

## **Appendix IS-6**

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Hydrology and Water Quality Report



**SUNSET AND WILCOX  
HYDROLOGY AND WATER QUALITY REPORT  
AUGUST 2020**

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## **1. INTRODUCTION**

### **1.1. PROJECT DESCRIPTION**

Seward Partners LLC (the Project Applicant) proposes to construct a new commercial project (Project) on an approximately 1.70-acre (73,903 square feet) site (Project Site) in the Hollywood Community Plan Area of the City of Los Angeles (City). The Project is bound by Sunset Boulevard on the north, Wilcox Avenue on the west, Cole Place on the east, and De Longpre Avenue on the south. The Project Site includes 10 individual parcels, and is currently occupied by a Staple retail store, office, and surface parking lots.

The Project would demolish the existing surface parking lots and office and retail uses to allow the construction of a 14-story, 276 foot tall commercial building that would include 423,932 square feet of office use and 12,386 square feet of restaurant or retail use; and, a 18-foot tall building to house Department of Water and Power (LADWP) equipment and an underground generator with a landscaped surface parking lot. The Project's proposed floor area ratio (FAR) would be 6:1. The Project would include ground floor restaurant and retail uses, offices use on the above floors, and mechanical equipment located on the rooftop.

Construction of the Project would be completed over an approximately TBD-year period, beginning as early as 2022. Construction timing may vary and the EIR will analyze the most conservative construction schedule. Project construction would require grading and excavation activities down to a maximum depth of 52 feet below existing grade for building foundations and three levels of subterranean parking. The Project would export approximately 93,000 cubic yards of soil and generate approximately 2,896 tons of demolition debris (asphalt, interior and exterior building demolition, and general demolition debris). No import of soil is proposed.

### **1.2. SCOPE OF WORK**

This report provides a description of the existing surface water hydrology, surface water quality, groundwater level, and groundwater quality at the Project Site. In addition, the report includes an analysis of the Project's potential impacts related to surface water hydrology, surface water quality, groundwater level, and groundwater quality.

## **2. ENVIRONMENTAL SETTING**

### **2.1. SURFACE WATER HYDROLOGY**

#### **2.1.1. REGIONAL**

The Project Site is located within the Ballona Creek Watershed (Watershed) in the Los Angeles Basin. The Watershed encompasses an area of approximately 130 square miles extending from the Santa Monica Mountains and the Ventura-Los Angeles County line on the north, to the Harbor Freeway (110) on the east, and to the Baldwin Hills on the south. Ballona Creek is a 9-mile-long flood protection channel that drains the Watershed to the

Pacific Ocean. The major tributaries to Ballona Creek include Centinela Creek, Sepulveda Canyon Channel, Benedict Canyon Channel, and numerous storm drains. Refer to Figure 9 for the Ballona Creek Watershed Map.

### 2.1.2. LOCAL

Underground storm drain facilities in the Project vicinity consist of the following:

- **Sunset Boulevard:** There is an existing 27 inch Reinforced Concrete Pipe main between Wilcox Avenue and Cole Place that flows westerly. See Figure 2. Based on as-built drawings available on NavigateLA, the main appears to have a capacity of 35.17 cubic feet per second. There are three existing catch basins located at the northeast and northwest corner at the intersection of Sunset Boulevard and Wilcox Avenue which discharge into this main.
  - Stormwater from the Project Site does not discharge into this main as stormwater discharged along Sunset Boulevard sheet flows east to Wilcox Avenue and south to Fountain Avenue.
- **Fountain Avenue:** Approximately 0.2 miles southwest of the Project Site, there is an existing 21 inch Reinforced Concrete Pipe main between Wilcox Avenue and Cole Avenue that flows westerly. Based on as-built drawings available on NavigateLA, the main appears to have a capacity of 14.43 cubic feet per second. There are three existing catch basins at the northeast and northwest corner that discharge into this main.
  - Stormwater from the Project Site discharged along Wilcox Avenue sheet flows south to Fountain Avenue.
  - Stormwater from the Project Site discharged along Cole Place sheet flows south to De Longpre Avenue, west to Wilcox Avenue, and south to Fountain Avenue.

The underground pipes and catch basins noted above are owned and maintained by the City of Los Angeles. The stormwater runoff from the Project Site is discharged to the surrounding streets and sheet flows into offsite storm drainage catch basins and underground storm drainage pipes which convey stormwater through various underground pipe networks into the Ballona Creek. Ballona Creek flows generally southwest, ultimately discharging into the Pacific Ocean at the Santa Monica Bay. Ballona Creek is designed to discharge to Santa Monica Bay approximately 71,400 cubic feet per second from a 50-year frequency storm event.<sup>1</sup>

### 2.1.3. PROJECT SITE

Based on the project survey by KPFF dated January 2020 (see Figure 1) and site observations, it is determined that under the existing conditions the Project Site is divided

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<sup>1</sup> <http://www.ladpw.org/wmd/watershed/bc/>; accessed March 25, 2020.

into two sites separated by an alley (Alley) with four total drainage areas, which are described below and shown in Figure 3. For the purposes of this hydrologic analysis, the 1.65-acre Project Site is slightly expanded to 1.70 acres. This accounts for ten feet along Wilcox Avenue previously dedicated to the City (Area A1 in Figure 3) to be merged into the Project Site upon Project buildout; waivers of dedications and improvements of a five-foot dedication along the entire alley abutting the lot with APN 5546-014-014 and a five-foot dedication along the alley abutting the lot with APN 5546-014-017; and a five-foot dedication and ten-foot by ten-foot corner cut along De Longpre Avenue (Area B in Figure 3) for compliance with the 2035 Mobility Plan typical street standards. The Project Site generally consists of impervious surface parking, buildings, and impervious pavement for pedestrian and vehicular circulation.

- **North Site**

- Area A1 consists of a one-story commercial building and surface parking located at the northern portion of the site and is bounded by Sunset Boulevard to the north, Cole Place to the east, Wilcox Avenue to the west, and Area A2 to the south. Storm water is generally conveyed to a valley gutter in the southern portion of the lot and discharges offsite to Wilcox Avenue and Cole Place.
- Area A2 consists of a one-story commercial building and surface parking and is bounded by Area A1 to the north, Cole Place to the east, Wilcox Avenue to the west, and Area A3 to the south. Storm water generally sheet flows offsite to Cole Place.
- Area A3 consists of surface parking and is bounded by Area A2 to the north, Cole Place to the east, Wilcox Avenue to the west, and an Alley to the south. Storm water generally sheet flows south to the Alley, from which stormwater then sheet flows to Wilcox Avenue and Cole Place.

- **South Site**

- Area B consists of a two-story building and surface parking located at De Longpre Avenue and Cole Place. The storm water is generally conveyed to a catch basin within the surface parking lot and is discharged offsite through a curb drain to Cole Place.

Figure 5 shows all the input parameters used for analyzing the existing Project Site. Table 1 summarizes the existing volumetric flow rate generated by a 50-year storm event (Q<sub>50</sub>).

Table 1- Existing Drainage Stormwater Runoff Calculations			
Drainage Area	Area (Acres)	Percent Imperviousness (%)	Q <sub>50</sub> (cfs) (volumetric flow rate measured in cubic feet per second)
<b>North Site</b>			
A1	0.83	92.2%	2.642
A2	0.54	100%	1.725
A3	0.18	100%	0.575
<b>South Site</b>			
B	0.15	100%	0.479
<b>TOTAL</b>	<b>1.70</b>	<b>96.2%</b>	<b>5.421</b>

## 2.2. SURFACE WATER QUALITY

### 2.2.1. REGIONAL

As stated above, the Project Site lies within the Ballona Creek Watershed. Constituents of concern listed for Ballona Creek under California’s Clean Water Act Section 303(d) List include Cadmium (sediment), Chlordane (Tissue & Sediment), Copper (Dissolved), Cyanide, Lead, PCBs, Silver, Toxicity, Trash, Viruses (Enteric), and Zinc. No TMDL data have been recorded by EPA for this waterbody.<sup>2</sup>

### 2.2.2. LOCAL

In general, urban stormwater runoff occurs following precipitation events, with the volume of runoff flowing into the drainage system depending on the intensity and duration of the rain event. Contaminants that may be found in stormwater from developed areas include sediments, trash, bacteria, metals, nutrients, organics and pesticides. The source of contaminants includes surface areas where precipitation falls, as well as the air through which it falls. Contaminants on surfaces such as roads, maintenance areas, parking lots, and buildings, which are usually contained in dry weather conditions, may be carried by rainfall runoff into drainage systems. The City of Los Angeles typically installs catch basins with screens to capture debris before entering the storm drain system. In addition,

<sup>2</sup>[https://iaspub.epa.gov/waters10/attains\\_waterbody.control?p\\_au\\_id=CAR4051300019980918142302&p\\_list\\_id=CAR4051300019980918142302&p\\_cycle=2016](https://iaspub.epa.gov/waters10/attains_waterbody.control?p_au_id=CAR4051300019980918142302&p_list_id=CAR4051300019980918142302&p_cycle=2016); accessed March 25, 2020.



the City conducts routine street cleaning operations, as well as periodic cleaning and maintenance of catch basins, to reduce stormwater pollution within the City.

### **2.2.3. PROJECT SITE**

Based on the project survey by KPFF dated January 2020 (see Figure 1) and site observations, and the fact that the existing Project Site was developed prior to the enforcement of storm water quality Best Management Practices (BMP) design, implementation and maintenance, it appears the Project Site currently does not implement BMPs and has no means of treatment for stormwater runoff.

## **2.3. GROUNDWATER HYDROLOGY**

### **2.3.1. REGIONAL**

Groundwater use for domestic water supply is a major beneficial use of groundwater basins in Los Angeles County. The City of Los Angeles overlies the Los Angeles Coastal Plain Groundwater Basin (Basin). The Basin comprises the Hollywood, Santa Monica, Central, and West Coast Subbasins. Groundwater flow in the Basin is generally south-southwesterly and may be restricted by natural geological features. Replenishment of groundwater basins occurs mainly by percolation of precipitation throughout the region via permeable surfaces, spreading grounds, and groundwater migration from adjacent basins, as well as injection wells designed to pump freshwater along specific seawater barriers to prevent the intrusion of salt water.

### **2.3.2. LOCAL**

Within the Basin, the Project Site specifically overlies the Hollywood Subbasin (Subbasin), which underlies the northeastern portion of the Basin. The Subbasin is bounded on the north by the Santa Monica Mountains and the Hollywood fault, on the east by the Elysian Hills, on the west by the Inglewood fault zone, and on the south by the La Brea high, formed by an anticline that brings impermeable rocks close to the surface.<sup>3</sup>

Groundwater in the Subbasin is replenished by percolation of precipitation and stream flow from the Santa Monica Mountains to the north. Urbanization in this area has decreased the amount of pervious surface area allowing direct percolation. Therefore, natural recharge is somewhat limited. The natural safe yield of the Subbasin is estimated to be approximately 3,000 acre-feet per year (AFY).

The primary producer from the Subbasin is the City of Beverly Hills, which currently owns and operates 4 groundwater production wells in the Subbasin. These wells have a combined

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<sup>3</sup> [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-B118-Basin-Descriptions/B118-Basin-Boundary-Description-2003---4\\_011\\_02.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-B118-Basin-Descriptions/B118-Basin-Boundary-Description-2003---4_011_02.pdf); accessed March 25, 2020.

capacity of 2,083 gallons per minute (gpm) and are treated by a reverse osmosis desalter.<sup>4</sup> Groundwater flow within the Subbasin generally flows east to west.

The Project Site is located in the eastern portion of the Subbasin.

### **2.3.3. PROJECT SITE**

The existing Project Site is improved with existing buildings and paved surfaces, and therefore does not contribute to groundwater recharge.

The below discussion is based upon a review of relevant previous investigations and on-site explorations conducted as part of the “Geotechnical Feasibility, Proposed Sunset + Wilcox Project, 6450 Sunset Blvd., 1429 & 1423 Wilcox Ave., and 1413 Cole Pl., Los Angeles, California” by Group Delta Consultants, Inc. dated May 2020.

Soil borings were drilled to a maximum depth of 61.5 feet below the ground surface during Group Delta Consultant, Inc.’s field investigation and groundwater was encountered at varying depths between 52.2 feet and 60.5 feet below ground surface. Historically, highest groundwater in this area of Los Angeles is approximately 40 to 50 feet below the ground surface.<sup>5</sup>

## **2.4. GROUNDWATER QUALITY**

### **2.4.1. REGIONAL**

As stated above, the City of Los Angeles overlies the Basin, which falls under the jurisdiction of the Los Angeles Regional Water Quality Control Board (LARWQCB). According to LARWQCB’s Basin Plan, objectives applying to all ground waters of the region include bacteria, chemical constituents and radioactivity, mineral quality, nitrogen (nitrate, nitrite), and taste and odor.<sup>6</sup>

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<sup>4</sup> [https://www.beverlyhills.org/cbhfiles/storage/files/filebank/9152--Urban%20Water%20Management%20Plan%202010\\_8-30-11.pdf](https://www.beverlyhills.org/cbhfiles/storage/files/filebank/9152--Urban%20Water%20Management%20Plan%202010_8-30-11.pdf); accessed March 25, 2020.

<sup>5</sup> Geotechnical report titled “Geotechnical Feasibility, Proposed Sunset + Wilcox Project, 6450 Sunset Blvd., 1429 & 1423 Wilcox Ave., and 1413 Cole Pl., Los Angeles, California” by Group Delta Consultants, Inc. dated May 2020.

<sup>6</sup> Los Angeles Regional Water Quality Control Board, Basin Plan, March 2013, [http://www.waterboards.ca.gov/losangeles/water\\_issues/programs/basin\\_plan/electronics\\_documents/Final%20Chapter%203%20Text.pdf](http://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/electronics_documents/Final%20Chapter%203%20Text.pdf) accessed March 25, 2020.

### **2.4.2. LOCAL**

As stated above, the Project Site specifically overlies the Hollywood Subbasin. Based upon LARWQCB's Basin Plan, constituents of concern listed for the Hollywood Subbasin include boron, chloride, sulfate, Total Dissolved Solids (TDS), and nitrate.<sup>7</sup>

### **2.4.3. PROJECT SITE**

Though it is possible for surface water borne contaminants to percolate into groundwater and affect groundwater quality, as the Project Site is 96.2% impervious in the existing condition, no appreciable infiltration of potential contaminants described above is expected to occur. Additionally, compliance with all existing hazardous waste regulations further reduce this potential.

Other types of risk such as underground storage tanks (UST) have a greater potential to impact groundwater. The below discussion is based on a review of relevant previous investigations and on-site explorations conducted as part of the Draft Phase I Environmental Site Assessment (ESA) of 6450 Sunset Boulevard, Los Angeles, California dated January 2019 by BA Environmental and the Draft Phase I ESA of 1424 and 1428 Wilcox Avenue, Los Angeles, California dated January 2020 by BA Environmental.

6450 Sunset Boulevard is currently occupied by a single-story commercial retail building and surface asphalt parking reportedly constructed in 1993. No evidence of on-site USTs or aboveground storage tanks (ASTs) was observed during BA Environmental's site reconnaissance. Historically, the subject property was occupied by a gasoline service station and automotive repair from around 1938 until around 1991. Reportedly, five USTs, a wastewater clarifier and automotive lifts have been removed and assessed for releases. Impacted soils were excavated in the area of the former fuel dispensers. The USTs received closure in 1991. There were no identified releases related to the clarifier and lifts at the time of removal. Based on review of the closure reports for the USTs and the assessment reports for the auto garage area, BA Environmental considers this to be a Historical Recognized Environmental Condition (HREC) and not a concern at this time.

1424 and 1428 Wilcox Avenue is currently occupied by a single-story commercial office building and surface parking reportedly constructed in 1945. No evidence of on-site USTs or ASTs was observed during BA Environmental's site reconnaissance. Historically, the subject property was occupied by single family residences; retail; an office, warehouse, and optical glass grinding building; musical instrument stage and rehearsal studio; and parking lots since prior to 1907 until around 2008. The historical address of 1433 Cole Place was listed on the LAFD, historical UST databased. Records obtained reported that the tank was not a UST; rather, an AST interpreted to contain liquefied petroleum gas (LPG) to fuel delivery trucks. No information was available regarding the removal. Based on this information, there is a low potential for environmental impact to the subject property from this reported AST.

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<sup>7</sup> Ibid.

Furthermore, based on the age of the subject building at 1424 and 1428 Wilcox Avenue, asbestos-containing materials (ACMs) and lead-based paint may exist within the subject building. BA Environmental recommends the following:

- Any suspect ACMs should be sampled prior to any renovations or demolition. Any identified AVMs schedule for renovation or demolition should be abated by a licensed asbestos abatement contractor, in accordance with all local, state and federal regulations; and
- Any suspect lead-based paint should be sampled prior to any renovations or demolition. Any identified lead-based paint scheduled for renovation or demolition, or noted to be damaged, should be abated by a licensed lead-based paint abatement contractor, and disposed of according to all states and local regulations.

### **3. PROPOSED IMPACT ANALYSIS**

#### **3.1. CONSTRUCTION**

##### **3.1.1. SURFACE WATER HYDROLOGY**

Construction activities for the Project would include demolition of the three existing buildings and hardscape, excavating down to a maximum depth of 52 feet below grade on the North Site and 23 feet below grade on the South Site to build up the underground structure, building up the structures, and constructing hardscape and landscape around the structures. It is anticipated that up to approximately 93,000 cubic yards of soil would be graded, most of which would be exported to construct the Project. These activities have the potential to temporarily alter existing drainage patterns and flows on the Project Site by exposing the underlying soils, modifying flow direction, and making the Project Site temporarily more permeable. Also, exposed and stockpiled soils could be subject to erosion and conveyance into nearby storm drains during storm events. In addition, construction activities such as earth moving, maintenance/operation of construction equipment, and handling/storage/disposal of materials could contribute to pollutant loading in stormwater runoff.

As the construction site would be greater than one acre, the Project would be required to obtain coverage under the National Pollutant Discharge Elimination System (NPDES) General Construction stormwater permit. In accordance with the requirements of this permit, the Project would implement a Stormwater Pollution Prevention Plan (SWPPP) that specifies BMPs and erosion control measures to be used during construction to manage runoff flows and prevent pollution. BMPs would be designed to reduce runoff and pollutant levels in runoff during construction. The NPDES and SWPPP measures are designed to (and would) contain and treat, as necessary, stormwater or construction watering for dust reduction on the Project Site so runoff does not impact off-site drainage facilities or receiving waters. Construction activities would be temporary, and flow directions and runoff volumes during construction would be controlled.

In addition, the Project would be required to comply with all applicable City grading permit regulations that require necessary measures, plans, and inspections to reduce sedimentation and erosion. Thus, through compliance with all NPDES General Construction Permit requirements, including preparation of a SWPPP, implementation of BMPs, and compliance with applicable City grading regulations, the Project would not substantially alter the Project Site drainage patterns in a manner that would result in substantial erosion, siltation, or flooding on- or off-site. Similarly, adherence to standard compliance measurements in construction activities would avoid flooding, substantially increasing or decreasing the amount of surface water flow from the Project Site into a water body, or a permanent, adverse change to the movement of surface water.

### **3.1.2. SURFACE WATER QUALITY**

Construction activities such as earth moving, maintenance/operation of construction equipment, potential dewatering, and handling/storage/disposal of materials could contribute to pollutant loading in stormwater runoff. However, as previously discussed, the Project would be required to obtain coverage under the NPDES General Construction Permit (order No. 2009-0009-SWQ). In accordance with the requirements of the permit, the Project Applicant would prepare and implement a site-specific SWPPP adhering to the California Stormwater Quality Association (CASQA) BMP Handbook. The SWPPP would specify BMPs to be used during construction. BMPs would include, but would not necessarily be limited to: erosion control, sediment control, non-stormwater management, and materials management BMPs. Refer to Exhibit 1 for typical SWPPP BMPs implemented during the construction of development projects.

Based on the Geotechnical report by Group Delta Consultants, Inc. dated May 2020, there were a total of four borings drilled on the site to a depth of 61.5 feet below grade. Groundwater was encountered at depths between 52.2 feet and 60.5 feet below grade. Based on the water table profile of the site, the highest groundwater level in the North Site is 59.5 feet below grade at boring 4 and the highest groundwater level in the South Site is 52.2 feet below grade at boring 1.<sup>8</sup> The planned maximum excavation depth is up to 52 feet below grade on the North Site and 23 feet below grade on the South Site from the highest existing elevation on the Project Site. Since the existing surface drops by approximately 14 feet across the Project Site, the excavation depth will vary. Since the proposed lowest underground excavation level is higher than the measured groundwater in the North Site and South Site, dewatering is not expected to be required during construction. Dewatering operations are practices that discharge non-stormwater, such as groundwater, that must be removed from a work location and discharged into the storm drain system to proceed with construction. Discharges from dewatering operations can contain high levels of fine sediments, which, if not properly treated, could lead to exceedance of the NPDES requirements. When groundwater is encountered during construction, temporary pumps and filtration would be utilized in compliance with the NPDES permit. The temporary system would comply with all relevant NPDES requirements related to construction and discharges from dewatering operations. Although not anticipated for the Project, if

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<sup>8</sup> Geotechnical report titled "Geotechnical Feasibility, Proposed Sunset + Wilcox Project, 6450 Sunset Blvd., 1429 & 1423 Wilcox Ave., and 1413 Cole Pl., Los Angeles, California" by Group Delta Consultants, Inc. dated May 2020

dewatering is required, the treatment and disposal of the dewatered water would occur in accordance with the requirements of LARWQCB's Waste Discharge Requirements for Discharges of Groundwater from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties.

With the implementation of site-specific BMPs included as part of the required Erosion Plan, the Project would reduce or eliminate the discharge of potential pollutants from the stormwater runoff. In addition, the Project Applicant would be required to comply with City grading permit regulations, which require implementation of necessary measures, plans (including a wet weather erosion control plan if construction occurs during the rainy season), and inspection to reduce sedimentation and erosion. Therefore, with compliance with NPDES requirements and City grading regulations, construction of the Project would not result in discharge that would cause: (1) pollution which would alter the quality of the water of the State (i.e. Ballona Creek) to a degree which unreasonably affects beneficial uses of the waters; (2) contamination of the quality of the water of the State by waste to a degree which creates a hazard to the public health through poisoning or through the spread of diseases; or (3) create a nuisance that would be injurious to health; affect an entire community or neighborhood, or any considerable number of persons; and occurs during or as a result of the treatment or disposal of wastes. Furthermore, construction of the Project would not result in discharges that would cause regulatory standards to be violated in Ballona Creek.

### **3.1.3. GROUNDWATER HYDROLOGY**

As stated above, construction activities for the Project would include demolition of the three existing buildings and hardscape, excavating down to a maximum depth of 52 feet below grade on the North Site and 23 feet below grade on the South Site to build up the underground structure, building up the structures, and constructing hardscape and landscape around the structures. Dewatering operations are not anticipated to be temporarily required in order to construct the footings and the underground structure. However, if groundwater is encountered during construction, temporary pumps and filtration would be utilized in compliance with all applicable regulations and requirements, including with all relevant NPDES requirements related to construction and discharges from dewatering operations. Therefore, the Project would not substantially deplete groundwater supplies in a manner that would result in a net deficit in aquifer volume or lowering of the local groundwater table.

### **3.1.4. GROUNDWATER QUALITY**

As discussed above, the Project would include excavations to a maximum depth of approximately 52 feet below grade on the North Site and 23 feet below grade on the South Site. The Project would also result in a net export of existing soil material. Although not anticipated at the Project Site, any contaminated soils found would be captured within that volume of excavated material, removed from the Project Site, and remediated at an approved disposal facility in accordance with regulatory requirements.

During on-site grading and building construction, hazardous materials, such as fuels, paints, solvents, and concrete additives, could be used and would therefore require proper management and, in some cases, disposal. The management of any resultant hazardous wastes could increase the opportunity for hazardous materials releases into groundwater. Compliance with all applicable federal, state, and local requirements concerning 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. Therefore, the Project would not result in any substantial increase in groundwater contamination through hazardous materials releases and impacts on groundwater quality would be less than significant.

## **3.2. OPERATION**

### **3.2.1. SURFACE WATER HYDROLOGY**

The Project will meet the requirements of the City's Low Impact Development (LID) standards.<sup>9</sup> Under section 3.1.3. of the LID Manual, post-construction stormwater runoff from a new development must be infiltrated, evapotranspired, captured and used, and/or treated through high efficiency BMPs onsite for at least the volume of water produced by the greater of the 85<sup>th</sup> percentile storm or the 0.75 inch storm event. The LID Manual prioritized the selection of BMPs used to comply with stormwater mitigation requirement. The order of priority is:

1. Infiltration Systems
2. Stormwater Capture and Use
3. High Efficient Biofiltration/Bioretenention Systems
4. Combination of Any of the Above

Feasibility screening delineated in the LID manual is applied to determine which BMP will best suit the Project. Based on Group Delta Consultants, Inc.'s geotechnical report, the underlying native soils generally consist of medium dense silty sand to a depth of about 15 feet below grade and very stiff clayey materials to a depth of 61.5 feet below grade<sup>10</sup>. Given the planned excavation depth of the North Site, deep infiltration is not considered feasible. Therefore, the North Site will land in LID BMP priority tier 2 – capture and use. The North Site would implement a capture and use system to collect and

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<sup>9</sup> The Development Best Management Practices Handbook, Part B Planning Activities, 5<sup>th</sup> edition was adopted by the City of Los Angeles, Board of Public Works on May 9, 2016 to reflect Low Impact Development (LID) requirements.

<sup>10</sup> Geotechnical report titled "Geotechnical Feasibility, Proposed Sunset + Wilcox Project, 6450 Sunset Blvd., 1429 & 1423 Wilcox Ave., and 1413 Cole Pl., Los Angeles, California" by Group Delta Consultants, Inc. dated May 2020

store the first flush of stormwater runoff to satisfy LID requirements and use it for irrigation. Based on the proposed on-structure landscape area and irrigation demands, a capture and reuse system is planned for as it appears feasible for the Project Site.

Given the on-grade site area of the South Site, percolation testing has been conducted to determine whether shallow infiltration into the upper medium dense silty sand layer is feasible. However, infiltration is not considered feasible as the tests results do not yield the minimum percolation rates required for City of Los Angeles tier 1 LID requirements<sup>11</sup><sup>12</sup>. Therefore, the South Site will land in LID BMP priority tier 2 – capture and use. The South Site would implement a capture and use system to collect and store the first flush of stormwater runoff to satisfy LID requirements and use it for irrigation. Based on the proposed landscape area and irrigation demands, a capture and reuse system is planned for as it appears feasible for the Project Site.

The Project will increase the percentage of pervious area compared to existing conditions on the Project Site. The Project Site currently consists of three existing buildings and paved parking lots with little pervious surface. The Project will develop an office building with on-structure landscaping on the North Site and a utility yard and landscaped parking lot on the South Site. Based on site investigation, it appears that stormwater discharges from the Project Site without treatment or on-site detention under the existing condition. The Project would improve this condition by complying with the LID standards for capturing and mitigating the first flush of stormwater rather than it being disposed directly to the public storm drain system.

Under the proposed conditions illustrated in Figure 4, the Project Site would consist of two drainage areas that would drain via building roof drains, surface flow, and subterranean drainage to the proposed BMPs.

- **North Site**

- The North Site would consist of a 14-story office building with three levels of subterranean parking. The building would span property line to property line and is therefore considered one drainage area. The general drainage on the podiums would consist of sheet flow to various catch basins and area drains to be designed and located by the Architect, Landscape and Plumbing Engineer during the design phase. The captured stormwater would be routed via building conveyance pipes designed by the Plumbing Engineer, and the water would be connected to the LID system.

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<sup>11</sup> The Development Best Management Practices Handbook, Part B Planning Activities, 5<sup>th</sup> edition was adopted by the City of Los Angeles, Board of Public Works on May 9, 2016 to reflect Low Impact Development (LID) requirements.

<sup>12</sup> Geotechnical report titled “Geotechnical Feasibility, Proposed Sunset + Wilcox Project, 6450 Sunset Blvd., 1429 & 1423 Wilcox Ave., and 1413 Cole Pl., Los Angeles, California” by Group Delta Consultants, Inc. dated May 2020.



- **South Site**

- The South Site would mainly be comprised of a LADWP transformer and switchgear to serve the proposed office building on the North Site and a surface parking lot. The general drainage of the area will be directed towards onsite drains. The captured stormwater would be routed via subgrade conveyance pipes designed by the Civil Engineer, and the water would be connected to the LID system.

Proposed runoff was analyzed for a 50-year storm event. Refer to Figure 6 for the parameters used for analyzing the proposed site drainage using HydroCalc and Figure 8 for the LA County Hydrology Data Map. Table 2 shows the proposed volumetric flow rates generated by a 50-year storm event.

Table 2 - Proposed Drainage Stormwater Runoff Calculations			
Drainage Area	Area (acres)	Percent Imperviousness (%)	Q <sub>50</sub> (cfs) (volumetric flow rate measured in cubic feet per second)
North Site	1.55	100%*	4.952
South Site	0.15	84.7%	0.476
<b>TOTAL</b>	<b>1.70</b>	<b>98.6%</b>	<b>5.428</b>

\*This conservative calculation excludes on-structure landscaping.

Table 3 shows the proposed 50-year frequency design storm event peak flow rate within the Project Site. A comparison of the pre- and post-Project peak flow rates indicates a 0.1% increase in stormwater runoff.

Table 3 – Proposed Drainage Stormwater Runoff Calculations Summary		
Pre-Project Q <sub>50</sub> (cfs)	Post-Project Q <sub>50</sub> (cfs)	Incremental Increase from Existing to Proposed Condition
5.421	5.428	0.1%

Compliance with the LID requirements for the Project Site would ensure stormwater treatment with post-construction BMPs that are required to control pollutants associated with storm events up to the 85<sup>th</sup> percentile storm event, per the City’s Stormwater Program. It follows that, the Project BMPs would control stormwater runoff and result in a minor

decrease in runoff. Consequently, the Project would decrease the amount of stormwater runoff discharging into the existing storm drainage infrastructure.

In order to meet the LID requirements, it is estimated that a total of 5,442 cubic feet of stormwater will need to be mitigated throughout the Project Site; 5,022 cubic feet on the North Site and 420 cubic feet on the South Site (see Figure 7). To achieve this design capture volume, capture and use systems are planned to be implemented on both the North Site and South Site.

In addition, as described above, as part of the SUSMP for the Project to manage post-construction stormwater runoff, the Project would include the installation of building roof drain downspouts, area drains, and planter drains throughout the Project Site to collect roof and site runoff and direct stormwater away from the building through a series of storm drain pipes. This on-site stormwater conveyance system would serve to prevent on-site flooding and nuisance water on the Project Site.

Earthquake-induced flooding can result from the failure of dams or other water-retaining structures resulting from earthquakes. According to the City of Los Angeles General Plan Safety Element, Exhibit G: Inundation & Tsunami Hazard Areas (Refer to Figure 11), the Project Site is located in a potential dam inundation area. The nearby dams to the site are Mulholland Dam, Big Tujunga Dam, Devil's Gate Dam, Eaton Wash Dam, and Santa Anita Dam which are approximately 1.4 miles, 16 miles, 11 miles, 15 miles, and 19 miles away from the project site respectively. Dam safety regulations are the primary means of reducing damage or injury due to inundation occurring from dam failure. The California Division of Safety of Dams regulates the siting, design, construction, and periodic review of all dams in the State. In addition, LADWP operates the dams in the Project Site area and mitigates the potential for over flow and seiche hazard through control of water levels and dam wall height. These measures include seismic retrofits and other related dam improvements completed under the requirements of the 1972 State Dam Safety Act. The City's Local Hazard Mitigation Plan,<sup>13</sup> which was adopted in July 2011, provides a list of existing programs, proposed activities and specific projects that may assist the City of Los Angeles in reducing risk and preventing loss of life and property damage from natural and human-caused hazards, including dam failure. The Hazard Mitigation Plan evaluation of dam failure vulnerability classifies dam failure as a moderate risk rating. Therefore, considering the above information and risk reduction projects, the risk of flooding from inundation by a seiche or dam failure is considered low.

Additionally, the Project Site is not located within a Special Flood Hazard Area (100-year floodplain) or Moderate Flood Hazard Area (500-year floodplain) identified by the Federal Emergency Management Agency (FEMA) and published in the Flood Insurance Rate Maps (FIRM).<sup>14</sup> The areas of minimal flood hazard, which are the areas outside the SFHA and

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<sup>13</sup> City of Los Angeles Emergency Management Department, *Local Hazard Mitigation Plan*, dated July 2011.

<sup>14</sup> FIRMs depict the 100-year floodplain as Zone A, Zone AO, Zone AH, Zones A1-A30, Zone AE, Zone A99, Zone AR, Zone AR/AE, Zone AR/AO, Zone AR/A1-A30, Zone AR/A, Zone V, Zone VE, and Zones V1-V30. FIRMs depict the 500-year floodplain as Zone B or Zone X (shaded).

higher than the elevation of the 500-year floodplain are labeled Zone C or Zone X (unshaded). As shown on Figure 10, the Project Site is located within Zone X (unshaded) and is therefore located outside of the 100- and 500-year floodplain.<sup>15</sup>

### **3.2.2. SURFACE WATER QUALITY**

The Project would not increase concentrations of the items listed as constituents of concern for the Ballona Creek Watershed.

As discussed above, the Project would implement a capture and use system on the North Site and either a shallow infiltration or capture and use system on the South Site as the BMP for managing stormwater runoff in accordance with current LID requirements. Since it appears there are currently no existing onsite BMPs, stormwater run-off during post-Project conditions would result in improved surface water quality.

Due to the incorporation of the required LID BMP(s), operation of the Project would not result in discharges that would cause: (1) pollution which would alter the quality of the waters of the State (i.e., Ballona Creek) to a degree which unreasonably affects beneficial uses of the waters; (2) contamination 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 diseases; or (3) create a nuisance that would be injurious to health; affect an entire community or neighborhood, or any considerable number of persons; and occurs during or as a result of the treatment or disposal of wastes.

As is typical of most urban existing uses and proposed developments, stormwater runoff from the Project Site has the potential to introduce pollutants into the stormwater system. Anticipated and potential pollutants generated by the Project are sediment, nutrients, pesticides, metals, pathogens, and oil and grease. Release of such pollutants would be minimized by implementation of LID BMPs.

Furthermore, operation of the Project would not result in discharges that would cause regulatory standards to be violated. As stated above, it appears that the existing conditions on the Project Site discharge without any means of treatment. However, the Project would include the installation of LID BMPs, which would mitigate at minimum the first flush or the equivalent of the greater between the 85th percentile storm and first 0.75-inch of rainfall for any storm event. The Project BMPs will control stormwater runoff with a negligible increase in runoff volume resulting from the Project.

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<sup>15</sup> Based on FIRM Number 06037C1605F, effective on 09/26/2008.

### **3.2.3. GROUNDWATER HYDROLOGY**

Regarding groundwater recharge, the entire Project Site is virtually impervious in the existing condition, and there is minimal groundwater recharge potential. The Project will develop hardscape and structures that cover virtually the entire Project Site with impervious surfaces, and therefore the groundwater recharge potential will remain minimal. As stated above, the stormwater which bypasses the BMP systems would discharge to an approved discharge point in the public right-of-way and not result in infiltration of a large amount of rainfall that would affect groundwater hydrology, including the direction of groundwater flow. Therefore, the Project's potential impact on groundwater recharge is less than significant.

As discussed above, Project development would require excavations with planned depths up to approximately 52 feet below grade on the North Site and 23 feet below grade on the South Site. As described in the geotechnical report by Group Delta Consultants, Inc., the groundwater was encountered at varying depths between 52.2 and feet below the ground surface. Furthermore, the historic high groundwater level in the vicinity of the Project Site was on the order of 40 to 50 feet below grade. Although not anticipated, if groundwater is encountered during construction, temporary pumps and filtration would be utilized in compliance with the NPDES permit. The temporary system would comply with all relevant NPDES requirements related to construction and discharges from dewatering operations. Furthermore, there are no existing wells or spreading grounds within one mile of the Project Site and the Project would not include new injection or supply wells.

### **3.2.4. GROUNDWATER QUALITY**

The Project does not include the installation or operation of water wells, or any extraction or recharge system that is in the vicinity of the coast, an area of known groundwater contamination or seawater intrusion, a municipal supply well or spreading ground facility.

Operational activities which could affect groundwater quality include spills of hazardous materials and leaking underground storage tanks. No underground storage tanks are currently operated or will be operated by the Project. In addition, while the Project would introduce more density and land uses to the Project Site which would slightly increase the use of potentially hazardous materials as described above, the Project would comply with all applicable existing regulations regarding the handling and potentially required cleanup of hazardous materials. Therefore, the Project would not affect or expand any potential areas of contamination, increase the level of contamination, or cause regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations, Title 22, Division 4, Chapter 15 and the Safe Drinking Water Act.

Additionally, the Project would include the installation of capture and use systems on both the North Site and South Site as a means of treatment and disposal of the volume of water produced by the greater of the 85<sup>th</sup> percentile storm or the 0.75-inch storm event, which would allow for treatment of the on-site stormwater prior to using it for irrigation.

#### **4. CONCLUSION**

In conclusion, the Project will improve the Project Site's hydrologic function. The Project design will include implementation of a capture and use system that would comply with the LID requirements. Whereas stormwater from the Project Site currently sheet flows without treatment into an underground storm drain network that ultimately discharges to the Santa Monica Bay, implementation of the Project would capture and use stormwater on-site, reducing the amount of water discharged from the Project Site.

## **APPENDICES**



# FIGURE 1

# ALTA/NSPS LAND TITLE SURVEY

## LINETYPES

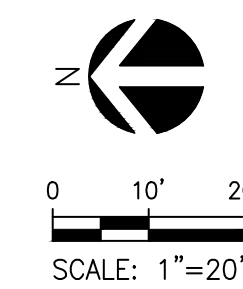
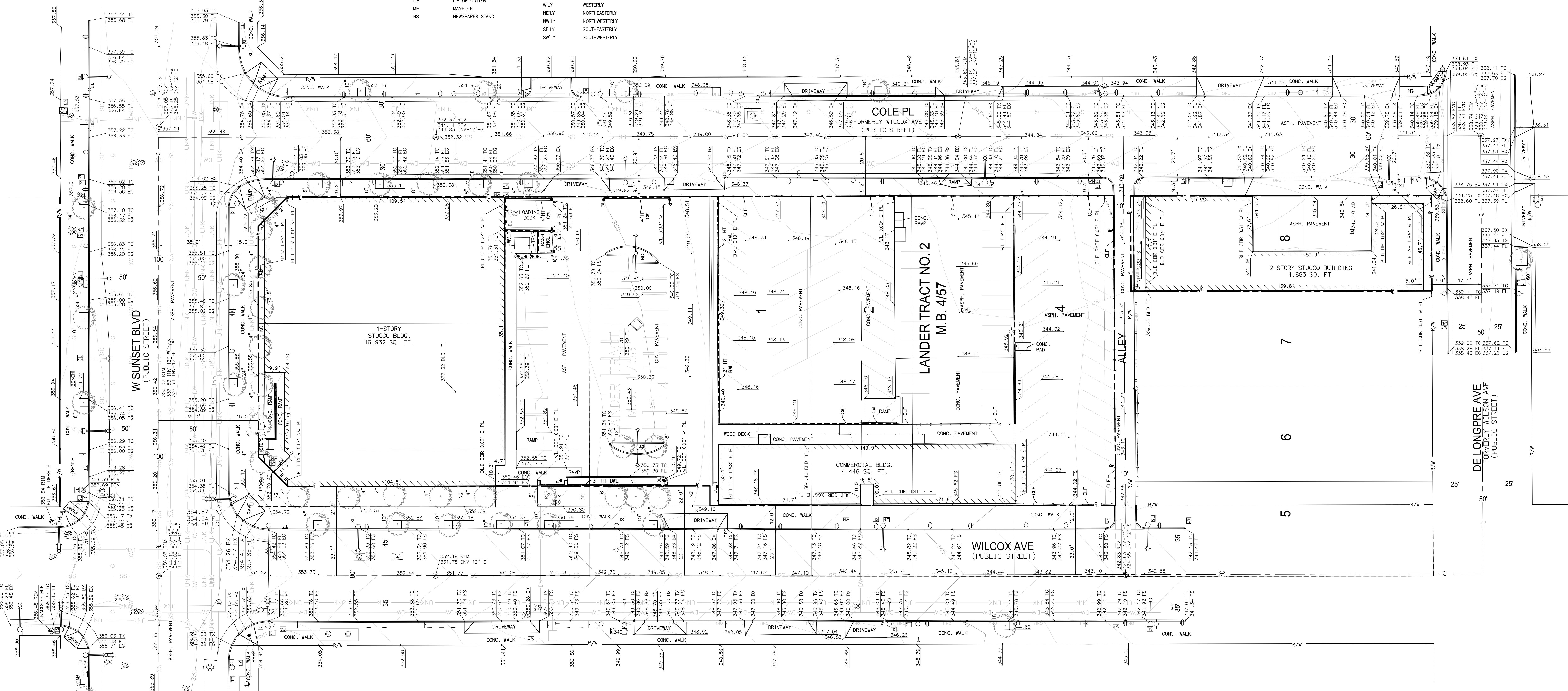
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[Symbol]	BUILDING OVERHANG
[Symbol]	BRICK LINE/HATCH
[Symbol]	CONC LINE/HATCH
[Symbol]	CHAINLINK FENCE
[Symbol]	CURB FACE WITH BACK OF CURB (0.5' O/S)
[Symbol]	FLOWLINE
[Symbol]	GRADEBREAK
[Symbol]	WALL
[Symbol]	WIRE FENCE
[Symbol]	WROUGHT IRON FENCE
[Symbol]	PROPERTY LINE
[Symbol]	LOT LINE
[Symbol]	RIGHT OF WAY LINE
[Symbol]	POTENTIAL RIGHT OF WAY LINE
[Symbol]	CENTERLINE
[Symbol]	EASEMENT LINE
[Symbol]	OVERHEAD UTILITY LINES
[Symbol]	FIBER OPTIC LINE
[Symbol]	ELECTRICAL LINE
[Symbol]	TRAFFIC SIGNAL LINE
[Symbol]	TELECOMMUNICATIONS LINE
[Symbol]	STORM DRAIN LINE
[Symbol]	SANITARY SEWER LINE
[Symbol]	GAS LINE
[Symbol]	CATV LINE

## ABBREVIATIONS

AC	ASPHALT CONCRETE	NTS	NOT TO SCALE
APR	APRON	ℙ	PROPERTY LINE
ARV	AIR VENT	PCL	PARCEL
ASPH	ASPHALT	PFWB	PUBLIC WORKS FIELD BOOK (LA COUNTY)
AD	AREA DRAIN	R/W	RIGHT-OF-WAY
BFP	BACK FLOW PREVENTER	RCF	REINFORCED CONC. PIPE
BL	BOLLARD	RET WALL	RETAINING WALL (CONCRETE)
BW	BACK OF WALK	SCS	SEWER CLEANOUT
℄	CENTERLINE	SD	STORM DRAIN
CATV	CABLE TV	SDMH	STORM DRAIN MANHOLE
CD	CURB DRAIN	SLPB	STREET LIGHT PULLBOX
CB	CATCH BASIN	SS	SANITARY SEWER
CBW	CONCRETE BLOCK WALL	SSMH	SANITARY SEWER MANHOLE
CLF	CHAIN LINK FENCE	SSM	STANDARD SURVEY MONUMENT WELL
CMP	CORRUGATED METAL PIPE	SWK	SIDEWALK
COL	COLUMN	TC	TOP OF CURB
COM	COMMUNICATIONS	TO	TOP OF SLOPE
CONC.	CONCRETE	TOE	TOE OF SLOPE
D/W	DRIVEWAY APRON	TE	TRASH ENCLOSURE
DI	DROP INLET	TR	TRASH RECEPTACLE
EG	EDGE OF GUTTER	TG	TOP OF GRATE
ELEV	ELEVATION	TRW	TREE WELL
ELC	ELECTRICAL	TS	TRAFFIC SIGNAL
ELP	ELECTRICAL PANEL	TSCB	TRAFFIC SIGNAL CABINET
ELV	ELECTRICAL VAULT	TRE	TRAFFIC PULLBOX
ESC	METRO ESCAPE ACCESS PORTAL	TYP	TYPICAL
FDC	FIRE DEPARTMENT CONNECTION	UNK	UNKNOWN
FF	FINISHED FLOOR	VCP	VITRIFIED CLAY PIPE
FL	FLOW LINE	VL	VAULT
FS	FINISHED SURFACE	WIF	WROUGHT IRON FENCE
GB	GRADE BREAK	WL	WALL
GI MH	GREASE INTERCEPTOR MANHOLE	WLT	WATER VAULT
GV	GAS VALVE	WV	WATER VALVE
HCR	HANDICAP RAMP	WDF	WOOD FENCE
INV	INVERT OF PIPE	XMR	TRANSFORMER
JB	JUNCTION BOX	N/LY	NORTHERLY
LAC6	LOS ANGELES COUNTY	S/LY	SOUTHERLY
LA	LANDSCAPE AREA	E/LY	EASTERLY
LIP	LIP OF GUTTER	W/LY	WESTERLY
MH	MANHOLE	NE/LY	NORTHEASTERLY
NS	NEWSPAPER STAND	NW/LY	NORTHWESTERLY
		SE/LY	SOUTHEASTERLY
		SW/LY	SOUTHWESTERLY

## LEGEND

[Symbol]	AERIAL TARGET	[Symbol]	ELECTRIC CABINET	[Symbol]	GAS MANHOLE	[Symbol]	TRAFFIC SIGNAL
[Symbol]	AIR RELEASE VALVE	[Symbol]	ELECTRIC MANHOLE	[Symbol]	GAS VALVE	[Symbol]	TREE
[Symbol]	AREA DRAIN (SQUARE)	[Symbol]	ELECTRIC METER	[Symbol]	GAS METER	[Symbol]	UNIDENTIFIED PULLBOX
[Symbol]	AREA DRAIN (CIRCLE)	[Symbol]	UTILITY POLE	[Symbol]	GUY WIRE	[Symbol]	UNIDENTIFIED CABINET
[Symbol]	BACKFLOW PREVENTER	[Symbol]	ELECTRIC PULLBOX	[Symbol]	GREASE INTERCEPTOR	[Symbol]	UNIDENTIFIED CLEAN OUT
[Symbol]	BOLLARD	[Symbol]	ROOF DRAIN	[Symbol]	IRRIGATION CONTROL BOX	[Symbol]	UNIDENTIFIED MANHOLE
[Symbol]	BENCHMARK	[Symbol]	SEWER CLEAN OUT	[Symbol]	IRRIGATION CONTROL VALVE	[Symbol]	UNIDENTIFIED CONTROL VALVE
[Symbol]	BLOW-OFF VALVE	[Symbol]	SEWER MANHOLE	[Symbol]	AREA LIGHT	[Symbol]	VENT
[Symbol]	CURB DRAIN	[Symbol]	HANDICAP PARKING	[Symbol]	MAILBOX	[Symbol]	WATER MANHOLE
[Symbol]	CONTROL POINT	[Symbol]	SIGN	[Symbol]	MONITORING WELL	[Symbol]	WATER METER
[Symbol]	CABLE TV PULLBOX	[Symbol]	SPRINKLER	[Symbol]	PALM	[Symbol]	WATER VALVE
[Symbol]	COMMUNICATIONS PULLBOX	[Symbol]	STORM DRAIN MANHOLE	[Symbol]	PARKING METER	[Symbol]	RISER
[Symbol]	ELECTRONIC TEST STATION	[Symbol]	STREET LIGHT	[Symbol]	POST INDICATOR VALVE	[Symbol]	DETECTOR CHECK VALVE
[Symbol]	FIRE DEPARTMENT CONNECTION	[Symbol]	STREET LIGHT PULLBOX	[Symbol]		[Symbol]	DRINKING FOUNTAIN
[Symbol]	FIRE HYDRANT	[Symbol]	TELEPHONE BOX				
[Symbol]	FLAG POLE	[Symbol]	TELEPHONE CABINET				
[Symbol]	FIBER OPTIC PULLBOX	[Symbol]	TELEPHONE MANHOLE				
[Symbol]	GROUND LIGHT	[Symbol]	TRAFFIC PULLBOX				
		[Symbol]	TRAFFIC SIGNAL CABINET				



NO.	DATE	REVISIONS
6		
5		
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3		
2		
1	3/24/20	ELEVATION CALLOUTS ON WILCOX AVENUE

PROJECT #	1900898
DATE PREPARED	01/27/2020
DRAWN BY	DB/FCBN
CHECKED BY	CJ

6450 SUNSET BLVD  
 PREPARED FOR:  
**MICHAEL GARGANO**  
 ARGENT VENTURES  
 561 FIFTH AVENUE, 34TH FLOOR  
 NEW YORK, NY 10019

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# ALTA/NSPS LAND TITLE SURVEY

# FIGURE 2

## Existing Utilities

### LINETYPES

[Symbol]	BUILDING LINE/HATCH
[Symbol]	BUILDING OVERHANG
[Symbol]	BRICK LINE/HATCH
[Symbol]	CONC LINE/HATCH
[Symbol]	CHAINLINK FENCE
[Symbol]	CURB FACE WITH BACK OF CURB (0.5' 0/5)
[Symbol]	FLOWLINE
[Symbol]	GRADEBREAK
[Symbol]	WALL
[Symbol]	WIRE FENCE
[Symbol]	WROUGHT IRON FENCE
[Symbol]	PROPERTY LINE
[Symbol]	LOT LINE
[Symbol]	RIGHT OF WAY LINE
[Symbol]	POTENTIAL RIGHT OF WAY LINE
[Symbol]	CENTERLINE
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[Symbol]	STORM DRAIN LINE
[Symbol]	SANITARY SEWER LINE
[Symbol]	WATER LINE
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[Symbol]	CATV LINE

### ABBREVIATIONS

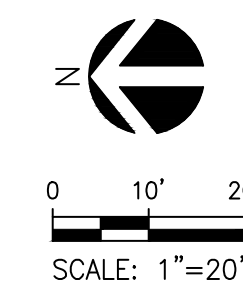
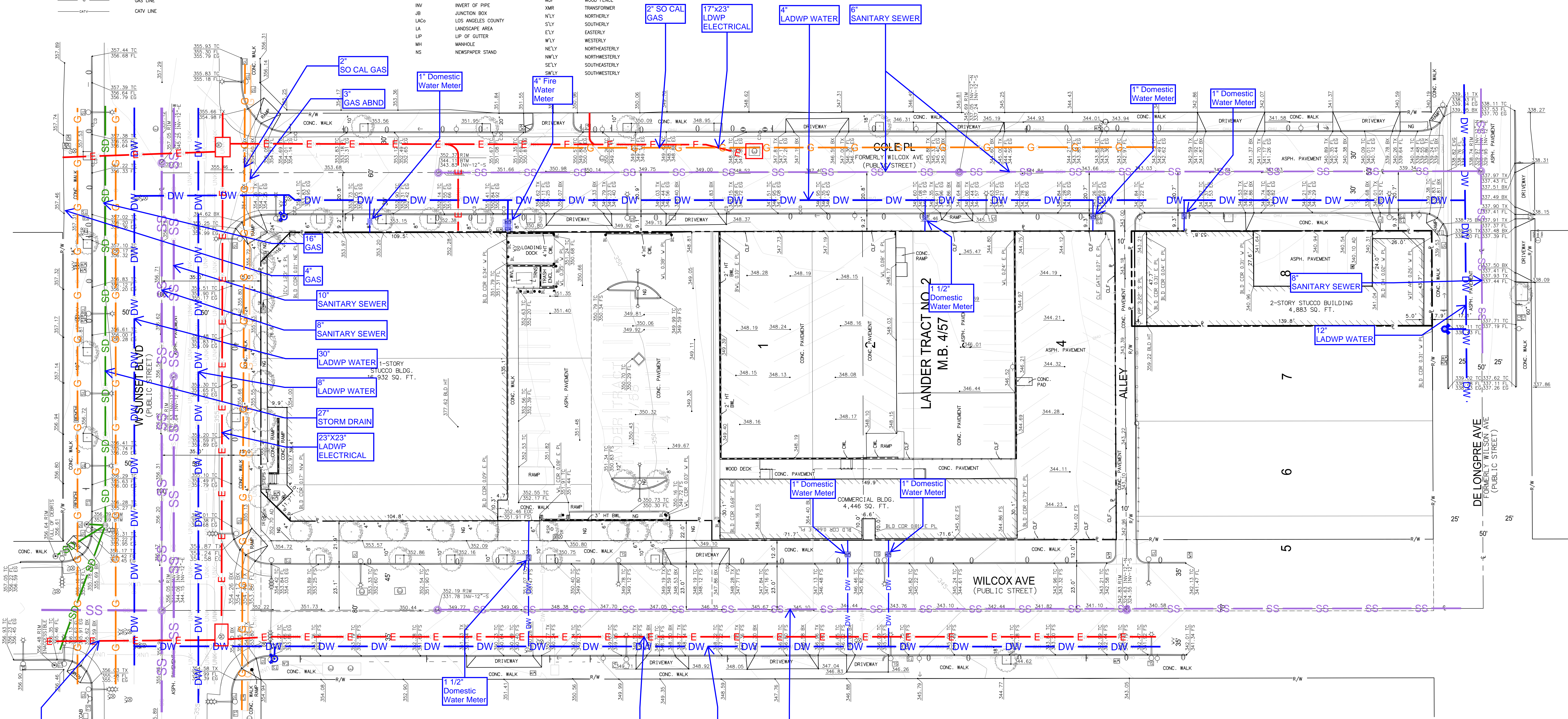
AC	ASPHALT CONCRETE	NTS	NOT TO SCALE
APR	APRON	PL	PROPERTY LINE
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CBW	CONCRETE BLOCK WALL	SS	SANITARY SEWER
CLF	CHAIN LINK FENCE	SSMH	SANITARY SEWER MANHOLE
CMP	CORRUGATED METAL PIPE	SSM	STANDARD SURVEY MONUMENT WELL
COL	COLUMN	SWK	SIDEWALK
COM	COMMUNICATIONS	TC	TOP OF CURB
CONC	CONCRETE	TOE	TOP OF SLOPE
D/W	DRIVEWAY APRON	TOE	TOP OF SLOPE
DI	DROP INLET	TR	TRASH ENCLOSURE
EG	EDGE OF GUTTER	TR	TRASH RECEPTACLE
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ELEC	ELECTRICAL	TRW	TREE WELL
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ESC	METRO ESCAPE ACCESS PORTAL	TRE	TRAFFIC PULLBOX
FDC	FIRE DEPARTMENT CONNECTION	TYR	TYPICAL
FF	FINISHED FLOOR	UNK	UNKNOWN
FL	FLOW LINE	VCP	VITRIFIED CLAY PIPE
FS	FINISHED SURFACE	VL	VAULT
GB	GRADE BREAK	WIF	WROUGHT IRON FENCE
GI MH	GREASE INTERCEPTOR MANHOLE	WL	WALL
OV	GAS VALVE	WLT	WATER VAULT
HCR	HANDICAP RAMP	WV	WATER VALVE
INV	INVERT OF PIPE	WDF	WOOD FENCE
JB	JUNCTION BOX	XMR	TRANSFORMER
LAC6	LOS ANGELES COUNTY LANDSCAPE AREA	NLY	NORTHERLY
LA	LIP OF GUTTER	S'LY	SOUTHERLY
LI	LIP OF GUTTER	E'LY	EASTERLY
MH	MANHOLE	W'LY	WESTERLY
NS	NEWSPAPER STAND	NE'LY	NORTHEASTERLY
		NW'LY	NORTHWESTERLY
		SE'LY	SOUTHEASTERLY
		SW'LY	SOUTHWESTERLY

### LEGEND

[Symbol]	AERIAL TARGET	[Symbol]	ELECTRIC CABINET	[Symbol]	GAS MANHOLE
[Symbol]	AIR RELEASE VALVE	[Symbol]	ELECTRIC MANHOLE	[Symbol]	GAS VALVE
[Symbol]	AREA DRAIN (SQUARE)	[Symbol]	ELECTRIC METER	[Symbol]	GAS METER
[Symbol]	AREA DRAIN (CIRCLE)	[Symbol]	UTILITY POLE	[Symbol]	GUY WIRE
[Symbol]	BACKFLOW PREVENTER	[Symbol]	ELECTRIC PULLBOX	[Symbol]	GREASE INTERCEPTOR
[Symbol]	BOLLARD	[Symbol]	ROOF DRAIN	[Symbol]	HOSE BIB
[Symbol]	BENCHMARK	[Symbol]	SEWER CLEAN OUT	[Symbol]	IRRIGATION CONTROL BOX
[Symbol]	BLOW-OFF VALVE	[Symbol]	SEWER MANHOLE	[Symbol]	IRRIGATION CONTROL VALVE
[Symbol]	CURB DRAIN	[Symbol]	SIGN	[Symbol]	AREA LIGHT
[Symbol]	CONTROL POINT	[Symbol]	SPRINKLER	[Symbol]	MAILBOX
[Symbol]	CABLE TV PULLBOX	[Symbol]	STORM DRAIN MANHOLE	[Symbol]	MONITORING WELL
[Symbol]	COMMUNICATIONS PULLBOX	[Symbol]	STREET LIGHT	[Symbol]	PALM
[Symbol]	ELECTRONIC TEST STATION	[Symbol]	STREET LIGHT PULLBOX	[Symbol]	PARKING METER
[Symbol]	FIRE DEPARTMENT CONNECTION	[Symbol]	TELEPHONE BOX	[Symbol]	POST INDICATOR VALVE
[Symbol]	FIRE HYDRANT	[Symbol]	TELEPHONE CABINET	[Symbol]	TRAFFIC SIGNAL
[Symbol]	FLAG POLE	[Symbol]	TRAFFIC MANHOLE	[Symbol]	TREE
[Symbol]	FIBER OPTIC PULLBOX	[Symbol]	TRAFFIC PULLBOX	[Symbol]	UNIDENTIFIED PULLBOX
[Symbol]	GROUND LIGHT	[Symbol]	TRAFFIC SIGNAL CABINET	[Symbol]	UNIDENTIFIED CABINET

### LEGEND

[Line Type]	SS	EX SEWER
[Line Type]	SD	EX STORM DRAIN
[Line Type]	DW	EX DOMESTIC WATER
[Line Type]	E	EX ELECTRICAL
[Line Type]	G	EX GAS



NO.	DATE	REVISIONS
6		
5		
4		
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1		

PROJECT #	190088
DATE PREPARED	01/27/2020
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CHECKED BY	CJ

6450 SUNSET BLVD  
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 F: 213.264.5004  
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# LEGEND

→ EXISTING FLOW PATTERN

**FLOW LENGTH:**  
THE LENGTH FROM FURTHEST POINT TO THE LOWEST POINT IN THE DRAINAGE AREA.

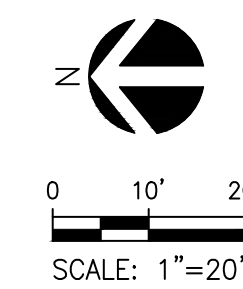
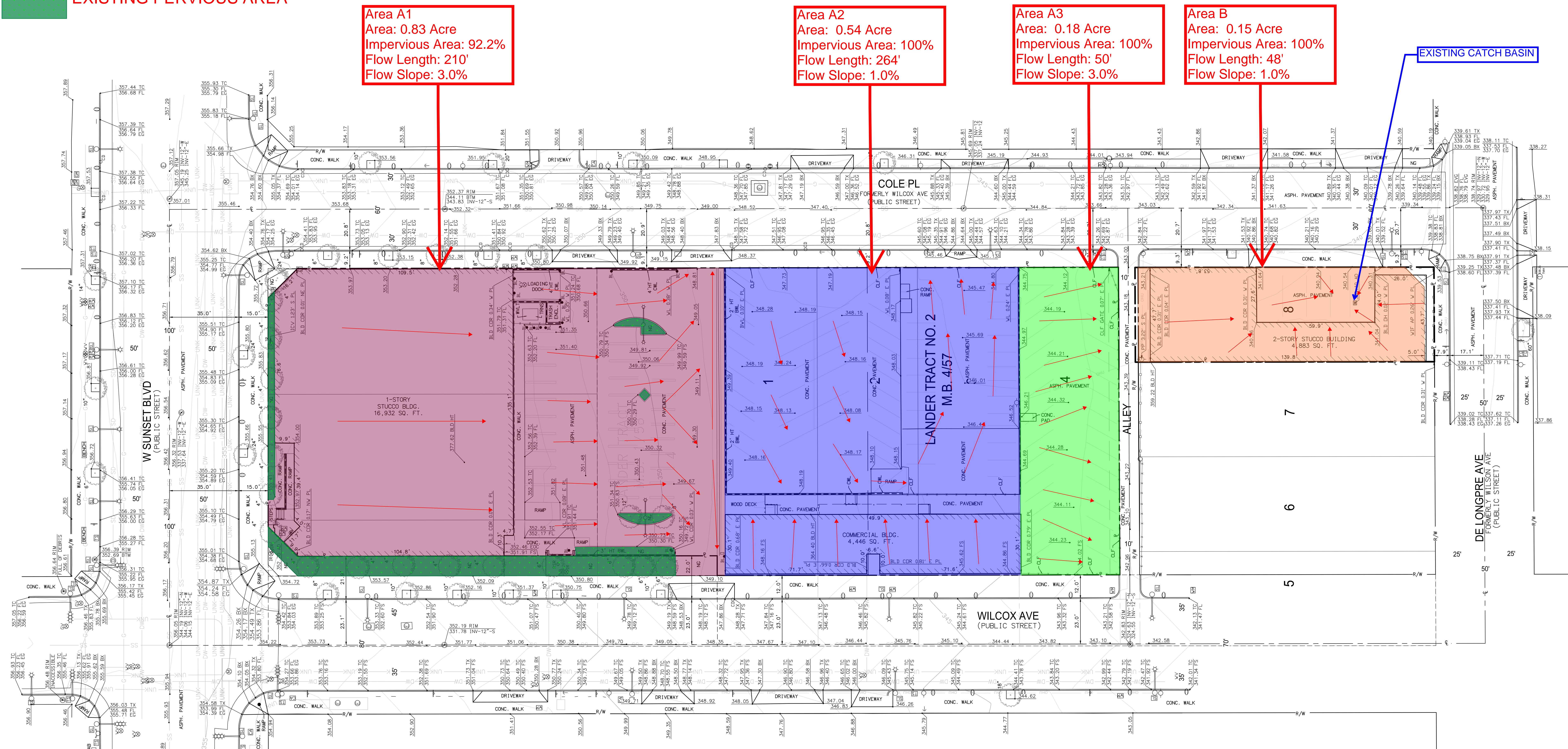
**FLOW SLOPE:**  
THE STEEPNESS (%) FROM THE HIGHEST POINT TO THE LOWEST POINT OF THE DRAINAGE AREA.

EXISTING PERVIOUS AREA

# ALTA/NSPS LAND TITLE SURVEY

# FIGURE 3

# Existing Site Drainage



NO.	DATE	REVISIONS
6		
5		
4		
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2		
1	3/24/20	ELEVATION CALLOUTS ON WILCOX AVENUE

PROJECT #	190098
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Proposed Site Drainage

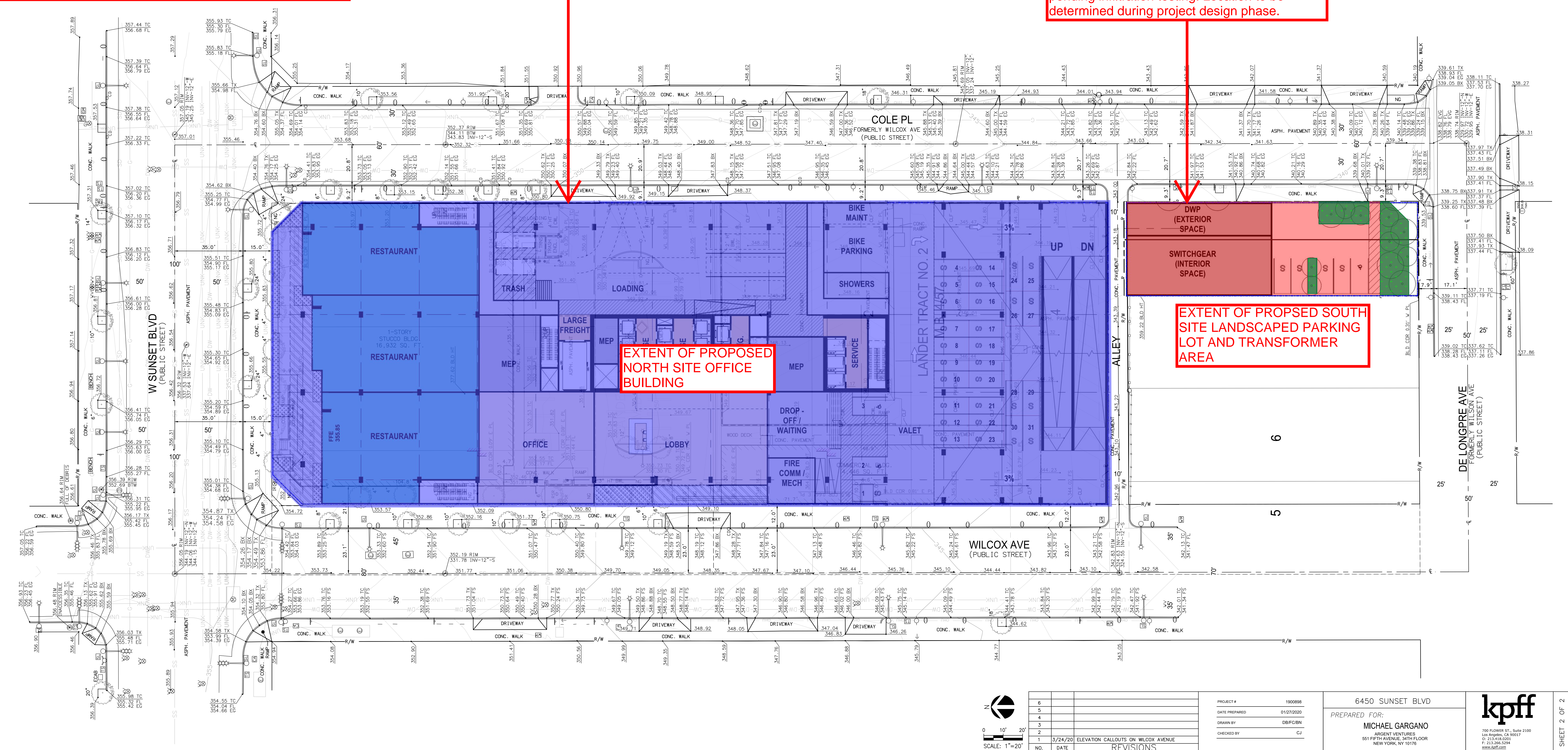
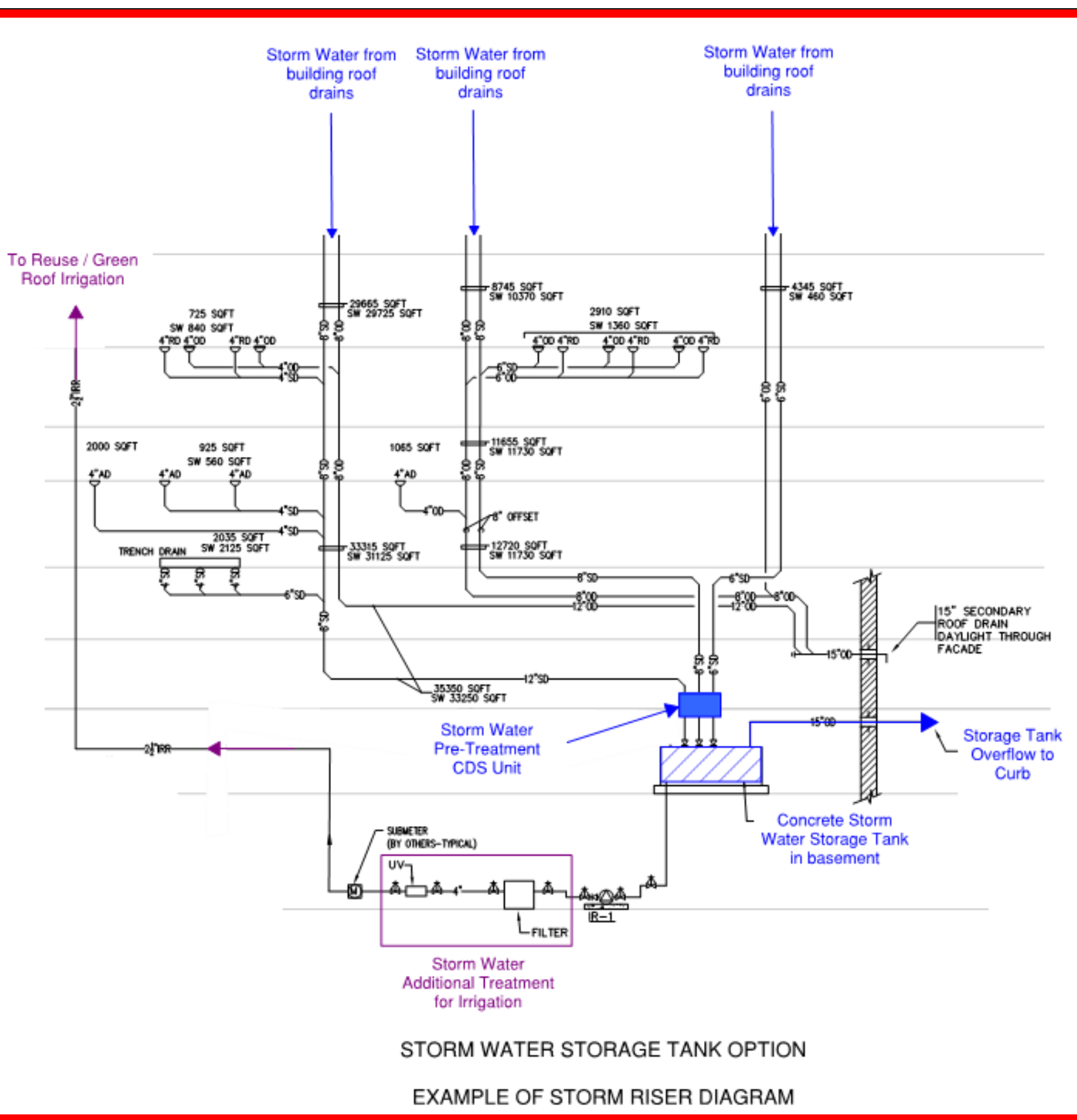
LEGEND

PROPOSED PERVIOUS AREA

TYPICAL CAPTURE AND USE LID SYSTEM.

North Lot Area  
Area: 1.55 Acre (INCLUDING MERGER ALONG WILCOX BLVD.)  
Impervious Area: 100%  
LID Volume: 5022.0 cubic feet.  
Capture and Use tank location to be determined during design phase

South Lot Area  
Area: 0.15 Acre (AREA INCORPORATES DEDICATED PORTION ALONG DELONGPRE AVE.)  
Impervious Area: 84.7%  
LID Volume: 420.2 cubic feet.  
Feasibility of infiltration BMP to be determined pending infiltration testing. Location to be determined during project design phase.



# FIGURE 5 Existing Flow Analysis

## Peak Flow Hydrologic Analysis

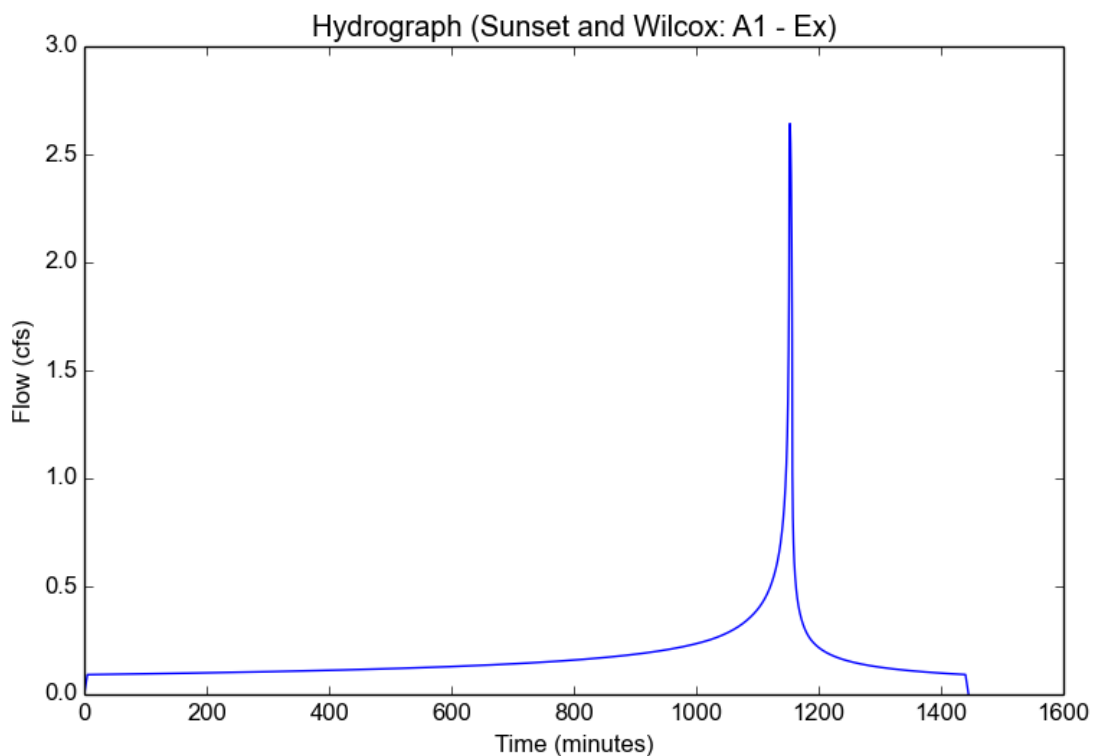
File location: //kpfllacivil.com/share/Projects/2020/2000101 6450 Sunset Boulevard/2 ENGR/STORM/2020-03-27 EIR Existing Hydrocalc Report.pdf  
Version: HydroCalc 1.0.2

### Input Parameters

Project Name	Sunset and Wilcox
Subarea ID	A1 - Ex
Area (ac)	0.83
Flow Path Length (ft)	210.0
Flow Path Slope (vft/hft)	0.03
50-yr Rainfall Depth (in)	5.95
Percent Impervious	0.921686747
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)	0.8968
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.6424
Burned Peak Flow Rate (cfs)	2.6424
24-Hr Clear Runoff Volume (ac-ft)	0.3454
24-Hr Clear Runoff Volume (cu-ft)	15047.7438



# Peak Flow Hydrologic Analysis

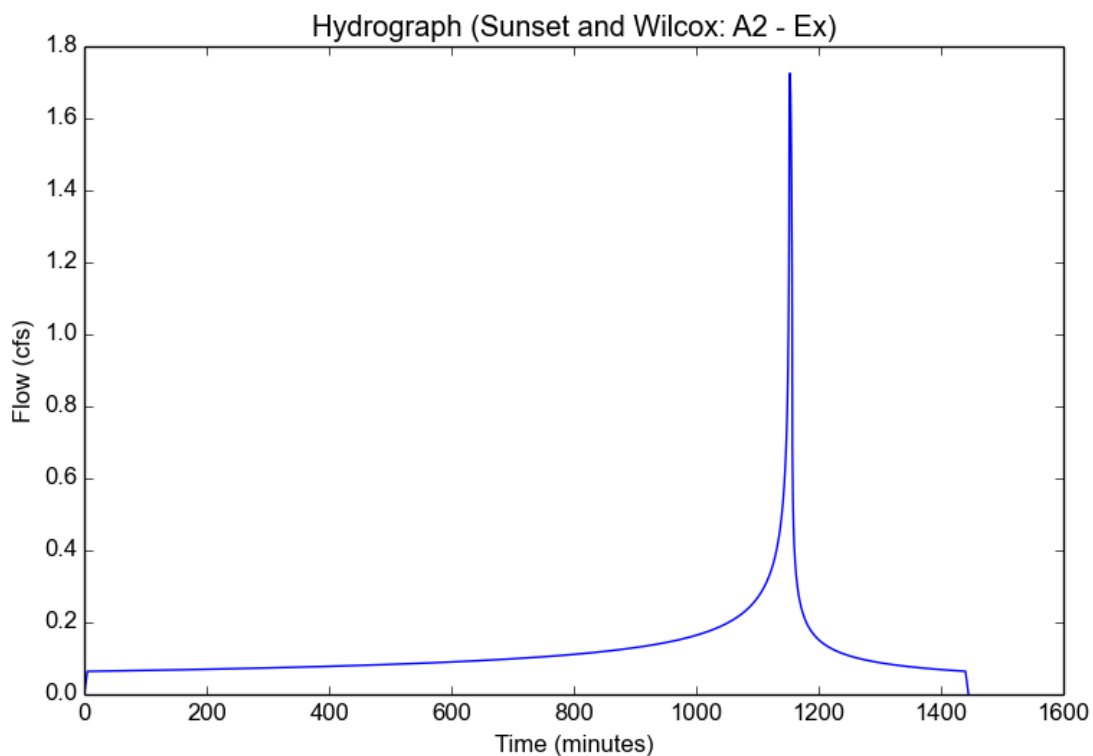
File location: //kpfflacivil.com/share/Projects/2020/2000101 6450 Sunset Boulevard/2 ENGR/STORM/2020-03-27 EIR Existing Hydrocalc Report.pdf  
Version: HydroCalc 1.0.2

## Input Parameters

Project Name	Sunset and Wilcox
Subarea ID	A2 - Ex
Area (ac)	0.54
Flow Path Length (ft)	264.0
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)	1.7253
Burned Peak Flow Rate (cfs)	1.7253
24-Hr Clear Runoff Volume (ac-ft)	0.239
24-Hr Clear Runoff Volume (cu-ft)	10410.1233



# Peak Flow Hydrologic Analysis

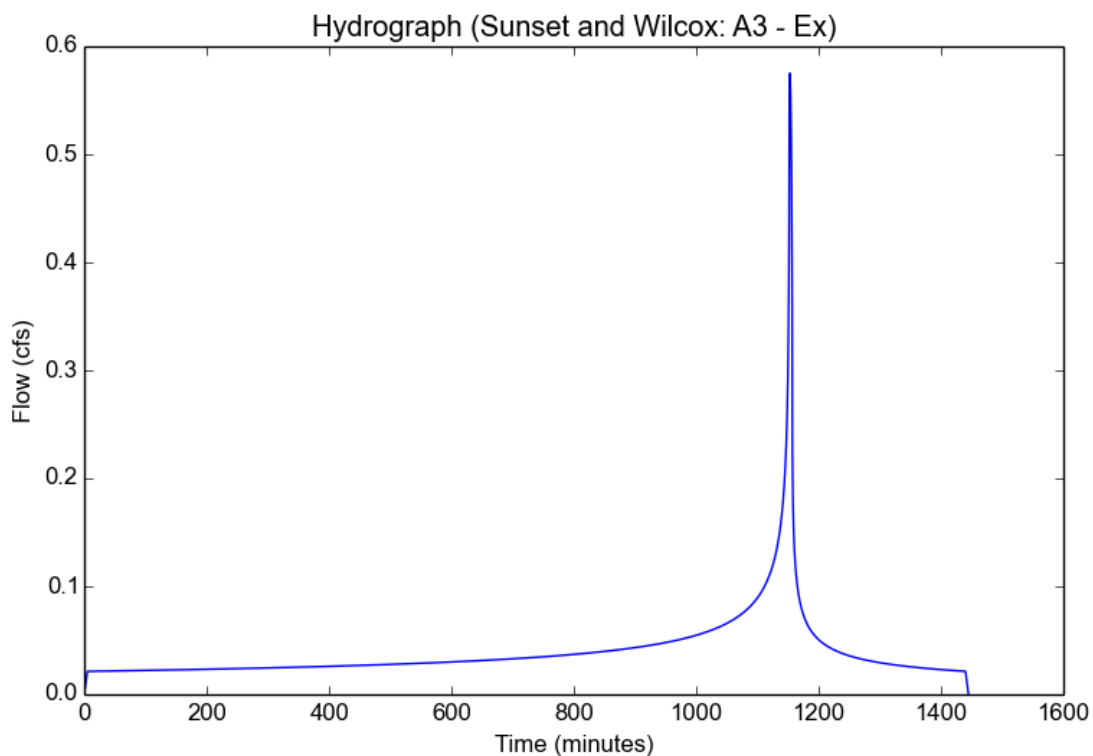
File location: //kpfllacivil.com/share/Projects/2020/2000101 6450 Sunset Boulevard/2 ENGR/STORM/2020-03-27 EIR Existing Hydrocalc Report.pdf  
Version: HydroCalc 1.0.2

## Input Parameters

Project Name	Sunset and Wilcox
Subarea ID	A3 - Ex
Area (ac)	0.18
Flow Path Length (ft)	50.0
Flow Path Slope (vft/hft)	0.03
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)	0.5751
Burned Peak Flow Rate (cfs)	0.5751
24-Hr Clear Runoff Volume (ac-ft)	0.0797
24-Hr Clear Runoff Volume (cu-ft)	3470.0411



# Peak Flow Hydrologic Analysis

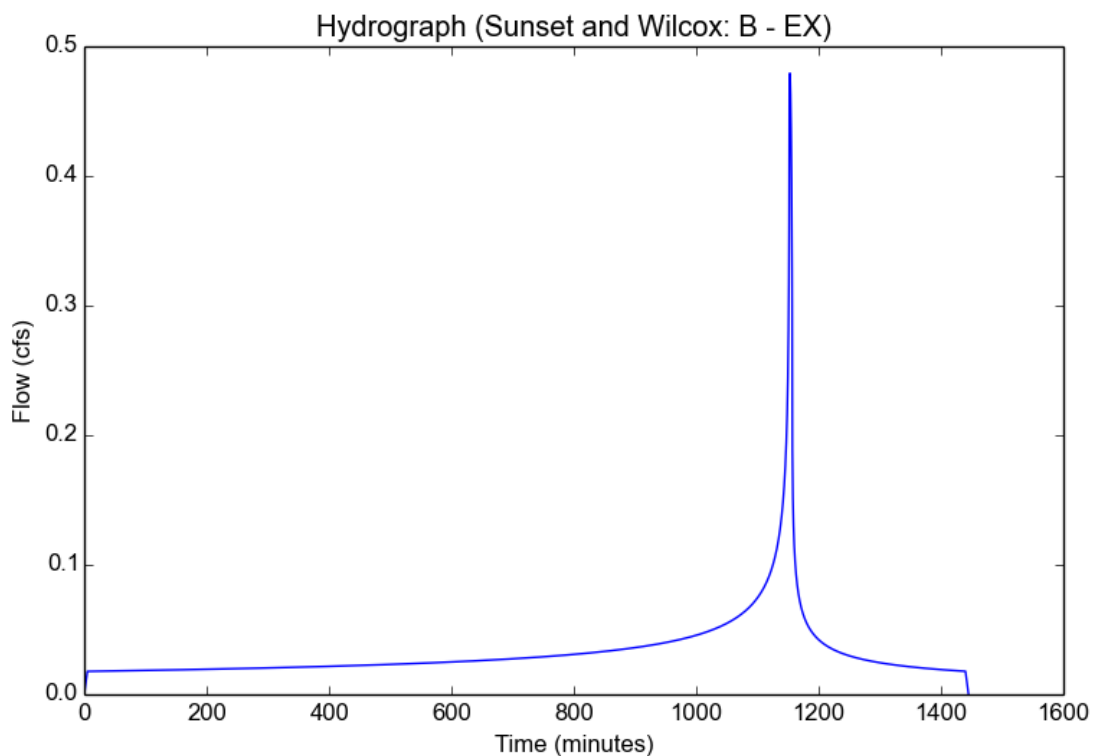
File location: //kpfflacivil.com/share/Projects/2020/2000101 6450 Sunset Boulevard/2 ENGR/STORM/2020-03-27 EIR Existing Hydrocalc Report.pdf  
Version: HydroCalc 1.0.2

## Input Parameters

Project Name	Sunset and Wilcox
Subarea ID	B - EX
Area (ac)	0.15
Flow Path Length (ft)	48.0
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)	0.4792
Burned Peak Flow Rate (cfs)	0.4792
24-Hr Clear Runoff Volume (ac-ft)	0.0664
24-Hr Clear Runoff Volume (cu-ft)	2891.7009



# FIGURE 6 Proposed Flow Analysis

## Peak Flow Hydrologic Analysis

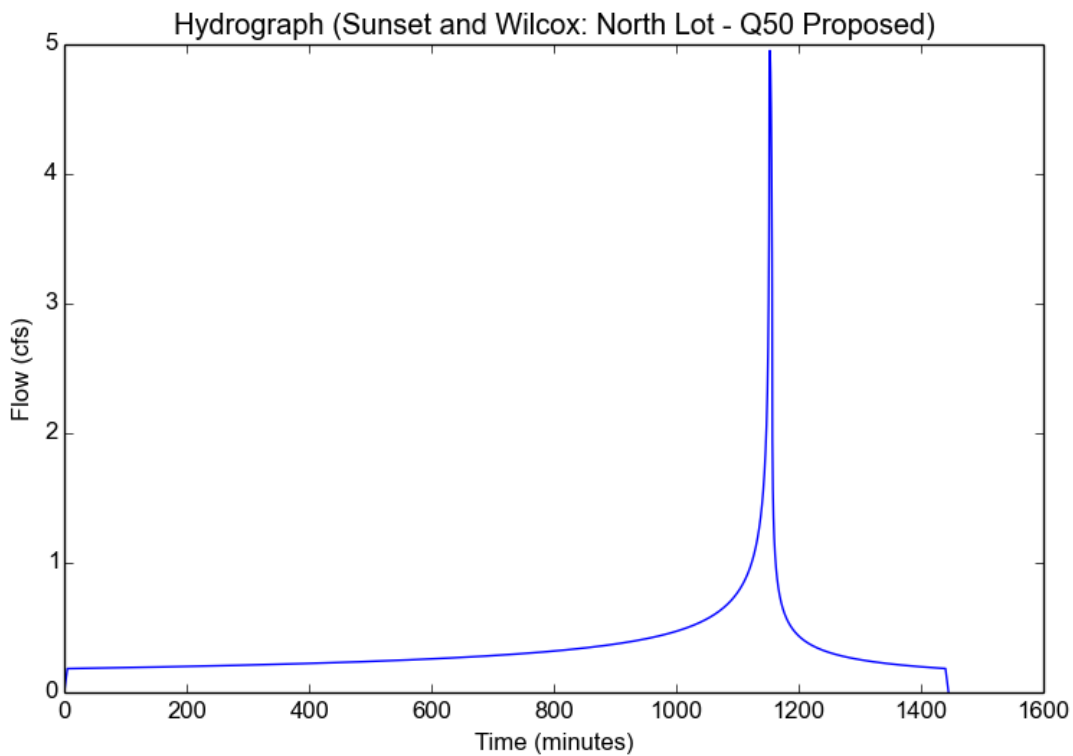
File location: //kpfllacivil.com/share/Projects/2020/2000101 6450 Sunset Boulevard/2 ENGR/STORM/2020-03-27 EIR Proposed Hydrocalc Report.pdf  
Version: HydroCalc 1.0.2

### Input Parameters

Project Name	Sunset and Wilcox
Subarea ID	North Lot - Q50 Proposed
Area (ac)	1.55
Flow Path Length (ft)	430.0
Flow Path Slope (vft/hft)	0.03
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)	4.9522
Burned Peak Flow Rate (cfs)	4.9522
24-Hr Clear Runoff Volume (ac-ft)	0.686
24-Hr Clear Runoff Volume (cu-ft)	29880.9094





# Peak Flow Hydrologic Analysis

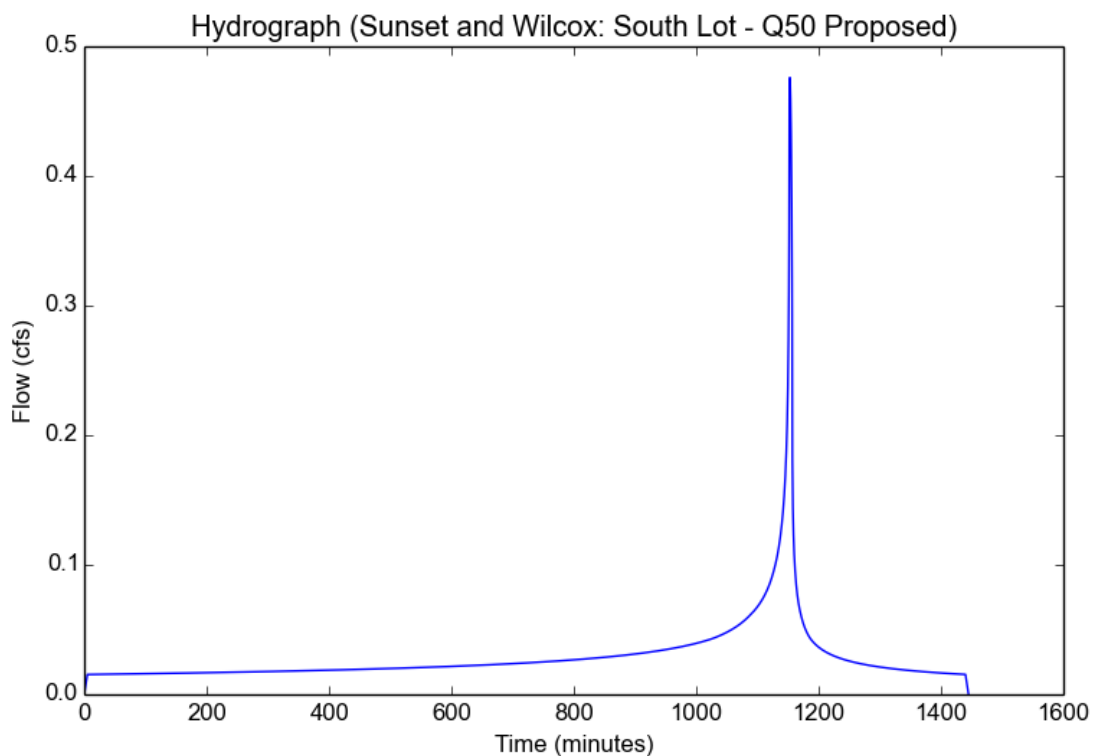
File location: //kpfllacivil.com/share/Projects/2020/2000101 6450 Sunset Boulevard/2 ENGR/STORM/2020-03-27 EIR Proposed Hydrocalc Report.pdf  
Version: HydroCalc 1.0.2

## Input Parameters

Project Name	Sunset and Wilcox
Subarea ID	South Lot - Q50 Proposed
Area (ac)	0.15
Flow Path Length (ft)	140.0
Flow Path Slope (vft/hft)	0.03
50-yr Rainfall Depth (in)	5.95
Percent Impervious	0.846666667
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)	0.8938
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.4759
Burned Peak Flow Rate (cfs)	0.4759
24-Hr Clear Runoff Volume (ac-ft)	0.0586
24-Hr Clear Runoff Volume (cu-ft)	2554.4851



# FIGURE 7

## Estimated LID Volume

### Peak Flow Hydrologic Analysis

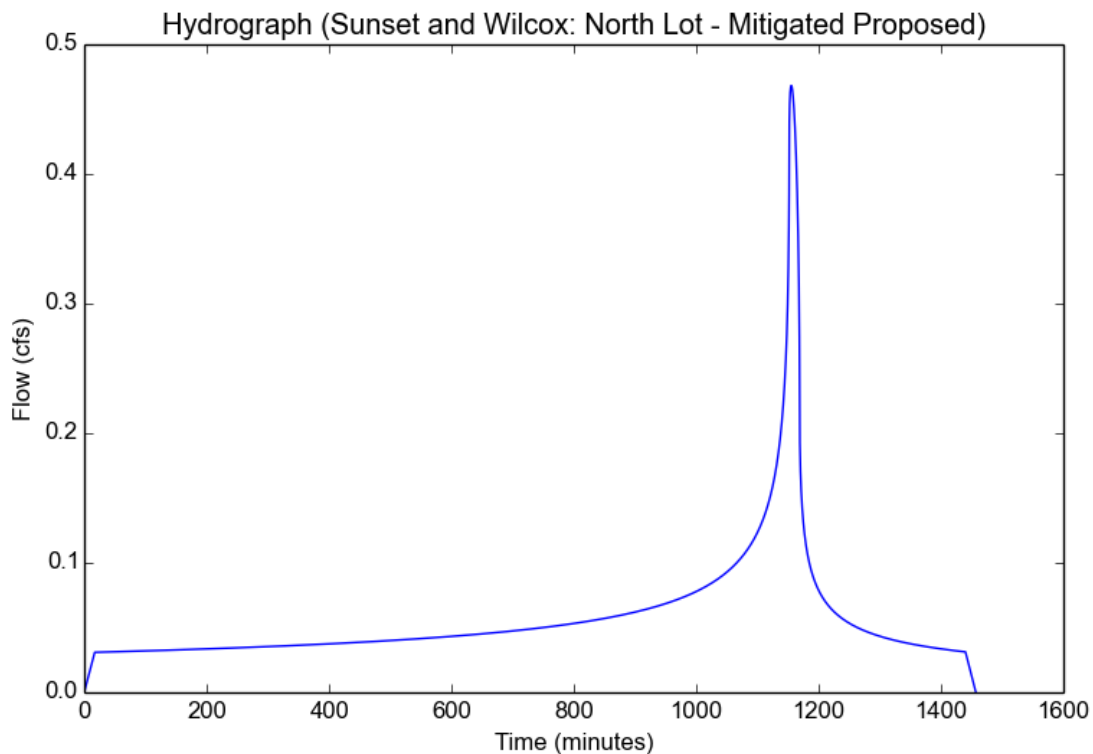
File location: //kpfllacivil.com/share/Projects/2020/2000101 6450 Sunset Boulevard/2 ENGR/STORM/2020-03-27 EIR Proposed Hydrocalc Report.pdf  
Version: HydroCalc 1.0.2

#### Input Parameters

Project Name	Sunset and Wilcox
Subarea ID	North Lot - Mitigated Proposed
Area (ac)	1.55
Flow Path Length (ft)	430.0
Flow Path Slope (vft/hft)	0.03
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	1.0
Soil Type	6
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

#### Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.3357
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	17.0
Clear Peak Flow Rate (cfs)	0.4683
Burned Peak Flow Rate (cfs)	0.4683
24-Hr Clear Runoff Volume (ac-ft)	0.1153
24-Hr Clear Runoff Volume (cu-ft)	5022.0184



# Peak Flow Hydrologic Analysis

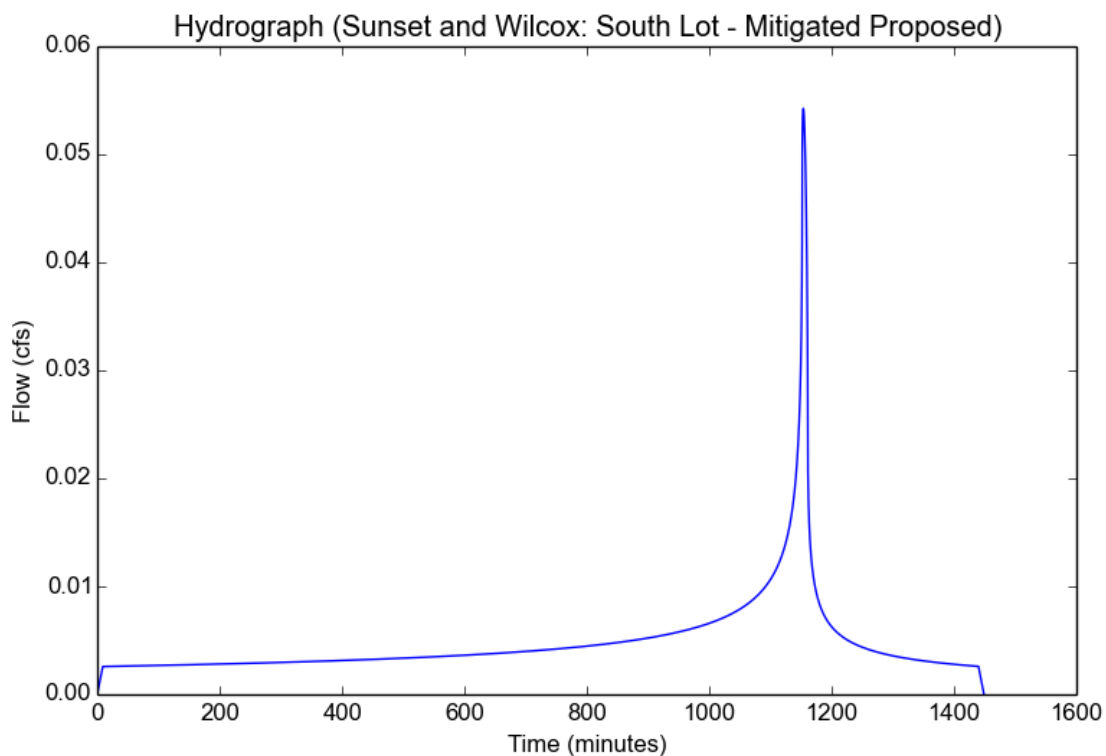
File location: //kpfllacivil.com/share/Projects/2020/2000101 6450 Sunset Boulevard/2 ENGR/STORM/2020-03-27 EIR Proposed Hydrocalc Report.pdf  
Version: HydroCalc 1.0.2

## Input Parameters

Project Name	Sunset and Wilcox
Subarea ID	South Lot - Mitigated Proposed
Area (ac)	0.15
Flow Path Length (ft)	140.0
Flow Path Slope (vft/hft)	0.03
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.846666667
Soil Type	6
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

## Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.4526
Undeveloped Runoff Coefficient (Cu)	0.2419
Developed Runoff Coefficient (Cd)	0.7991
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	0.0543
Burned Peak Flow Rate (cfs)	0.0543
24-Hr Clear Runoff Volume (ac-ft)	0.0096
24-Hr Clear Runoff Volume (cu-ft)	420.1976

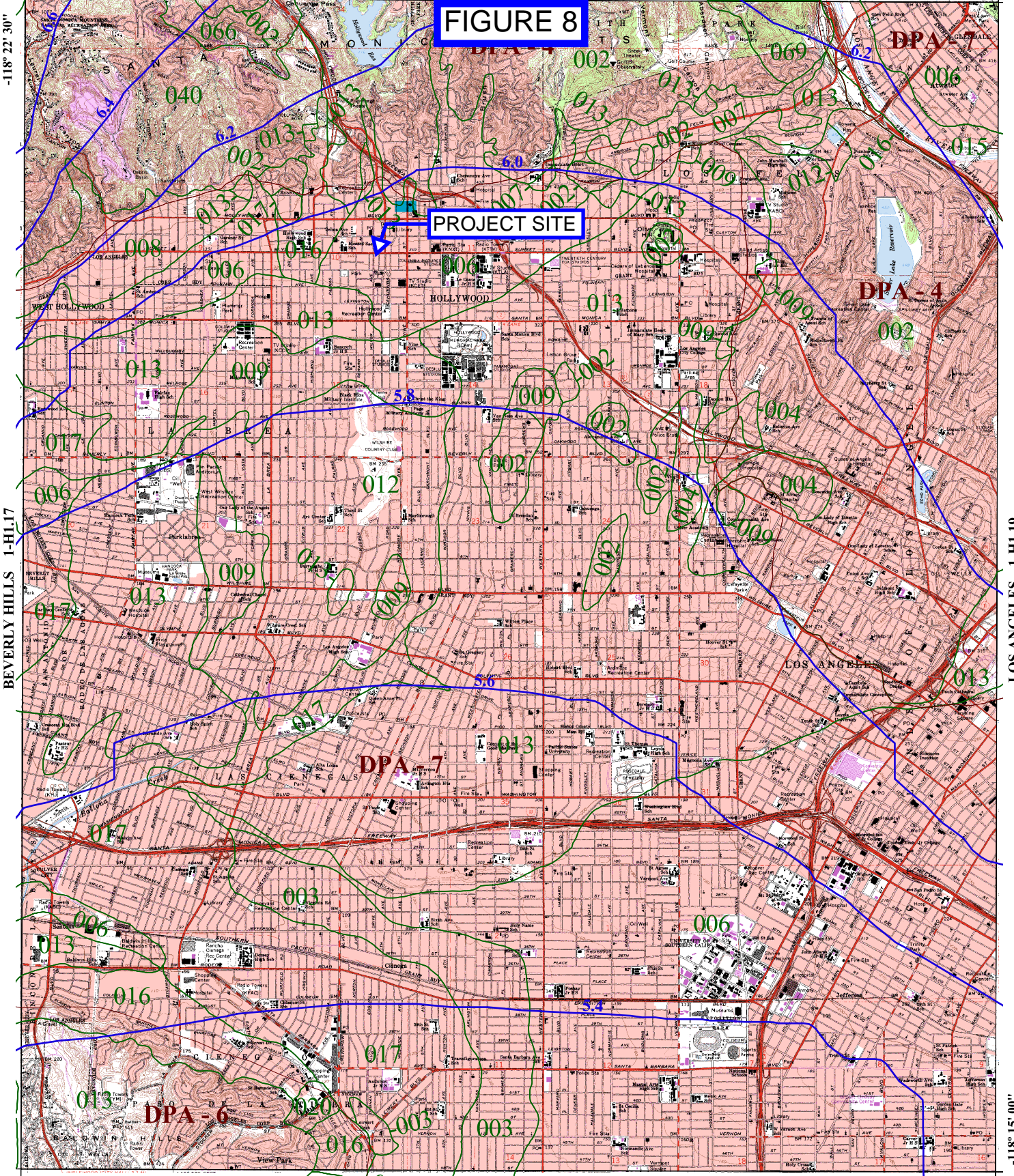


34° 07' 30"

BURBANK I-H1.28

# FIGURE 8

PROJECT SITE



BEVERLY HILLS I-H1.17

LOS ANGELES I-H1.19

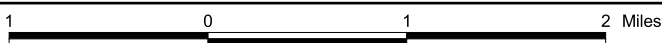
INGLEWOOD I-H1.8

34° 00' 00"

-118° 15' 00"



- 016 SOIL CLASSIFICATION AREA
- 7.2 INCHES OF RAINFALL
- DPA - 6 DEBRIS POTENTIAL AREA



25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878  
 10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

## HOLLYWOOD I-H1.18

### 50-YEAR 24-HOUR ISOHYET

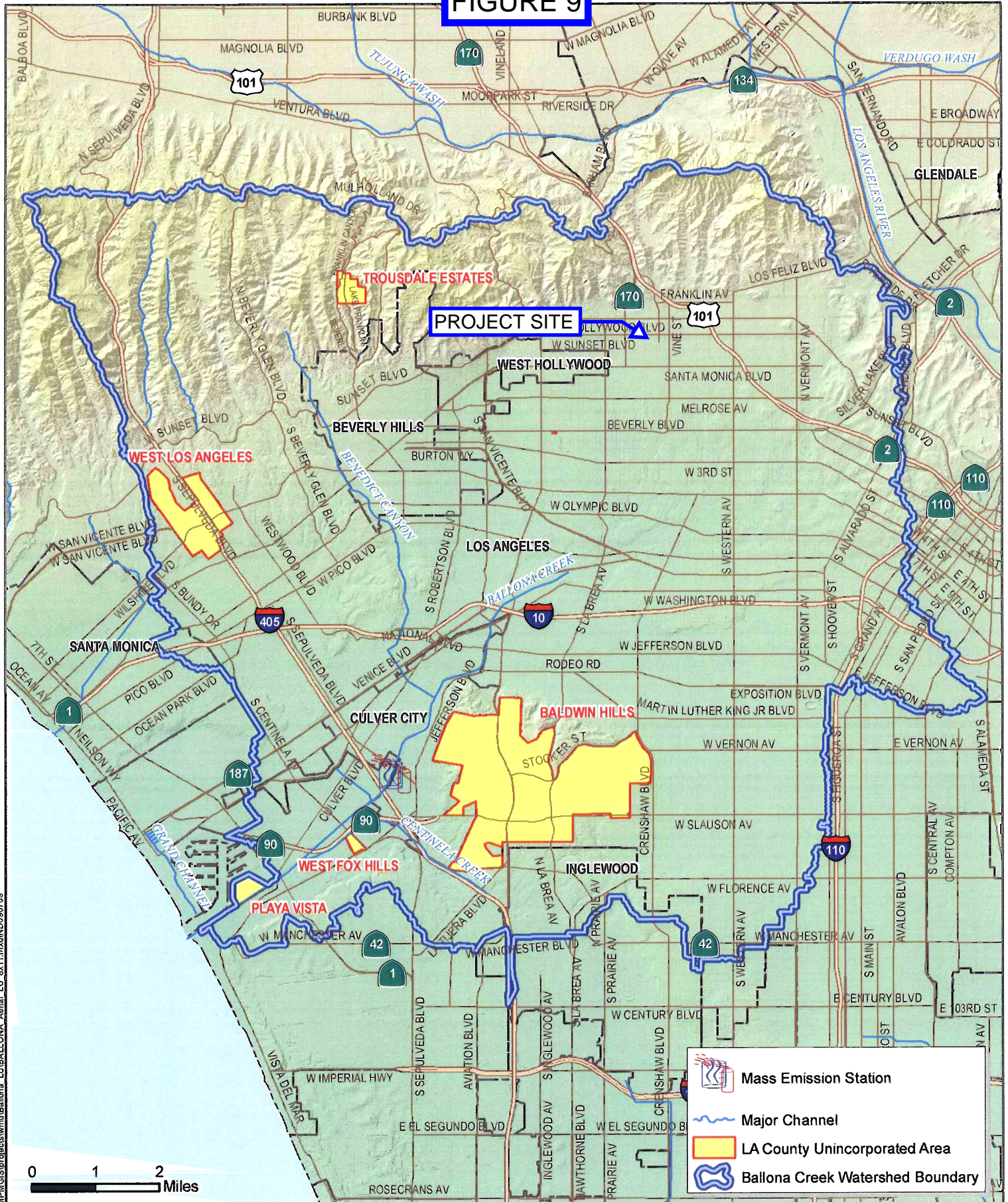




# BALLONA CREEK WATERSHED Unincorporated County Areas



**FIGURE 9**



M:\PMGIS\projects\wmd\Ballona\_LU\Ballona\_Aerial\_LU\_8x11.mxd\IND090709

# FIGURE 10

## 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 table 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 compiled 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  
NGA, NGS012  
National Geodetic Survey  
SSMC-3, #0302  
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 Service 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 1:112,000 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.

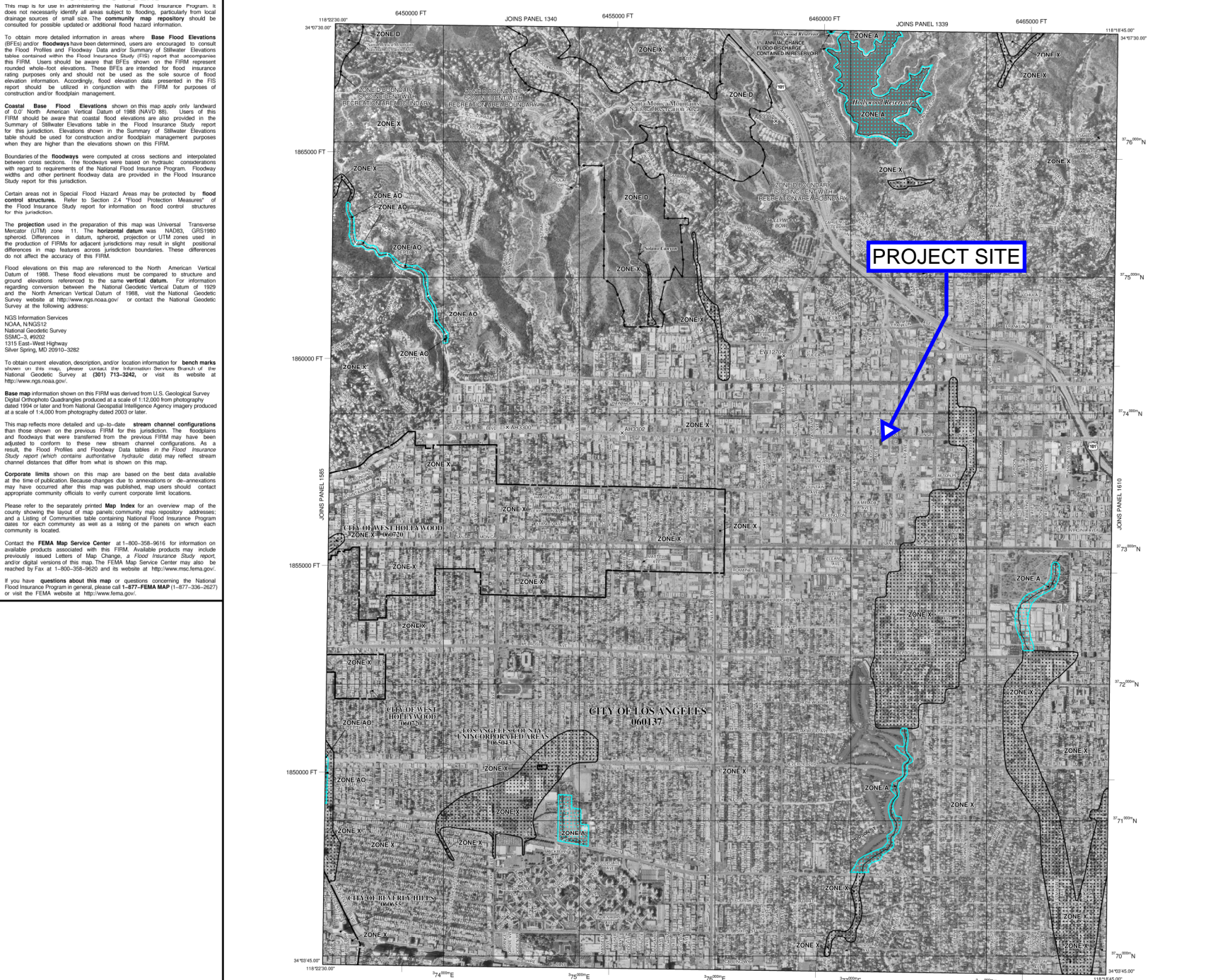
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, 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 the 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.msclma.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 equal or exceeded in any given year. The Special Flood Hazard Areas are defined by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, AP, AV, and VE. The 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 sheet flow; 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 substantially destroyed; areas are required to provide protection from the 1% annual chance or greater flood.

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

**ZONE AV** 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 flood wave less than 1 square mile, and areas protected by levees from 1% annual chance flood.

**OTHER AREAS**

**ZONE D** Areas determined to be outside the 0.2% annual chance floodplain. 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 defining Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.  
Base Flood Elevation line and value, elevation in feet.  
Base Flood Elevation value where uniform within zone, elevation in feet.

513  
(EL. 967)

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

One section line  
Transect line

97°07'30" 32°02'30"  
42°25'00"N  
1000-meter Universal Transverse Mercator grid values, zone 11  
600000 FT  
5000-foot grid ticks: California State Plane coordinate system, NAD 83 (NATIONAL GRID)

DXS510  
Bench mark (see explanation in Notes to Users section of the FIRM panel)

MI.5  
River Mile

MAP REPOSITORIES  
Refer to Map Repositories list on Maps 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 1-800-628-6620.

MAP SCALE 1" = 1000'  
0 100 200 300 400 500 600 FEET  
0 100 200 300 400 500 METERS

**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	06000	1605	F
	BEVERLY HILLS, CITY OF	06005	1605	F
	LOS ANGELES, CITY OF	06010	1605	F
	WEST HOLLYWOOD, CITY OF	06030	1605	F

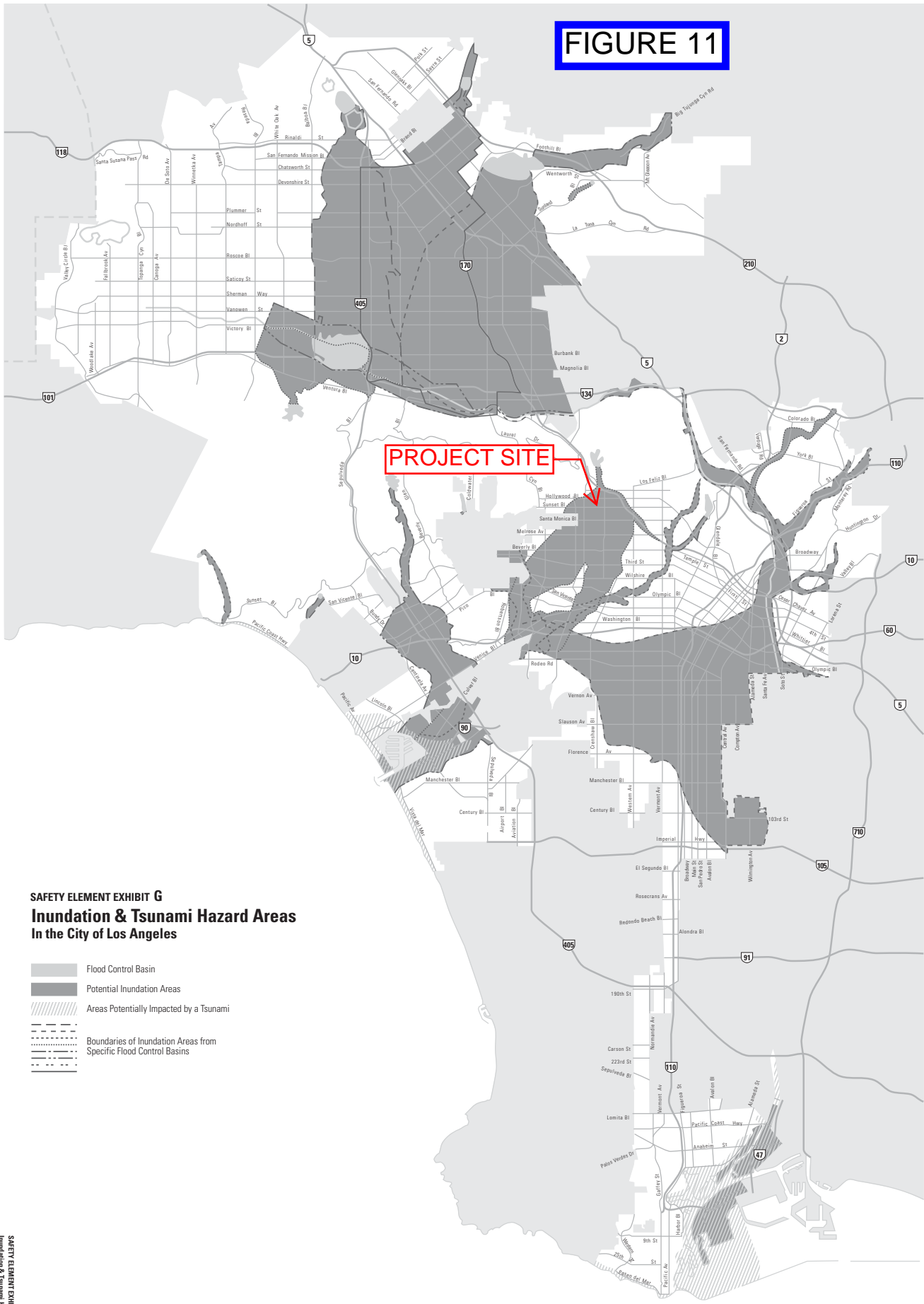
Notice to User: The **Map Number** shown below should be used when placing map orders. The **Community Number** shown above should be used on insurance applications for the subject community.

**MAP NUMBER 06037C1605F**

**EFFECTIVE DATE SEPTEMBER 26, 2008**

Federal Emergency Management Agency

**FIGURE 11**



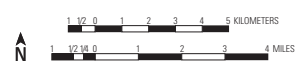
**SAFETY ELEMENT EXHIBIT G**  
**Inundation & Tsunami Hazard Areas**  
**In the City of Los Angeles**

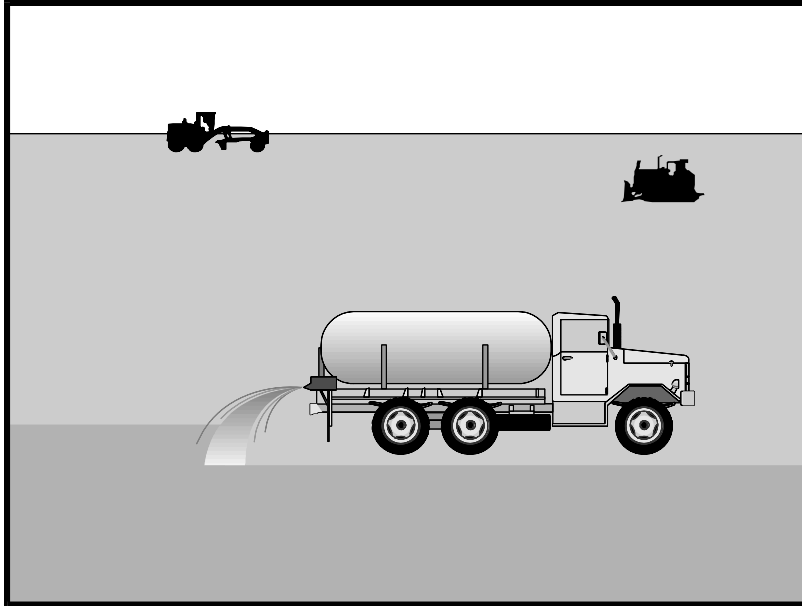
- Flood Control Basin
- Potential Inundation Areas
- Areas Potentially Impacted by a Tsunami
- Boundaries of Inundation Areas from Specific Flood Control Basins

SAFETY ELEMENT EXHIBIT G  
 Inundation & Tsunami Hazard Areas

Source: Environmental Impact Report, Framework Element, Los Angeles City General Plan, May 1995; Technical Appendix to the Safety Element of the Los Angeles County General Plan Hazard Reduction in Los Angeles County, Volume 2, Plate 6, "Flood and Inundation Hazards" January 1990; California Environmental Quality Act of 1970 (CEQA); Public Resources Code Section 21000 et. seq. with guidelines as amended, 1992; California Government Code Title 7 chapter 3, article 5 section 65302(g), as amended 1993.

Prepared by the General Plan Framework Section • City of Los Angeles Planning Department • Citywide Graphics • March, 1994 • Council File No. 89-2104





### Description and Purpose

Soil binding consists of application and maintenance of a soil stabilizer to exposed soil surfaces. Soil binders are materials applied to the soil surface to temporarily prevent water and wind induced erosion of exposed soils on construction sites.

### Suitable Applications

Soil binders are typically applied to disturbed areas requiring temporary protection. Because soil binders, when used as a stand-alone practice, can often be incorporated into the soil, they are a good alternative to mulches in areas where grading activities will soon resume. Soil binders are commonly used in the following areas:

- Rough graded soils that will be inactive for a short period of time
- Soil stockpiles
- Temporary haul roads prior to placement of crushed rock
- Compacted soil road base
- Construction staging, materials storage, and layout areas

### Limitations

- Soil binders are temporary in nature and may need reapplication.

### Categories

EC	Erosion Control	<input checked="" type="checkbox"/>
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	<input checked="" type="checkbox"/>
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

### Legend:

- Primary Category
- Secondary Category

### Targeted Constituents

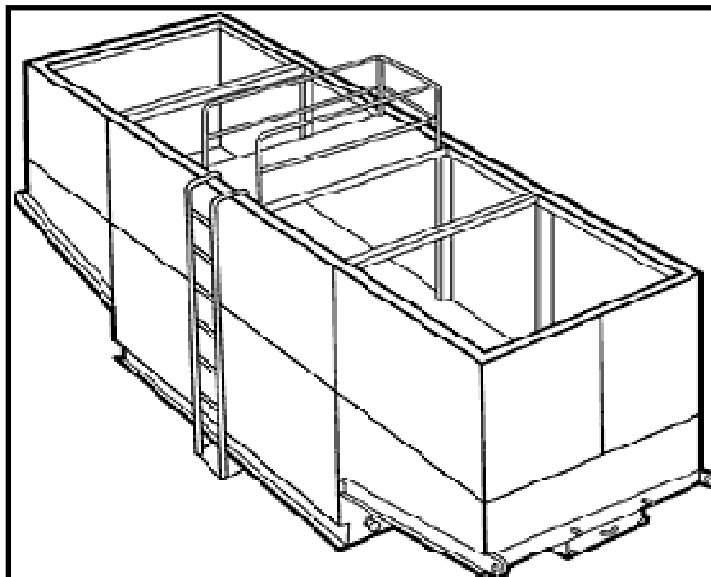
Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

### Potential Alternatives

- EC-3 Hydraulic Mulch
- EC-4 Hydroseeding
- EC-6 Straw Mulch
- EC-7 Geotextiles and Mats
- EC-8 Wood Mulching







## Description and Purpose

Dewatering operations are practices that manage the discharge of pollutants when non-stormwater and accumulated precipitation (stormwater) must be removed from a work location to proceed with construction work or to provide vector control.

The General Permit incorporates Numeric Effluent Limits (NEL) and Numeric Action Levels (NAL) for turbidity (see Section 2 of this handbook to determine your project's risk level and if you are subject to these requirements).

Discharges from dewatering operations can contain high levels of fine sediment that, if not properly treated, could lead to exceedences of the General Permit requirements.

## Suitable Applications

These practices are implemented for discharges of non-stormwater from construction sites. Non-stormwaters include, but are not limited to, groundwater, water from cofferdams, water diversions, and waters used during construction activities that must be removed from a work area to facilitate construction.

Practices identified in this section are also appropriate for implementation when managing the removal of accumulated precipitation (stormwater) from depressed areas at a construction site.

Stormwater mixed with non-stormwater should be managed as non-stormwater.

## Categories

EC	Erosion Control	
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	<input checked="" type="checkbox"/>
WM	Waste Management and Materials Pollution Control	

## Legend:

- Primary Category
- Secondary Category

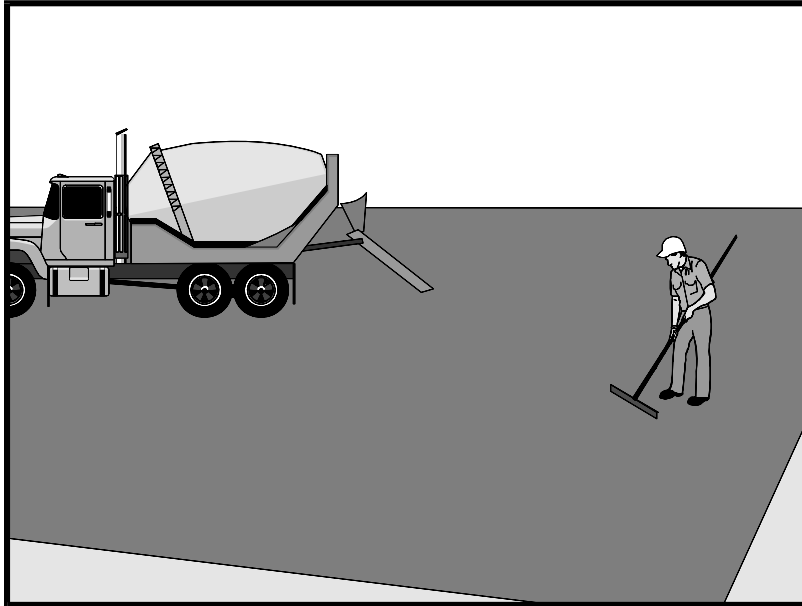
## Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	<input checked="" type="checkbox"/>
Organics	

## Potential Alternatives

- SE-5: Fiber Roll
- SE-6: Gravel Bag Berm





## Description and Purpose

Prevent or reduce the discharge of pollutants from paving operations, using measures to prevent runoff and runoff pollution, properly disposing of wastes, and training employees and subcontractors.

The General Permit incorporates Numeric Effluent Limits (NEL) and Numeric Action Levels (NAL) for pH and turbidity (see Section 2 of this handbook to determine your project's risk level and if you are subject to these requirements).

Many types of construction materials associated with paving and grinding operations, including mortar, concrete, and cement and their associated wastes have basic chemical properties that can raise pH levels outside of the permitted range. Additional care should be taken when managing these materials to prevent them from coming into contact with stormwater flows, which could lead to exceedances of the General Permit requirements.

## Suitable Applications

These procedures are implemented where paving, surfacing, resurfacing, or sawcutting, may pollute stormwater runoff or discharge to the storm drain system or watercourses.

## Limitations

- Paving opportunities may be limited during wet weather.
- Discharges of freshly paved surfaces may raise pH to environmentally harmful levels and trigger permit violations.

## Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	<input checked="" type="checkbox"/>
WM	Waste Management and Materials Pollution Control	<input checked="" type="checkbox"/>

## Legend:

- Primary Category
- Secondary Category

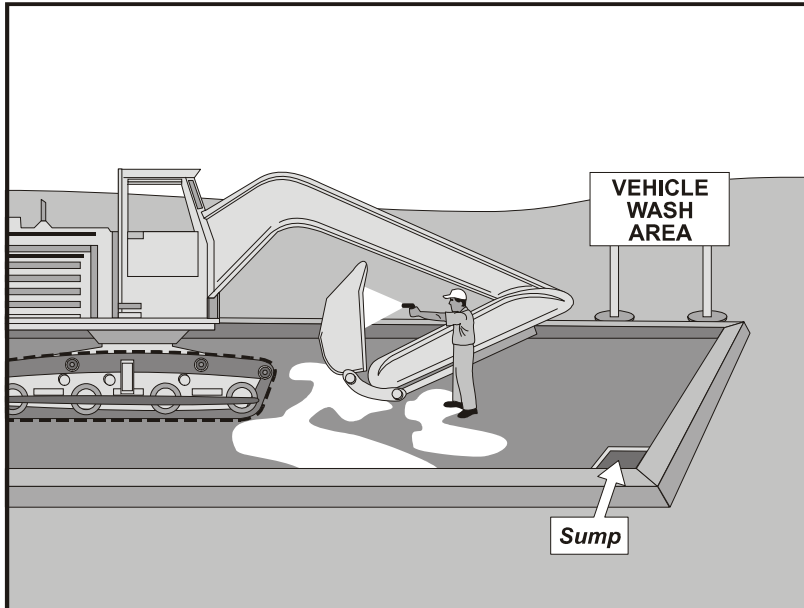
## Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	<input checked="" type="checkbox"/>
Organics	

## Potential Alternatives

None





## Description and Purpose

Vehicle and equipment cleaning procedures and practices eliminate or reduce the discharge of pollutants to stormwater from vehicle and equipment cleaning operations. Procedures and practices include but are not limited to: using offsite facilities; washing in designated, contained areas only; eliminating discharges to the storm drain by infiltrating the wash water; and training employees and subcontractors in proper cleaning procedures.

## Suitable Applications

These procedures are suitable on all construction sites where vehicle and equipment cleaning is performed.

## Limitations

Even phosphate-free, biodegradable soaps have been shown to be toxic to fish before the soap degrades. Sending vehicles/equipment offsite should be done in conjunction with TC-1, Stabilized Construction Entrance/Exit.

## Implementation

Other options to washing equipment onsite include contracting with either an offsite or mobile commercial washing business. These businesses may be better equipped to handle and dispose of the wash waters properly. Performing this work offsite can also be economical by eliminating the need for a separate washing operation onsite.

If washing operations are to take place onsite, then:

## Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	<input checked="" type="checkbox"/>
WM	Waste Management and Materials Pollution Control	

## Legend:

- Primary Objective
- Secondary Objective

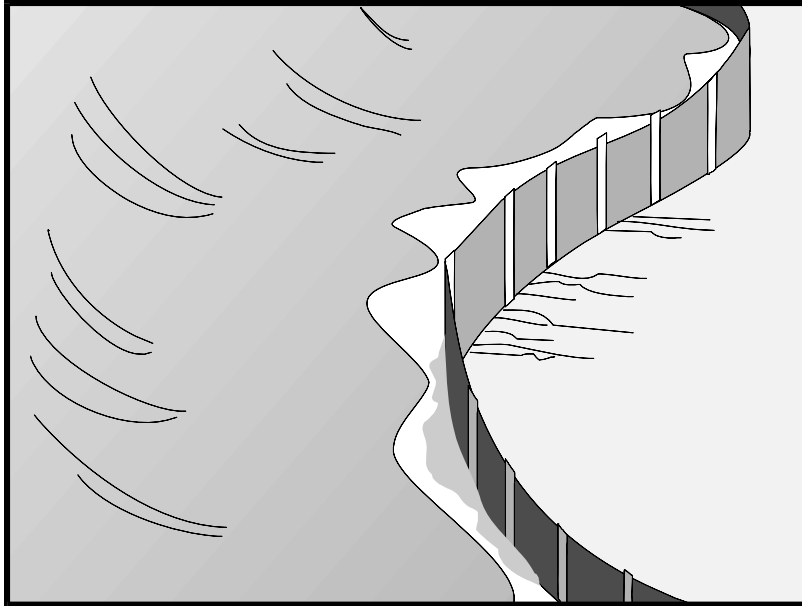
## Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	<input checked="" type="checkbox"/>
Trash	
Metals	
Bacteria	
Oil and Grease	<input checked="" type="checkbox"/>
Organics	<input checked="" type="checkbox"/>

## Potential Alternatives

None





## Description and Purpose

A silt fence is made of a woven geotextile that has been entrenched, attached to supporting poles, and sometimes backed by a plastic or wire mesh for support. The silt fence detains sediment-laden water, promoting sedimentation behind the fence.

## Suitable Applications

Silt fences are suitable for perimeter control, placed below areas where sheet flows discharge from the site. They could also be used as interior controls below disturbed areas where runoff may occur in the form of sheet and rill erosion and around inlets within disturbed areas (SE-10). Silt fences are generally ineffective in locations where the flow is concentrated and are only applicable for sheet or overland flows. Silt fences are most effective when used in combination with erosion controls. Suitable applications include:

- Along the perimeter of a project.
- Below the toe or down slope of exposed and erodible slopes.
- Along streams and channels.
- Around temporary spoil areas and stockpiles.
- Around inlets.
- Below other small cleared areas.

## Categories

<b>EC</b>	Erosion Control	
<b>SE</b>	Sediment Control	<input checked="" type="checkbox"/>
<b>TC</b>	Tracking Control	
<b>WE</b>	Wind Erosion Control	
<b>NS</b>	Non-Stormwater Management Control	
<b>WM</b>	Waste Management and Materials Pollution Control	

## Legend:

- Primary Category**
- Secondary Category**

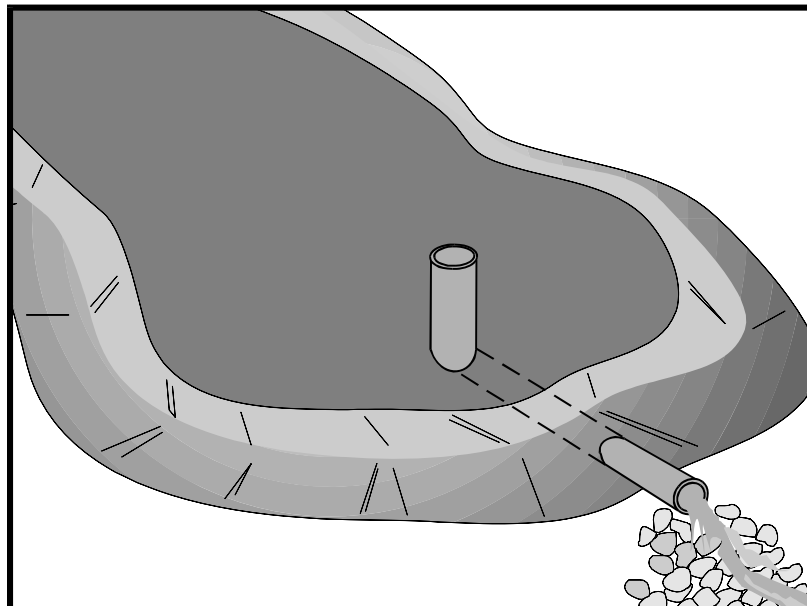
## Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

## Potential Alternatives

- SE-5 Fiber Rolls
- SE-6 Gravel Bag Berm
- SE-8 Sandbag Barrier
- SE-10 Storm Drain Inlet Protection
- SE-14 Biofilter Bags





## Description and Purpose

A sediment basin is a temporary basin formed by excavation or by constructing an embankment so that sediment-laden runoff is temporarily detained under quiescent conditions, allowing sediment to settle out before the runoff is discharged.

Sediment basin design guidance presented in this fact sheet is intended to provide options, methods, and techniques to optimize temporary sediment basin performance and basin sediment removal. Basin design guidance provided in this fact sheet is not intended to guarantee basin effluent compliance with numeric discharge limits (numeric action levels or numeric effluent limits for turbidity). Compliance with discharge limits requires a thoughtful approach to comprehensive BMP planning, implementation, and maintenance. Therefore, optimally designed and maintained sediment basins should be used in conjunction with a comprehensive system of BMPs that includes:

- Diverting runoff from undisturbed areas away from the basin
- Erosion control practices to minimize disturbed areas on-site and to provide temporary stabilization and interim sediment controls (e.g., stockpile perimeter control, check dams, perimeter controls around individual lots) to reduce the basin's influent sediment concentration.

At some sites, sediment basin design enhancements may be required to adequately remove sediment. Traditional

## Categories

EC	Erosion Control	
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

## Legend:

- Primary Category
- Secondary Category

## Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	<input checked="" type="checkbox"/>
Metals	
Bacteria	
Oil and Grease	
Organics	

## Potential Alternatives

SE-3 Sediment Trap (for smaller areas)





## Description and Purpose

Street sweeping and vacuuming includes use of self-propelled and walk-behind equipment to remove sediment from streets and roadways, and to clean paved surfaces in preparation for final paving. Sweeping and vacuuming prevents sediment from the project site from entering storm drains or receiving waters.

## Suitable Applications

Sweeping and vacuuming are suitable anywhere sediment is tracked from the project site onto public or private paved streets and roads, typically at points of egress. Sweeping and vacuuming are also applicable during preparation of paved surfaces for final paving.

## Limitations

Sweeping and vacuuming may not be effective when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose).

## Implementation

- Controlling the number of points where vehicles can leave the site will allow sweeping and vacuuming efforts to be focused, and perhaps save money.
- Inspect potential sediment tracking locations daily.
- Visible sediment tracking should be swept or vacuumed on a daily basis.
- Do not use kick brooms or sweeper attachments. These tend to spread the dirt rather than remove it.

## Categories

<b>EC</b>	Erosion Control	
<b>SE</b>	Sediment Control	<input checked="" type="checkbox"/>
<b>TC</b>	Tracking Control	<input checked="" type="checkbox"/>
<b>WE</b>	Wind Erosion Control	
<b>NS</b>	Non-Stormwater Management Control	
<b>WM</b>	Waste Management and Materials Pollution Control	

## Legend:

- Primary Objective**
- Secondary Objective**

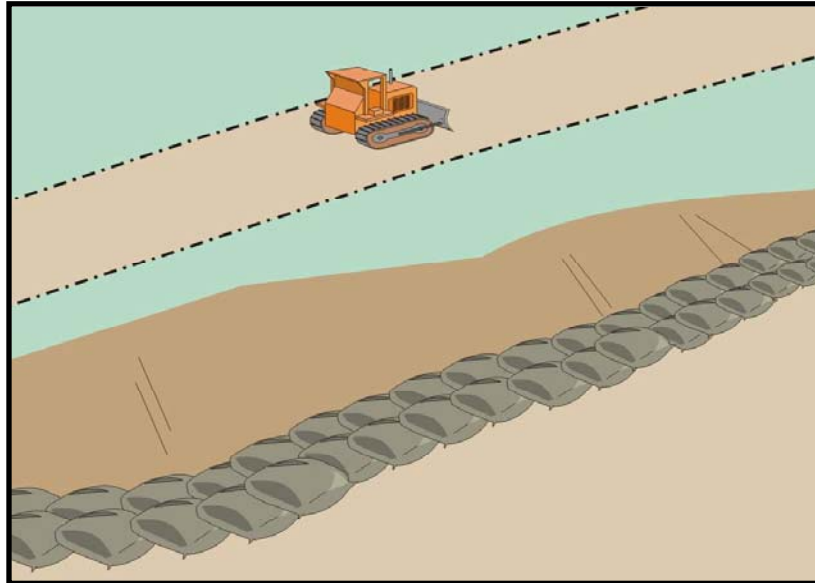
## Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	<input checked="" type="checkbox"/>
Metals	
Bacteria	
Oil and Grease	<input checked="" type="checkbox"/>
Organics	

## Potential Alternatives

None





## Categories

<b>EC</b>	Erosion Control	<input checked="" type="checkbox"/>
<b>SE</b>	Sediment Control	<input checked="" type="checkbox"/>
<b>TC</b>	Tracking Control	
<b>WE</b>	Wind Erosion Control	
<b>NS</b>	Non-Stormwater Management Control	
<b>WM</b>	Waste Management and Materials Pollution Control	

## Legend:

- Primary Category**
- Secondary Category**

## Description and Purpose

A sandbag barrier is a series of sand-filled bags placed on a level contour to intercept or to divert sheet flows. Sandbag barriers placed on a level contour pond sheet flow runoff, allowing sediment to settle out.

## Suitable Applications

Sandbag barriers may be suitable:

- As a linear sediment control measure:
  - Below the toe of slopes and erodible slopes.
  - As sediment traps at culvert/pipe outlets.
  - Below other small cleared areas.
  - Along the perimeter of a site.
  - Down slope of exposed soil areas.
  - Around temporary stockpiles and spoil areas.
  - Parallel to a roadway to keep sediment off paved areas.
  - Along streams and channels.
- As linear erosion control measure:
  - Along the face and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.

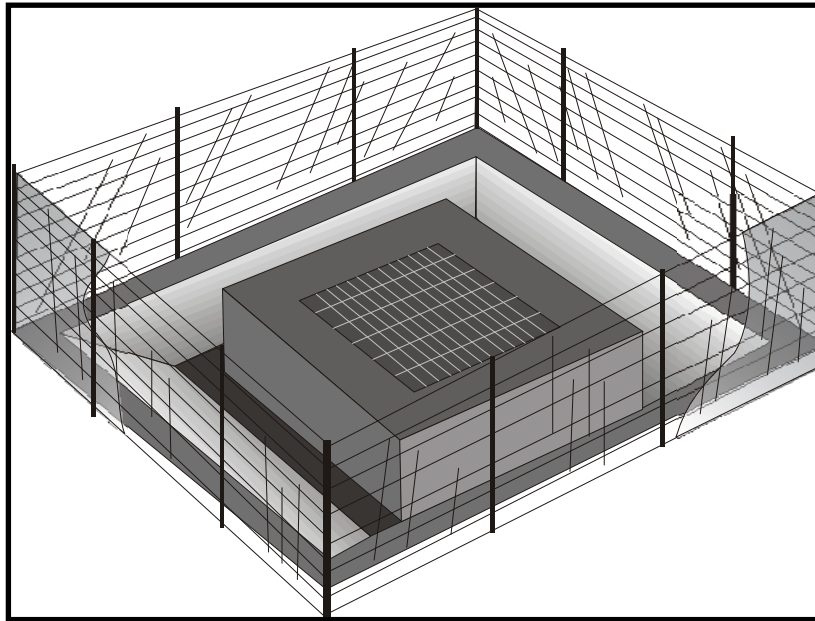
## Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

## Potential Alternatives

- SE-1 Silt Fence
- SE-5 Fiber Rolls
- SE-6 Gravel Bag Berm
- SE-14 Biofilter Bags





## Description and Purpose

Storm drain inlet protection consists of a sediment filter or an impounding area in, around or upstream of a storm drain, drop inlet, or curb inlet. Storm drain inlet protection measures temporarily pond runoff before it enters the storm drain, allowing sediment to settle. Some filter configurations also remove sediment by filtering, but usually the ponding action results in the greatest sediment reduction. Temporary geotextile storm drain inserts attach underneath storm drain grates to capture and filter storm water.

## Suitable Applications

Every storm drain inlet receiving runoff from unstabilized or otherwise active work areas should be protected. Inlet protection should be used in conjunction with other erosion and sediment controls to prevent sediment-laden stormwater and non-stormwater discharges from entering the storm drain system.

## Limitations

- Drainage area should not exceed 1 acre.
- In general straw bales should not be used as inlet protection.
- Requires an adequate area for water to pond without encroaching into portions of the roadway subject to traffic.

## Categories

<b>EC</b>	Erosion Control	
<b>SE</b>	Sediment Control	<input checked="" type="checkbox"/>
<b>TC</b>	Tracking Control	
<b>WE</b>	Wind Erosion Control	
<b>NS</b>	Non-Stormwater Management Control	
<b>WM</b>	Waste Management and Materials Pollution Control	

## Legend:

- Primary Category**
- Secondary Category**

## Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	<input checked="" type="checkbox"/>
Metals	
Bacteria	
Oil and Grease	
Organics	

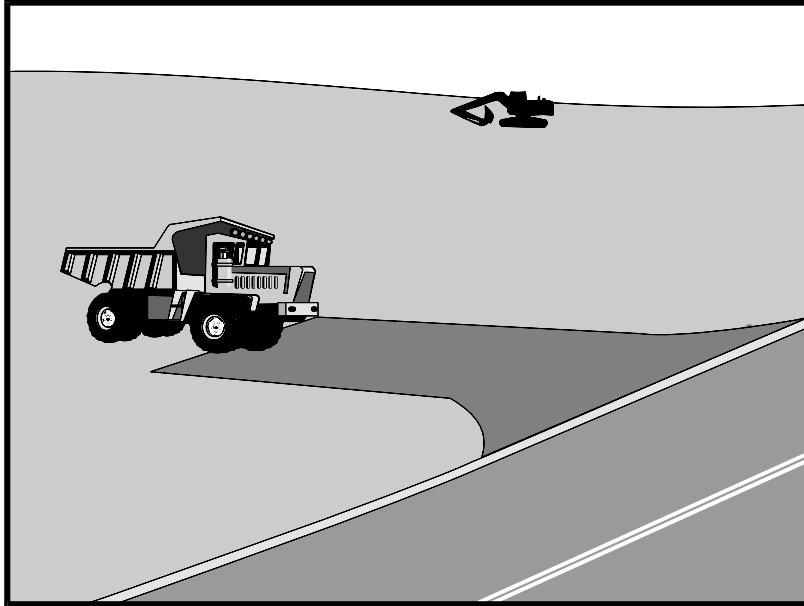
## Potential Alternatives

- SE-1 Silt Fence
- SE-5 Fiber Rolls
- SE-6 Gravel Bag Berm
- SE-8 Sandbag Barrier
- SE-14 Biofilter Bags





# Stabilized Construction Entrance/Exit TC-1



## Description and Purpose

A stabilized construction access is defined by a point of entrance/exit to a construction site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles.

## Suitable Applications

Use at construction sites:

- Where dirt or mud can be tracked onto public roads.
- Adjacent to water bodies.
- Where poor soils are encountered.
- Where dust is a problem during dry weather conditions.

## Limitations

- Entrances and exits require periodic top dressing with additional stones.
- This BMP should be used in conjunction with street sweeping on adjacent public right of way.
- Entrances and exits should be constructed on level ground only.
- Stabilized construction entrances are rather expensive to construct and when a wash rack is included, a sediment trap of some kind must also be provided to collect wash water

## Categories

EC	Erosion Control	<input checked="" type="checkbox"/>
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	<input checked="" type="checkbox"/>
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

## Legend:

- Primary Objective
- Secondary Objective

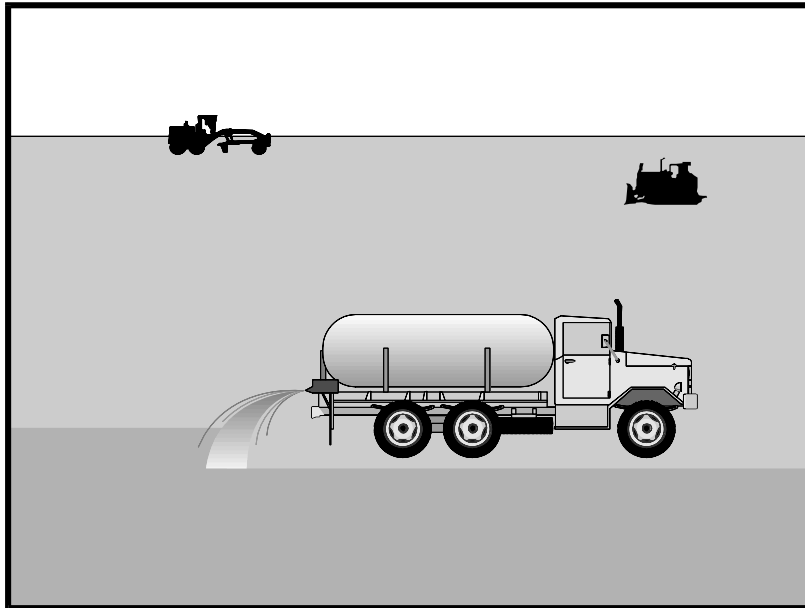
## Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

## Potential Alternatives

None





## Description and Purpose

Wind erosion or dust control consists of applying water or other chemical dust suppressants as necessary to prevent or alleviate dust nuisance generated by construction activities. Covering small stockpiles or areas is an alternative to applying water or other dust palliatives.

California’s Mediterranean climate, with a short “wet” season and a typically long, hot “dry” season, allows the soils to thoroughly dry out. During the dry season, construction activities are at their peak, and disturbed and exposed areas are increasingly subject to wind erosion, sediment tracking and dust generated by construction equipment. Site conditions and climate can make dust control more of an erosion problem than water based erosion. Additionally, many local agencies, including Air Quality Management Districts, require dust control and/or dust control permits in order to comply with local nuisance laws, opacity laws (visibility impairment) and the requirements of the Clean Air Act. Wind erosion control is required to be implemented at all construction sites greater than 1 acre by the General Permit.

## Suitable Applications

Most BMPs that provide protection against water-based erosion will also protect against wind-based erosion and dust control requirements required by other agencies will generally meet wind erosion control requirements for water quality protection. Wind erosion control BMPs are suitable during the following construction activities:

### Categories

EC	Erosion Control	
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	
WE	Wind Erosion Control	<input checked="" type="checkbox"/>
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

### Legend:

- Primary Category
- Secondary Category

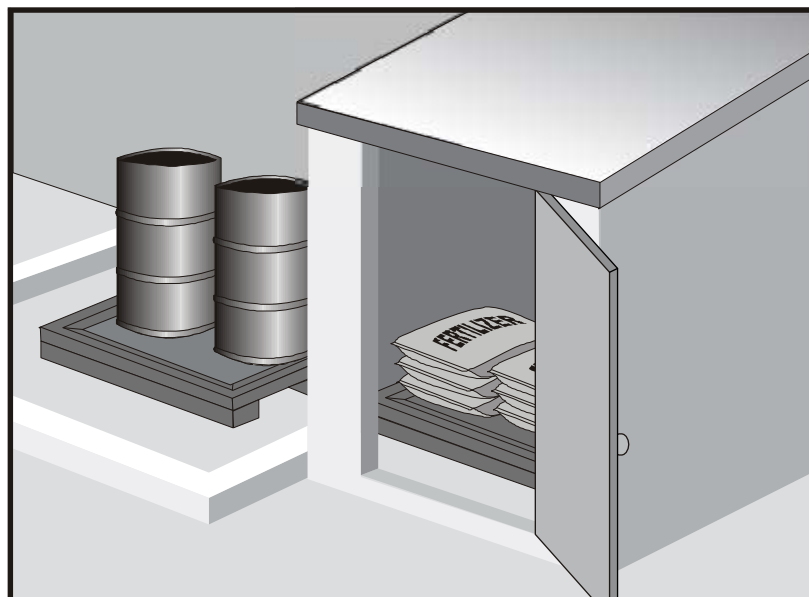
### Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

### Potential Alternatives

EC-5 Soil Binders





## Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	<input checked="" type="checkbox"/>

## Legend:

- Primary Category
- Secondary Category

## Description and Purpose

Prevent, reduce, or eliminate the discharge of pollutants from material delivery and storage to the stormwater system or watercourses by minimizing the storage of hazardous materials onsite, storing materials in watertight containers and/or a completely enclosed designated area, installing secondary containment, conducting regular inspections, and training employees and subcontractors.

This best management practice covers only material delivery and storage. For other information on materials, see WM-2, Material Use, or WM-4, Spill Prevention and Control. For information on wastes, see the waste management BMPs in this section.

## Suitable Applications

These procedures are suitable for use at all construction sites with delivery and storage of the following materials:

- Soil stabilizers and binders
- Pesticides and herbicides
- Fertilizers
- Detergents
- Plaster
- Petroleum products such as fuel, oil, and grease

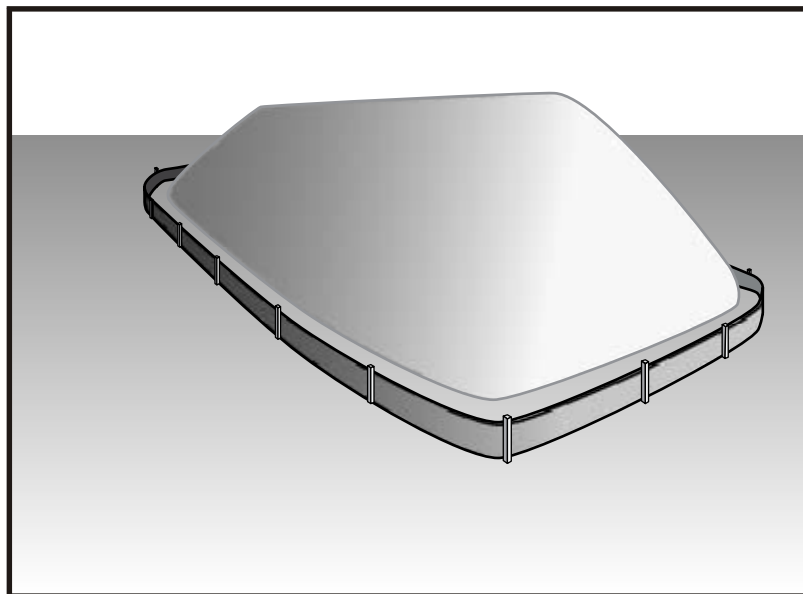
## Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	<input checked="" type="checkbox"/>
Trash	<input checked="" type="checkbox"/>
Metals	<input checked="" type="checkbox"/>
Bacteria	
Oil and Grease	<input checked="" type="checkbox"/>
Organics	<input checked="" type="checkbox"/>

## Potential Alternatives

None





## Description and Purpose

Stockpile management procedures and practices are designed to reduce or eliminate air and stormwater pollution from stockpiles of soil, soil amendments, sand, paving materials such as portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate sub base or pre-mixed aggregate, asphalt minder (so called “cold mix” asphalt), and pressure treated wood.

## Suitable Applications

Implement in all projects that stockpile soil and other loose materials.

## Limitations

- Plastic sheeting as a stockpile protection is temporary and hard to manage in windy conditions. Where plastic is used, consider use of plastic tarps with nylon reinforcement which may be more durable than standard sheeting.
- Plastic sheeting can increase runoff volume due to lack of infiltration and potentially cause perimeter control failure.
- Plastic sheeting breaks down faster in sunlight.
- The use of Plastic materials and photodegradable plastics should be avoided.

## Implementation

Protection of stockpiles is a year-round requirement. To properly manage stockpiles:

### Categories

EC	Erosion Control	
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	<input checked="" type="checkbox"/>
WM	Waste Management and Materials Pollution Control	<input checked="" type="checkbox"/>

### Legend:

- Primary Category**
- Secondary Category**

### Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	<input checked="" type="checkbox"/>
Trash	<input checked="" type="checkbox"/>
Metals	<input checked="" type="checkbox"/>
Bacteria	
Oil and Grease	<input checked="" type="checkbox"/>
Organics	<input checked="" type="checkbox"/>

### Potential Alternatives

None

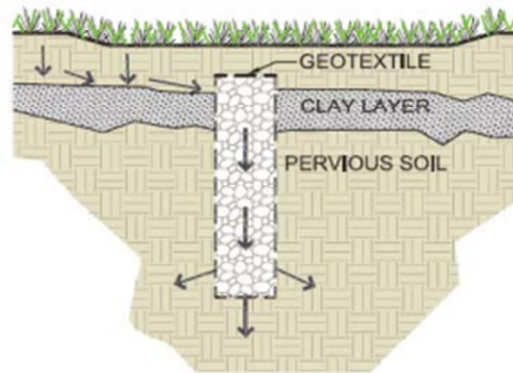


## EXHIBIT 2 TYPICAL LID BMPs

### INFILTRATION

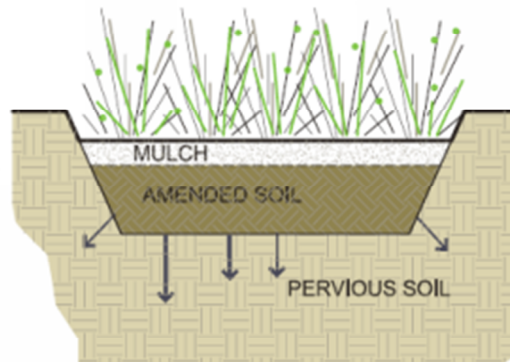
#### Dry Wells

A dry well is defined as an excavated, bored, drilled, or driven shaft or hole whose depth is greater than its width. Drywells are similar to infiltration trenches in their design and function, as they are designed to temporarily store and infiltrate runoff, primarily from rooftops or other impervious areas with low pollutant loading. A dry well may be either a drilled borehole filled with aggregate or a prefabricated storage chamber or pipe segment.



#### Bioretention

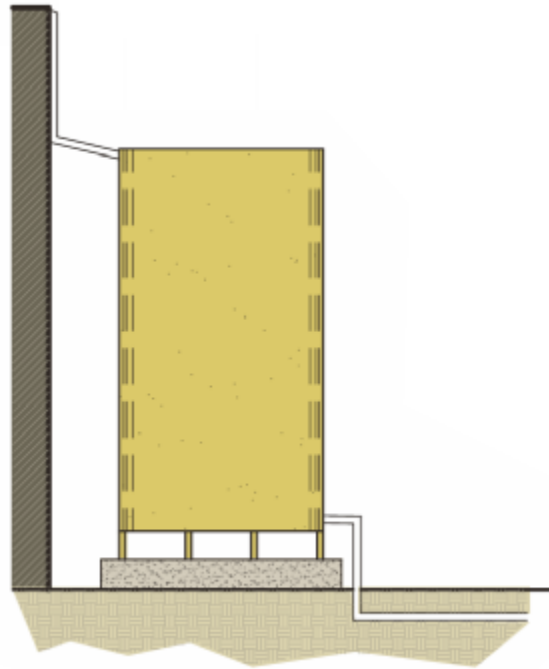
Bioretention stormwater treatment facilities are landscaped shallow depressions that capture and filter stormwater runoff. These facilities function as a soil and plant-based filtration device that removes pollutants through a variety of physical, biological, and chemical treatment processes. The facilities normally consist of a ponding area, mulch layer, planting soils, plantings, and, optionally, a subsurface gravel reservoir layer.



#### 4.5 CAPTURE AND USE BMPS

Capture and Use refers to a specific type of BMP that operates by capturing stormwater runoff and holding it for efficient use at a later time. On a commercial or industrial scale, capture and use BMPs are typically synonymous with cisterns, which can be implemented both above and below ground. Cisterns are sized to store a specified volume of water with no surface discharge until this volume is exceeded. The primary use of captured runoff is for

subsurface drip irrigation purposes. The temporary storage of roof runoff reduces the runoff volume from a property and may reduce the peak runoff velocity for small, frequently occurring storms. In addition, by reducing the amount of stormwater runoff that flows overland into a stormwater conveyance system, less pollutants are transported through the conveyance system into local streams and the ocean. The onsite use of the harvested water for non-potable domestic purposes conserves City-supplied potable water and, where directed to unpaved surfaces, can recharge groundwater in local aquifers.



**Cistern Example**