Appendix IS-5

Water Resources Report

PSOMAS

Hollywood and Wilcox - Redevelopment Project
1624 Wilcox Ave
Water Resources Technical Report

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Prepared by:

David J. Curtis, P.E., ENV SP
PSOMAS
555 South Flower Street, Suite 4300
Los Angeles, California 90071
(213) 223-1400
(213) 223-1444 Fax

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1.0 Introduction

1.1 Project Description

The Hollywood Wilcox Redevelopment Project (Project) involves the development of a mixed-use building consisting of 260 residential units, approximately 17,800 square feet of commercial space on a 1.42-acre site that currently includes a surface parking lot and four buildings. The Project, which is bounded by Hollywood Blvd to the north, Wilcox Ave to the west, and existing properties to the south and east.

One existing 2-story building on the northwest corner of the Project site will remain and the three other buildings on-site will be demolished. A new commercial building will be built on Hollywood Blvd and a new mixed-use building will be built behind, largely on what is currently an existing parking lot.

1.2 Scope of Work

This report provides a description of the surface water hydrology, surface water quality, and groundwater at the Project site and an analysis of the Project's potential significance related to the impact on surface water hydrology, surface water quality, and groundwater.

2.0 Environmental Setting

2.1 Surface Water Hydrology

2.1.1 Regional

The Project site is located within a watershed classified by the County of Los Angeles as the Ballona Creek and Other Urban Watersheds. Surface water from this watershed is collected via storm drains and eventually drains to the Ballona Creek where it is discharged into the Pacific Ocean. A copy of this watershed map is provided in Section 7.0.

2.1.2 Local

Stormwater runoff is collected and conveyed to the surrounding public streets via curb drains to the street gutter and eventually into the underground storm drain system, located to the south of the Project. A portion of the site on the east side of the property drains easterly onto an existing neighboring property, which eventually drains to Cahuenga Blvd. The remainder and majority of the site flows west to Wilcox Ave via sheet flow and building downspouts. In addition, building roof run-on from the northeastern neighbor sheet flows southeasterly merging with the eastern portion of the Project eventually draining to Cahuenga Blvd.

Stormwater collected in the street gutters on Cahuenga Blvd and Wilcox Ave continues southerly until it enters into the storm drain inlets connected to an existing 27 inch underground storm drain along Sunset Blvd. This storm drain routes to the south, through Hancock Park and eventually discharges into Ballona Creek and into the Pacific Ocean.

2.1.3 On-Site

The existing project site is comprised of four buildings and an at grade parking lot totaling approximately 1.42 acres with an average imperviousness of 100%. The site is bounded by Hollywood Blvd to the north, existing properties located northeast, Wilcox Ave to the west, and existing properties to the south and to the east.

In its existing condition, three subareas were defined: 1A, 2A, and 3A and are shown on the Existing Hydrology Exhibit in Section 7.0. Currently, there is building roof run-on from the neighboring properties northeast of the project site, resulting in cross-lot drainage through the project site which continues into the neighboring properties to the south and east. This area of the run-on is defined as Subarea 1A. The remainder of the site is split into two different subareas. A portion of the site on the east side of the property, defined as Subarea 2A, drains easterly. The remainder and majority of the site, designated as Subarea 3A, flows west to Wilcox Ave via sheet flow and building downspouts.

A review of the FEMA's Flood Insurance Rate map (FIRM) shows that the Project site is located within FEMA Zone X (Other Flood Areas). Refer to Section 7.0 for the FEMA FIRM. FEMA's zone designation for Zone X (Other Areas) is defined as "areas determined to be outside the 0.2% annual chance floodplain."

2.2 Surface Water Quality

2.2.1 Regional

The Project site is located within the Hollywood Subbasin of the Coastal Plain of the Los Angeles Groundwater Basin. This subbasin is located south of the Santa Monica Mountains, west of the Elysian Hills, east of the Inglewood fault zone, and north of La Brea High, formed by an anticline that brings impermeable rocks close to the surface. Surface drainage flows south to join Ballona Creek, then west to the Pacific Ocean. Average annual precipitation ranges from 12 to 14 inches.[1]

The Project site is within the Ballona Creek Watershed and is tributary to the Ballona Creek Reach 1 waterway. The Ballona Creek Reach 1 is listed on the 2012 Clean Water Act Section 303(d) list (approved by the EPA on June 26, 2015) as impaired due to the prevalence of the pollutants shown in Table 1, which is excerpted from the California Regional Water Quality Control Board, "Quality Limited Segments". Currently, this waterway's existing beneficial uses include wildlife habitat; potential uses include municipal and domestic supply, and warm freshwater habitat.

Table 1 Receiving Waters for Urban Runoff from Site[2]

Receiving Waters	303(d) List Impairments[3]	Designated Beneficial Uses	Proximity to RARE Uses
Ballona Creek Reach 1	Coliform Bacteria, Copper Dissolved, Cyanide, Lead, Selenium, Toxicity, Trash, Viruses (enteric), Zinc	Existing/Intermittent: WILD Potential: MUN, WARM	No

2.2.2 Local

The Riverside Flood Control and Conservation District performed a study on urban runoff. Table 2 lists the pollutants anticipated to be generated by the proposed land uses, which was extracted from this study. The City of Los Angeles does not have a similar table available at the time of this report. Because the project falls under the category of commercial and residential development, the following pollutants are potential: sediment/turbidity, nutrients, organic compounds, trash and debris, oxygen demanding substances, bacteria and viruses, oil and grease, pesticides, and metals.

[1] Department of Water Resources. California's Groundwater Bulletin 118. Coastal Plain of Los Angeles Groundwater Basin, Hollywood Subbasin.

[2] California Regional Water Quality Control Board, Los Angeles Region. *Water Quality Control Plan Los Angeles Region*. June 13, 1994.

[3] Los Angeles Regional Water Quality Control Board. 2012 CWA Section 303(d) *List of Water Quality Limited Segments*. June 26, 2015.

Table 2 Potential Pollutants Generated by Land Use Type[4]

Type of Development (Land Use)	Sediment/ Turbidity	Nutrients	Organic Compounds	Trash & Debris	Oxygen Demanding Substances	Bacteria & Viruses	Oil & Grease	Pesticides	Metals
Attached Residential Development	P	P	N	P	P(1)	P	P(2)	P	N
Commercial/ Industrial Development	P(1)	P(1)	P(5)	P	P(1)	P(3)	P	P(1)	P

Abbreviations: P=Potential N=Not expected

Notes:
(1) A potential pollutant if landscaping or open area exists on the Project site
(2) A potential pollutant if the project includes uncovered parking areas
(3) A potential pollutant if land use involves animal waste
(4) Specifically, petroleum hydrocarbons
(5) Specifically, solvents
(6) Bacterial indicators are routinely detected in pavement runoff.

A comparison of the pollutants existing in Ballona Creek Reach 1 based on the State 303(d) list (Table 1) and pollutants associated with the planned land use activities (Table 2) of the site show an overlap of **trash, bacteria & viruses, and metals** as pollutants. These common pollutants are considered the pollutants of concern.

During a storm, there is a potential for these pollutants to be diffused by stormwater to a local storm drain system. The City of Los Angeles usually installs and maintains public catch basins inlets which may be fitted with metal grates, bars, or filtration baskets to capture pollutants prior to entering the local storm drain system.

2.2.3 On-Site

From visual inspections and surveyed data of the site, water quality treatment improvements are not present at the Project site. Stormwater leaving the Project site presently drains directly into the street gutter system via sheet flow and curb drains, eventually entering into the public storm drain system. Existing potential pollutants at the Project site likely exists based on the current land use: a parking lot and retail buildings. Oil and grease is one such pollutant due to the existing uncovered parking lot which makes up a majority of the Project site.

2.3 Groundwater

2.3.1 Regional

The Project site is located within the Hollywood subbasin of the Los Angeles Coastal Plain Groundwater Basin. Groundwater generally flows southwesterly in the Los Angeles Coastal Plain Groundwater Basin. Groundwater replenishment occurs mainly by percolation of precipitation and stream flow from the higher areas to the north. Historical production has come from deeper aquifers of the Lakewood and San Pedro Formations. The total storage capacity of the subbasin is approximately 200,000 acre-foot. Currently the major pumper of groundwater is the City of Beverly Hills.[5]

[4] Riverside County Flood Control and Conservation District, Riverside County Water Quality Management Plan for Urban Runoff (July 24, 2006).
[5] Department of Water Resources. California's Groundwater Bulletin 118. Coastal Plain of Los Angeles Groundwater Basin, Hollywood Subbasin.

2.3.2 Local

As mentioned previously groundwater is replenished via stormwater percolation and stream flows. An existing water quality station well, 01S14W10N001S, is located within one mile southwest of the Project site. The last known sampling date for this well was on July 06, 1964. The data indicates a dissolved nitrate level less than the reporting limit of 0.1 mg/L.[6] According to the State Water Resources Control Board, concentrations below than 2 mg/L naturally occurs in groundwater. According to the California Groundwater Bulletin 118, a public water well located within the Hollywood Subbasin, tested in 1998 resulted in a Total Dissolved Solids (TDS) content of 526 mg/L, which is higher than the maximum contaminant level of 500 mg/L as set by the EPA for secondary drinking water standards.[7]

2.3.3 On-Site

Per the Earth Systems Southern California geotechnical report for the Project, varying depths ranging from negligible to 5 feet of fill was encountered. The fills consisted of loose silty sand and medium stiff silt (SM and ML soil types). Alluvial deposits were found to consist of loose to very dense silty sand, well graded sand, and clayey sand (SM, SW and SC soil types). Clay layers were encountered and noted along with a gravel rich sand layer. The site was classified as a stiff soil profile. Based on the Seismic Hazards report for the Hollywood Quadrangle, the historic shallowest groundwater level in the vicinity of the Project site is over 80 feet below ground surface. During the boring exploration, groundwater was encountered at approximately 90 feet below ground surface.[8]

3.0 Significant Thresholds

The methodology to determine the significance of a Project relating to the Project's impacts on water resources includes review of the environmental setting, project impacts, and cumulative impacts. This section provides an overview of the factors taken into consideration when determining the significance.

3.1 Surface Water Hydrology

The City of Los Angeles CEQA Thresholds Guide states that a project would normally have a significant impact on surface water hydrology if it would:

- Cause flooding during the projected 50-year developed storm event, which would have the potential to harm people or damage property or sensitive biological resources;
- Substantially reduce or increase the amount of surface water in a water body; or
- Result in permanent, adverse change to the movement of surface water sufficient to produce a substantial change in the current or direction of water flow.

3.2 Surface Water Quality

The City of Los Angeles CEQA Thresholds Guide states that a project would normally have a significant impact on surface water quality if discharges associated with the project would create pollution, contamination or nuisance, as defined in Section 13050 of the California Water Code (CWC) or that cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or

[6] State of California Department of Water Resources, Water Data Library, Water Quality Well 01S14W10N001S, available at: http://www.water.ca.gov/waterdatalibrary/index.cfm, accessed November 9, 2016.
[7] United States Environmental Protection Agency, Drinking Water Regulations and Contaminants, available at: https://www.epa.gov/dwregdev/drinking-water-regulations-and-contaminants, accessed November 9, 2016.
[8] Earth Systems Southern California, Preliminary Geotechnical Engineering Report LA-01670-01, October 7, 2016

Water Quality Control Plan for the receiving water body. The CEQA Thresholds Guide and CWC include the following definitions:

"Pollution" means an alteration of the quality of waters of the state to a degree which unreasonably affects either the following: 1) the waters for beneficial uses or 2) facilities which serve these beneficial uses. "Pollution" may include "Contamination".

"Contamination" means an impairment of the quality of the waters of the state by waste to a degree, which creates a hazard to the public health through poisoning or through the spread of disease. "Contamination" includes any equivalent effect resulting from the disposal of waste, whether or not waters of the state are affected.

"Nuisance" means anything which meets all of the following requirements: 1) is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property; 2) affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extend of the annoyance or damage inflicted upon individuals may be unequal; and 3) occurs during, or as a result of the treatment or disposal of wastes. [9]

3.3 Groundwater

The City of Los Angeles CEQA Thresholds Guide states that a project would normally have a significant impact on groundwater hydrology if it would:

- Change potable water levels sufficiently to:
    - Reduce the ability of a water utility to use the groundwater basin for public water supplies, conjunctive use purposes, storage of imported water, summer/winter peaking, or to respond to emergencies and drought;
    - Reduce yields of adjacent wells of well fields (public or private); or
    - Adversely change the rate or direction of flow of groundwater; or
- Result in demonstrable and sustain reduction of groundwater recharge capacity

The City of Los Angeles CEQA Thresholds Guide states that a project would normally have a significant impact on groundwater quality if it would:

- Affect the rate or change the direction of movement of existing contaminants;
- Expand the area affected by contaminants;
- Result in an increased level of groundwater contamination (including that from direct percolation, injection or salt water intrusion); or
- Cause regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations (CCR), Title 22, Division 4, and Chapter 15 and in the Safe Drinking Water Act.

[9] City of Los Angeles. LA CEQA Thresholds Guides. 2006

4.0 Methodology

4.1 Surface Water Hydrology

The purpose of this report is to evaluate the project impacts by comparing the existing and proposed surface water hydrology. While there is existing run-on from the northeastern property, the drainage plan will be designed to address only the on-site drainage and only data for the on-site area will be compared. The City of Los Angeles has adopted the Los Angeles County Department of Public Works' (LACDPW) method of hydrologic design as its basis of design per Special Order No. 007-1299 dated December 3, 1999. The LACDPW Hydrology Manual requires drainage facilities to meet the Urban Flood level of protection, known as the 25-year design storm. A 25-year design storm has a probability of 1/25 of being equaled or exceeded in any year. Additionally, the City's CEQA Threshold Guide establishes a 50-year design storm as the threshold to analyze potential impacts on surface water hydrology as a result of development. For the purposes of evaluating the threshold, a 50-year design storm will be evaluated in addition to the 25-year design storm.

The primary sources of data are the *LACDPW Hydrology / Sedimentation Manual and Appendices* (LACDPW 2006), and the Los Angeles County *Standard Urban Stormwater Mitigation Plan* (September 2002). To calculate the peak stormwater runoff, HydroCalc version 0.3.1-beta software was used, conforming to the LACDPW Hydrology Manual. HydroCalc is available for download through LACDPW's website and uses the Modified Rational Method to calculate the time of concentration, peak intensities, runoff coefficient, peak flow rate, and runoff volume for various storm events. The Modified Rational Method is given as:

$$Q = CIA$$

Where:

Q = Volumetric Flow Rate (cfs)
C = Runoff coefficient (dimensionless)
I = Rainfall Intensity at a given point in time (in/hr)
A = Basin Area (acres)

Site subarea drainage properties as well as data from the Isohyetal Map, namely the 50-year rainfall depth and soil type is gathered and used in the HydroCalc software. HydroCalc then calculates the peak stormwater runoff, Q, in addition to other variables.

4.2 Surface Water Quality

In 2003, the California State Water Resources Control board (SWRCB) adopted the Construction Activity Stormwater Permit (CGP)[10], which is "…required for all storm water discharges associated with construction activity where clearing, grading, and excavation results in a land disturbance of one or more acres." Under the CGP, the following Permit Registration Documents (PRD) must be submitted to SWRCB through the SMARTS website: a Notice of Intent (NOI), a Storm Water Pollution Prevention Plan (SWPPP), and other compliance related documents required by this CGP and mail the appropriate permit fee to the SWRCB.

The CGP requires all SWPPPs be written, amended, and certified by a Qualified SWPPP Developer, emphasizing BMPs, which are defined as "schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States." The SWPPP has two major objectives:

[10] Construction General Permit Water Quality Order 2009-0009-DWQ, Fact Sheet, website: http://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/constpermits/wqo_2009_0009_complete.pdf, accessed October 25, 2016.

- to help identify the sources of sediment and other pollutants that affect the quality of stormwater discharges; and
- to describe and ensure the implementation of BMPs to reduce or eliminate sediment and other pollutants in storm water and non-storm water discharges. The SWPPP must include BMPs that address source control, BMPs that address pollutant control, and BMPs that address treatment control.

Furthermore, the CGP requires that a project are enrolled for more than one continuous three-month period to submit information and annually certify that their site is in compliance with these requirements. The primary purpose of this requirement is to provide information needed for overall program evaluation and pubic information. The CGP requires that key personnel (e.g., Qualified SWPPP Developers, inspectors, etc.) have specific training or certifications to ensure their level of knowledge and skills are adequate to ensure their ability to design and evaluate project specifications that will comply with CGP requirements. Erosion control and drainage devices are required to be provided in accordance with the CGP and SWPPP as well as the MS4 Permit.

The City of Los Angeles has passed the Low Impact Development (LID) Ordinance, which the Project will need to comply with. The City developed their own technical manual, Development Best Management Practices Handbook – Low Impact Development Manual dated May 09, 2016, to serve as a guideline for the applicant to comply with the LID standards. The LID standards require on-site stormwater management techniques to be implemented and properly sized for stormwater runoff to infiltrate, evapotranspire, capture and use, and/or treated through high removal efficiency Best Management Practices on-site. The stormwater device or treatment must be able to treat the volume of water produced by a 0.75-inch, 24-hour rain event or the 85th percentile 24-hour runoff event, whichever is greater, without any stormwater runoff leaving the Project site to the Maximum Extent Feasible. The 85th percentile depth can be found through LACDPW's website at: http://dpw.lacounty.gov/wrd/hydrologygis/.

4.3 Groundwater

The Project's potential groundwater impacts were evaluated using Earth Systems Southern California's geotechnical report dated October 7, 2016 and infiltration report dated October 10, 2016. Results from the boring explorations indicate that groundwater is approximately 90 feet below ground surface. Fluctuations in groundwater levels may occur due to variations in rainfall, regional climate, and other factors. Data from the infiltration report was also considered in the selection of surface water quality mitigation.

5.0 Project Impact Analysis

5.1 Construction

5.1.1 Surface Water Hydrology

Construction activities for this Project is expected to include excavation of two levels of subterranean parking garages to an approximate total depth of 31 feet below ground surface. This excavation will occur on the majority of the Project site with exception to the northern and a small eastern portion of the site, requiring soil export. Construction activities have the potential to temporarily alter the existing surface drainage pattern and flows of the Project by diverting existing surface flows via pumps.

To mitigate potential sediment and erosion from construction activities, the Project will be required to comply with all applicable City grading permit regulations. These regulations may include necessary measures, plans, and inspections to address potential sedimentation and erosion into the public right-of-way. Compliance with the City's applicable regulations will not result in substantial erosion, siltation, or flooding. As previously mentioned in Section 4.2, a NPDES CGP will be required to be filed with the State through the SMARTS website. The PRDs include a SWPPP that implements BMPs to provide erosion

control measures or other source control measures preventing pollutants from discharging from the site. Therefore, with the SWPPP in conjunction with the City's permitting regulations, construction activities will have minimal effect on the Project site's drainage pattern. Therefore, surface water hydrology impacts as a result of construction activities would be less than significant.

5.1.2 Surface Water Quality

As discussed in Section 5.1.1, the SWPPP and the City's permitting regulations requires BMPs be implemented to control and eliminate pollutants resulting from construction activities. Thus compliance with the NPDES CGP and local permitting regulations would not substantially impact the Project site water quality in a manner that would result in contamination. The BMPs on-site will include measures to address erosion control, sediment control, tracking control, wind erosion, non-stormwater controls and waste and materials management. In order to comply with the NPDES and local regulations, the surface water quality will be managed through BMP implementation. Thus, surface water quality impacts resulting from construction activities would be less than significant.

5.1.3 Groundwater

As previously stated in Section 2.3 of this report, the historic groundwater table is over 80 feet below ground surface and groundwater was encountered during Earth Systems Southern California's geotechnical investigation at 90 feet below ground surface. The excavation depth of approximately 31 feet for the two levels of subterranean parking is well above the groundwater level and is not expected to encounter groundwater. Perched water zones can possibly be encountered during excavation in areas where borings were not drilled. Should perched groundwater be encountered, it would be directed to a dewatering system and discharged in accordance with all applicable rules and regulations under the NPDES CGP regulations and the City's grading permit conditions. Thus, potential construction-related groundwater hydrology impacts would be less than significant.

As previously stated in Section 2.3 of this report, the closest recorded monitoring well reported that dissolved nitrates were encountered in the groundwater below the reporting limit on July 06, 1964. Currently, the site is not known to contribute pollutants to the groundwater table. During construction of the Project, the existing parking lot and three existing buildings will be demolished. Compliance with all applicable federal, state, and local requirements in relation to the handling, storage and disposal of hazardous waste, would reduce the potential for the construction of the Project to release contaminants into groundwater that could affect existing contaminants, expand the area or increase the level of groundwater contamination, or cause a violation of regulatory water quality standards at an existing production well. Thus, potential construction-related groundwater quality impacts would be less than significant.

5.2 Operation

5.2.1 Surface Water Hydrology

The existing Project currently consists of a paved surface parking lot and four buildings with no landscape, resulting in 100% impervious surface coverage. The proposed Project will consist of a 15-story tower that tiers down to multiple podium levels and incorporate the addition of landscaped areas with direct exposure to rainwater. By adding more landscaped areas the Project site will result in lower imperviousness. The average imperviousness of the proposed site will be approximately 90%, resulting in a reduction in stormwater runoff compared to the existing site.

Stormwater runoff will continue to drain to Wilcox Ave, as to not change the existing drainage pattern. To address the existing cross-lot drainage issues from the northeast property, the site will collect the stormwater internally and divert the flow out onto the street. This will subsequently address the existing run-on onto the southeast neighbors downstream. The Existing Hydrology Exhibit in Section 7.0 shows three different subareas, Subareas 1A, 2A, and 3A. The Proposed Hydrology Exhibit in Section 7.0 shows two

different subareas, Subarea 1A and 2A. Subarea 1A in both existing and proposed delineates the off-site area. By addressing the surface cross-lot drainage issue, Subareas 2A and 3A from the existing hydrology are combined into one subarea, Subarea 2A, in the proposed condition. For the purposes of analyzing the impact of the Project, the off-site area, Subarea 1A, will not be analyzed.

Rainfall and soil characteristics for the Project site are given in Isohyetal Map Figure LACDPW 1-HI.18 and is provided in Section 7.0. The 50-year (24-hour) rainfall isohyet nearest the project area is approximately 5.95-inches. The isohyets for all of the storm events, based on factors from the LACDPW Hydrology Manual in Table 5.3.1, are as listed:

- 25-Year 24-Hour: 5.22-inches
- 50-Year 24-Hour: 5.95-inches

As shown on the Isohyetal Map, the soil classification of the project site falls predominantly into Soil Type 006. While the project area to be disturbed is approximately 1.29 acres, the project limits including the existing building that will remain is 1.42 acres. For the purposes of the hydrologic analysis, the project limit of 1.42 acres will be analyzed. As mentioned the calculations were performed with the HydroCalc software conforming to the LACDPW Hydrology Manual, which has been adopted by the City of Los Angeles for storm drain facility design. Output from the calculations are found in Section 7.0. Table 3 and Table 4 summarizes the runoff rates:

Table 3 Existing Runoff Rates[11]

Drainage Area	Area (acres)	% Impervious	Q_{25} (cfs)	Q_{50} (cfs)
2A	0.17	100%	0.48	0.54
3A	1.25	100%	3.02	3.70
Existing Total	**1.42**	**100%**	**3.50**	**4.24**

Table 4 Proposed Runoff Rates

Drainage Area	Area (acres)	% Impervious	Q_{25} (cfs)	Q_{50} (cfs)
2A	1.42	90%	3.36	4.14
Proposed Total	**1.42**	**90%**	**3.36**	**4.14**

[11] In order to properly determine the reduction of the flow rate from existing to proposed, the peak runoff rates for the Existing Subareas 2A and 3A were added and compared to Proposed Subarea 2A in Table 5. The combined Existing Subareas 2A and 3A reflect the same area as the Proposed Subarea 2A.

Table 5 below summarizes the hydrology results:

Table 5 Existing and Proposed Hydrology Summary

Condition	Area (acres)	Q_{25} (cfs)	Q_{50} (cfs)
Existing	1.42	3.50	4.24
Proposed	1.42	3.36	4.14
Difference	0	-0.14	-0.10
% Increase or Decrease from Existing to Proposed Condition	**0%**	**-4%**	**-2.4%**

As discussed above, based on the drainage patterns and flow paths of stormwater that are tributary to a common point or area within the Project site, the boundaries of the drainage areas would remain as under existing conditions. Therefore, the flow patterns and discharge points under existing conditions would be maintained with the Project. The Project site behaves in a similar manner as paved or impervious surfaces. Thus, while existing paved areas of the existing parking lot would be replaced by new impervious surfaces, from a hydrological perspective, these areas would be considered to have the same properties as existing pervious surfaces during an intense rain event and may also be reduced or slowed down due to a lower impervious area with the addition of landscaped areas. The results of the runoff rates, Table 5, confirm this theory, comparing the existing and proposed peak runoff flows at the discharge points from the Project site to the public right-of-way. Based on the above comparison, the operation of the Project would not result in flooding, and would not impact the capacity of the existing storm drain system. Accordingly, operation of the Project would result in a less than significant impact on surface water hydrology.

5.2.2 Surface Water Quality

The project falls under the jurisdiction of the City of Los Angeles Department of Public Works, which follows the 2016 Low Impact Development (LID) Manual design guidelines. Stormwater best management practices (BMP) proposed for the project will be designed to address the pollutants of concern identified in Section 2.2.2. Source and Treatment Control Best Management Practices (BMPs) are required for this project under the LA County Standard Urban Stormwater Mitigation Plan (SUSMP) and City of Los Angeles Low Impact Development (LID) Standards Manual. The purpose of this surface water quality section is:

- To meet City of Los Angeles Department of Public Works requirements;
- To document that the Los Angeles County LID requirements will be met;
- To determine the proposed development's impact on existing hydrologic conditions;
- To identify the pollutants of concern and provide BMPs that will mitigate those pollutants of concern; and
- To provide sufficient detailed information to support detailed hydraulic design of stormwater treatment systems.

Table 6 summarizes the efficiency of general categories of BMPs in treating different types of pollutants. The pollutants of concern for this Project's planned use and the receiving water are **trash, bacteria & viruses, and metals.** The selected Treatment Control BMP addresses these three pollutants of concern.

Table 6 Treatment Control BMP Selection Matrix[12]

Pollutant of Concern (Yes/No)	Treatment Control BMP Categories							
	Veg. Swale /Veg. Filter Strips	Detention Basins	**Planter Box /Infiltration Basins & Trenches**	Wet Ponds or Wetlands	Sand Filter or Filtration	**Water Quality Inlets**	Hydro-dynamic Separator Systems	Manufactured / Proprietary Devices
Sediment/Turbidity	H/M	M	H/M	H/M	H/M	L	H/M (L for turbidity)	U
No								
Nutrients	L	M	H/M	H/M	L/M	L	L	U
No								
Organic Compounds	U	U	U	U	H/M	L	L	U
No								
Trash & Debris	L	M	U	U	H/M	M	H/M	U
Yes			✓			✓		
Oxygen Demanding Substances	L	M	H/M	H/M	H/M	L	L	U
No								
Bacteria & Viruses	U	U	H/M	U	H/M	L	L	U
Yes			✓			✓		
Oils & Grease	H/M	M	U	U	H/M	M	L/M	U
No								
Pesticides (non-soil bound)	U	U	U	U	U	L	L	U
No								
Metals	H/M	M	H	H	H	L	L	U
Yes			✓			✓		

Abbreviations:
L: Low removal efficiency H/M: High or medium removal efficiency U: Unknown removal efficiency

5.2.2.1 Site Design BMPs

Currently, there are no known stormwater treatment BMPs at the existing Project site, meaning stormwater, with potential pollutants, will sheet flow from the site into the public right-of-way. Following the construction of the Project, stormwater will be treated by the proposed BMPs prior to discharging to the public right-of-way, providing water quality treatment not previously provided in the existing condition.

5.2.2.1.1 Minimize Stormwater Pollutants of Concern

The project site will minimize pollutants of concern by maximizing the reduction of pollutant loadings to the Maximum Extent Practicable. The pollutants of concern – namely, **trash, bacteria & viruses, and metals** – will be addressed through a pre-treatment filter device connected to the cistern within the Project site.

[12] Riverside County Flood Control and Conservation District, Riverside County Water Quality Management Plan for Urban Runoff (July 24, 2006)

5.2.2.1.2 Conserve Natural Areas

The Project site in its existing condition contains little to no natural areas. The Project will propose to add more landscaped areas to capture and use the stormwater.

5.2.2.2 Source Control BMPs

5.2.2.2.1 Protect Slopes and Channels

There are no unprotected slopes or unlined channels onsite. The entire area to be developed will be either vegetated or hardscaped.

5.2.2.2.2 Provide Storm Drain System Stenciling and Signage

Stenciling will be provided for public storm drains near the vicinity of the project.

5.2.2.3 Treatment Control BMPs

5.2.2.3.1 Mitigation Design (Volumetric or Flow based)

Volume-based or flow-based design standards may be used separately or in combination. Volume-based criteria are used in the sizing of the cistern. The LID requirements, approved by the Regional Water Quality Control Board, call for the treatment of the peak mitigation flow rate or volume of runoff produced by either the 75-inch or the 85th percentile rainfall event, whichever is greater. The rainfall intensity of the 85th percentile rainfall is 0.98 inch, therefore the 85th percentile rainfall event governs.

The City of LA prioritizes LID BMP selection in the following order: infiltration, capture and use, City approved Bio-Filtration/Retention System BMP (high removal efficiency), any combination of the previous, and lastly hydromodification. The Infiltration Report by Earth Systems Southern California dated October 10, 2016 indicates the infiltration rate is between 0.1 in/hr and 0.2 in/hr. According to the City's LID guidelines, an infiltration rate less than or equal to 0.3 in/hr is considered infeasible. If stormwater infiltration is not possible, the developer shall utilize the next priority BMP. The LID concept for this project is a stormwater capture and use system. The runoff within the cistern will be pumped up and will be restricted for use in irrigation of the landscape around the site. High flow outlets for the rainwater harvesting cistern will be routed to discharge as per existing conditions described in Section 2.1.

The LID calculation methodology was used to calculate the required treatment volume generated from the 85th percentile rainfall and to size the tanks adequately. HydroCalc was used to determine the peak mitigation flow rate, Qpm. However, since the selected BMP is a volume based BMP, only the volume is relevant in the design. LID Calculations are provided in Section 7.0. The results are summarized in the tables below.

Table 7 Proposed Condition LID Results

Project Site Area [ac]	BMP Type	85th percentile	85th percentile
		Q_{pm} [cfs]	V_M [ft^3][13]
1.42	Stormwater Capture and Use	0.33	4,200

[13] The total volume (V_M) of stormwater runoff to be mitigated was calculated by analyzing the project area as one area. Using this V_M and the appropriate BMP calculation from the City of LA LID manual, Table 7 shows the requirements for the area.

Table 8 Summary SUSMP/LID Mitigation BMPs

Area	Area [ac]	Impervious Area [ac]	Required Storage Tank V_M [ft^3]	BMP Type	Proposed Treatment V_M [ft^3]	% Treated	Impervious Area Untreated [ac]
1[14]	1.42	1.28	4,200	Storage Tank	4,725	100	0
Total Percent Treatment						**100%**	

The selected BMP for the site will have the capacity to capture and use 4,200 ft^3 of stormwater runoff. Rainwater tanks are available in various sizes, with the largest commercially available size being 5,050 gallons. Seven 5,050 gallon tanks will provide 4,725 ft^3 of storage, thus, this proposed BMP, or equivalent, is able provide 100% treatment.

In addition, as part of the Low Impact Development (LID) for the Project to manage post construction stormwater runoff, the Project would include the installation of floor drains, planter drains, and roof downspouts through the Project site to collect roof and site runoff and direct stormwater away from the structures through a series of underground storm drain pipes. This onsite stormwater conveyance system would serve to prevent onsite flooding and nuisance water on the Project site. Because the capture and use system will require the stormwater from the Project be treated prior to discharging to the public right-of-way, in accordance with the City's LID Ordinance, the operation of the Project would result in a less than significant impact on surface water quality.

5.2.3 Groundwater

After the construction of the Project, the site will have less impervious coverage than the existing condition. The stormwater will be captured and used on-site before being discharged into the public storm drain system. Therefore, the Project's potential operational groundwater hydrology impacts would be less than significant.

As opposed to the Project's existing condition where stormwater BMPs are not in place, the proposed Project will include BMPs that reduce possible contaminants generated by the Project's planned uses. As mentioned previously, groundwater infiltration was deemed infeasible through infiltration tests performed at the site at two potential depths. Instead the stormwater will be captured and used on-site prior to discharge to the public storm drain system. Therefore, the Project's potential operational groundwater quality impacts would be less than significant.

5.3 Cumulative Impacts

5.3.1 Surface Water Hydrology

Based on the above, the Project would not result in an incremental impact on either on-site or off-site flooding during a 25-year or 50-year storm event. The Project will reduce existing stormwater flow from the Project site. Through the nature of the local permitting process, the City will require stormwater management for all related and future projects in accordance with the LID guidelines. In addition, the City will continue to review future development projects to ensure sufficient local and regional infrastructure is available to accommodate stormwater runoff. Therefore, potential cumulative impacts associated with the Project on surface water hydrology would be less than significant.

[14] BMP required calculation based on City of LA LID manual.

5.3.2 Surface Water Quality

The Project will implement a capture and use system including pretreatment filters which will result in improved water quality to the Ballona Creek Watershed as compared to the existing Project condition. In addition, the Project and other future development projects will be reviewed and required by the City to be designed in order to comply with LID requirements. Therefore, based on the Project's less than significant impacts and required compliance with applicable water quality regulations, potential cumulative impacts to surface water quality would be less than significant.

5.3.3 Groundwater

Groundwater was encountered during the geotechnical investigation of the Project site at a depth of 90 feet below ground surface. The anticipated excavation for this Project is 31 feet below ground surface in order to construct the two levels of subterranean parking. Groundwater is not expected to be encountered during construction. However, if any perched groundwater is encountered during construction, it would need to be directed to a dewatering system and discharged in accordance with all applicable NPDES CGP regulations and local regulations. As a result of these regulations, no significant groundwater hydrology impacts would result at the Project site or within the larger groundwater basin.

No impacts to the groundwater table nor the existing groundwater quality are anticipated due to the Project's proposed BMPs, which will preclude any groundwater infiltration into the soil. Future and other proposed projects will be reviewed and required to comply with local and state regulations. Therefore, potential cumulative impacts to groundwater quality would be less than significant.

6.0 Level of Significance

6.1 Significance Summary

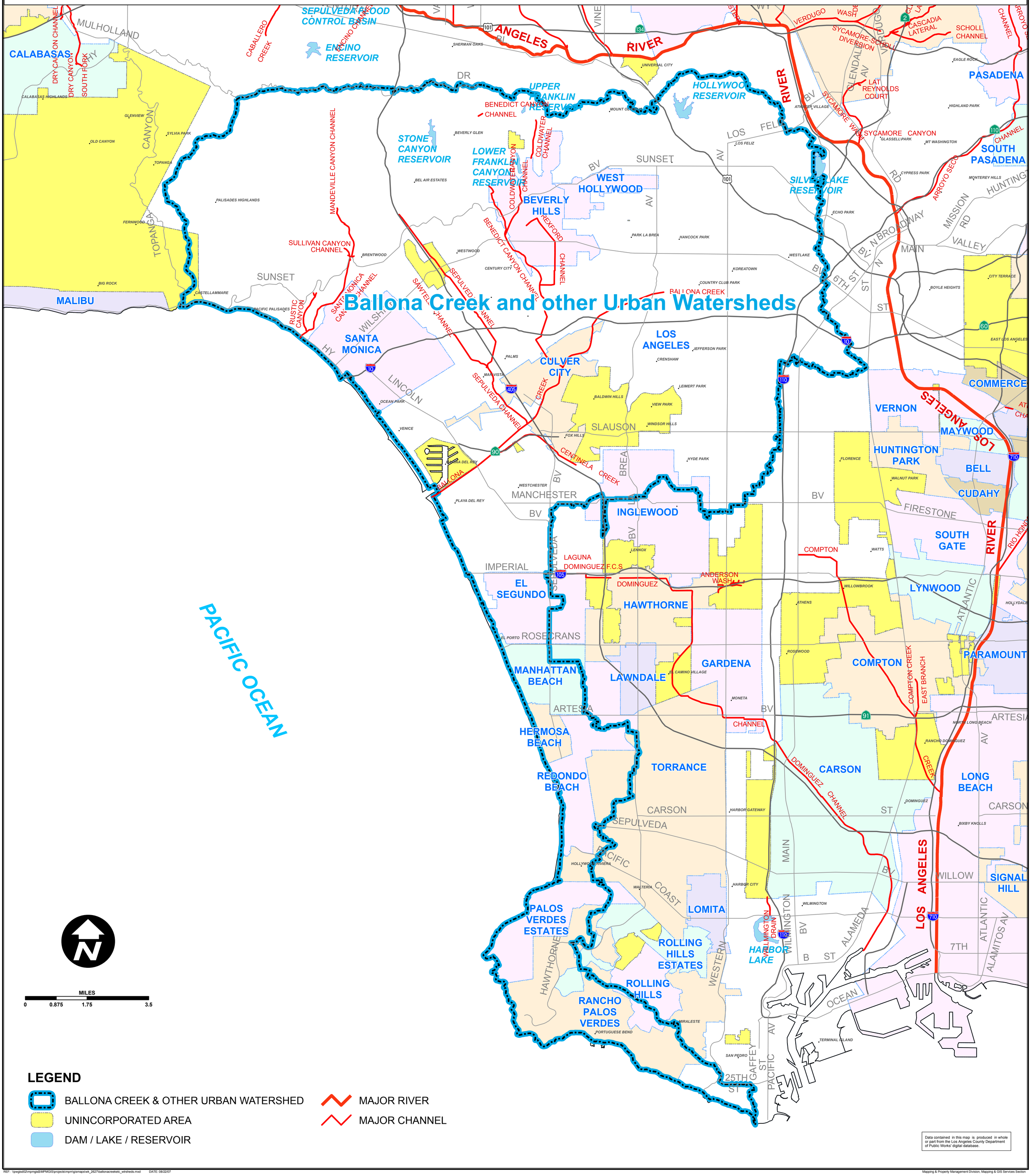
Based on the analysis contained in this report, the Project would not substantially increase the amount of surface water in a water body, and it will not result in a permanent adverse change to the movement of surface water that would result in an incremental effect on the capacity of the existing storm drain system. Additionally, the Project site is not located within a FEMA or City of Los Angeles designation 100- or 500-year flood plain, nor is it located within a potential inundation area as designed by the City of Los Angeles General Plan Safety Element. With compliance under the SWPPP, SUSMP, and the City's LID Ordinance, there are no significant impacts for surface water hydrology, surface water quality, or groundwater as a result of the construction and operation of this Project.

7.0 Attachments

COUNTY OF LOS ANGELES

BALLONA CREEK & OTHER URBAN WATERSHEDS

Ballona Creek and other Urban Watersheds



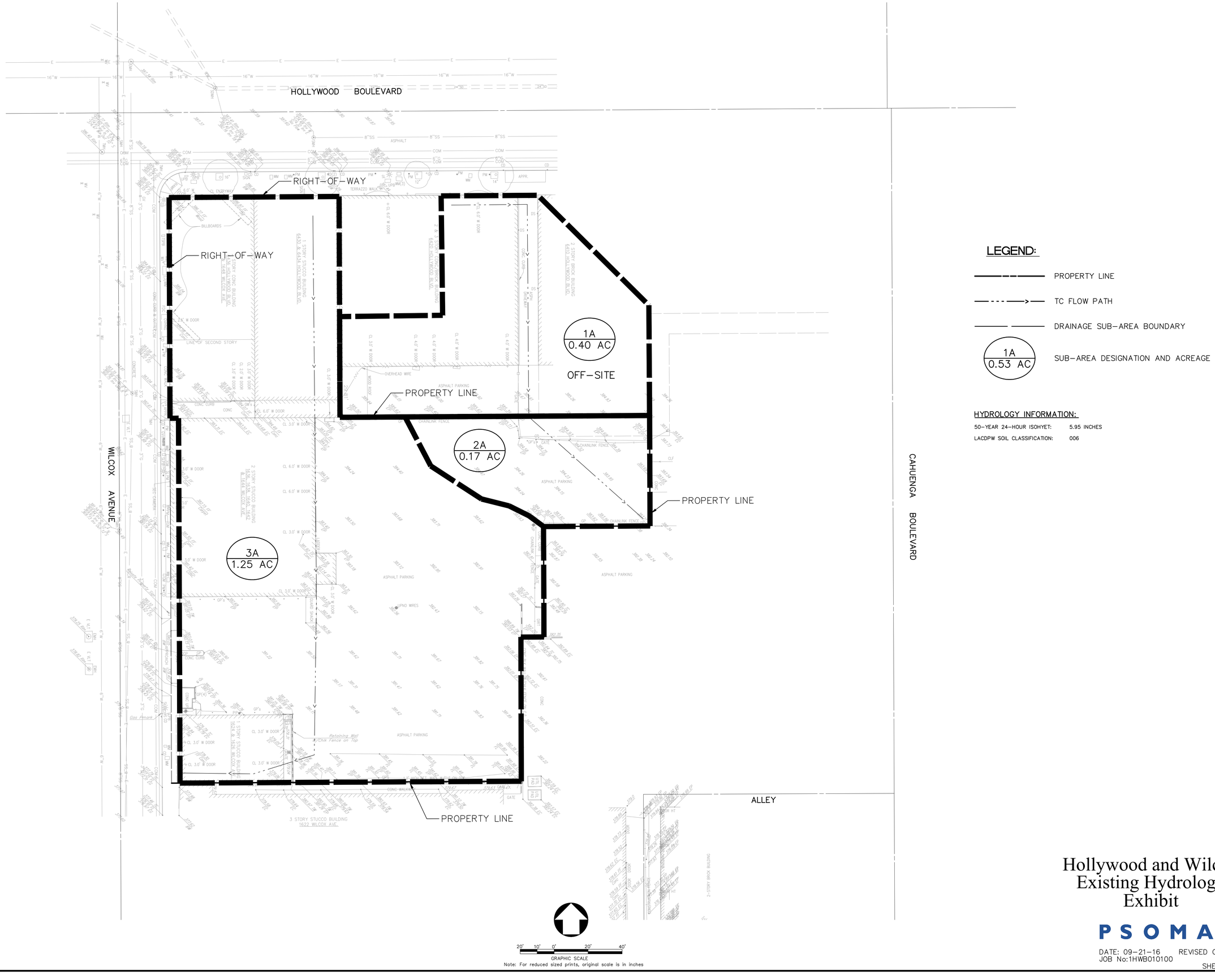
LEGEND

- BALLONA CREEK & OTHER URBAN WATERSHED
- UNINCORPORATED AREA
- DAM / LAKE / RESERVOIR
- MAJOR RIVER
- MAJOR CHANNEL

Data contained in this map is produced in whole or part from the Los Angeles County Department of Public Works' digital database.

REF: \\pwgisd02\mpmgis$\MPMGIS\projects\mpm\gismaps\wk_2627\ballonacreeketc_wtrsheds.mxd DATE: 08/22/07

Mapping & Property Management Division, Mapping & GIS Services Section



LEGEND:

- PROPERTY LINE
- TC FLOW PATH
- DRAINAGE SUB-AREA BOUNDARY
- 1A / 0.53 AC — SUB-AREA DESIGNATION AND ACREAGE

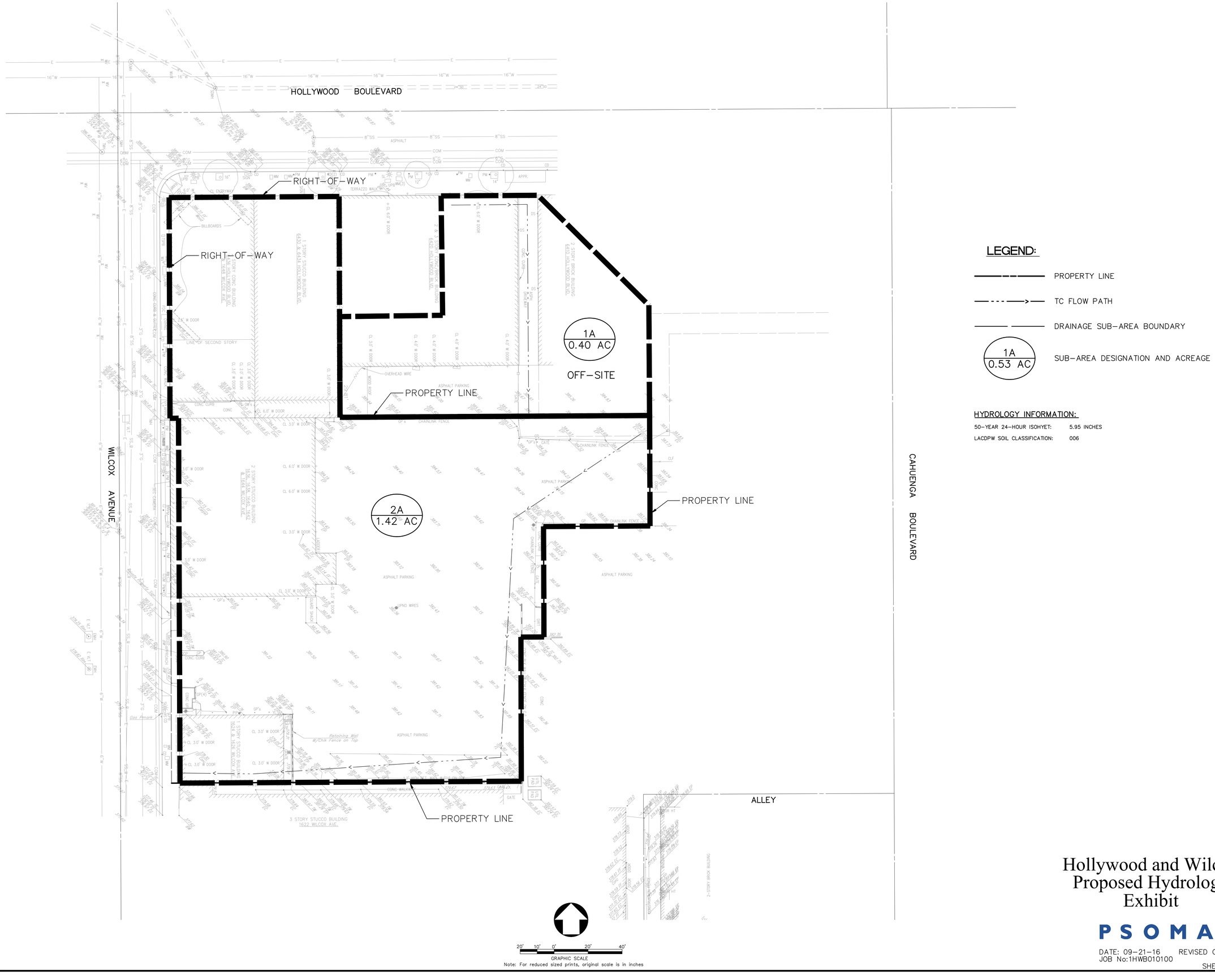
HYDROLOGY INFORMATION:

50-YEAR 24-HOUR ISOHYET:	5.95 INCHES
LACDPW SOIL CLASSIFICATION:	006

Hollywood and Wilcox Existing Hydrology Exhibit

PSOMAS

DATE: 09-21-16 REVISED ON: 09-21-16
JOB No:1HWB010100



LEGEND:

- PROPERTY LINE
- TC FLOW PATH
- DRAINAGE SUB-AREA BOUNDARY
- 1A / 0.53 AC — SUB-AREA DESIGNATION AND ACREAGE

HYDROLOGY INFORMATION:

50-YEAR 24-HOUR ISOHYET:	5.95 INCHES
LACDPW SOIL CLASSIFICATION:	006

Hollywood and Wilcox Proposed Hydrology Exhibit

PSOMAS

DATE: 09-21-16 REVISED ON: 09-21-16
JOB No:1HWB010100

SHEET 1 OF 1

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole–foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC–3, #9202
1315 East–West Highway
Silver Spring, MD 20910–3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713–3242,** or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1994 or later and from National Geospatial Intelligence Agency imagery produced at a scale of 1:4,000 from photography dated 2003 or later.

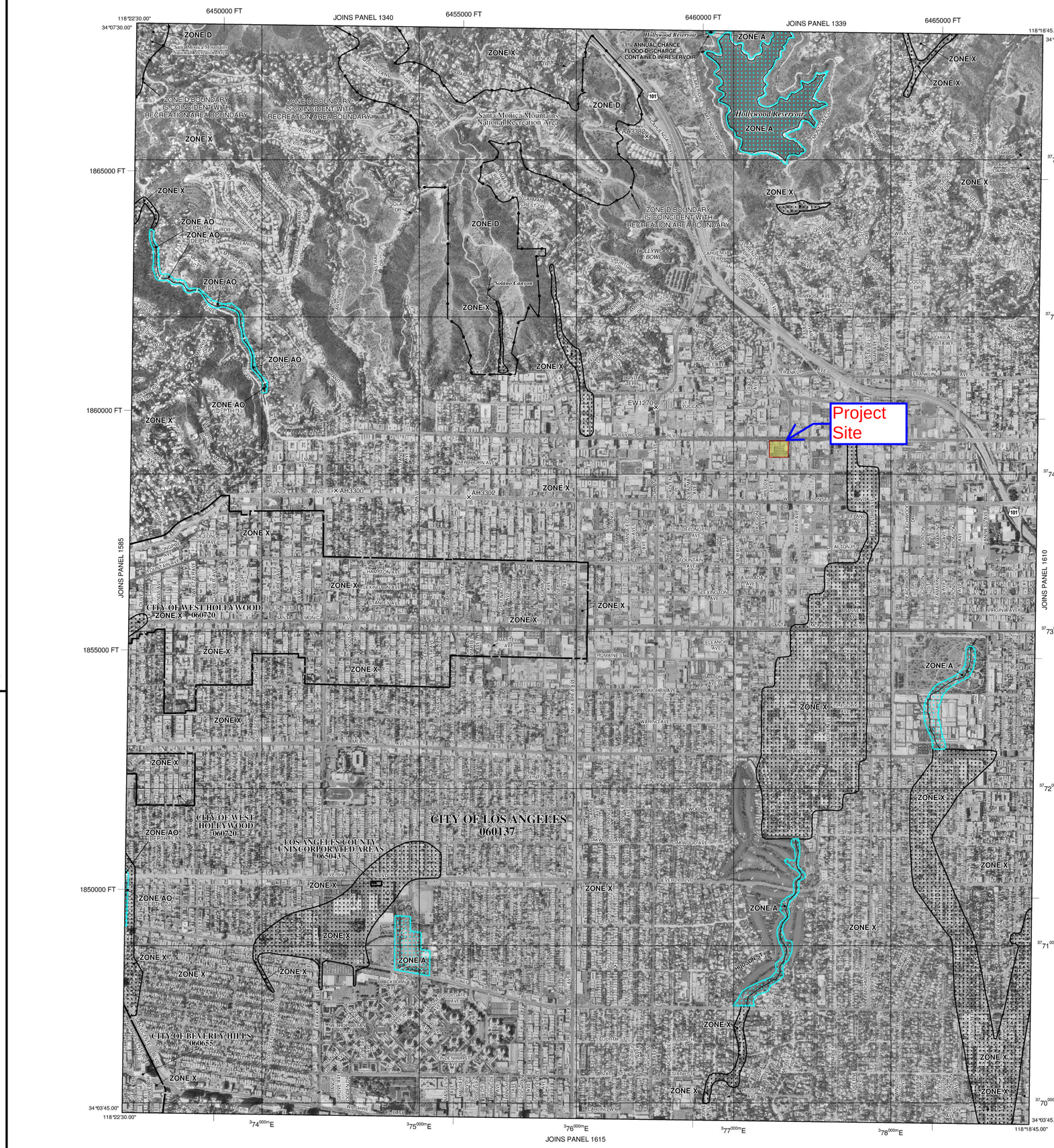
This map reflects more detailed and up–to–date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables *in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de–annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1–800–358–9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, *a Flood Insurance Study report*, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1–800–358–9620 and its website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1–877–FEMA MAP** (1–877–336–2627) or visit the FEMA website at http://www.fema.gov/.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

- A — A — Cross section line
- 23 — 23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4275'000mN — 1000-meter Universal Transverse Mercator grid values, zone 11
- 6000000 FT — 5000-foot grid ticks: California State Plane coordinate system, V zone (FIPSZONE 0405), Lambert Conformal Conic
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
September 26, 2008
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1–800–638–6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1605F

FIRM
FLOOD INSURANCE RATE MAP
LOS ANGELES COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 1605 OF 2350
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

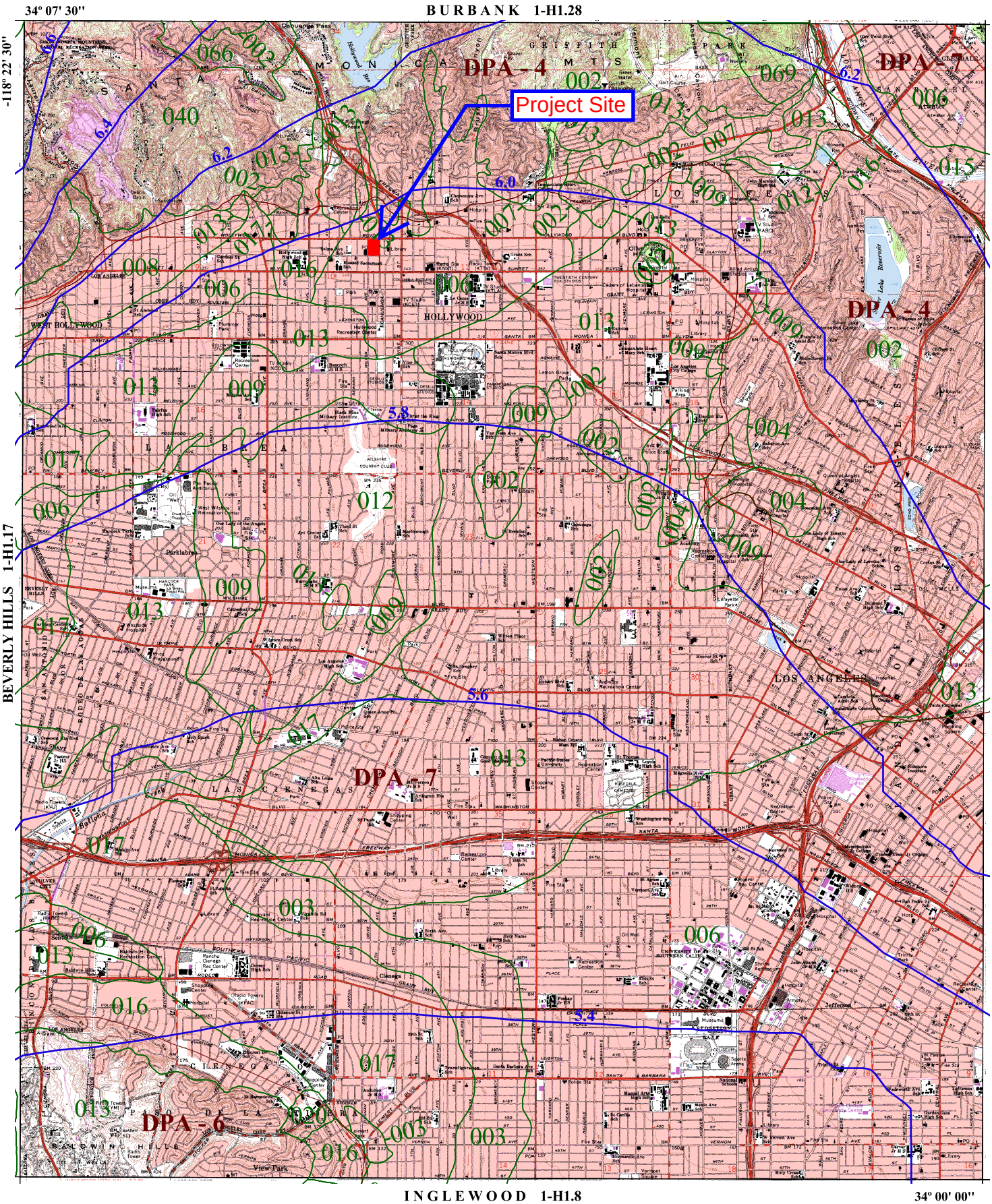
COMMUNITY	NUMBER	PANEL	SUFFIX
LOS ANGELES COUNTY	065043	1605	F
BEVERLY HILLS, CITY OF	060655	1605	F
LOS ANGELES, CITY OF	060137	1605	F
WEST HOLLYWOOD, CITY OF	060720	1605	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06037C1605F

EFFECTIVE DATE
SEPTEMBER 26, 2008

Federal Emergency Management Agency



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

HOLLYWOOD 1-H1.18
50-YEAR 24-HOUR ISOHYET

LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

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

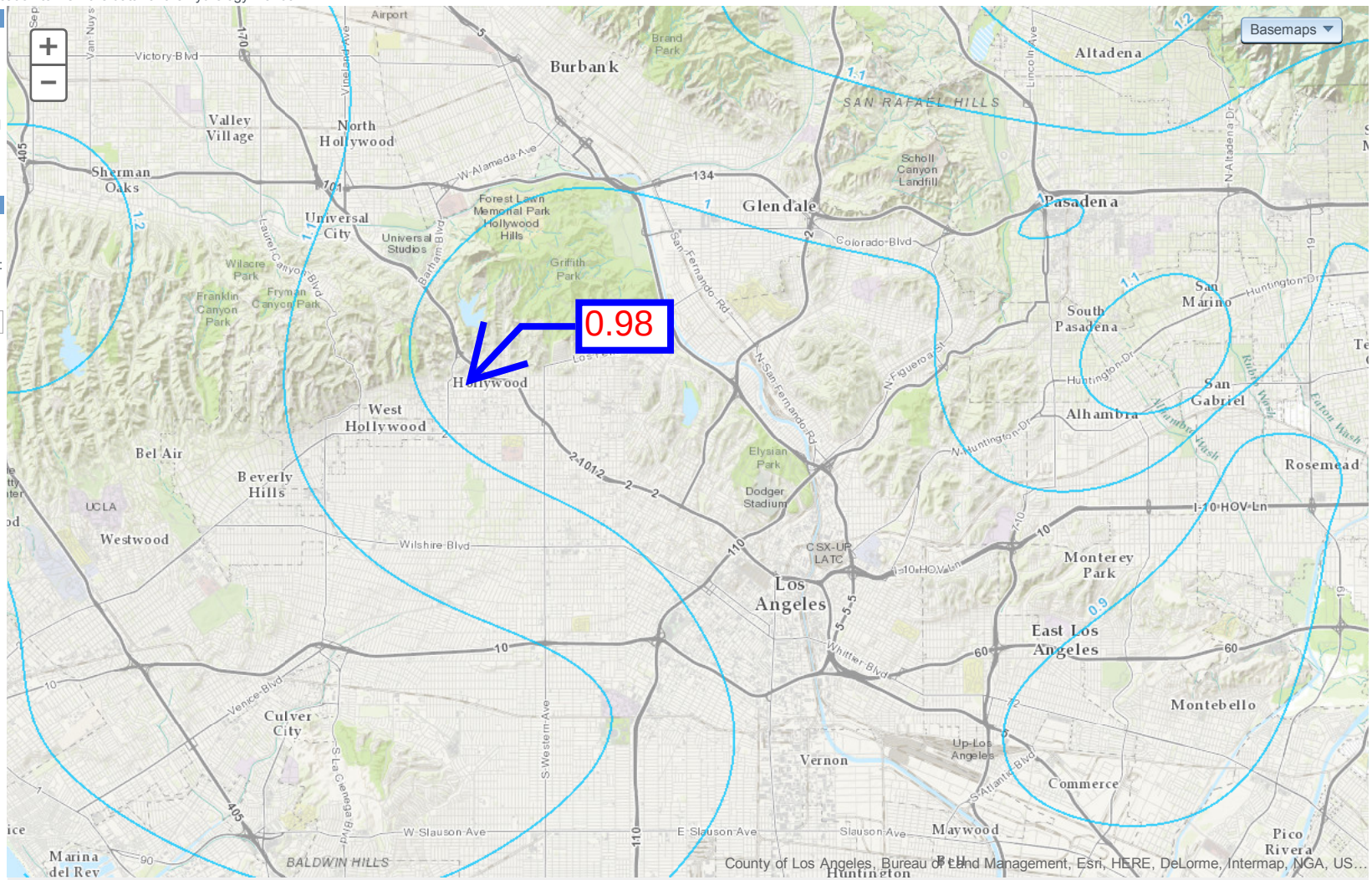
- [ ] 50yr Two Tenths (Rainfall)
- [ ] DPA Zones
- [ ] Soils 2004
- [ ] TG Page
- [x] Final 85th Percentile, 24-hr Rainfall
- [ ] Final 95th Percentile, 24-hr Rainfall
- [ ] 1-year, 1-hour Rainfall Intensity

SEARCH

Zoom to TG Page:

Enter Address, Cross Street, or Parcel No.:
(ex: 900 S. Fremont Ave., Fremont@Valley, 5342005904)

Search



Peak Flow Hydrologic Analysis

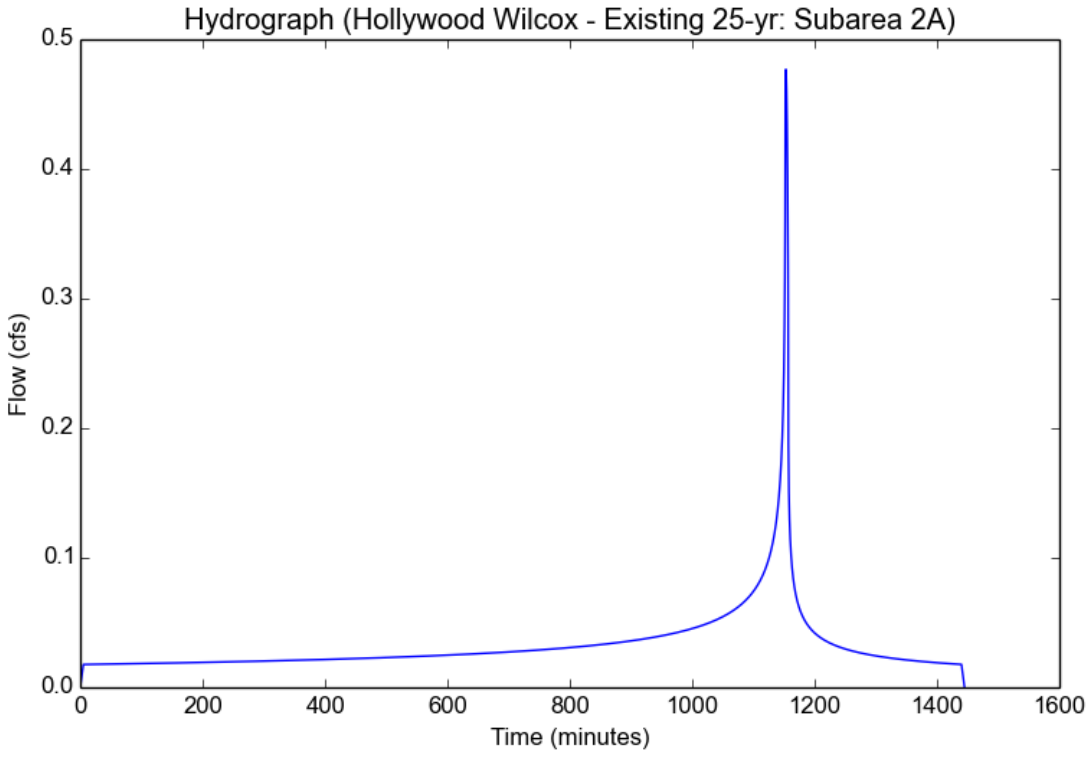
File location: W:/1HWB010100/ENGR/DOCS/EIR Hydrology Report/Hydro Calc/Hollywood Wilcox - Existing 25-yr - Subarea 2A.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Hollywood Wilcox - Existing 25-yr
Subarea ID	Subarea 2A
Area (ac)	0.17
Flow Path Length (ft)	90.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.95
Percent Impervious	1.0
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.2241
Peak Intensity (in/hr)	3.1168
Undeveloped Runoff Coefficient (Cu)	0.8305
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.4769
Burned Peak Flow Rate (cfs)	0.4769
24-Hr Clear Runoff Volume (ac-ft)	0.0661
24-Hr Clear Runoff Volume (cu-ft)	2877.4352



Peak Flow Hydrologic Analysis

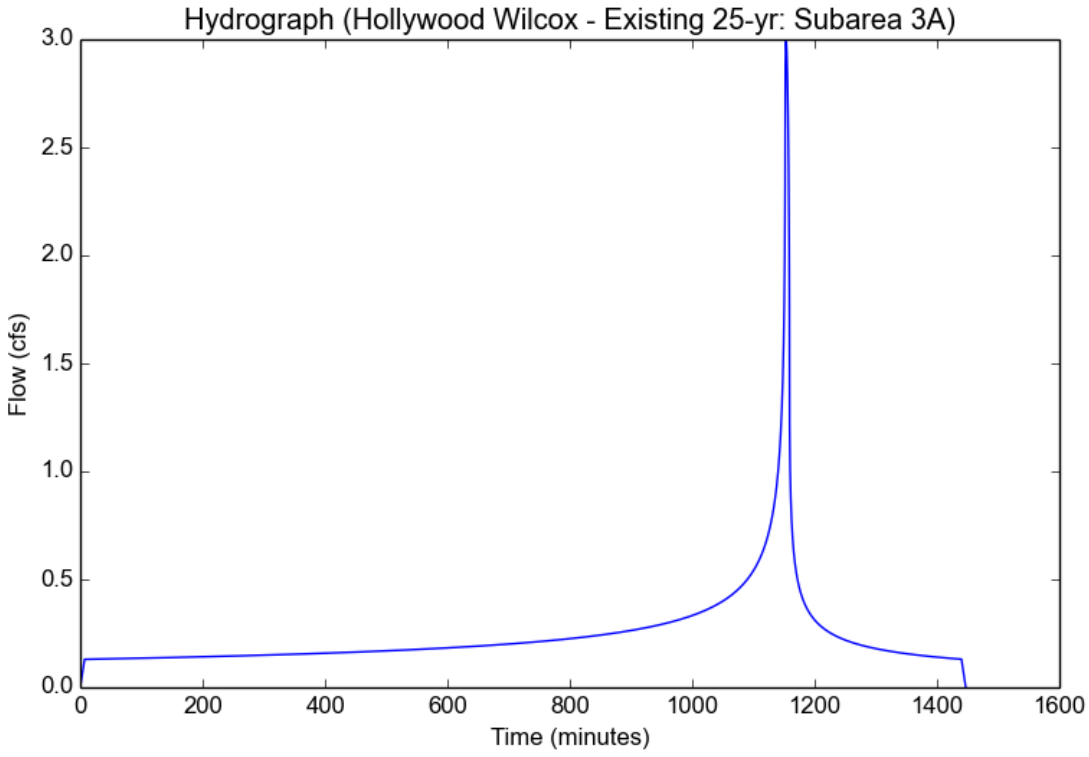
File location: W:/1HWB010100/ENGR/DOCS/EIR Hydrology Report/Attachments/Hydro Calc/Hollywood Wilcox - Existing 25-yr - Subarea 3A.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Hollywood Wilcox - Existing 25-yr
Subarea ID	Subarea 3A
Area (ac)	1.25
Flow Path Length (ft)	400.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.95
Percent Impervious	1.0
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.2241
Peak Intensity (in/hr)	2.6609
Undeveloped Runoff Coefficient (Cu)	0.7985
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	2.9936
Burned Peak Flow Rate (cfs)	2.9936
24-Hr Clear Runoff Volume (ac-ft)	0.4857
24-Hr Clear Runoff Volume (cu-ft)	21157.618



Peak Flow Hydrologic Analysis

File location: W:/1HWB010100/ENGR/DOCS/EIR Hydrology Report/Hydro Calc/Hollywood Wilcox - Existing 50-yr - Subarea 2A.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Hollywood Wilcox - Existing 50-yr
Subarea ID	Subarea 2A
Area (ac)	0.17
Flow Path Length (ft)	90.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.95
Percent Impervious	1.0
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.95
Peak Intensity (in/hr)	3.5499
Undeveloped Runoff Coefficient (Cu)	0.8593
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.5431
Burned Peak Flow Rate (cfs)	0.5431
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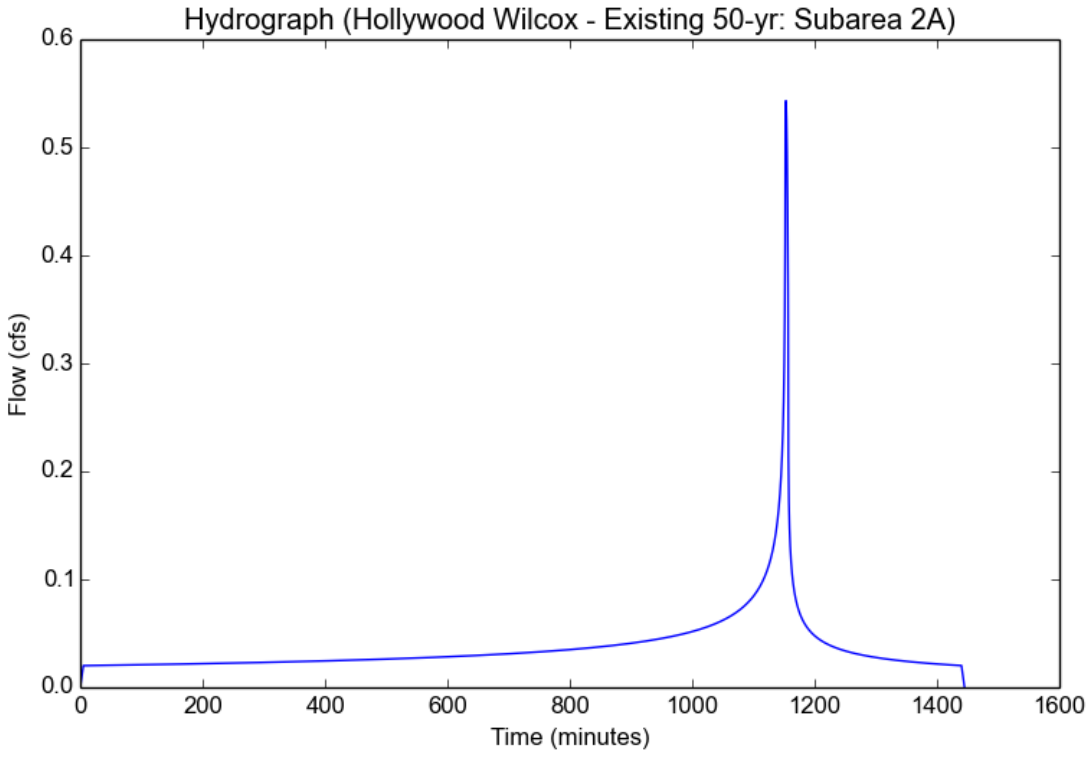


Peak Flow Hydrologic Analysis

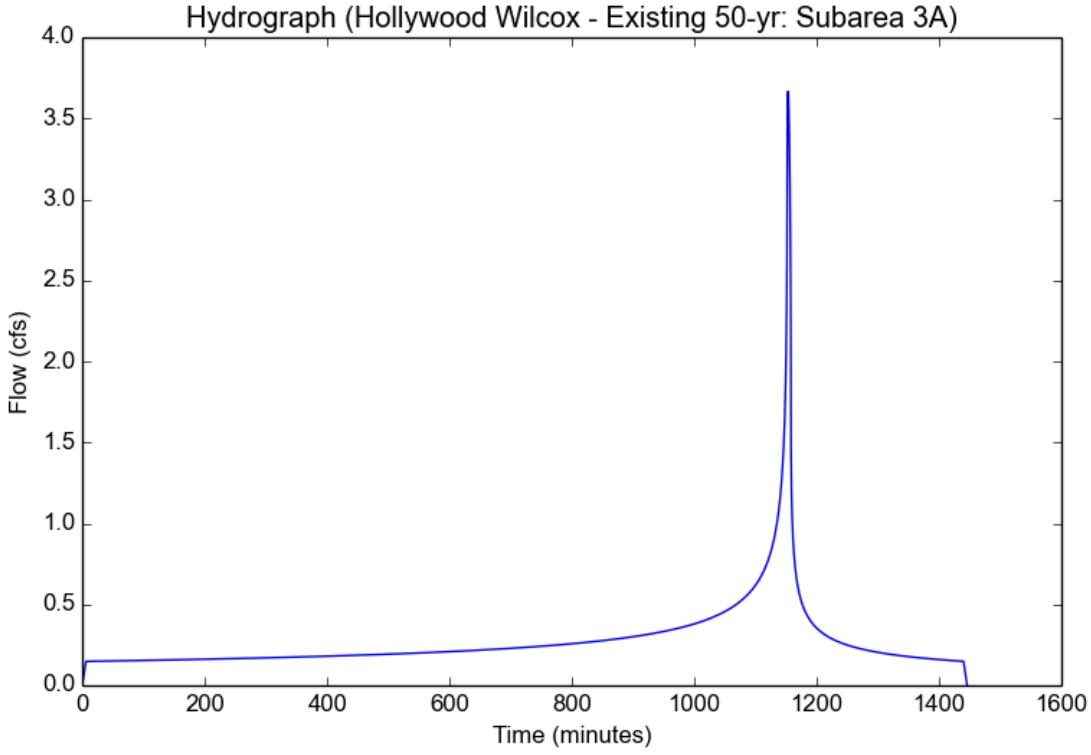
File location: W:/1HWB010100/ENGR/DOCS/EIR Hydrology Report/Attachments/Hydro Calc/Hollywood Wilcox - Existing 50-yr - Subarea 3A.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Hollywood Wilcox - Existing 50-yr
Subarea ID	Subarea 3A
Area (ac)	1.25
Flow Path Length (ft)	400.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.95
Percent Impervious	1.0
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.95
Peak Intensity (in/hr)	3.2584
Undeveloped Runoff Coefficient (Cu)	0.8404
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	3.6657
Burned Peak Flow Rate (cfs)	3.6657
24-Hr Clear Runoff Volume (ac-ft)	0.5532
24-Hr Clear Runoff Volume (cu-ft)	24097.5109



Peak Flow Hydrologic Analysis

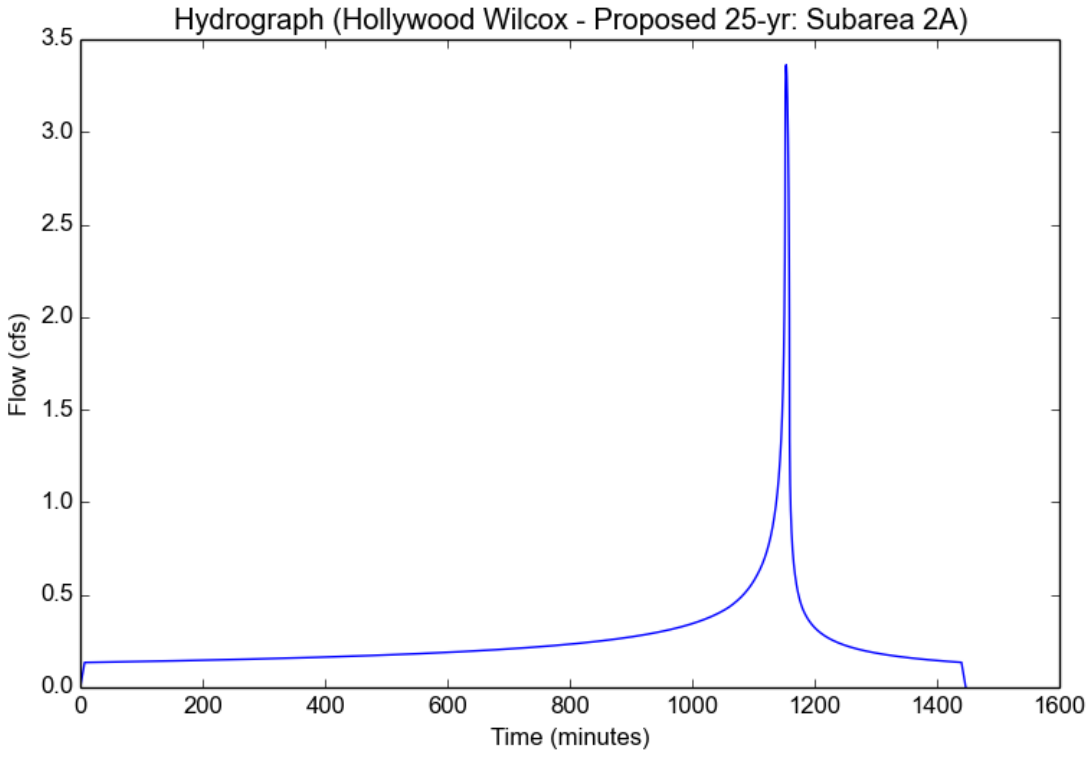
File location: W:/1HWB010100/ENGR/DOCS/EIR Hydrology Report/Attachments - Water Resources TR/Hydro Calc/Hollywood Wilcox - Proposed 25-yr -
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Hollywood Wilcox - Proposed 25-yr
Subarea ID	Subarea 2A
Area (ac)	1.42
Flow Path Length (ft)	420.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.95
Percent Impervious	0.9
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.2241
Peak Intensity (in/hr)	2.6609
Undeveloped Runoff Coefficient (Cu)	0.7985
Developed Runoff Coefficient (Cd)	0.8898
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	3.3623
Burned Peak Flow Rate (cfs)	3.3623
24-Hr Clear Runoff Volume (ac-ft)	0.5088
24-Hr Clear Runoff Volume (cu-ft)	22162.3626



Peak Flow Hydrologic Analysis

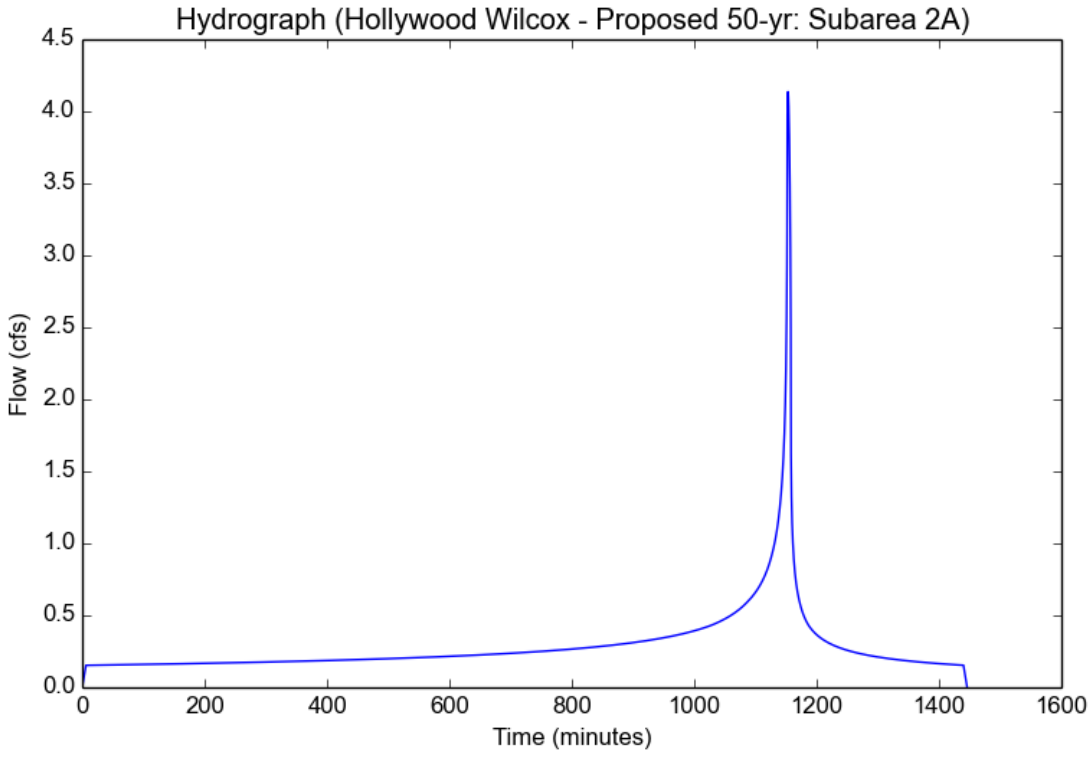
File location: W:/1HWB010100/ENGR/DOCS/EIR Hydrology Report/Attachments - Water Resources TR/Hydro Calc/Hollywood Wilcox - Proposed 50-yr -
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Hollywood Wilcox - Proposed 50-yr
Subarea ID	Subarea 2A
Area (ac)	1.42
Flow Path Length (ft)	420.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.95
Percent Impervious	0.9
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.95
Peak Intensity (in/hr)	3.2584
Undeveloped Runoff Coefficient (Cu)	0.8404
Developed Runoff Coefficient (Cd)	0.894
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	4.1367
Burned Peak Flow Rate (cfs)	4.1367
24-Hr Clear Runoff Volume (ac-ft)	0.5806
24-Hr Clear Runoff Volume (cu-ft)	25291.7708



Peak Flow Hydrologic Analysis

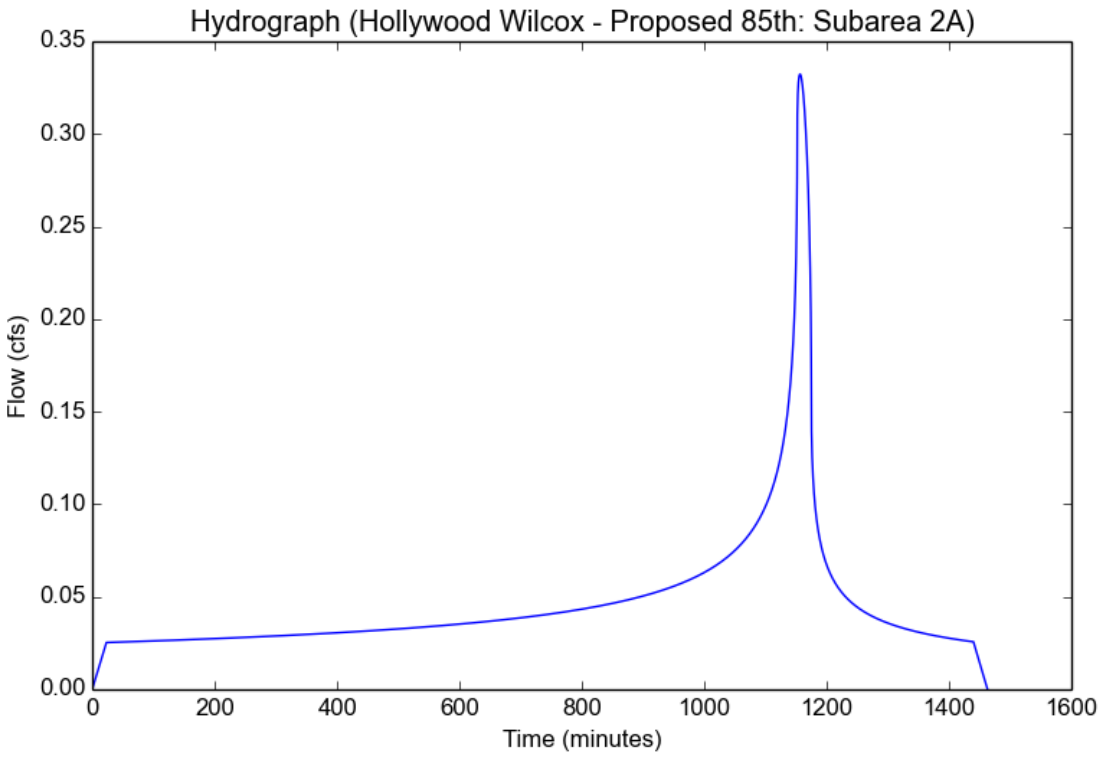
File location: W:/1HWB010100/ENGR/DOCS/EIR Hydrology Report/Attachments - Water Resources TR/Hydro Calc/Hollywood Wilcox - Proposed 85th -
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	Hollywood Wilcox - Proposed 85th
Subarea ID	Subarea 2A
Area (ac)	1.42
Flow Path Length (ft)	420.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	0.98
Percent Impervious	0.9
Soil Type	6
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.98
Peak Intensity (in/hr)	0.2854
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	23.0
Clear Peak Flow Rate (cfs)	0.3323
Burned Peak Flow Rate (cfs)	0.3323
24-Hr Clear Runoff Volume (ac-ft)	0.0943
24-Hr Clear Runoff Volume (cu-ft)	4108.0308



Project No, 1HWB010100
1648 Wilcox Ave
Los Angeles, CA 90028

Hollywood and Wilcox Volume Calculations:

Givens:

Areas =

Breakdown	sqft	acre
Area Total	61,980	1.423
Impervious, Ai	55,880	1.283
Pervious, Ap	4,800	0.111
Undeveloped Area, Au	0	0
Exempt Area	1,300	0.03
TOTAL	**61,980**	**1.423**
Landscaped Areas Counted Towards Mitigation Volume*		
Landscaped Area Ground Level	4,800	0.111
TOTAL Pervious	**4,800**	**0.111**
Landscaped Areas Counted Towards ETWU**		
Additional Landscaped Area	0	0
TOTAL Additional Pervious	**0**	**0**
Exempt Area***		
Pool	1,300	0.03
TOTAL Exempt	**1,300**	**0.03**

***Note these are landscaped areas exposed to the sky.**

****Note these are additional landscaped areas NOT EXPOSED to the sky.**

*****Note these are water features exposed to the sky.**

Soil media infiltration rate:	2.5	in/hr	(Table 4.5)
T_{Fill} =	3	hrs	(Table 4.5)
Drawdown time, T (hr) =	48	hrs	(Table 4.5)
$K_{Sat,Design}$ Factor of Safety, FS =	2		
$V_{design\ Planter}$ Factor of Safety =	1.5		
Design Storm =	85th Percentile		(Per City of LA requirement)
Design Storm Intensity =	0.98	in	(Per LA County Hydrology GIS)
Planting Factor =	0.5		(Per Landscape Architect)
7 Month Evapotranspiration, ET_7	21.7		(Per City of LA Irrigation Guidelines, App C)

i. Determine the Mitigation Volume (V_M):

V_M (ft^3) = 85th Percentile Intensity (in) * Catchment Area (acres) * (3630 cuft/1ac-in)

where Catchment Area (acres) = (Impervious Area * 0.9) + [(Pervious area + Undeveloped area) * 0.1]

V_M (ft^3) = 0.98*[(1.283*0.9)+[(0.111+0)*0.1]] * 3630 ft^3

V_M (ft^3) = 4148 ft^3 or 31,100 Gallons

The design will be a rainwater harvesting system, therefore,

V_M (ft^3) =	**4148**	**ft^3**	**or**	**31,100 Gallons**

ii. Determine planting area (ft^2):

Planting Area (ft^2) = 4800 + 0 ft^2

Planting Area (ft^2) = 4,800 ft^2

iii. Determine Planter Factor, PF, (ft^2)

Planter Factor (ft^2) = Planting Factor x Planting Area

Planter Factor (ft^2) = 0.5 x 4800 ft2

Planter Factor (ft^2) =	**2400**	**ft^2**

iv. Determine the 7-month (Oct 1-April 30) Estimated Total Water Use (ETWU):

$ETWU_{(7\text{-month})}$ = ET_7 x 0.62 x PF

$ETWU_{(7\text{-month})}$ = 21.7 x 0.62 x 2400

$ETWU_{(7\text{-month})}$ =	**32290**	**gal**

v. Verify $ETWU_{(7\text{-month})}$ is greater than or equal to V_{WQDV}:

$ETWU_{(7\text{-month})}$	≥	*$V_{(Design)}$ (gal)*
32,290	≥	***31,100***

CAPTURE AND USE IS FEASIABLE