4747, EXT. 61551, AT LEAST TWENTY-FOUR HOURS BEFORE STARTING ANY WORK UNDER THIS CONTRACT.
3. HOUSE LATERALS TO BE CONSTRUCTED WITH INVERTS AT PROPERTY LINE 6 FEET BELOW CURB GRADE, ONE ℄ OF ALLEY
4. WYE OR TEE BRANCHES MAY BE USED FOR CONNECTIONS TO MAINLINE SEWERS EXCEPT AS NOTED.
5. ALL STRUCTURES SHALL BE EITHER BRICK MANHOLES PER S-3 OR PRECAST CONCRETE MANHOLES PER S-36.
6. PROVIDE STAKES ON THE PROPERTY LINE OR PROPERTY LINES PRODUCED AT RIGHT ANGLES TO THE SEWER LINE AT THE CENTER LINE OF EACH MANHOLE.
7. MANHOLE TOPS IN IMPROVED RIGHTS OF WAY TO BE LEVEL WITH FINISHED GRADE.
8. VITRIFIED CLAY PIPE JOINTS SHALL BE TYPE "B", "F", OR "G" PER STANDARD SPECIFICATIONS SECTION 208-2.
9. IF A POWER POLE IS WITHIN THREE FEET OF THE SEWER, THE SEWER SHALL BE ENCASED, PER S-25, CASE II, TWO FEET ON EACH SIDE FROM THE POINT OF INTERFERENCE.
10. IF DURING THE COURSE OF CONSTRUCTION IT IS DETERMINED THAT THERE IS LESS THAN FOUR FEET OF COVER OVER THE TOP OF A MAIN LINE OR HOUSE LATERAL V.C.P. SEWER WHICH IS NOT INDICATED ON THE PLANS, THE PIPE SHALL BE ENCASED PER S-25, CASE II UNLESS OTHERWISE APPROVED BY THE COUNTY ENGINEER.
11. ALL JOINTS BETWEEN CAST IRON PIPE AND VITRIFIED CLAY PIPE SHALL BE MADE WITH A RUBBER SLEEVE JOINT, TYPE "C" OR "B", (WITH BUSHING IF NECESSARY) PER STANDARD SPECIFICATIONS, SECTION 208-2.
12. SEWERS TO BE TESTED FOR LEAKAGE PER SECTION 306-7.3.2 OF THE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.
13. SEWER PIPE BEDDING SHALL CONFORM TO S-21
14. SPECIAL BACKFILL IN DESIGNATED AREAS
   (a) Backfill trench and replace other earth removed so as to achieve the natural or finished grade & slope shown on the grading plan approved for this tract by the Building & Safety Division.
   (b) All backfill & earth replaced shall be compacted to a minimum of 98% of the max. density per ASTM Standard method of test D698-57T as modified.
   Acceptable certification of such compaction shall be submitted to the Construction Div.

PROFILE, ALIGNMENT AND GRADE OF

SANITARY SEWERS

PAGE 1

CONSTRUCTED IN

TRACT NO. 27288

PRIVATE CONTRACT NO. 8854

INDEX 252 113
W.S. 63

3 SHEETS; 5 PAGES

44070

SCALE: VERT. 1"=5' HORIZ. 1"=50' OCTOBER, 1972

PREPARED IN THE OFFICES OF
SIKAND ENGINEERING ASSOCIATES
18205 BURBANK BLVD., VAN NUYS, CALIF. 91401

BY: Ronald K. Horn
REG. C. E. No. 16913

THE FOLLOWING LATEST REVISED STANDARD PLANS ON FILE IN THE OFFICE OF THE COUNTY ENGINEER SHALL APPLY IN THE CONSTRUCTION OF THIS PROJECT.

LEGEND	S-1
MINIMUM PUBLIC SAFETY REQUIREMENTS	S-2
BRICK MANHOLE	S-3
STANDARD MANHOLE STEP	S-27
BEDDING FOR SEWER PIPE	S-29
CRADLING AND ENCASEMENT	S-33
WYE OR TEE SUPPORT	S-34
ALLOWABLE TRENCH WIDTHS	S-35
LOCKING MANHOLE FRAME AND COVER	S-37
NON-REINFORCED PRECAST CONCRETE MANHOLE	S-39

COUNTY OF LOS ANGELES, CALIFORNIA

HARVEY T. BRANDT, COUNTY ENGINEER JOHN D. PARKHURST, CHIEF ENGINEER

CHAIRMAN, BD. OF SUP. 32

APPROVED [signature] 12/15/72 APPROVED [signature]
REGIONAL ENGINEER DATED OFFICE ENGINEER

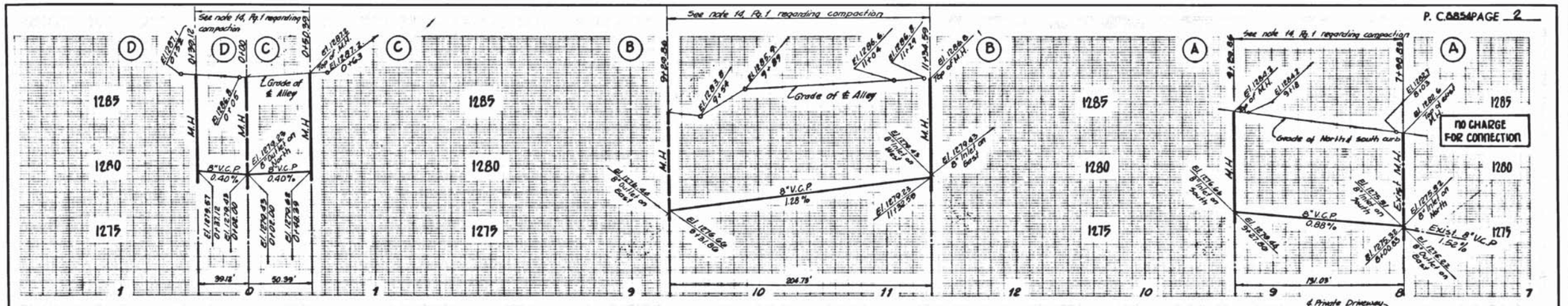
CHECKED [signature] 12-15-72
DATED

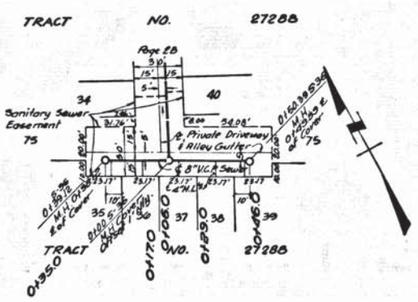
BRD. C.E. NO. 16390

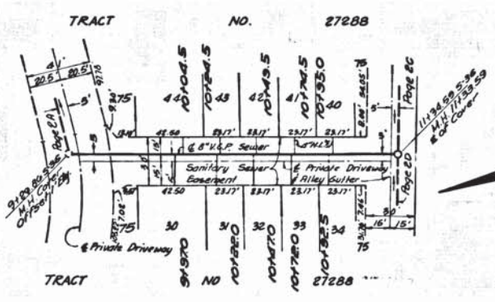
NEWHALL BLDG. DIST. 8.2

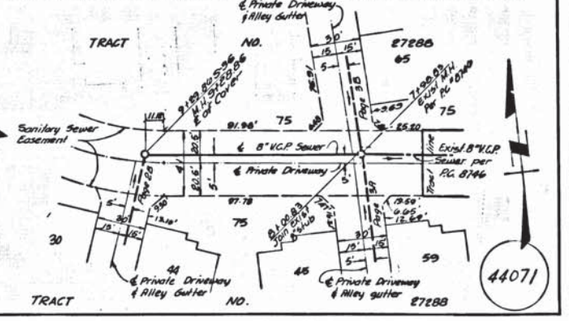
J.N. 0150.02

P. C. 8854 PAGE 2





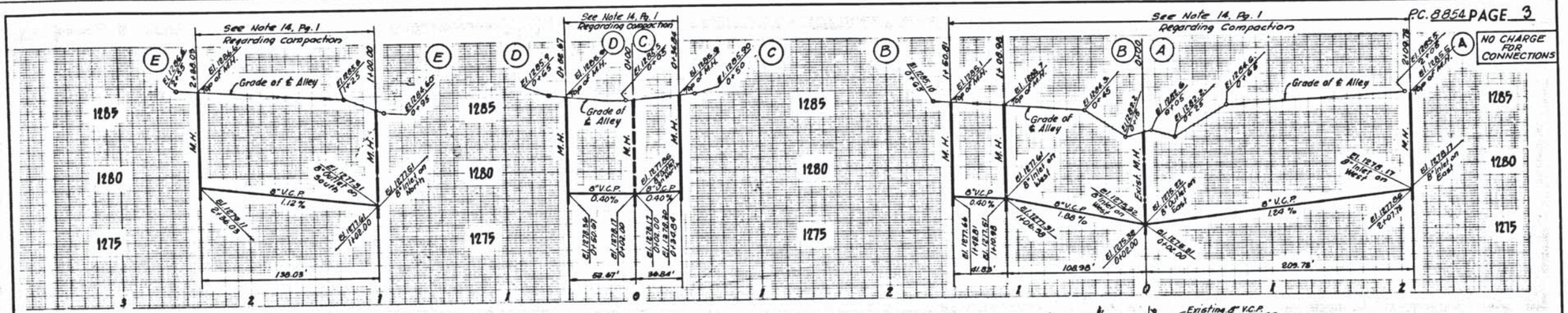


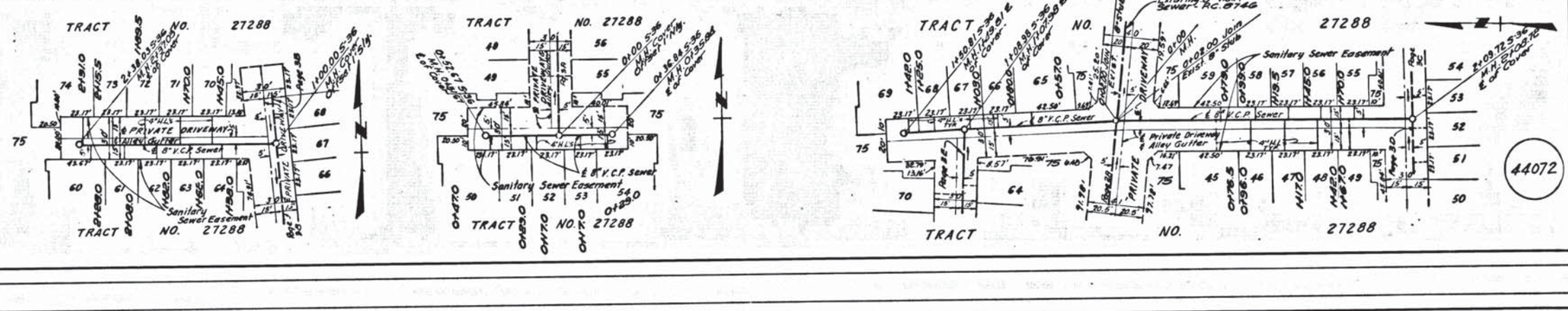


44071

P.C. 8854 PAGE 3

NO CHARGE FOR CONNECTIONS

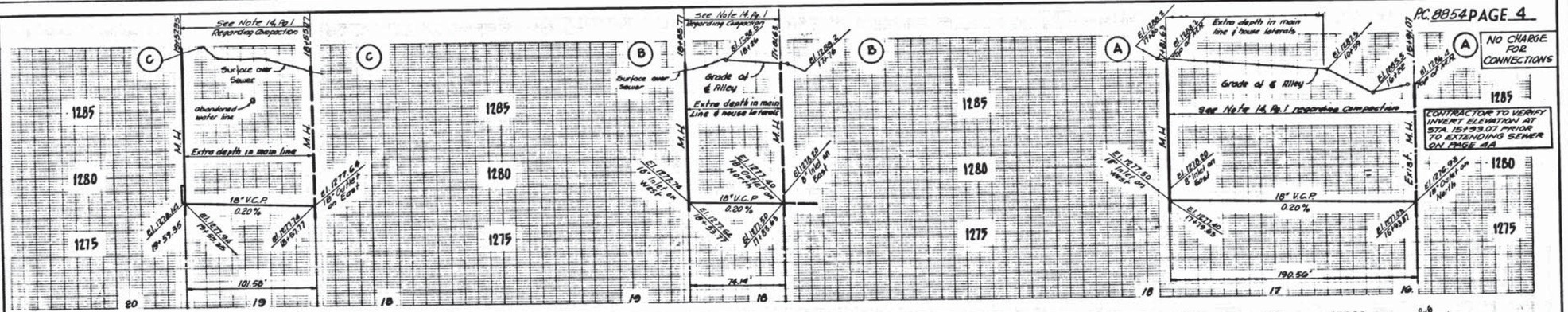


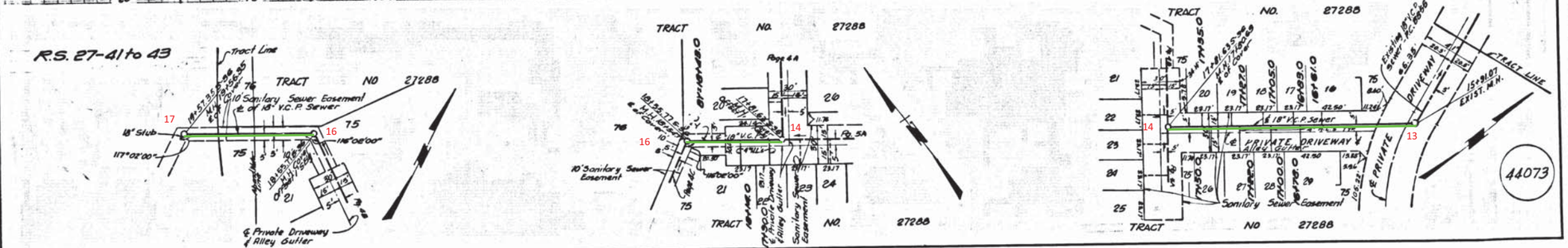


P.C. 8854 PAGE 4

NO CHARGE FOR CONNECTIONS

CONTRACTOR TO VERIFY INVERT ELEVATION AT STA. 151+93.07 PRIOR TO EXTENDING SEWER ON PAGE 4A





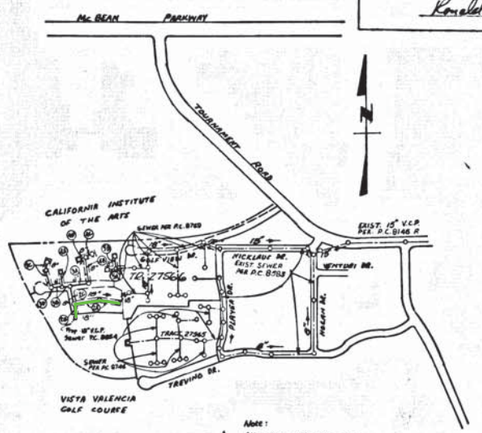
B.M. B.L. 642 ELEV. 1262.066
RD. Dept. B.M. tag in N. side of conc. base @ N.E. cor. Edison tower. Mt. M-3T3W5-3, 35' S. of ℄ of Lyons Ave. & 30' E. of ℄ of Wiley Canyon RD.
Newhall QUAD. 1965

NOTICE TO CONTRACTOR

The existence and location of any underground utility pipes or structures shown on these plans are obtained by a search of the available records. To the best of my knowledge there are no existing utilities except as shown on these plans.

The contractor is required to take due precautionary measures to protect the utility lines shown and any other lines not of record or not shown on these plans.

Ronald R. Horn 16913 R.C.E.



INDEX MAP
P.C. 8855
TRACT № 27567
SCALE: 1" = 500'

Note:
1. All private driveways are sanitary sewer easements
2. Figures in circles indicate page numbers

LOTS 78 & 79 NOT SERVED, COMMON LOTS FOR SLOPE ONLY

GENERAL NOTES:

1. ELEVATIONS ARE IN FEET ABOVE U.S.C. & G.S. MEAN LOWER DATUM OF 1929.
2. NO REVISIONS SHALL BE MADE IN THESE PLANS WITHOUT THE APPROVAL OF THE COUNTY ENGINEER.
3. NO REPRESENTATIVE OF THE COUNTY ENGINEER WILL SURVEY OR LAY OUT ANY PORTION OF THE WORK.
4. GRADES TO WHICH THIS IMPROVEMENT IS TO BE CONSTRUCTED ARE SHOWN ON PLANS AND PROFILES. GRADE POINTS FOR TOP OF CURBS, CENTER LINE OF STREETS, OR CENTER LINE OF ALLEYS ARE SHOWN BY CIRCLES ON PROFILES. AT ALL POINTS BETWEEN DESIGNATED POINTS THE GRADE SHALL BE ESTABLISHED SO AS TO CONFORM TO A STRAIGHT LINE DRAWN BETWEEN SAID DESIGNATED POINTS.
5. THE PRIVATE ENGINEER SHALL FURNISH THE COUNTY ENGINEER WITH GRADE SHEETS AND STATIONING FOR ALL HOUSE LATERALS AND "Y" OR "T" BRANCHES AND SHALL PROVIDE STAKES FOR THEM AT THEIR PROPER LOCATIONS WITH STATIONING PLAINLY MARKED. ALL HOUSE LATERALS SHALL BE CONSTRUCTED IN A STRAIGHT ALIGNMENT AT RIGHT ANGLES FROM THE MAIN LINE SEWER EXCEPT AS SHOWN ON THE PLANS. HOUSE LATERALS FROM CHIMNEYS SHALL NOT HAVE AN ANGLE OF LESS THAN 45° WITH THE MAIN LINE SEWER. ANY CHANGE IN ALIGNMENT SHALL BE REQUESTED IN WRITING BY THE PRIVATE ENGINEER.
6. THE PRIVATE ENGINEER SHALL FURNISH THE HOUSE LATERAL DEPTH AT THE PROPERTY LINE BELOW THE TOP OF CURB ELEVATION FOR EACH HOUSE LATERAL ON THE GRADE SHEET. ℄ OF ALLEY
7. BEFORE WORK CAN BE STARTED, THE CONTRACTOR MUST PAY A FEE TO THE COUNTY ENGINEER, SANITATION DIVISION, ROOM 19, BLDG. 2, IMPERIAL HIGHWAY, DOWNEY OR NEWHALL REGIONAL OFFICE, TO COVER THE COST OF CONSTRUCTION INSPECTION AND RECORD PLANS.
8. IF WORK IS TO BE DONE IN A STATE HIGHWAY, A PERMIT MUST BE OBTAINED FROM THE STATE OF CALIFORNIA, DIVISION OF HIGHWAYS, 120 SOUTH SPRING STREET, LOS ANGELES, CALIFORNIA.
9. APPROVAL OF THIS PLAN BY THE COUNTY OF LOS ANGELES DOES NOT CONSTITUTE A REPRESENTATION AS TO THE ACCURACY OF THE LOCATION OF OR THE EXISTENCE OR NON EXISTENCE OF ANY UNDERGROUND UTILITY PIPE, OR STRUCTURE WITHIN THE LIMITS OF THIS PROJECT. THIS NOTE APPLIES TO ALL PAGES.
10. REFER TO SECTION 7-10.4.3 OF THE STANDARD SPECIFICATIONS, REGARDING SAFETY ORDERS.

County Sanitation Districts shall be notified prior to the following so that required inspection can be made (Phone 337-1025 : x 638-1161)

Acceptance of the project.

No connections for the disposal of industrial wastes shall be made to sewers shown on these drawings without written permission from the Chief Engineer and General Manager of the County Sanitation Districts.

CONSTRUCTION NOTES:

1. WORK SHALL BE CONSTRUCTED ACCORDING TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (1970 EDITION WITH 1972 SUPPLEMENTS) AND COUNTY ENGINEER SPECIAL PROVISIONS FOR THE CONSTRUCTION OF SANITARY SEWERS DATED APRIL 10, 1972 AND SHALL BE PROSECUTED ONLY IN THE PRESENCE OF THE COUNTY ENGINEER.
2. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION DIVISION BY TELEPHONE, IN UNION 9-01, EXT. 51383, AT LEAST TWENTY-FOUR HOURS BEFORE STARTING ANY WORK UNDER THIS CONTRACT.
3. HOUSE LATERALS TO BE CONSTRUCTED WITH INVERTS AT PROPERTY LINE & FIRST BELOW CURB GRADE GIVE ℄ OF ALLEY
4. WYE OR TEE BRANCHES MAY BE USED FOR CONNECTIONS TO MAINLINE SEWERS EXCEPT AS NOTED.
5. ALL STRUCTURES SHALL BE EITHER BRICK MANHOLES PER S-3 OR PRECAST CONCRETE MANHOLES PER S-26.
6. PROVIDE STAKES ON THE PROPERTY LINE OR PROPERTY LINES PRODUCED AT RIGHT ANGLES TO THE SEWER LINE AT THE CENTER LINE OF EACH MANHOLE.
7. MANHOLE TOPS IN IMPROVED RIGHTS OF WAY TO BE LEVEL WITH FINISHED GRADE.
8. VITRIFIED CLAY PIPE JOINTS SHALL BE TYPE "S", "I", OR "O" PER STANDARD SPECIFICATIONS SECTION 208-2.
9. IF A POWER POLE IS WITHIN THREE FEET OF THE SEWER, THE SEWER SHALL BE ENCASED, PER S-23, CASE II, TWO FEET ON EACH SIDE FROM THE POINT OF INTERFERENCE.
10. IF DURING THE COURSE OF CONSTRUCTION IT IS DETERMINED THAT THERE IS LESS THAN FOUR FEET OF COVER OVER THE TOP OF A MAIN LINE OR HOUSE LATERAL V.C.P. SEWER WHICH IS NOT INDICATED ON THE PLANS, THE PIPE SHALL BE ENCASED PER S-23, CASE II UNLESS OTHERWISE APPROVED BY THE COUNTY ENGINEER.
11. ALL JOINTS BETWEEN CAST IRON PIPE AND VITRIFIED CLAY PIPE SHALL BE MADE WITH A RUBBER SLEEVE JOINT, TYPE "C" OR "S", (WITH BUSHING IF NECESSARY) PER STANDARD SPECIFICATIONS, SECTION 208-2.
12. SEWERS TO BE TESTED FOR LEAKAGE PER SECTION 306-2.2.7 OF THE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.
13. SEWER PIPE SHOWN AS SHALL CONFORM TO S-22

14. SPECIAL BACKFILL IN DESIGNATED AREAS
(a) Backfill trench and replace other earth removed as necessary to achieve the natural or finished grade & slope shown on the grading plan approved for this tract by the Building & Safety Division
(b) All backfill & earth replaced shall be compacted to a min. of 90% of the max density per ASTM Standard Method of Test D698-71T as modified
Acceptable certification of such compaction shall be submitted to the Construction Division

PROFILE, ALIGNMENT AND GRADE OF

SANITARY SEWERS

PAGE 1

CONSTRUCTED IN

TRACT Nº 27567

PRIVATE CONTRACT NO. 8855

INDEX 852 & 119
W.S. 63

9 SHEETS; 8 PAGES

SCALE: VERT. 1"=4' HORIZ. 1"=40' OCTOBER, 1972

PREPARED IN THE OFFICES OF

Sikand Engineering Associates, Inc.
18205 BURBANK BOULEVARD
VAN NUYS, CALIFORNIA 91401

BY Ronald R. Horn RCE № 10913

44011

THE FOLLOWING LATEST REVISED STANDARD PLANS ON FILE IN THE OFFICE OF THE COUNTY ENGINEER SHALL APPLY IN THE CONSTRUCTION OF THIS PROJECT.

LEGEND	
MINIMUM PUBLIC SAFETY REQUIREMENTS	S-1
BRICK MANHOLE	S-2
STANDARD MANHOLE STEP	S-27
BEDDING FOR SEWER PIPE	S-21
CRADLING AND ENCASEMENT	S-23
WYE OR TEE SUPPORT	S-24
ALLOWABLE TRENCH WIDTHS	S-25
LOCKING MANHOLE FRAME AND COVER	S-25
NON-REINFORCED PRECAST CONCRETE MANHOLE	S-26

COUNTY OF LOS ANGELES, CALIFORNIA

HARVEY T. BRANDT, COUNTY ENGINEER JOHN D. PARKHURST, CHIEF ENGINEER

APPROVED [signature] REGIONAL ENGINEER 12-15-72 (DATE) APPROVED [signature] SAN DIST. OFFICE ENGINEER

CHECKED [signature] (DATE)

SAN. C.I. NO. 14990

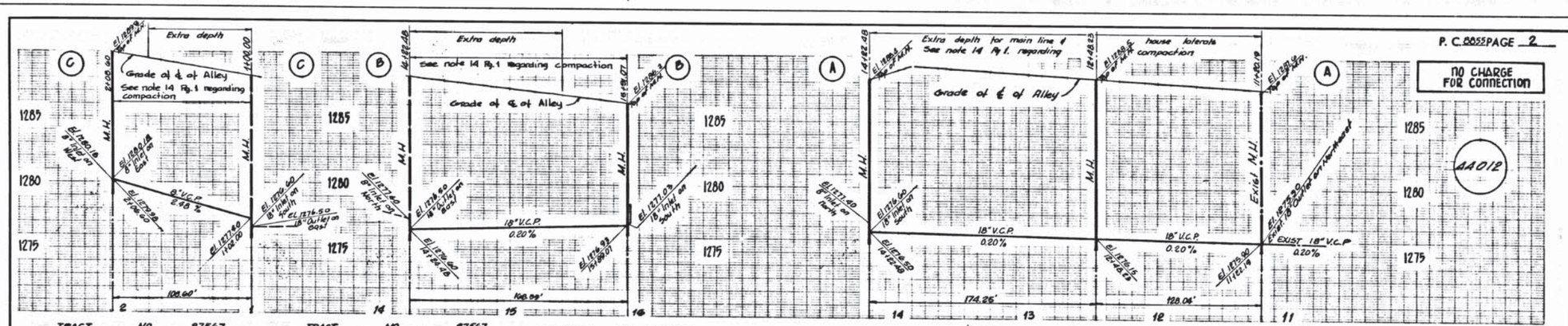
Newhall BLDG. DIST. 82

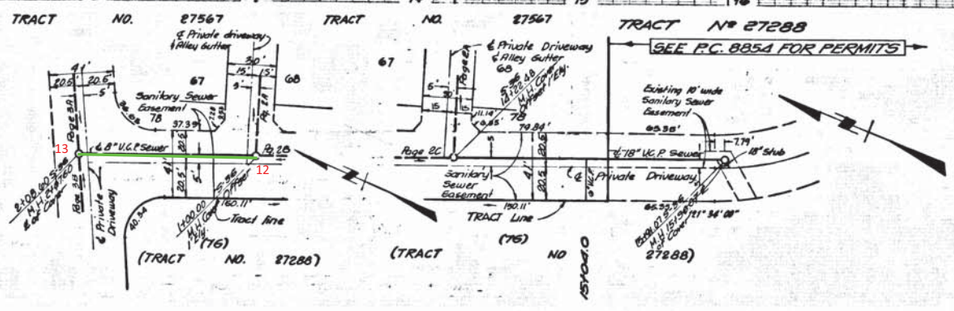
J.N. 0250.02

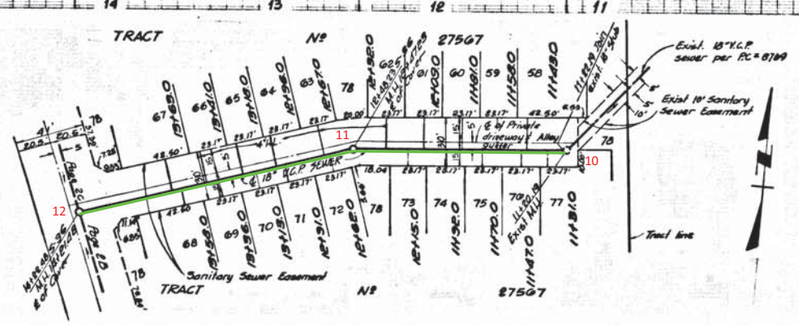
P. C. 8855 PAGE 2

NO CHARGE FOR CONNECTION

44012





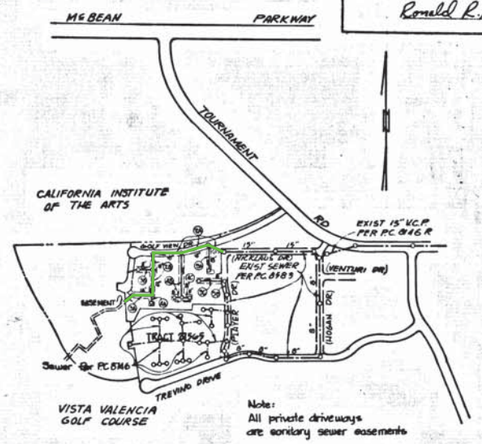


B.M. B.L. 642 ELEV. 1262.066
ROAD DEPT. B.M. TAG IN N. SIDE OF CONCRETE BASE AT N.E. COR. EDISON TOWER NO. M-37 S W3. 35'S. OF ℄ OF LYONS AVE 230'E. OF WILEY CYN. ROAD
NEWHALL QUAD. 1965

NOTICE TO CONTRACTOR

The existence and location of any underground utility pipes or structures shown on these plans are obtained by a search of the available records. To the best of my knowledge there are no existing utilities except as shown on these plans.
The contractor is required to take due precautionary measures to protect the utility lines shown and any other lines not of record or not shown on these plans.

Ronald R. Horn 16913 R.C.E.



Note:
All private driveways are sanitary sewer easements

INDEX MAP
SCALE: 1"=500'
P.C. 8769

Full compliance with section 306-1.9.3 of the special provisions will be required for backfill in streets. Certification of backfill compation & sand equivalents by a qualified, registered testing laboratory shall be provided by the permittee prior to the issuance of a certificate of partial acceptance

Lot 75 not served
Common lot for slope only

Issue no house conn. permits until P.C. 8588 is accepted.

GENERAL NOTES:

1. ELEVATIONS ARE IN FEET ABOVE U.S.C. & G.S. SEA LEVEL DATUM OF 1929.
2. NO REVISIONS SHALL BE MADE IN THESE PLANS WITHOUT THE APPROVAL OF THE COUNTY ENGINEER.
3. NO REPRESENTATIVE OF THE COUNTY ENGINEER WILL SURVEY OR LAY OUT ANY PORTION OF THE WORK.
4. GRADES TO WHICH THIS IMPROVEMENT IS TO BE CONSTRUCTED ARE SHOWN ON PLANS AND PROFILES. GRADE POINTS FOR TOP OF CURBS, CENTER LINE OF STREETS, OR CENTER LINE OF ALLEYS ARE SHOWN BY CIRCLES ON PROFILES. AT ALL POINTS BETWEEN DESIGNATED POINTS THE GRADE SHALL BE ESTABLISHED SO AS TO CONFORM TO A STRAIGHT LINE DRAWN BETWEEN SAID DESIGNATED POINTS.
5. THE PRIVATE ENGINEER SHALL FURNISH THE COUNTY ENGINEER WITH GRADE SHEETS AND STATIONING FOR ALL HOUSE LATERALS AND "Y" OR "T" BRANCHES AND SHALL PROVIDE STAKES FOR THEM AT THEIR PROPER LOCATIONS WITH STATIONING PLAINLY MARKED. ALL HOUSE LATERALS SHALL BE CONSTRUCTED IN A STRAIGHT ALIGNMENT AT RIGHT ANGLES FROM THE MAIN LINE SEWER EXCEPT AS SHOWN ON THE PLANS. HOUSE LATERALS FROM CHIMNEYS SHALL NOT HAVE AN ANGLE OF LESS THAN 60° WITH THE MAIN LINE SEWER. ANY CHANGE IN ALIGNMENT SHALL BE REQUESTED IN WRITING BY THE PRIVATE ENGINEER.
6. THE PRIVATE ENGINEER SHALL FURNISH THE HOUSE LATERAL DEPTH AT THE PROPERTY LINE BELOW THE TOP OF CURB ELEVATION FOR EACH HOUSE LATERAL ON THE GRADE SHEET.
7. BEFORE WORK CAN BE STARTED, THE CONTRACTOR MUST OBTAIN A PERMIT TO EXCAVATE IN COUNTY STREETS FROM THE L. A. COUNTY ROAD DEPT., DISTRICT OFFICE NO. 8, AND PAY A FEE TO THE COUNTY ENGINEER, ROOM 19 COUNTY ENGINEERING BUILDING, 9150 E. IMPERIAL HWY., DOWNEY OR NEWHALL REGIONAL OFFICE, TO COVER THE COST OF CONSTRUCTION INSPECTION AND RECORD PLANS.
8. IF WORK IS TO BE DONE IN A STATE HIGHWAY, A PERMIT MUST BE OBTAINED FROM THE STATE OF CALIFORNIA, DIVISION OF HIGHWAYS, 120 SOUTH SPRING STREET, LOS ANGELES, CALIFORNIA.
9. APPROVAL OF THIS PLAN BY THE COUNTY OF LOS ANGELES DOES NOT CONSTITUTE A REPRESENTATION AS TO THE ACCURACY OF THE LOCATION OR THE EXISTENCE OR NON EXISTENCE OF ANY UNDERGROUND UTILITY PIPE, OR STRUCTURE WITHIN THE LIMITS OF THIS PROJECT. THIS NOTE APPLIES TO ALL PAGES.
10. REFER TO SECTION 7-10.4.3 OF THE STANDARD SPECIFICATIONS, REGARDING SAFETY ORDERS.

BLDG

No connections for the disposal of industrial wastes shall be made to sewers shown on these drawings without written permission from the Chief Engineer and General Manager of the County Sanitation Districts.

County Sanitation Districts shall be notified prior to the following so that required inspection can be made (Phone 337-1025 - - 800-4664)

Acceptance of the project.

CONSTRUCTION NOTES:

1. WORK SHALL BE CONSTRUCTED ACCORDING TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (1969 EDITION WITH 1971 & 1972 SUPPLEMENTS) AND COUNTY ENGINEER SPECIAL PROVISIONS FOR THE CONSTRUCTION OF SANITARY SEWERS DATED MARCH 10, 1972 AND SHALL BE PROSECUTED ONLY IN THE PRESENCE OF THE COUNTY ENGINEER.
2. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION DIVISION BY TELEPHONE, AT (DIVISION 9-4747, EXT. 61888), AT LEAST TWENTY-FOUR HOURS BEFORE STARTING ANY WORK UNDER THIS CONTRACT.
3. HOUSE LATERALS TO BE CONSTRUCTED WITH INVERTS AT PROPERTY LINE 6 FEET BELOW CURB GRADE ESCEPT AS NOTED.
4. WYE OR TEE BRANCHES MAY BE USED FOR CONNECTIONS TO MAINLINE SEWERS EXCEPT AS NOTED.
5. ALL STRUCTURES SHALL BE EITHER BRICK MANHOLES PER S-3 OR PRECAST CONCRETE MANHOLES PER S-26.
6. PROVIDE STAKES ON THE PROPERTY LINE OR PROPERTY LINES PRODUCED AT RIGHT ANGLES TO THE SEWER LINE AT THE CENTER LINE OF EACH MANHOLE.
7. MANHOLE TOPS IN IMPROVED RIGHTS OF WAY TO BE LEVEL WITH FINISHED GRADE.
8. VITRIFIED CLAY PIPE JOINTS SHALL BE TYPE "B", "F", OR "G" PER STANDARD SPECIFICATIONS SECTION 208-2.
9. IF A POWER POLE IS WITHIN THREE FEET OF THE SEWER, THE SEWER SHALL BE ENCASED, PER S-23, CASE II, TWO FEET ON EACH SIDE FROM THE POINT OF INTERFERENCE.
10. IF DURING THE COURSE OF CONSTRUCTION IT IS DETERMINED THAT THERE IS LESS THAN FOUR FEET OF COVER OVER THE TOP OF A MAIN LINE OR HOUSE LATERAL V.C.P. SEWER WHICH IS NOT INDICATED ON THE PLANS, THE PIPE SHALL BE ENCASED PER S-23, CASE II UNLESS OTHERWISE APPROVED BY THE COUNTY ENGINEER.
11. ALL JOINTS BETWEEN CAST IRON PIPE AND VITRIFIED CLAY PIPE SHALL BE MADE WITH A RUBBER SLEEVE JOINT, TYPE "C" OR "S", (WITH BUSHING IF NECESSARY) PER STANDARD SPECIFICATIONS, SECTION 208-2.
12. SEWERS TO BE TESTED FOR LEAKAGE PER SECTION 306-2.3.2 OF THE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.
13. RESURFACE ALL TRENCHES WITHIN PAVED AREAS TO MEET L.A. COUNTY ROAD DEPT. OR CALIFORNIA STATE HIGHWAY REQUIREMENTS IN ACCORDANCE WITH PERMITS.

14. SPECIAL BACKFILL IN DESIGNATED AREAS
(a) Backfill trench and replace after earth removed so as to achieve the natural or finished grade & slopes shown on the grading plan approved for this tract by the Building and Safety Division
(b) All backfill and earth replaced shall be compacted to a minimum of 90% of the max. density per ASTM Standard Method of Test D698-57T as modified
Acceptable Certification of such compaction shall be submitted to the Construction Division

PROFILE, ALIGNMENT AND GRADE OF

SANITARY SEWERS

CONSTRUCTED IN

TRACT NO 27566

PRIVATE CONTRACT NO. 8769

Index 252-5-119

W.S. GS

3 SHEETS, 9 PAGES

SCALE: VERT. 1"=5' HORIZ. 1"=50' JUNE, 1972

PREPARED IN THE OFFICES OF
Sikand Engineering Associates, Inc.
18208 BURBANK BOULEVARD
VAN NUYS, CALIFORNIA 91401

BY: Ronald R. Horn 787-6880
REG. C. E. No. 16913

THE FOLLOWING LATEST REVISED STANDARD PLANS ON FILE IN THE OFFICE OF THE COUNTY ENGINEER SHALL APPLY IN THE CONSTRUCTION OF THIS PROJECT:

LEGEND	S-1
MINIMUM PUBLIC SAFETY REQUIREMENTS	S-2
BRICK MANHOLE	S-3
STANDARD MANHOLE STEP	S-27
BEDDING FOR SEWER PIPE	S-28
CRADLING AND ENCASEMENT	S-29
WYE OR TEE SUPPORT	S-30
ALLOWABLE TRENCH WIDTHS	S-31
LOCKING MANHOLE FRAME AND COVER	S-32
NON-REINFORCED PRECAST CONCRETE MANHOLE	S-34
SPECIAL HOUSE LATERALS	S-39

43402

COUNTY OF LOS ANGELES, CALIFORNIA

HARVEY T. BRUNOT, COUNTY ENGINEER — JOHN D. PARKHURST, CHIEF ENGINEER
CO. SAN DIST. NO. 32

APPROVED L. Williams 8/3/72 (REGIONAL ENGINEER / DATE) — APPROVED H. Southmayd (OFFICE ENGINEER)

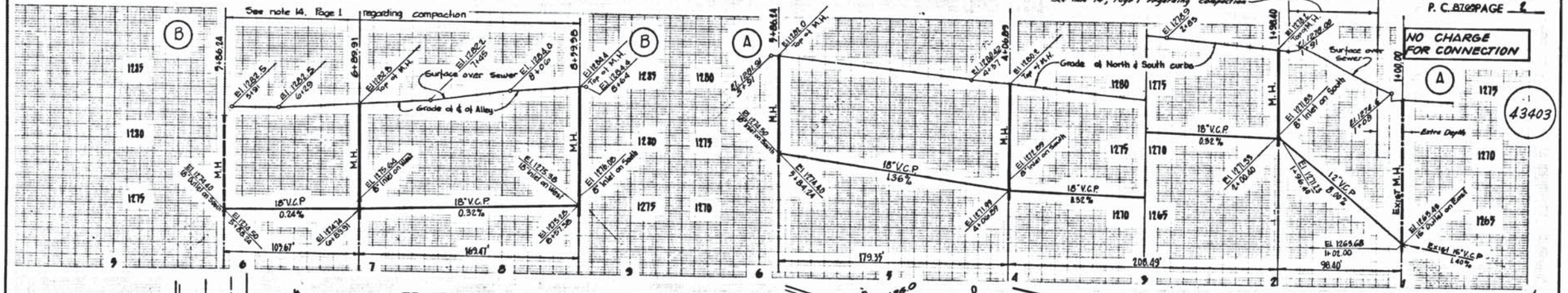
CHECKED Ralph Sylvia 8-3-72 (DATE)

SAN. C.E. NO. 15390

NEWHALL BLDG. DIST. 32

J. N. 0250.02

P. C. 8769 PAGE 2



L.A. COUNTY RENDER SHEET NO. 1 SOUTHERN CALIFORNIA BLUEPRINT CO.

PC 8769 PAGE 3

NO CHARGE FOR CONNECTION

43404

See note 14, Pg 1 regarding compaction

TRACT No 27566

LS 27-41-49
Portion Lot 5

Sewer Curve data
Δ = 28°39'18"
R = 150'
L = 54.07'

Extra depth

Identical

Grade ℄ of Alley

Sanitary Sewer Easement

8" Sanitary Sewer Easement

18" Stub

Sanitary Sewer Easement

℄ Private driveway

Identical floors

℄ Alley gutter

TRACT LINE

Curb line

℄ of Private driveway

℄ 8" V.C.P Sewer

℄ 18" V.C.P Sewer

Sanitary Sewer Easement

Page 18

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PC 8769 PAGE 4

NO CHARGE FOR CONNECTION

43405

See note 14, Pg 1 regarding compaction

TRACT No 27566

Grade ℄ of Alley

Sanitary Sewer Easement

℄ Private Driveway ℄ Alley gutter

℄ 8" V.C.P Sewer

Curb line

DRIVE VIEW

GOLF

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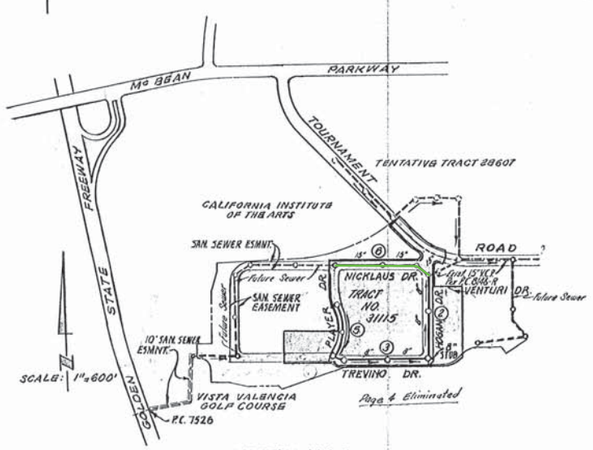
B.M. BL 642 ELEV. 1262.066

Road Department Bench Mark Tag in North side of concrete base at Northeast corner Edison tower on M-31383, 35' So. of & 8' East of Lyons Ave. and 30' E. of & Mtg. Canyon Road.

NEWHALL QUAD. 1965



INDEX MAP
SCALE : 1" = 600'

P. C. 8583

NOTE: NUMBERS IN CIRCLES INDICATE PAGE NUMBERS

THE FOLLOWING COUNTY ENGINEER STANDARD PLANS APPLY TO THIS PROJECT

LEGEND	S-1
MIN. PUBLIC SAFETY REQUIREMENTS	S-2
BRICK MANHOLE	S-3
NON REINFORCED PRECAST CONCRETE MANHOLE	S-36
LOCKING MANHOLE FRAME AND COVER	S-35
MANHOLE STEP	S-11
BEDDING FOR SEWER PIPE	S-21
CRADLING AND ENCASEMENT	S-23
WYE OR TEE SUPPORT	S-28
CHIMNEY PIPE AND BASE	S-27
ALLOWABLE TRENCH WIDTHS	S-33

REVISION:
LOWERED GRADES ON PAGE 3 (4+36.69 to 9+77.43) & 4 DUE TO WATER MAIN INTERFERENCE. ADDED CAST-IRON PIPE ON PAGE 4.
APPROVED: HARVEY T. BRANDT COUNTY ENGINEER
BY: L. Williamson DATE: 4-23-71
R.C.E. NO. 11392
OFFICE OF THE COUNTY ENGINEER

REVISION:- 1. Sanitary Sewer On Page 4 deleted.
2. Added 8" HL For Lot 8 On Page 5.
APPROVED:- HARVEY T. BRANDT COUNTY ENGINEER
BY:- Rudolph Spiindt 1930 R.C.E.NO. Date:- 4-28-71
OFFICE OF THE COUNTY ENGINEER

County Sanitation District shall be notified prior to the following that required inspection can be made (Phone 937-1025 or 698-1161)

Acceptance of the project,

No connections for the disposal of industrial wastes shall be made to sewers shown on these plans without written permission from the Chief Engineer and General Manager of the County Sanitation Districts.

NEWHALL BLDG. DIST. NO. 8.2

NOTES:

1. PROVIDE STAKES ON THE PROPERTY LINE OR PROPERTY LINES PRODUCED AT RIGHT ANGLES TO THE SEWER LINE AT THE CENTER LINE OF EACH MANHOLE.
2. NO REPRESENTATIVE OF THE COUNTY ENGINEER WILL SURVEY OR LAY OUT ANY PORTION OF THE WORK.
3. THE PRIVATE ENGINEER SHALL FURNISH THE COUNTY ENGINEER WITH GRADE SHEETS AND STATIONING FOR ALL HOUSE LATERALS AND "Y" OR "T" BRANCHES. HE SHALL PROVIDE STAKES FOR THEM AT THEIR PROPER LOCATIONS WITH STATIONING PLAINLY MARKED. ALL HOUSE LATERALS SHALL BE CONSTRUCTED IN A STRAIGHT ALIGNMENT AT RIGHT ANGLES FROM THE MAIN LINE SEWER EXCEPT AS SHOWN ON THE PLANS. HOUSE LATERALS FROM CHIMNEYS SHALL NOT HAVE AN ANGLE OF LESS THAN 45° WITH THE MAIN LINE SEWER. ANY CHANGE IN ALIGNMENT SHALL BE REQUESTED IN WRITING BY THE PRIVATE ENGINEER.
4. THE PRIVATE ENGINEER SHALL FURNISH THE HOUSE LATERAL DEPTH AT THE PROPERTY LINE BELOW THE TOP OF CURB ELEVATION FOR EACH HOUSE LATERAL ON THE GRADE SHEET.
5. NO REVISIONS SHALL BE MADE IN THESE PLANS WITHOUT THE APPROVAL OF THE COUNTY ENGINEER.
6. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION DIVISION BY TELEPHONE, MADISON 9-4747, EXT. 81551, AT LEAST TWENTY-FOUR HOURS BEFORE STARTING ANY WORK UNDER THIS CONTRACT.
7. MANHOLES SHALL BE BRICK SEWER STRUCTURES PER S-3 OR PRECAST CONCRETE MANHOLES PER S-36, EXCEPT AS NOTED [illegible]
8. "Y" BRANCHES ONLY MAY BE USED FOR CONNECTIONS. [illegible]
9. MANHOLE TOPS IN UNIMPROVED RIGHTS-OF-WAY TO BE SIX INCHES ABOVE FINISHED GRADE.
10. USE EXTRA STRENGTH PIPE. ALL PIPE IS STANDARD DEPTH EXCEPT AS NOTED.
11. VITRIFIED CLAY PIPE JOINTS SHALL BE TYPE "O", "F" OR "S" PER STANDARD SPECIFICATIONS SECTION 208-2.
12. IF A POWER POLE IS WITHIN THREE FEET OF THE SEWER, THE SEWER SHALL BE ENCASED, PER S-23, TWO FEET ON EACH SIDE FROM THE POINT OF INTERFERENCE.
13. IF DURING THE COURSE OF CONSTRUCTION IT IS DETERMINED THAT THERE IS LESS THAN FOUR FEET OF COVER OVER THE TOP OF A MAIN LINE OR HOUSE LATERAL V.C.P. SEWER WHICH IS NOT INDICATED ON THE PLANS, THE PIPE SHALL BE ENCASED PER S-23, UNLESS OTHERWISE APPROVED BY THE COUNTY ENGINEER.
14. HOUSE LATERALS TO BE CONSTRUCTED WITH INVERTS AT PROPERTY LINE 6 FEET BELOW CURB GRADE EXCEPT AS NOTED.
15. RESURFACE ALL TRENCHES WITHIN PAVED AREAS TO MEET L.A. COUNTY ROAD DEPT. OR CALIFORNIA STATE HIGHWAY REQUIREMENTS IN ACCORDANCE WITH PERMITS.
16. SEWERS TO BE TESTED FOR LEAKAGE PER SECTION 306-2.3.7 OF THE STANDARD SPECIFICATIONS.
17. REFER TO SECTION 7-10.4.1 OF THE STANDARD SPECIFICATIONS, REGARDING SAFETY ORDERS.
18. ALL JOINTS BETWEEN CAST IRON PIPE AND REINFORCED CLAY PIPE SHALL BE MADE WITH A RUBBER SLEEVE JOINT, TYPE "O" OR "F", (WITH BEDDING IF NECESSARY) PER STANDARD SPECIFICATIONS, SECTION 208-2.
19. SPECIAL BACKFILL IN DESIGNATED AREAS:
   (a) BACKFILL TRENCH AND REPLACE OTHER EARTH SO AS TO ACHIEVE THE NATURAL OR FINISHED GRADES AND SLOPES SHOWN ON THE GRADING PLAN APPROVED FOR THIS DEVELOPMENT BY THE BUILDING & SAFETY DIVISION.
   (b) ALL BACKFILL AND EARTH REPLACED SHALL BE COMPACTED TO A MINIMUM OF 90% OF MAXIMUM DENSITY PER ASTM STANDARD METHOD OF TEST D 698-57 T AS MODIFIED. ACCEPTABLE CERTIFICATION OF SUCH COMPACTION SHALL BE SUBMITTED TO THE CONSTRUCTION DIVISION.

COLLECT CHARGES AS INDICATED

NOTICE TO CONTRACTOR

The existence and location of any underground utility pipes or structures shown on these plans are obtained by a search of the available records. To the best of my knowledge there are no existing utilities except as shown on these plans.
The contractor is required to take due precautionary measures to protect the utility lines shown and any other lines not of record or not shown on these plans.
Alvin J. Hoya Jr. R.C.E. 13698

PROFILE ALIGNMENT AND GRADE OF P.C. 8583

SANITARY SEWERS PAGE 1

TO BE CONSTRUCTED IN

TRACT Nº 31115

PRIVATE CONTRACT NO. 8583

INDEX 233310 W.S. 83-D-3
3 SHEETS, 15 PAGES
SCALE: VERT. 1"=4' HORIZ. 1"=40' JANUARY, 1971

42501

PREPARED IN THE OFFICES OF
VALCON INC.
1429 THOUSAND OAKS BLVD.
THOUSAND OAKS, CALIFORNIA
By: Alvin J. Hoya Jr. R.C.E. NO. 13698

FOR LEGEND SEE PLAN NO. S-1

NOTE:
GRADES TO WHICH THIS IMPROVEMENT IS TO BE CONSTRUCTED ARE SHOWN ON PLANS AND PROFILES. GRADE POINTS FOR TOP OF CURBS, CENTER LINE OF STREETS, OR CENTER LINE OF ALLEYS ARE SHOWN BY CIRCLES ON PROFILES. AT ALL POINTS BETWEEN DESIGNATED POINTS THE GRADE SHALL BE ESTABLISHED SO AS TO CONFORM TO A STRAIGHT LINE DRAWN BETWEEN SAID DESIGNATED POINTS.
ELEVATIONS ARE IN FEET ABOVE U.S.C. & G.S. SEA LEVEL DATUM OF 1929.
WORK SHALL BE CONSTRUCTED ACCORDING TO STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (1970 EDITION) AND COUNTY ENGINEER SPECIAL PROVISIONS FOR THE CONSTRUCTION OF SANITARY SEWERS DATED APRIL 2, 1970 [illegible] AND SHALL BE PROSECUTED UNDER THE SUPERVISION OF THE COUNTY ENGINEER.
BEFORE WORK CAN BE STARTED, THE CONTRACTOR MUST OBTAIN A PERMIT TO EXCAVATE IN COUNTY STREETS FROM THE L.A. COUNTY ROAD DEPT., DISTRICT OFFICE NO. 5 [illegible] AND PAY A FEE TO THE COUNTY ENGINEER, CODE 02 OR 12, 3450 E. IMPERIAL HWY. DOWNEY, CA. [illegible] RENEWAL [illegible] REGIONAL OFFICE, SUFFICIENT TO COVER THE COST OF CONSTRUCTION INSPECTION AND RECORD PLANS.
APPROVAL OF THIS PLAN BY THE COUNTY OF LOS ANGELES DOES NOT CONSTITUTE A REPRESENTATION AS TO THE ACCURACY OF THE LOCATION OF OR THE EXISTENCE OR NON-EXISTENCE OF ANY UNDERGROUND UTILITY PIPE, OR STRUCTURE WITHIN THE LIMITS OF THIS PROJECT. THIS NOTE APPLIES TO ALL PAGES.
IF WORK IS TO BE DONE IN A STATE HIGHWAY, A PERMIT MUST BE OBTAINED FROM THE STATE OF CALIFORNIA, DIVISION OF HIGHWAYS, 120 SOUTH SPRING STREET, LOS ANGELES, CALIFORNIA.

COUNTY OF LOS ANGELES, CALIFORNIA

HARVEY T. BRANDT, COUNTY ENGINEER — J. D. PARKHURST, CHIEF ENGINEER

APPROVED BY: L. Williamson, REGIONAL ENGINEER — APPROVED BY: E. P. Burnett for, OFFICE ENGINEER

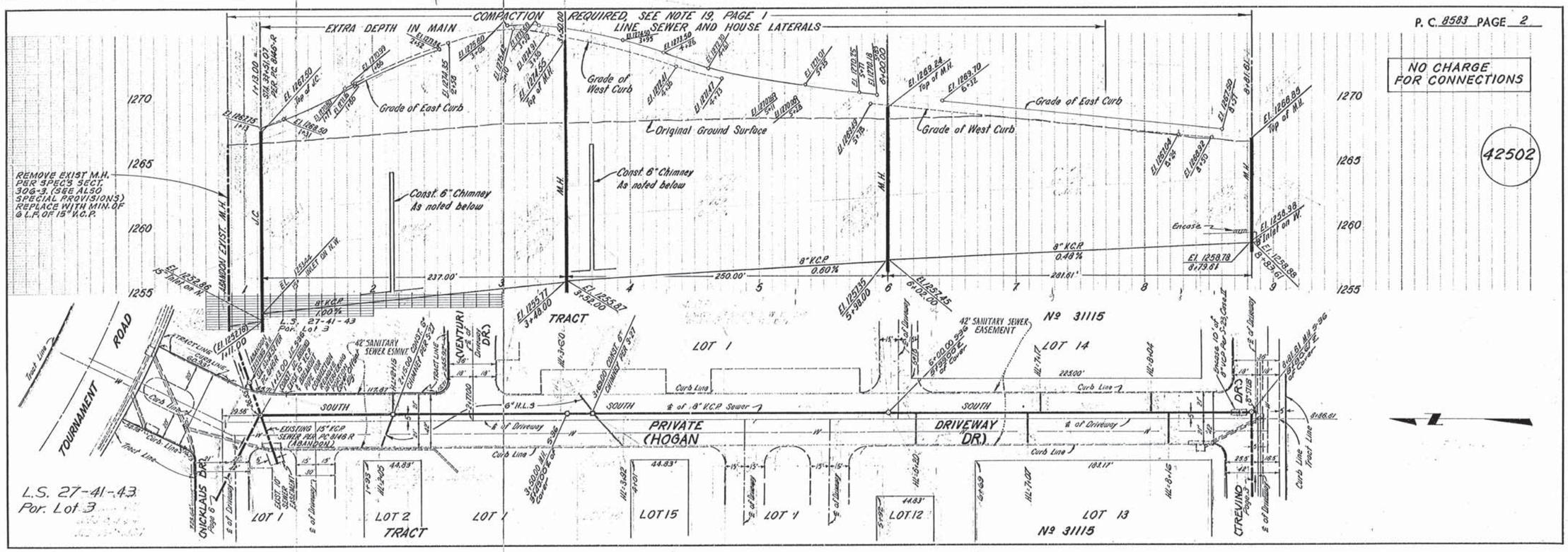
CHECKED BY: Rudolph Spiindt 4-5-71
REG. C.E. NO. 11390

J. N. 0250.02

P. C. 8583 PAGE 2

NO CHARGE FOR CONNECTIONS

42502



P.C. 8583 PAGE 5

COMPACTION REQUIRED, SEE NOTE 19, PAGE 1

NO CHARGE FOR CONNECTIONS

42505

P.C. 8583 PAGE 6

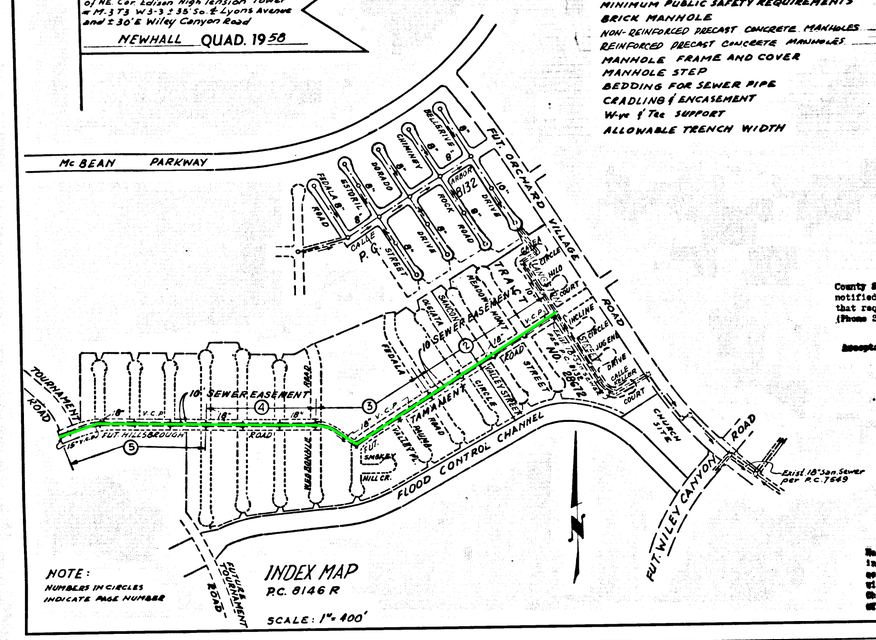
EXTRA DEPTH IN MAIN LINE SEWER AND HOUSE LATERALS
COMPACTION REQUIRED, SEE NOTE 19, PAGE 1

NO CHARGE FOR CONNECTIONS

42506

L.A. COUNTY SEWER SHEET NO. 2

B.M. SL 642 ELEV. 1262.07
Road Depart. & M. Top Mt. Side Conc. Base of NE. Cor. Edison High Tension Tower at M-373 W 3-3 ± 36' So. & Lyons Avenue and ± 30' E Wiley Canyon Road
NEWHALL QUAD. 1958



NOTE:
NUMBERS IN CIRCLES INDICATE PAGE NUMBER

THE FOLLOWING COUNTY ENGINEER STANDARD PLANS APPLY TO THIS PROJECT:

LEGEND	S-1
MINIMUM PUBLIC SAFETY REQUIREMENTS	S-2
BRICK MANHOLE	S-3
NON-REINFORCED PRECAST CONCRETE MANHOLES	S-5
REINFORCED PRECAST CONCRETE MANHOLES	S-6
MANHOLE FRAME AND COVER	S-16
MANHOLE STEP	S-17
BEDDING FOR SEWER PIPE	S-21
CRADLING & ENCASEMENT	S-23
Wye & Tee SUPPORT	S-26
ALLOWABLE TRENCH WIDTH	S-33

County Sanitation Districts shall be notified prior to the following so that required inspection can be made (Phone 58/1025 - - 600-6097).

Acceptance of the project.

In connections for the disposal of industrial wastes shall be made to sewers shown on these drawings without written permission from the Chief Engineer and General Manager of the County Sanitation Districts.

DOUBLE SCALE

NEWHALL BLDG. DIST. NO. 8.2

NOTES:
1. PROVIDE STAKES ON THE PROPERTY LINE OR PROPERTY LINES PRODUCED AT RIGHT ANGLES TO THE SEWER LINE AT THE CENTER LINE OF EACH MANHOLE.
2. NO REPRESENTATIVE OF THE COUNTY ENGINEER WILL SURVEY OR LAY OUT ANY PORTION OF THE WORK.
3. THE PRIVATE ENGINEER SHALL FURNISH THE COUNTY ENGINEER WITH GRADE SHEETS AND STATIONING FOR ALL "Y OR T" BRANCHES AND SHALL PROVIDE STAKES FOR THEM AT THEIR PROPER LOCATIONS WITH STATIONING PLAINLY MARKED.
4. [illegible]
5. NO REVISIONS SHALL BE MADE IN THESE PLANS WITHOUT THE APPROVAL OF THE COUNTY ENGINEER.
6. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION DIVISION BY TELEPHONE, MADISON 9-0101, EXT. 61881, AT LEAST TWENTY-FOUR HOURS BEFORE STARTING ANY WORK UNDER THIS CONTRACT.
7. MANHOLES SHALL BE BRICK SEWER STRUCTURES PER S-3, OR PRECAST CONCRETE MANHOLES PER S-5 OR S-6, EXCEPT AS NOTED.
8. USE STANDARD MANHOLE FRAMES AND COVERS, S-16.
9. MANHOLE TOPS IN UNIMPROVED RIGHTS-OF-WAY TO BE SIX INCHES ABOVE FINISHED GRADE.
10. USE EXTRA STRENGTH PIPE. ALL PIPE IS STANDARD DEPTH EXCEPT AS NOTED.
11. VITRIFIED CLAY PIPE JOINTS SHALL BE TYPE "D-1-F" OR "D-6" PER STD. SEC. 2.06.2
12. IF A POWER POLE IS WITHIN THREE FEET OF THE SEWER, THE SEWER SHALL BE ENCASED, PER S-23, TWO FEET ON EACH SIDE FROM THE POINT OF INTERFERENCE.
13. IF DURING THE COURSE OF CONSTRUCTION IT IS DETERMINED THAT THERE IS LESS THAN FOUR FEET OF COVER OVER THE TOP OF A MAIN LINE OR HOUSE LATERAL V.C.P. SEWER WHICH IS NOT INDICATED ON THE PLANS, THE PIPE SHALL BE ENCASED PER S-23, UNLESS OTHERWISE APPROVED BY THE COUNTY ENGINEER.
18. RESURFACE ALL TRENCHES WITHIN PAVED AREAS TO MEET L.A. COUNTY ROAD DEPT. OR CALIFORNIA STATE HIGHWAY REQUIREMENTS IN ACCORDANCE WITH PERMITS.
16. TO BE TESTED FOR LEAKAGE PER SEC. 306-9.9.7 OF STD. SPECS.
17. REFER TO SEC. 7-10.4-1 OF THE STANDARD SPECIFICATIONS REGARDING SAFETY ORDERS
18. "Tee or Wye" BRANCHES MAY BE USED FOR CONNECTION TO MAINLINE SEWERS, EXCEPT AS NOTED.
19. SPECIAL BACKFILLING DESIGNATED AREAS: (A) BACKFILL TRENCH AND REPLACE OTHER EARTH REMOVED 3.0:1 TO ACHIEVE THE NATURAL OF FINISHED GRADES AND SLOPES SHOWN ON GRADING PLANS, TR-28672-28673-28674, APPR. BY THE BUILDING AND SAFETY DIVISION; (B) ALL BACKFILL AND EARTH REPLACED SHALL BE COMPACTED TO THE MIN. OF 90% OF MAXIMUM DENSITY PER ASTM STD METHOD OF TEST D-698-C77 AS MODIFIED. ACCEPTABLE CERTIFICATION OF SUCH COMPACTION SHALL BE SUBMITTED TO THE CONST. DIVISION.
20. SEWER PIPE BEDDING SHALL CONFORM TO S-21.

THE SEWER EASEMENT FOR THIS PROJECT HAS BEEN DEDICATED PER TRACT NO. 28671, M.B. 781-78-84

DO NOT ISSUE HOUSE CONNECTION PERMITS UNTIL P.C. 8132 IS ACCEPTED

NOTICE TO CONTRACTOR
The existence and location of any underground utility pipes or structures shown on these plans are obtained by a search of the available records. To the best of my knowledge there are no existing utilities except as shown on these plans.
The contractor is required to take due precautionary measures to protect the utility lines shown and any other lines not of record or not shown on these plans.
Michael F. Madden R.C.E. 16744

PROFILE, ALIGNMENT AND GRADE OF P.C. 8146 R

SANITARY SEWERS PAGE 1

CONSTRUCTED IN
RIGHT OF WAY SOUTH OF McBEAN PARKWAY BETWEEN LANGSTON STREET AND TOURNAMENT ROAD

PRIVATE CONTRACT NO. 8146 R

W.S. 62
3 SHEETS, 5 PAGES
SCALE: VERT. 1"=8' HORIZ. 1"=40' AUGUST, 1968
41316
PREPARED IN THE OFFICES OF
VOORHEIS-TRINDLE CO.
5919 Van Nuys Blvd., Van Nuys, California.
By: Michael F. Madden
REG. C. E. NO. 16744

FOR LEGEND SEE PLAN NO. S-1

NOTE:
GRADE TO WHICH THIS IMPROVEMENT IS TO BE CONSTRUCTED ARE SHOWN ON PLANS AND PROFILES. GRADE POINTS FOR TOP OF CURBS, CENTER LINE OF STREETS, OR CENTER LINE OF ALLEYS ARE SHOWN BY CIRCLES ON PROFILES. AT ALL POINTS BETWEEN DESIGNATED POINTS THE GRADE SHALL BE ESTABLISHED SO AS TO CONFORM TO A STRAIGHT LINE DRAWN BETWEEN SAID DESIGNATED POINTS.
ELEVATIONS ARE IN FEET ABOVE U.S.C. & G.S. SEA LEVEL DATUM OF 1929
THIS DRAWING AND THE DATA HEREON ARE HEREBY MADE A PART OF THE SPECIFICATIONS.
WORK SHALL BE CONSTRUCTED ACCORDING TO STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (COUNTY ENGINEER SPECIAL PROVISIONS DATED JAN 2, 1969 AS REVISED) AND SHALL BE PROSECUTED IN THE PRESENCE OF COUNTY ENGINEER
BEFORE WORK CAN BE STARTED, THE CONTRACTOR MUST OBTAIN A PERMIT TO EXCAVATE IN COUNTY STREETS FROM THE L.A. COUNTY ROAD DEPT., DISTRICT OFFICE NO. 5 AND PAY A FEE TO THE COUNTY ENGINEER, ROOM 558, COUNTY ENGINEERING BUILDING, 108 WEST SECOND STREET OR NEWHALL REGIONAL OFFICE, SUFFICIENT TO COVER THE COST OF CONSTRUCTION INSPECTION AND RECORD PLANS.
APPROVAL OF THIS PLAN BY THE COUNTY OF LOS ANGELES DOES NOT CONSTITUTE A REPRESENTATION AS TO THE ACCURACY OF THE LOCATION OF OR THE EXISTENCE OR NON-EXISTENCE OF ANY UNDERGROUND UTILITY PIPE, OR STRUCTURE WITHIN THE LIMITS OF THIS PROJECT. THIS NOTE APPLIES TO ALL PAGES.
IF WORK IS TO BE DONE IN A STATE HIGHWAY, A PERMIT MUST BE OBTAINED FROM THE STATE OF CALIFORNIA, DIVISION OF HIGHWAYS, 120 SOUTH SPRING STREET, LOS ANGELES, CALIFORNIA.

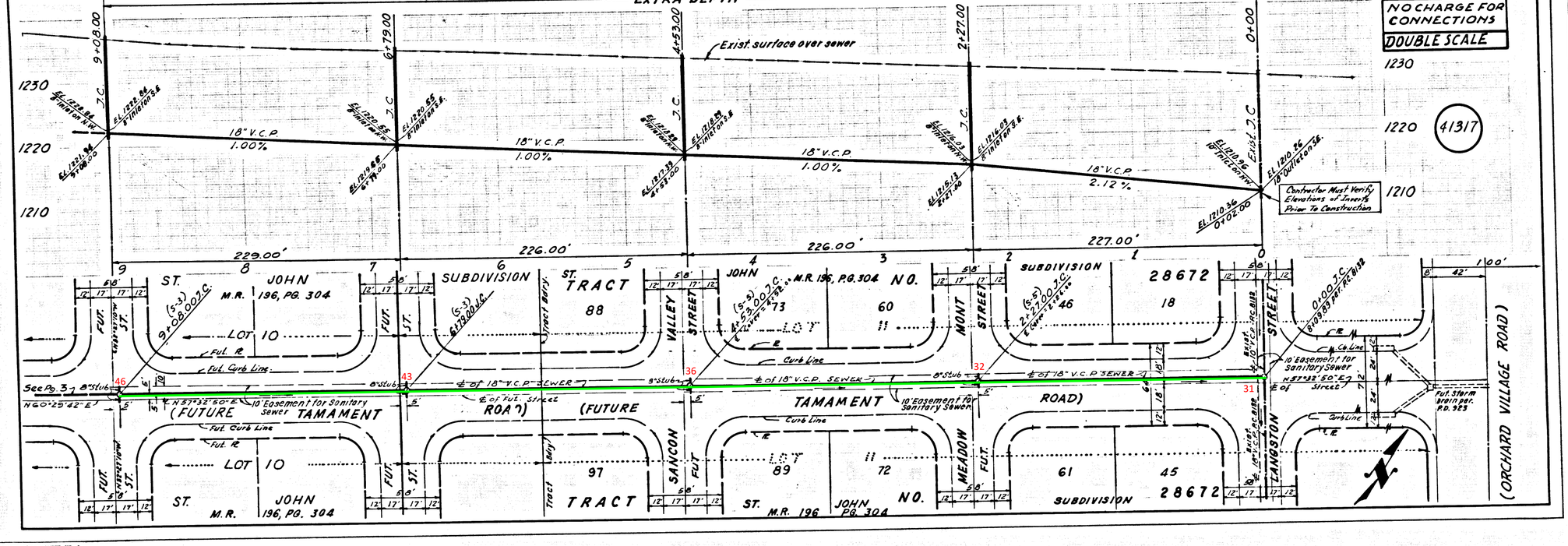
COUNTY OF LOS ANGELES, CALIFORNIA
JOHN A. LAMBIE, COUNTY ENGINEER J. D. PARKHURST, CHIEF ENGINEER
CO. SAN. DIST. 19th, 32
APPROVED BY: [signature] OFFICE ENGINEER
APPROVED BY: [signature] REGIONAL ENGINEER
CHECKED BY: Ralph Schaub 2/21/69
REG. C.E. No. 13906

J.N. 0369.34

P. C. 8146 R PAGE 2

NO CHARGE FOR CONNECTIONS
DOUBLE SCALE

41317



L.A. COUNTY SEWER SHEET NO. 1

P.C. 8146R PAGE 3

NO CHARGE FOR CONNECTIONS

DOUBLE SCALE

41318

EXTRA DEPTH

Use Type "G" Joints - 5' Lengths max.

Exist. surface over sewer

IDENTICAL

18" V.C.P. 1.00%

295.49'

322.21'

226.23'

FUTURE SCHOOL SITE

SUBDIVISION M.R. 196, Pg. 304

Prop. Lot Line N 50°05'24" W 109.01'

STREET

IDENTICAL POINTS

18" V.C.P. SEWER

10' EASEMENT FOR SANITARY SEWER

TAMAMENT ROAD

SUBDIVISION M.R. 196, Pg. 304

SEWER CURVE DATA: Δ = 39°47'00" R = 225' T = 81.44' L = 156.28' (SEE NOTE ABOVE)

See Page 4

See Page 5

P.C. 8146R PAGE 4

NO CHARGE FOR CONNECTIONS

DOUBLE SCALE

41319

EXTRA DEPTH

Exist. surface over sewer

18" V.C.P. 1.52%

18" V.C.P. 1.00%

226.00'

226.00'

216.00'

SUBDIVISION M.R. 196, Pg. 304

10' sanitary Sewer Easement

(FUTURE HILLSBOROUGH ROAD)

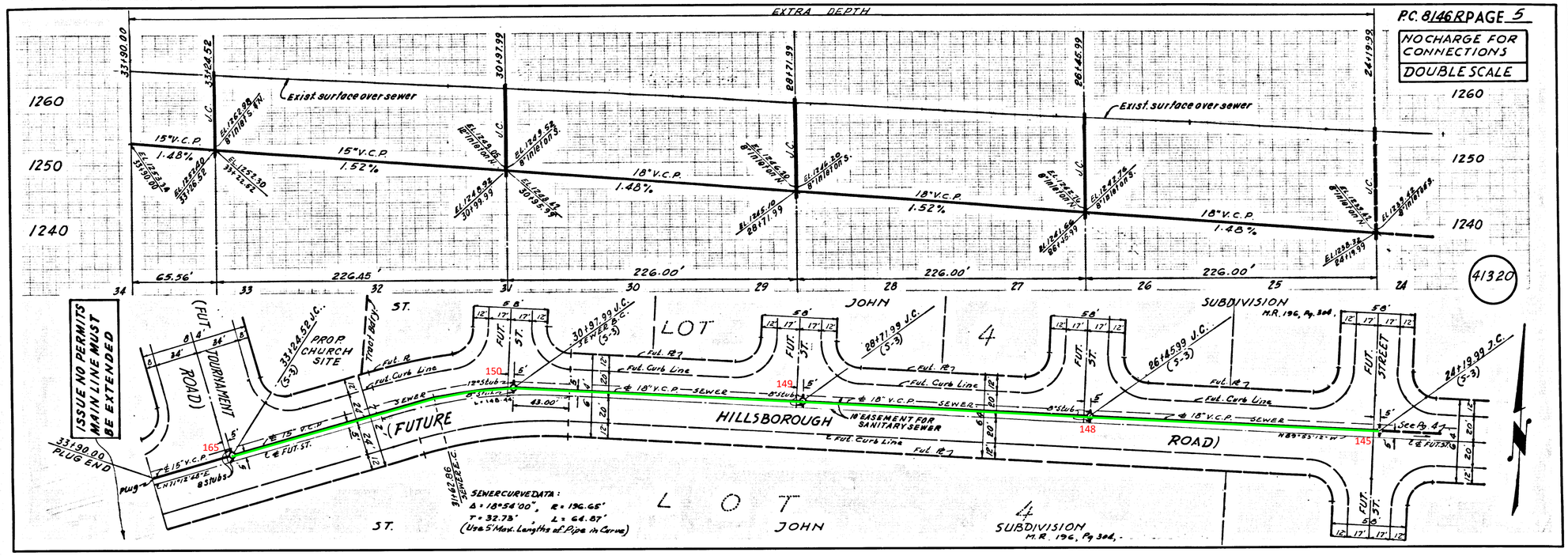
10' SEWER EASEMENT

See Page 3

See Page 5

P.C. 8146R PAGE 5

NO CHARGE FOR CONNECTIONS
DOUBLE SCALE



PAGE

WATER RECLAMATION
SOLID WASTE MANAGEMENT

COUNTY SANITATION DISTRICTS
OF LOS ANGELES COUNTY

1955 Workman Mill Road, Whittier, CA 90601-1400
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
Telephone: (562) 699-7411, FAX: (562) 699-5422
www.lacsd.org

GRACE ROBINSON HYDE
Chief Engineer and General Manager

April 14, 2017

File No: 31-900.17

Mr. Brian Allee
ESA PCR
2121 Alton Parkway, Ste. 100
Irvine, CA 92606

Dear Mr. Allee:

County of Los Angeles – Plan Request for Wastewater Services and Facilities for the Canyon Vew Estates

This is in reply to your letter dated April 11, 2017, requesting plans of the County Sanitation Districts of Los Angeles County (Districts) facilities located within the project area of the subject project.

☐ We have facilities within the project area.

☐ We propose to install new facilities within the project area. Plans will be forwarded to you when available.

☒ We do not have any facilities at the location of project based on your enclosed map. It also appears that your project is not annexed into the County Sanitation Districts of L.A. County. Please contact Ms. Donna Curry at 562-908-4288 Extension 2708 for more information. Enclosed is a map showing the relative locations of our facilities.

Please send all future correspondence to the attention of Michael Tatalovich, Sewer Design Section Head, at the above address. If you have any questions, please contact the undersigned at the Engineering Counter at 562-908-4288 Extension 1204.

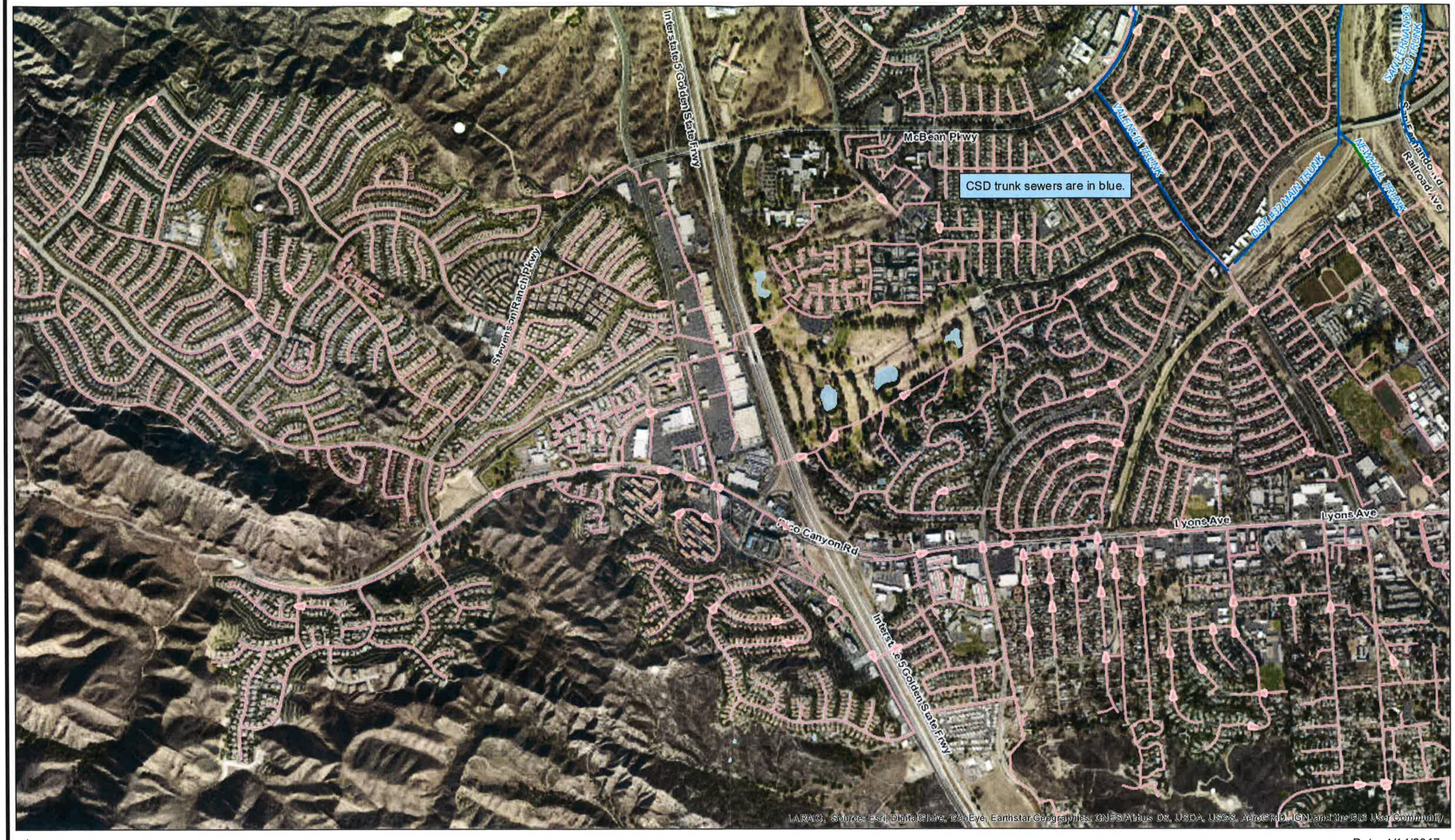
Very truly yours,

Koesen L Lipock
Engineering Technician
Sewer Design

KLL

DMS Doc #4119392

Recycled Paper



The County Sanitation Districts of Los Angeles County ("Districts") have developed the GIS data and related information files (collectively, the "Information") displayed on this map for the Districts' own internal use, and provide it to the public only to comply with the California Public Records Act (Cal. Gov. Code § 6250 et seq.). The Districts therefore disclaim liability for any other person's reliance on the Information. The Information depicts approximate locations of property, facilities and boundaries. Reasonable efforts have been made to ensure accuracy, but the Information may have spatial and other errors and should not be relied upon for surveying, engineering, excavation, construction, or related purposes. The Information is dynamic and is subject to change without notice.
THE INFORMATION IS PROVIDED ON AN "AS IS", "AS AVAILABLE" BASIS AND THE DISTRICTS EXPRESSLY DISCLAIM ALL WARRANTIES (express and implied), INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.
Prior to any excavation, please call Underground Service Alert (by dialing 811) and the Districts' Engineering Counter at (562) 908-4288 x1205, to obtain more accurate information about the location of Districts' subsurface facilities.
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Daryl Koutnik

From: Jui Ing Chien <jchien@parks.lacounty.gov>
Sent: Wednesday, April 19, 2017 2:26 PM
To: Brian Allee
Cc: James Barber; Faith Parducho; Clement Lau; Daryl Koutnik; Julie Yom
Subject: RE: LADRP Information Request for the Canyon View Estates Project
Attachments: Response -LACDPR Request for Info_4.11.pdf

Hi Brian,

Please find attached our response to the information request.
Thank you.

Jui Ing Chien - County of Los Angeles Department of Parks and Recreation - Planning and Development Agency | 510 South Vermont Avenue, Los Angeles , CA 90020 | ph# 213.351.5129 fax# 213.639.3959 | Business Hours 7:00 A.M. to 5:30 P.M. Monday through Thursday

---

From: Brian Allee [mailto:BAllee@esassoc.com]
Sent: Tuesday, April 11, 2017 2:10 PM
To: Jui Ing Chien <jchien@parks.lacounty.gov>; Julie Yom <jyom@parks.lacounty.gov>
Cc: James Barber <jbarber@parks.lacounty.gov>; Faith Parducho <fparducho@parks.lacounty.gov>; Clement Lau <clau@parks.lacounty.gov>; Daryl Koutnik <DKoutnik@esassoc.com>
Subject: FW: LADRP Information Request for the Canyon View Estates Project

Good afternoon Ms. Jui Chien and Ms. Julie Yom,

I just received Clement's out of office response with your contact information. As such, I have forwarded my request below to you both. Please let me know if you have any questions. Thanks in advance.

Brian J. Allee
Senior Planner
ESA PCR
949.753.7001

From: Brian Allee
Sent: Tuesday, April 11, 2017 2:02 PM
To: Faith Parducho
Cc: Daryl Koutnik; James Barber; Clement Lau
Subject: LADRP Information Request for the Canyon View Estates Project

Good afternoon Ms. Parducho.

Please find the attached request (in both PDF and Word format) for information regarding recreational and park services and facilities for the Canyon View Estates Project in the County of Los Angeles. The attachment includes a brief description of the Project, a regional map, vicinity map, tentative tract map, and a list of requested information. In order for the Project team to maintain our projected schedule, we would appreciate your response by Monday, April 24. Please feel free to contact me with any questions. Thanks in advance.

Brian J. Allee

Senior Planner
ESA PCR
2121 Alton Parkway, Suite 100
Irvine, CA 92606
949.753.7001
ballee@esassoc.com | www.esassoc.com

Follow us on Facebook | Twitter | LinkedIn

ESA PCR

2121 Alton Parkway
Suite 100
Irvine, CA 92606
949.753.7001 main
949.753.7002 fax

www.esassoc.com

April 11, 2017

Faith Parducho
Executive Office
LOS ANGELES COUNTY DEPARTMENT OF PARKS AND RECREATION
510 S. Vermont Avenue
Los Angeles, CA 90020

Subject: Request for Information Regarding Recreational and Park Services and Facilities for the Canyon View Estates Project in the County of Los Angeles.

Dear Ms. Parducho:

In coordination with the Los Angeles County Department of Regional Planning (LADRP), ESA PCR is preparing an Initial Study/Mitigated Negative Declaration (IS/MND) for the proposed Canyon View Estates Project (Project) located in the unincorporated Los Angeles County (County) pursuant to the California Environmental Quality Act (CEQA).

The IS/MND will include an assessment of the Project's potential impacts on parks and recreation services and facilities. Since the Project is located within the jurisdiction of the Los Angeles County Department of Parks and Recreation (LACDPR), we are requesting information from your agency with regard to parks and recreation services and facilities. In order to maintain the schedule for the IS/MND, we respectfully request your input by **April 24 2017.**

The following is a brief description of the Project and a list of information requested to support the evaluation of parks and recreation services and facilities in the IS/MND.

Project Description

Project Location and Surrounding Uses. Regionally, the approximately 94-acre Project site is situated west of Interstate 5 (I-5), north of California State Route 188 (SR-118), south of California State Route 126 (SR-126), and east of the Los Angeles-Ventura County boundary; refer to **Figure 1**, *Regional Map*. Locally, the Project site is located approximately 1,000 feet south of the intersection of Pico Canyon Road and Stevenson Ranch Parkway, east of the Southern Oaks residential community; refer to **Figure 2**, *Vicinity Map*. The area to the east of the Project site is also a residential community. To the south and southwest is open space and undeveloped property. The Pico Canyon Trail, a proposed four-mile trail mostly along Pico Canyon Road is aligned in areas generally to the east and southeast of the Project site. The existing 0.6-mile Pico Canyon Trail segment is northwest of the Project along Pico Canyon Road, from Stevenson Ranch Parkway west to the west end of the Southern Oaks community. The area to the north of the Project site is undeveloped and the area to the northwest is Pico Canyon County Park.

The Project site is currently vacant and consists of undeveloped terrain with moderate to steep variation in

topography. An existing water tank is located in the east-central portion of the Project site. Several small drainage courses traverse through the site, flowing north toward Pico Creek. Vegetation within the Project site includes, but is not limited to, chaparral and alluvial or riparian habitat. The existing vegetation is recovering from a wildfire in 2003.

Proposed Project. The Project proposes to develop 37 single-family residential lots, two open space lots and five public facility lots (basins); refer to **Figure 3**, *Tentative Tract Map* The proposed residential lots would occupy approximately 11.3 acres of the Project site. The remaining improved areas of the Project site would include 3.8 acres for supporting public roadway infrastructure and 2.7 acres of desilting basins. An additional 76.6 acres of open space is provided. The Project proposes access from the existing Magnolia Lane within the neighboring Southern Oaks community.

Schedule. It is anticipated that construction of the Project would commence as early as Summer 2018 and would last approximately 36 months with grading during the initial four months. Assuming this construction time frame for site work, the first units would be ready for occupancy in Fall 2019. The occupancy date is subject to change based on the construction start date and future market conditions. For purposes of this analysis, it is assumed that construction of the Project would occur in one phase and the Project would be fully occupied in Summer 2021.

Requested Information

For the analysis, please provide the following information regarding LACDPR recreational and park facilities and services within the Project vicinity:

1. The name, address, size, park classification (regional, community, neighborhood, special use, pocket), and available facilities within the parks that would serve the Project site.

Park Name	Address	Acres	Classification	Park Amenities
Jake Kuredjian Park	25265 Pico Canyon Road, Stevenson Ranch CA 91381	5.74	Neighborhood	One restroom with a drinking fountain, benches, walking paths, parking on site.
Pico Canyon Park	25600 Pico Canyon Road, Stevenson Ranch, CA 91381	21.28	Neighborhood	One restroom with a drinking fountain, one hiking trail, picnic tables, parking on site.
William S. Hart Park	24151 N. San Fernando Road Newhall, CA 91321	162.22	Regional (Special Use - Historic)	2 offices, 1 ranch house, 1 seniors center with multipurpose room, 2restrooms, museum, historic structures, historic district, 2 gift shops, horse trail, hiking trail, group camping, plaza, info kiosks, outdoor kitchen, vending machines, picnic

				tables, barbecues, drinking fountains, and security lighting. Parking: 162 spaces
Castaic Lake State Recreation Area	32132 Castaic Lake Drive Castaic, CA 91384	12659.74	Regional	5 offices, 1 boating instruction safety center with 6 multipurpose rooms, 20 restrooms, memorabilia, 2 civic art, 1 concession stand with snacks, bait & boat rentals, 14 picnic shelters, 31 group picnic shelters, 2 lakes with swim beach, boating, sailing, water skiing & fishing, trail staging area, horse trail, hiking trail, bicycle trail, 4 horseshoe pits, BMX area, control airplane area, , RV camping sites with RV dump station, tent camping sites & group camping site, showers for campers, 1 2-5 year old play area, 4 5-12 year old play areas & 2 2-12 year old play areas, info kiosks, educational signage, outdoor kitchens, 6 fish cleaning stations, picnic tables, barbecues, drinking fountains, and security lighting. parking: 2,266
Castaic Sports Complex	31320 North Castaic Road Castaic, CA 91384	53.75	Community Regional	2 offices, 1 gymnasium with multipurpose room, teen center & computer lab, 2 restrooms, 3 lighted softball fields with a multipurpose overlay, 3 lighted basketball courts, 1 fitness par course, 1 2-5 year old play area & 1 5-12 year old play area, picnic tables, barbecues, drinking fountains, and security lighting. Aquatic Center. Parking: 346
Placerita Canyon	19152 Placerita Canyon Road	360.44	Community Regional	1 rest room, historic structures, artifacts, nature center, exhibit

Natural Area and Nature Center	Newhall, CA 91231		(Special Use - Natural Area)	area, museum, gift shop, trail staging facility, horse trail, bicycle trail, hiking trail, specialty gardens, animal exhibit, wildlife sanctuary, group camping, info kiosks, educational signage, picnic tables, barbecues, drinking fountains, and security lighting. Parking 222 spaces.
Val Verde Community Regional Park	30300 West Arlington Road Val Verde, CA 91384	57.92	Community Regional	1 office, 1 community building with 2 multipurpose rooms with computer lab, swimming pool & bath house, 2 restrooms, historic park, 1 lighted softball field with an overlay multipurpose field, 1 lighted tennis court, 1 lighted basketball court, 1 hiking trail, 2 horseshoe pits, 1 2-5 year old play area & 1 5-12 year old play area, a camp site, picnic tables, barbecues, drinking fountains, and security lighting. Parking: 150 spaces
Vasquez Rocks Natural Area and Nature Center	10700 West Escondido Canyon Road Agua Dulce, CA 91350	945.41	Community Regional (Special Use - Natural Area)	Nature Center , rangers house – historic structure, archeology, artifacts, amphitheater, Trail staging area, horse trail, hiking trail, animal exhibits, wildlife sanctuary, group camping area, educational signage, and picnic tables. Parking: 240 spaces dirt parking lots.

2. Existing ratios of developed parkland per resident on a Countywide basis and for the parks serving the Project site.

   The Los Angeles Countywide Comprehensive Parks and Recreation Needs Assessment was completed in May 2016. The following are the results from the report. Please visit the link for more information: http://lacountyparkneeds.org/

Countywide, there are 3.3 acres of local and regional recreation parkland per 1,000 residents and 86.2 acres of regional open space and natural areas per 1,000 people.

For the Unincorporated Stevenson-Newhall Ranch-Castaic-Val Verde study area, where the project is located, there are 9.9 park acres of local and regional recreation parkland per 1,000 residents.

3. Current capacity and level of use of parks and recreational facilities near the Project site.

   Jake Kuredjian and Pico Canyon Parks are located within half-mile of the project site. Both parks are passive parks without recreational programming or special events. For more information, please visit the Parks Needs Assessment website for the study area profile.

4. Future plans for construction or expansion of parks and recreational facilities that could serve the Project site.

   The proposed project will increase the recreation demand for local parks in the Santa Clarita Valley region. The Quimby obligation of the project (TM 74650) will be met by the payment of in-lieu fees ($124,143) as of 11/08/2016. The Representative Land Values (RLVs) in Los Angeles County Code (LACC) Section 21.28.140 are used to calculate park fees and are adjusted annually, based on changes in the Consumer Price Index. The new RLVs become effective July 1st of each year and may apply to the subdivision map if first advertised for hearing before either a hearing officer or the Regional Planning Commission on or after July 1st pursuant to LACC Section 21.28.140, subsection 3. Accordingly, the park fee in the Park Obligation Report dated 11/08/2016 is subject to change depending upon when the subdivision is first advertised for public hearing.

   The Department is also requiring the dedication of a trail easement and construction of a trail within the open space lot 43 for the Pico Canyon Trail. The information should be included in the project's Initial Study/Mitigated Negative Declaration.

5. County-adopted parks and recreation standards and acreage goals to be used in analyzing the Project.

   The Department uses the following two goals which can be found in the Parks and Recreation Element of the Los Angeles County General Plan: The "four acres per one thousand persons" is used for local parkland which includes Community Park, Neighborhood Park, Pocket Park and Park Node. The "six acres per one thousand persons" is used for regional parkland which includes Community Regional Park, Regional Park and Special Use Facility.

Please feel free to contact me at (949) 753-7001, to discuss our information needs and/or any questions regarding the Project. If you would prefer to e-mail your response to this information request, please send it to me at ballee@esassoc.com. We very much appreciate your time and assistance.

Sincerely,

ESA PCR

Brian Allee
Senior Associate II

Attachments:
Figure 1, Regional Map
Figure 2, Vicinity Map
Figure 3, Tentative Tract Map

William S. Hart Union High School District

April 19, 2017

ESA PCR
Attention: Brian Allee, Senior Associate II
2121 Alton Parkway, Suite 100
Irvine, CA 92606

Re: Request for Information Regarding School Services and Facilities for Canyon View Estates Project

Dear Mr. Allee,

Included are the responses to your request for information regarding Canyon View Estates Project ("Project").

1. Based on school boundaries, which high schools do you anticipate the students generated by the Project would attend?

   At this time, the William S. Hart Union High School District ("School District") has assigned the area that includes the Project to Rancho Pico Junior High School for grades 7 through 8 and West Ranch High School for grades 9 through 12. These boundaries are subject to change by the Board of Education based on enrollment changes within existing residential developments and due to growth from new residential developments. Such demographic changes may require adjustments to boundaries to adequately serve the student population.

2. Student generation rates for high school the William S. Hart Union High School District utilizes for single-family residential units.

   The student generation rates for the School District are included in the School Facilities Needs Analysis that is attached to this response.

3. Existing enrollments from the current year (2017-2018 school year) and projected enrollments for the year of Project completion (2021-2022), and design capacities for these schools during the year of Project completion (2021-2022).

   Based on data provided to the California Department of Education, Rancho Pico Junior High School has an enrollment of 965 students in school year 2016/2017 and West Ranch High School has an enrollment of 2,391 students in school year 2016/2017.

   Davis Demographics and Planning has prepared an enrollment projection report for the School District that projects student enrollment through the 2023/2024 school year. Based on that document, it is projected that enrollment within the Rancho Pico Junior High School Boundary will be 950 students in school year 2021/2022. This, however, does not factor in the transfer of students within the School District which totals 123 students in the current school year. If that trend remained constant, the enrollment at Rancho Pico Junior High School would be approximately 1,073 students. It is important to note that enrollment within the Rancho Pico Junior High School Boundary is expected to reach 1,153 students in 2023/2024.

   For West Ranch High School, the Davis Demographics Report identifies a 2021/2022 enrollment within the attendance boundary of 2,106 students. In the current school year 622 students who attend West Ranch High School live outside its boundaries and if that trend continues, the enrollment in school year 2021/2022 could be as high as 2,728 students.

   When built, Rancho Pico Junior High School was designed to accommodate 1,200 students and West Ranch High School was designed to accommodate 2,600 students. Since that time, educational requirements have changed resulting in different usage of facilities that may have reduced the actual capacities of these facilities.

21380 Centre Pointe Parkway
Santa Clarita, CA 91350
661-259-0033 ext. 286

4. Number of existing portable classrooms at the identified schools, if any, and the potential to add portable classrooms in the future.

   Rancho Pico Junior High School currently has 8 portable classrooms and West Ranch High School has 7 portable classrooms.

   Neither school has space for additional portables without disruption to outdoor hardscapes and fields, which are part of the educational program of the schools, or without reducing necessary parking spaces at the campuses.

5. Any plans for new facilities or expansion of existing facilities in the Project area in the near future.

   There are currently no plans for new facilities or facilities expansions in the Project area.

6. The current adopted William S. Hart Union High School District SB 50 school facility impact fees by land use type.

   Our reports are attached.

If you have any questions, please feel free to contact me at your convenience.

Sincerely,

Karen M. Bladen
Facility Construction, Accounting Supervisor

21380 Centre Pointe Parkway
Santa Clarita, CA 91350
661-259-0033 ext. 286

COUNTY OF LOS ANGELES

FIRE DEPARTMENT

1320 NORTH EASTERN AVENUE
LOS ANGELES, CALIFORNIA 90063-3294

DARYL L. OSBY
FIRE CHIEF
FORESTER & FIRE WARDEN

May 3, 2017

Brian Allee, Senior Associate II
ESA/PCR
Planning Department
2121 Alton Parkway
Irvine, CA 92606

Dear Mr. Allee:

INITIAL STUDY/MITIGATED NEGATIVE DECLARATION, "CANYON VIEW ESTATES PROJECT," PROPOSES TO DEVELOP 37 SINGLE-FAMILY RESIDENTIAL LOTS, TWO OPEN SPACE LOTS AND FIVE PUBLIC FACILITY LOTS, THE PROPOSED RESIDENTIAL LOTS WOULD OCCUPY APPROXIMATELY 11.3 ACRES OF THE PROJECT SITE, PICO CANYON ROAD AND STEVENSON RANCH PARKWAY, STEVENSON RANCH FFER 201700045

The Initial Study/Mitigated Negative Declaration has been reviewed by the Planning Division, Land Development Unit, Forestry Division, and Health Hazardous Materials Division of the County of Los Angeles Fire Department.

The following are their comments:

PLANNING DIVISION:

1. Fire Station(s) and/or other facilities providing primary/first-in and back-up fire protection services to the project site:

   Fire Station 124 is the jurisdictional station (1st-due) for the project site. It is located at 25870 Hemingway Avenue, Stevenson Ranch, CA 91381.

   Fire Station 73 is the (2nd-due) station for the project site. It is located at 24875 N. Railroad Avenue, Santa Clarita, CA 91321.

2. Information for each serving fire station including:

   a. Fire station service boundaries and population with each of these service areas. If applicable please note any anticipated future changes.

      Fire Station 124 has a jurisdictional service boundary of 33.53 square miles and Fire Station 73's jurisdictional service boundary is 14.57 square miles. However, the Los Angeles County Fire Department (LACFD) operates under a regional concept in its approach to providing fire protection and emergency medical services wherein emergency response units are dispatched as needed to an incident anywhere in the LACFD's service territory based on distance and availability without regard to jurisdictional or municipal boundaries.

   b. Equipment and staffing (e.g., engines, trucks, squads, total full-time and part-time staff, number of firefighters on 24-hour duty, paramedic staff and services, etc.).

      Fire Station 124 is staffed with a 3-person engine company (1-Captain, 1-Fire Fighter Specialist and 1-Fire Fighter Paramedic) and a 2-person paramedic squad (2-Fire Fighter Paramedics) for each 24-hour shift.

      Fire Station 73 is staffed with a 4-person engine company (1-Captain, 1-Fire Fighter Specialist and 1-Fire Fighter Paramedic and 1-Fire Fighter) and a 2-person paramedic squad (2-Fire Fighter Paramedics) for each 24-hour shift.

   c. What is the LACFD's response time goal(s) for fire incidents?

      The Fire Department uses national guidelines of a 5-minute response time for the 1st-arriving unit for fire in urban areas and an 8-minute response time for the 1st-arriving unit in suburban areas. The Santa Clarita Valley is a mix of urban/suburban area.

   d. Most recent data on yearly emergency incidents for each station serving the project area (broken up by type) and associated average response times.

      During 2016, Fire Station 124 responded to a total of 2,043 emergency incidents of which, 42 were fire related incidents, 1,594 were emergency

medical incidents, and 407 were other types, with an average response time of 5:38 minutes.

During 2016, Fire Station 73 responded to a total of 2,238 emergency incidents, of which 66 were fire related incidents, 1,785 were emergency medical incidents, and 387 were other types, with an average emergency response time of 5:11 minutes.

3. Please describe any planned changes to fire staffing and operations to serve anticipated future development in the service area of the project site. Also, describe any planned improvements to the fire protection facilities in the service area of the project (i.e., expansion new facilities, additional staffing, etc.).

   There are no planned improvements in the immediate area of the project site. However, the Department's Developer Fee Detailed Fire Station Plan identifies one replacement station for temporary Fire Station 104 and seven additional fire stations for the Santa Clarita Valley.

4. Beyond any planned improvements or changes in operations discussed under Response 3, would project implementation require the physical expansion of an existing fire station(s), a new fire station, and/or additional staffing to the fire protection facilities servicing the project site? If yes, please answer questions a-c below. If no, proceed to Question 5.

   No, the project would not require new facilities, expansions, or additional staffing.

5. What would be the anticipated LACFD response time for fire incidents to the project site?

   Based on the information provided (no actual road network), it is estimated that Fire Station 124 would have an estimated response time of 3:40 minutes to the intersection of Southern Oaks Drive and Magnolia Lane.

6. Development requirements as relevant to the project including:

   a. Fire flow requirements for building of this design, height, and location.

      To be answered by Land Development Division.

   b. Fire protection devices (e.g., sprinklers, alarms).

To be answered by Land Development Division.

c. Any Project-specific fire access during project construction and project operation (including ingress/egress, turning radii, driveway width, grading, etc.) requirements and concerns.

To be answered by Land Development Division.

d. Fire hydrants and spacing.

To be answered by Land Development Division.

Any other design feature or special fire protection equipment required due to the location, uses, or other attributes of the project.

We have no further comments.

LAND DEVELOPMENT UNIT:

1. Request Information - Question #6 Development requirements as relevant to the Project?

   a. The proposed single family residential buildings are required to provide a minimum fire flow of 1,250 gallons per minute at 20 pounds per square inch for a 2 hour duration. The fire flow may increase if the proposed residential buildings exceed 3,600 total square feet. In this case use Table B105.1(2) in the County of Los Angeles Fire Code to determine the required fire flow.

   b. All proposed residential buildings will be required to provide an approved fire sprinkler system per the County of Los Angeles Residential, Building, and Fire Codes.

   c. Public streets in compliance with the Department of Public Works will be the primary access for this development. All streets and public infrastructure such as fire hydrants shall be installed prior to commence of any construction of any residential building.

   d. The spacing between new public fire hydrants will be 600 feet.

Should any questions arise regarding the information to question #6, please contact Juan Padilla of the County of Los Angeles Fire Department's Land Development Unit at (323) 890-4243 or at Juan.Padilla@fire.lacounty.gov.

FORESTRY DIVISION – OTHER ENVIRONMENTAL CONCERNS:

The statutory responsibilities of the County of Los Angeles Fire Department's Forestry Division include erosion control, watershed management, rare and endangered species, vegetation, fuel modification for Very High Fire Hazard Severity Zones or Fire Zone 4, archeological and cultural resources, and the County Oak Tree Ordinance. Potential impacts in these areas should be addressed.

The County of Los Angeles Fire Department's Forestry Division has not further comments regarding this project.

HEALTH HAZARDOUS MATERIALS DIVISION:

The Health Hazardous Materials Division (HHMD) of the Los Angeles County Fire Department has no comments for the request for information regarding fire protection and emergency medical services and facilities for the project. However, HHMD advises that a Phase I Environmental Site Assessment should be conducted because some areas of the project site proposed to be developed may require environmental assessment and/or mitigation under environmental oversight by the appropriate authorized government agencies that include, but are not limited to, the California Division of Oil Gas & Geothermal Resources, the Los Angeles Regional Water Quality Control Board, the California Department of Toxic Substances Control, and/or the HHMD Site Mitigation Unit.

If you have any additional questions, please contact this office at (323) 890-4330.

Very truly yours,

Michael Y. Takeshita

MICHAEL Y. TAKESHITA, ACTING CHIEF, FORESTRY DIVISION
PREVENTION SERVICES BUREAU

MYT:ac

761551N25A – SH-AD (3/16)

COUNTY OF LOS ANGELES

SHERIFF'S DEPARTMENT

"A Tradition of Service Since 1850"

DATE: May 9, 2017
FILE:

OFFICE CORRESPONDENCE

FROM: ROBERT J. LEWIS, CAPTAIN
SANTA CLARITA STATION

TO: TRACEY JUE, DIRECTOR
FACILITIES PLANNING BUREAU

SUBJECT: RESPONSE TO REQUEST FOR INFORMATION REGARDING SHERIFF'S FACILITIES AND SERVICES FOR THE PROPOSED CANYON VIEW ESTATES PROJECT

The following information is provided by the Santa Clarita Valley Sheriff's Station (Station) in response to a Request for Information (Request), dated April 11, 2017, from ESA PCR (Requestor). The Requestor, in coordination with Los Angeles County Department of Regional Planning (LADRP), is preparing an Initial Study/Mitigated Negative Declaration (IS/MND) for the Canyon View Estates Project (Project). The proposed Project will encompass 94 acres, generally located south of the Intersection of Pico Canyon Road and Stevenson Ranch Parkway, in the unincorporated community of Santa Clarita Valley. The IS/MND will identify potential impacts to the Station's resources and operations following implementation of the proposed project.

The proposed Project will develop 37 single-family residential, supporting public roadway infrastructure, desilting basins, and open space. The Project also proposes access from the existing Magnolia Lane within the neighboring Southern Oaks community. Construction of the proposed Project is expected to commence as early as Summer 2018, and will continue for approximately 36 months. Under this schedule, the first units would be ready for occupancy in Fall 2019. Assuming the construction would occur in one phase, the proposed Project would be fully occupied in Summer 2021.

CONTENTS
J. Diaz
NOTED

The information below is formatted to correspond with the format of the Request:

1. ***Sheriff Station(s) and/or other facilities providing primary and back-up responses to the Project site:***

The Santa Clarita Valley Sheriff's Station, located at 23740 Magic Mountain Parkway in Valencia, is the primary law enforcement service provider to the area within which the proposed Project is located.

Various other law enforcement agencies within and beyond the limits of Los Angeles County provide additional law enforcement services and resources to the Department via existing mutual aid agreements.

2. ***Provide information regarding the sheriff's station(s) serving the Project site, including:***

   a. *Staffing and equipment:*

      As of January 2017, the Station is staffed by 181 sworn personnel and 39 civilian employees. Assets assigned to the Station include an undisclosed number of radio cars, motorcycles, unmarked vehicles, and other specialty vehicles. The Station is equipped with a heliport for emergency flight operations. The Station operates on a 24-hour basis utilizing multiple shifts (day, night, and early morning) and an undisclosed number of personnel per shift.

   b. *Population served and service area boundaries:*

      As of January 2017, the estimated resident population of the Station's service area is 279,000. The Station's service area encompasses approximately 656 square miles, and includes the City of Santa Clarita and unincorporated County territory between the City of Los Angeles to the south, the Kern County line to the north, the Ventura County line to the west, and the township of Agua Dulce to the east.

   c. *Special service teams within the division and sheriff station:*

      Arson Explosives Detail: Provides fire and explosive, investigative, technical, and emergency response services. All team members are certified bomb technicians and arson investigators.

      Canine Services Detail: Assists patrol and search operations utilizing specially trained canine deputies and handlers.

      Emergency Services Detail: Coordinates and conducts mountain search and rescue operations, underwater search and rescue operations, swift water and flood rescue operations. All deputies are certified paramedics and rescue divers.

HazMat Detail: Responds to incidents involving chemical, biological, radiological, and nuclear weapons.

Special Enforcement Detail: Provides high-risk tactical operations in response to incidents involving barricaded persons, hostage situations, high-risk warrants, and security for visiting dignitaries.

d. *Most recent average emergency response times for the County as a whole and for the station serving the Project area:*

The Department generally adheres to the following, widely-accepted industry standard among law enforcement agencies for responding to emergent, priority, and routine calls for service: 10 minutes, 20 minutes, and 60 minutes, respectively.

The proposed Project is approximately 4.8 miles from the Station. The Station's estimated response times for emergent, priority, and routine calls for service received from the proposed Project are 7.1, 19.7, and 65.4 minutes, respectively. (Please note these are approximate time ranges only and could be affected by traffic conditions and the deployment of radio cars when the call for service is received.) Optimal response times for emergent, priority, and routine calls, are 10 minutes, 20 minutes, and 60 minutes, respectively.

e. *Most recent annual (not year to date) crime statistics for the County as a whole, the applicable reporting district, and the sheriff station:*

The Project is located within the Department's North Patrol Division, and within Reporting District 0660 of the Station's service area. During the reporting period beginning January 1, 2016 and ending December 31, 2016, there were a total of 61 Part I crimes committed in Reporting District 0660, including:

- Murder/non-negligent homicide... 0;
- Forcible rape..... 1;
- Robbery 2;
- Aggravated Assault..... 1;
- Burglary.....10;
- Motor vehicle theft..... 3;
- Larceny/theft 44;
- Arson ..... 0.

3. Describe any planned changes to sheriff staffing and operations to serve the anticipated future development in the service of the Project site. Also, describe any planned improvements to the sheriff protection facilities in the service area of the Project site. (i.e., expansion, new facilities, additional staffing, etc.), if applicable:

A proposed new facility to replace the Station is currently in the final planning stages. Programming and funding have yet to be finalized.

4. ***Beyond any planned improvements or changes in the operations discussed under Response 3, would Project implementation require the physical expansion of an existing sheriff station(s), a new sheriff station, and/or additional staffing to the sheriff protection facilities servicing the Project site? If yes, please answer a-c below. If not, proceed to Question 5.***

   The Station itself, including our secured parking area, has operated above-capacity for several years. The addition of sworn personnel to improve our service ratio to industry standards will exacerbate the Station's existing space deficiencies.

   The Station is currently understaffed and operates above capacity. Assigning additional personnel to the Station to meet an acceptable service ratio will exacerbate the current shortage of space and attendant assets. Any expansion of the Station, or construction of new facilities, should not only account for the current shortage, but should also accommodate additional personnel and assets that will become necessary as our service area continues to experience growth and intensification of land uses.

   Aside from the shortage of resources and assets described in the above response, the proposed Project is not expected to pose any unique condition or special circumstance that would result in a significant impact to the Station. Of course, the Station reserves the right to revise this assessment, if necessary, as additional details regarding the proposed Project become available.

   a. *Describe any new or expanded sheriff facilities resulting from Project implementation.*

      See response to # 3 above.

   b. *If any new staff required, how many and what position?*

      Additional staff will be required to properly address the increased calls for service. Specifically, one additional deputy will be needed for patrol enforcement.

   c. *If any new staff required, could the new staff be accommodated within existing or planned station(s) without the need for physical expansion of the existing station(s)?*

      The Station is currently understaffed and operates above capacity. Assigning additional personnel to the Station to meet an acceptable

service ratio will exacerbate the current shortage of space and attendant assets.

5. ***What would the anticipated LACSD response time for crime incidents to the Project site with the Project? What would be the response time goal to the site with the Project?***

   Target response times are not established by the Department. Rather, the Department generally adheres to the following, widely-accepted industry standard among law enforcement agencies for responding to emergent, priority, and routine calls for service: 10 minutes, 20 minutes, and 60 minutes, respectively.

6. ***Any other design features or special sheriff protection requirements or design features due to the specific attributes of the Project?***

   The Department generally prescribes to the principles of Crime Prevention Through Environmental Design (CPTED). The goal of CPTED is to reduce opportunities for criminal activities by employing physical design features that discourage anti-social behavior, while encouraging the legitimate use of the site. The overall tenets of CPTED include defensible space, territoriality, surveillance, lighting, landscaping, and physical security. With advanced notice, Station personnel can be available to discuss CPTED with the Project developer.

Thank you for including the Station in the environmental review process for the proposed Project. Should you have any questions of the Station regarding this matter, please feel free to contact Operations Lieutenant Justin Diez at 661-799-5102.

RJL:JRD:jrd

NEWHALL SCHOOL DISTRICT
COLLABORATE | INNOVATE | PERSEVERE | EXCEL

25375 Orchard Village Road, Valencia, CA 91355
District Office: 661-291-4000 District Fax: 661-291-4001
www.newhallschooldistrict.net

May 3, 2017

Brian Allee
Senior Associate II
ESA PCR
2121 Alton Parkway, Suite 100
Irvine, CA 92606

Re: Canyon View Estates Project
Location: 1000 feet south of the intersection of Pico Canyon Road and Stevenson Ranch Parkway

This is a response to your request for information for the preparation of the Initial Study/Mitigated Negative Declaration.

Pico Canyon Elementary was built in the southern Stevenson Ranch area twelve years ago and filled to capacity within one year. Due to the cap on enrollment, diverted students are assigned to various other schools in our district. While other district schools now have some excess capacity, due to the diligent efforts of the school district to construct new schools, the available sites are not in the vicinity of this development and the Newhall School District does not offer bus services in this situation. Therefore, this project cannot be served by the nearest schools and diversion of students will increase traffic as parents are required to enroll their students at distant sites.

This project will have a considerable negative effect on local elementary schools. Based on school attendance boundaries, students from this development would attend Pico Canyon Elementary School for grades TK-6. Student generation rates used by the district as of February 2017 are .466 for single family dwellings. Existing enrollments for this school as of April 21, 2017 is 946 students and enrollments already exceed designed capacity. Enrollments for 2017-2018 for this site are projected at 928 students. Projected enrollments for the year of Project completion (2021-22) is 924. This school site is sized for 850 students and contains three portable classrooms used for the Special Day Class program at the site. There is currently not sufficient room to add more portable classrooms at the site. There are no plans currently for expansion of facilities at this site. The Governing Board will consider adoption of the School Fee Justification Study at its May 16, 2017 Board meeting. Proposed Level 1 fees are $1.57 per square foot for an effective date of July 17, 2017. Current Level 1 fees are $1.51 per square foot. The District does not collect Level 2 fees.

Sincerely,

Ronna Wolcott
Assistant Superintendent, Business Services

4761551N25A-SH-AD32A (2/72) -PS9-85

COUNTY OF LOS ANGELES
SHERIFF'S DEPARTMENT
"A Tradition of Service"

DATE: March 6, 2014
FILE NO:

OFFICE CORRESPONDENCE

FROM: ROOSEVELT JOHNSON, CAPTAIN
SANTA CLARITA VALLEY STATION

TO: GARY T.K. TSE, DIRECTOR
FACILITIES PLANNING BUREAU

SUBJECT: **REQUEST FOR INFORMATION REGARDING POLICE PROTECTION FACILITIES AND SERVICES FOR THE STEVENSON RANCH PROJECT**

The following information is provided by the Santa Clarita Valley Sheriff's Station (Station) in response to a Request for Information, dated February 27, 2014, from PCR Services Corporation (PCR). PCR is preparing an Environmental Impact Report (EIR) for the Stevenson Ranch Project (Project). The proposed Project will construct 102 single-family dwellings and associated supporting infrastructure on a 230-acre site in the Stevenson Ranch area of Santa Clarita Valley.

Police station(s) and/or other facilities providing police protection services to the Project site:

The Station, located at 23740 Magic Mountain Parkway in Valencia, is the primary law enforcement service provider to the area within which the proposed Project is located. The Station currently deploys one to two patrol cars, per shift, to the proposed Project site.

Staffing and equipment for each police station/facility serving the Project site (e.g., patrol cars, total full-time and part-time staff, number of officers on 24-hr. duty, etc.):

The Station is currently staffed by 189 sworn deputies and 38 civilian employees. The Station provides 24-hour field deployment via multiple shifts, utilizing patrol cars, helicopters, emergency operations personnel, search and rescue personnel, and a mounted posse. For security reasons, the Station will not disclose the total number of vehicles, or specify the types of equipment utilized for law enforcement purposes.

Most recent data on associated response times for emergency, non-emergency, etc. calls (or otherwise named by the LASCSD) for the station/facility serving the Project site. What is the Department's goal for response time to the Project site? Are current response times at or under the response time goals for the Department? Please provide anticipated time to the Project site:

The Station's forecasted response times to the proposed Project site for emergent, priority, and routine calls, are 2 to 4 minutes, 5 to 10 minutes, and 10 to 20 minutes respectively (please note these are approximate time ranges only, and could be affected by traffic conditions and the deployment of radio cars when the call for service is received). Optimal response times for emergent, priority, and routine calls are 10 minutes, 20 minutes, and 60 minutes, respectively.

Service boundaries and population served by the police station(s) serving the site:

The Station's service area encompasses approximately 656 square miles, and includes the City of Santa Clarita and unincorporated County territory between the City of Los Angeles to the south, the Kern County line to the north, the Ventura County line to the west, and the township of Agua Dulce to the east. The estimated resident population of the Station's service area is 270,000.

Who would be the back-up responders?

Various other law enforcement agencies within and beyond the limits of Los Angeles County provide additional law enforcement services and resources to the Department via existing mutual aid agreements.

Planned improvements to the police protection facilities in the service area of the Project site (i.e., expansion, new facilities, additional staffing, etc.), if applicable:

At this time, the Station is not aware of any approved plans for improvements, expansion, new facilities, additional staffing, etc.

Any special police protection requirements or necessary measures due to the location or other attributes of the Project:

Based on the limited amount of Project-related details and information available at this time, the Station is not aware of any special police protection requirements or measures that are necessary due to Project location or other attribute. The Station will review this matter further as additional Project-related details and information are developed and received.

Thank you for including the Station in the environmental review process for the proposed Project. Should you have any questions of the Station regarding this matter, feel free to contact me at (661) 255-1121 or Lieutenant Brenda Cambra at (661) 799-5815.

RJ:LM:eh

GTKT:LM:lm/jh

Attachments

c: Roosevelt Johnson, Captain, Santa Clarita Valley (SCV) Station
Brenda Cambra, Lieutenant, SCV Station
Eileen Hanie, Operations Assistant, SCV Station
David Culver, Assistant Director, Facilities Planning Bureau (FPB)
Meghan Wang, Principal Facilities Project Manager, FPB
Lester Miyoshi, Departmental Facilities Planner, FPB
Chrono
(EIR-PoliceProtection-StevensonRanchProj)

County of Los Angeles
Sheriff's Department Headquarters
4700 Ramona Boulevard
Monterey Park, California 91754-2169

John E. Scott, Sheriff

March 25, 2013

Mike Harden
Principal Planner
PCR Services Corporation
One Venture, Suite 150
Irvine, California 92616

Dear Mr. Harden:

RESPONSE TO REQUEST FOR INFORMATION REGARDING POLICE PROTECTION FACILITIES AND SERVICES STEVENSON RANCH PROJECT

Thank you for inviting the Los Angeles County Sheriff's Department (Department) to review and respond to your February 27, 2014, Request for Information regarding police protection facilities and services (Request) for the Stevenson Ranch Project (Project). The Project would construct 102 single-family dwellings and associated supporting infrastructure on the 230-acre site in Stevenson Ranch. The Request is part of your efforts to identify and assess the Project's potential impacts on the Department's facilities and services.

The Department's response to your Request was prepared by Roosevelt Johnson, Captain of the Santa Clarita Valley Sheriff's Station (see attached correspondence, dated March 6, 2014).

For future reference, all California Environmental Quality Act documents, requests for information, and other related correspondence should be directed to the Department's Facilities Planning Bureau at the following address:

Gary T.K. Tse, Director
Facilities Planning Bureau
Los Angeles County Sheriff's Department
1000 South Fremont Avenue
Building A9-East, Fifth Floor, Unit 47
Alhambra, California 91803
Attention: Lester Miyoshi, Departmental Facilities Planner

Should you have any questions regarding this matter, please contact Lester Miyoshi, of my staff, at (626) 300-3012, and refer to Facilities Planning Bureau Project No. E14-011. You may also contact Mr. Miyoshi, via email, at Lhmiyosh@lasd.org.

Sincerely,

JOHN L. SCOTT, SHERIFF



Gary T.K. Tse, Director
Facilities Planning Bureau

4761551N25A-SH-A032A (2/72) PS9-85

RECEIVED
#16
JAN 21 2016
Orig. to Lester cc: Tracy
David, Subj. File.
FACILITIES PLANNING BUREAU

COUNTY OF LOS ANGELES
SHERIFF'S DEPARTMENT
"A Tradition of Service"

DATE: January 19, 2016
FILE NO:

OFFICE CORRESPONDENCE

FROM: ROOSEVELT JOHNSON, CAPTAIN
SANTA CLARITA VALLEY STATION

TO: TRACEY JUE, DIRECTOR
FACILITES PLANNING BUREAU

SUBJECT: **REVIEW COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE AIDLIN HILLS RESIDENTIAL PROJECT – COUNTY PROJECT NO. 00-136-(5)**

The Santa Clarita Valley Station (Station) reviewed the Draft Environmental Impact Report (DEIR), dated December 2015, for the Aidlin Hills Residential Project (Project). The proposed Project will construct 102 single-family homes and associated supporting infrastructure in the Stevenson Ranch community of Los Angeles County. The proposed Project is expected to generate a resident population of 306 persons, and will increase average daily traffic on Pico Canyon and Stevenson Ranch Roads, west of Interstate 5, by a total of 971 vehicle trips.

Section 4.11 of the DEIR contains various information pertaining to the Station (location, staffing, assets, service area/population, response times, etc.), some of which is obsolete. The Station provides the following updated information:

- As of July 2015, the Station is staffed by 200 sworn personnel and 43 civilian employees;
- As of July 2015, the resident population of the Station's service area is 279,000; and,
- As of July 2015, the Station's service ratio is one deputy per 1,395 residents, (0.72 deputy per 1,000 residents).

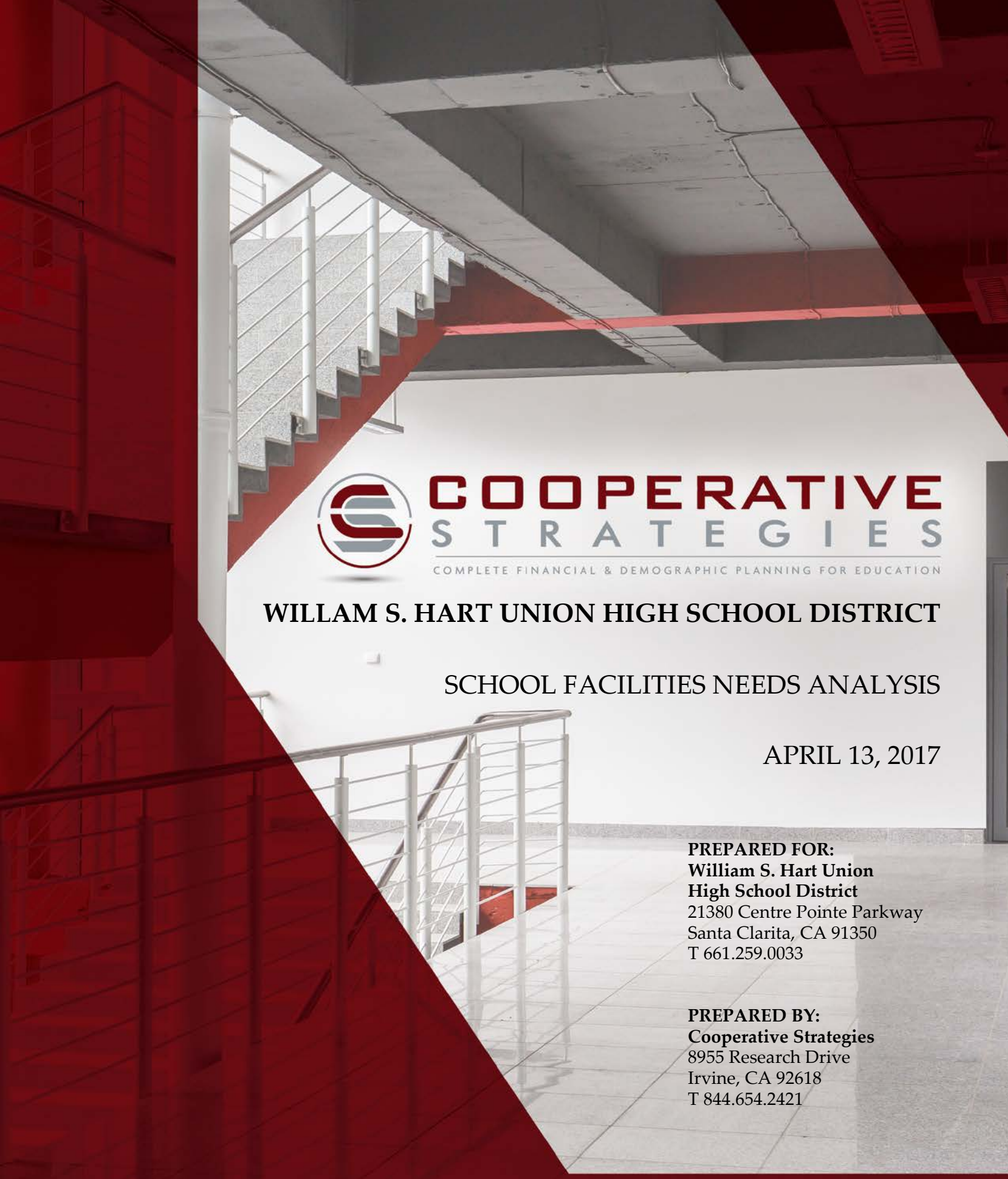
Section 4.11 of the DEIR also discusses potential Project-related impacts to the Department, including increased demands for service, the possible need for additional staff and assets, cumulative impacts, etc. According to the DEIR, such impacts are expected to be less than significant, and attributes this conclusion on future growths in the Department's operating budget following expected growths in the County's tax-base. In addition, the County can expect to collect developer fees, including Law Enforcement Facilities Fees specified in Chapter 22.74 of the Los Angeles County Municipal Code, for current and reasonably foreseeable future projects. These additional revenue streams would be used by the Department to fund additional staff, facilities, and assets, and would keep the Station's response times within acceptable limits.

The DEIR also suggests that the Department can address potential future crime by reviewing development proposals and recommending various strategies and physical design features to discourage criminal behavior and activities.

At this time, the Station does not dispute conclusions made in the DEIR regarding potential Project-related impacts to law enforcement services provided by the Department. However, the Station reserves the right to amend this assessment, if necessary, upon subsequent reviews of the proposed Project.

Thank you for including the Station in the environmental review process for the proposed Project. Should you have any questions regarding this matter, please contact Operations Lieutenant Todd P. Weber at (661) 799-5102.

RJ:TPW:tw



COOPERATIVE STRATEGIES

COMPLETE FINANCIAL & DEMOGRAPHIC PLANNING FOR EDUCATION

WILLAM S. HART UNION HIGH SCHOOL DISTRICT

SCHOOL FACILITIES NEEDS ANALYSIS

APRIL 13, 2017

PREPARED FOR:
William S. Hart Union High School District
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Santa Clarita, CA 91350
T 661.259.0033

PREPARED BY:
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EXHIBITS

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EXHIBIT B:	Current SAB Form 50-02
EXHIBIT C:	Current SAB Form 50-03
EXHIBIT D:	Eligibility Determination from the SAB
EXHIBIT E:	Summary of School Facility Planning Policies and Estimates of Actual School Facility Costs
EXHIBIT F:	Bonding Capacity Calculation
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EXHIBIT H:	Correspondence with the City and County
EXHIBIT I:	Reconstruction
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EXHIBIT M:	Calculation of Additional Grants for General Site Development
EXHIBIT N:	Allocation of GO Bond Authorization

EXECUTIVE SUMMARY

This School Facilities Needs Analysis ("Analysis") has been prepared in accordance with applicable laws to provide the factual basis for the William S. Hart Union High School District ("School District") to consider and, if desired, adopt alternative school facility fees ("Alternative Fees") that may be collected from residential development in the School District consistent with Section 17620 of the Education Code and Sections 65995.5, 65995.6, and 65995.7 of the Government Code (future code section references are to the Government Code unless otherwise specified). The Analysis provides factual information as to the following three (3) elements:

(i) Determination by the State Allocation Board ("SAB") of eligibility to receive funds from the State of California ("State") for new school facility construction;

(ii) Designation by the School District of satisfying at least two (2) of the four (4) statutory school requirements ("Statutory Requirements") set forth in Section 65995.5(b)(3); and

(iii) Calculation of the amount of the permissible Alternative Fees authorized by Section 65995.5 ("Alternative No. 2 Fee") and by Section 65995.7 ("Alternative No. 3 Fee").

A. Eligibility for New Construction Funding from the State

The School District has taken action electing to participate in the School Facilities Program ("SFP") established by Section 17070.10 of the Education Code and authorized a designated representative to (i) approve, certify, and submit the SAB Forms 50-01, 50-02, and 50-03 to the SAB and (ii) request an eligibility determination ("Eligibility Determination") for new construction funding as required by the SFP.

As shown in Exhibits A, B, C, and D, the School District is eligible to receive new construction funding under the SFP.

B. Compliance with Statutory Requirements

A review of the records of the School District was accomplished to ascertain if the School District satisfies at least two (2) of the Statutory Requirements. Table ES-1 summarizes the Statutory Requirements and identifies those satisfied by the School District as of the date hereof.

Table ES-1
Summary of Statutory Requirements

Statutory Requirements	Status
Substantial enrollment as defined in Section 65995.5(b)(3)(A) of its students on a multi-track year-round calendar	**Not Met**
Placed at least one (1) general obligation ("GO") bond measure on the ballot in the last four (4) years, and the measure received at least 50 percent plus one (1) of the votes cast	**Not Met**
Issued debt or incurred obligations for capital outlay in an amount equivalent to the percentage of its bonding capacity specified in Section 65995.5(b)(3)(C)	**Met**
At least 20 percent of the teaching stations are relocatable classrooms	**Met**

C. Calculation of Alternative No. 2 Fee and Alternative No. 3 Fee

The facts set forth herein justify on a roughly proportional and a reasonably related basis that the following amounts meet the requirements of Sections 66000 *et seq.*, as well as other applicable legal requirements, including but not limited to Sections 65995.5, 65995.6 and 65995.7. Because Newhall School District ("NSD"), Saugus Union School District ("SUSD"), and Sulphur Springs Union School District ("SSUSD") serve elementary school students (i.e., grades kindergarten through 6), and Castaic Union School District ("CUSD") serves elementary and junior high school students (i.e., grades kindergarten through 8), the Analysis identifies Alternative Fees by location. The Alternative No. 2 Fee and Alternative No. 3 Fee for the School District are listed in Table ES-2.

Table ES-2
Alternative Fees (2017$)

Fee	Units Located Within the CUSD Area of the School District	Units Located Within NSD, SUSD, & SSUSD
Alternative No. 2 Fee	$1.61	$2.67
Alternative No. 3 Fee	$3.21	$5.34

Attached as Exhibit E is (i) a summary of the school facility planning policies of the School District and (ii) an estimate of the school facilities cost impacts per square foot of residential construction. As can be seen from comparing Exhibit E to the recommended Alternative No. 2 Fee and the Alternative No. 3 Fee in Table ES-2, the Alternative Fees are less than the comparable amounts set forth in Exhibit E and are not sufficient to cover all of the actual school facilities cost impacts caused by new residential development on the School District.

Therefore, the Alternative No. 2 Fees and the Alternative No. 3 Fees are reasonably related and roughly proportional to the cost of school facilities for the future development identified in the Analysis in accordance with applicable laws.

D. Imposition of Alternative No. 2 Fee and Alternative No. 3 Fee

Prior to the adoption of the Analysis, the public is given a 30-day period to review and comment on the Analysis, and any written comments received by the Governing Board of the School District must be responded to. The Governing Board is also required to hold a public hearing prior to its consideration of the Analysis.

Should the Governing Board of the School District approve the resolution that adopts the Analysis and the accompanying Alternative No. 2 Fee and Alternative No. 3 Fee, those amounts would be effective immediately for a period not to exceed 12 months. By approving the Analysis and the accompanying Alternative Fees, the Governing Board is authorizing the imposition of the Alternative No. 2 Fee for those periods when the State has new construction bond funds available and the Alternative No. 3 Fee for those periods when the SAB is no longer approving apportionments for new construction due to a lack of funds available and the conditions in Section 65995.7 have been met.

I. GENERAL

Upon adoption of Alternative Fees by a school district, such Alternative Fees may be required in accordance with applicable law. It is anticipated that such adoption will specify that Alternative No. 2 Fees will be required as provided in Section 65995.5(a) if the SAB is approving apportionments for new construction funding, and Alternative No. 3 Fees will be required as provided in Section 65995.7(a), if the SAB is not approving apportionments for new construction funding.

The Analysis is divided into seven (7) main sections.

- Section I is the introductory section that generally describes the methodology used in preparing the Analysis.
- Section II describes the Eligibility Determination that has been obtained from the SAB, as well as documents which of the four (4) Statutory Requirements the School District presently satisfies.
- Section III projects the unhoused students to be generated by residential development anticipated to occur in the School District over the next five (5) years ("Future Units") in accordance with Section 65995.6(a).
- Section IV identifies any surplus school sites or existing surplus local funds that the School District might elect in whole or part to use to reduce the impact of the Future Units on the School District.
- Section V of the Analysis sets forth the recommended amount of the Alternative No. 2 Fee.
- Section VI of the Analysis sets forth the recommended amount of the Alternative No. 3 Fee.
- Finally, Section VII documents facts whereby the School District may make determinations regarding compliance of the Alternative Fees with Sections 66000 *et seq.*

Eligibility to Collect Alternative Fees

Eligibility to Receive State Funds

A school district must have been determined by the SAB to be eligible for new construction funding under the SFP pursuant to Section 65995.5(b)(1).

Statutory Requirements

A school district must satisfy at least two (2) of the four (4) Statutory Requirements in order to adopt and impose Alternative Fees. The Statutory Requirements are summarized as follows:

1. A school district has a substantial enrollment, as defined in Section 65995.5(b)(3)(A) ("Substantial Enrollment") of its students on a multi-track year-round calendar;

2. A school district has placed at least one (1) GO bond measure on the ballot in the last four (4) years, and the measure received at least 50 percent plus one (1) of the votes cast;

3. A school district has issued debt or incurred obligations for capital outlay in an amount equivalent to a certain percentage of its bonding capacity; and/or

4. At least 20 percent of the teaching stations within a school district are relocatable classrooms.

Projected Unhoused Students from Future Residential Development

Total Projected Student Enrollment

In determining the amount of any proposed Alternative Fees, a school district must project in accordance with Section 65995.6 the total number of students to be generated by Future Units ("Projected Student Enrollment"). This projection is performed by applying the student generation rates for residential development over the previous five (5) years of a type similar to that of the Future Units either in the school district or in the city or the county in which the school district is located. The projection may be modified by relevant planning agency information.

Excess Capacity

A school district must identify and consider the number of excess seats, if any, which are available at each school level (i.e. junior high school and high school). If surplus seats exist at one (1) or more school levels, the school district must

determine what portion of the excess seats, if any, should be made available to accommodate the Projected Student Enrollment. The determination may include such considerations as matriculation of existing students, advance funding from mitigated future residential units, long term needs of the school district, as well as other relevant factors. Excess seats shall be determined by comparing capacity as calculated pursuant to Section 17071.25 of the Education Code to student enrollment.

Projected Unhoused Students

Lastly, a school district must reduce the Projected Student Enrollment by the excess capacity, if any, that is identified and allocated by the school district to the Future Units to calculate the number of projected unhoused students ("Projected Unhoused Students").

Surplus Property and Existing Surplus Local Funds

Surplus Property

A school district must identify and make a reasonable allocation of surplus property, if any, which could be (i) used as a school site and/or (ii) sold to finance additional school facilities needed to accommodate the Projected Unhoused Students.

Existing Surplus Local Funds

A school district must identify and make a reasonable allocation of existing surplus local sources, including local funds, which includes commercial/industrial school fees ("Local Funds"), if any, that could be available to finance the construction of school facilities needed to accommodate the Projected Unhoused Students as referred to in Section 65995.5(c)(2) and 65995.6(b)(3).

Alternative No. 2 Fee

Student Capacity and Site Size of Future School Facilities

A school district must determine the appropriate number of students to be housed at each school level. Pursuant to Section 65995.5(h), after this determination has been made, the school district must calculate the appropriate site size for each school level based on the "School Site Analysis and Development Handbook" published by the State Department of Education as that handbook read as of January 1, 1998.

Site Acquisition and Site Development Costs

A school district must establish a factual basis for the estimated cost of acquiring property(s) for a school site(s) or the appraised value of a proposed school site(s). Additionally, the school district must establish an estimate of the permissible cost of developing such site(s). The site development cost includes utilities, off-site, and service site development costs.

Total School Facility Costs per Student and Total School Facility Costs

A school district must estimate the total school facility costs per student based on the site acquisition and the site development costs mentioned above, as well as the amounts specified in Section 65995.5, which may or may not be adequate to fund the necessary school facilities. Thereafter, the total school facility costs must be calculated. This calculation involves multiplying the number of Projected Unhoused Students by the school facility costs per student set forth in Section 65995.5 and subtracting any available local sources, including Local Funds, identified by the school district and dedicated to such portion of future development in the school district.

Residential Square Footage to be Constructed during the Next Five (5) Years

Based on information from the county, the city(s) or one (1) or more independent third party market reports, a school district must estimate the total assessable square footage of the Future Units.

Alternative No. 2 Fee

A school district must calculate the Alternative No. 2 Fee by dividing the total school facility costs by the total assessable square footage of the Future Units in accordance with Section 65995.5(c).

Alternative No. 3 Fee

Alternative No. 3 Fee

The Alternative No. 3 Fee is determined by increasing the Alternative No. 2 Fee by an amount that may not exceed the amount calculated pursuant to Section 65995.5(c), provided that the calculation of such amount excludes reductions for available local sources, including Local Funds, identified and dedicated in accordance with Section 65995.7(a).

II. ELIGIBILITY TO COLLECT ALTERNATIVE FEES

Section 65995.5 requires that a school district (i) be eligible for new construction funding under the SFP and (ii) satisfy at least two (2) of the Statutory Requirements to be eligible to impose an Alternative No. 2 Fee or an Alternative No. 3 Fee. Section II.A provides an evaluation of the eligibility of the School District for new construction funding under the SFP and Section II.B documents the School District's satisfaction of at least two (2) Statutory Requirements.

A. Eligibility to Receive State Funds

The School District has taken action electing to participate in the SFP established by Section 17070.10 of the Education Code. Additionally, the School District authorized a designated representative to (i) approve, certify, and submit the SAB Forms 50-01, 50-02, and 50-03 to the SAB and (ii) request an Eligibility Determination for new construction funding as required by the SFP. The School District filed SAB Forms 50-01, 50-02, and 50-03 and requested an Eligibility Determination for new construction funding as required by the SFP on March 5, 1999. On May 26, 1999, the Eligibility Determination of the School District was approved by the SAB. Subsequently, the School District submitted updated SAB Forms 50-01, 50-02, and 50-03 as part of its ongoing facilities planning and financing program. The most current SAB Forms 50-01, 50-02, and 50-03 are incorporated herein as Exhibits A, B, and C, respectively. As shown in the School District's most current Eligibility Determination from the SAB (attached and incorporated as Exhibit D), the School District is eligible for new construction funding under the SFP for 3,646 students in grades 7 and 8; 5,146 students in grades 9 through 12; 772 non-severe special day class students; and 298 severe special day class students.

B. Statutory Requirements

As stated in Section I, a school district must satisfy at least two (2) of the four (4) Statutory Requirements in order to levy Alternative Fees. What follows are facts establishing that the School District satisfies at least two (2) of the Statutory Requirements.

1. <u>Substantial Enrollment on Multi-track Year-Round Schedule</u>

This Statutory Requirement is met if the school district has Substantial Enrollment on a multi-track year-round schedule. Substantial Enrollment is defined differently for different types of school districts, as follows:

a. *Unified School Districts and Elementary School Districts*. At least 30 percent of the school district's students in grades kindergarten through 6 are on a multi-track year-round schedule in the high school attendance area in which all or some of the new residential units identified in the Analysis are planned for construction.

b. *High School Districts.* (i) At least 30 percent of the high school district's students are on a multi-track year-round schedule, or (ii) at least 40 percent of the students in grades kindergarten through 12 within the boundaries of the high school attendance area in which all or some of the new residential units identified in the Analysis are planned for construction are on a multi-track year-round schedule.

The School District has determined that this Statutory Requirement has not been satisfied.

2. <u>General Obligation Bond Measure</u>

This Statutory Requirement is met if the school district has placed a GO bond measure on the ballot in the last four (4) years and received at least 50 percent plus one (1) of the votes cast on one (1) such measure.

The School District has determined that this Statutory Requirement has not been satisfied.

3. <u>Debt or Obligations for Capital Outlay</u>

This Statutory Requirement is met if the school district has issued debt or incurred obligations for capital outlay in an amount equivalent to a specified percent of its local bonding capacity. If the debt does not include debt associated with a Mello-Roos Community Facilities District ("CFD") formed by a landowner election after November 4, 1998, the threshold is 15 percent. If the debt includes debt associated with a Mello-Roos CFD formed by a landowner election after November 4, 1998, the threshold is increased to 30 percent. All debt and obligations to be repaid from property taxes, parcel taxes, special taxes, and the school district's general fund may be included.

The School District has determined that this Statutory Requirement has been satisfied. The School District currently has $432,855,434.15 in outstanding debt. This outstanding debt consists of $359,655,434.15 from GO bonds and $73,200,000 in special tax bonds. This debt represents 85.93 percent of the School District's bonding capacity (see Exhibit F for a calculation of the School District's bonding capacity).

4. Relocatable Classrooms

This Statutory Requirement is met if at least 20 percent of the school district's teaching stations are relocatable classrooms.

The School District has determined that this Statutory Requirement has been satisfied. The School District currently has a total of 664 permanent classrooms and 283 relocatable classrooms. This equates to a 29.88 percent relocatable classroom utilization rate.

C. Eligibility to Collect Alternative Fees

As determined above, the School District is eligible to receive new construction funding and currently satisfies at least two (2) of the four (4) Statutory Requirements. As a result, the School District is eligible to adopt and impose Alternative Fees as provided by applicable law.

III. PROJECTED UNHOUSED STUDENTS FROM RESIDENTIAL DEVELOPMENT OVER THE NEXT FIVE YEARS

Section 65995.6(a) requires that the School District determine the need for new school facilities for the Projected Unhoused Students. The calculation of the Projected Unhoused Students shall be based on historical student generation rates ("SGRs") of new residential units constructed during the previous five (5) years of a type similar to that of the Future Units. Section III.A calculates the Projected Student Enrollment. Section III.B sets forth the relevant facts as to the identification of any excess seats which might be considered by the School District as available at each school level to house the Projected Student Enrollment, as determined in Section III.A. Finally, Section III.C calculates the Projected Unhoused Students.

A. Projected Student Enrollment

As stated above, Section 65995.6(a) specifies the methodology the School District must use to calculate the Projected Student Enrollment. What follows is a step-by-step description of this calculation.

1. Student Generation Rates

In order to calculate SGRs in accordance with Section 65995.6(a), the School District must identify residential units that (i) were constructed during the previous five (5) years and (ii) are representative of the Future Units. Residential data pertaining to the School District was obtained by Cooperative Strategies, LLC from the Office of the Assessor ("Assessor") of the County of Los Angeles ("County"). Using data from the Assessor of the County and the School District, Cooperative Strategies compiled a database from such information containing the addresses of the units that met the criteria listed above. Parcels in the database were then classified by housing type (i.e., single family detached, single family attached, and multifamily).

- Residential units classified as single family detached ("SFD") are defined as units with no common walls each assigned a unique Assessor's parcel number.

- The category of single family attached ("SFA") consists of units with common walls each assigned a unique Assessor's parcel number (e.g., townhomes, condominiums, etc.).

- The third type of residential unit, multifamily ("MF"), is defined as a unit with common walls on an Assessor's parcel on which other units are located.

Based on residential data provided by the County, Cooperative Strategies was able to identify units that (i) were built in the last five (5) years and (ii) are representative of Future Units. Cooperative Strategies then obtained a database of all students within the School District in school year 2016/2017. The student database was then matched to parcels in the residential database and the number of students was queried based on the parcels to which they matched and whether or not the matching parcel was located within the CUSD boundary. Upon completion of such queries, Cooperative Strategies calculated SGRs for the three (3) unit types for the junior high school and high school levels. Table 1 below lists the SGRs by school level and land use, while Exhibit G contains specific numbers and counts used in calculating the SGRs.

Table 1
Student Generation Rates

School Level	SFD Student	SFA Student	MF Student
Junior High School (Grades 7 & 8)[1]	0.0932	0.0809	0.1529
High School (Grades 9 - 12)[2]	0.1860	0.0867	0.1592
Total	**0.2792**	**0.1676**	**0.3121**

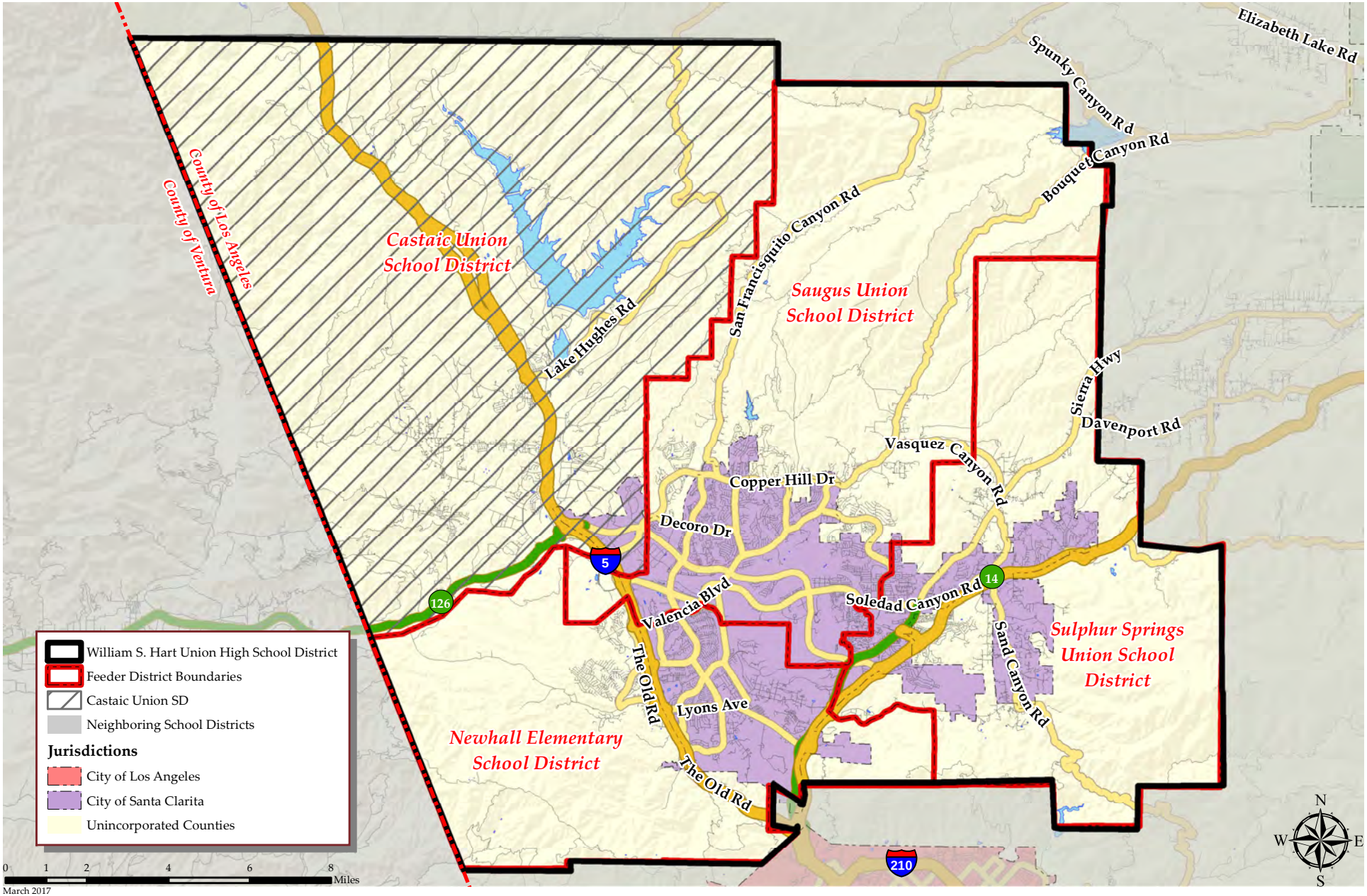
[1] Excludes CUSD.
[2] District-wide, including CUSD.

2. Future Units

Based on residential development projections prepared by Davis Demographics and Planning, Inc. ("DDP") and information provided by the Planning Departments of the City of Santa Clarita ("City") and the County, Cooperative Strategies estimates that the School District could experience the construction of 10,355 additional residential units over the next five (5) years (see Exhibit H for Cooperative Strategies' correspondence with the City and County). Of the 10,355 Future Units, 8,968 are located within NSD, SUSD, and SSUSD (please refer to the map on the following page for a geographic profile of the School District). Table 2 distinguishes between mitigated and non-mitigated Future Units by unit type for the area within NSD, SUSD, and SSUSD, and Table 3 classifies mitigated and non-mitigated Future Units by unit type in the entire School District.

WILLIAM S. HART UNION HIGH SCHOOL DISTRICT

GEOGRAPHIC PROFILE



COOPERATIVE STRATEGIES

COMPLETE FINANCIAL & DEMOGRAPHIC PLANNING FOR EDUCATION

Table 2
Mitigated and Non-Mitigated Future Units by Unit Type within NSD, SUSD, & SSUSD

Unit Type	Mitigated Future Units	Non-Mitigated Future Units	Total Future Units
Single Family Detached	2,684	793	3,477
Single Family Attached	2,505	230	2,735
Multifamily	2,444	312	2,756
Total Units	**7,633**	**1,335**	**8,968**

Table 3
Mitigated and Non-Mitigated Future Units by Unit Type in the Entire School District

Unit Type	Mitigated Future Units	Non-Mitigated Future Units	Total Future Units
Single Family Detached	3,350	861	4,211
Single Family Attached	3,018	230	3,248
Multifamily	2,584	312	2,896
Total Units	**8,952**	**1,403**	**10,355**

The projected number of non-mitigated future residential units identified in Tables 2 and 3 include units that may result from existing structures that are voluntarily demolished in order to be replaced by new residential development ("Reconstruction"). For additional information regarding the imposition of the Alternative No. 2 Fee and Alternative No. 3 Fee on Reconstruction please refer to Exhibit I.

It should be noted these projections are based on the best available information at this time and are independent of the projected residential development reported to the State in SAB Form 50-01.

3. <u>Projected Student Enrollment</u>

To calculate the Junior High School Projected Student Enrollment, the number of Future Units listed in Table 2 was multiplied by the Junior High School SGRs in Table 1. To calculate the High School Projected Student Enrollment, the number of Future Units listed in Table 3 was multiplied by the High School SGRs in Table 1. The results of these operations, according to school level, are shown in Table 4.

Table 4
Projected Student Enrollment

School Level	Students Generated from Mitigated Future Units	Students Generated from Non-Mitigated Future Units	Total Projected Students from Future Units
Junior High School	827	141	968
High School	1,296	230	1,526
Total	**2,123**	**371**	**2,494**

B. Current Capacity

Collectively, the School District's school facilities in school year 2016/2017 have a capacity of 20,906 seats per Section 17071.25 of the Education Code. Of these 20,906 seats, 6,320 are at the junior high school level and 14,586 are at the high school level. These capacities include seats from all new school facility construction projects funded by the State. Based on student enrollment data for school year 2016/2017, the enrollment of the School District is 22,437 students. As shown in Table 5, student enrollment exceeds facilities capacity at both the junior high school and high school levels in school year 2016/2017.

Table 5
Existing School Facilities Capacity and Student Enrollment

School Level	2016/2017 Facilities Capacity [1]	2016/2017 Student Enrollment [2]	Excess/ (Shortage) Capacity
Junior High (Grades 7-8)	6,320	6,794	(474)
High School (Grades 9-12)	14,586	15,643	(1,057)
Total	**20,906**	**22,437**	**(1,531)**

[1] See Exhibit B for SAB Form 50-02, and Exhibit J for the Updated School Facilities Capacity Calculation.
[2] Student enrollment from October 2016.

C. Projected Unhoused Students

As shown in Table 5, the School District's existing school facilities capacity is not adequate to house all the students currently being generated from existing residential units. Accordingly, the School District has no excess facilities capacity to house the Projected Student Enrollment. Therefore, the Projected Unhoused Students and the Projected Student Enrollment are identical.

IV. SURPLUS SCHOOL SITES AND EXISTING SURPLUS LOCAL FUNDS

Section 65995.6(b) states that the School District must identify and consider (i) surplus property, if any, owned by the School District that can be used as a school site or that is available for sale to finance school facilities, (ii) the extent to which projected enrollment growth can be accommodated at existing school facilities, and (iii) local sources that are available to finance the construction or reconstruction of school facilities needed to accommodate any growth in enrollment attributable to the construction of new residential units. Additionally, Section 65995.5(c)(2) requires the School District to subtract from the school facilities cost impact created by Future Units the amount of Local Funds that the governing board has dedicated to facilities necessitated by new residential units. To comply with Section 65995.6(b), the School District has identified and considered property it owns and has determined that it does possess six (6) sites that could be considered surplus (see Exhibit K for information on these sites). The Governing Board will review and re-adopt this Analysis annually, including a review of this determination and any need to consider property that may then be surplus to fund school facilities required to accommodate students being generated from existing residential units, or other students.

As for identifying and considering existing excess capacity that could accommodate the Projected Student Enrollment generated from non-mitigated Future Units, Table 5 in Section III.B. of this Analysis illustrates that the School District does not have adequate seats to house all of the students currently being generated from existing residential units.

Finally, in accordance with Sections 65995.6(b) and 65995.5(c)(2), the School District has determined that no local sources, including Local Funds, are available to finance the construction or reconstruction of school facilities needed to accommodate any Projected Student Enrollment generated from Future Units (see Exhibit L for more detail on local sources, including Local Funds).

V. ALTERNATIVE NO. 2 FEE

As discussed in Section I, the objective of this Analysis is (i) to determine whether the School District may adopt Alternative Fees and (ii) to determine the permissible amount of the Alternative No. 2 Fee and the Alternative No. 3 Fee that the School District is permitted to levy on new residential development. Based on the findings, determinations, and projections made in Sections II through IV, Section V contains a step-by-step calculation of the permissible Alternative No. 2 Fee in accordance with Section 65995.5.

A. Alternative No. 2 Fee School Facility Costs

As stated in Section 65995.5(c)(1), the initial step in calculating the maximum Alternative No. 2 Fee is to multiply the number of unhoused students generated from non-mitigated Future Units by the appropriate per-pupil grant amounts provided in Section 17072.10(a) of the Education Code. In addition, the sum shall be added to the site acquisition and site development costs determined pursuant to Section 65995.5(h).

1. Per-Pupil Grant Amounts

The per-pupil grant amounts identified in Section 17072.10(a) of the Education Code were adjusted by the SAB on January 25, 2017, pursuant to Section 17072.10(b) of the Education Code. The per-pupil grant amounts specified in Section 17072.10 are adjusted annually by the SAB to reflect construction cost changes as set forth in the statewide cost index for class B construction. Further, pursuant to SAB Regulation 1859.71.2 and Section 17074.56 of the Education Code, the per-pupil grants have been increased to account for automatic fire alarm detection systems and fire sprinkler systems. Table 6 shows the base per-pupil grant amounts.

Table 6
Base Per-Pupil Grant Amounts (2017$)

School Level	Per-Pupil Grant Amount	Additional Grants for Auto Alarm and Fire Sprinkler System	Base Per-Pupil Grant Amount
Junior High School	$11,744	$239	$11,983
High School	$14,944	$260	$15,204

In addition to the base per-pupil grant amounts shown in Table 6, SAB Regulation 1859.76 provides additional grants for general site development on new school construction projects. Currently, these additional grants are calculated as (i) 6 percent of the base per-pupil grants for junior high school projects, (ii) 3.75 percent of the base per-pupil grants for high school projects and (iii) a grant of $18,073 per new useable acre acquired for new school construction. To determine the general site development grant for each school level, Cooperative Strategies first applied the percentages mentioned above to the base per-pupil grant amounts shown in Table 6.

Second, Cooperative Strategies applied the grant per new useable acre mentioned above to the student capacity of future school facilities and corresponding site size requirements for the School District listed in Table 9 to derive a grant amount per student (see Exhibit M for more information on the calculation of the additional grants for general site development). Table 7 shows these additional grants as well as the total per-pupil grant amount.

Table 7
Total Per-Pupil Grant Amount (2017$)

School Level	Base Per-Pupil Grant Amount	Additional Grants for General Site Development	Total Per-Pupil Grant Amount
Junior High School	$11,983	$1,058	$13,041
High School	$15,204	$911	$16,115

Applicable law specifies the per-pupil grant amounts specified in Section 17072.10 are adjusted annually by the SAB to reflect construction cost changes as set forth in the statewide cost index for class B construction as provided in Section 17072.10(b) of the Education Code.

2. <u>Total New School Construction Grants</u>

To determine the total new school construction grants under Section 65995.5, the number of Projected Unhoused Students to be generated from non-mitigated Future Units, as shown in Table 4, is multiplied by the total per-pupil grant amounts set forth in Section 17072.10(a) and (b) of the Education Code, as shown in 7. Table 8 shows the total new school construction grants of the School District pursuant to Section 65995.5(c)(1).

Table 8
Total New School Construction Grants for Projected Unhoused Students from Non-Mitigated Future Units (2017$)
(In Accordance with Section 65995.5(c)(1) of the Government Code)

School Level	Projected Unhoused Students	Total Per-Pupil Grant Amount	Total New Construction Grants
Junior High School	141	$13,041	$1,838,781
High School	230	$16,115	$3,706,450
Total	**371**	**N/A**	**$5,545,231**

3. Total School Site Acquisition and Site Development Costs

In addition to the total new school construction grants specified by Section 17072.10 of the Education Code, Section 65995.5(c)(1) permits the Alternative No. 2 Fee to include site acquisition and site development costs determined pursuant to Section 65995.5(h) and the applicable statutory provisions referred to therein. What follows is the calculation for determining the appropriate site acquisition and site development costs in accordance with Section 65995.5(h).

a. Site Size Requirement

To calculate the amount of site acquisition and site development costs that may be included in the Alternative No. 2 Fee, a school district must determine the student capacity of future school facilities that will be needed to accommodate the Projected Unhoused Students, as well as students to be generated from residential development anticipated to occur over the next 20 years. Based on the educational programs of the School District, the School District has determined that future junior high school facilities will be designed to accommodate 1,200 students and future high school facilities will be designed to accommodate 2,600 students. Based on these capacities, the guidelines included in the "School Site Analysis and Development Handbook" published by the State Department of Education as that handbook read as of January 1, 1998, identify the following site sizes for the School District.

Table 9
Student Capacities and Site Sizes of Future School Facilities

School Level	Student Capacity	Site Size (Acres)
Junior High School	1,200	22.50
High School	2,600	49.00

It should be emphasized that the site sizes shown in Table 9 are based on site sizes recommended by the State Department of Education as of January 1, 1998. Since that time, the State Department of Education has prepared a revised Handbook that contains site size recommendations more consistent with School District policy. Please refer to Exhibit E for the site sizes more consistent with the revised Handbook.

b. Site Acquisition and Site Development Costs per Acre

Based on appraisals prepared by Overland, Pacific & Cutter, Inc. and Epic Land Solutions, Inc., the School District believes a reasonable estimate for site acquisition is $1,092,317 per acre at the junior high school level and $760,135 per acre at the high school level. These amounts are based on appraisals prepared for the Newhall Ranch Junior High School site in Valencia (November 2013), and Romero Canyon High School site in Castaic (July 2016).

In determining the appropriate site development costs for the junior high school level, Cooperative Strategies used site development costs for Rancho Pico Junior High School approved by the State Office of Public School Construction ("OPSC"). Based on this information, Cooperative Strategies estimated site development costs to be $53,196 per acre at the junior high school level. Site development costs for the high school level is $36,882 per acre based on additional site development costs incurred by the School District in excess of the appraised value of the Romero Canyon Site and required to bring the site to a construction-ready condition. Table 10 lists the total estimated site acquisition costs and site development costs of the School District in accordance with Section 65995.5(h).

Table 10
Site Acquisition and Site Development Costs of Future School Facilities (2017$)

School Level	Site Acquisition Cost [1]	Site Development Cost [1]	Total Site Cost
Junior High School	$24,577,133	$1,196,910	$25,774,043
High School	$37,246,615	$1,807,218	$39,053,833

[1] The site acquisition and site development costs are equal to the per acre costs listed above multiplied by the number of acres, as listed in Table 9.

c. School Facilities Needed

To ensure that non-mitigated Future Units are being charged an Alternative No. 2 Fee that is reasonably related to the school facilities that are required to house the Projected Unhoused Students to be generated from non-mitigated Future Units, the School District must identify the number of future school facilities that will be needed to house the Projected Unhoused Students to be generated from non-mitigated Future Units, as well as students to be generated from mitigated Future Units and residential development anticipated to occur over the next 20 years. To calculate the number of school facilities that the School District will need to adequately house the Projected Unhoused Students, the number of Projected Unhoused Students for each school level, as listed in Table 4, was divided by the applicable student capacity, as listed in Table 9. The number of school sites expected to be needed to house the Projected Unhoused Students generated from non-mitigated Future Units is shown in Table 11.

Table 11
School Facilities Needed

School Level	Total Facilities Needed	Facilities Needed for Students Generated from Mitigated Future Units	Facilities Needed for Students Generated from Non-Mitigated Future Units
Junior High School	0.807	0.689	0.118
High School	0.586	0.498	0.088

It is important to realize that while the number of Projected Unhoused Students from non-mitigated Future Units equates only to approximately 11.8 percent of a junior high school and 8.8 percent of a high school, the School District will need to construct at least one (1) junior high school and one (1) high school in the future to accommodate (i) existing unhoused students, (ii) students generated from mitigated Future Units, (iii) students generated from non-mitigated Future Units, and (iv) students generated from future residential units beyond the next five (5) years.

d. <u>Alternative No. 2 Fee Site Costs in Accordance with Section 65995.5(h) of the Government Code</u>

The calculation of the total school site acquisition and site development cost impacts under Section 65995.5(h) is a two-step process. The first step involves calculating the total school site acquisition and site development costs related to the Projected Unhoused Students generated from non-mitigated Future Units. The calculation of this first step is shown in Table 12.

Table 12
Total School Site Acquisition and Site Development
Costs for Students from Non-Mitigated Future Units (2017$)

School Level	Facilities Needed for Students Generated from Non-Mitigated Future Units	Site Cost	Total Site Costs [1]
Junior High School	0.118	$25,774,043	$3,041,337
High School	0.088	$39,053,833	$3,436,737
[1] Numbers may not sum due to rounding.			

Only a portion of the total site costs may be included in the calculation of the Alternative No. 2 Fee. Accordingly, the total school site acquisition and site development costs under Section 65995.5(h) must be reduced by half to arrive at the Alternative Fee No. 2 Site Costs. The calculation of this step is shown in Table 13.

Table 13
Alternative No. 2 Fee Site Costs (2017$)
(In Accordance with Section 65995.5(h) of the Government Code)

School Level	Total Site Costs	Multiplier	Alternative No. 2 Fee Site Cost
Junior High School	$3,041,337	50.00%	$1,520,669
High School	$3,436,737	50.00%	$1,718,369

4. Alternative No. 2 Fee School Facility Costs

As stated previously, the initial step in calculating the maximum Alternative No. 2 Fee is to identify (i) the total new school construction grant, and (ii) the site acquisition and development costs pursuant to Section 65995.5(h). The sum of these amounts, which is the Alternative No. 2 Fee School Facility Costs, is the maximum amount of school facility costs that may be included in the Alternative No. 2 Fee before any local fund credits are applied. For the School District, the total new school construction grant is $5,545,231 and the total site acquisition and site development cost pursuant to Section 65995.5(h) is $3,239,038. These costs and the Alternative No. 2 Fee School Facility Costs are shown by school level in Table 14.

Table 14
Alternative No. 2 Fee School Facility Costs (2017$)
(In Accordance with Section 65995.5(c)(1) of the Government Code)

School Level	Total New Construction Grants	Alternative No. 2 Fee Site Costs	Alternative No. 2 Fee School Facility Costs
Junior High School	$1,838,781	$1,520,669	$3,359,450
High School	$3,706,450	$1,718,369	$5,424,819
Total	**$5,545,231**	**$3,239,038**	**$8,784,269**

B. Credit for Local Funds

The second step in calculating the maximum Alternative No. 2 Fee is to subtract the amount of local sources, including Local Funds, if any, the School District has decided to dedicate to school facilities necessitated by the construction of non-mitigated Future Units from the Alternative No. 2 Fee School Facility Costs in order to calculate the Net Alternative No. 2 Fee School Facility Costs. As stated in Section IV of the Analysis, the School District has determined that no credit is available to accommodate Projected Unhoused Students generated from Future Units (see Exhibit L for more detail on local sources, including Local Funds).

Table 15
Net Alternative No. 2 Fee School Facility Costs (2017$)
(In Accordance with Section 65995.5(c)(2) of the Government Code)

Item	Junior High School Amounts	High School Amounts
Alternative No. 2 Fee School Facility Costs	$3,359,450	$5,424,819
Credit for Existing Surplus Local Funds	$0	$0
Net Alternative No. 2 Fee School Facility Costs	**$3,359,450**	**$5,424,819**

C. Alternative No. 2 Fee Calculation

The final step in calculating the maximum Alternative No. 2 Fee is to divide the Net Alternative No. 2 Fee School Facility Costs by the total square footage of assessable space for non-mitigated Future Units.

1. Average Square Footage per Unit

In order to project the total square footage of assessable space of the non-mitigated Future Units, the Analysis must estimate the average square footage of Future SFD Units, Future SFA Units, and Future MF Units to be constructed in the School District. To calculate the Alternative Fees at the junior high school level, Cooperative Strategies has estimated the average square footage of Future SFD Units, Future SFA Units, and Future MF Units, excluding development within the CUSD portion of the School District. For the high school level, Cooperative Strategies has estimated the average square footage of Future SFD Units, Future SFA Units, and Future MF Units for development within the entire School District. Cooperative Strategies has estimated that Future SFD Units will contain an average of 3,123 assessable square feet at the junior high school level and 3,137 assessable square feet at the high school level, while Future SFA Units will contain 1,595 assessable square feet and Future MF Units will contain 1,000 assessable square feet at both the junior high school and high school levels (see Exhibit H).

2. Total Square Footage of Assessable Space

To calculate the total square footage of assessable space for non-mitigated Future Units applicable to the junior high school level, the average square footage of Future SFD Units, Future SFA Units, and Future MF Units listed above was multiplied by the number of non-mitigated Future Units listed in Table 2 . The results of this operation are shown in Table 16.

Table 16
Estimated Total Residential Square Footage of Non-Mitigated Future Units Applicable to the Junior High School Level Alternative Fees

Land Use	Non-Mitigated Future Units	Average Square Footage	Total Square Footage
Single Family Detached	793	3,123	2,476,539
Single Family Attached	230	1,595	366,850
Multifamily	312	1,000	312,000
Total	**1,335**	**N/A**	**3,155,389**

To calculate the total square footage of assessable space for non-mitigated Future Units applicable to the high school level Alternative Fees, the average square footages of Future SFD Units listed above were multiplied by the number of non-mitigated Future Units listed in Table 3. The results of this operation are shown in Table 17.

Table 17
Estimated Total Residential Square Footage of Non-Mitigated Future Units Applicable to the High School Level Alternative Fees

Land Use	Non-Mitigated Future Units	Average Square Footage	Total Square Footage
Single Family Detached	861	3,137	2,700,957
Single Family Attached	230	1,595	366,850
Multifamily	312	1,000	312,000
Total	**1,403**	**N/A**	**3,379,807**

The projected total square footage of non-mitigated future residential units identified in Tables 16 and 17 includes units that may result from Reconstruction. For additional information regarding the imposition of the Alternative No. 2 Fee and Alternative No. 3 Fee on Reconstruction please refer to Exhibit I.

3. Calculation of Alternative No. 2 Fee

To calculate the Alternative No. 2 Fee, the Net Alternative No. 2 Fee School Facility Costs, as listed in Table 15, were divided by the total square footage of assessable space of the non-mitigated Future Units, as listed in Tables 16 and 17. Table 18 provides the Alternative No. 2 Fee that can be adopted by the School District.

Table 18
Alternative No. 2 Fee (2017$)

Item	JHS Amount/ Square Footage	HS Amount/ Square Footage
Net Alternative No. 2 Fee School Facility Costs	$3,359,450	$5,424,819
Total Residential Square Footage	3,155,389	3,379,807
Alternative No. 2 Fee	**$1.06**	**$1.61**

In conclusion, the Alternative No. 2 fee for non-mitigated Future Units constructed within the CUSD area of the School District is $1.61 per square foot while the Alternative No. 2 Fee for non-mitigated Future Units constructed within the NSD, SUSD, and SSUSD area of the School District is $2.67 per square foot. Table 19 lists the Alternative No. 2 Fees of the School District based on whether the non-mitigated Future Units are located within the CUSD area of the School District or within the NSD, SUSD, and SSUSD area of the School District.

Table 19
Total Alternative No. 2 Fees Based on Location (2017$)

School Level	Units Located Within the CUSD Area of the School District	Units Located Within NSD, SUSD, & SSUSD
Junior High School	N/A	$1.06
High School	$1.61	$1.61
Total	**$1.61**	**$2.67**

VI. ALTERNATIVE NO. 3 FEE

The Alternative No. 2 Fee, which is the maximum Alternative Fee that may be imposed during periods when State funds for new construction are available, was calculated in Section V in accordance with Section 65995.5. During periods when the SAB is no longer approving apportionments for new construction due to a lack of funds available, the Alternative No. 3 Fee may be imposed by a school district. Additionally, in accordance with Section 1859.81 of the SAB regulations, a school district requesting financial hardship assistance funding is required to impose the maximum developer fee justified by law (the Alternative No. 2 Fee, or the Alternative No. 3 Fee when the State declares that such fees can be imposed), or an alternative source greater than or equal to the amount of such fees. Similar to the methodology of the calculations performed in Section V, this Section VI provides a calculation of the Alternative No. 3 Fee in accordance with Section 65995.7.

A. Alternative No. 3 Fee School Facility Costs

Pursuant to Section 65995.7, the Alternative No. 3 Fee School Facility Cost, which is the maximum amount of school facility costs that may be included in the Alternative No. 3 Fee, is calculated by increasing the Net Alternative No. 2 Fee School Facility Costs by an amount not to exceed the Alternative No. 2 Fee School Facility Costs. As required by Section 65995.7, this amount has been reduced by the amount of local funds ($0 in the case of the School District) identified pursuant to Section 65995.5(c)(2). Accordingly, Table 20 shows the Net Alternative No. 2 Fee School Facility Costs previously shown in Table 15, and adds to that amount the Alternative No. 2 Fee School Facility Costs previously shown in Table 14. The results, shown in Table 20, are the Alternative No. 3 Fee School Facility Costs applicable to both the junior high and high school level.

Table 20
Alternative No. 3 Fee School Facility Costs (2017$)
(In Accordance with Section 65995.7 of the Government Code)

Item	Junior High School Level	High School Level
Net Alternative No. 2 Fee School Facility Costs	$3,359,450	$5,424,819
Alternative No. 2 Fee School Facility Costs	$3,359,450	$5,424,819
Alternative No. 3 Fee School Facility Costs	**$6,718,900**	**$10,849,638**

B. Alternative No. 3 Fee Calculation

To calculate the Alternative No. 3 Fee, the Alternative No. 3 Fee School Facility Costs were divided by the total square footage of assessable space of the non-mitigated Future Units applicable to the junior high school and high school levels listed in Table 16 and Table 17, respectively. This calculation is required by Section 65995.5(c)(3) and outlined in Section V.C. of the Analysis. Table 21 provides the Alternative No. 3 Fee that can be levied by the School District on new residential development where permitted by applicable law.

Table 21
Alternative No. 3 Fee (2017$)

Item	Junior High School Level	High School Level
Alternative No. 3 Fee School Facility Costs	$6,718,900	$10,849,638
Total Residential Square Footage	3,155,389	3,379,807
Alternative No. 3 Fee	**$2.13**	**$3.21**

It should be noted that Section 65995.7(b) offers a reimbursement election to the person(s) subject to Alternative No. 3 Fees for the supplemental fees paid by such person(s), to the extent State funding has been received for the construction of facilities which required the collection of such fees.

In conclusion, the Alternative No. 3 Fee for non-mitigated Future Units constructed within the CUSD are of the School District is $3.21 per square foot while the Alternative No. 3 Fee for non-mitigated Future Units constructed within the NSD, SUSD, and SSUSD area of the School District is $5.34 per square foot. Table 22 lists the Alternative No. 3 Fees within the School District based on whether the non-mitigated Future Units are located within the CUSD area of the School District or within the NSD, SUSD, and SSUSD area of the School District.

Table 22
Total Alternative No. 3 Fees Based on Location (2017$)

School Level	Units Located Within the CUSD Area of the School District	Units Located Within NSD, SUSD, & SSUSD
Junior High School	N/A	$2.13
High School	$3.21	$3.21
Total	**$3.21**	**$5.34**

VII. SECTION 66000 OF THE GOVERNMENT CODE

Sections 66000 *et seq.* were enacted by the State in 1987. These provisions are assumed to be applicable to the Alternative Fees. Sections 66000 *et seq.* require that all public agencies satisfy the following requirements when establishing, increasing or imposing a fee, such as the herein described Alternative Fees, as a condition of approval for a development project.

1. Determine the purpose of the fee.

2. Identify the facilities to which the fee will be put.

3. Determine that there is a reasonable relationship between the need for public facilities and the type of development on which a fee is imposed.

4. Determine that there is a reasonable relationship between the amount of the fee and the public facility or portion of the public facility attributable to the development on which the fee is imposed.

5. Provide an annual accounting of any portion of the fee remaining unexpended or uncommitted in the School District's accounts.

New residential development in the School District, as shown in the Analysis, will generate additional students who will require the School District to provide additional school facilities. The amount to be included in the Alternative Fees is specified by statute. The Alternative No. 2 Fee of $1.61 per square foot for units located within CUSD and $2.67 for units located within NSD, SUSD, and SSUSD, and the Alternative No. 3 Fee of $3.21 per square foot for units located within CUSD and $5.34 for units located within NSD, SUSD, and SSUSD are justified in the Analysis. The estimated average school facilities cost impacts on the School District per square foot of residential development as estimated in Exhibit E is $5.42 for units located within CUSD and $8.87 for units located within NSD, SUSD, and SSUSD. As the actual school facilities cost impacts per square foot of residential construction is greater than the Alternative Fees, it is reasonable for the School District to determine that the Alternative No. 2 Fees and the Alternative No. 3 Fees are roughly proportional and reasonably related to the actual impacts caused by residential development on the School District.

This Analysis and the information included in Exhibit E therefore establish that the Alternative Fees meet the requirements of Sections 66000 *et seq.* and such a determination by the School District as part of adopting the Alternative Fees is justified and appropriate. The School District, therefore, is justified in levying Alternative Fees on all new development.

By way of summary, the Analysis shows that non-mitigated Future Units will produce additional junior high school and high school students and that the School District does not have the capacity or funds to accommodate all of those additional students. Alternative Fees, therefore, will be used to fund (i) new junior high school and high school facilities, (ii) expansion of existing junior high school, and high school facilities, and (iii) other upgrades to existing school facilities, but only to the extent that such items are needed to accommodate the Projected Unhoused Students generated from Future Units and to the extent that the use of the Alternative Fees on such items is permitted by applicable law.

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EXHIBIT A

Updated SAB Form 50-01

ENROLLMENT CERTIFICATION/PROJECTION

SCHOOL DISTRICT: WILLIAM S. HART UNION HIGH

FIVE DIGIT DISTRICT CODE NUMBER (*see California Public School Directory*): 65136

COUNTY: LOS ANGELES

HIGH SCHOOL ATTENDANCE AREA (HSAA) OR SUPER HSAA (*if applicable*):

Part A. Enrollment Data - (districts or county superintendent of schools)

Grade	3rd Previous 2012/13	2nd Previous 2013/14	Previous 2014/15	Current 2015/16
K	3,431	3,533	3,760	3,877
1	3,574	3,433	3,296	3,138
2	3,571	3,676	3,550	3,290
3	3,648	3,684	3,774	3,531
4	3,687	3,734	3,768	3,755
5	3,713	3,764	3,816	3,828
6	3,858	3,837	3,821	3,821
7	3,788	3,752	3,697	3,655
8	3,825	3,801	3,833	3,696
9	4,023	4,093	4,062	4,044
10	3,940	4,010	4,059	4,005
11	3,806	3,822	3,829	3,939
12	3,797	3,706	3,753	3,693
TOTAL	**48,661**	**48,845**	**49,018**	**48,272**

Part B. Pupils Attending Schools Chartered By Another District

3rd Previous	2nd Previous	Previous	Current
106	149	200	172

Part C. Continuation High School - (districts only)

Grade	3rd Previous	2nd Previous	Previous	Current
9	21	9	20	3
10	16	32	23	17
11	103	137	152	108
12	400	383	374	381

Part D. Special Day Class Pupils - (districts or county superintendent of schools)

Elementary	Non-Severe	Severe	Secondary	Non-Severe	Severe
MR			MR	632	496
HH			HH		
DEAF			DEAF		
HI			HI		
SLI			SLI		
VI			VI		
SED			SED		
OI			OI		
OHI			OHI		
SLD			SLD		
DB			DB		
MH			MH		
AUT			AUT		
TBI			TBI		
TOTAL			TOTAL	632	496

Part E. Special Day Class Enrollment - (county superintendent of schools only)

3rd Previous	2nd Previous	Previous	Current

Part F. Number of New Dwelling Units: 11206

Part G. District Student Yield Factor: N/A

Part H. Five Year Projected Enrollment - School Facility Program Projections - (except special day class pupils only)

K-6	7-8	9-12	TOTAL
	8,576	16,600	25,176

Projections - special day class pupils only

Elementary	Non-Severe	Severe	Secondary	Non-Severe	Severe
MR			MR	610	479
HH			HH		
DEAF			DEAF		
HI			HI		
SLI			SLI		
VI			VI		
SED			SED		
OI			OI		
OHI			OHI		
SLD			SLD		
DB			DB		
MH			MH		
AUT			AUT		
TBI			TBI		
TOTAL			TOTAL	610	479

Part I.

One Year Projected Enrollment - State Relocatable Program Projections - (except special day class pupils only)

K-6	7-8	9-12	TOTAL
	6,792	16,118	22,910

Projections - (special day class pupils only)
(Includes Severe & Non-Severe)

	Elementary	Secondary		Elementary	Secondary
MR		1,125	OI		
HH			OHI		
DEAF			SLD		
HI			DB		
SLI			MH		
VI			AUT		
SED			TBI		
			TOTAL		1,125

I certify, as the District Representative, that the information reported on this form is true and correct and that:
I am designated as an authorized district representative by the governing board of the district.
If the district is requesting an augmentation in the enrollment projection pursuant to Regulation Section 1859.42 (b), the local planning commission or approval authority has approved the tentative subdivision map used for augmentation of the enrollment and the district has identified dwelling units in that map to be contracted. All subdivision maps used for augmentation of enrollment are available at the district for review by the Office of Public School Construction (OPSC).
This form is an exact duplicate (verbatim) of the form provided by the Office of Public School Construction.
In the event a conflict should exist, then the language in the OPSC form will prevail.

SIGNATURE OF DISTRICT REPRESENTATIVE: [signature]

DATE: 2/22/16

EXHIBIT B

Updated SAB Form 50-02

STATE OF CALIFORNIA
EXISTING SCHOOL BUILDING CAPACITY

STATE ALLOCATION BOARD
OFFICE OF PUBLIC SCHOOL CONSTRUCTION

SAB 50-02 (Rev. 01/01) Sheet (Rev. 08/10/00)

SCHOOL DISTRICT: WILLIAM S. HART UNION HIGH
COUNTY: LOS ANGELES
HSS UNIT DISTRICT CODE NUMBER (see District Profile Detail Directory): 65138
HIGH SCHOOL ATTENDANCE AREA (if applicable):

PART I - Classroom Inventory ‹ NEW » ADJUSTED

Line 1. Leased State Relocatable Classrooms		48	108			156
Line 2. Portable Classrooms leased less than 5 years		2				2
Line 3. Interim Housing Portables leased less than 5 years						
Line 4. Interim Housing Portables leased at least 5 years						
Line 5. Portable Classrooms leased at least 5 years						
Line 6. Portable Classrooms owned by district		12	23			35
Line 7. Permanent Classrooms		71	242	42		355
Line 8. Total (Lines 1 through 7)		134	371	42		547

PART II - Available Classrooms

Option A:						
a. Part I, line 4						
b. Part I, line 5						
c. Part I, line 6		12	23			35
d. Part I, line 7		71	242	42		355
e. Total (a, b, c, & d)		83	265	42		390

Option B:					
a. Part I, line 8	134	371	42		547
b. Part I, lines 1,2,5 and 6 (total only)					182
c. 25 percent of Part I, line 7 (total only)					89
d. Subtract c from b (enter 0 if negative)	34	69			103
e. Total (a minus d)	100	302	42		444

PART III - Determination of Existing School Building Capacity

Line 1. Classroom capacity		2,241	7,156	646	
Line 2. SER adjustment		134	430	33	
Line 3. Operational Grants					
Line 4. Greater of line 2 or 3		134	430	33	
Line 5. Total of lines 1 and 4		2,375	7,585	679	

I certify, as the District Representative, that the information reported on this form is true and correct and that:
I am designated as an authorized district representative by the governing board of the district; and,
This form is an exact duplicate (verbatim) of the form provided by the Office of Public School Construction (OPSC).
In the event a conflict should exist, then the language in the OPSC form will prevail.

SIGNATURE OF DISTRICT REPRESENTATIVE

DATE 2/1/01

EXHIBIT C

Updated SAB Form 50-03

SAB 50-03 (NEW 12/1998)

SCHOOL DISTRICT	5-DIGIT DISTRICT CODE NUMBER (see California Public Schools Directory)
WILLIAM S. HART UNION HIGH	66136
BUSINESS ADDRESS	HIGH SCHOOL ATTENDANCE AREA (if applicable)
21515 Rodeiew Drive	
CITY	COUNTY
Santa Clarita, CA 91350-2948	LOS ANGELES

Part I- The following individual(s) have been designated as district representative(s) by the School Board

DISTRICT REPRESENTATIVE	TELEPHONE NUMBER	E-MAIL ADDRESS
Richard Lee	(805) 255-0033	
DISTRICT REPRESENTATIVE	TELEPHONE NUMBER	E-MAIL ADDRESS

Part II. [X] District requests its eligibility determination be reviewed/approved by the Board.

Part III - New Construction Eligibility	K-6	7-8	9-12
1. Projected Enrollment (Part C, Form SAB 50-01)		7,270	14,235
2. Existing School Building Capacity (Part F, line 5 of Form SAB 50-02)		4,074	7,305
3. New Construction Baseline Eligibility (line 1 minus line 2)		3,196	7,030

Part IV - Modernization Eligibility (choose only one option)

1. School Name: Canyon High School	Grade Level		
Option A	**K-6**	**7-8**	**9-12**
2. Permanent classrooms at least 25 years old			
3. Portable classrooms at least 20 years old			
4. Total (lines 2 and 3)			
5. Multiply line 4 by 25 for K-6 and 27 for 7-8 and 9-12			
6. CBEDS enrollment at school			
7. Modernization Eligibility (lesser of totals of line 5 or 6)			

Option B

2. Permanent space at least 25 years old (report by classroom or square footage)	141,415
3. Portable space at least 20 years old (report by classroom or square footage)	
4. Total (lines 2 and 3)	141,415
5. Remaining permanent or portable space (report by classroom or square footage)	23,040
6. Total (lines 4 and 5)	164,455
7. Percentage (Divide line 4 by line 6)	86%
8. CBEDS enrollment at this school	2,267
9. Modernization Eligibility (Multiply line 7 by line 8)	1,967

I certify, as the District Representative, that the information reported on this Form is true and correct and that:

A resolution or other appropriate documentation supporting this application under Chapter 12.5, Part 10, Division 1, commencing with Section 17070.10, et.seq., of the Education Code was adopted by the School District's Governing Board on February 10, 1999 *; and,*

This form is an exact duplicate (verbatim) of the form provided by the Office of Public School Construction (OPSC). In the event a conflict should exist, then the language in the OPSC Form will prevail.

SIGNATURE OF DISTRICT REPRESENTATIVE: Richard C. Lee DATE: 2/11/99

FROM : OPSC PHONE NO. : 3225314 May. 05 1999 02:52PM P2

EXHIBIT D

Eligibility Determination from the SAB

District Main Page

Return to Search Results

District: William S. Hart Union High
District Rep: Mr. Michael Otavka

Modernization Eligibility | New Construction Eligibility | Fund Release

District Code	Attendance Area	Original SAB Approval Date	Recent SAB Approval
65136	0	5/26/1999	1/28/2009

SAB 50-03 New Construction Eligibility Information

New Construction Baseline Eligibility

Grade Level:	K - 6	7 - 8	9 - 12	Non-Severe	Severe
Established Eligibility:	0	3196	7030	0	0
SAB Approvals/Adjustments:	0	450	-1884	772	298
Remaining Eligibility:	0	3646	5146	772	298

SAB 50-03 Eligibility Document Status/Dates

Status:	PM Complete
Date Signed:	2/11/1999
Date Received:	3/5/1999
SAB Approval Date:	5/26/1999

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EXHIBIT E

Summary of School Facility Planning Policies and Estimates of Actual School Facility Costs

WILLIAM S. HART UNION HIGH SCHOOL DISTRICT
School Facility Cost Impacts per Residential Square Foot
March 2017

School Facility Costs

School Level	Site Acquisition Cost	Facility Construction	Total Cost
Junior High School	$16,550,000	$76,232,604	$92,782,604
High School	$52,311,268	$154,688,732	$207,000,000

Costs per Student

School Level	Total Cost	Students Housed	Cost per Student
Junior High School	$92,782,604	1,200	$77,319
High School	$207,000,000	2,600	$79,615

Average School Facility Cost Impacts per Residential Unit per Residential Square Foot at the Junior High School Level

School Level	Cost per Student	Weighted Average SGR	Cost per Unit
Junior High School	$77,319	0.1056	$8,166
Total School Facility Cost Impact			**$8,166**
Average Square Footage [1]			2,364
School Facility Cost Impact per Square Foot			**$3.45**

[1] See Table 16 of the Analysis.

Average School Facility Cost Impacts per Residential Unit per Residential Square Foot at the High School Level

School Level	Cost per Student	Weighted Average SGR	Cost per Unit
High School	$79,615	0.1639	$13,052
Total School Facility Cost Impact			**$13,052**
Average Square Footage [1]			2,409
School Facility Cost Impact per Square Foot			**$5.42**

[1] See Table 17 of the Analysis.

Average School Facility Cost Impacts per Residential Square Foot by Locaton

School Level	Units Located within the CUSD Portion of the School District	Units Located withing NSD, SUSD, & SSUSD Portion of the School District
Junior High School	N/A	$3.45
High School	$5.42	$5.42
Total	**$5.42**	**$8.87**

EXHIBIT F

Bonding Capacity Calculation

WILLIAM S. HART UNION HIGH SCHOOL DISTRICT

Bonding Capacity Calculation

Fiscal Year 2016/2017

	Description	Value
(1)	Total assessed valuation of tangible taxable property (as provided by County Auditor-Controller)	$40,300,260,654
(2)	Applicable percentage bond debt limit Section 15102 (Non-Unified School District) 1.25% Section 15108 (Unified School District) 2.50%	1.25%
(3)	District Bonding capacity	$503,753,258
(4)	Senate Bill 50 local bonding capacity threshold 15% of District's local bonding capacity	$75,562,989
(5)	Senate Bill 50 local bonding capacity threshold 30% of District's local bonding capacity	$151,125,977

Source: Los Angeles County Auditor-Controller.

EXHIBIT G

Student Generation Rate Calculation

WILLIAM S. HART UNION HIGH SCHOOL DISTRICT

Student Generation Rate Calculation

Number of Existing Students in School Year 2016/2017

School Level	Student Enrollment[1]
Junior High School	6,794
High School	15,643
Total	**22,437**

[1] Student enrollment from October 2016.

Number of Students Matched to Units Built in the Last Five (5) Years by Land Use

Area	Students Matching to SFD Units	Students Matching to SFA Units	Students Matching to MF Units
Junior High School	181	14	23
High School	381	15	24

Number of Residential Units Built in the Last Five (5) Years by Land Use and Area

Area	SFD Units	SFA Units	MF Units
Outside CUSD	1,995	173	157
Within the Entire School District	2,097	173	157

Student Generation Rates

Area	SFD Units	SFA Units	MF Units
Junior High School	0.0932	0.0809	0.1529
High School	0.1860	0.0867	0.1592
Total	**0.2792**	**0.1676**	**0.3121**

EXHIBIT H

Correspondence with the City and County

COOPERATIVE STRATEGIES

COMPLETE FINANCIAL & DEMOGRAPHIC PLANNING FOR EDUCATION

March 30, 2017

Mr. David Peterson
City of Santa Clarita
Planning Division
23920 Valencia Blvd, Suite 302
Santa Clarita, CA 91355

Re: Residential Development Projections within William S. Hart Union High School District Boundaries

Dear Mr. Peterson,

Cooperative Strategies, LLC is in the process of revising the School Facilities Needs Analysis ("SFNA") for the William S. Hart Union High School District ("School District"). Pursuant to Section 65995.5(c)(3) of the Government Code, one component of the SFNA is an estimate of the number, type, and square footage of expected future residential units ("Future Units") to be constructed in the area of the City of Santa Clarita ("City") served by the School District **over the next five (5) years.**

Projections regarding the Future Units to be constructed within the area of the City served by the School District are shown on the following page. The projection of the number and type of Future Units is based on information provided by the Newhall Land & Farm Company, as well as information prepared by Davis Demographics & Planning, Inc. The average square footage estimates were calculated by Cooperative Strategies based on an analysis of residential units recently built within the School District. Cooperative Strategies would like to provide the City with the opportunity to review, and if necessary, modify these projections. Please complete the attached page ("Certificate") and return to Cooperative Strategies at your earliest convenience..

Mr. Peterson, should you have any questions regarding the projections please contact me at 949.250.8343. We sincerely appreciate your assistance in providing this information and look forward to hearing from you soon.

Sincerely,

Andrew Bishop
Senior Director

In its efforts to assist Cooperative Strategies, LLC in preparing the SFNA in accordance with the guidelines of Section 65995.5(c)(3) of the Government Code for the William S. Hart Union High School District, the City of Santa Clarita ("City"):

___The City concurs with the previous residential development projections as provided below:

Unit Type	Projected Number of Units [1]	Estimated Average Square Footage per Unit
Single Family Detached *(i.e. single family home)*	888	2,900
Single Family Attached (e.g. *condos, duplexes, townhomes, etc.)*	611	1,750
Multifamily *(i.e. apartments)*	312	1,000

[1] Excludes units designated as age restricted (i.e. requiring residents to be at least 55 years of age).

___The residential development projected by the City is listed below:

Unit Type	Projected Number of Units [1]	Estimated Average Square Footage per Unit
Single Family Detached *(i.e. single family home)*		
Single Family Attached (e.g. *condos, duplexes, townhomes, etc.)*		
Multifamily *(i.e. apartments)*		

[1] Excludes units designated as age restricted (i.e. requiring residents to be at least 55 years of age).

Signed, _____, of the City of Santa Clarita on _____.

Printed Name: _____
Title: _____

COOPERATIVE STRATEGIES

COMPLETE FINANCIAL & DEMOGRAPHIC PLANNING FOR EDUCATION

March 30, 2017

Mr. Donald Kress
County of Los Angeles
Department of Regional Planning
320 West Temple Street, 13th Floor
Los Angeles, CA 90012

Re: Residential Development Projections within William S. Hart Union High School District Boundaries

Dear Mr. Kress,

Cooperative Strategies, LLC is in the process of revising the School Facilities Needs Analysis ("SFNA") for the William S. Hart Union High School District ("School District"). Pursuant to Section 65995.5(c)(3) of the Government Code, one component of the SFNA is an estimate of the number, type, and square footage of expected future residential units ("Future Units") to be constructed in the area of the County of Los Angeles ("County") served by the School District **over the next five (5) years.**

Projections regarding the Future Units to be constructed within the area of the County served by the School District are shown on the following page. Because Castaic Union School District serves grades K-8, while Newhall, Saugus Union, and Sulphur Springs School Districts only serve grades K-6, development projections must be identified based on whether the area is inside or outside Castaic Union School District. The projection of the number and type of Future Units was based on information provided by the Newhall Land & Farming Company, as well as information prepared by Davis Demographics & Planning, Inc. The average square footage estimates were calculated by Cooperative Strategies based on an analysis of residential units recently built within the School District. Cooperative Strategies would like to provide the County with the opportunity to review, and if necessary, modify these projections. Please complete the attached page ("Certificate") and return to Cooperative Strategies at your earliest convenience.

Mr. Kress, should you have any questions regarding the projections please contact me at 949.250.8389. We sincerely appreciate your assistance in providing this information and look forward to hearing from you soon.

Sincerely,

Andrew Bishop
Senior Director

In its efforts to assist Cooperative Strategies, LLC in preparing the SFNA in accordance with the guidelines of Section 65995.5(c)(3) of the Government Code for the William S. Hart Union High School District, the County of Los Angeles ("County"):

___The County concurs with the previous residential development projections as provided below:

Unit Type	All Units in WSHUHSD		Units Outside Castaic USD	
	Projected Number of Units[1]	Estimated Average Square Footage per Unit	Projected Number of Units[1]	Estimated Average Square Footage per Unit
Single Family Detached *(i.e. single family home)*	3,323	3,200	2,589	3,200
Single Family Attached (e.g. *condos, duplexes, townhomes, etc.)*	2,637	1,550	2,124	1,550
Multifamily *(i.e. apartments)*	2,584	1,000	2,444	1,000

[1] Excludes units designated as age restricted (i.e. requiring residents to be at least 55 years of age).

___The residential development projected by the County is listed below:

Unit Type	All Units in WSHUHSD		Units Outside Castaic USD	
	Projected Number of Units[1]	Estimated Average Square Footage per Unit	Projected Number of Units[1]	Estimated Average Square Footage per Unit
Single Family Detached *(i.e. single family home)*				
Single Family Attached (e.g. *condos, duplexes, townhomes, etc.)*				
Multifamily *(i.e. apartments)*				

[1] Excludes units designated as age restricted (i.e. requiring residents to be at least 55 years of age).

Signed, _____, of the County of Los Angeles on _____.

Printed Name: _____
Title: _____

EXHIBIT I

Reconstruction

Reconstruction is the act of replacing existing structures with new construction, which may have an alternative land use (i.e. commercial/industrial versus residential) or may consist of different residential unit types (e.g., single family detached versus multifamily, etc.).

A. Residential Reconstruction

Residential Reconstruction consists of voluntarily demolishing existing residential units and replacing them with new residential development. To the extent Reconstruction increases the residential square footage beyond what was demolished ("New Square Footage"), the increase in square footage is subject to the applicable Alternative No. 2 Fee or Alternative No. 3 Fee as such construction is considered new residential development. As for the amount of square footage constructed that replaces only the previously constructed square footage ("Replacement Square Footage"), the determination of the applicable fee, if any, is subject to a showing that the Replacement Square Footage results in an increase in student enrollment and, therefore, an additional impact being placed on the School District to provide school facilities for new student enrollment.

As of the date of this Analysis, the large-scale Reconstruction of residential development within the School District has not occurred to the point where statistically significant data can be utilized to determine if Replacement Square Footage increases student enrollment. Therefore, prior to the imposition of fees on Replacement Square Footage, the School District may undertake an analysis on any future proposed project(s) and may amend/update this Analysis. Such analysis will examine the extent to which an increase in enrollment can be expected from Replacement Square Footage due to any differential in student generation rates as identified in the Analysis for the applicable unit types between existing square footage and Replacement Square Footage. To the extent it can be demonstrated that Replacement Square Footage will increase student enrollment, the School District may then impose a fee on the Replacement Square Footage. This fee amount on Replacement Square Footage shall be calculated by determining the cost impacts associated with any growth in student enrollment from the Replacement Square Footage. Any such fee that is calculated for the Replacement Square Footage shall not exceed the Alternative No. 2 Fee or Alternative No. 3 Fee that is in effect at such time.

B. Reconstruction of Commercial/Industrial Construction into Residential Construction

The voluntary demolition of existing commercial/industrial buildings and replacement of them with new residential development is a different category of Reconstruction. Cooperative Strategies is aware that such types of Reconstruction may occur within the School District over the next five (5) years, however, Cooperative Strategies was unable to find information (i) about the amount planned within the School District over the next five (5) years or (ii) historical levels, which might indicate the amount to be expected in the future. Due to the lack of information, the School District has decided to evaluate the impacts of Commercial/Industrial Reconstruction projects on a case-by-case basis and will make a determination of whether a fee credit is justified based on the nature of the project.

The fee credit determination will be based upon a comparison of the impacts of the planned residential project and the existing land use category (i.e. retail and services, office, research and development, industrial/warehouse/manufacturing, hospital, or hotel/motel). The actual impacts of the planned residential project (taken from Exhibit E) will be reduced by the impact of the existing commercial/industrial category (derived from calculations contained in the current Commercial/Industrial Development School Fee Justification Study adopted by the School District). Any reduction to the Alternative No. 2 Fee would only occur if the reduced amount falls below the Alternative No. 2 Fee. In such a case, the School District would levy the reduced amount per square foot of new residential construction for the subject Reconstruction project.

EXHIBIT J

Updated School Facilities Capacity Calculation

WILLIAM S. HART UNION HIGH SCHOOL DISTRICT

School Facilities Capacity Calculation

Application	Item	Permanent Classrooms	Junior High School	High School
N/A	SAB Form 50-02	N/A	2,375	7,585
N/A	Non-Severe/Severe Capacity	N/A	193	386
N/A	Teaching Stations Added Without State Funding[1]	3	0	81
N/A	Teaching Stations Added Without State Funding 2016/2017[1]	3	0	81
50/65136-00-001	Rio Norte Junior High School	44	1,701	0
50/65136-00-002	Sierra Vista Junior High School	6	162	0
50/65136-00-003	West Ranch High School	96	0	2,484
50/65136-00-004	Rancho Pico Junior High School	44	1,700	0
50/65136-00-005	Golden Valley High School	96	0	2,592
50/65136-00-006	Saugus High School	13	0	351
50/65136-00-007	Arroyo Seco Junior High School	9	189	0
50/65136-00-008	Canyon High School	26	0	702
50/65136-00-009	Valencia High School	2	0	54
50/65136-00-010	Academy of the Canyons	0	0	270
Total Capacity	**N/A**	**342**	**6,320**	**14,586**

[1] Teaching stattions added without State funding are loaded at 27 students per teaching station.

EXHIBIT K

Surplus Site Determination

Section 65995.6(b)(1) requires the School District to identify and consider any surplus property owned by the School District that may be used as a school site or that is available for sale to finance school facilities. The School District has identified six (6) sites that may fall into this category.

1. **Hasley Canyon/Sloan Canyon Roads**

   Hasley Canyon/Sloan Canyon Roads is a 70 acre site with an assessed value of $2,756,000. These values are based on the most recent data available from the SAB Form 423 Certification of Unused Sites.

2. **Sierra Estates**

   Sierra Estates is a 10.6 acre site with an assessed value of $790,111. These values are based on the most recent data available from the SAB Form 423 Certification of Unused Sites.

3. **Sierra Estates II**

   Sierra Estates II is a 250 acre site with an assessed value of $13,653,090. These values are based on the most recent data available from the SAB Form 423 Certification of Unused Sites.

4. **South Summit**

   South Summit is a 31.5 acre site with an assessed value of $530,673. These values are based on the most recent data available from the SAB Form 423 Certification of Unused Sites.

5. **The Ranch**

   The Ranch is a 13.4 acre site with an assessed value of $1,137,757. These values are based on the most recent data available from the SAB Form 423 Certification of Unused Sites.

6. **Vasquez Canyon**

   Vasquez Canyon is an 81 acre site with an assessed value of $4,424,612. These values are based on the most recent data available from the SAB Form 423 Certification of Unused Sites.

These six (6) sites, therefore, have a combined assessed value of $23,292,243 that could be used to offset the impact of Future Units. This potential funding will be discussed further in Exhibit M.

DEPARTMENT OF GENERAL SERVICES

CERTIFICATION OF UNUSED SITES

SAB 423 (7/06)

STATE ALLOCATION BOARD

OFFICE OF PUBLIC SCHOOL CONSTRUCTION

Date of this Report: May 23, 2016

DISTRICT	DISTRICT NO.	COUNTY	F/Y
William S. Hart Union High	65136	LOS ANGELES (19)	15-16

Site	Grade Level E-M-H	No. Acres	Year Acquired	Purchase Price	Parcel ID Number	Assessed Value	Assessed Fee	Next Assessable Year
HASLEY CANYON/SLOAN CANYON ROADS 9835398	H	70.0	2014		3247-043-901	2,756,000	27,560	22/23
SIERRA ESTATES (LOH) 9834284	M	10.6	2011	625,000	2813-018-903	790,111	7,901	19/20
SIERRA ESTATES II 9834276	H	250.0	2011	10,800,000	2813-018-900 2813-018-901 2853-002-900	13,653,090	136,531	19/20
SOUTH SUMMIT - 2.84 ACRES 9835414	H	2.8	2014		9836-013-921	392,200	3,922	22/23
SOUTH SUMMIT - 21 ACRES 9835406	H	21.0	2014		2836-013-919	98,349	983	22/23
SOUTH SUMMIT - 7.67 ACRES 9835422	H	7.7	2014		2836-013-920	40,124	401	22/23
THE RANCH 9834318	H	13.4	2011	900,000	2813-018-902	1,137,757	11,378	19/20
VASQUEZ CANYON (CATTERALL) 9834300	M	60.0	2011	2,000,000	3231-001-901 3231-001-900	2,528,349	25,283	19/20
VASQUEZ CANYON (COULSON) 9834292	M	21.0	2011	1,500,000	3231-001-902	1,896,264	18,963	19/20

This report lists all of the District's previously reported unused sites, including sites that have received a waiver in previous years. **All School Districts and County Offices of Education are required to report all unused sites to the State Allocation Board, pursuant to California Education Code Sections 17219 - 17224.** An unused site is deemed to be any site owned by the District that is not being used for school purposes.

Please review and verify the information indicated above for accuracy and content and answer the questions listed below. This form must be returned to the Office of Public School Construction no later than July 1, 2016.

1. Do any of the sites listed above meet the conditions for a waiver as outlined in Section IV of the Form SAB 424? **If YES, please complete a Form SAB 424 for each eligible site.**

YES ☐ NO ☒

2. Does the District have any new Unused Sites to report? **If YES, please complete a Form SAB 424 for each new site.**

YES ☐ NO ☒

I certify that I am authorized to represent the Governing Board of the District, that the above information is true and correct and that the District has no additional sites which are unused. If any of the above information is incorrect, omitted, or an unused site is not listed, I have attached Form(s) SAB 424 indicating additional sites or changes to the above information.

Michael Otavka, Director of Facilities | (661) 259-0033 x 274

Authorized Agent and Title (Typed or Printed) | (Area Code) Phone Number

Authorized Agent (signature) | Date 6/30/16

EXHIBIT L

Identification and Consideration of Local Funding Sources per Section 65995.5(c)(2) and Section 65995.6(b)(3)

Section 65995.6(b)(3) requires the School District to identify and consider any local sources other than fees, charges, dedications, or other requirements that can be used to offset the cost impacts of Future Units. Additionally, Section 65995.5(c)(2) requires the School District to subtract the amount of Local Funds, which includes commercial/industrial school fees, that the governing board has dedicated to facilities necessitated by Future Units. What follows is a summary of potential local sources, including Local Funds that were evaluated for reducing such impact.

1. Certificates of Participation

Certificates of Participation ("COPs") are a means of financing facilities through a lease. The lease payments are typically secured by the School District's general fund.

The School District has issued COPs in the past but does not currently have any proceeds from COPs to offset the available impacts of non-mitigated Future Units.

2. General Obligation Bonds

General Obligation ("GO") bonds are secured by the full faith, credit and taxing power of the issuing school district. A GO bond constitutes debts of the issuer and generally requires 2/3 approval by election prior to issuance; however, a Proposition 39 GO bond is approved by 55 percent of the votes. In return for a lower voter approval threshold under Proposition 39, the issuing school district (i) must identify a specific list of school facility projects, (ii) has limitations on the rate of maximum tax levy, and (iii) upon approval, the expenditures are monitored and audited by a citizens' oversight committee annually. Voter approval grants the school district the right to levy additional *ad valorem* taxes on all taxable property within its jurisdiction in order to pay debt service on the GO bonds.

General obligation ("GO") bonds are tax-exempt bonds secured by the "full faith and credit," i.e., unlimited taxing power, of the issuing school district. A bond generally requires 2/3 approval of voters; however, a Proposition 39 GO bond is approved by 55 percent of the votes. In return for a lower voter approval threshold, the School District (i) has limitations on the type of expenditures, (ii) must provide additional data to the electorate, and (iii) upon approval, the expenditures are monitored by a Citizens Oversight Committee. Voter approval grants the School District the right to levy an additional ad valorem tax on all taxable property within its jurisdiction in order to pay debt service on the GO bonds.

On November 6, 2001, the voters of the School District approved Measure V, which authorized the issuance of $158,000,000 in GO bonds. Currently there are no remaining Measure V Funds allocated for new construction projects.

Additionally, the voters of the School District authorized $300 million in GO bonds on November 4, 2008 (see Exhibit F for more information on Measure SA). Of the $300,000,000 to be issued, approximately $110,000,000 is available for new construction projects that could be used to offset the impact of Future Units. Therefore, the School District has a total of $110,000,000 in GO bond proceeds available at the time to offset the impacts of non-mitigated Future Units. However, in addition to the Future Units listed in Tables 2 and 3 of the Analysis, the School District will experience growth beyond the next five (5) years. According to the best residential development estimates available, the School District can expect an additional 37,423 units to be constructed within the School District through calendar year 2035. This number includes Future Units and residential units to be constructed beyond the next five (5) years.

Apportioning the $110,000,000 in earmarked proceeds between students generated from Future Units and students generated from residential units constructed beyond the next five (5) years resulted in $30,129,699 of the proceeds being available to reduce the impact of students generated from Future Units over the next five (5) years (see Exhibit N for more information on the allocation of GO bond proceeds). This potential funding will be discussed further below.

On June 30, 2016, the School District issued its 2016 GO Refunding Bonds. These bonds were issued to refund a portion of the 2008 Series A GO bonds. Therefore, no proceeds from this issuance are available to offset the impact of students generated from non-mitigated Future Units.

3. <u>Redevelopment Pass-Throughs</u>

California redevelopment law allows school districts to share in tax increment income via pass-through agreements with local redevelopment agencies. The passage of AB X1 26 eliminated redevelopment agencies as of February 1, 2012, and replaced them with successor agencies. Though redevelopment agencies have been eliminated, local educational agency's pass-through entitlements remain.

The School District currently has a pass-through agreement with the City of Santa Clarita. Based on projected revenues from this pass-through agreement, the School District estimates it will receive $269,890 for capital facilities over the next five (5) years. At this time, $269,890 is considered to be available as potential funding for school facilities to house students generated from Future Units.

4. Community Facilities Districts

The Mello-Roos Community Facilities Act provides an alternative method for public agencies to fund facilities with useful lives of five (5) years or more. The Community Facilities District ("CFD") is a financing entity through which a local government is authorized to levy special taxes to pay debt service on issued bonds or to pay for the direct construction of facilities. A two-thirds vote of the qualified voters is required to form the CFD.

The School District has formed 10 CFDs to date: CFD No. 87-1, CFD No. 88-4, CFD No. 89-2, CFD No. 90-1, CFD No. 99-1, CFD No. 2002-1, CFD No. 2004-1, CFD No. 2005-1, CFD No. 2008-1, and CFD No. 2015-1. These CFDs were formed on specific residential development projects as a mechanism to finance mitigation payments. Accordingly, none of the special tax or bond proceeds from these CFDs will be available to offset the cost impacts of any residential units constructed outside the boundaries of the CFDs. In most instances, the School District will not be permitted to collect additional statutory school fees, mitigation payments or Alternative Fees from the units located within the CFDs, nor were the units from the CFDs considered in calculating the Alternative No. 2 and Alternative No. 3 Fees.

5. School Fees

Sections 17620 *et seq.* of the Education Code gives school districts the authority to collect statutory school fees ("School Fees") from commercial and industrial development if a justification study is prepared and certain nexus findings are made. Section 65995.5(c)(2) requires the School District to identify and consider Local Funds, which includes commercial/industrial School Fees, and to subtract such funds from the total impact created by Future Units, if such Local Funds are available.

A total of $2,584,532 in commercial/industrial fees has been collected over the last five (5) years. A similar amount of commercial/industrial School Fees can be expected to be received over the following five (5) years. This potential funding will be discussed further below.

6. Identification of Existing Surplus Local Funds

As stated in Section III.B, the School District currently has 474 unhoused junior high school students and 1,057 unhoused high school students from existing residential units. Based on per-student costs calculated in Exhibit E, these existing unhoused students have a cost impact to the School District of $47,551,185 at the junior high school level and $102,464,505 at the high school level.

Over the next five (5) years, the School District will also need to construct school facilities to house students to be generated from Future Units. Using per-student costs calculated in Exhibit E, providing adequate school facilities to the 141 Projected Unhoused Students at the junior high school level and the 230 Projected Unhoused Students at the high school level identified in Section III.C will have a cost of $10,901,979 and $18,311,450 respectively. Table L-1 shows a summary of the school facilities needs of the School District.

Table L-1
Identification of School Facilities Needs (2017$)

Item	Junior High School Level	High School Level	Total
Current Unhoused Student Impact	$36,649,206	$84,153,055	$120,802,261
Future Unhoused Student Impact	$10,901,979	$18,311,450	$29,213,429
Total	**$47,551,185**	**$102,464,505**	**$150,015,690**

As stated above, the School District has identified the following local funds: (i) $30,129,699 in available GO Bond Proceeds, (ii) a potential for $269,890 in funding from redevelopment pass-through agreements, (iii) potential commercial/industrial school fees in the amount of $2,584,532, and (iv) potential surplus site revenues in the amount of $23,292,243. In addition, the School District also plans to pursue State funding for the construction of school facilities to adequately house students generated from existing residential development and Future Units. Based on the current per-pupil grant amounts established by the State and the School District's site costs, the 474 existing unhoused students at the junior high school level and the 1,057 existing unhoused students at the high school level would generate $11,271,807 and $25,844,731 in State funding respectively. Furthermore, and the 141 Projected Unhoused Students at the junior high school level and the 230 Projected Unhoused Students at the high school level would generate $3,359,450 and $5,424,819 in State funding respectively. Additionally, based on Table 14 of the Analysis, the School District can expect to receive $3,359,450 from Alternative No. 2 Fees at the junior high school level and $5,424,819 from Alternative No. 2 Fees at the high school level on new residential development. Table L-2 summarizes potential funding sources to fund the school facilities needs identified in Table L-1.

Table L-2
Identification of Local Funds (2017$)

Item	Junior High School Level	High School Level	Total
Available GO Bond Proceeds	$11,679,490	$18,450,209	$30,129,699
Projected Redevelopment Revenues	$89,963	$179,927	$269,890
Projected Commercial/Industrial School Fees	$861,511	$1,723,021	$2,584,532
Potential Value of Surplus School Sites	$7,764,081	$15,528,162	$23,292,24
State Funding for Current Unhoused Students	$11,271,807	$24,981,010	$36,252,81
State Funding for Projected Unhoused Students	$3,359,450	$5,424,819	$8,784,269
Projected Alternative No. 2 Fees	$3,359,450	$5,424,819	$8,784,269
Total	**$38,385,752**	**$71,711,967**	**$110,097,719**

As shown in Table L-3, when considering the current and future school needs of the School District, there is currently a combined $39,917,971 funding shortfall. Therefore, the School District does not have surplus funds available to offset the cost impact of Future Units.

Table L-3
Identification of Funding Shortfall (2017$)

Item	Junior High School Level	High School Level
School Facilities Needs	$47,551,185	$102,464,505
Local Funding Sources	($38,385,752)	($71,711,967)
Remaining Funding Shortfall	**$9,165,433**	**$30,752,538**

EXHIBIT M

Calculation of Additional Grants for General Site Development

WILLIAM S. HART UNION HIGH SCHOOL DISTRICT

General Site Development Grant per Student Calculation

1. Calculation of Additional Grant Amount as a percentage of Base Per-Pupil Grant at Each School Level

School Level	Base Per-Pupil Grant [1]	Percent	Additional Grant
Junior High School	$11,983	6.00%	$719
High School	$15,204	3.75%	$570
[1] Includes Automatic Fire Detection/Sprinkler Grant.			

2a. Calculation of Total Grant Amount for a New School Facility at Each School Level

School Level	Grant per New Usable Acre	Site Size	Grant per School Facility
Junior High School	$18,073	22.5	$406,643
High School	$18,073	49.0	$885,577

2b. Calculation of Grant Amount per Student at Each School Level

School Level	Grant per School Facility	Facility Capacity	Grant per Student
Junior High School	$406,643	1,200	$339
High School	$885,577	2,600	$341

3. Determination of Total Grant per Student for General Site Development at Each School Level

School Level	Additional Grant as a percentage of Base Per-Pupil Grant	Grant per Student	Total Grant for General Site Development
Junior High School	$719	$339	$1,058
High School	$570	$341	$911

EXHIBIT N

Allocation of GO Bond Authorization

WILLIAM S. HART UNION HIGH SCHOOL DISTRICT

Allocation of GO Bond Proceeds

Credit for GO Bond Proceeds as of School Year 2017

GO Bond Authorization	Available GO Bond Proceeds
Measure SA	$110,000,000

Units Constructed in the Next Five (5) Years and Total Units Constructed

Unit Type	Residential Units within NSD, SUSD, and SSUSD over Next Five Years [1]	Residential Units within the Entire School District over the Next Five Years [2]	Number of Total Units [3]
Number of SFD Units	3,477	4,211	16,977
Number of SFA Units	2,735	3,248	13,998
Number of MF Units	2,756	2,896	6,447
Total	**8,968**	**10,355**	**37,423**

[1] Residential units projected over the next five years within the portion of the School District serving students in grades 7 & 8 (excludes CUSD).

[2] Residential units projected over the next five years within the portion of the School District serving students in grades 9 through 12 (includes CUSD).

[3] Total Residential Units = Residential Units in Next Five (5) Years + Residential Units Beyond Next Five (5) Years.

Students Generated by Units to be DevelopedIn the Next Five (5) Years and by Total Units Constructed

	Students Generated from Future Units over the Next Five Years	Students Geenrated from Total Units
Junior High School Students from SFD Units	324	1,582
Junior High School Students from SFA Units	221	1,132
Junior High School Students from MF Units	421	986
Total Junior High School Students Generated	**966**	**3,700**
High School Students from SFD Units	783	3,158
High School Students from SFA Units	282	1,214
High School Students from MF Units	461	1,026
Total High School Students Generated	**1,526**	**5,398**
Total Students Generated	**2,492**	**9,098**
% of Students Geenrated from Future Units		**27.39%**

Allocation of GO Bond Authorization to Students Generated from Future Units

Item	Amount
Available GO Bond Proceeds	$110,000,000
% of Students Geenerated from Future Units	27.39%
GO Bond Proceeds Available to Students Generated from Future Units	**$30,129,699**
GO Bond Proceeds Available to Junior High School Students Generated from Future Units	$11,679,490
GO Bond Proceeds Available to High School Students Generated from Future Units	$18,450,209

County Library
Of Los Angeles Public
Skye Patrick
County Librarian

County of Los Angeles Public Library
7400 East Imperial Hwy., Downey, CA 90242 • (562) 940-8400 • colapublib.org

April 24, 2017

Brian Allee
Senior Planner
ESA PCR
2121 Alton Parkway, Suite 100
Irvine, CA 92606

Dear Mr. Allee:

Request for Information Regarding Library Services and Facilities for the Canyon View Estates Project in the County of Los Angeles

This is to respond to your request for library service information for the above referenced project. Attached is the Library's response to your questions.

If you have any questions or need additional information, please feel free to contact Elsa Muñoz, Head, Support Services at (562) 940-8450 or emunoz@library.lacounty.gov.

Sincerely,

Yolanda De Ramus
Chief Deputy County Librarian

YDR:EB:EM:KK:ss
u:\staffservices\eir\canyon view estates\response.docx

Attachment (1)

c: Ting Fanti, Head, Budget and Fiscal Services
Jesse Walker-Lanz, Library Administrator, Adult and Digital Services

CANYON VIEW ESTATES PROJECT

1. County library facilities providing library services to the Project site.

   Response: The proposed project is located in the Stevenson Ranch Library service area. The library is located at 25950 The Old Road, Stevenson Ranch, CA 91381.

2. Please provide facility information for each LACPL library that would serve the Project, including:

   Response:

   a. Size of library buildings (square footage): 11,551 sq. ft.

   b. Personnel (paid employees and volunteers): 5 Full Time Staff, 11 Part Time Staff, 4 Volunteers

   c. Collection size and amenities: This facility contains a collection of 55,342 items; a 50-seat meeting room; 3 group study rooms; express checkout service machines; 23 public access computers; public access WiFi and public restrooms.

   d. Programmed or target service population (please indicate the basis for the population):

      - Family Places: early childhood
      - Homework Center and live homework help: K-12 and college
      - LearningExpress Library: all age
      - Career Help from Tutor.com: K-12, college and adult
      - Language learning online: all age
      - Story time: under 5 as well as programs for teenagers and adults

   e. Actual population served: 14,543

   f. Census tracts that comprise each of the library's service area (if known): 920326 (Census Tracts 2010)

3. Planned, funded, and/or scheduled service improvements or expansions to County library facilities that would serve the Project.

   Response: No refurbishments or expansions is currently planned as the leased 12,000 square feet Stevenson Ranch Library was recently open in March 2015.

4. Would Project implementation require the physical expansion of an existing library(s), a new library facility, and/or additional staffing to the library facilities serving the Project site? If yes, please answer a-c below. If not, proceed to Question 5.

Response: No, the proposed project for 37 single-family residential lots will not require the physical expansion of the Stevenson Ranch Library.

a. Describe any new or expanded library facilities resulting from Project implementation.

b. If any new staff required, how many and what position?

c. If any new staff required, could the new staff be accommodated within existing or planned library(s) without the need for physical expansion of the existing library(s)?

5. Please confirm LACPL's standards and goals used to assess the adequacy of library services and facilities and potential impact from Project development.

Response: The Public Library uses the following library service level guidelines to determine needs:

- Building size: 0.5 gross square feet per capita
- Land size: 2 gross square feet per capita
- Collection: 2.75 items per capita
- Computer: 1 computer per 1,000 capita

In order to mitigate the impact of new developments, the Public Library applies a mitigation fee for each new residential unit in unincorporated areas of the county known as the Library Facilities Mitigation Fee (Developer Fee). Developers proposing new residential units are required to pay the Developer Fee in effect at the time the building permits for the project are issued. Since this project is in the unincorporated area served by the County Public Library, it is subject to the Developer Fee.

The proposed project is located in the Library Planning Area 1 (Santa Clarita Valley). The current mitigation fee for this area, which may be adjusted annually based on changes in the Consumer Price Index, is $885 per residential unit.

Los Angeles County
Department of Regional Planning

Planning for the Challenges Ahead

Richard J. Bruckner
Director

August 24, 2017

Kimia Fatehi, Tribal Historic and Cultural Preservation Officer
Fernandeño Tatavium Band of Mission Indians
1019 Second street
San Fernando, CA 91340

RE: Tribal Cultural Resources under the California Environmental Quality Act, AB 52 (Gatto, 2014). Formal Notification of the Proposed Project pursuant to Public Resources Code (PRC) §21080.3.1.

The Los Angeles County Department of Regional Planning is issuing this formal notification of the proposed project. Below please find a description of the proposed project, a map showing the project location, and our contact information along with the name of our point of contact, pursuant to PRC §21080.3.1(d).

Proposed Project: Canyon View Estates
Project No. TR74650 - 5
Vesting Tentative Tract Map No. RPPL2016004402
Conditional Use Permit No. RPPL2016004409
Oak Tree Permit No. TBD
Environmental Assessment No. 2016004410

Project Description: A subdivision request to create 37 single-family lots, 2 open space lots, and 6 public facility lots on 94.38 gross acres. A Conditional Use Permit is requested to allow a density-controlled development with on-site grading exceeding 100,000 cubic yards in a Hillside Management Area. One oak tree is proposed to be removed. The project site is vacant.

Project Location: S/W of Pico Canyon & Interstate 5, East of Magnolia Lane
APNs 2826-020-012, -013, -061

Lead Agency Contact Information:
Marie Pavlovic
Land Divisions Section
Department of Regional Planning
320 W. Temple Street, Room #1360
Los Angeles, CA 90012
Tel: (213) 974-6433
Email: mpavlovic@planning.lacounty.gov

Pursuant to PRC §21080.3.1(b), you have 30 days from the receipt of this letter to request consultation, in writing, with the Department of Regional Planning. Written request must be submitted to the contact information listed above.

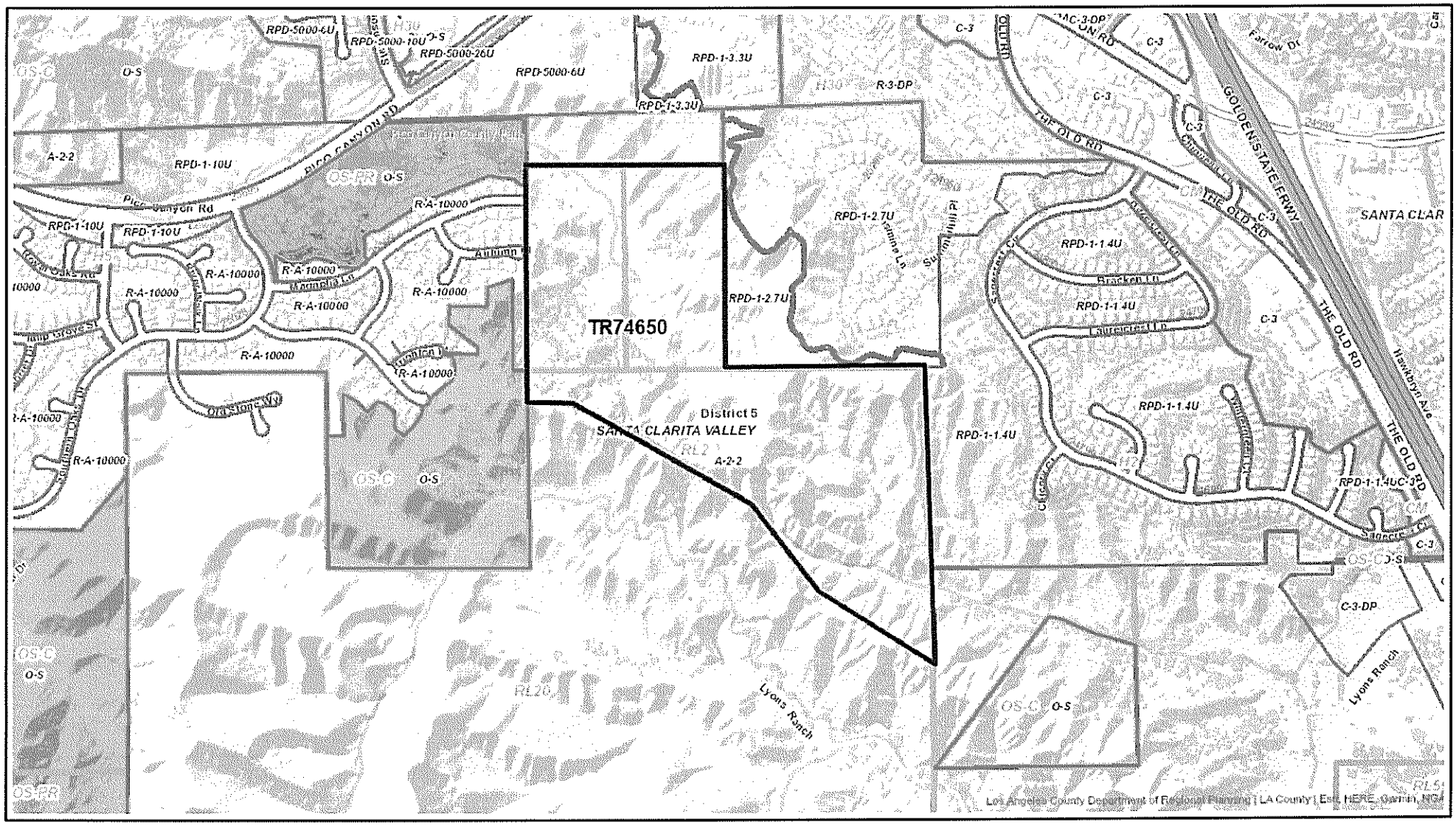
Our office hours are Monday through Thursday, 7:00 a.m. to 5:30 p.m. We are closed on Fridays.

Sincerely,
DEPARTMENT OF REGIONAL PLANNING
Richard J. Bruckner

Marie Pavlovic, Senior Regional Planning Assistant
Land Divisions Section

Encl: Map of Project Location

KKS, MP



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PROJECT SITE - TR74650

Printed: Aug 24, 2017

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Los Angeles County
Department of Regional Planning

Planning for the Challenges Ahead

Richard J. Bruckner
Director

August 24, 2017

Anthony Morales, Chief
Gabrieleno Tongva - San Gabriel Band of Mission Indians
P.O. Box 693
San Fernando, CA 91778

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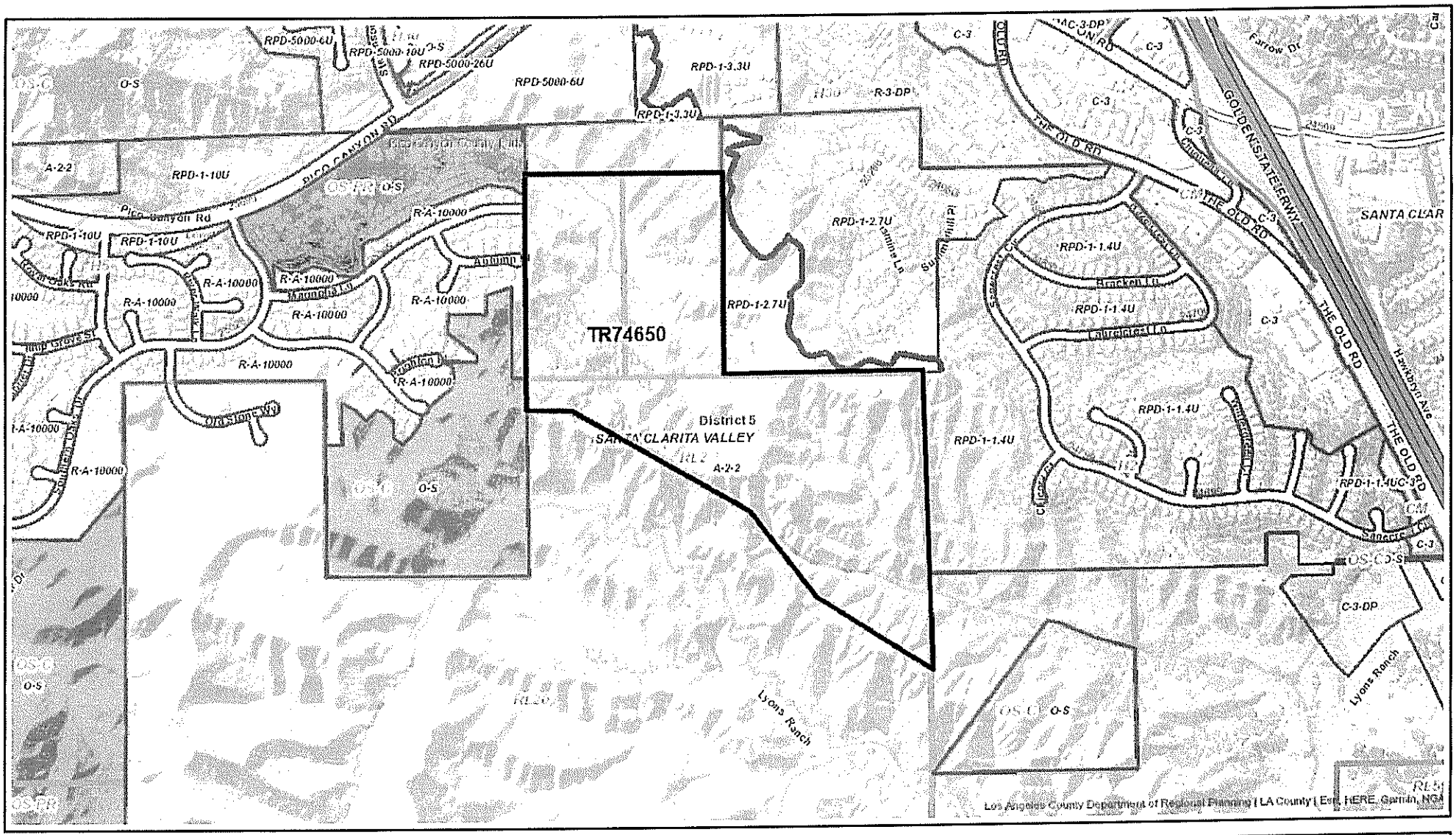
Sincerely,
DEPARTMENT OF REGIONAL PLANNING
Richard J. Bruckner

Marie Pavlovic, Senior Regional Planning Assistant
Land Divisions Section

Encl: Map of Project Location

KKS, MP



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PROJECT SITE - TR74650

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COUNTY OF LOS ANGELES

FIRE DEPARTMENT

605 N. ANGELENO AVENUE
AZUSA, CA 91702
(626) 969-5205

DARYL L. OSBY
FIRE CHIEF
FORESTER & FIRE WARDEN

March 28, 2017

Alex Koutzoukis
507 30th Street
Newport Beach, CA 92663

Dear Mr. Koutzoukis:

FUEL MODIFICATION PLAN – CANYON VIEW ESTAES PRELIM TRACT MAP, SANTA CLARITA TRACT 74650 - FM PROJECT #6542 - FFFM #201700084

The Preliminary Fuel Modification Plan has been reviewed and approved. The project is approved in concept, and needs to be resubmitted for final review and approval prior to granting building permits. The Land Development Unit of the County of Los Angeles Fire Department has been notified that this plan has been approved.

Questions regarding this response should be directed to the Fuel Modification Unit. Office hours are Monday through Thursday, from 8:00 a.m. to 4:00 p.m. for plan submittal and general questions. Plan checkers are available 8:00 a.m. to 10:00 a.m. and by appointment. The Fuel Modification Unit may be reached at (626) 969-5205.

Very truly yours,

KEVIN T. JOHNSON, ASSISTANT CHIEF, FORESTRY DIVISION
PREVENTION SERVICES BUREAU

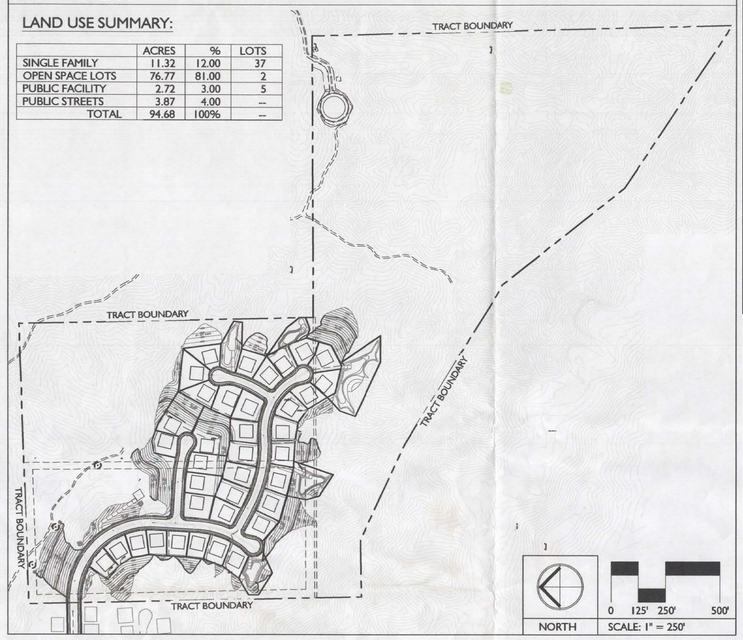
KTJ:bw

Enclosures

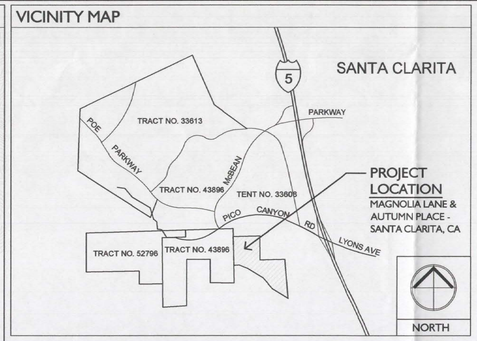
FULL SITE PLAN

LAND USE SUMMARY:

	ACRES	%	LOTS
SINGLE FAMILY	11.32	12.00	37
OPEN SPACE LOTS	76.77	81.00	2
PUBLIC FACILITY	2.72	3.00	5
PUBLIC STREETS	3.87	4.00	--
TOTAL	94.68	100%	--



VICINITY MAP



PRELIMINARY FUEL MODIFICATION SITE PLAN

PHOTOGRAPHS AND APPROXIMATE PHOTOGRAPHY LOCATIONS ARE FROM SITE VISIT ON JANUARY 26TH, 2017 PERFORMED BY A. KOUTZOUKIS WITH MJS LANDSCAPE ARCHITECTURE.

FUEL MODIFICATION ZONES

SEE SHEET 2 FOR DETAILED DESCRIPTIONS AND REQUIREMENTS

ZONE A - SETBACK ZONE
EXTENDS 30' BEYOND THE EDGE OF ANY COMBUSTIBLE STRUCTURE

ZONE B - IRRIGATED ZONE
EXTENDS FROM THE OUTERMOST EDGE OF ZONE A TO 100 FEET FROM STRUCTURE

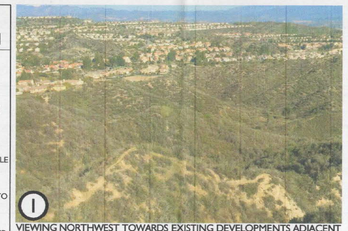
ZONE C - NATIVE BRUSH THINNING ZONE
EXTENDS FROM THE OUTERMOST EDGE OF ZONE B UP TO 200 FEET FROM STRUCTURE

SITE INFORMATION

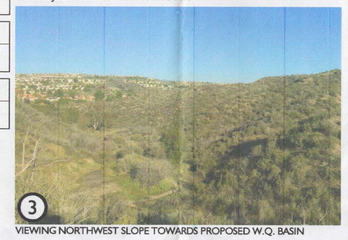
TOTAL DISTURBED AREA: 981,639 S.F.
TOTAL PROPOSED LANDSCAPE AREA: T.B.D.

NOTE

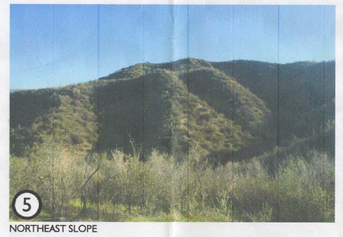
OPEN SPACE AREAS TO BE DESIGNATED AS RESTRICTED USE AREAS ON THE FINAL MAP.


1 VIEWING NORTHWEST TOWARDS EXISTING DEVELOPMENTS ADJACENT TO PROJECT AND STEVENSON RANCH

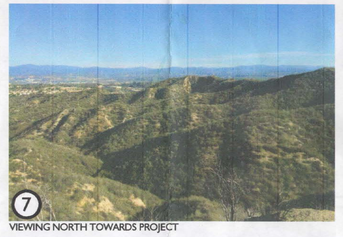

2 EXISTING OAK TREE TO REMAIN

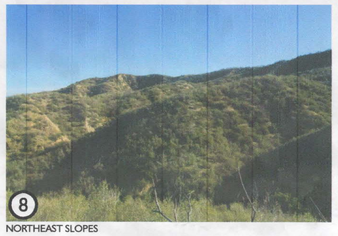

3 VIEWING NORTHWEST SLOPE TOWARDS PROPOSED W.Q. BASIN


4 NORTH SLOPE

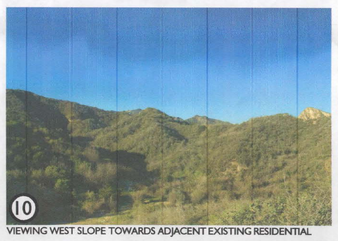

5 NORTHEAST SLOPE

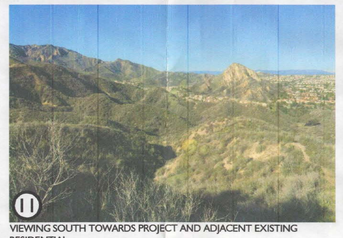

6 VIEWING SOUTHWEST INWARD TOWARDS PROJECT

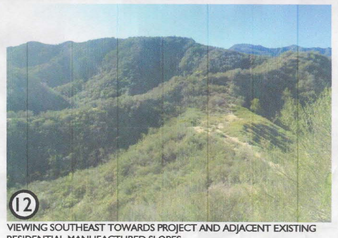

7 VIEWING NORTH TOWARDS PROJECT

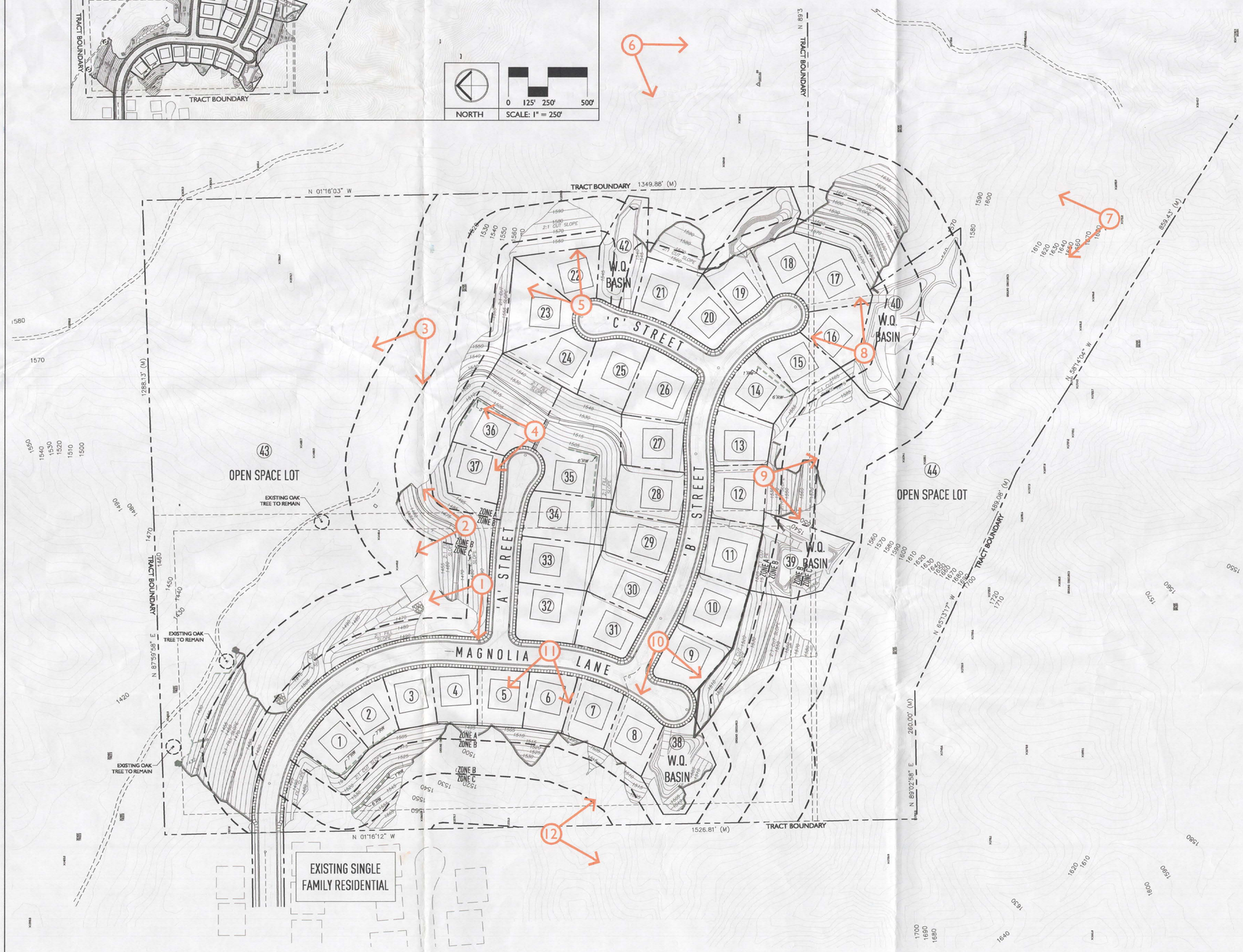

8 NORTHEAST SLOPES


9 VIEWING SOUTHWEST TOWARDS PROJECT


10 VIEWING WEST SLOPE TOWARDS ADJACENT EXISTING RESIDENTIAL


11 VIEWING SOUTH TOWARDS PROJECT AND ADJACENT EXISTING RESIDENTIAL


12 VIEWING SOUTHEAST TOWARDS PROJECT AND ADJACENT EXISTING RESIDENTIAL MANUFACTURED SLOPES



FMH 6542
COUNTY OF LOS ANGELES
FIRE DEPARTMENT
PREVENTION SERVICES BUREAU
PRELIMINARY
FUEL MODIFICATION PLAN
By ____ Date 3/23/17
FUEL MODIFICATION UNIT
The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County/City or State law

#6542
COUNTY OF LOS ANGELES
FIRE DEPARTMENT
PREVENTION SERVICES BUREAU
PRELIMINARY
FUEL MODIFICATION PLAN
RESUBMIT
By M Vara Date 3/24/17
FUEL MODIFICATION UNIT
The stamping of this plan and specifications SHALL NOT be held to permit or to be an approval of the violation of any provisions of any County/City or State law

UNDERGROUND SERVICE ALERT
call TOLL FREE
1-800-422-4133
CALL TWO WORKING DAYS BEFORE YOU DIG

REVISION BLOCK

REV#	DATE	REVISION DESCRIPTION	PLAN CHK	CITY ENGR	APPR	DATE
1	02.22.2017	2ND COUNTY SUBMITTAL				

APPLICANT:
JON FRIEDMAN
1435 REYNOLDS CT.
THOUSAND OAKS, CA 91362
805.373.2860

PREPARED BY:
MJS LANDSCAPE ARCHITECTURE
507 30th St.
Newport Beach, CA 92663
949.675.9964
mjs-la.com

DATE: FEBRUARY 22, 2017

CANYON VIEW ESTATES

PRELIMINARY FUEL MODIFICATION SITE PLAN

FOR
TRACT MAP NO. 74650
LOCATED IN THE UNINCORPORATED TERRITORY OF THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

SCALE: AS NOTED

SHEET 1 OF 2 SHTS

LEGAL DESCRIPTION - 2 OF 2

ALSO EXCEPT THEREFROM AN UNDIVIDED ONE PERCENT OF ALL OIL, GAS AND OTHER HYDROCARBON SUBSTANCES AND MINERAL WHICH MAY LIE, IN, ON, UNDER OR BE HEREAFTER PRODUCED, SAVED OR SOLD FROM SAID LAND WITH THE RIGHT OF INGRESS AND EGRESS THERETO AS GRANTED TO JOSEPH W. AIDLIN, IN DEED RECORDED JANUARY 19, 1940 IN BOOK 17241 PAGE 29 OF OFFICIAL RECORDS

ALSO EXCEPT THEREFROM 1/4TH OF AN UNDIVIDED PERCENT OF ALL OIL, GAS, AND OTHER HYDROCARBON SUBSTANCES AND MINERALS WHICH MAY LIE, IN, ON, UNDER OR BE HEREAFTER PRODUCED, SAVED OR SOLD FROM SAID LAND WITH THE RIGHT OF INGRESS AND EGRESS THERETO AS GRANTED TO JOSEPH W. AIDLIN AND MARY AIDLIN, HUSBAND AND WIFE AS JOINT TENANTS IN DEED RECORDED APRIL 6, 1948 IN BOOK 25865 PAGE 77 OF OFFICIAL RECORDS

BY AN AGREEMENT DATED OCTOBER 1, 1959 AND RECORDED DECEMBER 31, 1959 AS INSTRUMINT NO. 4607 IN BOOK M420 PAGE 171 OF OFFICIAL RECORDS, THE HOLDERS OF THE ABOVE INTERRST WAIVED AND RELINQUISHED ANY RIGHT TO ENTER UPON THE SURFACE OR SUBSURFACE TO A DEPTH OF 500 FEET MEASURED VERTICALLY FROM THE SURFACE OF SAID LAND FOR ANY PART THEREOF, FOR THE PURPOSE OF EXERCISING ANY OF THEIR SAID RESPECTIVE RIGHTS

PARCEL 4:

ANY AND ALL EASEMENTS, RIGHTS AND RIGHTS OF WAY, FOR ACCESS, INSTALLATION AND MAINTENANCE OF UTILITIES OR COMMUNICATION SERVICES OF RECORD, APPURTENANT OR ATTACHED TO OR UTILIZED BY ANY OF THE AFORESAID PARCELS

APN'S: 2826-020-012, 2826-020-013 AND 2826-020-061

LEGAL DESCRIPTION - 1 OF 2

ALL THAT CERTAIN REAL PROPERTY SITUATED IN THE COUNTY OF LOS ANGELES, STATE OF California, DESCRIBED AS FOLLOWS:

PARCEL 1:

THE WEST HALF OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF FRACTIONAL SECTION 5, TOWNSHIP 3 NORTH, RANGE 16 WEST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

EXCEPT THEREFROM ALL OIL, GAS, MINERALS AND HYDROCARBON SUBSTANCES BELOW A DEPTH OF 500 FEET BUT WITHOUT THE RIGHT OF SURFACE ENTRY TO REMOVE OR RECOVER SAME, AS RESERVED BY HESTER L. WILSON A WIDOW, AND ELSIE WILSON CASAD, A MARRIED WOMAN IN DEED RECORDED JUNE 17, 1966 AS INSTRUMENT NO. 1315

PARCEL 2:

THE EAST ONE HALF OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF FRACTIONAL SECTION 5, TOWNSHIP 3 NORTH, RANGE 16 WEST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

PARCEL 3:

THAT PORTION F THE SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 3 NORTH, RANGE 16 WEST, SAN BERNARDINO MERIDIAN IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, WHICH LIES WITHIN THE FOLLOWING DESCRIBED BOUNDARIES:

BEGINNING AT THE NORTHWESTERLY CORNER OF SAID SOUTHEAST QUARTER; THENCE ALONG THE WESTERLY LINE OF SAID SOUTHEAST QUARTER SOUTH 00° 57' 02" EAST 215.00 FEET; THENCE AT RIGHT ANGLES TO SAID WESTERLY LINE NORTH 89° 02' 58" EAST 360.00 FEET; THENCE SOUTH 65° 13' 17" EAST 469.08 FEET; THENCE SOUTH 58° 14' 04" EAST 859.43 FEET; THENCE SOUTH 38° 28' 44" EAST 713.00 FEET; THENCE SOUTH 54° 48' 53" EAST 905.37 FEET TO A POINT IN THE EASTERLY LINE OF SAID SOUTHEAST QUARTER DISTANT SOUTH 01° 29' 47" EAST 1936.44 FEET FROM THE SOUTHERLY BOUNDARY OF TRACT NO. 45308 AS PER MAP FILED IN BOOK 1222 PAGES 36 TO 45 INCLUSIVE OF MAPS, RECORDS OF SAID COUNTY; THENCE ALONG SAID EASTERLY LINE NORTH 01° 29' 47" WEST 1936.44 FEET TO THE SOUTHERLY BOUNDARY SAID SOUTHERLY BOUNDARY ALSO BEING THE NORTHERLY LINE OF SAID SOUTHEAST QUARTER; THENCE ALONG THE NORTHERLY LINE OF SAID SOUTHEAST QUARTER SOUTH 89° 38' 47" WEST 2589.06 TO THE POINT OF BEGINNING, SAID LAND IS SHOWN AS PARCEL 1 OF THAT CERTAIN CERTIFICATE OF COMPLIANCE RECORDED NOVEMBER 15, 2002 AS INSTRUMENT NO. 02-2765315 OF OFFICIAL RECORDS

EXCEPT THEREFROM AN UNDIVIDED TWO PERCENT OF ALL OIL, GAS, GOLD, SILVER, AND OTHER PRECIOUS METALS, MINERALS AND MINERAL SUBSTANCES IN AND UNDER AND THAT MAY BE PRODUCED FROM SAID LAND, TOGETHER WITH THE RIGHT OF INGRESS AND EGRESS AT ALL TIMES FOR THE PURPOSES OF MINING, DRILLING AND EXPLORING SAID LANDS FOR ANY AND ALL OIL, GAS, MINERAL AND MINERALS SUBSTANCES AND REMOVING THE SAME THEREFROM; TOGETHER WITH ALL THE DIPS, SPURS AND ANGLES AND ALSO ALL THE METALS, ORES, GOLD AND SILVERBREARING QUARTZ, ROCK AND EARTH, MINERAL AND MINERAL SUBSTANCES THEREIN AND ALL RIGHTS, PRIVILEGES AND ADVANTAGES THERETO INCIDENT, APPENDANT AND APPURTENANT OR THEREWITH USUALLY HAD AND ENJOYED AS GRANTED TO S. A. GANAHL, A SINGLE MAN IN DEED RECORDED JUNE 14, 1937 IN BOOK 15045 PAGE 173 OF OFFICIAL RECORDS

SIGNED FUEL MODIFICATION PLAN NOTES - 1 OF 3

COUNTY OF LOS ANGELES
FIRE DEPARTMENT
FUEL MODIFICATION UNIT
605 NORTH ANGELENO AVENUE
AZUSA, CALIFORNIA 91702

DARYL L. OSBY
FIRE CHIEF
FORESTER & FIRE WARDEN

FUEL MODIFICATION PLAN NOTES

Zone A – Setback Zone

- Extends 20 feet beyond the edge of any combustible structure, accessory structure, appendage or projection. Overhangs or other parts of the structure not accurately reflected on the plans may negate the approval of plant location on the approved plan.
- Irrigation by automatic or manual systems shall be provided to landscaping to maintain healthy vegetation and fire resistance.
- Landscaping and vegetation in this zone shall consist primarily of green lawns, ground covers not exceeding 6 inches in height, and adequately spaced shrubs. The overall characteristics of the landscape shall provide adequate defensible space in a fire environment.
- Plants in Zone A shall be inherently highly fire resistant and spaced appropriately. Species selection should be made referencing the Fuel Modification Plant List. Other species may be utilized subject to approval. Final or revised Plans submitted after 6 months from the initial submittal will have plants in all zones evaluated based on the most current *Fuel Modification Plant List* available from the Fuel Modification Unit.
- Except for dwarf varieties or mature trees small in stature, trees are generally **not recommended** within Zone A.
- Target species will typically not be allowed within 30 or more feet of combustible structures and may require removal if existing on site.
- Vines and climbing plants shall not be allowed on any combustible structure requiring review.

Zone B – Irrigated Zone

- Extends from the outermost edge of Zone A to 100 feet from structure.
- Irrigation by automatic or manual systems shall be provided to landscaping to maintain healthy vegetation and fire resistance.
- Landscaping and vegetation in this zone shall typically consist primarily of green lawns, ground covers, and adequately spaced shrubs and trees.
- Unless otherwise approved, Ground covers shall be maintained at a height not to exceed 6 inches in Zone A and B. If on a slope 12 inches is acceptable in Zone B within 50 feet of a structure and 18 inches beyond 50 feet. The overall characteristics of the landscape shall provide adequate defensible space in a fire environment. Specimen native plants may be approved to remain if properly maintained for adequate defensible space. Annual grasses and weeds shall be maintained at a height not to exceed 3 inches.
- Plants in Zone B shall typically be fire resistant and spaced appropriately. Species selection should be made referencing the Fuel Modification Plant List. Other species may be utilized subject to approval.

SERVING THE UNINCORPORATED AREAS OF LOS ANGELES COUNTY AND THE CITIES OF:

AGOURA HILLS	CALABASAS	DIAMOND BAR	HIDDEN HILLS	LA MIRADA	MALIBU	POMONA	SIGNAL HILL
ARTESIA	CERRITOS	DUARTE	HUNTINGTON PARK	LA PUENTE	MAYWOOD	RANCHO PALOS VERDES	SOUTH EL MONTE
AZUSA	CLAREMONT	EL MONTE	INDUSTRY	LAKEWOOD	NORWALK	ROLLING HILLS	SOUTH GATE
BALDWIN PARK	COMMERCE	GARDENA	INGLEWOOD	LANCASTER	PALMDALE	ROLLING HILLS ESTATES	TEMPLE CITY
BELL	COVINA	GLENDORA	IRWINDALE	LAWNDALE	PALOS VERDES ESTATES	ROSEMEAD	WALNUT
BELL GARDENS	CUDAHY	HAWAIIAN GARDENS	LA CANADA FLINTRIDGE	LOMITA	PARAMOUNT	SAN DIMAS	WEST HOLLYWOOD
BELLFLOWER	DEL AMO	HAWTHORNE	LA HABRA	LYNWOOD	PICO RIVERA	SANTA CLARITA	WESTLAKE VILLAGE
BRADBURY							WHITTIER

SIGNED FUEL MODIFICATION PLAN NOTES - 2 OF 3

- Vegetation in this zone may consist of modified existing native plants, adequately spaced ornamental shrubs and trees, or both. There may also be replacement landscape planting with ornamental or native species to meet minimum slope coverage requirements of City or County agencies or other Landscape or Hillside ordinances. In all cases the overall characteristics of the landscape shall provide adequate defensible space in a fire environment.
- Target species will typically not be allowed within 30 or more feet of combustible structures and may require removal if existing on site. This distance may extend to 60 feet if the situation dictates.
- Irrigation systems are not required for this zone if it consists entirely of native plants. (Native plants are generally not compatible with regular, un-seasonal supplemental water.)
- All trees, unless otherwise approved, shall be planted far enough from structures and Fire Department accesses as to not overhang any structure or access at maturity.

Zone C – Native Brush Thinning Zone

- Extends from the outermost edge of Zone B up to 200 feet from structure or to property line
- Required thinning and clearance will be determined upon inspection. Required clearance may increase to the maximum allowed by the Fire Code as needed because of vegetation growth.
- Irrigation systems are not required for this zone if it consists entirely of native plants. (Native plants are generally not compatible with regular, un-seasonal supplemental water.)
- Vegetation in this zone may consist of modified existing native plants, adequately spaced ornamental shrubs and trees, or both. There may also be replacement landscape planting with ornamental or native species to meet minimum slope coverage requirements of City or County agencies or other Landscape or Hillside ordinances. In all cases the overall characteristics of the landscape shall provide adequate defensible space in a fire environment
- Plants in Zone C shall be spaced appropriately. Existing native vegetation shall be modified by thinning and removal of those species constituting a fire risk. These species include, but are not limited to chamise, sage, sage brush, and buckwheat.
- Annual grasses and weeds shall be maintained at a height not to exceed 3 inches.
- General spacing for existing native shrubs or groups of shrubs is 15 feet between canopies. Native plants may be thinned by reduced amounts as the distance from development increases.
- General spacing for existing native trees or groups of trees is 30 feet between canopies. This distance may increase or decrease depending on the slope, arrangement of the trees in relation to slope, and the species of tree.

Fire Access Road Zone

- Extends a minimum of 10 feet from the edge of any public or private roadway that may be used as access for fire-fighting apparatus or resources.
- Clear and remove flammable growth for a minimum of 10 feet on each side of Fire Access Roads. (Fire Code 325.10) Additional clearance beyond 10 feet may be required upon inspection.
- Fire access roads, driveways and turnarounds shall be maintained in accordance with fire code. Fire Access Roads shall have unobstructed vertical clearance for a width of 20 feet. (Fire Code 503.2.1)
- Landscaping and native plants within the Fire Access Road Zone shall be appropriately spaced and maintained to provide safe egress in wildland fire environments.
- All trees, unless otherwise approved, shall be planted far enough from structures and Fire Department accesses as to not overhang any structure or access at maturity.

SIGNED FUEL MODIFICATION PLAN NOTES - 3 OF 3

Maintenance

Routine maintenance shall be regularly performed in all zones. Requirements include but are not limited to those items in the Fuel Modification Guidelines and those outlined below:

- Removal or thinning of undesirable combustible vegetation and removal of dead or dying landscaping to meet minimum brush clearance requirements.
- Pruning and thinning to reduce the overall fuel load and continuity of fuels.
- Fuel loads shall be reduced by pruning lower branches of trees and tree-form shrubs to 1/3 of their height, or 6 feet from lowest hanging branches to the ground, to help prevent fire from spreading and make maintenance easier. Trees with understory plants should be limbed up at least three times the height of the underlying vegetation or up to a height of 40 feet, whichever is less, to help prevent fire from spreading upward into the crown.
- Accumulated plant litter and dead wood shall be removed. Debris and trimmings produced by thinning and pruning should be removed from the site or chipped and evenly dispersed in the same area to a maximum depth of 6 inches.
- All invasive species and their parts should be removed from the site.
- Manual and automatic irrigation systems shall be maintained for operational integrity and programming. Effectiveness should be regularly evaluated to avoid over or under-watering.
- Compliance with the Fire Code is a year-round responsibility. Enforcement will occur following inspection by the Fire Department. Annual inspections for brush clearance code requirements are conducted following the natural drying of grasses and fine fuels, between the months of April and June depending on geographic region. Inspection for compliance with an approved Fuel modification Plan may occur at any time of year.
- Brush Clearance enforcement issues on adjacent properties should be directed to the County of Los Angeles Fire Department's Brush Clearance Unit at (626) 969-2375.
- All future plantings shall be in accordance with the County of Los Angeles Fire Department Fuel Modification Guidelines and approved prior to installation. Changes to the approved plan which require an additional plan review will incur a plan review fee.
- Questions regarding landscape planting and maintenance with regard to fire safety should be directed to the Fire Department's Fuel Modification Unit at (626) 968-5205.

The property owner(s) agree to be responsible for the long-term maintenance of this Fuel Modification plan, as described herein. A Covenant & Agreement identifying the applicable Fuel Modification Plan will be recorded on the parcel(s) or CC&R's approved, prior to Final plan approval. Notification of Fuel Modification requirements is to be made upon sale to new owners. Proposed changes to the Final Fuel Modification plan must be submitted to the Fuel Modification Unit for approval, prior to implementation. Plans will be reviewed based on the current plant list. Regular inspections will be performed by the Fire Department to ensure compliance with the approved plan. Failure to comply with the Fuel Modification Plan requirements may result in an Administrative Fine of at least $500 per violation, as well as possible liens, assessments, and legal action. Violations may also be corrected at the owners expense with the cost placed on the property tax bill with the addition of an Abatement Enforcement Cost of $648.

Name (Print)	Signature	Date
Jonathan Friedman		2/14/17

Approval of this Fuel Modification Plan constitutes approval for only those Codes reviewed as part of the Fuel Modification process and does not replace the needed approval of any other office or agency with jurisdiction and review responsibility for those items which may or may not be illustrated on the plan.

UNDERGROUND SERVICE ALERT
CALL TOLL FREE
1-800-422-4133
CALL TWO WORKING DAYS BEFORE YOU DIG

REVISION BLOCK

REV#	DATE	REVISION DESCRIPTION	PLAN CHK	CITY ENGR	APPR	DATE
1	02.22.2017	2ND COUNTY SUBMITTAL				

APPLICANT:
JON FRIEDMAN
1435 REYNOLDS CT.
THOUSAND OAKS, CA 91362
805.373.2860

PREPARED BY:
MJS LANDSCAPE ARCHITECTURE
507 30th St.
Newport Beach, CA 92663
949.675.9964
mjs-la.com

LANDSCAPE ARCHITECT — LICENSED — MARK JOSEPH STEINBACH #3232 — 03.31.19 — 02.22.17

CANYON VIEW ESTATES
PRELIMINARY FUEL MODIFICATION SITE PLAN
FOR
TRACT MAP NO. 74650
LOCATED IN THE UNINCORPORATED TERRITORY OF THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

DATE: FEBRUARY 22, 2017

SCALE: AS NOTED

SHEET 2 OF 2 SHTS

Water Resources &Outreach 26501 Summit Circle, Santa Clarita, CA 91350-3049

(661) 297-1600 | yourSCVwater.com

February 5, 2021

County of Los Angeles
Department of Public Works
Land Development Division
900 S. Fremont Avenue
Alhambra, CA 91803

Re: Wate A a lab l t Lette o Vest n Tentat e T a t No 74650 Can on V e Estates, Co nt o Los An eles APN s: 2826 020 012, 013 061

This letter is in response to a request from Pico Canyon, LLC, the developer ("Developer") of this project site for a "Water Availability" letter from the Santa Clarita Valley Water Agency ("SCV Water"), pursuant to County of Los Angeles, Department of Public Works requirements. The proposed project site is located at the end of Magnolia Lane and in the Unincorporated Territory of Los Angeles County. Based on the tentative tract map, plot date April 9, 2018, it entails 37 lots for residential development and 8 lots for open space, public and HOA facilities.

The above-referenced Vesting Tentative Tract Map 74650 is within the service area of the Valencia Water Division of the Agency. The Agency is prepared to provide safe and reliable water services to the Development subject to the following terms, conditions and reservations:

1. Developer shall submit to SCV Water a set of construction improvement plans and fire department requirements for the Development. This will enable SCV Water to determine distribution system and other water facilities required for the Development in accordance with SCV Water rules. The Development may require the installation of a reservoir, water mains, services or other appurtenances, or may require improvements to the existing source of supply, which improvements shall be the responsibility of the Developer. Fire flow requirements shall be determined by the regulatory agency with applicable jurisdictions (e.g., Los Angeles County Fire Department). The size and scope of any facilities required to deliver adequate fire flow will be determined by SCV Water.

2. Pursuant to the requirements of SCV Water, the Developer shall pay all required fees and charges, including any required deposit amounts in order to develop planning documents, prepare or process plans and designs and to complete construction of required on-site and off-site improvements required for water service to the Development.

3. Developer shall grant SCV Water all easements and, if necessary, sites for facilities required for water service to the Development, together with a policy of title insurance acceptable to SCV Water, guaranteeing SCV Water's title to and interest in such easements. Developer will be responsible for all fees and charges associated with preparation and recordation of the easements.

4. Developer shall comply with all SCV Water's Rules and Regulations governing water service and development in force at the time water service is requested, as those Rules and Regulations may be amended from time to time. Developer acknowledges that all water service pursuant to this letter and to the Development shall be in accordance with SCV Water's rules and regulations.

5. SCV Water can provide safe and reliable water service to the Development, and fully expects to be able to continue providing safe and reliable water service into the future. In relying upon this letter and SCV Water's ability to provide water service to the Development, Developer is aware of the restrictions and limitations contained in this letter and the reliance of SCV Water upon its wells and imported water supplied by the State Water Project to supply the water needed for domestic water purposes, both of which are subject to restriction.

6. By issuing this letter, SCV Water does not guarantee any specific quantities, pressures or flows with respect to water service. SCV Water does not guarantee water quality, except that the water shall meet current drinking water standards.

7. Developer acknowledges and agrees that this letter is limited and exclusive to the Development and number of units described above and may not be transferred or assigned to any other person or for any other purpose without SCV Water's written consent.

8. Provision of water service to the Development is contingent upon the Developer meeting the requirements of any other governmental entity having jurisdiction over the Development.

9. At any time prior to connection to the existing water system, and upon a finding by SCV Water's Board of Directors that SCV Water is unable to serve the Development for reasons beyond their control, SCV Water may revoke this letter.

10. Developer, for itself and on behalf of its successors, shall defend, at Developer's expense, any action brought against SCV Water, or its agents, officers, directors, or employees, because of the issuance of this letter or any approvals or authorizations obtained in connection with the Development, or in the alternative, to relinquish any such approvals or authorizations. Developers shall reimburse SCV Water for any costs, fees, or expenses SCV Water may incur as a result of any such legal action. Further, Developer agrees that in conducting the defense of such action, SCV Water shall be entitled to engage its own attorneys, the entire expense of which shall be paid by the Developer.

11. Water supply availability is further conditioned expressly upon the Development being located within the boundaries of SCV Water and effective completion of the annexation of the Development, or any portion thereof which is not now within the boundaries of SCV Water.

12. Those portions of the Development located outside of the boundaries of the SCV Water must be annexed prior to becoming eligible for service.

13. This letter and any representations made herein shall expire twenty-four (24) months from the date hereof if water service has not been installed to the Development. Developer and the Development shall not be entitled to any additional water connections not installed prior to the expiration date of this letter.

Sincerely,



Rick Vasilopulos
Water Resources Planner
Santa Clarita Valley Water Agency

MASTER LIST OF REFERENCES

AESTHETICS REFERENCES:

- Los Angeles County General Plan 2035, Figure 9.7, Scenic Highways Map, Figure 9.9, Historic Resource Sites Policy Map, and Figure 10.1, Regional Trail System, https://planning.lacounty.gov/generalplan/figures2015, accessed May 2017.
- California Department of Transportation, State Scenic Highway Mapping System, http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/, accessed May 3, 2019.
- Visibility Analysis for Canyon View Estates, prepared by Envicom Corporation, September 28, 2017.
- Canyon View Estates: Analysis to Evaluate Visibility from Interstate 5, prepared by Envicom Corporation. February 6, 2019.
- Trail Photo-Simulation of the proposed Canyon View Estates Project, prepared by MJS Design Group. February 13, 2019.
- Canyon View Estates Oak Tree Survey Report, prepared by ESA, dated September 2017.
- Google Earth, Aerial Views, accessed April 2017.
- Santa Clarita Valley Area Plan, One Valley One Vision, 2012, Exhibit CO-7, Santa Clarita Valley Area Plan Scenic Resources, https://planning.lacounty.gov/view/santa_clarita_valley_area_plan, accessed May 2017.
- Canyon View Estates Visibility Analysis: Spot Elevations Along I-5, Ridgeline, and Project Site, prepared by Envicom Corporation, dated May 2019; Addendum to the February 2019 Canyon View Estates: Analysis to Evaluate Visibility from Interstate 5.

AGRICULTURE / FOREST REFERENCES:

- Los Angeles County General Plan 2035, Figure 9.5, Agricultural Resource Areas Policy Map, https://planning.lacounty.gov/generalplan/figures2015, accessed April 2017.
- State of California Department of Conservation Website, California Important Farmland Finder, http://maps.conservation.ca.gov/ciff/ciff.html, accessed April 2017.
- State of California Los Angeles County Important Farmland 2012 map, California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program, https://maps.conservation.ca.gov/dlrp/ciftimeseries/, accessed May 2017.

AIR QUALITY REFERENCES:

- Air Quality Impact Analysis, Canyon View Estates Project, County of Los Angeles, prepared by Envicom Corporation, dated May 10, 2017, Revised September 8, 2017.
- Los Angeles County General Plan 2035, Figure 8.1, Air Basins, https://planning.lacounty.gov/generalplan/figures2015, accessed September 2017.

BIOLOGICAL RESOURCES REFERNCES:

- Canyon View Estates Biological Constraints Analysis, prepared by ESA, dated October 2017
- Canyon View Estates Oak Tree Survey Report, prepared by ESA, dated September 2017.
- Sawyer, John O., T. Keeler-Wolf, and J. Evens. 2009. A Manual of California Vegetation. Second Edition. Sacramento: California Native Plant Society. [Reference book; not available online]

- Los Angeles County General Plan 2035, Figure 9.3, Significant Ecological Areas and Coastal Resource Areas Map, https://planning.lacounty.gov/generalplan/figures2015, accessed September 2017.

CULTURAL RESOURCES REFERENCES:

- Revised Phase I Archaeological Survey of the Canyon View Estates Project, Los Angeles County, California, prepared by W&S Consultants, dated November 30, 2017.
- Los Angeles County General Plan 2035, Figure 9.9, Historic Resource Sites Policy Map, https://planning.lacounty.gov/generalplan/figures2015, accessed September 2017.
- Paleontological Resources Assessment of the Canyon View Estates Residential Development Project, Santa Clarita, California, prepared by Envicom Corporation, dated September 14, 2017.
- Native American Heritage Commission (NAHC). 2017 (August). Proposed Canyon Estates, Community of Stevenson Ranch, Oat Mountain and Newhall USGS Quadrangle, Los Angeles County, California. West Sacramento, CA: NAHC.

GEOLOGY AND SOILS REFERENCES;

- Geologic and Geotechnical Engineering Review, Vesting Tentative Tract Map 52905, APN: 2826-020-012 & 2826-020-013, City of Santa Clarita, Los Angeles County, California for Jemstreet Properties, prepared by GeoSoils Consultants, Inc., dated April 17, 2017.
- Los Angeles County General Plan 2035, Figure 9.8, Hillside Management Areas and Ridgeline Management Map and Figure 12.1, Seismic and Geotechnical Hazard Zones Policy Map, https://planning.lacounty.gov/generalplan/figures2015, accessed April 2017.

GREENHOUSE GAS EMISSIONS REFERENCES:

- Air Quality Impact Analysis, Canyon View Estates Project, County of Los Angeles, prepared by Envicom Corporation, dated May 10, 2017, Revised September 8, 2017.
- Los Angeles County Department of Regional Planning. 2014. *Unincorporated Los Angeles County Community Climate Action Plan 2020. Final.* July. Los Angeles, CA. Prepared with assistance from: ICF International, https://planning.lacounty.gov/assets/upl/project/ccap_final-august2015.pdf, accessed May 2017.
- California Air Pollution Control Officers Association (CAPCOA), 2008. *CEQA & Climate change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act.* 2008, http://www.capcoa.org/wp-content/uploads/2012/03/CAPCOA-White-Paper.pdf, accessed May 2017.
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