Appendix IS-4

Drainage Technical Report

Drainage Report

9000 Airport

Los Angeles, California

Prepared for

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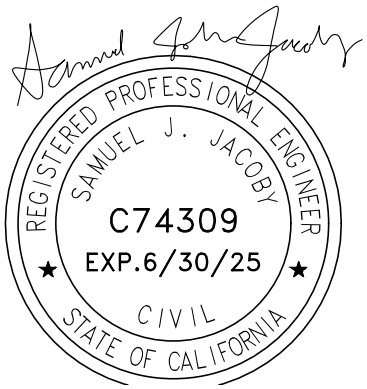

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1. Introduction

1.1 Project Description

The proposed project includes the development of a 435,390 square foot warehouse building including 80,000 square feet of office space with surface parking ("Option #1") or the development of a warehouse campus comprised of three buildings, totaling 410,056 square foot, including a total of 90,000 square feet of office space with surface parking ("Option #2") on an approximately 789,989 square foot site located within the Westchester – Playa del Rey Community Plan area in the City of Los Angeles. The Project Site is bounded by Interceptor Street to the north, West Arbor Vitae Street to the south, Airport Boulevard to the west, and residential uses to the east.

The Project Site is currently developed with an approximately 37,860 rental car facility comprised of two single-story buildings and accessory structures, as well as associated surface parking areas which would be removed to accommodate the Project.

Option 1 consists of a single building, detailed below:

	Footprint	Warehouse	Office
Option 1	435,390 s.f.	355,390 s.f.	80,000 s.f.
Landscaping	94,400 s.f.	Impervious	695,589 s.f.

Option 2 consists of three buildings detailed below:

	Footprint	Warehouse	Office
Building 1	102,930 s.f.	87,930 s.f.	30,000 s.f.
Building 2	139,083 s.f.	124,083 s.f.	30,000 s.f.
Building 3	123,043 s.f.	108,043 s.f.	30,000 s.f.
Option 2 Total	365,056 s.f.	320,056 s.f.	90,000 s.f.
Landscaping	120,400 s.f.	Impervious	669,589 s.f.

1.2 Scope of Work

As part of the environmental impact report (EIR) for the Project, this report will describe the existing and proposed surface water hydrology, surface water quality, and groundwater at the Project Site and immediate surrounding areas, as well as an analysis of the Project's potential impacts on each of these water resources.

For the purpose of this report, the collective Project (Option 1 or Option 2) have similar hydrologic impacts and requirements so they will largely be considered the same project, except where divergent for Option 2.

2. Regulatory Framework

2.1 Surface Water Hydrology

2.1.1 County of Los Angeles Hydrology Manual

Per the City of Los Angeles (City)'s Special Order No. 007-1299, December 3, 1999, the City has adopted the Los Angeles County (County) Department of Public Works Hydrology Manual as its basis of design for storm drainage facilities. The Hydrology Manual requires that a storm drain conveyance system be designed for at least a 10-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 facilities based on the MS4 Permit and is enforced on all new developments that discharge directly into the County's storm drain system, which this project is not subject to. Nor is the project proposing any County infrastructure improvements or connections and thus will not require the approval/review from the County Flood Control District department.

The Los Angeles County Department of Public Works Hydrology Manual (January 2006) establishes the Los Angeles County Department of Public Works' hydrologic design procedures based on historic rainfall and runoff data collected within the county. The hydrologic techniques in the manual apply for the design of local storm drains, retention and detention basins, pump stations, and major channel projects.

The proposed Project is required to utilize the 2006 Hydrology Manual and accompanying hydrologic tools including HydroCalc Calculator to calculate existing and proposed discharges and volumes from the Project.

2.1.2 Los Angeles Municipal Code

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 approval through the B-Permit process (Section 62.105, LAMC). Through the B-Permit process, storm drain installation plans which include any connections to the City's storm drain system from a property line to a catch basin or storm drain pipe, are subject to review and approval by the City of Los Angeles Department of Public Works, Bureau of Engineering.

2.2 Surface Water Quality

2.2.1 Clean Water Act

Controlling pollution of the nation's receiving water bodies has been a major environmental concern for more than three decades. Growing public awareness of the impacts of water pollution in the United States culminated in the establishment of the federal Clean Water Act (CWA) in 1972, which provided the regulatory framework for surface water quality protection. The United States Congress amended the CWA in 1987 to specifically regulate discharges to waters of the United States from public storm drain systems and storm water flows from industrial facilities, including construction sites, and require such discharges be regulated through permits under the National Pollutant Discharge Elimination System (NPDES) (CWA Section 402p) Rather than setting numeric effluent limitations for storm water and urban runoff, CWA regulation calls for the implementation of Best Management Practices (BMPs) to reduce or prevent the discharge of pollutants from these activities to the Maximum Extent Practicable(MEP) for urban runoff and meeting the Best Available Technology Economically achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) standards for construction storm water. Regulations

and permits have been implemented at the federal, state, and local level to form a comprehensive regulatory framework to serve and protect the quality of the nation's surface water resources.

In addition to reducing pollution with the regulations described above, the CWA also seeks to maintain the integrity of clean waters of the United States – in other words, to keep clean waters clean and to prevent undue degradation of others. As part of the CWA, the Federal Anti-Degradation Policy [40 Code of Federal Regulations (CFR) Section 131.12] states that each state "shall develop and adopt a statewide anti-degradation policy and identify the methods for implementing such policy…" [40 CFR Section 131.12(a)]. Three levels of protection are defined by the federal regulations:

1. Existing uses must be protected in all of the Nation's receiving waters, prohibiting any degradation that would compromise those existing uses;

2. Where existing uses are better than those needed to support propagation of aquatic wildlife and water recreation, those uses shall be maintained, unless the state finds that degradation is "…necessary to accommodate important economic or social development" [40 CFR Section 131.12(a)(2)]. Degradation, however, is not allowed to fall below the existing use of the receiving water; and

3. States must prohibit the degradation of Outstanding National Resource Waters, such as waters of national and state parks, wildlife refuges, and waters of exceptional recreation or ecological significance.

2.2.2 Federal Anti-Degradation Policy

The Federal Anti-Degradation Policy (40 CFR 131.12) requires states to develop statewide anti-degradation policies and identify methods for implementing them. Pursuant to the CFR, state anti-degradation policies and implementation methods shall, 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.

2.2.3 Porter-Cologne Water Quality Act

In the State of California, the State Water Resources Control Board (SWRCB) and local Regional Water Quality Control Boards (RWQCBs) have assumed the responsibility of implementing the United States Environmental Protection Agency's (USEPA) NPDES Program and other programs under the CWA such as the Impaired Waters Program and the Anti-Degradation Policy. The primary quality control law in California is the Porter-Cologne Water Quality Act (Water Code Sections 13000 et seq.). Under Porter-Cologne, the SWRCB issues joint federal NPDES Storm Water permits and state Waste Discharge Requirements (WDRs) to operators of municipal separate storm sewer systems (MS4s), industrial facilities, and construction sites to obtain coverage for the storm water discharges from these operations.

2.2.4 California Anti-Degradation Policy

The California Anti-Degradation Policy, otherwise known as the Statement of Policy with Respect to Maintaining High Quality Water in California was adopted by the SWRCB (State Board Resolution No. 68-16) in 1968. Unlike the Federal Anti-degradation, Policy, the California Anti-Degradation 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.

2.2.5 California Toxic Rule

In 2000, the EPA promulgated the California Toxic Rule, which establishes water quality criteria for certain toxic substances to be applied to waters in the State. 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 Toxic 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 Los Angeles Regional Water Quality Control Board (LARWQCB) as having beneficial uses protective of aquatic life or human health.

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

As required by the California Water Code, 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 anti-degradation 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.

2.2.7 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.

2.2.8 The General Permit for Construction Activities

SWRCB Order No. 2009-0009-DWQ known as "General Permit" was adopted on September 2, 2009 and was amended by Order No 2012-0006-DWQ which became effective on July 17, 2012. This PDES permit establishes a risk-based approach to stormwater control requirements for construction projects by identifying three project risk levels. The main objectives of the 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
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 BMPs for a specific construction project, charging Owners with stormwater quality management responsibilities. A construction site subject to the General Permit must prepare and implement a SWPPP that meets the requirements of the General Permit. As part of the Project, preparation, and implementation of a SWPPP will be required. In addition, the Project will be required to obtain a Waste Discharger Identification Number (WDID) through the State's Storm Water Multiple Application and Report Tracking System (S.M.A.R.T.S.).

2.2.9 Los Angeles County Municipal Storm Water System (MS4) Permit

As described previously, 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 December 13, 2001, the LARWQCB adopted Order No. 01-182 under the CWA and the Porter-Cologne Act. This Order is the NPDES Permit or MS4 permit for municipal stormwater and urban runoff discharges within Los Angeles County. The requirements of this Order (the "Permit") cover 84 cities and most of the unincorporated areas of Los Angeles County. Under the Permit, the LACFCD is designated as the Principal Permittee. The Permittees are the 84 Los Angeles County cities (including the City of Los Angeles) and unincorporated areas within Los Angeles 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 Permittees. Since adoption of Order No. 01-182, the LARWQCB has seen adopted Order No. R4-2012-0175, as amended by State Water Board Order WQ 2015-0075 NPDES Permit No. CAS004001 on November 8, 2012. This current permit will expire on December 28, 2017. The City of Los Angeles is a Permittee of the California Regional Water Quality Control Board, Los Angeles Region, and is therefore subject to the requirements set forth in Order No. R4-2012-0175, as amended by State Water Board Order WQ 2015-0075, NPDES Permit No. CAS004001.

2.2.10 Los Angeles Municipal Code

Section 64.70 of LAMC sets forth the City's Stormwater and Urban Runoff Pollution Control Ordinance. The ordinance prohibits the discharge of the following items into any storm drain systems: ·

- Any liquids, solids, or gasses which by reason of their nature or quantity are flammable, reactive, explosive, corrosive, or radioactive, or by interaction with other materials could result in fire, explosion, or injury.
- Any solid or viscous materials, which could cause obstruction to the flow or operation of the storm drain system.
- Any pollutant that injures or constitutes a hazard to human, animal, plant, or fish life, or creates a public nuisance.
- Any noxious or malodorous liquid, gas, or solid in sufficient quantity, either singly or by interaction with other materials, which creates a public nuisance, hazard to life, or inhibits authorized entry of any person into the storm drain system.
- Any medical, infectious, toxic, or hazardous material or waste.

Earthwork activities, including grading, are overseen by the Los Angeles Building Code, which is contained in Los Angeles Municipal Code (LAMC), Chapter IX, Article 1. Section 91.7013 contains regulations pertaining to erosion control and drainage devices and Section 91.7014 provide requirements for flood, mudflow protection and general construction requirements.

2.2.11 Standard Urban Stormwater Mitigation Plan (SUSMP)

Under the current Los Angeles County Municipal NPDES Permit, permittees are required to implement a development planning program to address storm water pollution. These programs require project applicants for certain types of projects to implement Standard Urban Stormwater Mitigation Plans (SUSMP) throughout the operational life of their projects. The purpose of SUSMP is to reduce the discharge of pollutants in storm water by outlining BMPs which must be incorporated into the design plans of new development and redevelopment.

The Project falls within the definition of "redevelopment" under the MS4 Storm Water Permit which requires compliance with the Low Impact Development (LID) requirements and SUSMP requirements.

2.2.12 Low Impact Development

LID is a stormwater strategy that is used to mitigate the impacts of runoff and stormwater pollution as close to its source as possible. Urban runoff discharged from municipal storm drain systems is one of the principal causes of water quality impacts in most urban areas. The stormwater may contain pollutants such as trash and debris, bacteria and viruses, oil and grease, sediments, nutrients, metals, and toxic chemicals that can negatively affect the ocean, rivers, plant and animal life, and public health.

LID encompasses a set of site design approaches and BMPs that are designed to address runoff and pollution at the source. These LID practices can effectively remove nutrients, bacteria, and metals, while reducing the volume and intensity of stormwater flows.

The Project is subject to compliance of Order No. R4-2012-0175, which became effective on November 8, 2012. The main purpose of this law is to ensure that development and redevelopment projects mitigate runoff in a manner that captures or treats rainwater at its source, while utilizing natural resources.

In accordance with Order No. R4-2012-0175, stormwater runoff shall be infiltrated, evapotranspirated, captured and used, or treated through high removal efficiency BMPs, onsite, through stormwater management techniques that comply with provisions of the City of Los Angeles Development Best Management Practices Handbook.

2.2.13 Hydromodification

In addition to the LID requirements listed in the Permit, the Permit also addresses requirements for Hydromodification as pertaining to the project. Per Part VI.D.7.c.iv of the Permit:

"Each Permittee shall require all New Development and Redevelopment projects located within natural drainage systems as described in Part VI.D.7.c.iv.(1)(a)(iii) to implement hydrologic control measures, to prevent accelerated downstream erosion and to protect stream habitat in natural drainage systems. The purpose of the hydrologic controls is to minimize changes in post-development hydrologic storm water runoff discharge rates, velocities, and duration. This shall be achieved by maintaining the project's pre-project stormwater runoff flow rates and durations."

However, per Part VI.D.7.c.iv.(1)(b)(iv) of the Permit, the project is exempt from such requirements as runoff from the site is discharged directly via storm drain to a receiving water that is not susceptible to hydromodification impacts. Dominguez Channel is categorized as not susceptible to hydromodification. Therefore, the project is not required to implement hydrologic control measures as mitigation for hydromodification impacts. In addition, implementation of the project will result in a reduction of peak flows and volumes as compared to existing conditions, thereby satisfying hydromodification requirements in addition to the receiving water exemption.

2.3 Groundwater

2.3.1 California Groundwater Sustainability Act

On Sept. 16, 2014, California Governor Jerry Brown signed into law a three-bill legislative package, known as the Sustainable Groundwater Management Act of 2014 (SGMA). The SGMA provides a framework for sustainable management of groundwater supplies by local authorities, with a limited role for state intervention only if necessary to protect the resource.

The SGMA requires the formation of local groundwater sustainability agencies (GSAs) that must assess conditions in their local water basins and adopt locally-based management plans. The act provides substantial time – 20 years – for GSAs to implement plans and achieve long-term groundwater sustainability. It protects existing surface water and groundwater rights and does not impact current drought response measures.

The California Water Commission (CWC) requires a statewide prioritization of California's groundwater basins using the following eight criteria:

1. Overlying population;
2. Projected growth of overlying population;
3. Public supply wells;

4. Total wells;
5. Overlying irrigated acreage;
6. Reliance on groundwater as the primary source of water;
7. Impacts on the groundwater; including overdraft, subsidence, saline intrusion, and other water quality degradation; and
8. Any other information determined to be relevant by the Department.

The Project Site is located within a low priority California Statewide Groundwater Elevation Monitoring groundwater basin.

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

As required by the California Water Code, 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 anti-degradation 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 LARWQCB 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.

2.3.3 Safe Drinking Water Act (SDWA)

The federal Safe Drinking Water Act (SDWA), established in 1974, sets drinking water standards throughout the country and is administered by the USEPA. The drinking water standards established in the SDWA, as set forth in the CFR, are referred to as the National Primary Drinking Water Regulations (Primary Standards, Title 40, CFR Part 141) and the National Secondary Drinking Water Regulations (Second Standards, 40 CFR Part 143). California passed its own SDWA in 1986 that authorizes the State's Department of Health Services (DHS) to protect the public from contaminants in drinking water by establishing maximum contaminants levels, as set forth in the California Code of Regulations (CCR), Title 22, Division 4, Chapter 15, that are at least as stringent as those developed by the USEPA, as required by the federal SDWA.

2.3.4 West Coast Groundwater Basin

The West Coast Groundwater Basin (Basin) underlies 160 square miles in the southwestern part of the Los Angeles Coastal Plain in Los Angeles County. The Basin extends southwesterly along the coast from the Newport-Inglewood Uplift to the Santa Monica Bay. The Basin provides groundwater to

approximately eleven cities and unincorporated areas of Los Angeles County. This average annual production is roughly 52,000 Acre-feet (AF), which accounts for 20% of total retail demands.

In 1961, the Basin was adjudicated. The adjudication limits the allowable annual extraction of groundwater per water rights holder within West Basin in order to prevent seawater intrusion and an unhealthy groundwater level. As part of the adjudication, the court appointed the California Department of Water Resources (DWR) to serve as Watermaster to account for all water rights and groundwater extraction amounts per year.

3. Environmental Setting

3.1 Surface Water Hydrology

3.1.1 Regional

Located within the Dominguez Channel watershed and generally east of the Los Angeles International Airport (LAX), the site discharges into the Port of Los Angeles (POLA) via the Dominguez Channel. Per the LA Sanitation and Environment (LASAN), The Domiguez Channel watershed encompasses about 70,000 acres and is located in the south portion of the LA Basin. The Channel is about 15.7 miles in length and begins in Hawthorne and discharges into POLA. The watershed is bounded by Manchester Boulevard in the north, POLA to the south; while the west includes areas of El Segundo, Manhattan Beach, Redondo Beach, Torrance and the Palos Verdes Hills. The eastern areas includes portions of Willowbrook, West Compton, and Carson. Over 90% of the watershed is developed, 41% is residential and 44% is commercial, industrial, and transportation related. About 61% of the watershed is impervious.

3.1.1 Local

Stormwater runoff is collected from the Project Site and conveyed through offsite storm drain facilities along the public streets surrounding the Project Site. Stormwater from the site generally flows southeast via Los Angeles City and Los Angeles County storm drain facilities. The site initially drains via connection to an existing 30" drain at the southeast corner of the site. This 30" city storm drain then flows east on Arbor Vitae St (plan D-27210, east towards Belanca Ave where it discharges to a county drain (BI 0113-Line C) generally running south, itself discharging to BI 0013 – Line B Inglewood Drain in Century Boulevard and continuing east. The Inglewood Drain, at the intersection of 116th St. and Inglewood Avenue, discharges to the Dominguez Channel (Doty Ave. to Inglewood Ave.) where it continues east. This channel reach discharges to further downstream reaches of the Dominguez Channel and ultimately the Pacific Ocean at the Los Angeles Harbor (POLA). Please refer to Appendix A for the existing condition hydrology map.

3.1.2 Onsite

In existing conditions, the site largely drains overland from north (elevation 107±) to south (elevation 102.5±). There are intermittent drains that are not mapped onsite, but the existing site does drain to the southeast corner of the site where it discharges to the City's drain.

The site proposes to mimic the existing drainage discharge (southeast corner of the site) and existing flow rates. See the attachments for existing and proposed hydrology maps.

Table 3-1 Existing Hydrology Summary

Existing Conditions 10-year Storm Frequency				
Drainage Sub Area	Area	Time of Concentration	Imperviousness	Q10 (cfs)
	Acres	Min	%	cfs
DMA 1	18.14	7	0.9	29.91
Existing Conditions 50-year Storm Frequency				
Drainage Sub Area	Area	Time of Concentration	Imperviousness	Q10 (cfs)
	Acres	Min	%	cfs
DMA 1	18.14	6	0.9	45.6

3.2 FEMA

The project is within Panel 1760 (Map Number 06037C1760F , dated September 26, 2008) on Federal Emergency Management Agency's (FEMA's) Flood Insurance Rate Map (FIRM). Based on the FIRM, the project is within Zone X, which depicts areas determined to be outside of the 0.2% (500-year) annual chance floodplain. Therefore, the processing of a CLOMR/LOMR, through FEMA, will not be required for this project.

3.3 Surface Water Quality

3.3.1 Regional

The Project is located within the Dominguez Channel Watershed, a highly industrialized area with numerous nonpoint sources of pollution which results in poor sediment quality both within the Channel and in adjacent Inner Harbor areas. The Dominguez Channel Watershed covers approximately 70,000 acres and is located in the southern portion of the Los Angeles Basin. Approximately 43,400 acres of the watershed drains to the 15.7-mile-long Dominguez Channel which begins in Hawthorne and discharges into the Los Angeles Harbor in the east basin. Over 90% percent of the land area is developed. Residential use covers about 41% and another 44% is industrial, commercial, and transportation related. Overall, the watershed is approximately 61% impervious.

Included in the water shed are portions of the cities of Los Angeles, El Segundo, Manhattan Beach, Redondo Beach, Torrance and the Palos Verdes Hills. Portions of Compton and Carson, and portions of unincorporated areas of Los Angeles County are also included. The watershed is managed by the Dominguez Channel Watershed Management Group (DCWMG). The DCWMG consists of the City of Los Angeles as the coordinating agency for the Enhanced Watershed Management Program and Coordinated Integrated Monitoring Program development, and also involves Los Angeles County, Los Angeles County Flood Control District, and the cities of El Segundo, Hawthorne, and Inglewood.

3.3.2 Beneficial Uses in Dominguez Channel Watersheds

The existing and potential beneficial uses for the waters within the Dominguez Channel Watershed, where the majority of the surface water flows from the Project ultimately discharge are described below.

Table 3-2 Beneficial Uses of Dominguez Channel and greater Los Angeles/Long Beach

303(d) list waterbody	Basin Plan waterbody (Hydo # 405.12)	MUN	NAV	IND	REC1	REC2	COMM	WARM	EST	MAR	WILD	RARE	MIGR	SPWN	SHELL	WET
Dominguez Channel fresh Torrance Lateral	Dominguez Channel to Estuary	P			Ps	E		P			P	E				
Dominguez Channel Estuary	Dominguez Channel Estuary		P		Es	E	E		E	E	E	Ee	Ef	Ef		
Consolidated Slip Inner Harbor Fish Harbor	Los Angeles Long Beach Harbor All Other Inner areas		E	E	E	E	E			E		Ee			P	
Cabrillo Marina	Los Angeles Long Beach Harbor Marinas		E	E	E	E	E			E		E			P	
Inner Cabrillo Beach	Los Angeles Long Beach Harbor Public Beach areas		E		E	E	E			E	E	E		E	E	
Los Angeles River Estuary	Los Angeles River Estuary		E	E	E	E	E		E	E	E	Ee	Ef	Ef	P	E
Outer Harbor San Pedro Bay	Los Angeles Long Beach Harbor Outer Harbor		E		E	E	E			E		E			P	

Beneficial use designations apply to all tributaries to the indicated water body, if not listed separately.
E: Existing beneficial use
P: Potential beneficial use
e: One or more rare species utilize all oceans, bays, estuaries, and wetlands for foraging and/or nesting.
f: Aquatic organisms utilize all bays, estuaries, lagoons, and coastal wetlands, to a certain extent, for spawning and early development. This may include migration into areas that are heavily influenced by freshwater inputs.
s: Access prohibited by Los Angeles County Department of Public Works

3.3.3 Impairments and TMDL's in the Dominguez Channel, Above and Below Vermont Ave.: CWA 303(d) List of Water Quality Limited Segments

Under Section 303(d) of the CWA, states are required to identify water bodies that do not meet their water quality standards. Biennially, the LARWQCB prepares a list of impaired waterbodies in the region, referred to as the 303(d) list. The 303(d) list outlines the impaired waterbody and the specific pollutant(s) for which it is impaired. All waterbodies on the 303(d) list are subject to the development of a Total Daily Maximum Load (TMDL).

Storm water runoff from the Project discharges to Dominguez Channel and to Port of Los Angeles (POLA). According to the 2018 303(d) list of Limited Water Quality Segments published by the SWRCB, the Dominguez Channel is listed as impaired by the constituents in the table below.

Table 3-3 List of 303(d) Impairments Dominguz Channel (lined portion above Vermont Ave)

Listed Pollutants	Indicator Bacteria (68243), Zinc (68450), Copper (72474), Toxicity (76424), Lead (98867)
Listed Pollutants w/TMDL	Zinc (68450); Copper (72474); Toxicity (76424); Lead (98867)

Table 3-4 List of 303(d) Impairments Dominguz Channel (unlined portion below Vermont Ave)

Listed Pollutants	PCBs (Polychlorinated biphenyls) (68139), Benzo(a)pyrene (68354), Pyrene (68839), Phenanthrene (69111), Chrysene (C1-C4) (69124), Benzo(a)anthracene (69189), Dieldrin (tissue) (69913), Indicator Bacteria (70163), Lead (70528), Benthic Community Effects (72640), Toxicity (76061), Chlordane (tissue) (98920), Copper (98921), DDT (tissue & sediment) (99361)
Listed Pollutants w/TMDL	PCBs (Polychlorinated biphenyls) (68139); Benzo(a)pyrene (68354); Pyrene (68839); Phenanthrene (69111); Chrysene (C1-C4) (69124); Benzo(a)anthracene (69189); Dieldrin (tissue) (69913); Lead (70528); Benthic Community Effects (72640); Toxicity (76061); Chlordane (tissue) (98920); Copper (98921); DDT (tissue & sediment) (99361)

3.3.4 Local

Within the urban environment of the Project, stormwater runoff occurs during and shortly after rain events. The volume of runoff depends on the intensity and duration of the storm event and the imperviousness of the drainage area. Typical urban pollutants associated with stormwater runoff following rain events includes sediment, trash, bacteria, metals, nutrients and potentially organics and pesticides. The source of contaminants is wide ranging and includes all areas where rainfall occurs along with atmospheric deposition. Therefore, sources of contaminants within urban areas include roadways, building tops, parking lots, landscape areas and maintenance areas.

To reduce contaminant loads from entering the storm drain system, the City conducts routine street cleaning operations as well as periodic cleaning and maintenance of the catch basins to reduce stormwater pollution within the storm drain system.

3.3.5 On Site

Under the existing conditions, the entire project area is built out with high impervious conditions throughout each existing drainage area, and the predominant land use being surface parking lots and buildings. As mentioned, the proposed existing underground drainage facilities within the property are an inlet filters, (hydrodynamic separator), and sub-surface infiltration chambers within the property, and prior to the discharge to the City's main at the southeast corner of the property. Anticipated pollutants consistent with parking lots, building areas and landscaping include total suspended solids (TSS), oil/grease, heavy metals, nutrients, pesticides, and trash.

Table 3-5 Typical Pollutants of Concern

Land Use	Pollutants of Concern [2]								
	Suspended Solids	Total Phosphorus	Total Nitrogen	Total Kjeldahl Nitrogen	Cadmium, Total	Chromium, Total	Copper, Total	Lead, Total	Zinc, Total
High Density Single Family Residential	X	X			[4]	[4]	X	X	X
Multi-Family Residential	X				[4]	[4]	X		X
Mixed Residential	X	X	X		[4]	[4]	X	X	X
Commercial	X	X	X	X	[4]	[4]	X	X	X
Industrial	X	X	X	X	[4]	[4]	X	X	X
Critical Facilities [3]	X	[4]	[4]	[4]	[4]	[4]	X	X	X
Transportation (streets, roads)	X	X	X	X	[4]	[4]	X	X	X
Institutional (educational facilities)	X				[4]	[4]	X		X

[1] Adapted from Table A-3 of the *Technical Manual for Stormwater Best Management Practices in the County of Los Angeles* (February 2004) and the Southern California Coastal Water Research Project Land Use Specific Storm Water Monitoring Data. X = exceedance of "standard" by observed median/average concentration; blank = no exceedance of "standard" by observed median/average concentration.

[2] Derived from Table 11 of the 2012 Los Angeles County MS4 Permit (page 104).

[3] Critical facilities include automobile dismantling (SIC 50xx), automobile repair (SIC 75xx), metal fabrication (SIC 34xx), motor freight (SIC 42xx), automobile dealerships (SIC 55xx), chemical manufacturing (SIC 28xx), and machinery manufacturing (SIC 35xx).

[4] No available data to determine if these pollutants of concern originate from this land use. Pollutant is assumed to be produced by this land use unless otherwise proven by the project applicant.

Source: Los Angelese County LID Manual with information from MS4 permit covering City of Los Angeles

Table 3-6 BMP Pollutant Removal Effectiveness

BMP	Pollutant/Condition of Concern									Reference
	Dissolved oxygen (DO)[1]	Metals	Nutrients	Pathogen indicator/ bacteria	Pesticides[1]	Runoff volume and flow[1]	Sediment/Total suspended solids (TSS)	Trash[2]	Waste material[1]	
SC - All source controls (collective)	x	x	x	x	x	x	x	x	x	CASQA Stormwater BMP Handbook - Municipal (2003)
SC - Catch basin cleaning	x	x	x	x	x	x	x	x	x	CASQA Stormwater BMP Handbook - Municipal (2003)
SC - Education	x	x	x	x	x	x	x	x	x	CASQA Stormwater BMP Handbook - Municipal (2003)
SC - Street sweeping	x	x			x	x	x	x	x	CASQA Stormwater BMP Handbook - Municipal (2003)
SC-/TC - Roof runoff controls	x	x	x	x	x	x	x	x	x	CASQA Stormwater BMP Handbook - Development (2003)
TC - Bioretention	x	x		x	x	x	x	x	x	CASQA Stormwater BMP Handbook - Industrial and Commercial (2003)[3]
TC - Constructed wetland	x	x		x	x	x	x	x	x	CASQA Stormwater BMP Handbook - Industrial and Commercial (2003)[3]
TC - Extended detention basin	x				x	x		x	x	CASQA Stormwater BMP Handbook - Industrial and Commercial (2003)[3]
TC – Infiltration basin	x	x	x	x	x	x	x	x	x	CASQA Stormwater BMP Handbook - Industrial and Commercial (2003)[3]
TC - Infiltration trench	x	x	x	x	x	x	x	x	x	CASQA Stormwater BMP Handbook - Industrial and Commercial (2003)[3]
TC - Media filter	x	x			x	x	x	x	x	CASQA Stormwater BMP Handbook - Industrial and Commercial (2003)[3]
TC - Pervious pavement	x	x	x	x	x	x	x	x	x	CASQA Stormwater BMP Handbook - Development (2003)
TC - Vegetated buffer strip	x	x			x	x	x	x	x	CASQA Stormwater BMP Handbook - Industrial and Commercial (2003)[3]
TC - Vegetated swale	x				x	x		x	x	CASQA Stormwater BMP Handbook - Industrial and Commercial (2003)[3]
TC - Vortex separator	x	x	x	x	x	x	x	x	x	CASQA Stormwater BMP Handbook - Industrial and Commercial (2003)[3]
TC - Wet pond	x	x			x	x	x	x	x	CASQA Stormwater BMP Handbook - Industrial and Commercial (2003)[3]

[1] BMP removal efficiencies for dissolved oxygen, pesticides, runoff volume and flow, and waste material are not defined in the CASQA Stormwater BMP Handbooks. For the purposes of this Database and selection queries, these pollutants and conditions of concerns will have a relationship with all BMPs so as to not limit the number of outputs.
[2] All BMPs are assumed to address trash for the purposes of this information database.
[3] Targeted constituents are based on "high pollutant removal" denoted in the CASQA BMP manual.

Source: California Stormwater Quality Association (CASQA) "Guidance Document for Effectiveness Assessment – Source Contribution Tools and Methodologies Information Database", Version 1.1, July 2018

3.4 GROUNDWATER

3.4.1 Regional

The City of Los Angeles overlies the Los Angeles Coastal Plain Groundwater Basin (Basin) which consists of four major subbasins: Hollywood, Santa Monica, Central and West Coast. Replenishment of the Basin occurs primarily through percolation of rainfall throughout the watershed via permeable surfaces, spreading grounds, and groundwater migration from adjacent basins. Injection wells are also used to pump freshwater along specific seawater barriers to prevent the intrusion of salt water. Groundwater flow within the Basin generally flows in a south and southwesterly direction.

3.4.2 Local

The Project resides specifically within the West Coast Groundwater Basin, managed for replenishment by the Water Replenishment District of Southern California (WRD). Through the coordination of the Los

Angeles County Public Works Department, DWR, and WRD, the West Coast Groundwater Basin is managed and maintained to provide the utmost water quality and reliability for the region.

3.4.3 On Site

Leighton Consulting, Inc. has prepared a geotechnical analysis of the site. The first report titled "Geotechnical Exploration Report" was prepared on April 5th, 2023, and a supplemental report titled "Supplemental Percolation Study" was prepared on September 22, 2023. Per the reports, "The soils encountered in the consist of a layer of undocumented artificial fill materials (Afu) was encountered overlying Quaternary-aged (Late to Middle Pleistocene) old eolian and dune deposits (Qoe). The undocumented artificial fill encountered in borings LP-3 and LP-4 ranged from approximately 4 to 7 feet in thickness, likely associated with the existing and previous site improvements. The fill soils consist primarily of clayey sand, sandy clay, and clay. Below the artificial fill materials, old eolian and dune deposits (Qoe) were encountered in the borings to the maximum depth explored. The Qoe deposits encountered generally consist of olive brown to reddish-brown, slightly moist to moist, very stiff to hard clay with varying amounts of silt and sand. Below approximately 15 feet in depth at borings LP-3 and LP-4, the Qoe deposits consist of yellow brown, medium dense to very dense sand and clayey sand. Detailed descriptions of the subsurface materials encountered in the borings are presented on the attached boring logs (Appendix A).

Groundwater was not encountered at the site during the recent and prior subsurface explorations performed at the site to the maximum depth of 50 feet bgs.

Table 3-7 Infiltration Results

Test Well Designation	Depth of Test Zone (feet bgs)	Measured Infiltration Rate (inches per hour)	Design Infiltration Rate (Inches per hour)
LP-3	27 to 30	86.6	17.3
LP-4	25 to 30	81.5	16.3

Based on the results of Leighton's percolation testing that was performed at the site, the measured (unfactored) infiltration rates for the two (2) tests performed were 86.6 inches per hour (LP-3) and 81.5 inches per hour (LP-4). The design infiltration rates for the two (2) tests performed at the site are 17.3 inches per hour for LP-3 and 16.3 inches per hour for LP-4.

Based on the infiltration rates, infiltration is considered to be feasible as a BMP for this project.

4. SIGNIFICANCE THRESHOLD

4.1 4.1. Surface Water Hydrology

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

- Cause flooding during the projected 50-year developed storm event, which would have the potential to harm people or damage property or sensitive biological resources;

- Substantially reduce or increase the amount of surface water in a water body; or
- Result in 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 4.2. Surface Water Quality

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

The City of Los Angeles CEQA Thresholds Guide and CWC include the following relevant 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 though 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.

4.3. GROUNDWATER

According to the City of Los Angeles CEQA Thresholds Guide, a project would normally have a significant impact on groundwater quality and groundwater level if it would:

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

5. METHODOLOGY

5.1 Surface Water Hydrology

In December 3, 1999, the City of Los Angeles issued Special Order No. 007-1299 which adopted the Los Angeles County Department of Public Works' Hydrology Manual to be used for studies within the City of Los Angeles. According to the County's 2006 Hydrology Manual, storm drains associated with the Project must carry flow from at least the 10-year frequency design storm. The 10-year storm event also corresponds with the design storm of the existing storm drain infrastructure receiving the flows from the Project.

The City's LA CEQA Thresholds Guide; however, has determined that a 50-year storm frequency analysis is required when determining flood hazards impacts and changes in the amount or movement of surface water. To analyze the Project's potential impacts under both thresholds, runoff for both 10- and 50-year frequency design storms was calculated for this report.

This study was prepared using HydroCalc 0.3.1-beta software in conformance with the County's Hydrology Manual (2006). The HydroCalc program uses the Modified Rational Method to calculate the required time of concentration and designed flowrates for 25- and 50-year storm events. The peak runoff for a drainage area is calculated using the formula Q= CIA, where

Q= flowrate (cfs)

C= runoff coefficient (unit less)

I=rainfall intensity (in/hr)

A= basin area (acres)

The HydroCalc calculator is supported by the County's online GIS system. This database is used to locate the Project Site's 50-year isohyet rainfall frequency as well as relevant soil type (please refer to Appendix B). The data collected is then used in the HydroCalc program to calculate peak stormwater runoff values.

5.2 Surface Water Quality

5.2.1 Construction

Prior to the issuance of grading permits, the applicant is required by The City to provide of a Notice of Intent (NOI) and WDID Number issued from the SWRCB in accordance with the requirements of the General Permit to ensure the potential for soil erosion and construction impacts are minimized. In accordance with the updated General Permit (Order No 2012-0006-DWQ), the following Permit Registration Documents (PRD's) are required to be submitted to the SWRCB prior to commencement of construction activities:

- Notice of Intent (NOI);
- Risk Assessment (Standard or Site-Specific);
- Particle Size Analysis (if site-specific risk assessment is performed);
- Site Map;
- SWPPP;
- Annual Fee & Certification.

The updated General Permit uses a risk-based approach for controlling erosion and sediment discharges from construction sites, since the rates of erosion and sedimentation can vary from site to site depending on factors such as duration of construction activities, climate, topography, soil condition, and proximity to receiving water bodies. The updated General Permit identifies three levels of risk with differing requirements, designated as Risk Levels 1, 2 and 3, with Risk Level 1 having the fewest permit requirements and Risk Level 3 having the most-stringent requirements.

The Risk Assessment incorporates two risk factors for a project site: sediment risk (general amount of sediment potentially discharged from the site) and receiving water risk (the risk sediment discharges can pose to receiving waters). Based on the Risk Level a project falls under, different sets of regulatory requirements are applied to the site. The main difference between Risk Levels 1, 2, and 3 are the numeric effluent standards. In Risk Level 1, there are no numeric effluent standard requirements, as it is considered a Low sediment risk and Low receiving water risk. Instead, narrative effluent limits are prescribed. In Risk Level 2, Numeric Action Levels (NALs) of pH between 6.5-8.5 and turbidity below 250 NTU are prescribed in addition to the narrative effluent limitations found in Risk Level 1 requirements. Should the NAL be exceeded during a storm event, the discharger is required to immediately determine the source associated
with the exceedance and to implement corrective actions if necessary to mitigate the exceedance. Risk Level 3 dischargers must comply with Risk Level 2 requirements for NALs in addition to more rigorous monitoring requirements such as receiving water monitoring and in some cases bioassessment, should NALs be exceeded.

5.2.2 Operation

The Project (Option 1 or Option 2) will meet the requirements of the LID Manual. Post-construction stormwater BMPs shall be designed to manage and capture stormwater runoff. Infiltration systems are the first priority type of BMP improvements, as they provide for percolation and infiltration of the stormwater into the ground, which not only reduces the volume of stormwater runoff entering the MS4,

but can contribute to groundwater recharge. If stormwater infiltration is not feasible, the next priority BMP shall be used.

The LID Manual establishes an order of priority, as specified below. Each type of BMP shall be implemented to the maximum extent feasible when determining the appropriate BMPs for a project.

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

Leighton Consulting, Inc. has prepared a geotechnical analysis of the site. The first report titled "Geotechnical Exploration Report" was prepared on April 5th, 2023 and a supplemental report titled "Supplemental Percolation Study" was prepared on September 22, 2023. Per the Study, percolation testing of the project site was performed in accordance with the County of Los Angeles requirements (COLA, 2017). Based on the results of the percolation testing, the subsurface soils at the site were determined to be suitable for stormwater infiltration based on measured field permeability. The design infiltration rates are greater than 0.3 inches/hour, which is the minimum usable rate per County guidelines.

Since Infiltration is deemed to be feasible for this project, infiltration will be the primary LID BMP for both options.

The next item on the priority list, Capture and Use, is not required because the site will infiltrate the entire water quality design volume. However, Capture and Use will be considered as a supplemental LID BMP. Capture and use, commonly referred to as rainwater harvesting, collects and stores stormwater for later use, thereby offsetting potable water demand and reducing pollutant loading to the storm drain system. Therefore, sufficient landscaped area with appropriate water demand is needed for the captured runoff to be directed to. In the City of Los Angeles, the use of collected stormwater is primarily limited to irrigation of landscaped surfaces. Harvest and Use feasibility analysis requires input from the Landscape Architect of various planting factors and parameters. Harvest and Use feasibility will be evaluated when planting information can be confirmed.

Projects that have demonstrated that they cannot manage 100% of the water quality design volume onsite through infiltration and/or capture and use BMPs may manage the remaining volume through the use of a high removal efficiency biofiltration/bioretention BMP. The high removal efficiency biofiltration/bioretention BMP shall be sized to adequately capture 1.5 times the volume not managed through infiltration and/or capture and use. Biofiltration BMPs are landscaped facilities that capture and treat stormwater runoff through a variety of physical and biological treatment processes. These facilities, also called Bioretention Planter Boxes, provide multiple benefits, including pollutant control, peak flow control, and low amounts of volume reduction through infiltration and evapotranspiration. These BMPs are not anticipated for both options. However, these BMPs may be utilized for redundancy water quality treatment; and will be determined in the final engineering phase of the project.

Water quality BMPs will be evaluated and selected during Final Design of the Project.

5.3 Groundwater

This report discusses the impact of the Project as it relates to the underlying groundwater conditions of the Los Angeles Coastal Plain Groundwater Basin. The significance of the Project as it relates to the condition of the underlying groundwater table included a review of the following existing considerations:

- Identification of the Los Angeles Coastal Plain Groundwater Basin as the underlying groundwater basin, and description of the level, quality, direction of flow, and existing uses for the groundwater
- Description of the location, existing uses, production capacity, quality, and other pertinent data for spreading grounds and potable water wells in the vicinity (typically within a one-mile radius) and;

The analysis of the proposed Project impacts on groundwater conditions include a review of the following proposed considerations:

- Description of the rate, duration, location and quantity of extraction, dewatering, spreading, injection or other activities;
- The projected reduction in groundwater resources and any existing wells in the vicinity (typically within one-mile radius); and
- The projected change in local or regional groundwater flow patterns

In addition, short-term groundwater quality impacts could potentially occur during construction of the Project as a result of soil or shallow groundwater being exposed to construction activities, materials, wastes, and spilled materials. These potential impacts are qualitatively assessed.

6. IMPACT ANALYSIS

6.1 Construction

6.1.1 Surface Water Hydrology and Quality

Implementation of the Project would result in construction activities that includes demolition of the existing parking lots and buildings on-site and over-excavation of existing soils. Final earthwork quantities will be determined in the final engineering phase.

Construction activities have the potential to temporarily alter the existing drainage patterns of the Project site as well as increase the permeability of a site based on increased pervious surface coverage during construction. Exposed pervious surfaces also have the potential for erosion, scour and increased sediment and associated pollutants discharging from the site during construction activities. The main pollutant of concern during construction is typically sediment and soil particles that discharge off-site due to wind, rain, and construction patterns.

At this stage in the proposed Project, a detailed, site-specific Risk Assessment cannot be performed. However, based on the Project's location and known site conditions, a preliminary erosion calculation can be performed The Project is located in a low risk watershed and the predicted sediment loss is <15 tons/acre (14.51 tons/acre). Current project build out is expected to be 17 months. However, construction delays may push the construction duration to more than 18 months, therefore, the Project could classify as a Risk Level 2. If a conservative Risk Level 2 assumption was made, certain monitoring

requirements apply to the Project. See Table 7 below highlighting the various requirements for Risk Levels 1-3.

Table 6-1 Risk Level Requirements

Visual Inspection Sample Collection						Sample Collection	
Risk Level	Quarterly Non-Storm Water Discharge	Baseline	REAP	Daily Storm BMP	Post Storm	Storm Water Discharge	Receiving Water
1	X	X		X	X		
2	X	X	X	X	X	X	
3	X	X	X	X	X	X	X

In the event exceedances of receiving water quality objectives are observed, measures must be taken and documented within the SWPPP to improve discharge water quality and runoff effluent. This may include but not limited to increasing the size of existing BMPs such as sediment traps, adding more BMPs to the drainage area such as erosion control stabilizers, additional filtering and/or a reduction in active grading area.

6.1.1.1 Construction Best Management Practices (BMPs)

In accordance with the existing and updated General Permit, a construction SWPPP must be prepared and implemented for the Project site, and revised as necessary, as administrative or physical conditions change. The SWPPP must be made available for review upon request, shall describe construction BMPs that address pollutant source reduction, and provide sures/controls necessary to mitigate potential pollutant sources. These measures/controls include, but are not limited to: erosion controls, sediment controls, tracking controls, non-storm water management, materials & waste management, and good housekeeping practices including the following:

- Erosion control BMPs, such as hydraulic mulch, soil binders, and geotextiles and mats, protect the soil surface by covering and/or binding the soil particles. Temporary earth dikes or drainage swales may also be employed to divert runoff away from exposed areas and into more suitable locations. If implemented correctly, erosion controls can effectively reduce the sediment loads entrained in storm water runoff from construction sites.
- Sediment controls are designed to intercept and filter out soil particles that have been detached and transported by the force of water. All storm drain inlets on the project site or within the project vicinity (i.e., along streets immediately adjacent to the project boundary) should be adequately protected with an impoundment (i.e., gravel bags) around the inlet and equipped with a sediment filter (i.e., fiber roll). Bags should also be placed around areas of soil disturbing activities, such as grading or clearing.
- Stabilize all construction entrance/exit points to reduce the tracking of sediments onto adjacent streets. Wind erosion controls should be employed in conjunction with tracking controls.
- Non-storm water management BMPs prohibit the discharge of materials other than storm water, as well as reduce the potential for pollutants from discharging at their source. Examples include avoiding paving and grinding operations during the rainy season (i.e., October 1 through April 30 each year) where feasible, and performing any vehicle equipment cleaning, fueling and maintenance in designated areas that are adequately protected and contained.

- Waste management consists of implementing procedural and structural BMPs for collecting, handling, storing, and disposing of wastes generated by a construction project to prevent the release of waste materials into storm water discharges.

Prior to commencement of construction activities, the General Permit requires the Project SWPPP to be prepared in accordance with the site-specific sediment risk analyses based on the grading plans, with erosion and sediment controls proposed for each phase of construction for the Project. The phases of construction will define the maximum amount of soil disturbed, the appropriately sized sediment basins and other control measures to accommodate all active soil disturbance areas and the appropriate monitoring and sampling plans. Major phases of the construction for the Project are described below.

6.1.1.2 Mass & Rough Grading

During mass and/or rough grading, a substantial amount of soil disturbing activities or earthwork will occur. As a consequence, soil loss potential will be at its highest risk level to exceed NALs/NELs specified in the General Permit. Therefore, an effective combination of erosion and sediment controls must be implemented during this phase of construction.

This region requires the use of sediment basins or sediment traps to control the amount of sediment discharged off-site during the rainy season. Sediment basins or sediment traps generally act as primary sediment control facilities at downstream locations that provide final polish of runoff prior to discharging off-site. Therefore, they are a major element in a project's erosion and sediment control design.

6.1.1.3 Utility and Road Installation

In addition to the erosion and sediment control BMP requirements for the grading phase, the utility and road installation phase will introduce materials to the Project site that may cause or contribute to exceedances of NALs specified in the General Permit. Materials include, but are not limited to hydrated lime, concrete, mortar, Portland cement treated base, and fly ash. For this reason, pH levels must be controlled at this stage through non-storm water management and waste and materials management BMPs. Stockpile management will also be important due to the trenching activities involved during utility installation. Should NALs/NELs be exceeded at any point in time, additional site management or good housekeeping BMPs shall be implemented, and the source of pollution controlled.

6.1.1.4 Vertical Construction

Once utilities and roads are in place, sediment controls (such as sediment/desilting basins) found in the rough grade phase may no longer be applicable as previously designed, due to the installment of curb and gutter, catch basins, and storm drain infrastructure to convey runoff off-site per the post-construction condition. BMPs at this stage will thus be more focused on on-site sediment control BMPs and at discharge points (i.e., catch basin inlet protection). During vertical construction, a substantial amount of construction materials will be delivered to the site, and wastes generated from the site have the potential to negatively impact pH levels. Therefore, non-storm water management and waste and materials management BMPs will be employed regularly.

6.1.1.5 Final Stabilization and Landscaping

During final stabilization and landscaping, minimal construction will be taking place and the majority of the project site will be stabilized. The majority of activities will involve planting and landscaping lots and

common areas. Sediment control at discharge locations and stockpile management will be of primary concern. Good housekeeping practices will continue in this phase of construction.

Through compliance with the General Permit including the preparation of a SWPPP, implementation of BMPs, and compliance with applicable City grading regulations, construction of the Project would not cause flooding, substantially increase or decrease the amount of surface water in a water body, or result in a permanent, adverse change to flow direction. The Project would also not result in discharges that would cause: (1) pollution that would impact the quality of waters of the State to a degree which negatively impacts beneficial uses of the waters; (2) contamination of the quality of the waters of the State by waste to a degree which creates a hazard to the public health through poisoning or through the spread of diseases; or (3) 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.

Construction of the Project would not result in discharges that would cause regulatory impacts within the Dominguez Channel Watersheds. Therefore, impacts to surface water hydrology and water quality during construction would be less than significant.

6.1.2 Groundwater Hydrology

Construction of the Project (Option 1 or Option 2) is not anticipated to impact any water supply wells. No water supply wells are located at or within one mile of the Project[1] and the Project will not include the construction of any water supply wells. In addition, recharge of groundwater will not be impacted. Rather, groundwater recharge will increase due to increased perviousness at the Project Site which allows for increased natural infiltration of stormwater.

Construction of the Project will include excavation with average depths of 10 feet below ground surface (bgs). Groundwater was not encountered (testing extended to 50 feet bgs) as mentioned in the geotechnical investigation by Leighton. Based on these excavation depths, groundwater is not anticipated to be encountered during construction. Therefore, a dewatering permit from the LARWQCB is not anticipated for this project. The Project will comply with all Standard Provisions and with any additional conditions that are applicable under 40 CFR section 122.42 to ensure groundwater hydrology is protected.

6.1.3 Groundwater Quality

Construction of the Project does not expect to include temporary dewatering practices during the construction due to the groundwater level greater than 50 feet bgs.

Final earthwork volumes quantities will be determined in the final engineering phase. In the event any contaminated soils are found during excavation, soils would be captured within that volume of excavated material, removed from the Project Site, and deposited at an approved disposal facility in accordance with regulatory requirements, including SCAQMD Rule 1166.

During on-site grading and building activities, hazardous materials such as fuels, paints, solvents, and concrete additives could be used and require proper management and containment during construction

[1] Source: Los Angeles County Groundwater Well Mapping Application. Well 1314 (State ID 2S14W31H01) is approximately 500 ft away, but is inactive.

activities. The presence of such materials provides an opportunity for hazardous materials to be released into groundwater. To protect groundwater resources, the Project will comply with all applicable federal, state and local requirements related to the handling, storage, application and disposal of hazardous waste which will reduce the potential for construction activities of the Project to release contaminants into groundwater that could affect existing contamination, mobilize or increase the level of groundwater contamination, or cause a violation of regulatory water quality standards at an existing production well. Therefore, the Project would not result in a significant increase in groundwater contamination though hazardous materials releases and impacts on groundwater quality would be less than significant.

6.2 OPERATION

6.2.1 Surface Water Hydrology

Development of the Project (Option 1 or Option 2) would result in the addition of landscaped areas throughout the Project Site, and would reduce the amount of impervious surfaces from 90% to 88% and 85%, respectively. This increase in pervious surfaces would result in a slight reduction in stormwater runoff. As this is still in the conceptual design stage of the Project, the hydrology analysis was performed assuming one outlet point in the proposed condition, consistent with the existing condition, discharging to Arbor Vitae Avenue to evaluate the most conservative potential impact on the local storm drain system, and may change during final design. Output calculations are provided in Attachments C to F

Table 6-2

Option 1			
10-Year Storm Event			
Area	Acreage	% Impeviousness	Q10 (cfs)
1-PRE	18.14	90%	29.83
1-POST	18.14	88%	29.83(MAX)
50-Year Storm Event			
Area	Acreage	% Impeviousness	Q50 (cfs)
1-PRE	18.14	90%	45.6
1-POST	18.14	88%	45.6(MAX)
*Proposed flow will not exceed existing peak discharge			

Table 6-3

Option 2			
10-Year Storm Event			
Area	Acreage	% Impeviousness	Q10 (cfs)
2-PRE	18.14	90%	29.71
2-POST	18.14	85%	29.71(MAX)
50-Year Storm Event			
Area	Acreage	% Impeviousness	Q50 (cfs)
2-PRE	18.14	90%	45.59
2-POST	18.14	85%	45.59(MAX)
*Proposed flow will not exceed existing peak discharge			

6.2.1.1 Option 1 Proposed Hydrology

Option 1 is proposed as a single tenant with a single infiltration BMP to satisfy LID requirements, but will be oversized by 5% to allow for pass-through high-flows. An effect of the oversized BMP will be that attenuation of larger events (10-, 50-year rainfall) to meet existing flows. Several inlets are proposed to reduce surface flow and minimize ponding on-site. The inlets will be equipped with inlet filters for pretreatment. Additionally, a hydrodynamic separator is proposed, sized for the LID flow.

The site discharges to a common onsite main prior to discharge to the existing 30" RCP at the south east corner of the site (City drain)

Table 6-2 below provides 10-year and 50-year storm frequency analysis for the Project Site's existing conditions. These two storm frequencies are required by Los Angeles County Public Works (10-year) and the City of Los Angles CEQA guideline requirements (50-year). Output calculations are provided in Appendix B.

Table 6-3 below provides for a summary of the LID volumes and infiltration rates. Output calculations are provided in Appendix C.

Table 6-4 Option 2 Proposed 10-Year & 50-Year Discharge

Proposed - Option 1 - Conditions 10-year Storm Frequency				
Drainage Sub Area	Area	Time of Concentration	Imperviousness	Q10 (cfs)
	Acres	Min	%	cfs
DMA 1	18.14	7	0.88	29.83
Proposed - Option 1 -Conditions 50-year Storm Frequency				
Drainage Sub Area	Area	Time of Concentration	Imperviousness	Q10 (cfs)
	Acres	Min	%	cfs
DMA 1	18.14	6	0.88	45.6

Table 6-5 Option 2 LID Summary

Proposed - Option 1 - LID Statistics				
Drainage Sub Area	Area	Time of Concentration	Imperviousness	Volume
	Acres	Min	%	CF
DMA 1	18.14	31	0.88	55,130
LID Volume Proposed for Infiltration				

6.2.1.2 Option 2

Option 2 proposes three buildings. Generally the areas surrounding each building is being considered uniquely. There will be, therefore, three infiltration BMP to satisfy LID requirements. The proposed hydrology map for Option 2 identifies these unique drainage areas. Similar to Option 1, the infiltration BMPS will be oversized by 5% to allow for pass-through high-flows. An effect of the oversized BMP will

be that attenuation of larger events (10-, 50-year rainfall) to meet existing flows. Several inlets are proposed to reduce surface flow and minimize ponding on-site. The inlets will be equipped with inlet filters for pretreatment. Additionally, a hydrodynamic separator is proposed, sized for the LID flow.

The three areas discharge to a common onsite main prior to discharge to the existing 30" RCP at the south east corner of the site (City drain)

Table 6-4 below provides 10-year and 50-year storm frequency analysis for the Project Site's existing conditions. These two storm frequencies are required by Los Angeles County Public Works (10-year) and the City of Los Angles CEQA guideline requirements (50-year). Output calculations are provided in Appendix D.

Table 6-5 below provides for a summary of the LID volumes and infiltration rates. Output calculations are provided in Appendix E.

Table 6-6 Option 2 Proposed 10-Year & 50-Year Discharge

Proposed - Option 2 - Conditions 10-year Storm Frequency				
Drainage Sub Area	Area	Time of Concentration	Imperviousness	Q10 (cfs)
	Acres	Min	%	cfs
DMA2-1	5.83	7	0.85	
DMA2-2	6.14	7	0.85	
DMA2-3	6.17	7	0.85	
				29.71
Proposed - Option 2 - Conditions 50-year Storm Frequency				
Drainage Sub Area	Area	Time of Concentration	Imperviousness	Q50 (cfs)
	Acres	Min	%	cfs
DMA2-1	5.83	6	0.85	
DMA2-2	6.14	6	0.85	
DMA2-3	6.17	6	0.85	
				45.59

Table 6-7 Option 2 LID Summary

Proposed - Option 2 - Statistics				
Drainage Sub Area	Area	Time of Concentration	Imperviousness	Volume
	Acres	Min	%	CF
DMA2-1	5.83	14	0.85	17,189
DMA2-2	6.14	17	0.85	18,103
DMA2-3	6.17	19	0.85	18,192
LID Volume Proposed for Infiltration				

Based on the above, operation of the Project would not increase the peaks flows from the 10- year and 50-year storm events resulting from the proposed development

Based on the hydrology analysis, the Project (Option 1 or Option 2) would not result in on-site or off-site flooding, impact the capacity of the existing storm drain system or street conveyance system, or worsen an existing condition flood condition. In addition, the Project would not substantially reduce or increase the amount of surface water in the local waterbody, or result in a permanent adverse change in the drainage pattern that would result in an incremental effect on the capacity of the storm existing storm drain system. Therefore, operation of the Project would result in less than significant impact on surface water hydrology.

6.2.2 Surface Water Quality

Stormwater runoff from the Project (Option 1 or Option 2) has the potential to discharge pollutants into the City and County storm drain systems. Anticipated pollutants and typical source areas include the following:

Table 6-8 Potential Stormwater Pollutants and Sources

Pollutant Source	
Sediment (coarse and fine)	Parking lots, driveways, building rooftops, landscape areas, roads
Nutrients (dissolved and particulates)	Landscape areas, lawns
Pesticides	Landscape areas, lawns
Pathogens	Landscape areas, lawns, building rooftops, food serving areas
Trash/debris	Parking lots, driveways, roadways, parks
Oil/grease	Parking lots, driveways, roadways, food serving areas
Metals (dissolved and particulate)	Parking lots, driveways, roadways

To meet the local MS4 Permit and LID requirements consistent with the City's LID Ordinance and LID Development BMP Handbook (May 2016), stormwater management strategies will be implemented throughout the Project Site. As noted in the existing conditions description, the existing site does not have any structural or LID BMPs to treat or infiltrate stormwater onsite. Therefore, implementation of the LID features proposed as part of the Project would result in a significant improvement in surface water quality runoff as compared to existing conditions. Water quality (LID) hydrologic calculations and 85th Percentile 24-hour Isohyetal (Rainfall) Map are included in Appendix B. See Section 5.2.2 for a detailed description of the BMP hierarchy that will be followed when determining the most appropriate LID BMPs to be designed as part of the Project.

Based on the proposed LID Plan to be submitted during the Final Design phases of the Project, operation of the Project would not result in discharges that would cause: (1) an incremental increase in pollution which would alter the quality of the waters of the State (Dominguez Channel) to a degree which unreasonably affects beneficial uses of the waters; (2) an incremental increase of contamination of the quality of the waters of the State by waste to a degree which creates a hazard to the public health through poisoning or through the spread of diseases; or (3) an incremental increase in the nuisance that would injurious to health; affect an entire community or neighborhood, or any considerable numbers of persons; and occurs during or as a result of the treatment or disposal of wastes. Lastly, operation of the Project would not result in discharges that would cause regulatory standards to be violated in Dominguez Channel. Thus, operational impacts on surface water quality would be less than significant.

6.2.3 Groundwater Hydrology

Under the proposed conditions, region and local potable water levels and adjacent wells or well fields will not be impacted by the Project. The post-developed Project does not include any groundwater pumping and relies on the local water purveyor for water. In addition, the Project is not anticipated to adversely change the rate of direction of flow of groundwater.

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. There will be no proposed USTs that will be operated with the Project.

While the development of the new Project would comply with all applicable existing regulations at the Project Site, prevention methods will be enforced so the Project will not affect or expand any potential areas of contamination, increase the level of contamination, or cause regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations, Title 22, Division 4, Chapter 15 and the Safe Drinking Water Act. 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 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.

Operation of the Project will not require extraction from the groundwater supply. The Project does not include the installation or operation of water wells, or any extraction or recharge system that is in the vicinity of the coast, an area of known groundwater contamination or seawater intrusion, a municipal supply well or spreading ground facility. The Project does not include surface or subsurface application or introduction of potential contaminants or waste materials during construction or operation. The Project is not anticipated to result in releases or spills of contaminants that could reach a groundwater recharge area or spreading ground or otherwise reach groundwater through percolation.

Additionally, the Project would include the installation of structural BMPs as a means of pretreatment prior to infiltration or capture and use of the first flush or equivalent of the greater between the 85th percentile storm event and the first 0.75-inch of rainfall for any storm event, which would allow for treatment of runoff generated on-site prior to discharging to catch basins in the public right of way.

Based on the above, operation of the Project would result in a less than significant impact on groundwater quality.

6.3 CUMULATIVE IMPACTS

6.3.1 Surface Water Hydrology

The regional geographic context for the cumulative impact analysis on surface water hydrology is the Dominguez Channel Watershed. The Project will reduce flows to these watersheds due to increased perviousness as compared to the existing conditions. BMPs will be implemented during the construction phase of the Project to ensure against erosion or negative impacts to surface water hydrology. As there

is sufficient capacity within Arbor Vitae to handle the proposed flows during the operational phase, there are no significant impacts to surface water hydrology anticipated.

6.3.2 Surface Water Quality

Future growth, including the related projects, in the Dominguez Channel Watershed would be subject to NPDES requirements relating to water quality for both construction and operation. The Project Site is located in a highly urbanized area, and it is anticipated that future development projects would also be subject to LID requirements. The Project would comply with all applicable laws, rules, and regulations, and therefore, the Project's cumulative impacts to surface water quality would be less than significant.

6.3.3 Groundwater Hydrology

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, the related projects 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 thousand foot radius of the Project Site. In addition, Project development would not involve the temporary or permanent extraction of groundwater from the Project Site or otherwise utilize the groundwater.

Development of the related projects could result in changes in impervious surface area within their respective project sites. 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, as infiltration systems are designed to infiltrate only the greater of the 85th percentile storm and or the first 0.75-inch of rainfall for any storm event, the infiltration of stormwater as a means of stormwater treatment and management within the Project Site and related project sites would not result in a cumulative effect to groundwater hydrology. Based on the above, cumulative impacts to groundwater hydrology would be less than significant.

6.3.4 Groundwater Quality

Future growth in the Los Angeles Coastal Plain Santa Monica Subbasin would be subject to LA RWQCB requirements relating to groundwater quality. In addition, since the Project 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, it is anticipated that the Project and other future development projects would also be subject to LARWQCB requirements and implementation of measures to comply with total maximum daily loads. Therefore, since the Project does not have an adverse impact and through

compliance with all applicable laws, rules and regulations, cumulative impacts to groundwater quality would be less than significant.

7. LEVEL OF SIGNIFICANCE

Based on the analysis contained in this report no significant impacts have been identified for surface water hydrology, surface water quality, or groundwater for this Project. An assessment of the LID hierarchy will be performed during final design as part of the Project's LID Plan to confirm the most appropriate BMP for the Project. Preliminary geotechnical results show that infiltration is likely feasible resulting from percolation rates. Detailed calculations and design will be included separately in the Project's LID Plan to be prepared during construction.

8. List of Attachments

ATTACHMENT 1. HYDROLOGY EXHIBITS
ATTACHMENT 2. MAPS AND REFERENCES
ATTACHMENT 3. EXISTING HYDROLOGIC RESULTS
ATTACHMENT 4. OPTION 1 HYDROLOGIC RESULTS
ATTACHMENT 5. OPTION 1 LID RESULTS
ATTACHMENT 6. OPTION 2 HYDROLOGIC RESULTS
ATTACHMENT 7. OPTION 2 LID RESULTS

Attachment 1. Hydrology Exhibits

F:\proj\2023\230326\4 Production and Drafting\Const Dwgs\Civil\Exhibits\CX230326HX.dwg 2-06-24 10:55:50 AM ChrisP

AIRPORT BOULEVARD
(A 83' PUBLIC RIGHT OF WAY)

AIRPORT BOULEVARD

EX. 15" SEWER MAIN
EX. 12" WATER MAIN
EX. 15" SEWER MAIN
EX. 15" SEWER MAIN
EX. 12" WATER MAIN
EX. 8" WATER MAIN
EX. 8" WATER MAIN
EX. 8" WATER MAIN
EX. 18" SEWER MAIN
EX. 8" WATER MAIN

ARBOR VITAE STREET

INTERCEPTOR STREET
(A 60' PUBLIC RIGHT OF WAY)
(BASIS OF BEARINGS)

BELFORD AVENUE
(A 62' PUBLIC RIGHT OF WA

INTERCEPTOR STREET
(A 60' PUBLIC RIGHT OF WAY)

BUILDING
(BUILDING FOOTPRINT = 30,519 SQUARE FEET)
(BUILDING DRIPLINE = 32,820 SQUARE FEET)
(BUILDING HEIGHT = 12'±)
ONE STORY CONCRETE

BUILDING
(BUILDING FOOTPRINT = 7,341 SQUARE FEET)
(BUILDING HEIGHT = XX'±)
ONE STORY CONCRETE

CAR WASH AREA
GAS PUMP / VAC AREA
GAS UTIL AREA
PARKING COUNT IN THIS AREA WAS NOT COUNTED DUE TO OVERLAPPING PARKING STRIPES

PARCEL C
PARCEL MAP L.A. NO. 2767
P.M. 56/49
ALSO KNOWN AS
PARCEL A
PARCEL MAP L.A. NO. 4378
P.M. 115/64-65

PARCEL B
PARCEL MAP L.A. NO. 2767
P.M. 56/49

LOT 37
TRACT NO. 15283
M.B. 327/31-33

113.95'
0.88%
104.00 FS
105.00 FS
105.97 FS
NODE 1
107.00 FS
52.70'
1.95%
NODE 2
103.87 TC
62.35'
1.14%
118.63'
0.82%

ARBOR VITAE DEVELOPMENTS LTD
APN: 4125-010-006

LANDINGS APARTMENT BEADEL LLC LANDINGS APARTMENT BQ CAPITAL LLC LANDINGS APARTMENT QUANDT LLC LANDINGS APARTMENT LIPTON LLC
APN: 4125-011-051

9043 RAMSGATE LLC
APN: 4125-011-012
LOT 36
TRACT NO. 15283
M.B. 327/31-33

9037 RAMSGATE LLC
APN: 4125-011-011
LOT 35
TRACT NO. 15283
M.B. 327/31-33

9033 RAMSGATE LLC
APN: 4125-011-010
LOT 34
TRACT NO. 15283
M.B. 327/31-33

PRESMAXTON B. FAMILY LIMITED PARTNERSHIP
APN: 4125-011-009
LOT 33
TRACT NO. 15283
M.B. 327/31-33

MICHELLE DENISE THOMPSON TRUST THOMPSON
APN: 4125-011-008
LOT 32
TRACT NO. 15283
M.B. 327/31-33

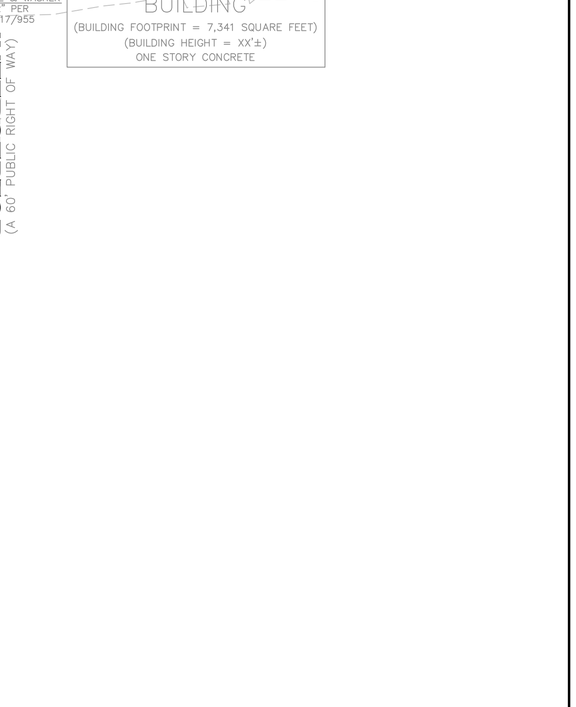
SANDRA MCDOWELL / MICHAEL THOMAS
APN: 4125-011-007
LOT 31
TRACT NO. 15283
M.B. 327/31-33

9007 RAMSGATE LLC
APN: 4125-011-052
LOT 29-30
TRACT NO. 15283
M.B. 327/31-33

MARILU CALDERON/VIDAL CALDERON APN: 4125-011-004
LOT 28 TRACT NO. 15283
M.B. 327/31-33

1 INCH = 50 FEET

SITE MAP
NOT TO SCALE



LEGEND

DRAINAGE AREA BOUNDARY
EXISTING DRAINAGE PATH
EXISTING CONTOURS
189' 2.5% Tc LENGTH Tc SLOPE
DMA 1 15,250 SF 0.35 AC DMA NAME DRAINAGE AREA (SQFT) DRAINAGE AREA (ACRE)
100

Existing Conditions 10-year Storm Frequency

Drainage Sub Area	Area	Time of Concentration	Imperviousness	Q10 (cfs)
	Acres	Min	%	cfs
DMA 1	18.14	7	0.9	29.91

Existing Conditions 50-year Storm Frequency

Drainage Sub Area	Area	Time of Concentration	Imperviousness	Q10 (cfs)
	Acres	Min	%	cfs
DMA 1	18.14	6	0.9	45.6

SHEET HX-0

PROPOSED ONE STORY WAREHOUSE BUILDING

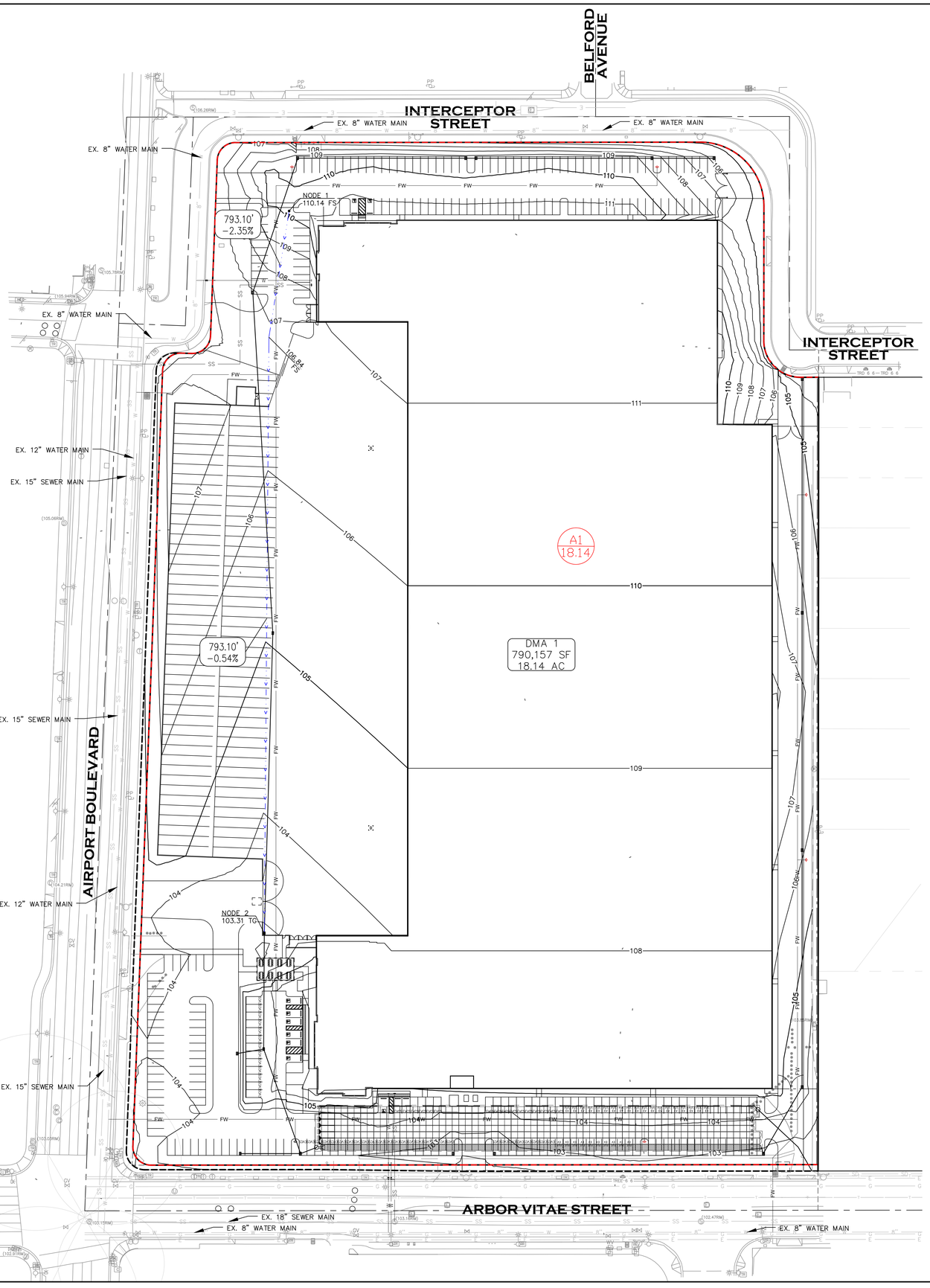
EXISTING HYDROLOGY EXHIBIT
9000 SOUTH AIRPORT BLVD.

LOS ANGELES, CA

DRAWN BY: JR	DATE: 7-11-2023
CHECKED BY:	SCALE: 1" = 40'
	CA JOB NO.: 230326

Cannon
16842 Von Karman Avenue, Suite 150
Irvine, CA 92606
P 909.753.8111 F 909.753.0775

REV. NO	DATE	REVISED	REV. BY	CKD. BY	APRD BY
		DESTROY ALL PRINTS BEARING EARLIER DATE			



SITE MAP

NOT TO SCALE

Proposed - Option 1 - Conditions 10-year Storm Frequency				
Drainage Sub Area	Area	Time of Concentration	Imperviousness	Q10 (cfs)
	Acres	Min	%	cfs
DMA 1	18.14	7	0.88	29.83
Proposed - Option 1 -Conditions 50-year Storm Frequency				
Drainage Sub Area	Area	Time of Concentration	Imperviousness	Q10 (cfs)
	Acres	Min	%	cfs
DMA 1	18.14	6	0.88	45.6
Proposed - Option 1 - LID Statistics				
Drainage Sub Area	Area	Time of Concentration	Imperviousness	Volume
	Acres	Min	%	CF
DMA 1	18.14	31	0.88	55,130
LID Volume Proposed for Infiltration				

Option 1			
10-Year Storm Event			
Area	Acreage	% Impeviousness	Q10 (cfs)
1-PRE	18.14	90%	29.83
1-POST	18.14	88%	29.83(MAX)
50-Year Storm Event			
Area	Acreage	% Impeviousness	Q50 (cfs)
1-PRE	18.14	90%	45.6
1-POST	18.14	88%	45.6(MAX)
*Proposed flow will not exceed existing peak discharge			

LEGEND

A1 / 4.77 — AREA DESIGNATION / AREA (IN ACRES)

PROPERTY LINE

DRAINAGE AREA BOUNDARY

PROP. DRAINAGE PATH

PROPOSED CONTOURS 100

5 / 25 — INLET Q (CFS) / PIPE Q (CFS)

189' / 2.5% — ℄ LENGTH / ℄ SLOPE

DMA 1 / 15,250 SF / 0.35 AC — DMA NAME / DMA AREA (SQUARE FEET) / DMA AREA (ACRE)

WATER MAIN — W

SANITARY SEWER LINE — SS

STORM DRAIN LINE — SD

FIRE LINE — FW

REV NO	DATE	REVISED	DRWG BY	CKD BY	APPD BY
		DESTROY ALL PRINTS BEARING EARLIER DATE			

Cannon
10842 Von Karman Avenue, Suite 150
Irvine, CA 92606
P 909.793.8111 F 909.793.0775

DRAWN BY: CP	DATE 2/6/2024		
CHECKED BY	SCALE AS SHOWN		
	CA JOB NO. 230326		

PROPOSED ONE STORY WAREHOUSE BUILDING

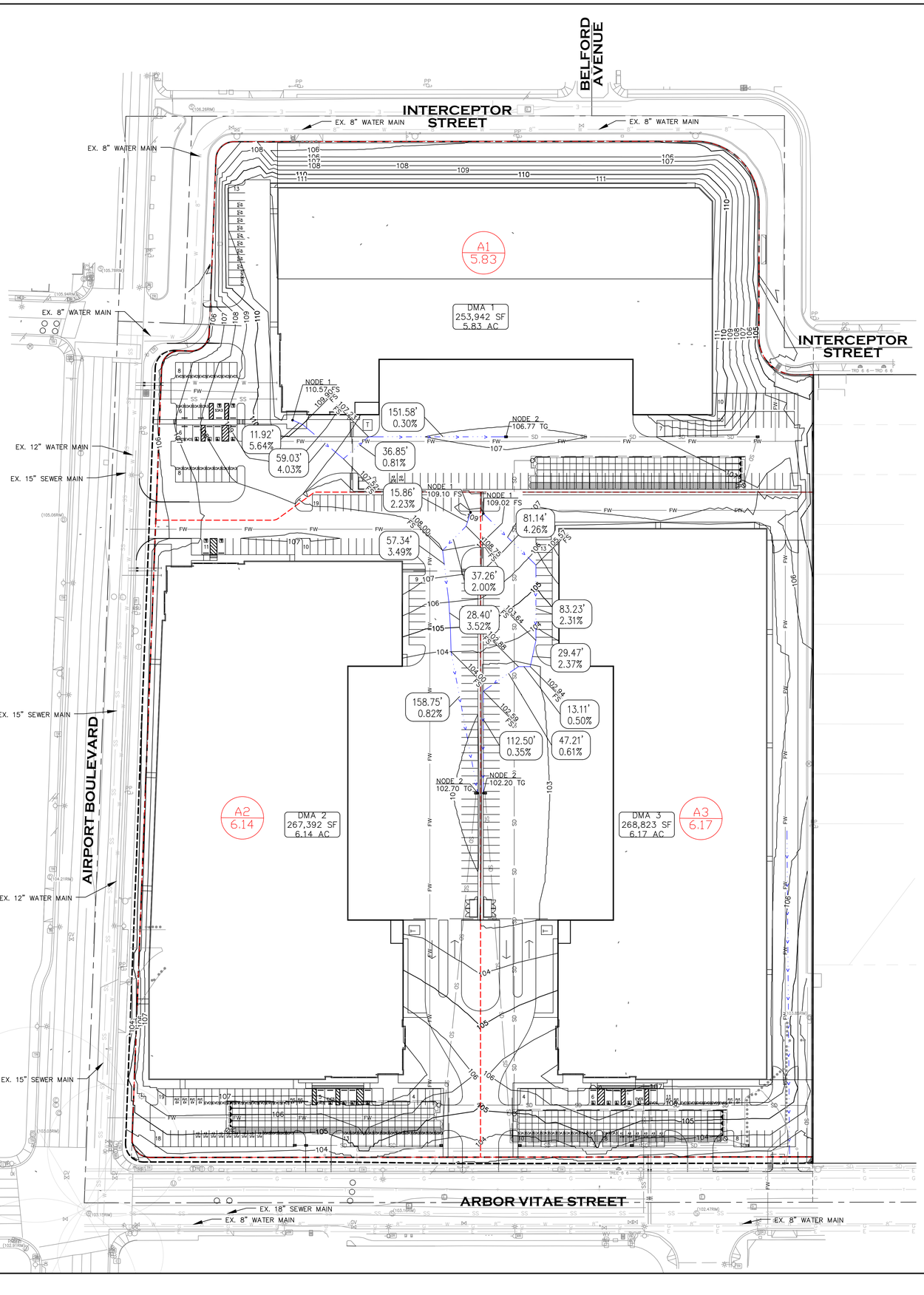
HYDROLOGY EXHIBIT (1) BUILDING

9000 SOUTH AIRPORT BLVD.

LOS ANGELES, CA

SHEET

HX-1



SITE MAP

NOT TO SCALE

Proposed - Option 2 - Conditions 10-year Storm Frequency				
Drainage Sub Area	Area	Time of Concentration	Imperviousness	Q10 (cfs)
	Acres	Min	%	cfs
DMA2-1	5.83	7	0.85	
DMA2-2	6.14	7	0.85	
DMA2-3	6.17	7	0.85	
				29.71

Proposed - Option 2 - Conditions 50-year Storm Frequency				
Drainage Sub Area	Area	Time of Concentration	Imperviousness	Q50 (cfs)
	Acres	Min	%	cfs
DMA2-1	5.83	6	0.85	
DMA2-2	6.14	6	0.85	
DMA2-3	6.17	6	0.85	
				45.59

Proposed - Option 2 - Statistics				
Drainage Sub Area	Area	Time of Concentration	Imperviousness	Volume
	Acres	Min	%	CF
DMA2-1	5.83	14	0.85	17,189
DMA2-2	6.14	17	0.85	18,103
DMA2-3	6.17	19	0.85	18,192
LID Volume Proposed for Infiltration				

Option 2			
10-Year Storm Event			
Area	Acreage	% Impeviousness	Q10 (cfs)
2-PRE	18.14	90%	29.71
2-POST	18.14	85%	29.71(MAX)
50-Year Storm Event			
Area	Acreage	% Impeviousness	Q50 (cfs)
2-PRE	18.14	90%	45.59
2-POST	18.14	85%	45.59(MAX)
*Proposed flow will not exceed existing peak discharge			

LEGEND

A1 / 4.77 — AREA DESIGNATION / AREA (IN ACRES)

PROPERTY LINE

DRAINAGE AREA BOUNDARY

PROP. DRAINAGE PATH

PROPOSED CONTOURS 100

24 / 20 — PIPE Q (CFS) / PIPE Q (CFS)

189' / 2.5% — % LENGTH / % SLOPE

DMA 1 / 15,250 SF / 0.35 AC — DMA NAME / DMA AREA (SQUARE FEET) / DMA AREA (ACRE)

WATER MAIN — W

SANITARY SEWER LINE — SS

STORM DRAIN LINE — SD

FIRE LINE — FW

N

0 50 100

1 INCH = 50 FEET

Know what's below. Call before you dig.

REV NO	DATE	REVISED	DESTROY ALL PRINTS BEARING EARLIER DATE	REV BY	CKD APPD BY

Cannon

10842 Von Karman Avenue, Suite 150
Irvine, CA 92606
P 909.793.8111 F 909.793.0775

DRAWN BY: JR
CHECKED BY:

DATE 7-11-2023
SCALE 1" = 40'
CA JOB NO. 230326

PROPOSED ONE STORY WAREHOUSE BUILDING

HYDROLOGY EXHIBIT (3) BUILDING

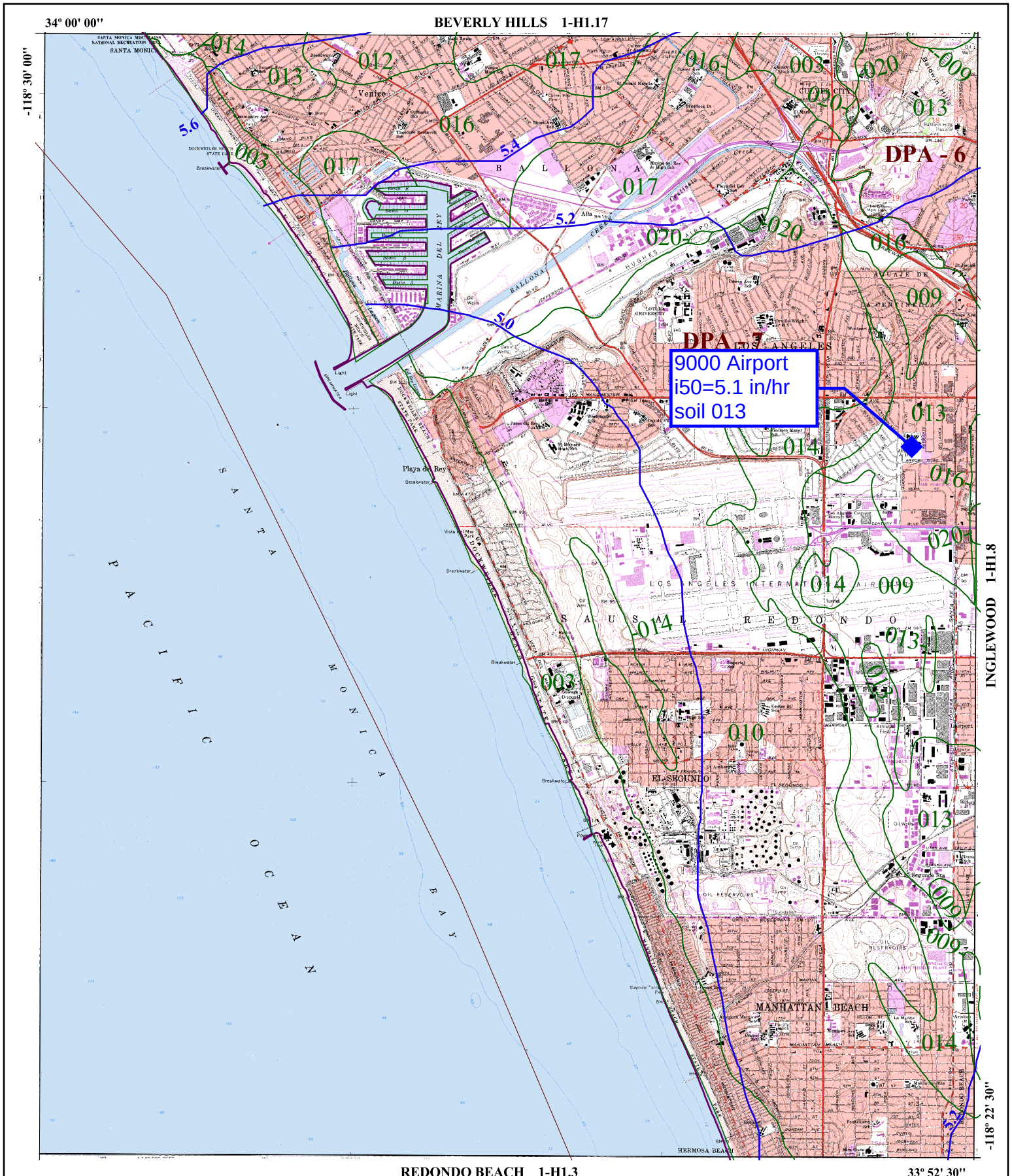
9000 SOUTH AIRPORT BLVD.

LOS ANGELES, CA

SHEET

HX-2

Attachment 2. Maps and References



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

1 0 1 2 Miles

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878

10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

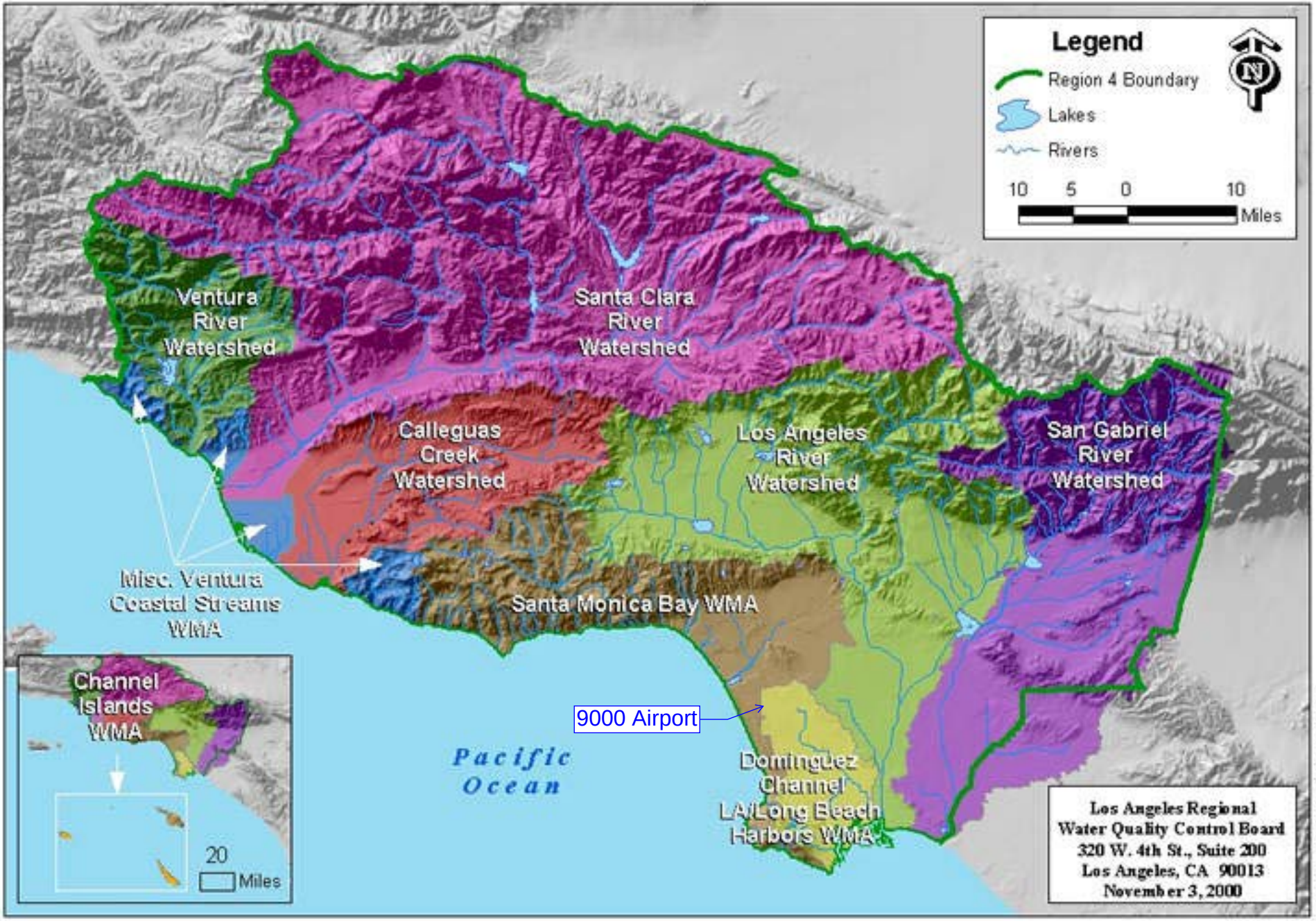
V E N I C E

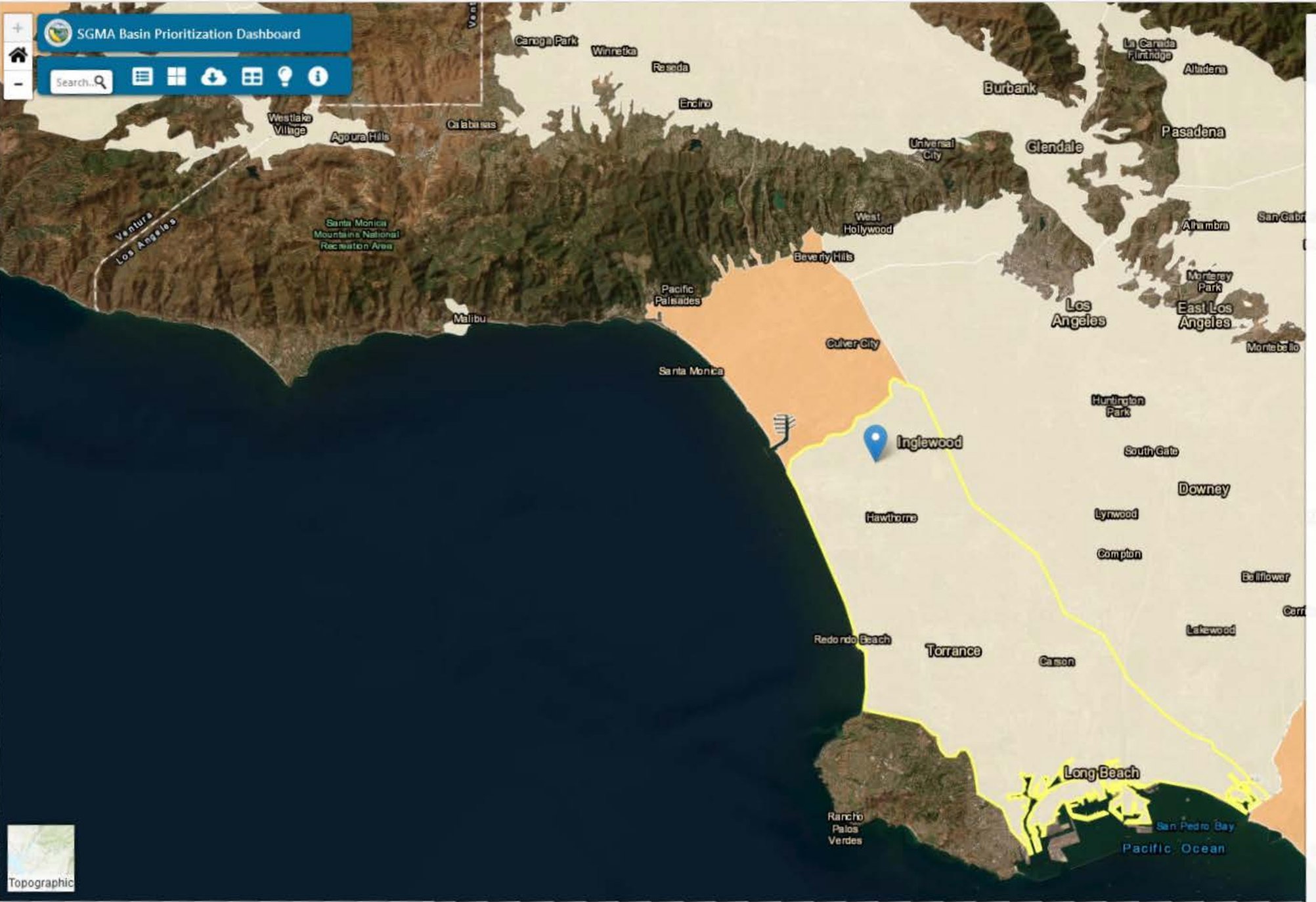
50-YEAR 24-HOUR ISOHYET

1-H1.7

LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

Los Angeles Regional Water Quality Control Board
Watersheds, Lakes, and Rivers





Basin Priority Details

COASTAL PLAIN OF LOS ANGELES - WEST COAST (4-011.03)

Phase 1 (FINAL)

Very Low 0 Priority Points

Component 1 - Population	
Population (2010)	1,196,091
Pop / mi²	8,231
C1 Priority Points	5

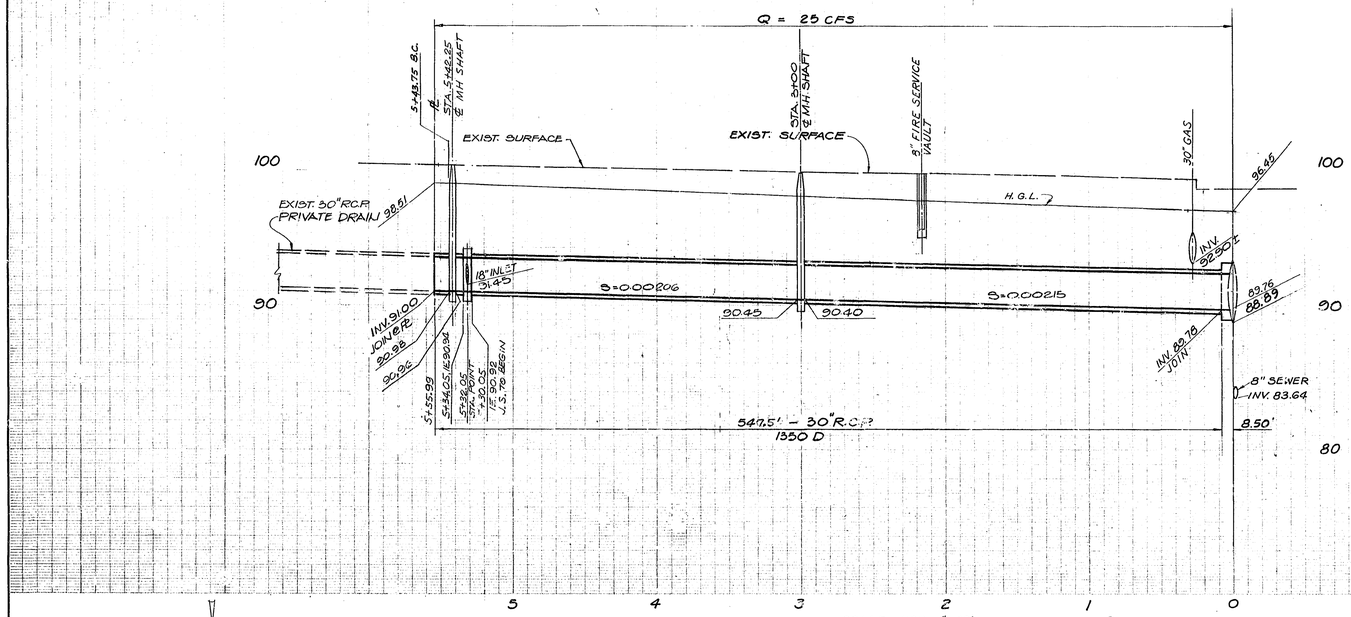
Component 2 - Population Growth	
Population (2030)	1,274,424
Pop Growth	7%
C2 Priority Points	2

Component 3 - Public Supply Wells	
Public Supply Wells	36
PSW / mi²	0.24
C3 Priority Points	2

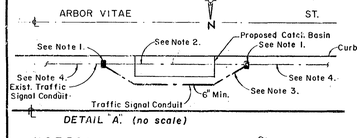
Component 4 - Total Wells	
Total Wells	1,672
Wells / mi²	11.5
C4 Priority Points	4

Component 5 - Irrigated Acres	
Irrigated Acres	0
Irr. Acres / mi²	0

D-51510



SCALE: HOR. 1"=40'
VER. 1"=4'



DETAIL "A" (no scale)

NOTES:

1. Install Type 2 pullbox and splice conductors.
2. Remove interfering portion of Traffic Signal Conduit.
3. Install 1½" Traffic Signal Conduit and 7-№14 wires.
4. Reuse existing conduit & wires.

HERTZ PROPERTY

PARCEL A
PARCEL MAP L.A. No. 4578, FILED WITH LOS ANGELES Co. RECORDER, AUG. 10, 1979 BOOK 118, PAGE 65, SHEET 1 & 2 OF 2
ADDRESS: 9000 AIRPORT BLVD. L.A.

HERTZ PROPERTY
℄ MH SHAFT 5+81.35
EC. 5+79.10
JOIN EX. S.D. ℄

EXIST. 30" R.C.P. STORM DRAIN

CURVE DATA
Δ = 31°10'44"
R = 22.5'
T = 6.28'
L = 12.24'

JUNCTION STRUCTURE "C" PER STD. PLAN S-303-0
A=90°, B=18", C=4.5', D=30"
E=8', L=4'
ELEV. R=92.15; ELEV. S=91.45'

CATCH BASIN PER L.A. CITY STD. PLAN S-331-0 WITH MONOLITHIC CONN. PER STD. PLAN S-331-0 FOR LATERAL CONNECTION
W=1'-0"; V=7.27' TRAFFIC CONDUIT, 11'± SN

TEL. (GMTD), 5½" SN

SEE DETAIL "A" FOR RELOCATION OF T.S. CONDUIT

WATER SERVICE VAULT TO BE SUPPORTED DURING TRENCH EXCAVATION

CURVE DATA
Δ = 26°00'00"
R = 22.50'
T = 5.19'
L = 10.21'

UTILITY EASEMENT LINES

℄ EXIST. 51" RCP PER LACFCD DWG. No. 181-113-D1.9 PROJECT No. 113

8" SEWER
PROTECT T.S. CONDUIT
EXIST. C.B.

30" GAS, 15.5' SN

EC. 0+51.29
BC 0+40.08

EXIST. CURB & GUTTER
CONC. WARPED GUTTER PER STD. PLAN S-310-0 CASE 1.
BC 5+43.75
EC 5+32.05
℄ C.B. 5+32.05
STA. 5+00 ℄ MH SHAFT
TYPE E2 PER CITY STD. PLAN B-1532
OFFSET ℄ M.H. 8.2' ℄ TO NORTH
EXIST. MH.
℄ EXIST. 60" RCP PER LACFCD DWG. No. 181-113-D1.9 PROJECT No. 113

ARBOR VITAE ST.
ALLEY

TEL (2-3½ TRD)
4" GAS, 16' NS
TEL. (BU CAB)
15" SEWER 30' N/S
36" SEWER (ABANDONED)
8" WATER, 18' NS
STA. 5+42.25 ℄ MH SHAFT
TYPE E2 PER CITY STD. PLAN B-1532
OFFSET ℄ M.H. E2 6" to NORTH

J.S. No. 2
A = 30°
B = 30"
C = 8'-6"
D = 51"
EL. R = 89.78
EL. S = 89.70

40 0 40 80
1 IN = 40 FT.

EXIST. FENCE
12'-0"
CURB & GUTTER
℄ GAS LINE
99.42 T.C.
94.72± BOT. EL.
92.15
91.45
30" ℄ RCP
TEL LINE CONDUIT (G MOUNTED)
TRAFFIC CONTROL CONDUIT TO BE RELOCATED
TO BE SUPPORTED DURING TRENCH EXCAVATION.
MONOLITHIC CONNECTION FOR LATERAL
J.S. "C" 5+32.05

SECTION A-A

SCALE: HORIZ. 1"=4' VERT. 1"=4'

EXIST. CONC. SIDEWALK TO BE REMOVED TO NEAREST SCORE LINE. REPLACE WITH 3" CONC. ON 4" S.N.B.

VOLUNTARY IMPROVEMENT:
ARBOR VITAE ST. APPROX. 970 FT. E/O TO 400 FT. E/O AIRPORT BLVD. (S.D.)

CHECKING & CONSTRUCTION PERMIT No. B-8987

NOTE:
48 HOURS PRIOR TO EXCAVATION NOTIFY:
1. SOUTHERN CALIFORNIA GAS COMPANY
8141 GULANA AVENUE
PLAYA DEL REY, CALIFORNIA 90291
PHONE (213) 823-7945
2. PACIFIC TEL. Co. PHONE 1-800-422-4133

PLANS PREPARED BY:
DANIEL, MANN, JOHNSON AND MENDENHALL
3250 WILSHIRE BOULEVARD
LOS ANGELES, CALIFORNIA 90010
TELEPHONE: 213/381-3663
PLANNING ARCHITECTURE ENGINEERING SYSTEMS ECONOMICS

	DATE
DESIGNED PVT. ENG.	8/7/80
DRAWN PVT. ENG.	8/7/80
CHECKED M. Wade	4-27-81
SUPERVISED M. Cates	4-27-81
PROJECT ENGR. Mathew Mooney	R.E. NO. 21945
ASST. DIV./DIST ENGR.	R.E. NO.

REGISTERED PROFESSIONAL ENGINEER No. 21945 CIVIL STATE OF CALIFORNIA

NO.	REVISION DESCRIPTION	DRAINAGE ENGR.	DATE

CITY OF LOS ANGELES
DONALD C. TILLMAN
CITY ENGINEER

DATE April 17, 1981
DIV./DIST. ENGR. Joseph M. Powell
R.E. NO.

I.A.C.E. INDEX	SCALES	HORIZ. 1"= 40' / VERT. 1"= 4'	SHEET 2 OF 2	INDEX NUMBER D-27210

ENG. 6.300 (R 4-77)

D-51510

Attachment 3. Existing Hydrologic Results

Peak Flow Hydrologic Analysis

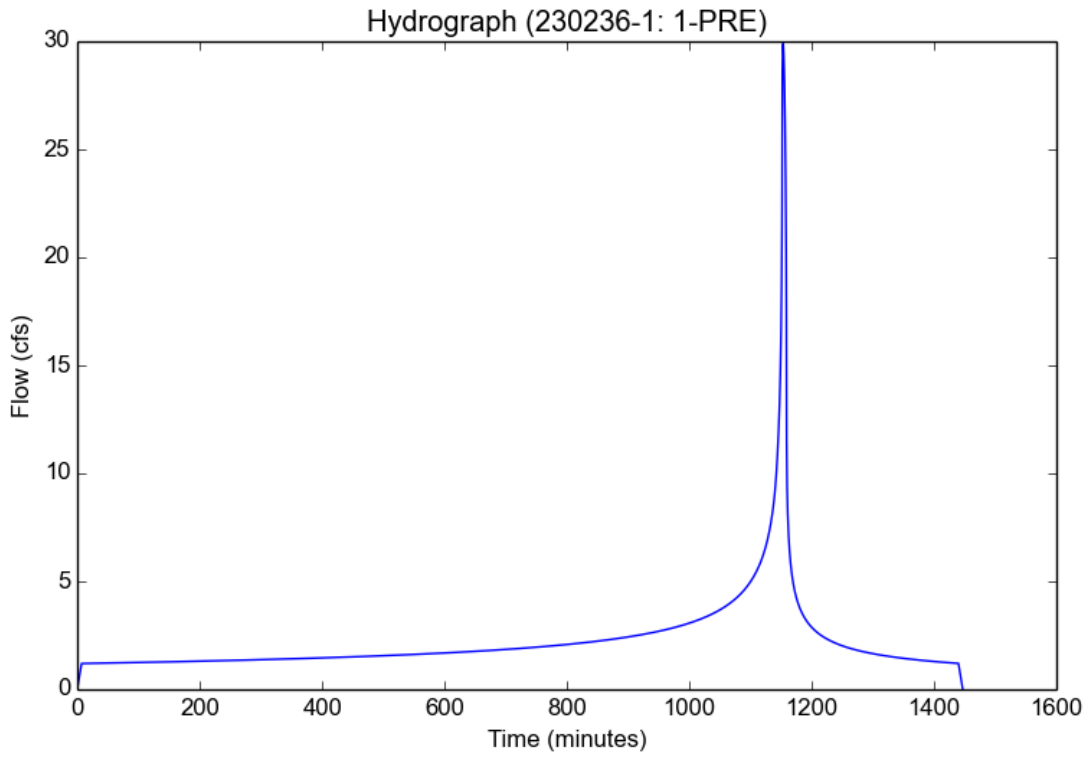
File location: //cannonassoc.com/dfsroot1/Public/proj/2023/230326/3 Project Design/Civil/HH/04 Calcs/230236-1 Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	230236-1
Subarea ID	1-PRE
Area (ac)	18.14
Flow Path Length (ft)	347.63
Flow Path Slope (vft/hft)	0.012
50-yr Rainfall Depth (in)	5.1
Percent Impervious	0.9
Soil Type	13
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	3.6414
Peak Intensity (in/hr)	1.8548
Undeveloped Runoff Coefficient (Cu)	0.7883
Developed Runoff Coefficient (Cd)	0.8888
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	29.9052
Burned Peak Flow Rate (cfs)	29.9052
24-Hr Clear Runoff Volume (ac-ft)	4.5022
24-Hr Clear Runoff Volume (cu-ft)	196117.3744



Peak Flow Hydrologic Analysis

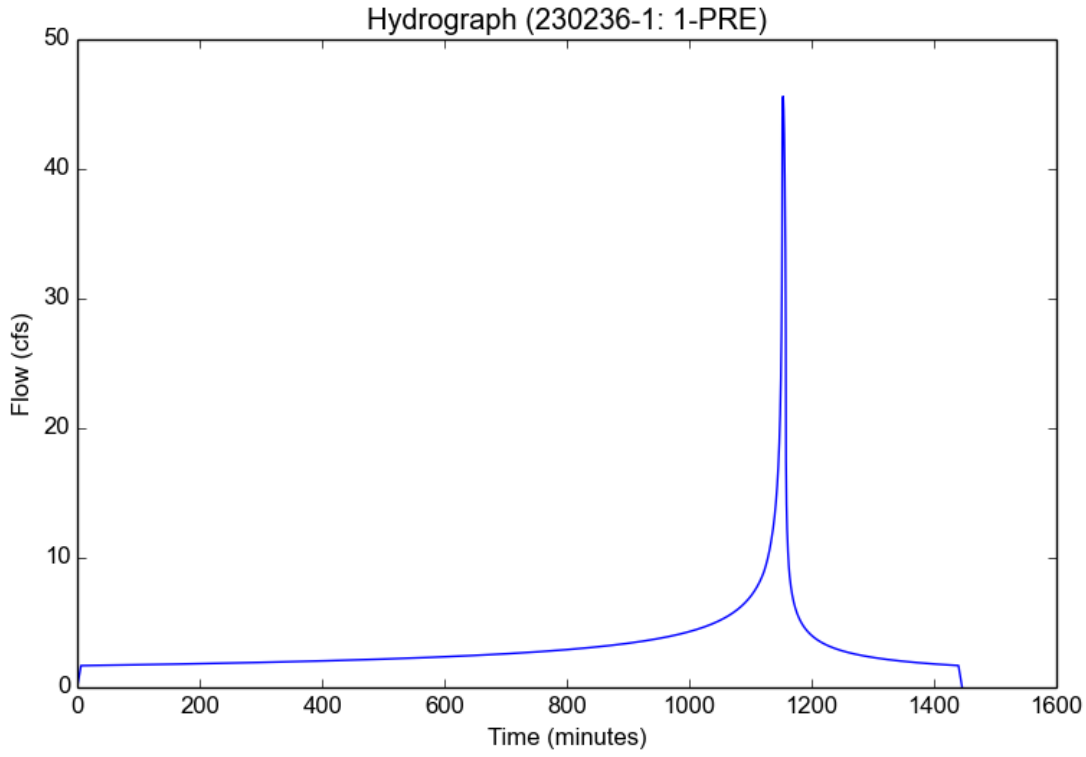
File location: //cannonassoc.com/dfsroot1/Public/proj/2023/230326/3 Project Design/Civil/HH/04 Calcs/230236-1 Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	230236-1
Subarea ID	1-PRE
Area (ac)	18.14
Flow Path Length (ft)	347.63
Flow Path Slope (vft/hft)	0.012
50-yr Rainfall Depth (in)	5.1
Percent Impervious	0.9
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.1
Peak Intensity (in/hr)	2.7929
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	45.5972
Burned Peak Flow Rate (cfs)	45.5972
24-Hr Clear Runoff Volume (ac-ft)	6.3237
24-Hr Clear Runoff Volume (cu-ft)	275458.4049



Peak Flow Hydrologic Analysis

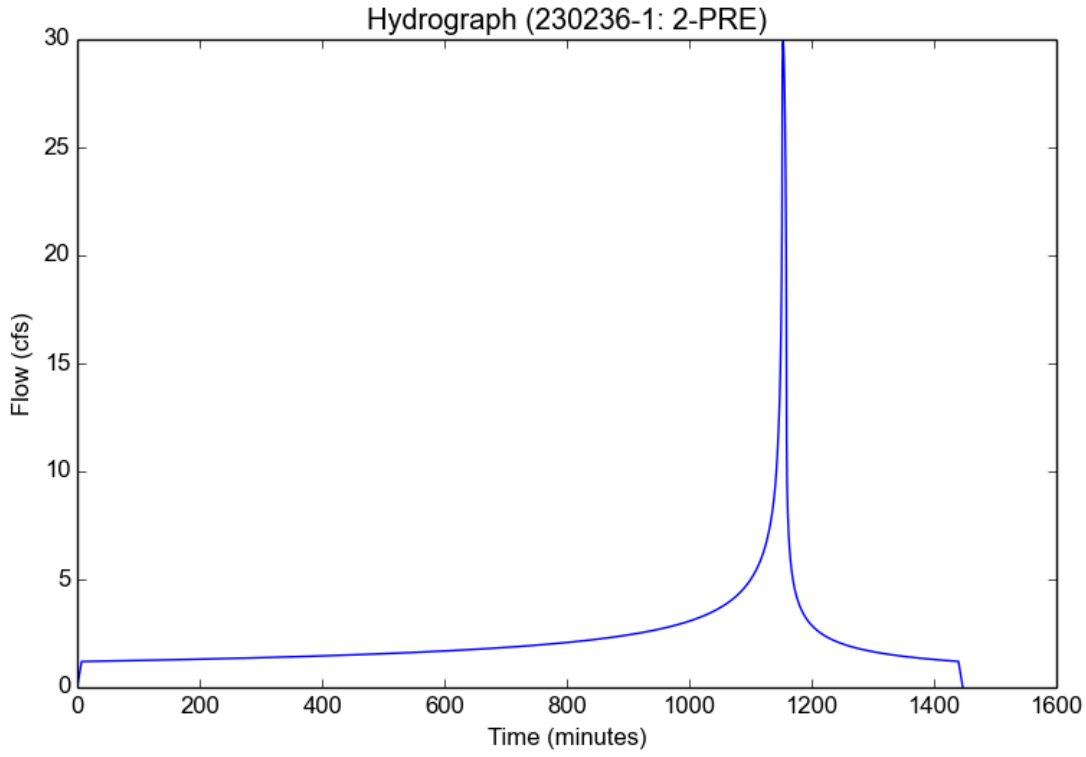
File location: //cannonassoc.com/dfsroot1/Public/proj/2023/230326/3 Project Design/Civil/HH/04 Calcs/230236-1 Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	230236-1
Subarea ID	2-PRE
Area (ac)	18.14
Flow Path Length (ft)	347.63
Flow Path Slope (vft/hft)	0.012
50-yr Rainfall Depth (in)	5.1
Percent Impervious	0.9
Soil Type	13
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	3.6414
Peak Intensity (in/hr)	1.8548
Undeveloped Runoff Coefficient (Cu)	0.7883
Developed Runoff Coefficient (Cd)	0.8888
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	29.9052
Burned Peak Flow Rate (cfs)	29.9052
24-Hr Clear Runoff Volume (ac-ft)	4.5022
24-Hr Clear Runoff Volume (cu-ft)	196117.3744



Peak Flow Hydrologic Analysis

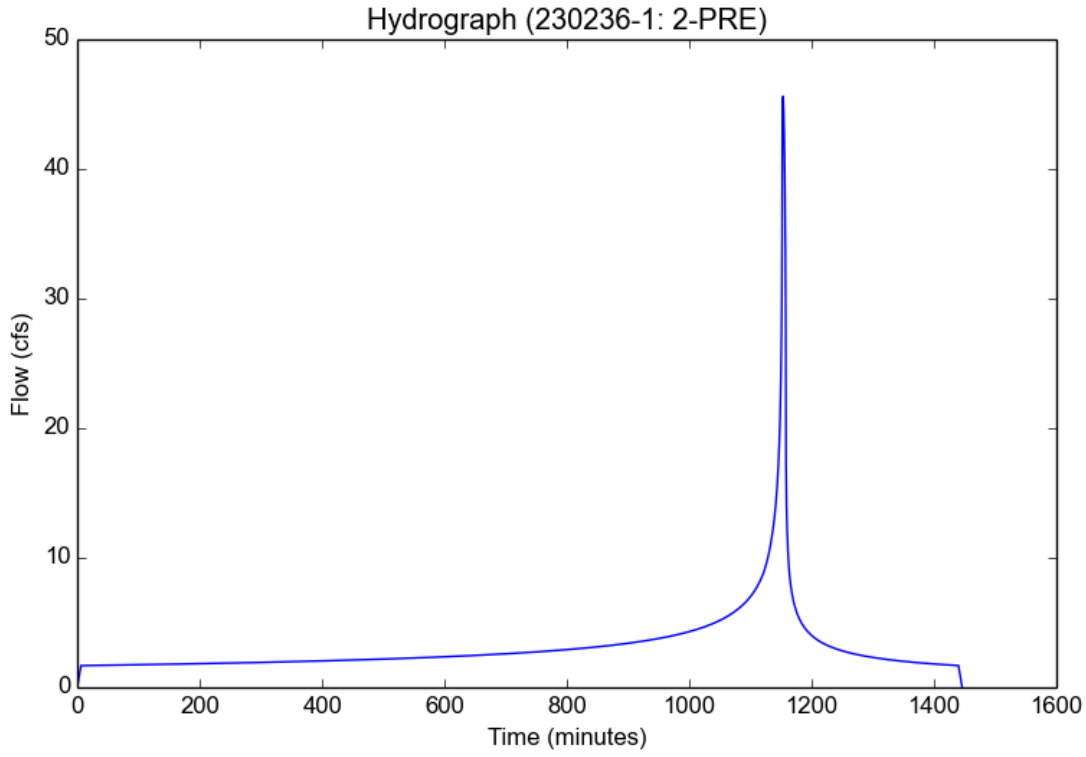
File location: //cannonassoc.com/dfsroot1/Public/proj/2023/230326/3 Project Design/Civil/HH/04 Calcs/230236-1 Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	230236-1
Subarea ID	2-PRE
Area (ac)	18.14
Flow Path Length (ft)	347.63
Flow Path Slope (vft/hft)	0.012
50-yr Rainfall Depth (in)	5.1
Percent Impervious	0.9
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.1
Peak Intensity (in/hr)	2.7929
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	45.5972
Burned Peak Flow Rate (cfs)	45.5972
24-Hr Clear Runoff Volume (ac-ft)	6.3237
24-Hr Clear Runoff Volume (cu-ft)	275458.4049



Attachment 4. Option 1 Hydrologic Results

Peak Flow Hydrologic Analysis

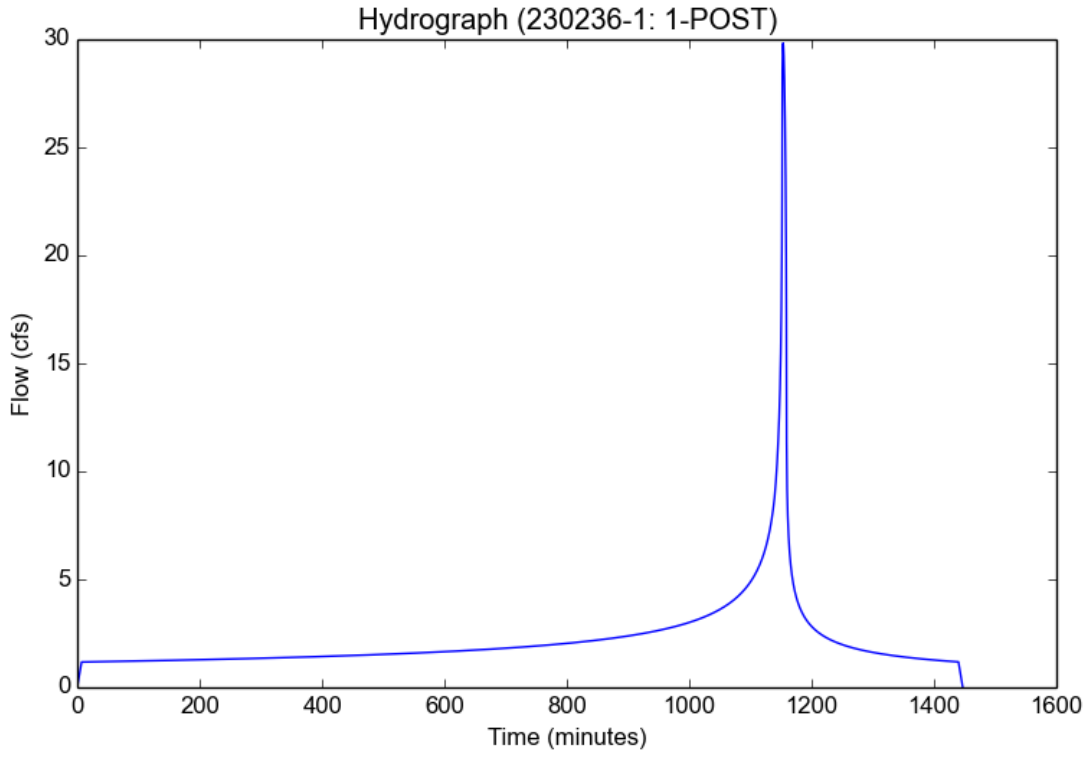
File location: //cannonassoc.com/dfsroot1/Public/proj/2023/230326/3 Project Design/Civil/HH/04 Calcs/230236-1 Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	230236-1
Subarea ID	1-POST
Area (ac)	18.14
Flow Path Length (ft)	347.63
Flow Path Slope (vft/hft)	0.012
50-yr Rainfall Depth (in)	5.1
Percent Impervious	0.88
Soil Type	13
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	3.6414
Peak Intensity (in/hr)	1.8548
Undeveloped Runoff Coefficient (Cu)	0.7883
Developed Runoff Coefficient (Cd)	0.8866
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	29.8301
Burned Peak Flow Rate (cfs)	29.8301
24-Hr Clear Runoff Volume (ac-ft)	4.42
24-Hr Clear Runoff Volume (cu-ft)	192537.1856



Peak Flow Hydrologic Analysis

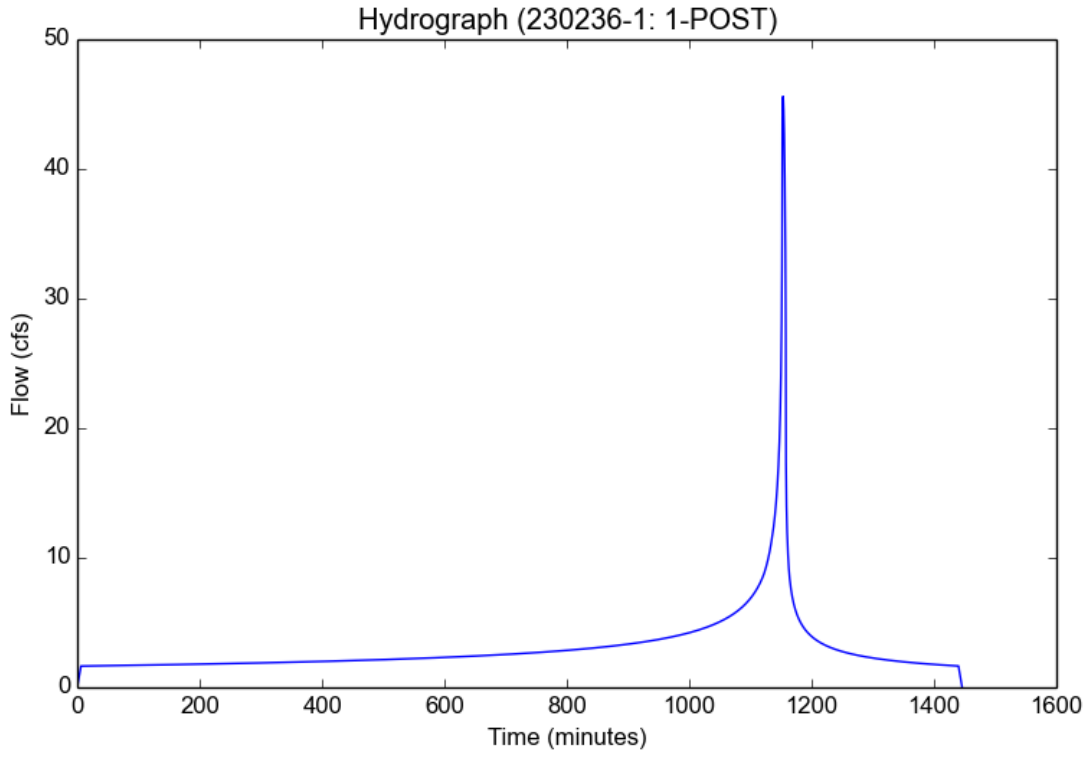
File location: //cannonassoc.com/dfsroot1/Public/proj/2023/230326/3 Project Design/Civil/HH/04 Calcs/230236-1 Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	230236-1
Subarea ID	1-POST
Area (ac)	18.14
Flow Path Length (ft)	347.63
Flow Path Slope (vft/hft)	0.012
50-yr Rainfall Depth (in)	5.1
Percent Impervious	0.88
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.1
Peak Intensity (in/hr)	2.7929
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	45.5972
Burned Peak Flow Rate (cfs)	45.5972
24-Hr Clear Runoff Volume (ac-ft)	6.2121
24-Hr Clear Runoff Volume (cu-ft)	270600.9868



Attachment 5. Option 1 LID results

Peak Flow Hydrologic Analysis

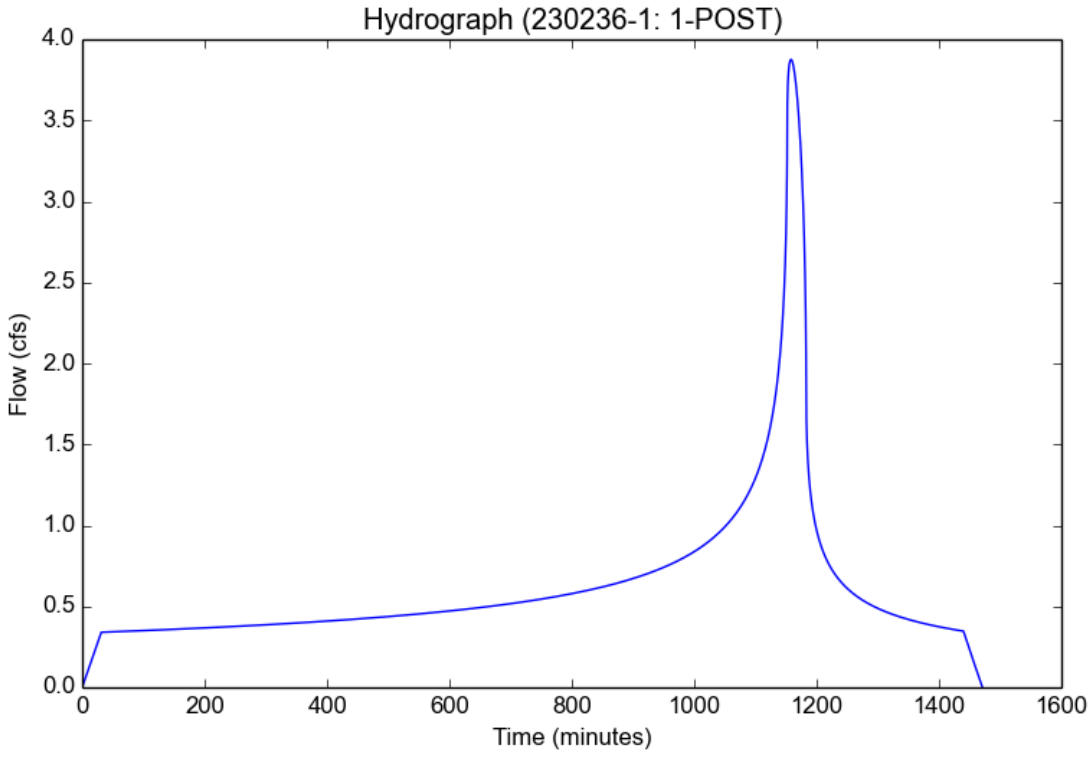
File location: //cannonassoc.com/dfsroot1/Public/proj/2023/230326/3 Project Design/Civil/HH/04 Calcs/230236-1 Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	230236-1
Subarea ID	1-POST
Area (ac)	18.14
Flow Path Length (ft)	793.1
Flow Path Slope (vft/hft)	0.014
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.88
Soil Type	13
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.2657
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.804
Time of Concentration (min)	31.0
Clear Peak Flow Rate (cfs)	3.8758
Burned Peak Flow Rate (cfs)	3.8758
24-Hr Clear Runoff Volume (ac-ft)	1.2656
24-Hr Clear Runoff Volume (cu-ft)	55130.3131



Attachment 6. Option 2 Hydrologic Results

Peak Flow Hydrologic Analysis

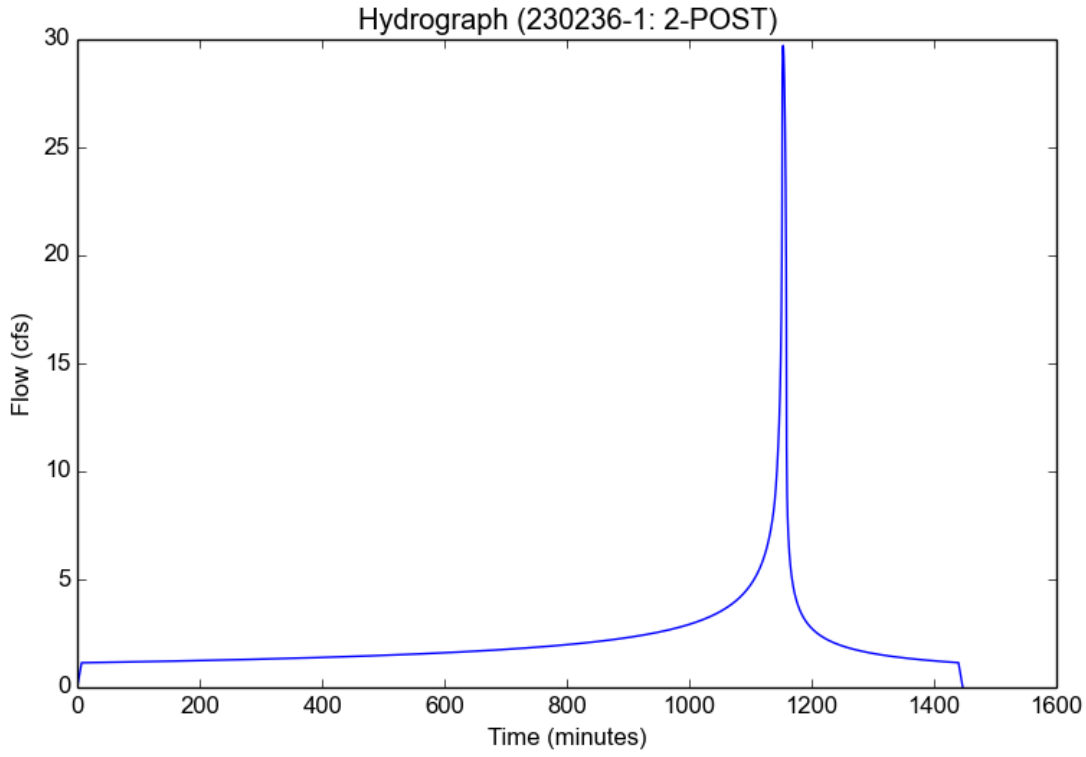
File location: //cannonassoc.com/dfsroot1/Public/proj/2023/230326/3 Project Design/Civil/HH/04 Calcs/230236-1 Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	230236-1
Subarea ID	2-POST
Area (ac)	18.14
Flow Path Length (ft)	347.63
Flow Path Slope (vft/hft)	0.012
50-yr Rainfall Depth (in)	5.1
Percent Impervious	0.85
Soil Type	13
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	3.6414
Peak Intensity (in/hr)	1.8548
Undeveloped Runoff Coefficient (Cu)	0.7883
Developed Runoff Coefficient (Cd)	0.8832
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	29.7173
Burned Peak Flow Rate (cfs)	29.7173
24-Hr Clear Runoff Volume (ac-ft)	4.2968
24-Hr Clear Runoff Volume (cu-ft)	187166.9023



Peak Flow Hydrologic Analysis

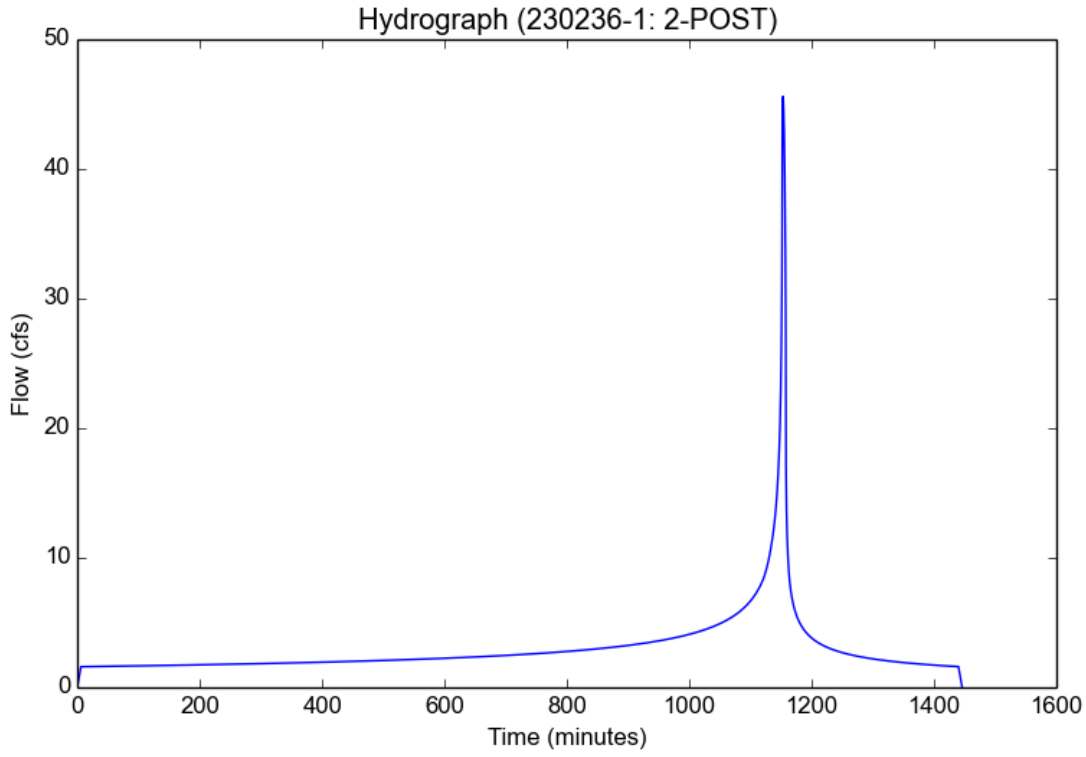
File location: //cannonassoc.com/dfsroot1/Public/proj/2023/230326/3 Project Design/Civil/HH/04 Calcs/230236-1 Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	230236-1
Subarea ID	2-POST
Area (ac)	18.14
Flow Path Length (ft)	347.63
Flow Path Slope (vft/hft)	0.012
50-yr Rainfall Depth (in)	5.1
Percent Impervious	0.85
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.1
Peak Intensity (in/hr)	2.7929
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	45.5972
Burned Peak Flow Rate (cfs)	45.5972
24-Hr Clear Runoff Volume (ac-ft)	6.0449
24-Hr Clear Runoff Volume (cu-ft)	263314.8596



Attachment 7. Option 2 LID Results

Peak Flow Hydrologic Analysis

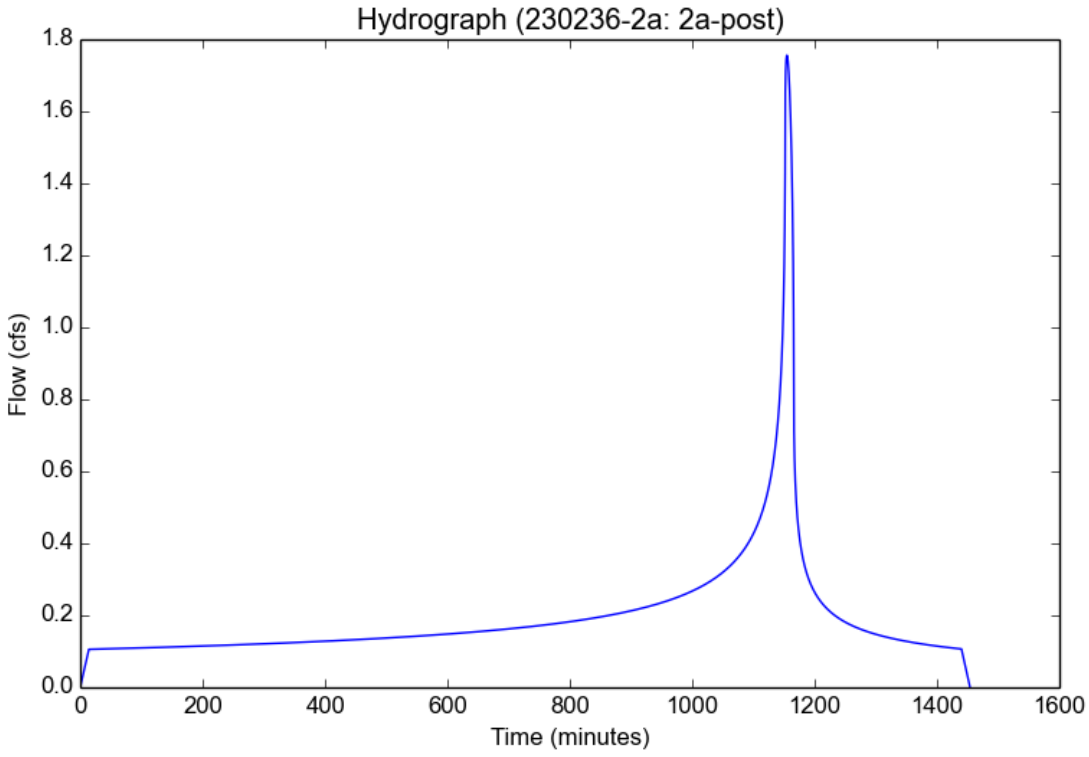
File location: //cannonassoc.com/dfsroot1/Public/proj/2023/230326/3 Project Design/Civil/HH/04 Calcs/230236-1 Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	230236-2a
Subarea ID	2a-post
Area (ac)	5.83
Flow Path Length (ft)	259.39
Flow Path Slope (vft/hft)	0.027
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.85
Soil Type	13
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.3861
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.78
Time of Concentration (min)	14.0
Clear Peak Flow Rate (cfs)	1.7559
Burned Peak Flow Rate (cfs)	1.7559
24-Hr Clear Runoff Volume (ac-ft)	0.3946
24-Hr Clear Runoff Volume (cu-ft)	17189.2145



Peak Flow Hydrologic Analysis

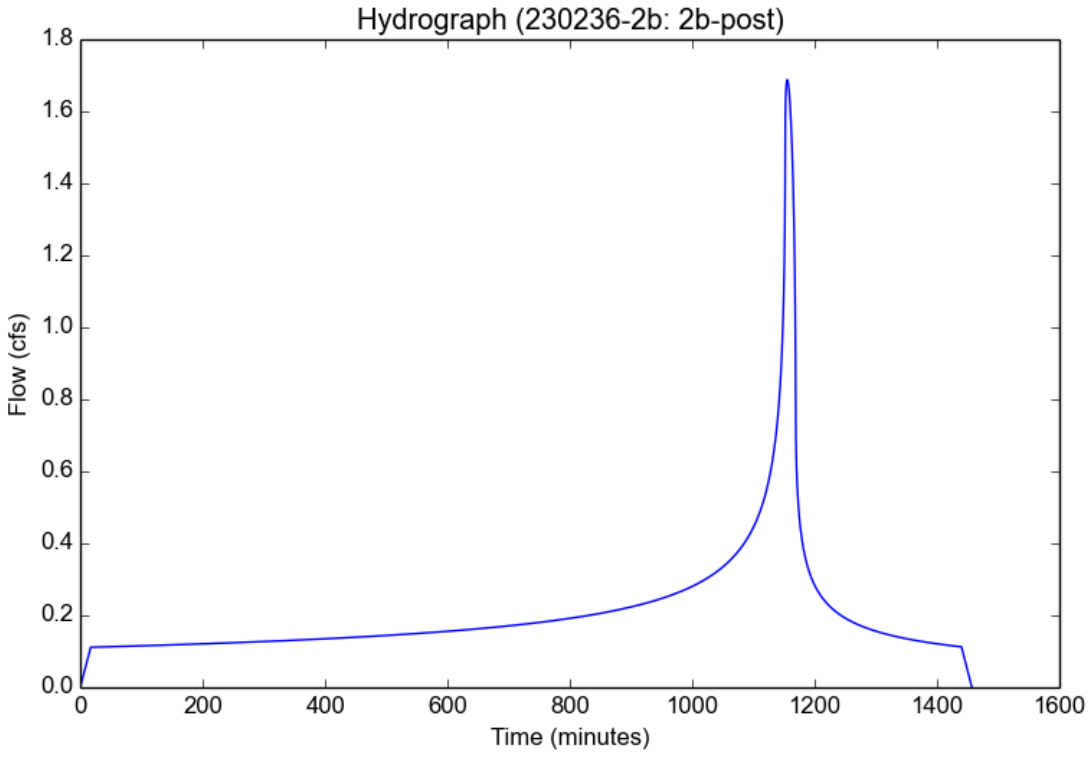
File location: //cannonassoc.com/dfsroot1/Public/proj/2023/230326/3 Project Design/Civil/HH/04 Calcs/230236-1 Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	230236-2b
Subarea ID	2b-post
Area (ac)	6.14
Flow Path Length (ft)	324.01
Flow Path Slope (vft/hft)	0.021
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.85
Soil Type	13
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.3524
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.78
Time of Concentration (min)	17.0
Clear Peak Flow Rate (cfs)	1.688
Burned Peak Flow Rate (cfs)	1.688
24-Hr Clear Runoff Volume (ac-ft)	0.4156
24-Hr Clear Runoff Volume (cu-ft)	18103.2422



Peak Flow Hydrologic Analysis

File location: //cannonassoc.com/dfsroot1/Public/proj/2023/230326/3 Project Design/Civil/HH/04 Calcs/230236-1 Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	230236-2c
Subarea ID	2c-post
Area (ac)	6.17
Flow Path Length (ft)	366.66
Flow Path Slope (vft/hft)	0.017
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.85
Soil Type	13
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.3345
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.78
Time of Concentration (min)	19.0
Clear Peak Flow Rate (cfs)	1.6098
Burned Peak Flow Rate (cfs)	1.6098
24-Hr Clear Runoff Volume (ac-ft)	0.4176
24-Hr Clear Runoff Volume (cu-ft)	18191.7112