

Appendix G

Hydrology and Water Quality Report



HILTON UNIVERSAL CITY
HYDROLOGY AND WATER QUALITY REPORT
JULY 2023

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1. INTRODUCTION

1.1. PROJECT DESCRIPTION

Hillcrest Real Estate, LLC (Applicant) proposes to expand the existing hotel facilities (Project) within the approximately 7.26-acre Hilton Universal City Hotel property (Project Site), located at 555 Universal Hollywood Drive in the Sherman Oaks-Studio City-Toluca Lake-Cahuenga Pass Community Plan (Community Plan) Area of the City of Los Angeles (City). The Project Site is developed with a 24-story hotel building with 495 guestrooms (Existing Hotel Building), an attached ancillary hotel building providing meeting/banquet rooms and ancillary hotel uses (Existing Ancillary Hotel Building), a three-level parking garage, an outdoor pool area (Existing Outdoor Pool Area), and other related improvements.

The Project would involve the construction of a new 18-story, 295,688-square-foot hotel building (Hotel Expansion Building) with 395 guest rooms, a new lobby, three restaurants (including bars), a bar & lounge space in the lobby, and other recreational amenities on the southern portion of the Project Site. The Project would also expand the northern portion of the Existing Ancillary Hotel Building with a one-story meeting room addition (Meeting Room Addition) of 3,400 square feet. This addition would consist of four separate meeting rooms of less than 750 square feet and a connecting hallway. Adjacent to the Meeting Room Addition, two reconfigured landscaped spaces, one of 7,485 square feet and the other of 2,800 square feet, will be constructed. These landscaped areas would also be used as a pre-function space for the Meeting Room Addition. The Project would also involve constructing a horizontal and vertical expansion of the existing parking garage.

Atop the roof of the Hotel Expansion Building would feature a restaurant and bar with indoor and outdoor of approximately 7,232 square feet (719 seats). The Hotel Expansion Building would also include recreational amenities. On Level 1, there would be an 8,630-square-foot spa. On Level 2, there would be an approximately 2,666-square-foot fitness center. On the Basement Level, there would be an approximately 9,106-square-foot private pool deck with an approximately 2,450-square-foot pool, and an approximately 860-square-foot pool. In addition, the roof of the Hotel Expansion Building would feature a 2,294-square-foot deck surrounding a rooftop pool and jacuzzi totaling approximately 1,308 square feet.

Overall, the Project would add approximately 299,088 square feet of additional floor area to the Project Site. The Project would provide 464 new parking spaces to accommodate additional employees, hotel guests and restaurant/spa visitors. Upon completion of the Project, the Hilton Universal City Hotel (referred to in entirety as “Hotel”), which includes existing uses to remain and all proposed Project features, would provide a maximum of 890 guestrooms and 696,609 square feet of total floor area, resulting in a floor-to-area ratio of approximately 2.20:1 for the Project Site.

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. REGULATORY FRAMEWORK

2.1. SURFACE WATER HYDROLOGY

County of Los Angeles Hydrology Manual

Drainage and flood control in the City are subject to review and approval by the City's Department of Public Works, Bureau of Engineering (Bureau of Engineering). Storm drains within the City are constructed by both the City and the Los Angeles County (County) Flood Control District (County Flood Control). The County Flood Control constructs and has jurisdiction over regional facilities such as major storm drains and open flood control channels, while the City constructs and is responsible for local interconnecting tributary drains.

Per the City's Special Order No. 007-1299, December 3, 1999, the City has adopted the County Department of Public Works' Hydrology Manual as its basis of design for storm drainage facilities.¹ The Department of Public Works' Hydrology Manual requires that a storm drain conveyance system be designed for a 25-year storm event and that the combined capacity of a storm drain and street flow system accommodate flow from a 50-year storm event. Areas with sump conditions are required to have a storm drain conveyance system capable of conveying flow from a 50-year storm event. The County also limits the allowable discharge into existing storm drain (MS4) facilities based on the County's MS4 Permit, which is enforced on all new developments that discharge directly into the County's MS4 system.

Drainage and flood control structures and improvements within the City are subject to review and approval by the City's Department of Public Works and Department of Building and Safety. As required by the Department of Public Works, all public storm facilities must be designed in conformity with the standards set forth by the County. The Department of Public Works reviews and approves MS4 plans prior to construction. Any proposed increases in discharge directly into County facilities, or proposed improvements of County-owned MS4 facilities, such as catch basins and drainage lines, require approval from County Flood Control to ensure compliance with the County's Municipal National Pollutant Discharge Elimination System (NPDES) Permit requirements.

Los Angeles Municipal Code (LAMC)

Any proposed drainage improvements within the street right of way or any other property owned by, to be owned by, or under the control of the City requires the approval of a B-

¹ Los Angeles County Department of Public Works, Hydrology Manual, 2006.

permit (LAMC Section 62.105). Under the B-permit process, storm drain installation plans are subject to review and approval by the City's Department of Public Works Bureau of Engineering. Additionally, any connections to the City's storm drain system from a property line to a catch basin or a storm drain pipe requires a storm drain permit from the Department of Public Works, Bureau of Engineering.

2.2. SURFACE WATER QUALITY

Clean Water Act

The Clean Water Act (CWA), formerly known as the Federal Water Pollution Control Act, was first introduced in 1948, with major amendments in the 1960s, 1970s and 1980s.² The CWA authorizes Federal, state, and local entities to cooperatively create comprehensive programs for eliminating or reducing the pollution of state waters and tributaries. Amendments to the CWA in 1972 established the NPDES permit program, which prohibits discharge of pollutants into the nation's waters without procurement of a NPDES permit from the United States Environmental Protection Agency (USEPA). The purpose of the permit is to translate general requirements of the CWA into specific provisions tailored to the operations of each organization that is discharging pollutants. Although federally mandated, the NPDES permit program is generally administered at the State and Regional levels.

The USEPA NPDES Program requires NPDES permits for: (1) Municipal Separate Storm Sewer Systems (MS4) Permit generally serving, or located in, incorporated cities with 100,000 or more people (referred to as municipal permits); (2) 11 specific categories of industrial activity (including landfills); and (3) construction activity that disturbs five acres or more of land. As of March 2003, Phase II of the NPDES Program extended the requirements for NPDES permits to numerous small municipal separate storm sewer systems, construction sites of one to five acres, and industrial facilities owned or operated by small municipal separate storm sewer systems, which were previously exempted from permitting.

Federal Anti-Degradation Policy

The Federal Antidegradation Policy has been incorporated within the CWA and requires states to develop state-wide antidegradation policies and identify methods for implementing them.³ Pursuant to the Code of Federal Regulations, state antidegradation policies and implementation methods must, at a minimum, protect and maintain: (1) existing in-stream water uses; (2) existing water quality, where the quality of the waters exceeds levels necessary to support existing beneficial uses, unless the state finds that allowing lower water quality is necessary to accommodate economic and social development in the area; and (3) water quality in waters considered an outstanding national resource.

² United States Environmental Protection Agency, Clean Water Act, 2002.

³ United States Environmental Protection Agency, Water Quality Standards Handbook - Chapter 4: Antidegradation, 2010.

California Porter-Cologne Act

The Porter-Cologne Water Quality Control Act established the legal and regulatory framework for California's water quality control.⁴ The California Water Code (CWC) authorizes the State Water Resources Control Board (SWRCB) to implement the provisions of the CWA, including the authority to regulate waste disposal and require cleanup of discharges of hazardous materials and other pollutants. In California, the NPDES stormwater permitting program is administered by the SWRCB.

Under the CWC, the State of California is divided into nine Regional Water Quality Control Boards (RWQCBs), which govern the implementation and enforcement of the CWC and the CWA. The Project Site is located within Region 4, also known as the Los Angeles Region (LARWQCB). The RWQCBs develop and enforce water quality objectives and implement plans that will best protect California's waters, acknowledging areas of different climate, topography, geology, and hydrology. Each RWQCB is required to formulate and adopt a Water Quality Control Plan or Basin Plan for its region. The Basin Plan establishes beneficial use definitions for the various types of water bodies, and serves as the basis for establishing water quality objectives, discharge conditions and prohibitions, and must adhere to the policies set forth in the CWC and established by the SWRCB. In this regard, the LARWQCB issued the Los Angeles Basin Plan on August 29, 2014 for the Coastal Watersheds of Los Angeles and Ventura Counties, with subsequent amendments. The RWQCB is also given authority to issue waste discharge requirements, enforce actions against stormwater discharge violators, and monitor water quality.⁵

California Anti-Degradation Policy

The California Antidegradation Policy, otherwise known as the Statement of Policy with Respect to Maintaining High Quality Water in California was adopted by SWRCB (State Board Resolution No. 68-16) in 1968.⁶ Unlike the Federal Antidegradation Policy, the California Antidegradation Policy applies to all waters of the State, not just surface waters. The policy states that whenever the existing quality of a water body is better than the quality established in individual Basin Plans, such high quality shall be maintained and discharges to that water body shall not unreasonably affect present or anticipated beneficial use of such water resource.

California Toxics Rule

In 2000, the EPA promulgated the California Toxics Rule, which establishes water quality criteria for certain toxic substances to be applied to waters in the State.⁷ The EPA promulgated this rule based on the EPA's determination that the numeric criteria are necessary in the State to protect human health and the environment. The California Toxics

⁴ State Water Resources Control Board, Porter-Cologne Water Quality Control Act, 2018.

⁵ United States Environmental Protection Agency, Clean Water Act, 2016.

⁶ California State Water Resources Control Board, State Board Resolution No. 68-16, 1968.

⁷ United States Environmental Protection Agency, Water Quality Standards, Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, 2001.

Rule establishes acute (i.e., short-term) and chronic (i.e., long-term) standards for bodies of water such as inland surface waters and enclosed bays and estuaries that are designated by the LARWQCB as having beneficial uses protective of aquatic life or human health.

Board Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties

As required by the CWC, the LARWQCB has adopted a plan entitled “Water Quality Control Plan, Los Angeles Region: Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties” (Basin Plan). Specifically, the Basin Plan designates beneficial uses for surface and groundwaters, sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the California Antidegradation Policy, and describes implementation programs to protect all waters in the Los Angeles Region. In addition, the Basin Plan incorporates (by reference) all applicable State and Regional Board plans and policies and other pertinent water quality policies and regulations. Those of other agencies are referenced in appropriate sections throughout the Basin Plan.⁸

Finally, the Basin Plan provides valuable information to the public about local water quality issues. The watersheds within the Los Angeles Region include the Ventura River, Santa Clara River, Calleguas Creek, Malibu Creek, Ballona Creek, Los Angeles River, Dominguez Channel, San Gabriel River and Los Cerritos Channel Watersheds.

NPDES Permit Program

The NPDES permit program was first established under authority of the CWA to control the discharge of pollutants from any point source into the waters of the United States. As indicated above, in California, the NPDES stormwater permitting program is administered by the SWRCB through its nine RWQCBs.

Construction General Permit

SWRCB Order No. 2009-0009-DWQ known as the “Construction General Permit” was adopted on September 2, 2009, and subsequently amended by SWRCB Order Nos. 2010-0014-DWQ and 2012-0006-DWQ. This NPDES permit establishes a risk-based approach to stormwater control requirements for construction projects by identifying three project risk levels. The main objectives of the Construction General Permit are to:

1. Reduce erosion
2. Minimize or eliminate sediment in stormwater discharges
3. Prevent materials used at a construction site from contacting stormwater
4. Implement a sampling and analysis program

⁸ Los Angeles Regional Water Quality Control Board. LARWQCB Basin Plan http://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/ Accessed March 13, 2023.

5. Eliminate unauthorized non-stormwater discharges from construction sites
6. Implement appropriate measures to reduce potential impacts on waterways both during and after construction of projects
7. Establish maintenance commitments on post-construction pollution control measures

California mandates requirements for all construction activities disturbing more than one acre of land to develop and implement Stormwater Pollution Prevention Plans (SWPPP). The SWPPP documents the selection and implementation of Best Management Practices (BMPs) for a specific construction project, charging owners with stormwater quality management responsibilities. A construction site subject to the Construction General Permit must prepare and implement a SWPPP that meets the requirements of the Construction General Permit.^{9 10}

Los Angeles County Municipal Storm Water System (MS4) Permit

As described above, USEPA regulations require that MS4 permittees implement a program to monitor and control pollutants being discharged to the municipal system from both industrial; and commercial projects that contribute a substantial pollutant load to the MS4.

On July 31, 2021, the LARWQCB adopted Order No. R4-2021-0105 (Order) under the CWA and the Porter-Cologne Act, which became effective September 11, 2021. The Order is the NPDES permit or MS4 permit for municipal stormwater and urban runoff discharges within the County. The requirements of the Order (the Permit) cover 85 cities and most of the unincorporated areas of the County as well as 10 cities and unincorporated areas of Ventura County. Under the Permit, the County Flood Control is designated as the Principal Permittee. The other permittees are the 85 Los Angeles County cities (including the City) and the County as well as the Ventura County Watershed Protection District, the 10 Ventura County cities and Ventura County. Collectively, these are the “Co-Permittees”. The Principal Permittee helps to facilitate activities necessary to comply with the requirements outlined in the Permit but is not responsible for ensuring compliance of any of the Co-Permittees.

Stormwater Quality Management Program (SQMP)

In compliance with the Permit, the Co-Permittees are required to implement a storm water quality management program (SQMP) with the goal of accomplishing the requirements of the Permit and reducing the amount of pollutants in storm water runoff. The SWMP requires the County and the 84 incorporated cities to:

⁹ State Water Resources Control Board. http://www.swrcb.ca.gov/water_issues/programs/npdes/ Accessed March 15, 2023.

¹⁰ USEPA. U.S. Environmental Protection Agency - NPDES.

1. Implement a public information and participation program to conduct outreach on storm water pollution;
2. Control discharges at commercial/industrial facilities through tracking, inspecting, and ensuring compliance at facilities that are critical sources of pollutants;
3. Implement a development planning program for specified development projects;
4. Implement a program to control construction runoff from construction activity at all construction sites within the relevant jurisdictions;
5. Implement a public agency activities program to minimize storm water pollution impacts from public agency activities; and
6. Implement a program to document, track, and report illicit connections and discharges to the storm drain system.

The Permit contains the following provisions for implementation of the SQMP by the Co-Permittees:

1. General Requirements:
 - a. Each permittee is required to implement the SQMP in order to comply with applicable storm water program requirements.
 - b. The SQMP shall be implemented and each permittee shall implement additional controls so that discharge of pollutants is reduced.
2. Best Management Practice Implementation: Permittees are required to implement the most effective combination of BMPs for storm water/urban runoff pollution control. This should result in the reduction of storm water runoff.
3. Revision of the SQMP: Permittees are required to revise the SQMP in order to comply with requirements of the RWQCB while complying with regional watershed requirements and/or waste load allocations for implementation of Total Maximum Daily Loads (TMDLs) for impaired waterbodies.
4. Designation and Responsibilities of the Principal Permittee: The County Flood Control is designated as the Principal Permittee who is responsible for:
 - a. Coordinating activities that comply with requirements outlined in the NPDES Permit;
 - b. Coordinating activities among Permittees;
 - c. Providing personnel and fiscal resources for necessary updates to the SQMP;

- d. Providing technical support for committees required to implement the SQMP; and
 - e. Implementing the Countywide Monitoring Program required under this Order and assessing the results of the monitoring program.
5. Responsibilities of Co-Permittees: Each Co-Permittee is required to comply with the requirements of the SQMP as applicable to the discharges within its geographical boundaries. These requirements include:
- a. Coordinating among internal departments to facilitate the implementation of the SQMP requirements in an efficient way;
 - b. Participating in coordination with other internal agencies as necessary to successfully implement the requirements of the SQMP; and
 - c. Preparing an annual Budget Summary of expenditures for the storm water management program by providing an estimated breakdown of expenditures for different areas of concern, including budget projections for the following year.
6. Watershed Management Committees (WMCs):
- a. Each WMC shall be comprised of a voting representative from each Permittee in the Watershed Management Area (WMA).
 - b. Each WMC is required to facilitate exchange of information between co-permittees, establish goals and deadlines for WMAs, prioritize pollution control measures, develop and update adequate information, and recommend appropriate revisions to the SQMP.

Legal Authority: Co-Permittees are granted the legal authority to prohibit non-storm water discharges to the storm drain system including discharge to the MS4 from various development types.

Low Impact Development – City of Los Angeles

In 2011, the City adopted a Citywide Low Impact Development Ordinance (LID Ordinance) that amended the City's existing Stormwater Ordinance (LAMC Section Nos. 64.70 and 64.72, discussed above). The LID Ordinance, effective May 12, 2012, and updated in updated September 2015 (Ordinance No. 183,833), enforces the requirements of the County MS4 Permit. LID is a stormwater management strategy with goals to mitigate the impacts of increased runoff and stormwater pollution as close to their source as possible; and that promotes the use of natural infiltration systems, evapotranspiration, and the reuse of stormwater.

The goal of LID practices is to remove nutrients, bacteria, and metals from stormwater while also reducing the quantity and intensity of stormwater flows. Through the use of

various infiltration strategies, LID is aimed at minimizing impervious surface area. Where infiltration is not feasible, the use of bioretention, rain gardens, green roofs, and rain barrels that will store, evaporate, detain, and/or treat runoff can be used.¹¹

The intent of LID standards is to:

- Require the use of LID practices in future developments and redevelopments to encourage the beneficial use of rainwater and urban runoff;
- Reduce stormwater/urban runoff while improving water quality;
- Promote rainwater harvesting;
- Reduce off-site runoff and provide increased groundwater recharge;
- Reduce erosion and hydrologic impacts downstream; and
- Enhance the recreational and aesthetic values in our communities.

The Citywide LID strategy addresses land development planning as well as storm drain infrastructure. Toward this end, LID is implemented through BMPs that fall into four categories: site planning BMPs, landscape BMPs, building BMPs, and street and alley BMPs. While the LID Ordinance and the BMPs contained therein comply with the County MS4 Permit requirements for stormwater management, the MS4 requirements apply only to proposed new development and redevelopment of a certain size, primarily address stormwater pollution prevention as opposed to groundwater recharge, and vary over time as the permit is reissued every five years. The LID Ordinance provides a consistent set of BMPs that are intended to be inclusive of, and potentially exceed, SUSMP standards, apply to existing as well as new development, and emphasize natural drainage features and groundwater recharge in addition to pollution prevention in receiving waters. The LID Ordinance requires the capture and management of the greater of an 85th percentile rain event or the first 0.75-inch of runoff flow during storm events defined in the City's LID BMPs, through one or more of the City's preferred LID improvements in priority order: on-site infiltration, capture and reuse, or biofiltration/biotreatment BMPs, to the maximum extent feasible.

Per the City's 2016 LID Manual's Figure 3.3 and Section 4.1, the City's preferred LID improvement is on-site infiltration of stormwater, since it allows for groundwater recharge and reduces the volume of stormwater entering municipal drains.¹² If Project Site conditions are not suitable for infiltration, the City requires on-site retention via stormwater capture and reuse. Should capture and reuse be deemed technically infeasible, high

¹¹ City of Los Angeles Department of Public Works, Bureau of Sanitation, Watershed Protection Division, Planning and Land Development for Low Impact Development (LID), Part B: Planning Activities, 5th Edition, May 2016, https://www.lacitysan.org/cs/groups/sg_sw/documents/document/y250/mde3/~edisp/cnt017152.pdf. Accessed March 13, 2023.

¹² City of Los Angeles Department of Public Works, Bureau of Sanitation, Watershed Protection Division, Planning and Land Development for Low Impact Development (LID), Part B: Planning Activities, 5th Edition, May 2016, https://www.lacitysan.org/cs/groups/sg_sw/documents/document/y250/mde3/~edisp/cnt017152.pdf. Accessed March 13, 2023.

efficiency bio-filtration/ bioretention systems should be utilized. Lastly, under the LID Ordinance (LAMC Section 64.72 (C) 6), as interpreted in the LID Manual, if no single approach listed in the LID Manual is feasible, then a combination of approaches may be used.¹³

The LID Ordinance applies first to a project in lieu of SUSMP. If a large project cannot meet the requirements of the LID Ordinance, then SUSMP applies instead.

2.3. GROUNDWATER

Board Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties

As required by the CWC, the LARWQCB has adopted a plan entitled “Water Quality Control Plan, Los Angeles Region: Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties” (Basin Plan). Specifically, the Basin Plan designates beneficial uses for surface and groundwaters, sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the State's antidegradation policy, and describes implementation programs to protect all waters in the Los Angeles Region. In addition, the Basin Plan incorporates (by reference) all applicable State and Regional Board plans and policies and other pertinent water quality policies and regulations. Those of other agencies are referenced in appropriate sections throughout the Basin Plan.

The Basin Plan is a resource for the Regional Board and others who use water and/or discharge wastewater in the Los Angeles Region. Other agencies and organizations involved in environmental permitting and resource management activities also use the Basin Plan. Finally, the Basin Plan provides valuable information to the public about local water quality issues. The City overlies the Los Angeles Coastal Plain Groundwater Basin (Basin). The Basin is comprised of the Hollywood, Santa Monica, Central, and West Coast Subbasins.

Safe Drinking Water Act (SDWA)

The Safe Drinking Water Act (SDWA) is the main federal law that ensures the quality of the Nation's drinking water.¹⁴ The SDWA was originally passed by Congress in 1974 to protect public health by regulating the nation's public drinking water supply and its sources: rivers, lakes, reservoirs, springs, and groundwater wells. Under SDWA, the USEPA sets standards for drinking water quality and oversees the states, localities, and water suppliers that implement those standards. The SDWA regulates contaminants of concern in domestic water supply, including MCLs, and that the USEPA has delegated the California Department of Public Health the responsible agency for administering California's drinking

¹³ City of Los Angeles Department of Public Works, Bureau of Sanitation, Watershed Protection Division, Planning and Land Development for Low Impact Development (LID), Part B: Planning Activities, 5th Edition, May 2016, https://www.lacitysan.org/cs/groups/sg_sw/documents/document/y250/mde3/~edisp/cnt017152.pdf. Accessed March 13, 2023.

¹⁴ United States Code, Title 42 – The Public Health and Welfare- Chapter 6A Public Health and Service, Safe Drinking Water Act. 2006 Edition, Supplement 4, 2006.

water program. MCLs are established under CCR Title 22, Div. 4, Ch. 15, Article 4 (Title 22 Standards).

California Water Plan

The California Water Plan provides a framework for water managers, legislators, and the public to consider options and make decisions regarding California's water future. The California Water Plan, which is updated every five years, presents basic data and information on California's water resources including water supply evaluations and assessments of agricultural, urban, and environmental water uses to quantify the gap between water supplies and uses. The California Water Plan also identifies and evaluates existing and proposed statewide demand management and water supply augmentation programs and projects to address the State's water needs.

The goal for the California Water Plan Update is to meet CWC requirements, receive broad support among those participating in California's water planning, and be a useful document for the public, water planners throughout the state, legislators and other decision-makers.

3. ENVIRONMENTAL SETTING

3.1. SURFACE WATER HYDROLOGY

3.1.1. REGIONAL

The Project Site is located within the Los Angeles River Watershed. The Los Angeles River is a 51 mile long flood protection channel that drains the San Fernando Valley and portions of the Los Angeles basin, from the San Fernando Valley on the north, through downtown Los Angeles and to the Port of Long Beach. The Los Angeles River Watershed totals approximately 834 square miles. It borders the crest of the San Gabriel Mountains on the north, the Ventura-Los Angeles County line on the west, and extends south to Long Beach. The major tributaries to the Los Angeles River include Bell Creek, Arroyo Calabasas, Tujunga Wash, Arroyo Seco, Rio Hondo, Compton Creek, and numerous storm drains. Refer to Figure 8 for the Los Angeles River Watershed Map.

3.1.2. LOCAL

Underground storm drainage facilities along Lankershim Boulevard are owned and maintained by the City. Based on City record data, there is an existing 84-inch Reinforced Concrete Pipe (RCP) in Lankershim Boulevard.

Stormwater runoff enters off-site catch basins and underground storm drainage pipes which convey stormwater through underground pipe networks into the Los Angeles River. The Los Angeles River flows generally southeast, ultimately discharging into the Pacific Ocean at the Port of Long Beach. The Los Angeles River is designed to carry approximately 64,773 cfs from a 50-year frequency storm event adjacent to the Project Site.

3.1.3. ON SITE

Based on the topographic survey by Hennon Surveying & Mapping Inc. dated September 24, 2019 (Topographic Survey) and the *Geotechnical Engineering Investigation for*

Proposed Hilton Universal City Expansion Project, 555 Universal Hollywood Drive, Los Angeles, California (Geotechnical Engineering Investigation), dated June 9, 2020 by Geotechnologies, Inc., and the *Updated Geotechnical Engineering Investigation* (Updated Geotechnical Engineering Investigation) dated September 14, 2022, prepared by Geotechnologies, Inc., the Project Site slopes generally to the southwest at varying gradients with an elevation of approximately 740 feet above mean sea level on the northwestern corner of the Project Site to approximately 675 feet above mean sea level on the southwestern corner.

The Project Site is currently approximately 75-percent impervious. The Project Site is not crossed by any water courses or rivers. The Project Site currently serves as an asphalt service road, structures, planter area, and pool area with surrounding patio and landscaping. The Project would require redevelopment of approximately 5.25 acres of the 7.26 acres Project Site. The redeveloped area is approximately 66.1-percent impervious. As shown in Figure 1, stormwater from the Project Site is conveyed by sheet flow toward the south and east. Runoff is collected in a series of private catch basins and storm drain and is conveyed to the 84-inch storm drain in Lankershim Boulevard. All stormwater runoff eventually drains to the City storm drain system. The result of the existing 50-year, 24-hour storm flow rate (Q_{50}) of the 5.25 acres of the Project Site's area to be redeveloped is presented in Table 1 below. The calculations are performed in HydroCalc in Figure 3.

Table 1- Existing Drainage Stormwater Runoff Calculations¹

Drainage Area	Area (Acres)	Q_{50} (cfs) ²	Percent Impervious (%)
1	1.62	5.27	48.9
2	0.81	2.87	49.9
3	1.12	3.97	92.1
4	0.95	3.37	66.7
5	0.75	2.66	81.2
Total	5.25	18.14	66.1

¹ The calculations do not include runoff from previously developed Existing Hotel Building and Existing Ancillary Hotel Building as shown in Figure 1 since these areas of the Project Site will not be redeveloped. Therefore, total percent impervious (66.1%) is different than (75%) percent impervious for the entire Project Site.

² The volumetric flow rate is measured in cubic feet per second.

3.2. SURFACE WATER QUALITY

3.2.1. REGIONAL

As stated above, the Project Site lies within the Los Angeles River Watershed. Constituents of concern listed for the Los Angeles River under California's Clean Water Act Section

303(d) List include Cadmium (dissolved), Lead (dissolved), Chlordane, Dichloroethylene, Tetrachloroethylene, Trichloroethylene, Coliform Bacteria, Copper (Dissolved), Total Aluminum, Total Lead, Enterococcus, Fecal Coliform, Total Coliform, Algae, Ammonia, Oil and Grease, and Zinc (Dissolved).

3.2.2. LOCAL

In general, urban stormwater runoff occurs following precipitation events with the volume of runoff flowing into the drainage system varying with 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 it falls through. 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 has installed catch basins with screens to capture debris before entering the storm drain system. In addition, the City conducts routine street cleaning operations as well as periodic cleaning and maintenance of catch basins to reduce stormwater pollution within the City.

3.2.3. ON SITE

While the Project Site currently does not have structural BMPs for the treatment of stormwater runoff from existing impervious surfaces such as building roof areas and pavements, there are a range of non-structural BMPs that are currently utilized at the Project Site to minimize the impact of pollutant sources. These include general housekeeping practices such as regular trash collection, spill prevention and response activities, proper storage of hazardous materials and wastes; and substituting environmentally friendly products for environmentally hazardous products, such as soaps, solvents, and pesticides. In addition, stormwater runoff from existing pervious surfaces such as island landscaped areas and planting areas is naturally treated to some extent by existing vegetation and the absorptive properties of the existing soils. Based on the existing operations within the Project Site, the on-site runoff likely contains the following pollutants of concern: sediment, nutrients, pesticides, metals, pathogens, and oil and grease.

3.3. GROUNDWATER LEVEL

3.3.1. REGIONAL AND LOCAL

Groundwater use for domestic water supply is a major beneficial use of groundwater basins in Los Angeles County. The Project Site overlies the San Fernando Valley Groundwater Basin (SFV Basin). Generally, groundwater flows south-southwesterly within the SFV Basin 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 seawater barriers to prevent the intrusion of salt water.¹⁵

The SFV Basin is bounded on the north and northwest by the Santa Susana Mountains, on the north and northeast by the San Gabriel Mountains, on the east by the San Rafael Hills, on the south by the Santa Monica Mountains and Chalk Hills, and on the west by the Simi Hills. The valley is drained by the Los Angeles River and its tributaries. Precipitation in the San Fernando Valley ranges from 15 to 23 inches per year and averages about 17 inches.¹⁶

The groundwater in this SFV Basin is mainly unconfined with some confinement within the Saugus Formation in the western part of the basin and in the Sylmar and Eagle Rock areas. Recharge of the SFV Basin is from a variety of sources. Spreading of imported water and runoff occurs in the Pacoima, Tujunga, and Hansen Spreading Grounds. Runoff contains natural streamflow from the surrounding mountains, precipitation falling on impervious areas, reclaimed wastewater, and industrial discharges. Water flowing in surface washes infiltrates, particularly in the eastern portion of the basin.

Groundwater in the SFV Basin flows generally from the edges of the basin toward the middle of the basin, then beneath the Los Angeles River Narrows into the Central Sub-basin of the Coastal Plain of Los Angeles Basin. In the northeastern part of the SFV Basin, groundwater moves from the La Crescenta area southward beneath the surface of Verdugo Canyon toward the Los Angeles River near Glendale, whereas the groundwater in the Tujunga area flows west following the Tujunga Wash around the Verdugo Mountains to join groundwater flowing from the west following the course of the Los Angeles River near Glendale (ULARAW 1999). Flow velocity ranges from about 5 feet per year in the western part of the SFV Basin to 1,300 feet per year beneath the Los Angeles River Narrows.

3.3.2. ON-SITE

As previously discussed in Section 3.3.1 of this report, the Project Site overlies the SFV Basin. Based on on-site explorations conducted as part of the Geotechnical Engineering Investigation, fill materials were encountered ranging from 3 to 25 feet in depth. The fill thickens from east to west on the south side of the existing parking structure. Deeper fill may be encountered to the west, as stated in the Updated Geotechnical Engineering Investigation for the Project Site. Fill materials consisted of silty sand and sand which are dark brown, moist, and medium dense. The bedrock underlying the fills on site consists of interbedded siltstone and sandstone with beds of coarse grained conglomerate of the Upper Topanga Formation. The shallower depth weathered rock is generally dark and yellowish brown, greenish gray, and grayish brown in color. With increasing depth, the rock is

¹⁵ https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/4_012_SanFernandoValley.pdf, accessed June 29, 2023

¹⁶ https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/4_012_SanFernandoValley.pdf, accessed June 29, 2023

generally gray to dark gray in color. The rock is moderately hard to hard, moist, and moderately to poorly bedded.

Per the Updated Geotechnical Engineering Investigation, the bedrock that underlines the Project Site is well bedded and moderately fractured. Water will follow bedding planes and fractures within the bedrock.

Per the Updated Geotechnical Engineering Investigation, the historically highest groundwater levels are not shown within 0.3 mile of the Project Site with a depth of “0”, which is at the ground surface. This indicates that the underlying soils are not of sufficient permeability to transmit water. The seepage water is anticipated at the bedrock contacts, from fractures, and from coarse sandstone beds. Soil borings were drilled to depths between 27 and 60 feet below ground surface (bgs) during Geotechnologies’ field investigation and groundwater seepage was encountered at varying depths between 14 to 36 feet bgs.

3.4. GROUNDWATER QUALITY

3.4.1. REGIONAL

As stated above, the City overlies the SFV Basin, which falls under the jurisdiction of the 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.¹⁷

3.4.2. LOCAL

In the western part of the SFV Basin, calcium sulfate-bicarbonate character is dominant, and in the eastern part of the SFV Basin, calcium bicarbonate character dominates. Total dissolved solids (TDS) range from 326 to 615 mg/L, and electrical conductivity ranges from 540 to 996 micromhos (µmhos). Data from 125 public supply wells shows an average TDS content of 499 and a range from 176 to 1,160.¹⁸ The average TDS content meets the secondary maximum contaminant level (SMCL) of 1000 mg/L for the SFV Basin.¹⁹

Several investigations by U.S. Geological Survey group have determined contamination of volatile organic compounds such as trichloroethylene (TCE), perchloroethylene (PCE), petroleum compounds, chloroform, nitrate, sulfate, and heavy metals. TCE, PCE and

¹⁷ Los Angeles Regional Water Quality Control Board, Basin Plan, September 11, 2014.
https://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/basin_plan_documentation.html
Accessed March 15, 2023.

¹⁸ https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/4_012_SanFernandoValley.pdf, accessed June 29, 2023

¹⁹ USGS Status of Groundwater Quality in San Fernando-San Gabriel Study Unit, 2005: California GAMA Priority Basin Project

nitrate contamination occurs in the eastern part of the SFV Basin and elevated sulfate concentration occurs in the western part of the basin.²⁰

3.4.3. ON-SITE

Since the Project Site is primarily fill material overlying bedrock, no appreciable infiltration of potential contaminants described above is expected to occur. Due to the bedrock impermeability and given the size of pervious areas (approximately 25-percent of the existing total Project Site area) and the depth of existing groundwater at the ground surface, as well as the flow direction of the existing drainage, the Project Site does not contribute substantially to groundwater recharge. Under existing uses and combination of good housekeeping practices described above and in compliance with all existing hazardous waste regulations, the runoff from the Project Site would not adversely affect groundwater quality.

Other types of risk such as underground storage tanks have a greater potential to impact groundwater. As discussed in the Project's Initial Study (Appendix A of the Draft EIR for the Project), a Phase I Environmental Site Assessment (ESA) was prepared for the Project (Geosyntec, 2020), which identified two underground storage tanks formerly containing diesel fuel were removed from the Project Site.²¹ With this removal, no underground storage tanks currently exist on the Project Site.

4. SIGNIFICANCE THRESHOLDS

In accordance with the significance thresholds described by the State CEQA Guidelines Appendix G and the 2006 City's CEQA Threshold Guide, the Project has been analyzed for potential impacts on hydrology, water quality, and groundwater. This report includes an analysis of the Project with respect to the CEQA thresholds as described below.

In accordance with Appendix G of the California Environmental Quality Act (CEQA) Guidelines (CEQA Guidelines), the Project would have a significant impact related to stormwater if it would:

- a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality

²⁰ https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/4_012_SanFernandoValley.pdf, accessed June 29, 2023

²¹ City of Los Angeles City Planning, Hilton Universal City Project Initial Study, October 6, 2020. <https://planning.lacity.org/development-services/eir/hilton-universal-city-project> Accessed June 6, 2023.

- b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin
- c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
 - i) result in a substantial erosion or siltation on- or off-site
 - ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site
 - iii) create or contribute runoff water which would exceed the capacity of the existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff
 - iv) impede or redirect flood flows
- d) In flood hazard, tsunami or seiche zones, risk release of pollutants due to project inundation
- e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan

In assessing impacts related to stormwater in this section, the City will use Appendix G as the thresholds of significance. The criteria identified in the 2006 City's CEQA Thresholds Guide (Threshold Guide) Thresholds Guide as discussed below will be used where applicable and relevant to assist in analyzing the Appendix G thresholds.

4.1 SURFACE WATER HYDROLOGY

The City's Thresholds Guide, identifies the following criteria to evaluate surface water hydrology impacts:

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

4.2 SURFACE WATER QUALITY

In the context of the above questions from Appendix G, the City's CEQA Threshold Guide states that a project would normally have a significant impact on surface water quality if it

would result in discharges that would create pollution, contamination or nuisance, as defined in Section 13050 of the CWC or that cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or Water Quality Control Plan for the receiving water body.

The CWC includes the following definitions:

- “Pollution” means an alteration of the quality of the waters of the state to a degree which unreasonably affects either of the following: 1) the waters for beneficial uses or 2) facilities which serve these beneficial uses. “Pollution” may include “Contamination.”
- “Contamination” means an impairment of the quality of the waters of the state by waste to a degree, which creates a hazard to the public health through poisoning or through the spread of disease. “Contamination” includes any equivalent effect resulting from the disposal of waste, whether or not waters of the state are affected.
- “Nuisance” means anything which meets all of the following requirements: 1) is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property; 2) affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal; and 3) occurs during, or as a result of, the treatment or disposal of wastes.²²

4.3. GROUNDWATER LEVEL

According to the City’s CEQA Thresholds Guide, a project would normally have a significant impact on groundwater level if it would:

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

4.4. GROUNDWATER QUALITY

²² California Legislative Information, Water Code – Wat Division 7. Water Quality [13000-16104], Chapter 2. Definitions [13050-13051], https://leginfo.ca.gov/faces/codes_displaySection.xhtml?lawCode=WAT§ionNum=13050; Accessed March 30, 2023.

According to the City's CEQA Thresholds Guide a project would normally have a significant impact on groundwater quality if it would:

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

5. METHODOLOGY

5.1. SURFACE WATER HYDROLOGY

Surface Water Hydrology for the Project Site is under the jurisdiction of the City's Department of Public Works Bureau of Engineering. Drainage collection, treatment and conveyance are regulated by the City. Per the City's Special Order No. 007-1299, December 3, 1999, the City has also adopted the Los Angeles County Department of Public Works (LACDPW) Hydrology Manual as its basis of design for storm drainage facilities. The LACDPW Hydrology Manual requires projects to have drainage facilities that meet the Urban Flood level of protection. The Urban Flood is runoff from a 25-year frequency design storm falling on a saturated watershed. A 25-year frequency design storm has a probability of 1/25 of being equaled or exceeded in any year. The City's CEQA Threshold Guide, however, establishes the 50-year frequency design storm event as the threshold to analyze potential impacts on surface water hydrology as a result of development. This is in part because the City uses the 50-year storm event to plan the existing and planned storm water drainage systems. Consequently, the use of the 50-year frequency design storm event in this analysis is in line with the City's CEQA threshold to determine if the project "[exceeds] the capacity of existing or planned storm water drainage systems or provide[s] additional sources of polluted runoff."

Modified Rational Method was used to calculate storm water runoff. The "peak" (maximum value) runoff for a drainage area is calculated using the formula, $Q = CIA$

Where,

Q = Volumetric flow rate (cfs)

C = Runoff coefficient (dimensionless)

I = Rainfall Intensity at a given point in time (in/hr)

A = Basin area (acres)

The Modified Rational Method assumes that a steady, uniform rainfall rate will produce maximum runoff when all parts of the basin area are contributing to outflow. This occurs when the storm event lasts longer than the time of concentration. The time of concentration (T_c) is the time it takes for rain in the most hydrologically remote part of the basin area to reach the outlet.

The method assumes that the runoff coefficient (C) remains constant during a storm. The runoff coefficient is a function of both the soil characteristics and the percentage of impervious surfaces in the drainage area.

The LACDPW developed a time of concentration calculator, Hydrocalc, to automate time of concentration calculations as well as the peak runoff rates and volumes using the Modified Rational Method design criteria as outlined in the Hydrology Manual. The data input requirements include: sub-area size, soil type, land use, flow path length, flow path slope and rainfall isohyet. The Hydrocalc Calculator was used to calculate the storm water peak runoff flow rate for the Project conditions by evaluating an individual sub-area independent of all adjacent subareas. See Figure 3 for the Hydrocalc Calculator results and Figure 5 for Isohyet Map.

5.2. SURFACE WATER QUALITY

5.2.1. CONSTRUCTION

Construction BMPs will be designed and maintained for the Project as part of the implementation of the SWPPP in compliance with the Construction General Permit. The SWPPP shall begin when construction commences and before any site clearing or demolition activity. During construction, the SWPPP will be referred to regularly and amended as changes occur throughout the construction process. The Notice of Intent (NOI), Amendments to the SWPPP, Annual Reports, Rain Event Action Plans (REAPs), and Non-Compliance Reporting are posted to the State's SMARTS website in compliance with the requirements of the Construction General Permit. In addition, as part of the NOI application a risk level evaluation will be performed to determine the risk level category (risk level 1, 2, or 3) for the Project based on a detailed construction schedule, soil type, site slope, and location. Each of the three risk level categories establishes specific monitoring and testing requirements.

5.2.2. OPERATION

The Project will meet the requirements of the City's Low Impact Development (LID) standards.²³ 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

²³ The Development Best Management Practices Handbook, Part B Planning Activities, 4th edition was adopted by the City of Los Angeles, Board of Public Works on July 1, 2011 to reflect Low Impact Development (LID) requirements that took effect May 12, 2012.

treated through high efficiency BMPs onsite for at least the volume of water produced by the greater of the 85th 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/Bioretention 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. Specifically, LID guidelines require that infiltration systems maintain at least 10 feet of clearance to the observed groundwater level, 5 feet from property line, and 25 feet from any building structure.

Based on the Updated Geotechnical Engineering Investigation, stormwater infiltration is not feasible on the Project Site due to the shallow occurrences of the bedrock beneath the site.

Since infiltration is infeasible, the next tier in the City's LID Manual, and stated above, is a stormwater capture and use system. Approximately 13,000 square feet of landscaping would be required to justify the feasibility of a stormwater capture and use system, in which stormwater is collected and stored for later use, to mitigate 68,884 gallons of stormwater runoff per LID guidelines.

The selected BMPs must control peak flow discharge to provide stream channel and over bank flood protection, based on LID flow design criteria. Furthermore, the source and treatment control BMPs will be sufficiently designed and constructed to collectively treat, infiltrate, capture and use, or filter stormwater runoff to meet or exceed the requirements of the City Watershed Protection Division and the LACDPW Watershed Division.

According to the City's LID standards, the LID BMP systems shall be sized to capture the runoff generated from the greater of the 85th percentile storm and the 0.75-inch storm event at a minimum:

$$V_{\text{design}} (\text{gallons}) = (85^{\text{th}} \text{ percentile} * 7.48 \text{ gallons/cubic foot}) * \text{Catchment Area (sq. ft.)}$$

Where:

$$\text{Catchment Area} = (\text{Impervious Area} * 0.9) + [(\text{Pervious Area} + \text{Undeveloped Area}) * 0.1]$$

For catchment areas given in acres, multiply the above equation by 43,560 sq. ft./acre.²⁴

According to the County's LID Standards Manual, the design storm, from which the Stormwater Quality Design Volume (SWQDv) is calculated, is defined as the greater of:

- The 0.75-inch, 24-hour rain event; or
- The 85th percentile, 24-hour rain event as determined from the County 85th percentile precipitation isohyetal map.

The volume of stormwater runoff that must be retained at a project site is calculated using Modified Rational Method (MODRAT) developed by the County. MODRAT uses the design storm and a time of concentration to calculate the stormwater runoff at different times during a storm. By calculating the stormwater runoff flows based on the rainfall distribution, a hydrograph can be developed. The area under the hydrograph curve is the volume of stormwater runoff. The procedure for calculating the stormwater runoff using the MODRAT is an iterative process. LACDPW has developed a regression equation to calculate the time of concentration. The procedures for calculating the time of concentration and SWQDv using MODRAT is described below²⁵:

Step 1: Assume Initial Time of Concentration

Assume an initial time of concentration (T_C).

Step 2: Calculate Rainfall Intensity

Calculate the rainfall intensity using the assumed initial time of concentration as the duration from the following equation:

$$I_t = I_{1440} * \left(\frac{1440}{t}\right)^{0.47}$$

Where:

t = Duration = Assumed initial time of concentration [min];

I_t = Rainfall intensity for the duration [in/hr];

and I_{1440} = 24-hour rainfall intensity [in/hr].

Step 3: Calculate Impervious Area and Stormwater Runoff Coefficient

²⁴ Planning and Land Development Handbook for Low Impact Development (LID), 5th Edition dated May 9, 2016, https://www.lacitysan.org/cs/groups/sg_sw/documents/document/y250/mde3/~edisp/cnt017152.pdf. Accessed March 29, 2023.

²⁵ County of Los Angeles Department of Public Works Low Impact Development <https://dpw.lacounty.gov/ldd/lib/fp/Hydrology/Low%20Impact%20Development%20Standards%20Manual.pdf>. Accessed March 29, 2023.

Determine the impervious area of the project site from the following equation or from Appendix D of the 2006 Hydrology Manual:

$$IMP = \frac{\sum_{i=1}^n (IMP_i * A_i)}{A_T}$$

Where:

IMP = Project site-specific percent impervious;

IMP_i = Impervious area, i;

A_i = Area, i [ft²];

and A_T = Total project site area [ft²]

Determine the undeveloped stormwater runoff coefficient, C_u, using the soil curve data from Appendix C and the rainfall intensity calculated in Step 2. Calculate the developed stormwater runoff coefficient using the following equation:

$$C_d = (0.9 * IMP) + (1.0 - IMP) * C_u$$

Where:

C_d = Developed project site stormwater runoff coefficient;

IMP = Site-specific percent impervious for project site;

and C_u = Undeveloped project site stormwater runoff coefficient.

Step 4: Calculate the Time of Concentration (T_C)

Calculate the time of concentration using the following equation:

$$T_C = \frac{0.31 * L^{0.483}}{(C_d * I_t)^{0.519} * S^{0.135}}$$

Where:

T_C = Time of concentration [min];

L = Longest flow path length from watershed boundary to outlet [ft];

C_d = Developed project site stormwater runoff coefficient;

I_t = Rainfall intensity for the duration [in/hr];

and S = Slope of longest flow path [ft/ft].

Step 5: Compare Initial Assumption with T_C

If the calculated time of concentration (Step 4) is within 0.5 minutes of the assumed time of concentration (Step 1), then the value is sufficient. If the calculated and estimated times of concentration differ by more than 0.5 minutes, round the calculated time of concentration (Step 4) to the nearest minute and use that value as the assumed time of concentration (Step 1) and restart the calculation again from Step 2.

Step 6: Calculate Peak Flow Rate

Round the calculated time of concentration to the nearest minute and recalculate the rainfall intensity and developed project site stormwater runoff coefficient. Calculate the peak flow rate using the rational equation:

$$Q = \frac{C_d * I * A}{43,560}$$

Where:

Q = Peak flow rate [cfs];

C_d = Developed project site stormwater runoff coefficient;

I = Rainfall intensity [in/hr];

and A = Project area [ft²].

Step 7: Calculate SWQDv

MODRAT relies on temporal rainfall distribution and the time of concentration to generate hydrographs. The steps for calculating stormwater runoff are presented in the 2006 Hydrology Manual. Manual calculations for generating hydrographs require a lot of time and careful organization. The calculations are ideally suited for a computer program, and have been included in the HydroCalc program discussed below. Use of this program is encouraged to reduce the time required to reach a solution.

HydroCalc Program

LACDPW developed a hydrologic calculator (HydroCalc), which is available at <http://dpw.lacounty.gov/wrd/publication/>. HydroCalc completes the full MODRAT calculation process and produces the peak stormwater runoff flow rates and volumes for single subareas. Because HydroCalc does not have reach routing capabilities, it is limited to watersheds and project areas up to 40 acres.

5.3. GROUNDWATER LEVEL

The State's CEQA Guidelines require a review of the Project, environmental setting, significant thresholds, and comparison with the screening criteria as stated above in Section 4.3.

5.4. GROUNDWATER QUALITY

The State's CEQA Guidelines require a review of the Project, environmental setting, significant thresholds, and comparison with the screening criteria as stated above in Section 4.4. In addition to the items discussed above, this report discusses the impact of the underlying Coastal Plain of Los Angeles Groundwater Basin.

6. PROJECT IMPACT ANALYSIS

6.1. CONSTRUCTION

6.1.1. SURFACE WATER HYDROLOGY

Construction activities for the Project would include excavating down approximately 50 feet for the parking garage expansion, building up the structures, hardscape and landscape around the structures. It is anticipated that grading activities of approximately 87,000 net cubic yards of soil would be exported in construction of the Project. Construction activities would have the potential to temporarily alter existing drainage patterns and flows within the Project Site by exposing the underlying soils and making the Project Site temporarily more permeable. 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.

However, as the construction site would be greater than one acre, the Project would be required to obtain coverage under the NPDES Construction General Permit. In accordance with the requirements of this permit, the Project would implement a 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 in fact) contain and treat, as necessary, stormwater or construction watering on the Project site so runoff does not impact off-site drainage facilities or receiving waters. Construction activities are temporary and flow directions and runoff volumes during construction will be controlled.

Construction of the Project would not substantially alter the Project Site drainage patterns in a manner that would result in substantial erosion, siltation, flooding on- or off-site. The new construction associated with the Project would not change the direction of any surface flow from off-site sources or cause a new impediment to any flood flow from off-site sources. Similarly, adherence to standard compliance measures 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 resulting in a permanent, adverse change to the movement of surface water. As such, construction-related impacts to hydrology would be less than significant. Therefore, Project construction-related impacts to surface water hydrology would be less than significant.

6.1.2. SURFACE WATER QUALITY

Generally, construction activities, such as earth moving, maintenance and operation of construction equipment, expected temporary dewatering of nuisance water, and handling/storage/disposal of materials, could contribute to pollutant loading in stormwater runoff. However, as previously discussed, construction contractors disturbing greater than one acre of soil would be required to obtain coverage under the NPDES Construction

General Permit (Order No. 2009-0009-DWQ), as well as its subsequent amendments SWRCB Order Nos. 2010-0014-DWQ and 2012-0006-DWQ. 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 not be limited to: erosion control, sediment control, non-stormwater management, and materials management BMPs. Refer to Exhibit 2 for typical SWPPP BMPs to be implemented during construction of the Project.

With the implementation of site-specific BMPs included as part of the SWPPP, 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 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 City grading permit regulations, construction of the Project would not result in discharge that would violate any water quality standard or waste discharge requirements, or otherwise substantially degrade water quality. Furthermore, construction of the Project would not result in discharges that would cause regulatory standards to be violated in the Los Angeles River. Therefore, Project construction-related impacts on surface water quality would be less than significant.

6.1.3. GROUNDWATER LEVEL

As stated above, construction activities for the Project would include excavation to a depth of approximately 50 feet for the parking garage expansion, building up the structure, and hardscape and landscape around the structure. Groundwater seepage was encountered above the proposed finish floor elevation at the existing parking garage. However, the anticipated seepage rate of approximately 10 gpm is low and can be considered nuisance water as stated in the Updated Geotechnical Engineering Investigation. 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, and thus, Project construction-related impacts to groundwater level would be less than significant.

6.1.4. GROUNDWATER QUALITY

As discussed above, the Project would include excavations to a maximum depth of approximately 50 feet below ground surface. The Project would also result in a net export of 87,000 cubic yards of existing soil material. As concluded in the Project's Initial Study (Appendix A of the Draft EIR prepared for the Project), impacted soil concentrations from two former underground storage tanks reported were below the San Francisco Bay Regional Water Quality Control Board Environmental Screening Levels (ESLs) for Direct

Exposure Human Health Risk Levels, Residential Shallow Soil Exposure.^{26,27} Therefore, contaminated soils would be below screening levels and any contaminated soils that may be captured within that volume of excavated material would be removed from the Project Site and remediated at an approved disposal facility in accordance with regulatory requirements.

In general, 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. In addition, as there are no groundwater production wells or public water supply wells within one mile of the Project Site, Project construction activities are not anticipated to affect existing wells. Therefore, the Project would not result in any substantial increase in groundwater contamination through hazardous materials releases and Project construction-related impacts on groundwater quality would be less than significant.

As mentioned previously, the Project Site encountered groundwater seepage at depths ranging from 14 to 36 feet bgs, however, the City requires the use of the highest historical groundwater level for design and engineering purposes, which is at the ground surface for the Project Site. Dewatering initiatives would be part of construction planning and deployed if groundwater is encountered. Dewatering operations are practices that discharge groundwater that must be removed from a work location 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. 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. If 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 Watershed of Los Angeles and Ventura Counties. Therefore, as the Project would comply with the NDPEs' and LARWPCB's dewatering requirements, the Project construction related impacts on groundwater quality would be less than significant.

²⁶ City of Los Angeles City Planning, Hilton Universal City Project Initial Study, October 6, 2020. <https://planning.lacity.org/development-services/eir/hilton-universal-city-project>
Accessed June 6, 2023.

²⁷ The ESLs, which are published by the SF-RWQCB, are the most commonly referenced screening levels for petroleum hydrocarbons throughout California, including within the LARWQCB area.

6.2. OPERATION

6.2.1. SURFACE WATER HYDROLOGY

As previously discussed, the entire Project Site in its current condition is approximately 75-percent impervious including at-grade parking, existing structures, a service road, and a pool-patio area. The remaining 25-percent of the existing Project Site is pervious surfaces consisting of landscape areas and planters. Although the Project is anticipated to have landscaping, to account for the highest possible runoff flow rate, the post-construction condition of the Project is analyzed as being 100-percent impervious.

Table 2 below shows the proposed peak flow rates stormwater runoff calculation for the 50-year frequency design storm event (Q_{50}) of the 5.25-acre portion of the Project Site area to be redeveloped. The proposed (Post-Project) Q_{50} is 18.15 cfs and the existing (Pre-Project) Q_{50} is (18.14 cfs) presented in Table 1 in Section 3.1.3. See Figure 3 for calculations. A comparison of the Pre- and Post-Project peak flow rates indicates an insignificant increase of 0.054 percent in stormwater runoff. The Project would not cause flooding during the 50-year developed storm event and would not create runoff which would exceed the capacity of the planned drainage system as they are sized to convey the Post-Project Q_{50} . Thus, the 0.0054 cfs increase in runoff due to the Project is considered insignificant because this increase in flow would not cause flooding during the Post-Project Q_{50} , and therefore, means that Project operational-related impacts to surface water hydrology would be less than significant.. Refer to Figure 2 for the proposed drainage concept.

Table 2- Proposed Drainage Stormwater Runoff Calculations ¹			
Drainage Area	Area (Acres)	Q_{50} (cfs) ²	Percent Impervious (%)
1	1.56	5.07	100
2	0.84	2.97	100
3	1.10	3.89	100
4	0.95	3.37	100
5	0.80	2.84	100
Total	5.25	18.15	100%
Pre and Post Drainage Stormwater Runoff Comparison – 50-year Storm Event			
Q_{50} (cfs) – Pre-development			18.14
Q_{50} (cfs) – Post-development			18.15
Incremental Increase from Existing to Proposed Condition			0.054%

¹ To account for the highest possible runoff flow rate, the post-construction condition of the Project is analyzed as being 100-percent impervious.

² The volumetric flow rate is measured in cubic feet per second

In addition, as described above, as part of LID compliance for the Project to manage post-construction stormwater runoff, the Project would include the installation of catch basins, planter drains, and building roof drain downspouts throughout the Project Site to collect roof and site runoff and direct stormwater away from structures through a series of underground storm drain pipes. This on-site stormwater conveyance system would serve to prevent onsite flooding and nuisance water on the Project Site. In addition, with implementation of the proposed BMPs, the Project would implement a combination of pre-treatment and capture and use systems to collect and store the first flush of stormwater runoff in tanks, and re-use the water for various purposes onsite implemented upon LA Sanitation's approval. Refer to Figure 2 for the proposed drainage concept.

With the implementation of the Project's LID BMPs, such as rainwater harvesting cisterns, the Project would not cause flooding during the Q₅₀, would not create runoff which would exceed the capacity of existing or planned drainage systems, would not substantially reduce or increase the amount of surface water in a water body, or result in a permanent adverse change to the movement of surface water.

Additionally, according to FEMA, the Project Site is located within Zone X – Area of Minimal Flood Hazard (500- year flood plain). Refer to Figure 6 for the FEMA Flood Map. The Project is not located within a potential inundation area as designed by the City's General Plan Safety Element.

Based on the above, the Project operation would not result in an incremental impact on either on-site or off-site flooding during a 50-year storm event, would not substantially reduce or increase the amount of surface water in a water body, or result in a permanent adverse change to the movement of surface water that would result in an incremental effect on the capacity of the existing storm drain system. Therefore, Project operation-related impacts on surface water hydrology would be less than significant.

6.2.2. SURFACE WATER QUALITY

The Project will not increase concentrations of the items listed as constituents of concern for the Los Angeles River Watershed because the Project would meet the requirements of the City's LID standards. Under Section 3.1.3 of the City's 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 85th percentile storm or the 0.75 inch storm event. In accordance with the feasibility discussion in Section 5.2.2 of this report above, the Project would implement a capture and use system as a BMP for managing stormwater runoff in accordance with current LID requirements. Since there are currently no existing onsite

structural BMPs, stormwater run-off during post-Project conditions would result in improved surface water quality.

With the incorporation of the required LID BMPs, operation of the Project would not result in discharges that would cause: (1) violations of water quality standards or waste discharge requirements; (2) substantial decreases in groundwater supplies or substantial interference with groundwater recharge, (3) substantial alteration of the existing drainage pattern of the site; (4) conflicts with or obstruct implementation of a water quality control plan or sustainable groundwater management plan; (5) pollution which would alter the quality of the waters of the State (i.e., the Los Angeles River) to a degree which unreasonably affects beneficial uses of the waters; (6) 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 (7) 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 because the Project would implement LID BMPs. As stated above, 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 at a minimum treat 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 installed BMP systems will be designed with an internal bypass or overflow system to prevent upstream flooding due to large storm events. The stormwater which bypasses the BMP systems would discharge to an approved discharge point. Implementation of LID BMPs will reduce Project operational impacts on surface water quality and would further improve runoff quality into the Los Angeles River. Therefore, the Project would not result in any substantial increase in concentration of items listed as constituents of concern for the Los Angeles River Watershed and impacts on surface water quality would be less than significant.

6.2.3. GROUNDWATER LEVEL

The Project will develop hardscape and structures that cover the majority of the Project footprint with impervious surfaces. However, the Project would include the installation of LID BMPs, which would at a minimum treat 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 installed BMP systems will be designed with an internal bypass or overflow system to prevent upstream flooding due to large storm events. 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, which would affect groundwater hydrology, including the direction of groundwater flow.

As discussed above, Project development would require excavations with a maximum depth of approximately 50 feet below grade. As described in the Updated Geotechnical Engineering Investigation prepared for the Project Site, the historically highest groundwater levels is at ground surface and groundwater seepage is encountered at 14 to 36 bgs. There is limited groundwater recharge due to the shallow occurrence of bedrock beneath the Project Site, which are not of sufficient permeability to transmit water. Since the Project Site's underlying soils do not allow for significant groundwater recharge and because there would not be a substantial change to the amount of water that would percolate into the underlying soils compared to existing conditions, the Project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge.

Based on the above, Project operation-related impacts on groundwater hydrology, including groundwater levels would be less than significant.

6.2.4. GROUNDWATER QUALITY

Operational activities which could affect groundwater quality include spills of hazardous materials and leaking underground storage tanks. Surface spills from the handling of hazardous materials most often involve small quantities and are cleaned up in a timely manner, thereby resulting in little threat to groundwater. Other types of risks, such as leaking underground storage tanks, have a greater potential to affect groundwater. No underground storage tanks are currently operated or will be operated. Compliance with all applicable existing regulations at the Project Site would prevent the Project from affecting or expanding any potential areas of contamination, increasing the level of contamination, or causing 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. Furthermore, as described above, operation of the Project would not require extraction from the groundwater supply based on the depth of excavation for the proposed uses and the depth of groundwater below the Project Site. Additionally, the Project would include the installation of SUSMP and 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.

Based on the above, Project operation-related impacts on groundwater quality would be less than significant.

6.3. CUMULATIVE IMPACT ANALYSIS

6.3.1. SURFACE WATER HYDROLOGY

The geographic context for the cumulative impact analysis on surface water hydrology is the Los Angeles River Watershed. The Project, in conjunction with forecasted growth in

the Los Angeles River Watershed, could cumulatively increase stormwater runoff flows. However, as noted above, the Project does not have an adverse impact on stormwater flows, as site-specific BMPs included as part of the SWPPP would be used during construction. The new construction associated with the Project would not change the direction of any surface flow from off-site sources or cause a new impediment to any flood flow from off-site sources. Similarly, adherence to standard compliance measures in construction activities by the related projects would avoid flooding, substantially increasing or decreasing the amount of surface water flow from the Project Site into a water body, or resulting in a permanent, adverse change to the movement of surface water.

Also, in accordance with the City of Los Angeles LID requirements, the Project's on-site stormwater conveyance system and LID BMPs, as would be the case for the related projects, would serve to prevent onsite flooding and nuisance water on the Project Site, would not create runoff which would exceed the capacity of existing or planned drainage systems, would not substantially reduce or increase the amount of surface water in a water body, or result in a permanent adverse change to the movement of surface water. In addition, the City of Los Angeles Department of Public Works would review each related project and future development project on a case-by-case basis to ensure sufficient local and regional infrastructure is available to accommodate stormwater runoff. As such, the Project's contribution to surface water hydrology impacts would not be cumulatively considerable. Therefore, potential cumulative Project impacts related to or associated with the Project on surface water hydrology would be less than significant.

6.3.2. SURFACE WATER QUALITY

Future growth in the Los Angeles River Watershed would be subject to NPDES requirements relating to water quality for both construction and operation. In addition, since the Project Site is located in a highly urbanized area, future land use changes or development are not likely to cause substantial changes in regional surface water quality. As noted above, the Project does not have an adverse impact on water quality, and would in fact improve the quality of on-site flows due to the introduction of new BMPs that would collect, treat, and discharge runoff from the Project Site (most of which is not treated before being discharged under existing conditions). In addition, compliance with the City of Los Angeles' grading permit regulations is required, in which necessary measures, plans (including a wet weather erosion control plan if construction occurs during the rainy season), and inspection to reduce sedimentation and erosion must be implemented. Also, related projects and other future development projects would also be subject to LID requirements and implementation of measures to comply with total maximum daily loads. Increases in regional controls associated with other elements of the MS4 Permit would improve regional water quality over time. The Project and related projects would be required to comply with all applicable laws, rules, and regulations. Therefore, potential cumulative Project impacts related to or associated with the Project on surface water quality would be less than significant.

6.3.3. GROUNDWATER LEVEL

Cumulative groundwater hydrology impacts could result from the overall utilization of groundwater basins located in proximity to the Project Site and the related projects. In addition, interruptions to existing injection or supply wells or designated spreading grounds would have the potential to affect groundwater levels. Any calculation of the extent to which the related projects would extract or otherwise directly utilize groundwater would be speculative. Nonetheless, to the extent existing injection or supply wells or designated spreading grounds are located within or near the related project sites, could adversely affect local and regional groundwater hydrology, including groundwater levels. In addition, the cumulative utilization of groundwater in the region, either as a result of water extraction under the related project sites or extraction from local basins by the local water supply agency to accommodate the related projects could also adversely affect local and regional groundwater hydrology. However, as described above, no water supply wells, spreading grounds, or injection wells are located within a one mile radius of the Project Site. In addition, the Project Site's underlying soils do not allow for significant groundwater recharge and because there would not be a substantial change to the amount of water that would percolate into the underlying soils compared to existing conditions, the Project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge.

Furthermore, as previously discussed, implementation of the Project would result in no or minimal increase in impervious surface area, as the Project Site is currently 75-percent impervious, but the redeveloped area of the Project Site is anticipated to be approximately 66.1-percent impervious. However, also noted earlier, the Project is conservatively analyzed as being 100-percent impervious to account for the highest possible runoff flow rate. Any calculation of the extent to which the related projects would increase or decrease impervious or pervious surfaces that might affect groundwater hydrology would be speculative. In addition, as the related projects are located in a highly urbanized area, any reduction in groundwater recharge due to the overall net change in impervious area within the related project sites would be minimal in the context of the regional groundwater basin. Additionally, the Project would include the installation of SUSMP and LID BMPs, which would at minimum, treat 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 installed BMP systems will be designed with an internal bypass or overflow system to prevent upstream flooding due to large storm events.

Therefore, the potential cumulative Project impacts related to or associated with the Project on groundwater level would be less than significant.

6.3.4. GROUNDWATER QUALITY

Future growth in the SFV Basin would be subject to LARWQCB requirements relating to groundwater quality. In addition, since the Project Site is located in a highly urbanized area, future land use changes or development are not likely to cause substantial changes in regional groundwater quality. As noted above, the Project does not have an adverse impact on groundwater quality. Also, Project related projects and other future development projects would also be subject to LARWQCB requirements and implementation of

measures to comply with total maximum daily loads. Therefore, the potential cumulative Project impacts related to or associated with the Project on groundwater quality would be less than significant.

7. LEVEL OF SIGNIFICANCE

Based on the analysis contained in this report, the Project construction and operational impacts to surface water hydrology, surface water quality, groundwater level, or groundwater quality would be less than significant.

FIGURE 1

FIGURE 1: EXISTING ON-SITE DRAINAGE

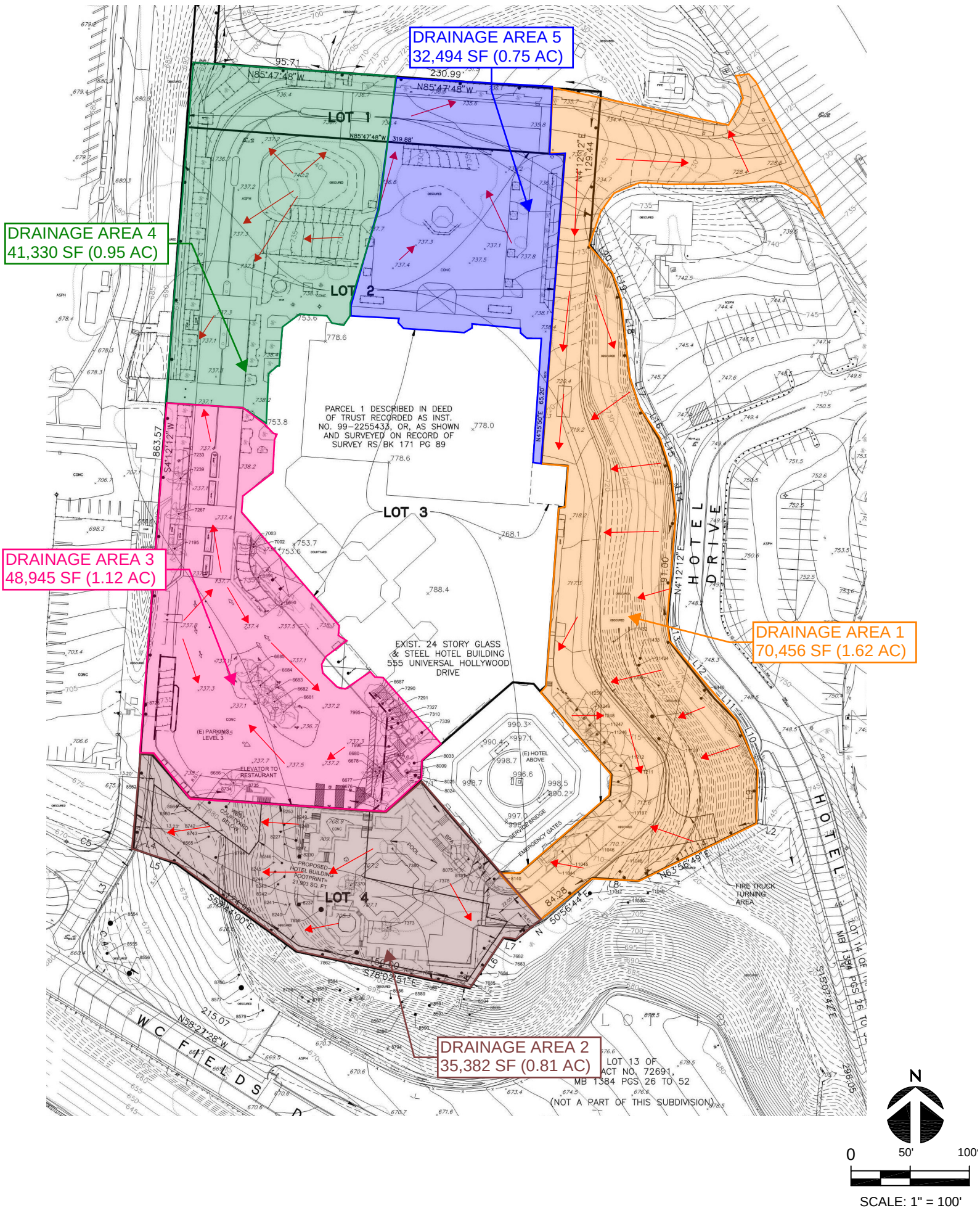
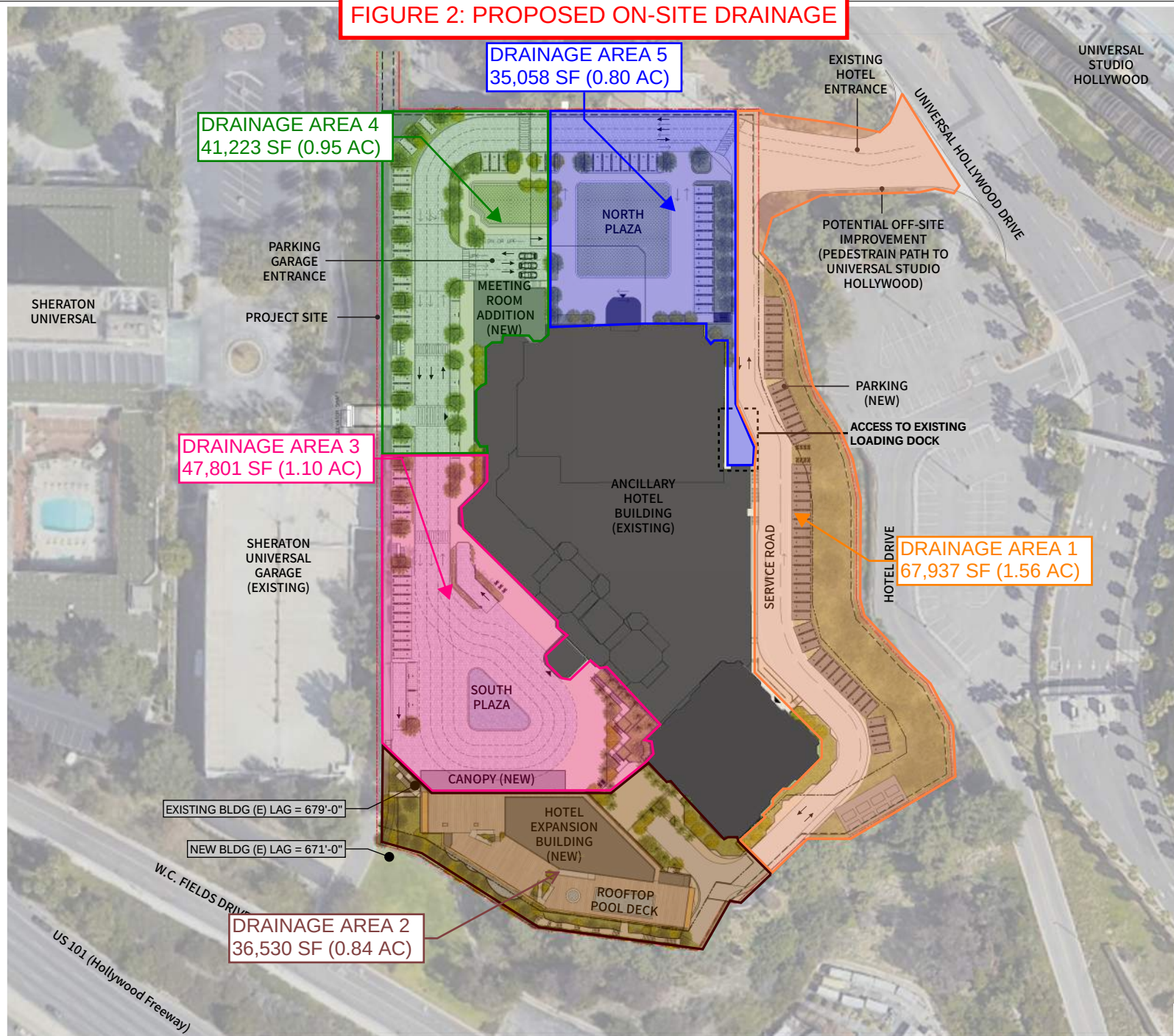


FIGURE 2

FIGURE 2: PROPOSED ON-SITE DRAINAGE

1

SITE PLAN

NOT TO SCALE

**NOT FOR
CONSTRUCTION**38 NORTHWEST DAVIS, SUITE 300
PORTLAND, OR 97209
503.245.71001505 5TH AVE, SUITE 300
SEATTLE, WA 98101
206.576.16001014 HOWARD STREET
SAN FRANCISCO, CA 94103
415.252.7063

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line+**HILTON UNIVERSAL CITY EXPANSION**555 UNIVERSAL HOLLYWOOD DR
UNIVERSAL CITY, CA 91608

ZONING CASE #: CPC-2017-5423-VZC-HD-CU-CUB-CUX-SFR

HILLCREST REAL ESTATE, LLC.

SITE PLAN

ENTITLEMENT
SUBMITTAL

DATE: 03/03/2023

PROJECT #: 214990

SCALE:

A1.01_

FIGURE 3

Peak Flow Hydrologic Analysis

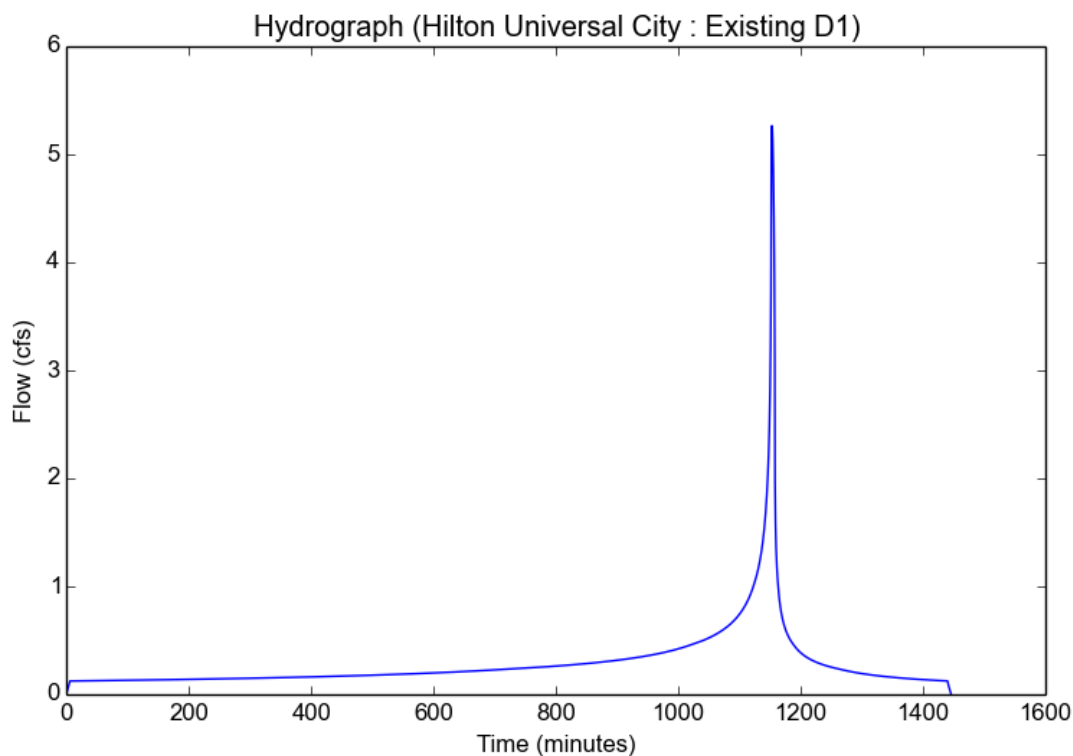
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	Hilton Universal City
Subarea ID	Existing D1
Area (ac)	1.62
Flow Path Length (ft)	732.02
Flow Path Slope (vft/hft)	0.0385
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.4885
Soil Type	2
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	3.6144
Undeveloped Runoff Coefficient (Cu)	0.8985
Developed Runoff Coefficient (Cd)	0.8992
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	5.2653
Burned Peak Flow Rate (cfs)	5.2653
24-Hr Clear Runoff Volume (ac-ft)	0.5867
24-Hr Clear Runoff Volume (cu-ft)	25556.7477



Peak Flow Hydrologic Analysis

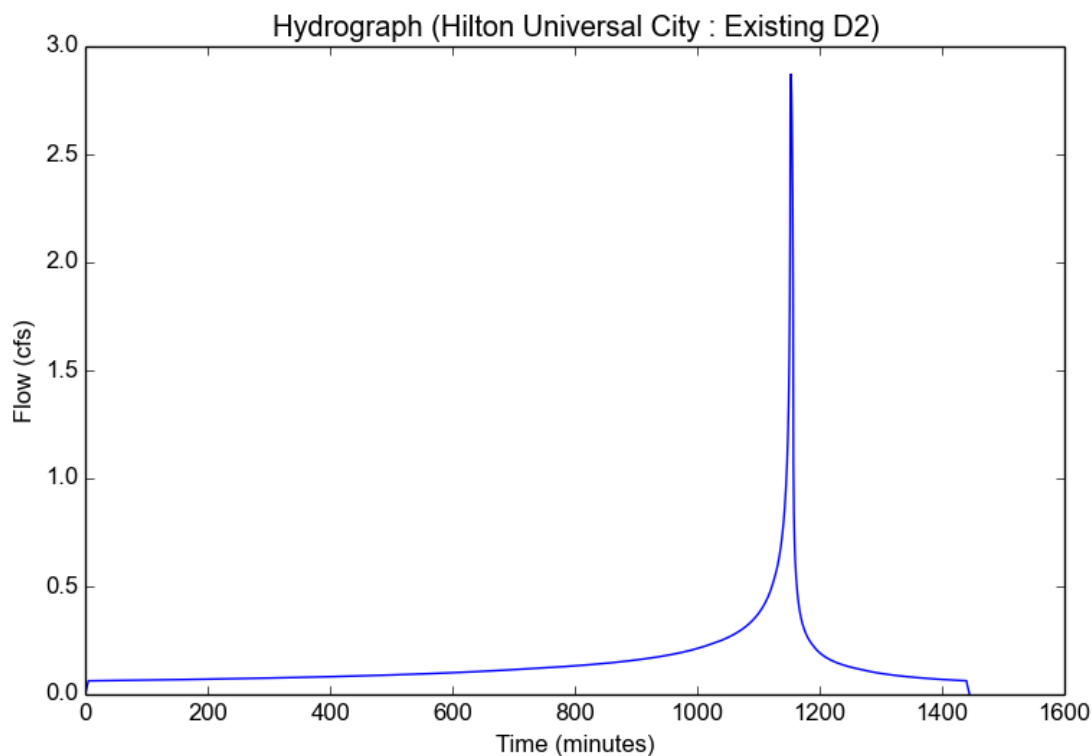
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	Hilton Universal City
Subarea ID	Existing D2
Area (ac)	0.81
Flow Path Length (ft)	275.05
Flow Path Slope (vft/hft)	0.1382
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.4988
Soil Type	2
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	3.9377
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.8706
Burned Peak Flow Rate (cfs)	2.8706
24-Hr Clear Runoff Volume (ac-ft)	0.2954
24-Hr Clear Runoff Volume (cu-ft)	12869.563



Peak Flow Hydrologic Analysis

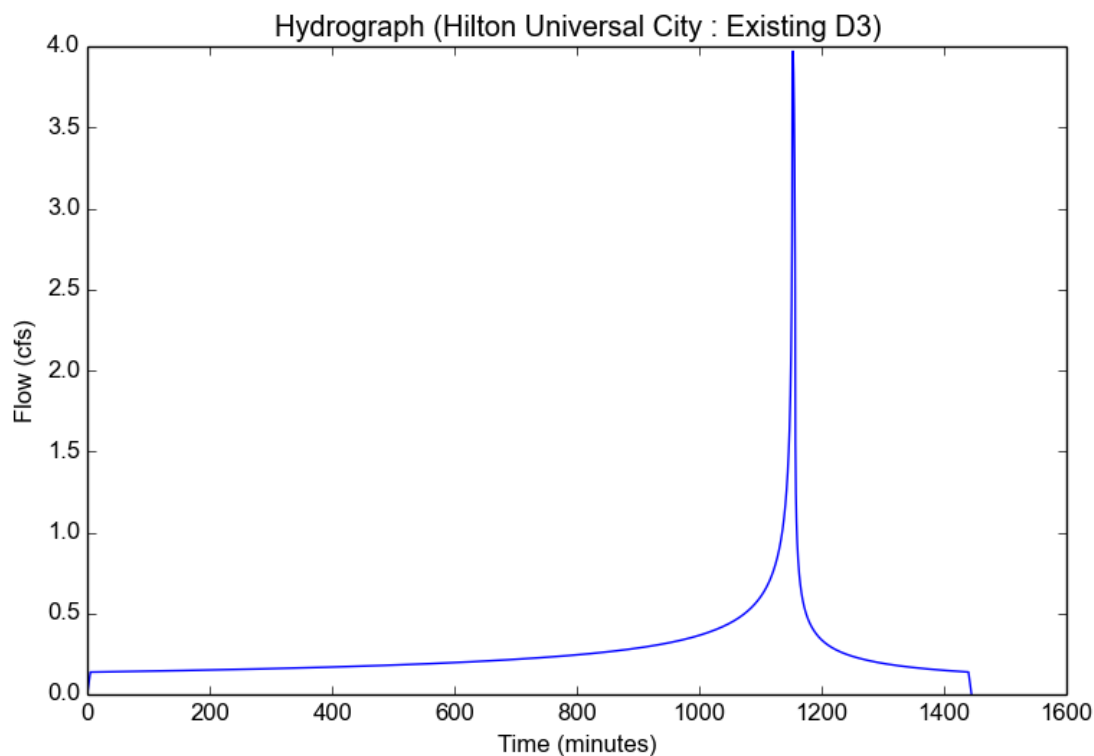
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	Hilton Universal City
Subarea ID	Existing D3
Area (ac)	1.12
Flow Path Length (ft)	391.61
Flow Path Slope (vft/hft)	0.0363
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.9205
Soil Type	2
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	3.9377
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.9692
Burned Peak Flow Rate (cfs)	3.9692
24-Hr Clear Runoff Volume (ac-ft)	0.5274
24-Hr Clear Runoff Volume (cu-ft)	22973.764



Peak Flow Hydrologic Analysis

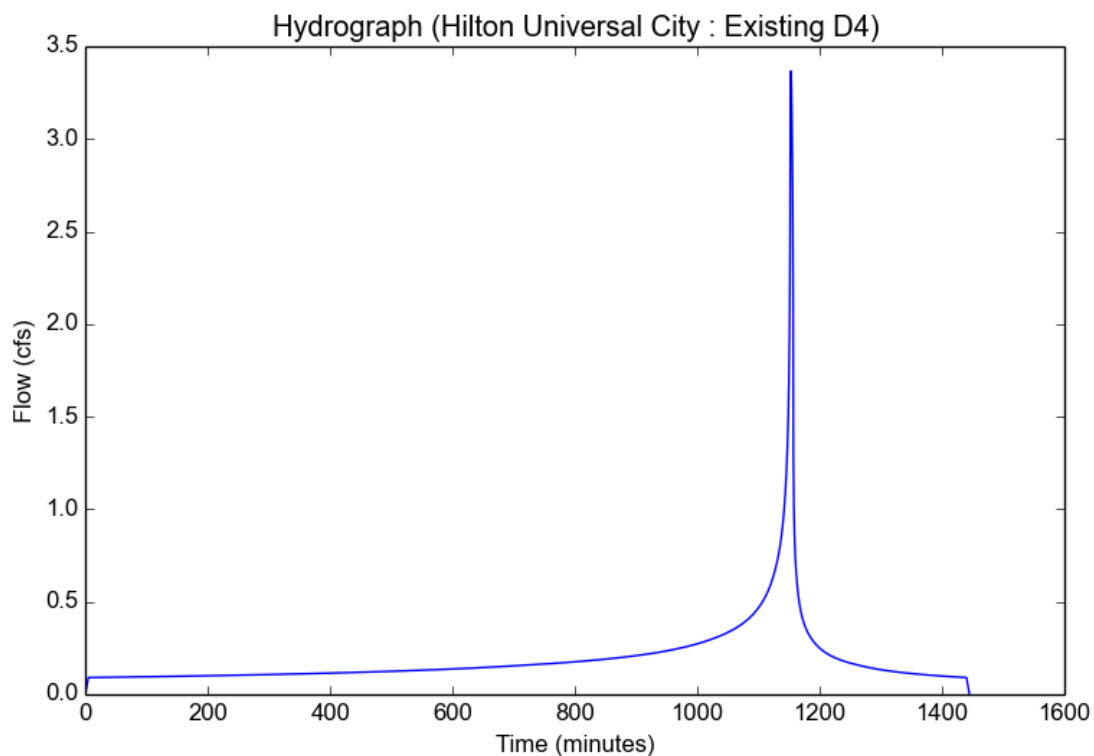
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	Hilton Universal City
Subarea ID	Existing D4
Area (ac)	0.95
Flow Path Length (ft)	340.54
Flow Path Slope (vft/hft)	0.0123
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.6673
Soil Type	2
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	3.9377
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.3668
Burned Peak Flow Rate (cfs)	3.3668
24-Hr Clear Runoff Volume (ac-ft)	0.3868
24-Hr Clear Runoff Volume (cu-ft)	16849.1541



Peak Flow Hydrologic Analysis

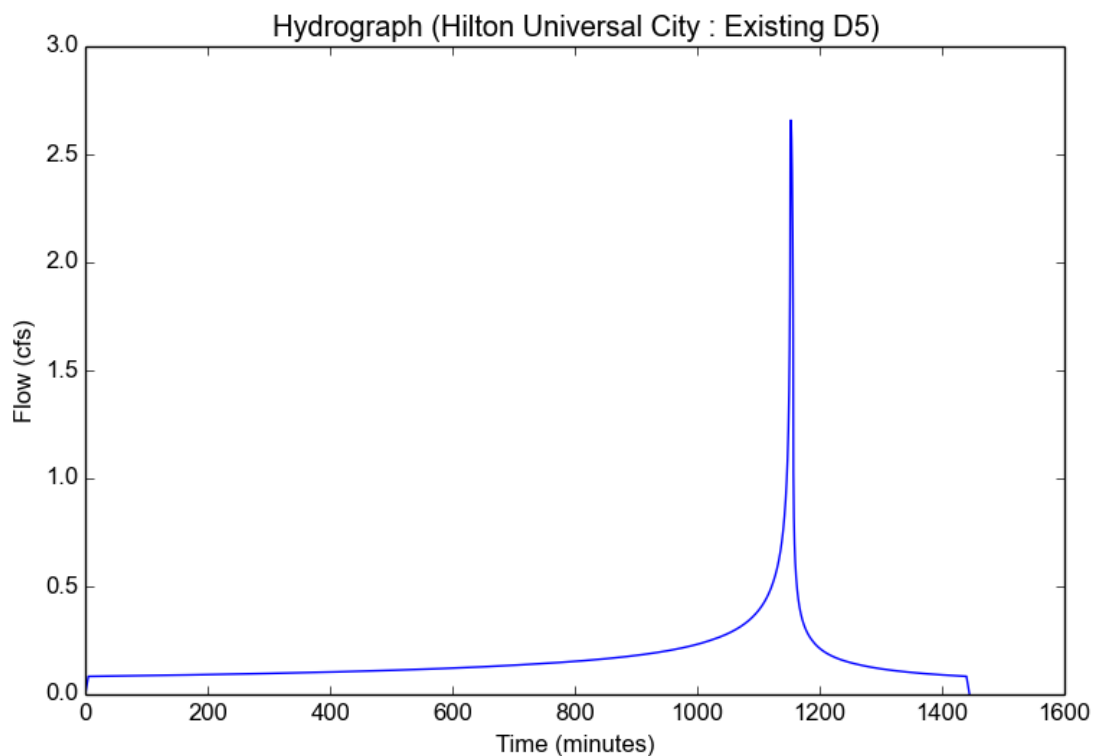
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	Hilton Universal City
Subarea ID	Existing D5
Area (ac)	0.75
Flow Path Length (ft)	257.9
Flow Path Slope (vft/hft)	0.0078
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.8123
Soil Type	2
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	3.9377
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.658
Burned Peak Flow Rate (cfs)	2.658
24-Hr Clear Runoff Volume (ac-ft)	0.3327
24-Hr Clear Runoff Volume (cu-ft)	14494.4073



Peak Flow Hydrologic Analysis

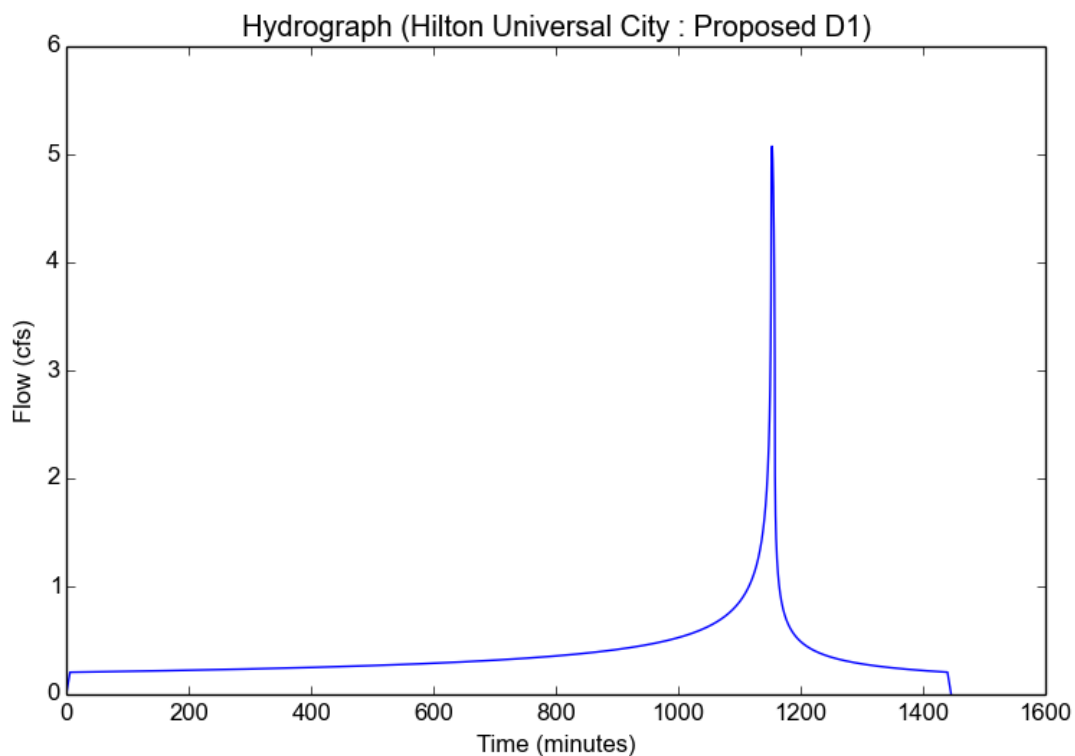
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Version: HydroCalc 1.0.2

Input Parameters

Project Name	Hilton Universal City
Subarea ID	Proposed D1
Area (ac)	1.56
Flow Path Length (ft)	732.02
Flow Path Slope (vft/hft)	0.0385
50-yr Rainfall Depth (in)	6.6
Percent Impervious	1.0
Soil Type	2
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	3.6144
Undeveloped Runoff Coefficient (Cu)	0.8985
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	5.0746
Burned Peak Flow Rate (cfs)	5.0746
24-Hr Clear Runoff Volume (ac-ft)	0.7658
24-Hr Clear Runoff Volume (cu-ft)	33359.0551



Peak Flow Hydrologic Analysis

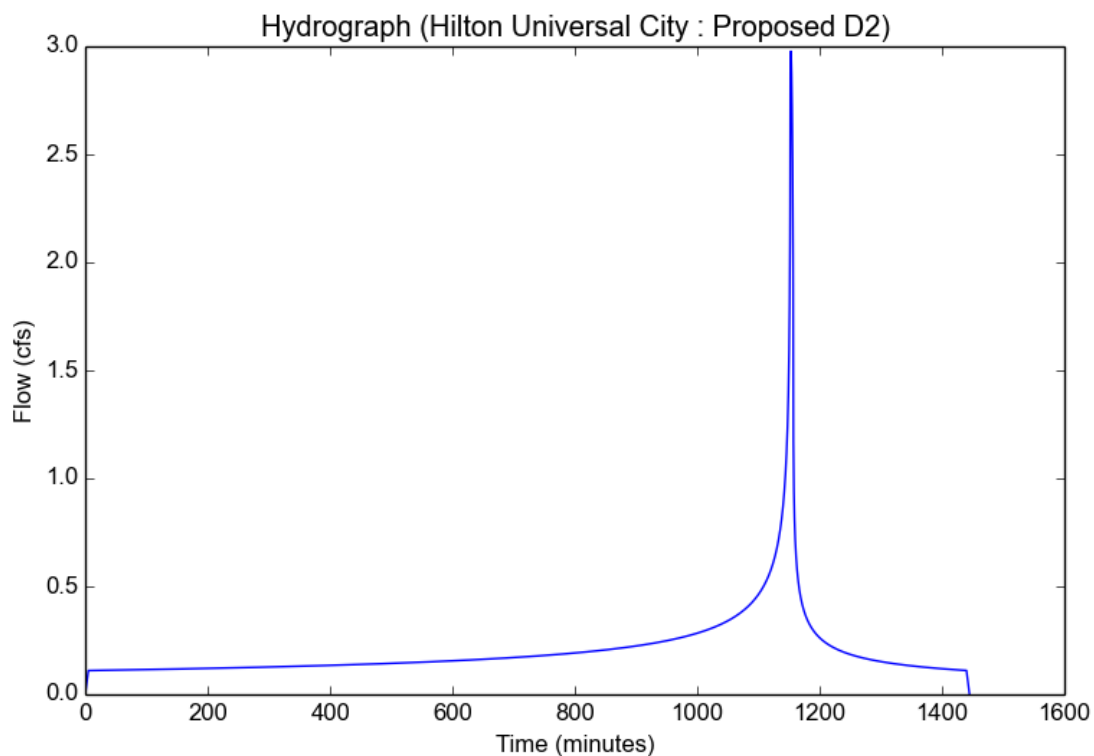
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Version: HydroCalc 1.0.2

Input Parameters

Project Name	Hilton Universal City
Subarea ID	Proposed D2
Area (ac)	0.84
Flow Path Length (ft)	275.05
Flow Path Slope (vft/hft)	0.1382
50-yr Rainfall Depth (in)	6.6
Percent Impervious	1.0
Soil Type	2
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	3.9377
Undeveloped Runoff Coefficient (Cu)	0.9063
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.9769
Burned Peak Flow Rate (cfs)	2.9769
24-Hr Clear Runoff Volume (ac-ft)	0.4124
24-Hr Clear Runoff Volume (cu-ft)	17962.5656



Peak Flow Hydrologic Analysis

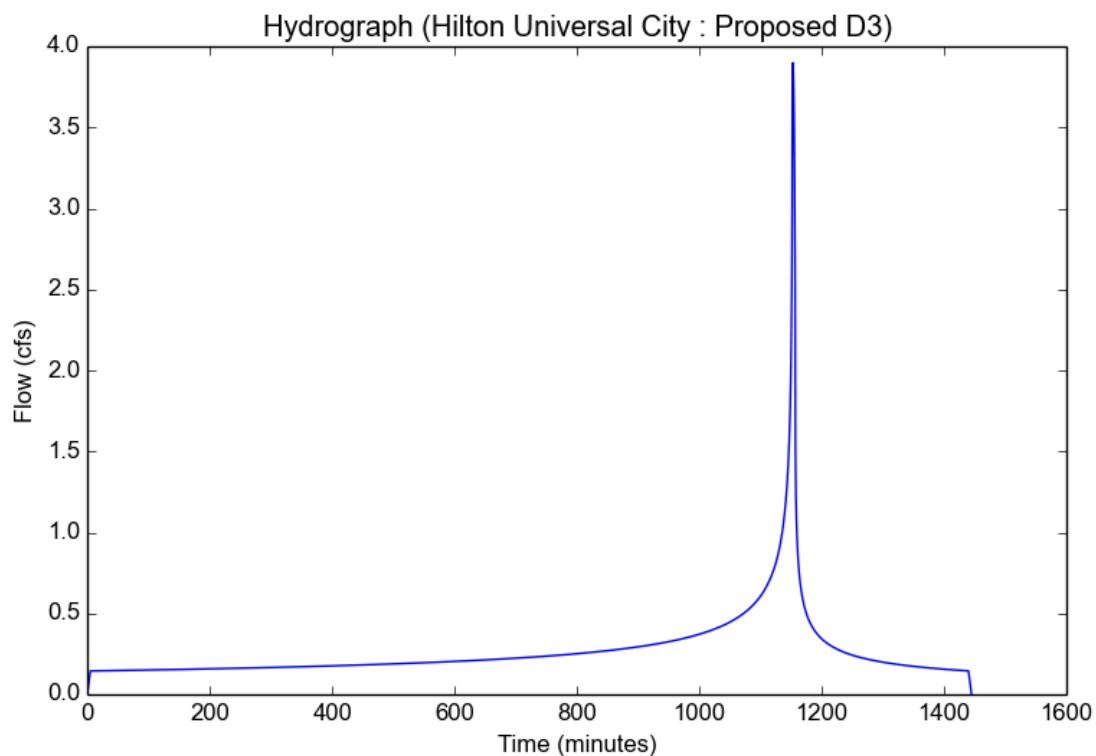
File location: P:/2015/1500129 Hilton Universal City - New Hotel Tower/ENGR/EIR Support/Water Resources Technical Report/HydroCalc/Hilton Universal City
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Hilton Universal City
Subarea ID	Proposed D3
Area (ac)	1.1
Flow Path Length (ft)	391.61
Flow Path Slope (vft/hft)	0.0363
50-yr Rainfall Depth (in)	6.6
Percent Impervious	1.0
Soil Type	2
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	3.9377
Undeveloped Runoff Coefficient (Cu)	0.9063
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.8984
Burned Peak Flow Rate (cfs)	3.8984
24-Hr Clear Runoff Volume (ac-ft)	0.54
24-Hr Clear Runoff Volume (cu-ft)	23522.4074



Peak Flow Hydrologic Analysis

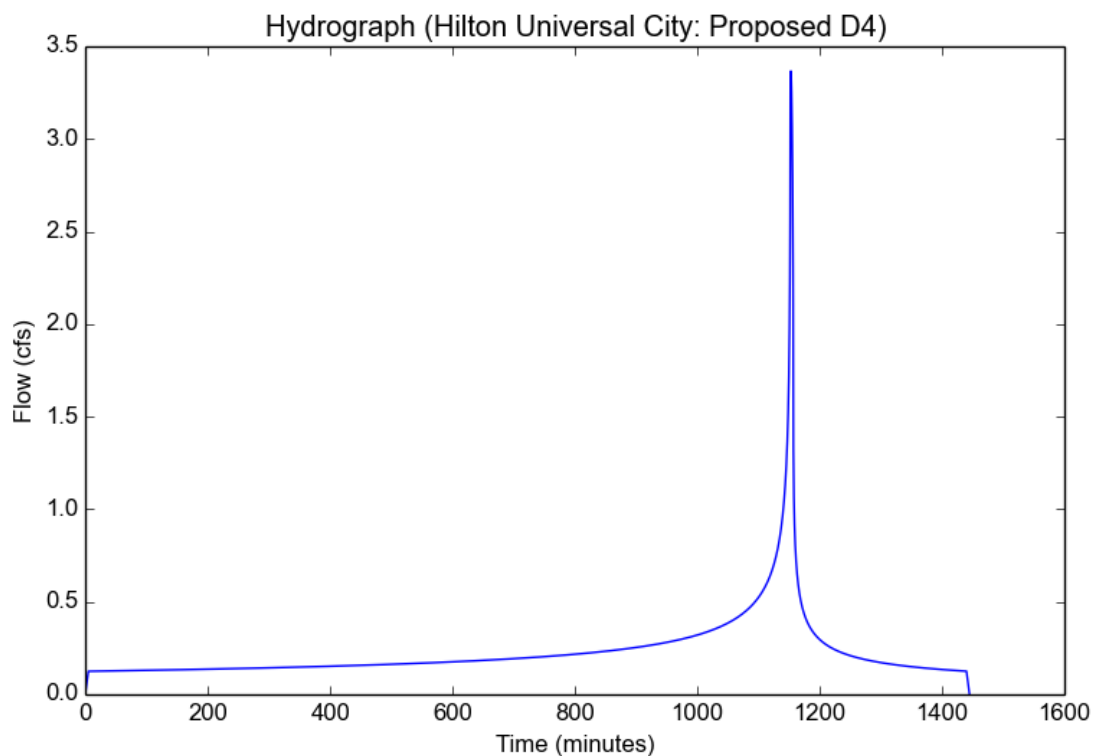
File location: P:/2015/1500129 Hilton Universal City - New Hotel Tower/ENGR/EIR Support/Water Resources Technical Report/HydroCalc/Hilton Universal City
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Hilton Universal City
Subarea ID	Proposed D4
Area (ac)	0.95
Flow Path Length (ft)	340.54
Flow Path Slope (vft/hft)	0.0123
50-yr Rainfall Depth (in)	6.6
Percent Impervious	1.0
Soil Type	2
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	3.9377
Undeveloped Runoff Coefficient (Cu)	0.9063
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.3668
Burned Peak Flow Rate (cfs)	3.3668
24-Hr Clear Runoff Volume (ac-ft)	0.4664
24-Hr Clear Runoff Volume (cu-ft)	20314.8064



Peak Flow Hydrologic Analysis

File location: P:/2015/1500129 Hilton Universal City - New Hotel Tower/ENGR/EIR Support/Water Resources Technical Report/HydroCalc/Hilton Universal City
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Hilton Universal City
Subarea ID	Proposed D5
Area (ac)	0.8
Flow Path Length (ft)	257.9
Flow Path Slope (vft/hft)	0.0078
50-yr Rainfall Depth (in)	6.6
Percent Impervious	1.0
Soil Type	2
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	3.9377
Undeveloped Runoff Coefficient (Cu)	0.9063
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.8352
Burned Peak Flow Rate (cfs)	2.8352
24-Hr Clear Runoff Volume (ac-ft)	0.3927
24-Hr Clear Runoff Volume (cu-ft)	17107.2054

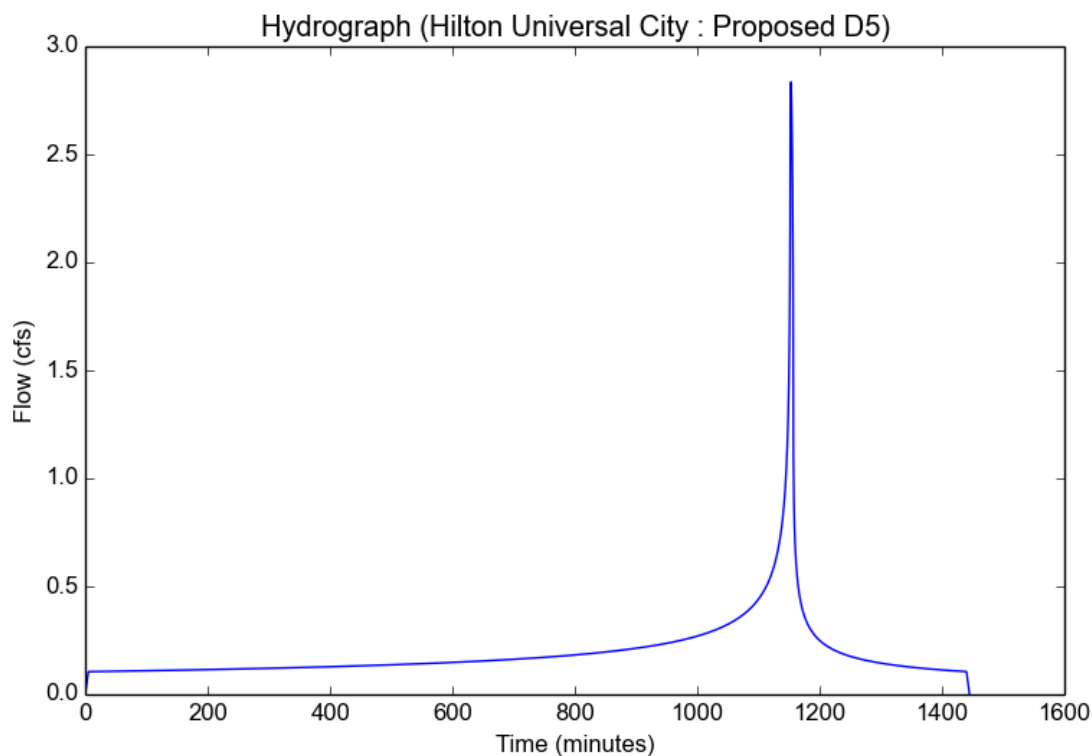


FIGURE 4

A1-Capture & Use Sizing

Note:

Red values to be changed by user.

Black values are automatically calculated.

[1]	Total Area (SF)		111625
[2]	Impervious Area (SF)		111625
[3]	Pervious Area (SF)	$[1]-[2] =$	0
[4]	Catchment Area (SF)	$([2]*0.9)+([3]*0.1) =$	100463
[5]	Design Rainfall Depth (in)	Greater of 0.75", 85th percentile	1.10
[6]	V_{design} (gal)	$[5]/12*7.48*[4] =$	68884
[7]	Planting Area (SF)		13000
[8]	Plant Factor*		0.4
[9]	$ETWU_{(7\text{-month})}$	$21.7*0.62*[8]*[7] =$	69961
[10]	Is $V_{\text{design}} \leq ETWU_{(7\text{-month})}$?		YES

*The plant factor used shall be from WUCOLS. The plant factor ranges from 0 to 0.3 for low water use plants, from 0.4 to 0.6 for moderate water use plants, and from 0.7 to 1.0 for high water use plants.

Source: LID Handbook, City of LA (May 2012)



NON-IMPACTED AREAS: 110,160 sf
 - EXISTING BUILDING = 90,450 sf
 - EXISTING HILLSCAPE = 19,715 sf

DIRECT ON GRADE WORK : 111,623 SF

ON STRUCTURE AREA: 82,040 sf

LID REQ'MTS:

TREAT ONLY DIRECT ON GRADE (Yellow , 111,623 SF, 100% IMP):

- SWQDv (gallons) = 68,884
- PLANTER AREA = 13,000 SF

E) LAG = 679'-0"

E) LAG = 671'-0"

1 SITE PLAN

NOT TO SCALE



**NOT FOR
CONSTRUCTION**



38 NORTHWEST DAVIS, SUITE 300
PORTLAND, OR 97209
503.245.7100

1505 5TH AVE, SUITE 300
SEATTLE, WA 98101
206.576.1600

1014 HOWARD STREET
SAN FRANCISCO, CA 94103
415.252.7063

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line+

HILTON UNIVERSAL CITY EXPANSION

555 UNIVERSAL HOLLYWOOD DR
UNIVERSAL CITY, CA 91608

ZONING CASE #: CPC-2017-5423-VZC-HD-CU-CUB-CUX-SFR

HILLCREST REAL ESTATE, LLC.

SITE PLAN

ENTITLEMENT
SUBMITTAL

DATE: 03/03/2023

PROJECT #: 214990

SCALE:

A1.01_

FIGURE 5



Hydrology Map

A GIS viewer application to view the data for the hydrology manual.

LAYERS

- ☒ 50yr Two Tenths (Rainfall)
- ☐ DPA Zones
- ☒ Soils 2004
- ☒ Final 85th Percentile, 24-hr Rainfall
- ☐ Final 95th Percentile, 24-hr Rainfall
- ☐ 1-year, 1-hour Rainfall Intensity

SEARCH

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

Search

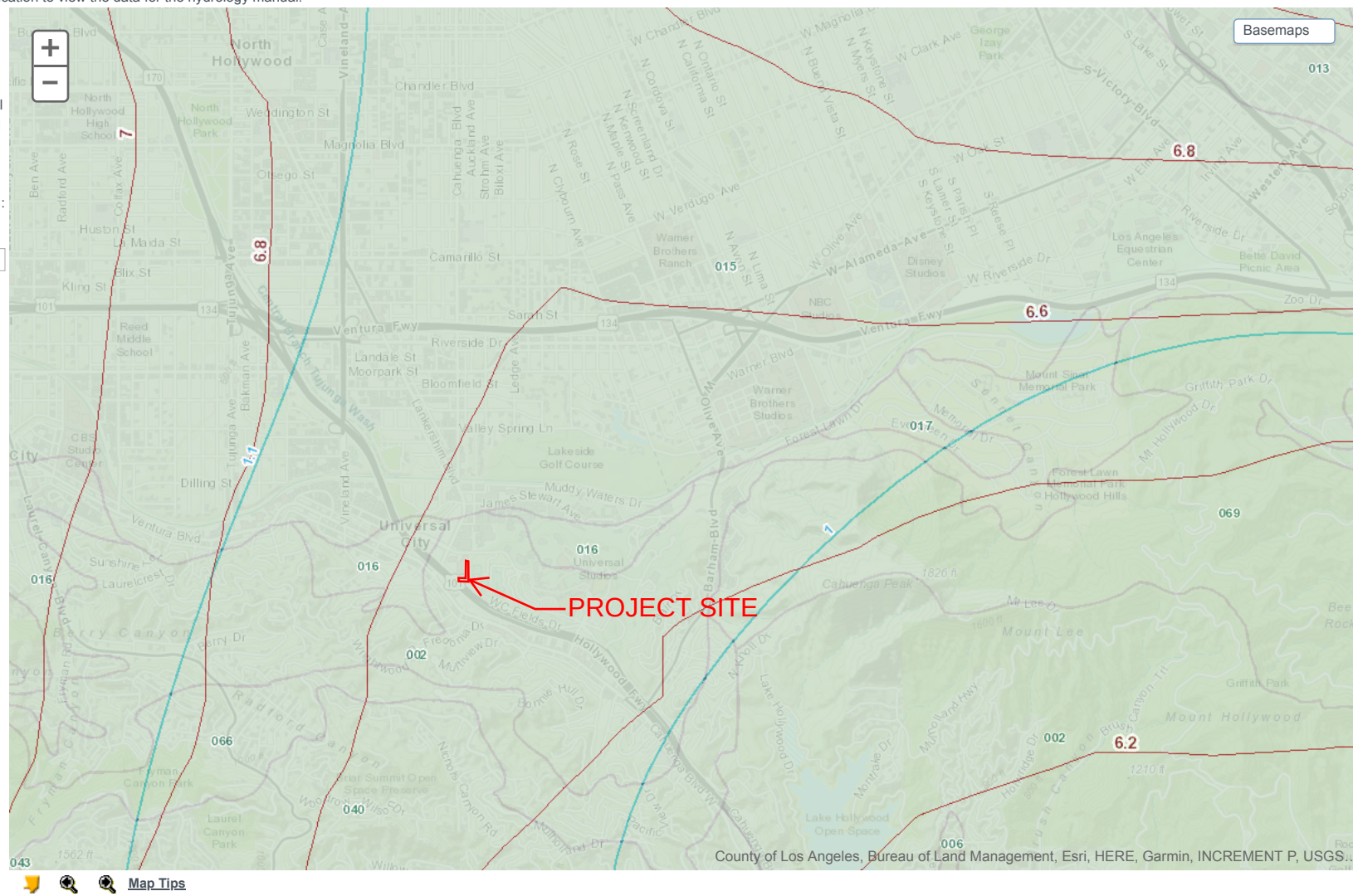


FIGURE 6

National Flood Hazard Layer FIRMette



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

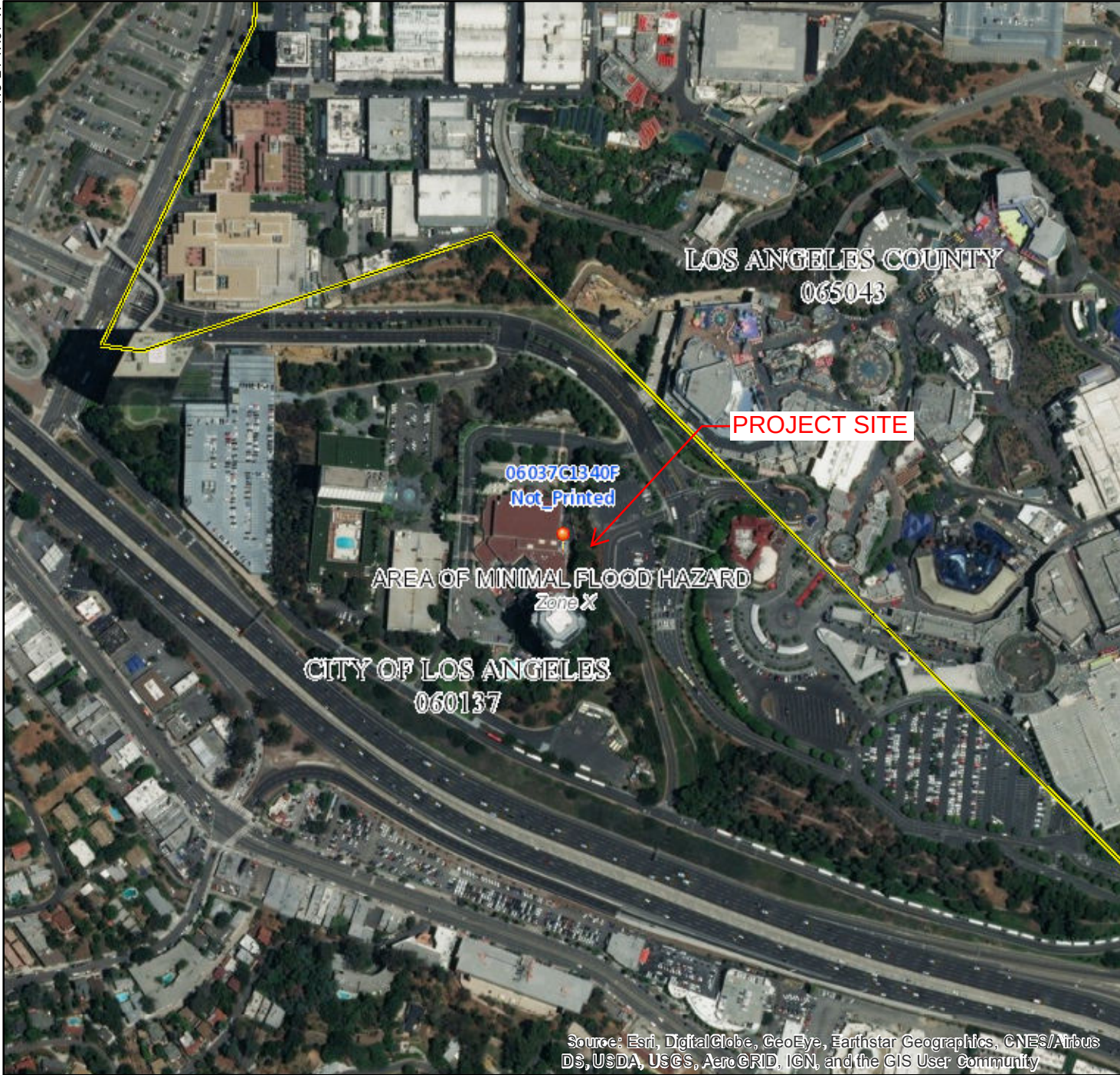
SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth
		Regulatory Floodway Zone AE, AO, AH, VE, AR
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
		Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



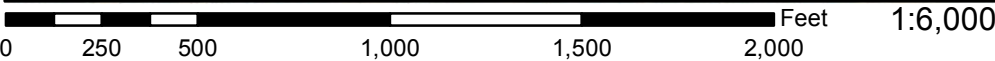
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The base map shown complies with FEMA's base map accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **3/20/2018 at 3:07:25 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: base map imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



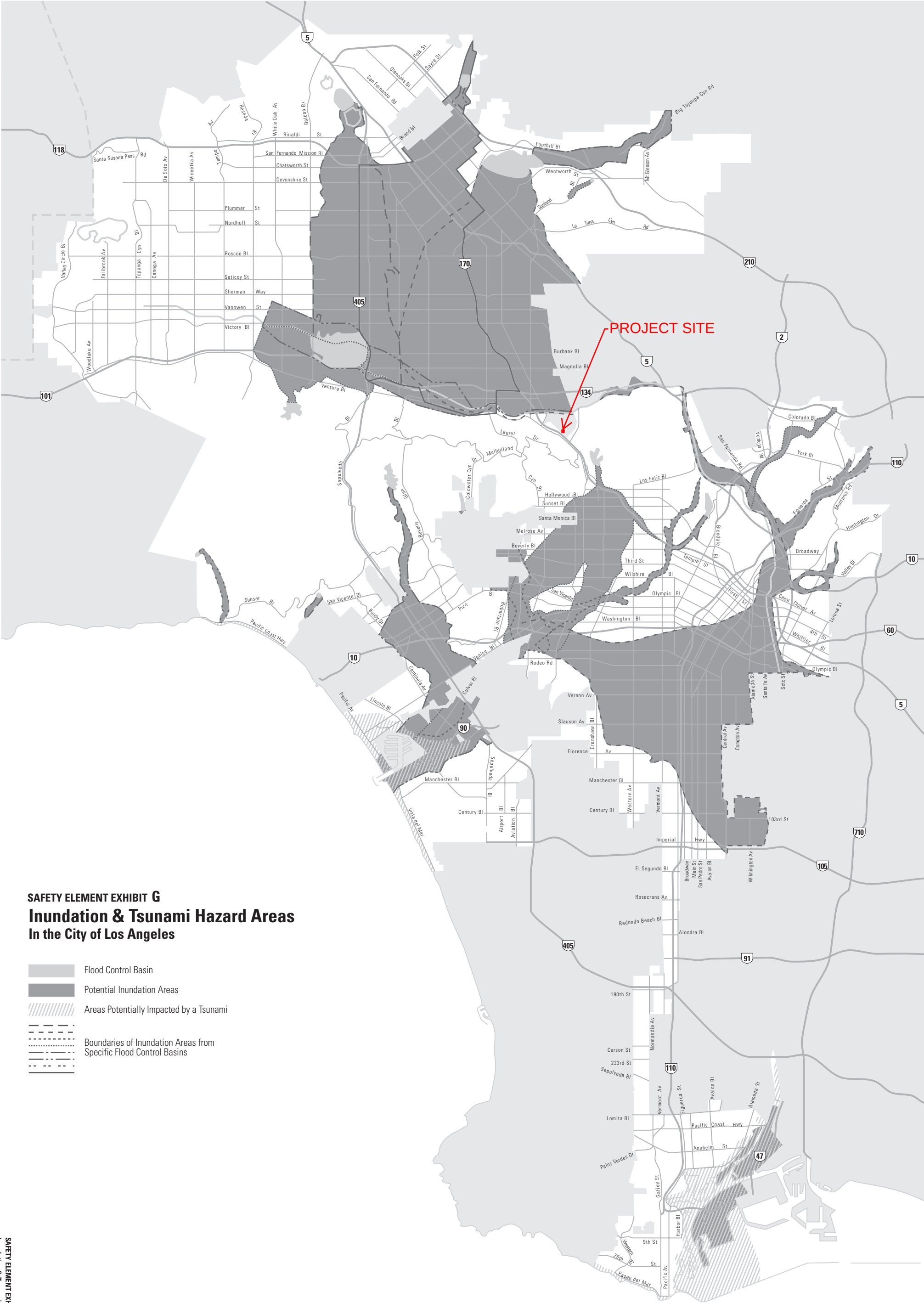
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



34°7'58.87"N

118°21'9.91"W

FIGURE 7



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

Sources: 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.

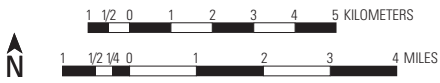


FIGURE 8

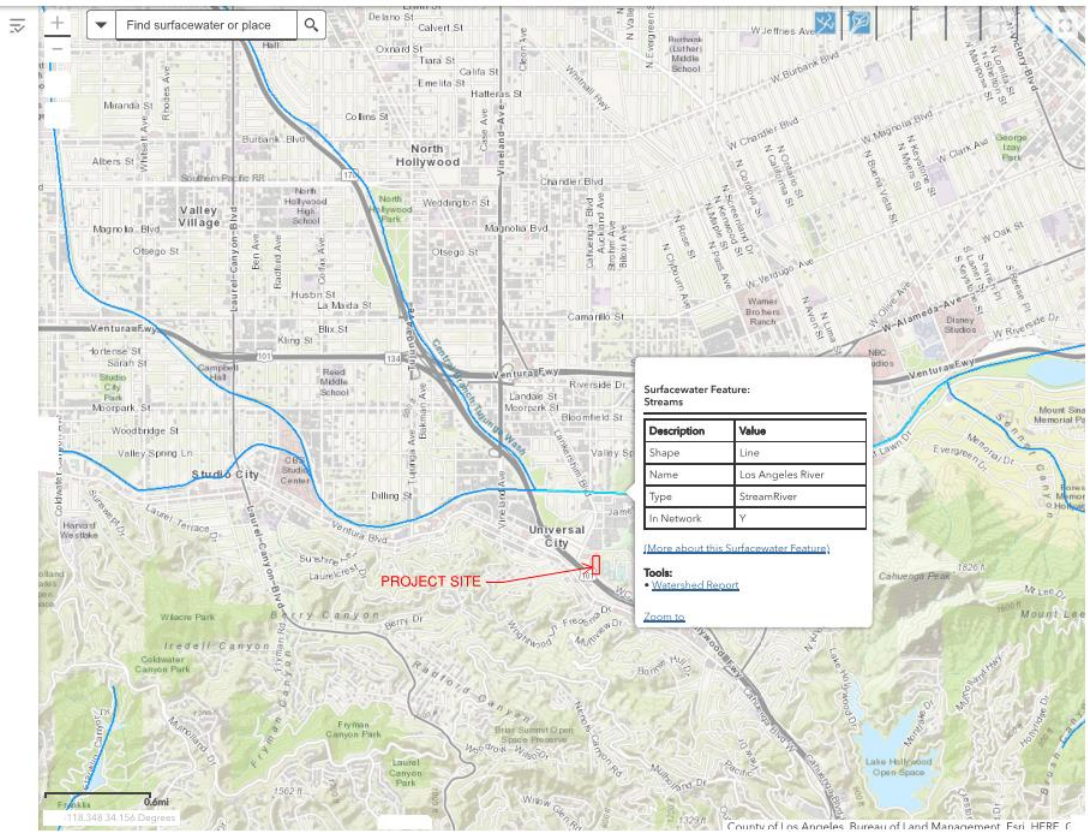
3/22/2018

WATERS GeoViewer

EPA WATERS GeoViewer

Operational layers

Feature Layers



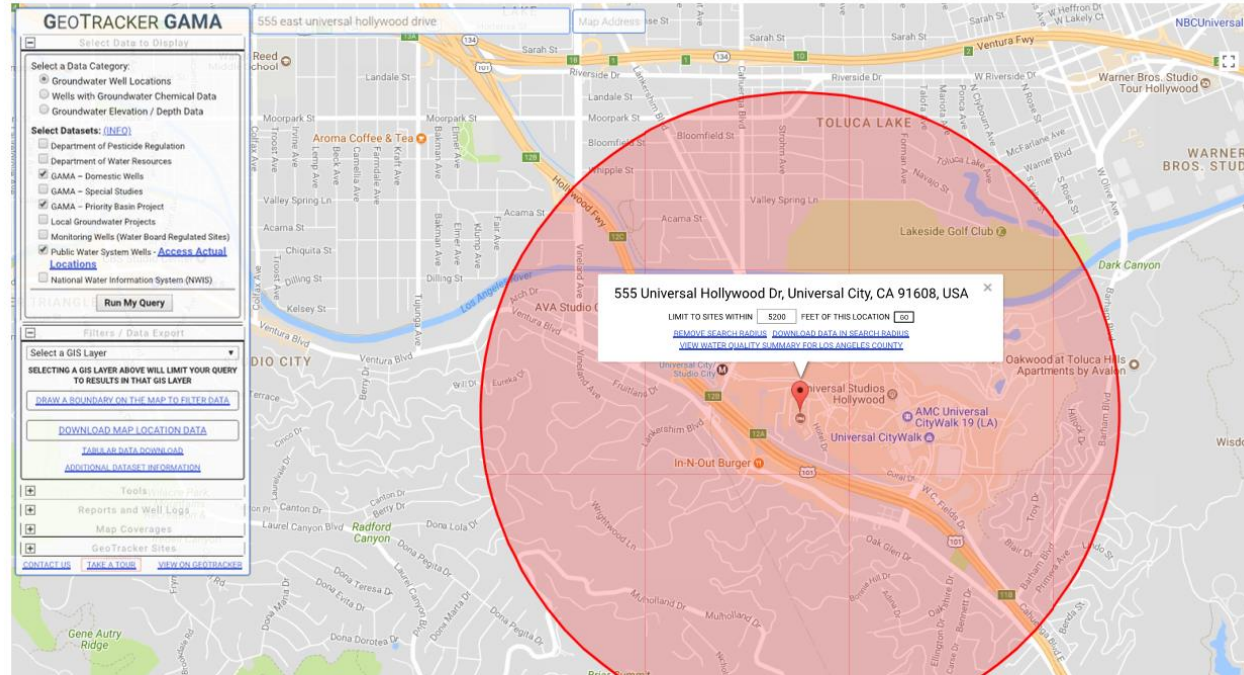
<https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=ada345690c26496ea52a666a092593b>

1/1

Resource: <https://epa.maps.arcgis.com>

3/22/2018

GeoTracker GAMA



Resource: <http://geotracker.waterboards.ca.gov/gama/>

EXHIBIT 1



UrbanGreen[®] Rainwater Harvesting Maintenance Guide



UrbanGreen® Rainwater Harvesting Maintenance

A DuroMaxx® Steel Reinforced Polyethylene (SRPE) Cistern

Overview

SRPE Cisterns should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend more heavily on site activities than the size or configuration of the system. Cisterns for rainwater harvesting should have appropriate pretreatment to remove sediment, debris, and pollutants prior to collection in the cistern.

Setup and Safety

If applicable, set up safety and warning equipment around the access to the cistern to notify pedestrian and vehicle traffic of potential hazard. All OSHA and Confined Space requirements should be followed. If a pump or electrical equipment is present in the system, the power supply should be disconnected and locked out before maintenance activities commence.

Inspection should be performed when the cistern is empty.

Most rainwater harvesting systems will include a mechanical pump and filter system. This system should be turned off and power isolated to prevent operation while the tank is empty. The water should be emptied from the tank using a submersible pump to completely empty the cistern.

Inspection

Inspection is the key to effective maintenance. Quarterly inspections from the surface are recommended during the first year of operation to establish seasonal trends for a specific location. Quarterly inspections can be performed through the manhole access riser provided. It is recommended that a maintenance schedule be implemented based on the findings of the first year quarterly inspections. It is recommended that the cistern be drained and inspected internally on an annual

basis at a minimum. It is recommended that records be kept of each inspection. A sample inspection log is included for reference.

Inspection from the surface:

- Inspect the surface of the water collected in the cistern. Remove floating debris.
- Inspect and note water levels in the cistern.
- Cistern:
 - Measure and note sediment levels using a sludge sampler along the centerline of the cistern. Sediment depth greater than 4" indicate that maintenance is needed.
- Pump Sump:
 - If a sump is provided to house a submersible pump, measure the depth of sediment in the sump using a sludge sampler. Sediment depth greater than 4" indicate that maintenance is needed.

Internal inspection

- Cistern wall inspection
 - Inspect the interior walls of the cistern for any cracks or holes.
- Calming inlet:
 - Visually inspect the calming inlet for any obstruction and debris. Calming inlet should be free of any obstruction allowing water to freely flow into the cistern in a non-turbulent manner.
- Pumps:
 - Refer to the pump maintenance manual for inspection instructions.

Cleaning

Cleaning should be done during the dry season when there is little or no water in the cistern. The cistern should be empty and all inlets should be blocked before entry in the cistern.

Calming inlet

Remove all debris and obstructions from the calming inlet.

- Cistern
 - Vacuum all sediment from the sump area of the cistern. Accumulated sediment can typically be evacuated through the manhole access riser. A standard power washer and vacuum truck can be used.
- Pump Sump
 - Remove pumps and vacuum all sediment from the sump area. A standard power washer and vacuum truck can be used.
- Pumps:
 - Refer to the pump maintenance manual for maintenance instructions.

Repairs

SRPE cisterns are manufactured from Hydrostatic Design Basis rated HDPE. Should a need arise for repair, only qualified HDPE welding providers should be used. Contact Contech Engineered Solutions, LLC for a list of qualified HDPE welding vendors.

Factory Contact

For additional service needs, please contact:

CONTECH ENGINEERED SOLUTIONS LLC – 1 800 338 1122
www.ContechES.com

Inspection & Maintenance Log Sample Template

_____ " Diameter System			Location: Anywhere, USA		
Date	Depth of Sediment	Accumulated Trash	Maintenance Performed	Maintenance Personnel	Comments
12/01/14	2"	None	Removed Sediment	B. Johnson	Installed
03/01/15	1"	Some	Removed Sediment and Trash	B. Johnson	Swept parking lot
06/01/15	0"	None	None		
09/01/15	0"	Heavy	Removed Trash	S. Riley	
12/01/15	1"	None	Removed Sediment	S. Riley	
04/01/15	0"	None	None	S. Riley	
04/15/15	2"	Some	Removed Sediment and Trash	ACE Environmental Services	



Support

Drawings and specifications are available at www.ContechES.com.

Site-specific support is available from our engineers.

DuroMaxx®
STEEL REINFORCED PE TECHNOLOGY

CONTECH®
ENGINEERED SOLUTIONS

800.338.1122
www.ContechES.com

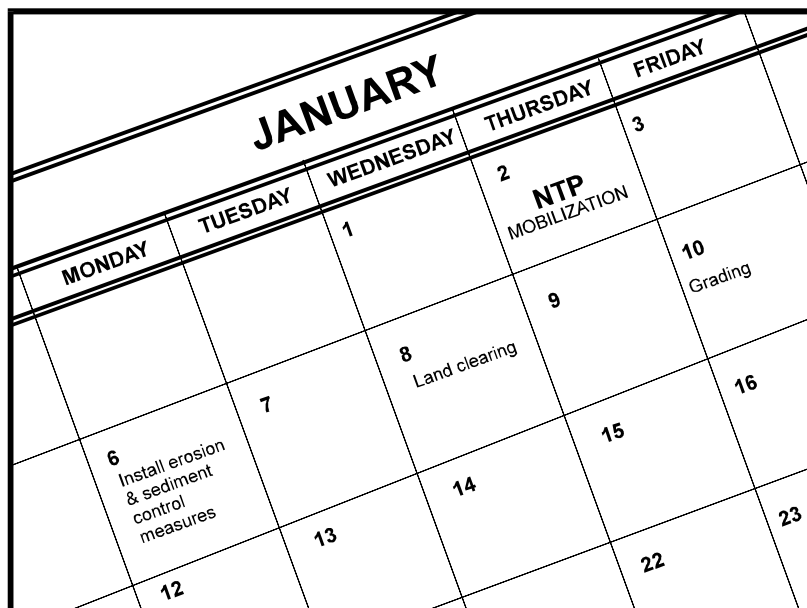
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The product(s) described may be protected by one or more of the following US patents: 5,322,629; 5,624,576; 5,707,527; 5,759,415; 5,788,848; 5,985,157; 6,027,639; 6,350,374; 6,406,218; 6,641,720; 6,511,595; 6,649,048; 6,991,114; 6,998,038; 7,186,058; 7,296,692; 7,297,266; related foreign patents or other patents pending.

EXHIBIT 2



Description and Purpose

Scheduling is the development of a written plan that includes sequencing of construction activities and the implementation of BMPs such as erosion control and sediment control while taking local climate (rainfall, wind, etc.) into consideration. The purpose is to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking, and to perform the construction activities and control practices in accordance with the planned schedule.

Suitable Applications

Proper sequencing of construction activities to reduce erosion potential should be incorporated into the schedule of every construction project especially during rainy season. Use of other, more costly yet less effective, erosion and sediment control BMPs may often be reduced through proper construction sequencing.

Limitations

- Environmental constraints such as nesting season prohibitions reduce the full capabilities of this BMP.

Implementation

- Avoid rainy periods. Schedule major grading operations during dry months when practical. Allow enough time before rainfall begins to stabilize the soil with vegetation or physical means or to install sediment trapping devices.
- Plan the project and develop a schedule showing each phase of construction. Clearly show how the rainy season relates

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	

Legend:

- ☒ Primary Objective
- ☒ Secondary Objective

Targeted Constituents

Sediment	☒
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

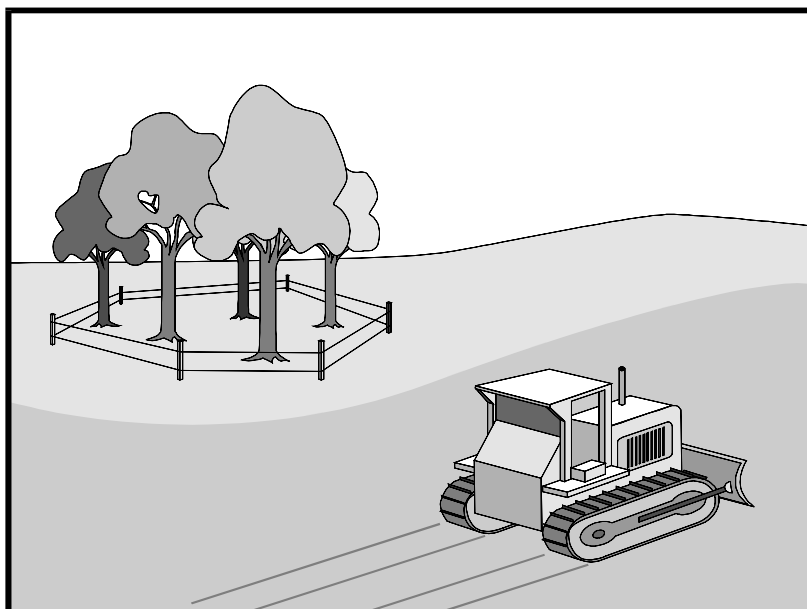
Potential Alternatives

None

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Preservation Of Existing Vegetation EC-2



Description and Purpose

Carefully planned preservation of existing vegetation minimizes the potential of removing or injuring existing trees, vines, shrubs, and grasses that protect soil from erosion.

Suitable Applications

Preservation of existing vegetation is suitable for use on most projects. Large project sites often provide the greatest opportunity for use of this BMP. Suitable applications include the following:

- Areas within the site where no construction activity occurs, or occurs at a later date. This BMP is especially suitable to multi year projects where grading can be phased.
- Areas where natural vegetation exists and is designated for preservation. Such areas often include steep slopes, watercourse, and building sites in wooded areas.
- Areas where local, state, and federal government require preservation, such as vernal pools, wetlands, marshes, certain oak trees, etc. These areas are usually designated on the plans, or in the specifications, permits, or environmental documents.
- Where vegetation designated for ultimate removal can be temporarily preserved and be utilized for erosion control and sediment control.

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	

Legend:

- ☒ **Primary Objective**
- ☒ **Secondary Objective**

Targeted Constituents

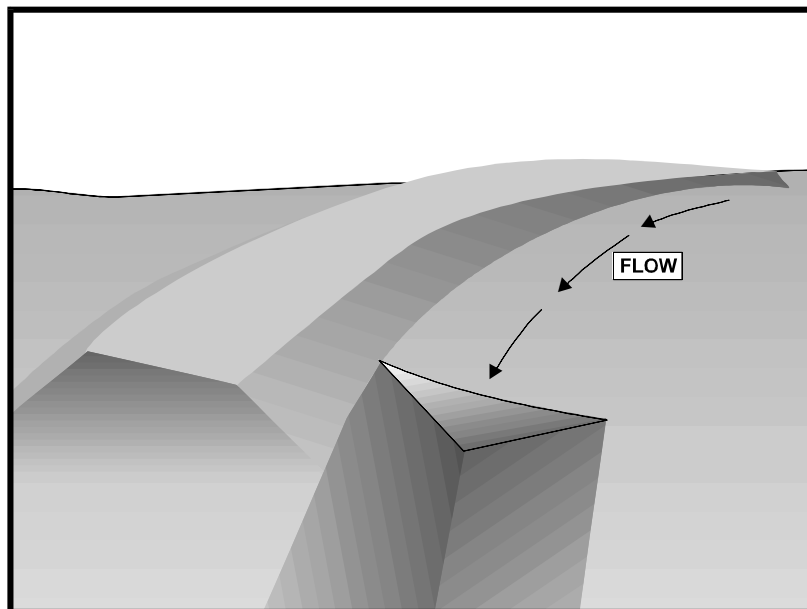
Sediment	☒
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

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Description and Purpose

An earth dike is a temporary berm or ridge of compacted soil used to divert runoff or channel water to a desired location. A drainage swale is a shaped and sloped depression in the soil surface used to convey runoff to a desired location. Earth dikes and drainage swales are used to divert off site runoff around the construction site, divert runoff from stabilized areas and disturbed areas, and direct runoff into sediment basins or traps.

Suitable Applications

Earth dikes and drainage swales are suitable for use, individually or together, where runoff needs to be diverted from one area and conveyed to another.

- Earth dikes and drainage swales may be used:
 - To convey surface runoff down sloping land
 - To intercept and divert runoff to avoid sheet flow over sloped surfaces
 - To divert and direct runoff towards a stabilized watercourse, drainage pipe or channel
 - To intercept runoff from paved surfaces
 - Below steep grades where runoff begins to concentrate
 - Along roadways and facility improvements subject to flood drainage

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	

Legend:

- ☒ **Primary Objective**
- ☒ **Secondary Objective**

Targeted Constituents

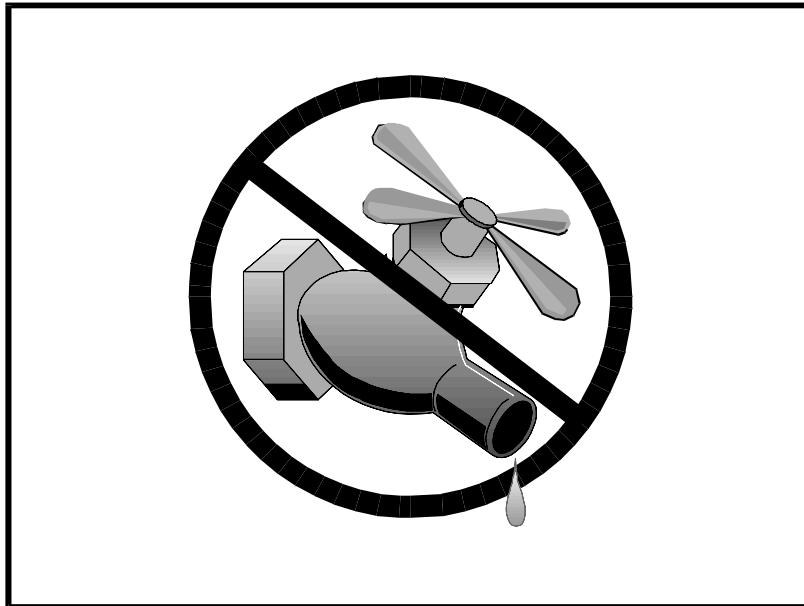
Sediment	☒
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

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Description and Purpose

Water conservation practices are activities that use water during the construction of a project in a manner that avoids causing erosion and the transport of pollutants offsite. These practices can reduce or eliminate non-stormwater discharges.

Suitable Applications

Water conservation practices are suitable for all construction sites where water is used, including piped water, metered water, trucked water, and water from a reservoir.

Limitations

- None identified.

Implementation

- Keep water equipment in good working condition.
- Stabilize water truck filling area.
- Repair water leaks promptly.
- Washing of vehicles and equipment on the construction site is discouraged.
- Avoid using water to clean construction areas. If water must be used for cleaning or surface preparation, surface should be swept and vacuumed first to remove dirt. This will minimize amount of water required.

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	

Legend:

- ☒ **Primary Objective**
- ☒ **Secondary Objective**

Targeted Constituents

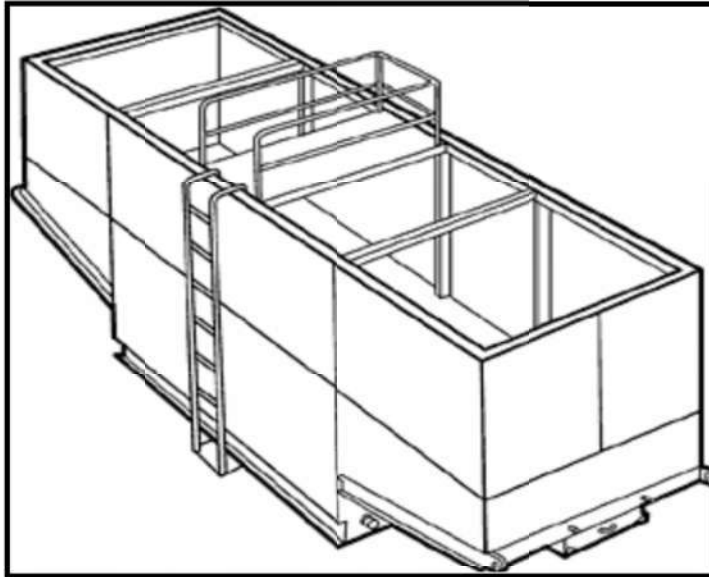
Sediment	☒
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

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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 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 exceedances of the General Permit requirements or Basin Plan standards.

The dewatering operations described in this fact sheet are not Active Treatment Systems (ATS) and do not include the use of chemical coagulations, chemical flocculation or electrocoagulation.

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

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	

Legend:

- ☒ **Primary Category**
- ☒ **Secondary Category**

Targeted Constituents

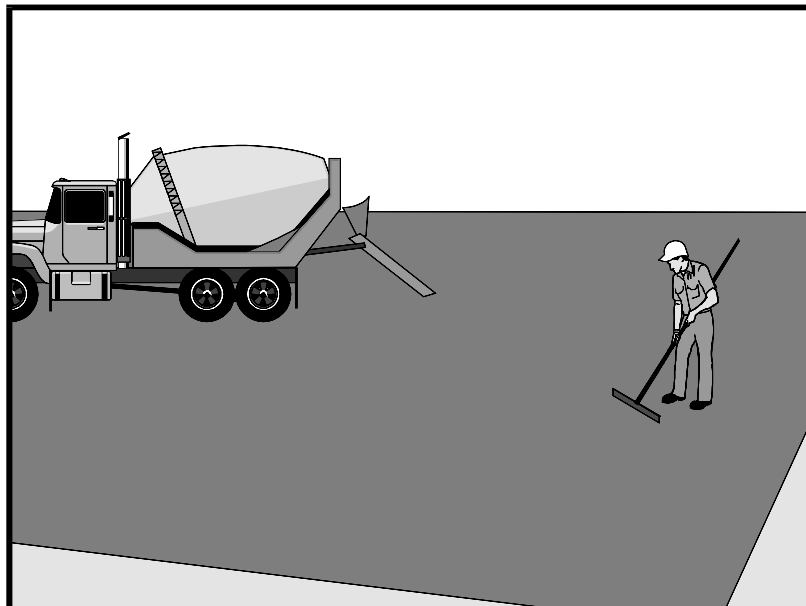
Sediment	☒
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	☒
Organics	

Potential Alternatives

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

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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 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	☒
WM	Waste Management and Materials Pollution Control	☒

Legend:

- ☒ **Primary Category**
- ☒ **Secondary Category**

Targeted Constituents

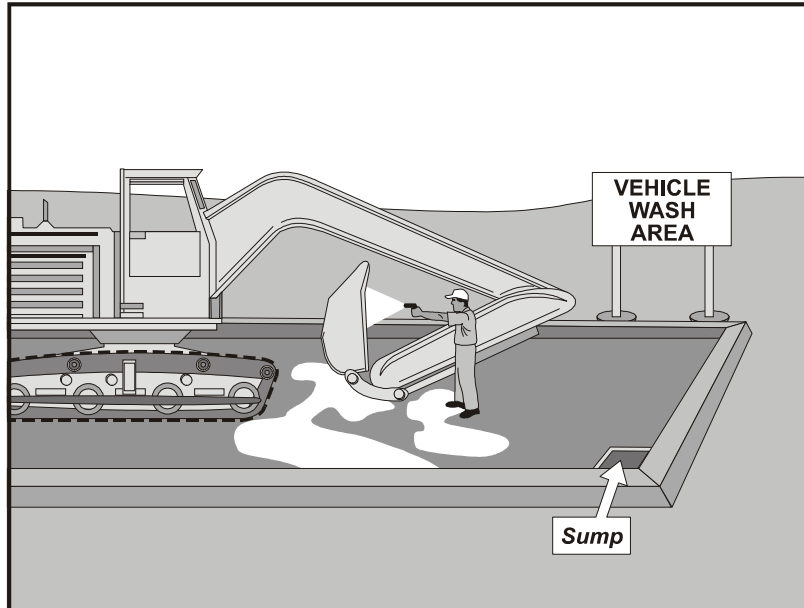
Sediment	☒
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	☒
Organics	

Potential Alternatives

None

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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	☒
WM	Waste Management and Materials Pollution Control	

Legend:

- ☒ **Primary Objective**
- ☒ **Secondary Objective**

Targeted Constituents

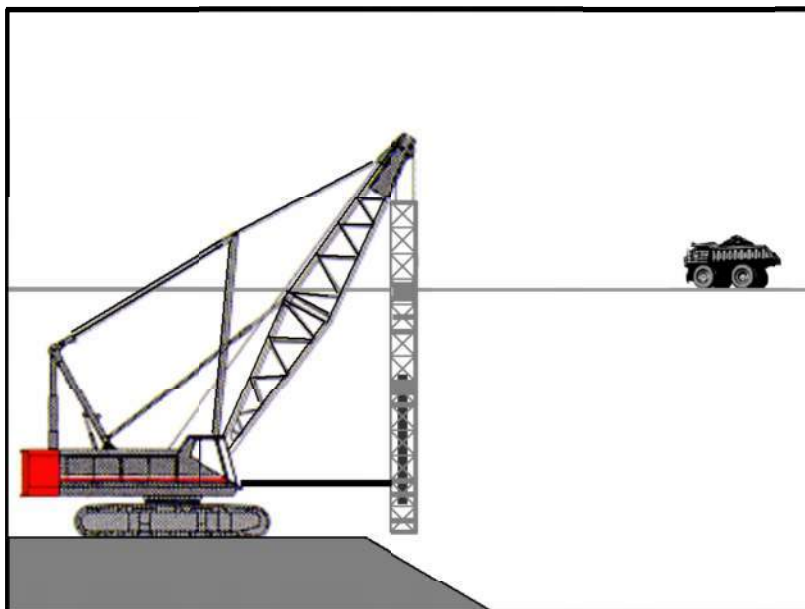
Sediment	☒
Nutrients	☒
Trash	
Metals	
Bacteria	
Oil and Grease	☒
Organics	☒

Potential Alternatives

None

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Description and Purpose

The construction and retrofit of bridges and retaining walls often include driving piles for foundation support and shoring operations. Driven piles are typically constructed of precast concrete, steel, or timber. Driven sheet piles are also used for shoring and cofferdam construction. Proper control and use of equipment, materials, and waste products from pile driving operations will reduce or eliminate the discharge of potential pollutants to the storm drain system, watercourses, and waters of the United States.

Suitable Applications

These procedures apply to all construction sites near or adjacent to a watercourse or groundwater where permanent and temporary pile driving (impact and vibratory) takes place, including operations using pile shells as well as construction of cast-in-steel-shell and cast-in-drilled-hole piles.

Limitations

None identified.

Implementation

- Use drip pans or absorbent pads during vehicle and equipment operation, maintenance, cleaning, fueling, and storage. Refer to NS-8, Vehicle and Equipment Cleaning, NS-9, Vehicle and Equipment Fueling, and NS-10, Vehicle and Equipment Maintenance.

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	

Legend:

- ☒ **Primary Objective**
- ☒ **Secondary Objective**

Targeted Constituents

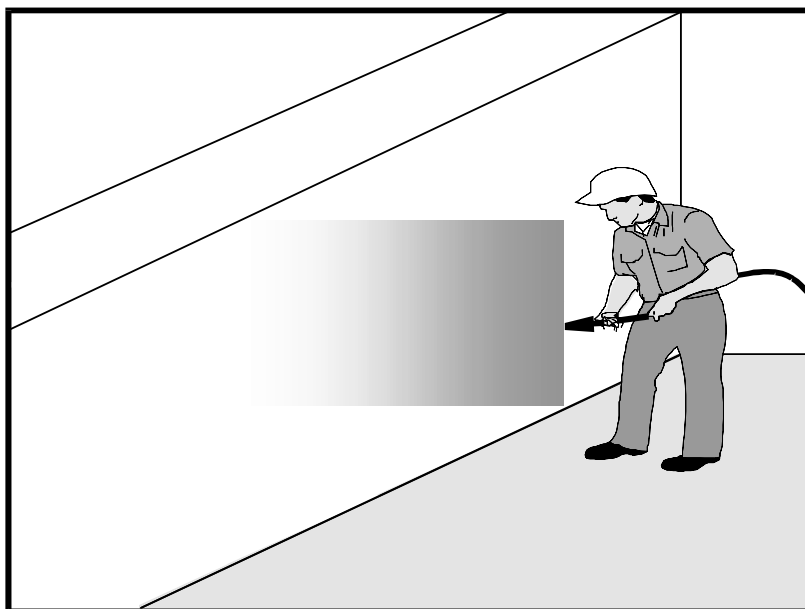
Sediment	☒
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	☒
Organics	

Potential Alternatives

None

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Description and Purpose

Concrete curing is used in the construction of structures such as bridges, retaining walls, pump houses, large slabs, and structured foundations. Concrete curing includes the use of both chemical and water methods.

Concrete and its associated curing materials have basic chemical properties that can raise the pH of water to levels outside of the permitted range. Discharges of stormwater and non-stormwater exposed to concrete during curing may have a high pH and may contain chemicals, metals, and fines. The General Permit incorporates Numeric Action Levels (NAL) for pH (see Section 2 of this handbook to determine your project's risk level and if you are subject to these requirements).

Proper procedures and care should be taken when managing concrete curing materials to prevent them from coming into contact with stormwater flows, which could result in a high pH discharge.

Suitable Applications

Suitable applications include all projects where Portland Cement Concrete (PCC) and concrete curing chemicals are placed where they can be exposed to rainfall, runoff from other areas, or where runoff from the PCC will leave the site.

Limitations

- Runoff contact with concrete waste can raise pH levels in the water 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	☒
WM	Waste Management and Materials Pollution Control	☒

Legend:

- ☒ **Primary Category**
- ☒ **Secondary Category**

Targeted Constituents

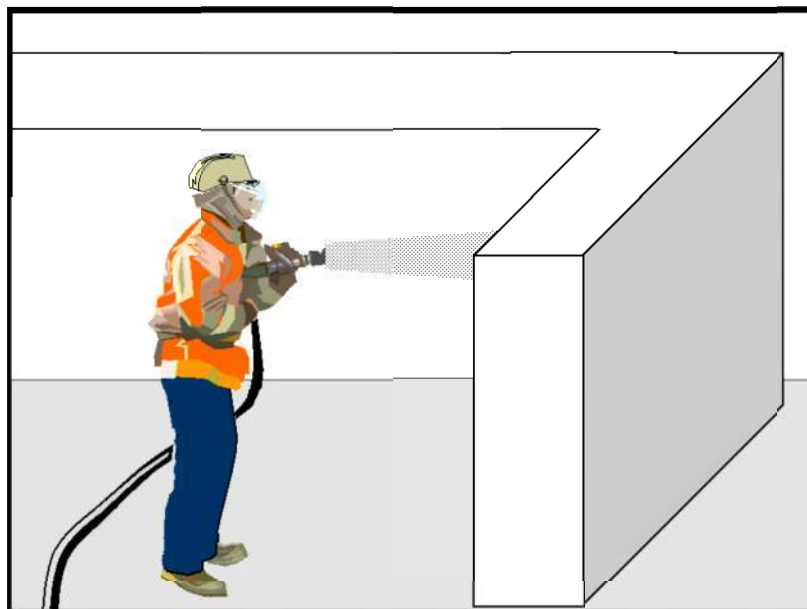
Sediment	☒
Nutrients	
Trash	
Metals	☒
Bacteria	
Oil and Grease	☒
Organics	

Potential Alternatives

None

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Description and Purpose

Concrete finishing methods are used for bridge deck rehabilitation, paint removal, curing compound removal, and final surface finish appearances. Methods include sand blasting, shot blasting, grinding, or high pressure water blasting. Stormwater and non-stormwater exposed to concrete finishing by-products may have a high pH and may contain chemicals, metals, and fines. Proper procedures and implementation of appropriate BMPs can minimize the impact that concrete-finishing methods may have on stormwater and non-stormwater discharges.

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

Concrete and its associated curing materials 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 apply to all construction locations where concrete finishing operations are performed.

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	☒

Legend:

- ☒ **Primary Category**
- ☒ **Secondary Category**

Targeted Constituents

Sediment	☒
Nutrients	
Trash	
Metals	☒
Bacteria	
Oil and Grease	
Organics	☒

Potential Alternatives

None

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