INITIAL STUDY

APPENDIX H: HYDROLOGY AND WATER QUALITY TECHNICAL REPORT

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ECHELON STUDIOS PROJECT
DRAFT TECHNICAL REPORT: HYDROLOGY & WATER QUALITY
APRIL 2023

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1. INTRODUCTION

1.1. PROJECT DESCRIPTION

The Echelon Studios Project (the "Project") proposes the construction of a new approximately 510,621-square-foot production studio and creative office campus located at 5601 - 5673 West Santa Monica Boulevard, 5612 - 5672 West Virginia Avenue, and 1110 - 1118 North Wilton Place, within the Hollywood Community Plan area (the "Project Site") in the City of Los Angeles (the "City"). The Project has been designed to incorporate a variety of interconnected uses geared toward the entertainment industry in single building, standing up to six stories and 93 feet in height, that would include approximately 109,957 square feet of production studios and related support space, 388,286 square feet of creative office, and 12,378 square feet of restaurant space on a walkable campus. The Project would also include approximately 981 vehicular parking spaces on-site in a two-level subterranean parking garage and approximately 162 bicycle spaces in the first subterranean parking garage level and on the ground floor. The Project would be built on a 225,456-square-foot lot (including 11,373-square-foot alleyway), resulting in a site-wide Floor Area Ratio (FAR) of up to 2.26 to 1. The Project would require a Vesting Tentative Tract Map for the merger of an existing 11,373-square-foot public alley that runs through the Project Site, subdivision resulting in a ground lot and eight air space lots, and a waiver for all dedication and street widening requirements along Wilton Place, Santa Monica Boulevard, and along the public alley. The anticipated outbound haul route from the Project Site would be along Santa Monica Boulevard to the 101 freeway. Approximately 251,000 cubic yards of soil would be excavated and exported from the Project Site.

1.2. SCOPE OF WORK

This report provides a description of the existing surface water hydrology, surface water quality, groundwater level, and groundwater quality at the Project Site. It also analyzes the Project's potential impacts related to surface water hydrology, surface water quality, groundwater level, and groundwater quality.

2. REGULATORY FRAMEWORK

2.1. SURFACE WATER HYDROLOGY

County of Los Angeles Hydrology Manual

Per the City of Los Angeles (City) 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 2006 LACDPW Hydrology Manual requires projects to have drainage facilities that meet the Urban Flood level of protection. The Urban Flood is runoff from a 25-year frequency design storm falling on a saturated watershed. A 25-year frequency design storm has a probability of 1/25 of being equaled or exceeded in any year. Areas with sump conditions are required to have a storm

drain conveyance system capable of conveying flow from a 50-year storm event.[1] The County also limits the allowable discharge into existing storm drain facilities based on the municipal separate storm sewer systems (MS4) Permit, which is enforced on all new developments that discharge directly into the County's storm drain system. Any proposed drainage improvements of County owned storm drain facilities such as catch basins and storm drain lines require approval/review from the County Flood Control District department.

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

2.2. SURFACE WATER QUALITY

Clean Water Act

The Clean Water Act (CWA) was first introduced in 1948 as the Water Pollution Control Act. The CWA authorizes Federal, State, and local entities to cooperatively create comprehensive programs for eliminating or reducing the pollution of State waters and tributaries. The primary goals of the CWA are to restore and maintain the chemical, physical, and biological integrity of the nation's waters and to make all surface waters fishable and swimmable. As such, the CWA forms the national framework for the management of water quality and the control of pollutant discharges. The CWA also sets forth a number of objectives in order to achieve the above-mentioned goals. These objectives include regulating pollutant and toxic pollutant discharges; providing for water quality that protects and fosters the propagation of fish, shellfish and wildlife; developing waste treatment management plans; and developing and implementing programs for the control of non-point sources of pollution.[2]

Since its introduction, major amendments to the CWA have been enacted (e.g., 1961, 1966, 1970, 1972, 1977, and 1987). Amendments enacted in 1970 created the U.S. Environmental Protection Agency (USEPA), while amendments enacted in 1972 deemed the discharge of pollutants into waters of the United States from any point source unlawful unless authorized by a USEPA National Pollutant Discharge Elimination System (NPDES) permit.

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[1] Los Angeles County Department of Public Works Hydrology Manual, January 2006, http://ladpw.org/wrd/publication/index.cfm

[2] Non-point sources of pollution are carried through the environment via elements such as wind, rain, or stormwater and are generated by diffuse land use activities (such as runoff from streets and sidewalks or agricultural activities) rather than from an identifiable or discrete facility.

Amendments enacted in 1977 mandated development of a "Best Management Practices" Program at the State level and provided the Water Pollution Control Act with the common name of "Clean Water Act," which is universally used today. Amendments enacted in 1987 required the USEPA to create specific requirements for discharges.

In response to the 1987 amendments to the CWA and as part of Phase I of its NPDES permit program, the USEPA began requiring NPDES permits for: (1) municipal separate storm sewer systems (MS4) generally serving, or located in, incorporated cities with 100,000 or more people (referred to as municipal permits); (2) 11 specific categories of industrial activity (including landfills); and (3) construction activity that disturbs five acres or more of land. Phase II of the USEPA's NPDES permit program, which went into effect in early 2003, extended the requirements for NPDES permits to: (1) numerous small MS4s,[3] (2) construction sites of one to five acres, and (3) industrial facilities owned or operated by small municipal separate storm sewer systems. The NPDES permit program is typically administered by individual authorized States.

In 2008, the USEPA published draft Effluent Limitation Guidelines (ELGs) for the construction and development industry. On December 1, 2009, the EPA finalized its 2008 Effluent Guidelines Program Plan.

In California, the NPDES stormwater permitting program is administered by the State Water Resources Control Board (SWRCB). The SWRCB was created by the Legislature in 1967. Its joint authority over water distribution and water quality protection allows the SWRCB to provide protection for the State's waters, through its nine Regional Water Quality Control Boards (RWQCBs). The RWQCBs develop and enforce water quality objectives and implement plans that will best protect California's waters, acknowledging areas of different climate, topography, geology, and hydrology. The RWQCBs develop "basin plans" for the hydrologic areas within their jurisdictions, issue waste discharge requirements, enforce action against stormwater discharge violators, and monitor water quality.[4]

Federal Anti-Degradation Policy

The Federal Anti-Degradation Policy (40 Code of Federal Regulations § 131.12) requires States to develop statewide anti-degradation policies and identify methods for implementing them. Pursuant to the Code of Federal Regulations (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

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[3] A small MS4 is any MS4 not already covered by the Phase I program as a medium or large MS4. The Phase II Rule automatically covers on a nationwide basis all small MS4s located in "urbanized areas" as defined by the Bureau of the Census (unless waived by the NPDES permitting authority), and on a case-by-case basis those small MS4s located outside of urbanized areas that the NPDES permitting authority designates.

[4] USEPA. U.S. Environmental Protection Agency - Clean Water Act. July 2011. http://www.epa.gov/lawsregs/laws/cwa.html

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.

California Porter-Cologne Act

The Porter-Cologne Water Quality Control Act established the legal and regulatory framework for California's water quality control. The California Water Code (CWC) authorizes the SWRCB to implement the provisions of the CWA, including the authority to regulate waste disposal and require cleanup of discharges of hazardous materials and other pollutants.

As discussed above, under the CWC, the SWRCB is divided into nine RWQCBs, governing the implementation and enforcement of the CWC and CWA. The Project Site is located within Region 4, also known as the Los Angeles Region. Each RWQCB is required to formulate and adopt a Basin Plan for its region. This Basin Plan must adhere to the policies set forth in the CWC and established by the SWRCB. The RWQCB is also given authority to include within its regional plan water discharge prohibitions applicable to particular conditions, areas, or types of waste.

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.

California Toxics Rule

In 2000, the USEPA promulgated the California Toxics Rule, which establishes water quality criteria for certain toxic substances to be applied to waters in the State. The USEPA promulgated this rule based on the USEPA's determination that the numeric criteria are necessary in the State to protect human health and the environment. The California Toxics 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 RWQCB (LARWQCB) as having beneficial uses protective of aquatic life or human health.

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

As required by the 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 groundwater, 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.[5]

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.

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.

The General Permit

SWRCB Order No. 2012-0006-DWQ known as "The General Permit" was adopted on July 17, 2012. This NPDES permit establishes a risk-based approach to stormwater control requirements for construction projects by identifying three project risk levels. The main objectives of the 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

[5] Los Angeles Regional Water Quality Control Board. LARWQCB Basin Plan. <http://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/>

6. Implement appropriate measures to reduce potential impacts on waterways both during and after construction of projects

7. Establish maintenance commitments on post-construction pollution control measures

California mandates requirements for all construction activities disturbing more than one acre of land to develop and implement Stormwater Pollution Prevention Plans (SWPPP). The SWPPP documents the selection and implementation of Best Management Practices (BMPs) for a specific construction project, charging owners with stormwater quality management responsibilities. A construction site subject to the General Permit must prepare and implement a SWPPP that meets the requirements of the General Permit.[6, 7]

Los Angeles County Municipal Storm Water System (MS4) Permit

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

On November 8, 2012, the LARWQCB adopted Order No. R4-2012-0175 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 Los Angeles County Flood Control District (LACFCD) is designated as the Principal Permittee. The other permittees are the 84 Los Angeles County cities (including the City of Los Angeles) and 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 Co-Permittees.

Stormwater Quality Management Program (SQMP)

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

- Implement a public information and participation program to conduct outreach on storm water pollution;

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6 State Water Resources Control Board. State Water Resources Control Board. July 2012, http://www.swrcb.ca.gov/water_issues/programs/npdes/.

7 USEPA. U.S. Environmental Protection Agency - NPDES. July 2012, https://www.epa.gov/npdes.

- Control discharges at commercial/industrial facilities through tracking, inspecting, and ensuring compliance at facilities that are critical sources of pollutants;

- Implement a development planning program for specified development projects;

- Implement a program to control construction runoff from construction activity at all construction sites within the relevant jurisdictions;

- Implement a public agency activities program to minimize storm water pollution impacts from public agency activities; and

- Implement a program to document, track, and report illicit connections and discharges to the storm drain system.

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

1. General Requirements:

    - Each permittee is required to implement the SQMP in order to comply with applicable stormwater program requirements.

    - The SQMP shall be implemented and each permittee shall implement additional controls so that discharge of pollutants is reduced.

2. Best Management Practice Implementation:

    - Permittees are required to implement the most effective combination of BMPs for stormwater/urban runoff pollution control. This should result in the reduction of storm water runoff.

3. Revision of the SQMP:

    - Permittees are required to revise the SQMP in order to comply with requirements of the RWQCB while complying with regional watershed requirements and/or waste load allocations for implementation of Total Maximum Daily Loads (TMDLs) for impaired waterbodies.

4. Designation and Responsibilities of the Principal Permittee:

    The Los Angeles County Flood Control District is designated as the Principal Permittee who is responsible for:

    - Coordinating activities that comply with requirements outlined in the NPDES Permit;

    - Coordinating activities among Permittees;

- Providing personnel and fiscal resources for necessary updates to the SQMP;

- Providing technical support for committees required to implement the SQMP; and

- Implementing the Countywide Monitoring Program required under this Order and assessing the results of the monitoring program.

5. Responsibilities of Co-Permittees:

   Each Co-Permittee is required to comply with the requirements of the SQMP as applicable to the discharges within its geographical boundaries. These requirements include:

   - Coordinating among internal departments to facilitate the implementation of the SQMP requirements in an efficient way;

   - Participating in coordination with other internal agencies as necessary to successfully implement the requirements of the SQMP; and

   - Preparing an annual Budget Summary of expenditures for the storm water management program by providing an estimated breakdown of expenditures for different areas of concern, including budget projections for the following year.

6. Watershed Management Committees (WMCs):

   - Each WMC shall be comprised of a voting representative from each Permittee in the Watershed Management Area (WMA).

   - Each WMC is required to facilitate exchange of information between co-permittees, establish goals and deadlines for WMAs, prioritize pollution control measures, develop and update adequate information, and recommend appropriate revisions to the SQMP.

7. Legal Authority:

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

City of Los Angeles Water Quality Compliance Master Plan for Urban Runoff

On March 2, 2007, a motion was introduced by the City of Los Angeles City Council to develop a water quality master plan with strategic directions for planning, budgeting and funding to reduce pollution from urban runoff in the City of Los Angeles (City Council File

07-0663). The Water Quality Compliance Master Plan for Urban Runoff (Master Plan) was developed by the Bureau of Sanitation, Watershed Protection Division in collaboration with stakeholders to address the requirements of this Council motion. The primary goal of the Master Plan is to help meet water quality regulations. Implementation of the Master Plan is intended over the next 20 to 30 years to result in cleaner neighborhoods, rivers, lakes and bays, augmented local water supply, reduced flood risk, more open space, and beaches that are safe for swimming. The Master Plan also supports the Mayor and Council's efforts to make Los Angeles the greenest major city in the nation.

- The Master Plan identifies and describes the various watersheds in the City, summarizes the water quality conditions of the City's waters, identifies known sources of pollutants, describes the governing regulations for water quality, describes the BMPs that are being implemented by the City, discusses existing TMDL Implementation Plans and Watershed Management Plans. Additionally, the Master Plan provides an implementation strategy that includes the following three initiatives to achieve water quality goals:

- Water Quality Management Initiative, which describes how Water Quality Management Plans for each of the City's watershed and TMDL-specific Implementation Plans will be developed to ensure compliance with water quality regulations.

- The Citywide Collaboration Initiative, which recognizes that urban runoff management and urban (re)development are closely linked, requiring collaborations of many City agencies. This initiative requires the development of City policies, guidelines, and ordinances for green and sustainable approaches for urban runoff management.

- The Outreach Initiative, which promotes public education and community engagement with a focus on preventing urban runoff pollution.

- The Master Plan includes a financial plan that provides a review of current sources of revenue, estimates costs for water quality compliance, and identifies new potential sources of revenue.

City of Los Angeles Stormwater Program

The City of Los Angeles supports the policies of the Construction General Permit and the Los Angeles County NPDES permit through the *Development Best Management Practices Handbook. Part A Construction Activities,* 3rd Edition (Handbook), and associated ordinances were adopted in September 2004. *Part B Planning Activities*, 4th Edition was adopted in June 2011. The Handbook provides guidance for developers in complying with the requirements of the Development Planning Program regulations of the City's Stormwater Program. Compliance with the requirements of this Handbook is required by City of Los Angeles Ordinance No. 173,494. The Handbook and ordinances also have specific minimum BMP

requirements for all construction activities and require dischargers whose construction projects disturb one acre or more of soil to prepare a SWPPP and file a Notice of Intent (NOI) with the SWRCB. The NOI informs the SWRCB of a particular project and results in the issuance of a Waste Discharger Identification (WDID) number, which is needed to demonstrate compliance with the General Permit.

Los Angeles Municipal Code

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

- Any liquids, solids, or gases 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.

Additionally, unless otherwise permitted by a NPDES permit, the ordinance prohibits industrial and commercial developments from discharging untreated wastewater or untreated runoff into the storm drain system. Furthermore, the ordinance prohibits trash or any other abandoned objects/materials from being deposited such that they could be carried into the storm drains. Lastly, the ordinance not only makes it a crime to discharge pollutants into the storm drain system and imposes fines on violators, but also gives City public officers the authority to issue citations or arrest business owners or residents who deliberately and knowingly dump or discharge hazardous chemicals or debris into the storm drain system.

Earthwork activities, including grading, are governed by the Los Angeles Building Code, which is contained in LAMC, Chapter IX, Article 1. Specifically, Section 91.7013 includes regulations pertaining to erosion control and drainage devices, and Section 91.7014 includes general construction requirements, as well as requirements regarding flood and mudflow protection.

Low Impact Development (LID)

In October 2011, the City of Los Angeles passed an ordinance (Ordinance No. 181,899) amending LAMC Chapter VI, Article 4.4, Sections 64.70.01 and 64.72 by imposing rainwater Low Impact Development (LID) strategies on projects that require building permits. The LID ordinance became effective on May 12, 2012.

LID is a stormwater management strategy with goals to mitigate the impacts of increased runoff and stormwater pollution as close to its source as possible. LID promotes the use of natural infiltration systems, evapotranspiration, and the reuse of stormwater. The goal of these LID practices is to remove nutrients, bacteria, and metals from stormwater while also reducing the quantity and intensity of stormwater flows. Through the use of various infiltration strategies, LID is aimed at minimizing impervious surface area. Where infiltration is not feasible, the use of bioretention, rain gardens, green roofs, and rain barrels that will store, evaporate, detain, and/or treat runoff may be used.[8]

The intent of the City of Los Angeles LID standards is to:

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

The City of Los Angeles Bureau of Sanitation, Watershed Protection Division has adopted the LID standards as issued by the LARWQCB and the City of Los Angeles Department of Public Works. The LID Ordinance conforms to the regulations outlined in the NPDES Permit.

2.3. GROUNDWATER

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

As noted above, and as required by the CWC, the LARWQCB has adopted the 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

[8] City of Los Angeles. "Development Best Management Practices Handbook." May, 2016

implementation programs to protect all waters in the Los Angeles Region. In addition, the Basin Plan incorporates (by reference) all applicable State and Regional Board plans and policies and other pertinent water quality policies and regulations. Those of other agencies are referenced in appropriate sections throughout the Basin Plan.

The Basin Plan is a resource for the Regional Board and others who use water and/or discharge wastewater in the Los Angeles Region. Other agencies and organizations involved in environmental permitting and resource management activities also use the Basin Plan. Finally, the Basin Plan provides valuable information to the public about local water quality issues.

Safe Drinking Water Act (SDWA)

The Federal Safe Drinking Water Act, established in 1974, sets drinking water standards throughout the country and is administered by the USEPA. The drinking water standards established in the SDWA 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 Safe Drinking Water Act 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 (MCLs), 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.

California Water Plan

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

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

3. ENVIRONMENTAL SETTING

3.1. SURFACE WATER HYDROLOGY

3.1.1. REGIONAL

The Project Site is located within the Ballona Creek Watershed (Watershed) in the Los Angeles Basin. The Watershed covers approximately 130 square miles in the coastal plain of the Los Angeles Basin. Its boundaries are the Santa Monica Mountains to the north, the Harbor Freeway (110) to the east, and the Baldwin Hills to the south. The watershed includes the cities of Beverly Hills, West Hollywood, portions of the cities of Los Angeles, Culver City, Inglewood and Santa Monica, unincorporated areas of Los Angeles County, and areas under the jurisdiction of Caltrans.

The watershed is highly developed: residential (64%), industrial (4%), vacant/open space (17%), and commercial (8%) are the predominant land uses. Overall, 49% of the watershed is covered by roads, rooftops and other impervious surfaces.

Ballona Creek flows as an open channel for just under 10 miles from mid-Los Angeles (south of Hancock Park) through Culver City, reaching the Pacific Ocean at Playa del Rey (Marina del Rey Harbor). The Estuary portion (from Centinela Avenue to the outlet) is soft bottomed, while the remainder of the creek is lined in concrete. Ballona Creek is fed by a network of underground storm drains, which reaches north into Beverly Hills and West Hollywood. Major tributaries of the Creek and Estuary include Centinela Creek, Sepulveda Channel, and Benedict Canyon Channel.[9] Refer to Figure 1 for Ballona Creek Watershed Map.

3.1.2. LOCAL

Offsite underground storm drain facilities in the Project Vicinity consist of the following:

- **North Wilton Place:** There is a 15-inch storm drain main with a 0.85% slope in North Wilton Place. The estimated full-flow capacity of the 15-inch pipe is 5.96 cubic feet per second (cfs), as shown on Figure 2A. The main connects to a storm drain main in Santa Monica Boulevard. There is an existing catch basin adjacent to the southwest corner of the Project Site.

- **Santa Monica Boulevard:** There is a 30-inch storm drain main with a 0.6% slope in Santa Monica Boulevard. The estimated full-flow capacity of the 30-inch pipe is 31.77 cfs, as shown on Figure 2B. There is an existing catch basin adjacent to the southwest corner of the Project Site.

- **North Saint Andrews Place:** There is a 15-inch catch basin lateral with a 5.0% slope that connects to the 30-inch North Saint Andrews Place. The estimated full-flow capacity of the 24-inch pipe is 10.37 cfs, as shown on Figure 2C. There is an existing catch basin adjacent to the southeast corner of the Project Site. The North

[9] http://www.ladpw.org/wmd/watershed/bc/

Saint Andrews Place storm drain main upsizes to a 30-inch main with a 0.6% slope downstream of the catch basin. The estimated full-flow capacity of the 30-inch pipe is 31.77 cfs, as shown on Figure 2D.

The underground main pipes, laterals and catch basins noted above are owned and maintained by the City of Los Angeles. Stormwater runoff from the Project Site is discharged into offsite storm drainage catch basins and underground storm drainage pipes, which convey stormwater through various underground pipe networks into Ballona Creek.

3.1.3. ON-SITE

The Project Site is approximately 225,456 sq. ft. (5.18 acres) in size and currently predominantly consists of an existing asphalt parking lot, concrete alley, and a concrete building.

Generally, the Project Site slopes from northeast to southwest approximately 5.7' with the northeast corner being the high point and the southwest corner being the low point. The Project Site in its existing condition consists of 4 drainage areas. See Figure 2 for the Existing Site Drainage Areas. Table 1 below reports the existing volumetric flow rate for each tributary area generated by a 50-year storm event.

- Drainage Area A1 sheet flows into an alley and then onto Wilton Place which then directs storm water into the Santa Monica Boulevard storm drain main.
- Drainage Area B1 Sheet flows onto Santa Monica Boulevard, which then directs storm water into the Santa Monica Boulevard storm drain main.
- Drainage Area C1 sheet flows onto Saint Andrews Place, which then directs storm water into the Saint Andrews stormwater main.
- Drainage Area C2 directs stormwater from the existing building roof to the Santa Monica Boulevard storm drain main via downspout connections.

Table 1- Existing Drainage Stormwater Runoff Calculations

Drainage Area	Area (Acres)	Q50 (cfs) (volumetric flow rate measured in cubic feet per second)
A-1	1.95	5.25
B-1	1.58	4.98
C-1	0.92	2.90
C-2	0.72	2.27
TOTAL	**5.17**	**15.4**

As noted above, the total volumetric flow from the Project Site ultimately discharges into the Santa Monica Boulevard 30-inch storm drain main.

3.2. SURFACE WATER QUALITY

3.2.1. REGIONAL

As described above, the Project Site lies within the Ballona Creek Watershed. Constituents of concern listed for Ballona Creek under California's Clean Water Act Section 303(d) List include cadmium (sediment), coliform bacteria, copper (dissolved), cyanide, lead, selenium, toxicity, trash, viruses (Enteric), and zinc.[10]

3.2.2. LOCAL

In general, urban stormwater runoff occurs following precipitation events, with the volume of runoff flowing into the drainage system depending on the intensity and duration of the rain event. During dry weather conditions, nonstormwater runoff typically consist of irrigation of landscaping, and residential, commercial, and industrial activities such as hardscape and car washing. Contaminants that may be found in stormwater from developed areas include sediments, trash, bacteria, metals, nutrients, organics and pesticides. The source of contaminants includes surface areas where precipitation falls, as well as the air through which it falls. Contaminants on surfaces such as roads, maintenance areas, parking lots, and buildings, which are usually contained in dry weather conditions, may be carried by rainfall runoff into drainage systems. The City typically installs catch basins with screens to capture debris before entering the storm drain system. In addition, the City conducts routine street cleaning operations, as well as periodic cleaning and maintenance of catch basins, to reduce stormwater pollution within the City.

3.2.3. ON-SITE

A preliminary site investigation indicated that existing stormwater management Best Management Practices (BMPs) are not present on-site. Refer to Figure 2 for the Existing Site Drainage pattern and location of existing underground drainage structures.

3.3. GROUNDWATER HYDROLOGY

3.3.1. REGIONAL

Groundwater use for domestic water supply is a major beneficial use of groundwater basins in Los Angeles County. The City of Los Angeles overlies the Los Angeles Coastal Plain Groundwater Basin (Basin). The Basin is comprised of the Hollywood, Santa Monica, Central, and West Coast Groundwater Subbasins. Groundwater flow in the Basin is generally south southwesterly and may be restricted by natural geological features. Replenishment of groundwater basins occurs mainly by percolation of precipitation throughout the region via permeable surfaces, spreading grounds, and groundwater migration from adjacent basins, as well as injection wells designed to pump freshwater along specific seawater barriers to prevent the intrusion of salt water. Refer to Figure 8 for the groundwater basin exhibit.

[10] https://www.waterboards.ca.gov/water_issues/programs/tmdl/2010state_ir_reports/category5_report.shtml;

3.3.2. LOCAL

The Project Site specifically overlies the Hollywood Subbasin. The Hollywood Subbasin is bounded on the north by the Santa Monica Mountains and the Hollywood fault, on the east by the Elysian Hills, on the west by the Inglewood fault zone, and on the south by the La Brea high, formed by an anticline that brings impermeable rocks close to the surface.[11]

Groundwater in the Subbasin is replenished by percolation of precipitation and stream flow from the Santa Monica Mountains to the north. Over time, urbanization has decreased the amount of pervious surfaces limiting natural recharge through direct percolation. There are no groundwater production wells or public water supply wells within one mile of the Project Site. The City of Beverly Hills is the only water purveyor with drinking water wells in this groundwater basin.

3.3.3. ON-SITE

The existing site is 100 percent impervious. The Project Site is approximately 225,205 sq. ft. (5.17 acres) and consists of an asphalt surface parking lot and an existing commercial building at the southeast corner of the site.

As described in the Geotechnical Engineering Investigation Report by Geotechnologies, Inc. (Geotechnical Report), groundwater was encountered during exploration at depths of 32.2 feet below the ground surface, which relates to elevations 296.3 feet above mean sea level.[12] According to the Geotechnical Report, the Seismic Hazard Zone Report by the California Geological Survey indicated the historically highest groundwater level in the area is roughly 20 feet beneath the ground surface, which relates to 308.5 feet.[13]

Considering the historic high groundwater level at a depth of roughly 20 feet, and the depth of the proposed lowest level basement being 30.8 feet, groundwater would likely be encountered during construction. It is not uncommon for groundwater levels to vary seasonally or for groundwater seepage conditions to develop where none previously existed, especially in impermeable fine-grained soils which are heavily irrigated or after seasonal rainfall.

3.4. GROUNDWATER QUALITY

3.4.1. REGIONAL

As stated above, the City of Los Angeles overlies the Los Angeles Coastal Plain Groundwater Basin, which falls under the jurisdiction of the LARWQCB. The LARWQCB's Basin Plan identifies water quality objectives applying to all ground waters

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[11] https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/4_011_02_HollywoodSubbasin.pdf

[12] Geotechnical Engineering Investigation – Proposed Commercial Development – 5601 Santa Monica Boulevard, Los Angeles, California, Updated March 3, 2022

[13] Ibid.

of the region for parameters including bacteria, chemical constituents and radioactivity, mineral quality, nitrogen (nitrate, nitrite), and taste and odor.[14]

3.4.2. LOCAL

As stated above, the Project Site specifically overlies the Hollywood Subbasin. The City of Beverly Hills is the only water purveyor with drinking water wells in this groundwater basin. Based on historical and current treatment provided by the City of Beverly Hills, the constituents of concern in the Hollywood Subbasin are iron, manganese, arsenic, color, odor, Volatile Organic Compounds (VOC's), and Total Dissolved Solids (TDS).[15]

3.4.3. ON-SITE

The existing Project Site is 100 percent impermeable, consisting of an asphalt parking lot with an existing commercial building at the southeast corner of the Site. Therefore, the existing Project Site does not contribute to groundwater recharge, and as a result does not contribute to groundwater pollution or otherwise adversely impact groundwater quality.

Other types of risk such as underground storage tanks (USTs) have a greater potential to impact groundwater. According to the Phase 1 Environmental Site Assessment Report by Partner Engineering and Science Inc. (Phase I ESA)[16]:

- A laundromat was identified as having operated at 5663 Santa Monica Boulevard between approximately 1954 to 1967. Due to concerns of the historical use of dry cleaning solvents (tetrachloroethylene [PCE]), this lot was identified as a potential concern for historical releases to soil and/or groundwater.

- Automotive service and repair operations were reported as having operated at 5667 Santa Monica Boulevard between 1955 and 2009. This lot was identified as the likely historical site of the Sears Auto Center, although historical documents, including a permitted waste oil tank, were listed at 5601 and 5603 Santa Monica Boulevard, which is the main Sears building. Eight hydraulic lifts and a drain sample box, as well as a potential vent pipe, were observed at this former building in 2015. Concerns regarding possible repair operations were also identified based on the observation of disassembled engines and motor parts in the former buildings at 5637 and 5643-45 Santa Monica Boulevard (Gosen Auto Body Part – 2002). Two possible former underground storage tanks (USTs) were also identified to the north of the Sears Automotive Center building on the southwestern corner of the Site (5667 Santa Monica Boulevard).

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[14] http://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/electronics_documents/Final%20Chapter%203%20Text.pdf

[15] https://planning.lacity.org/eir/CrossroadsHwd/deir/files/references/G13.pdf

[16] Phase I Environmental Site Assessment Report, by Partner Engineering and Science, Inc., dated October 23, 2020.

- An automotive repair facility was located at 5617 Santa Monica Boulevard (Gaylord AS) and an automobile service station was identified at 5615 Santa Monica Boulevard in 1924 (Omara Marony). These locations appear to be located under the footprint of the current Sears Building, which includes a basement level.

The Phase I ESA revealed evidence of Recognized Environmental Conditions (RECs) and environmental issues in connection with the Project Site. Based its conclusions, the Phase I recommended the following:

- A Phase II investigation including a ground-penetrating radar (GPR) or similar geophysical survey should be conducted to determine whether UST(s) remain on-site, and whether there is evidence of an associated impact to the Project Site.

- Consideration should be made for the installation of passive sub-slab vapor barrier and venting systems for future on-site buildings to mitigate potential vapor intrusion risks due to VOC-impacted soil vapor at the Project Site. Additionally, a Site Health & Safety Plan and Soil Management Plan should be developed and implemented in order to manage potentially impacted soils that may be encountered during any future development activities.

- Prior to the disturbance of any suspect Asbestos Containing Materials or Lead Based Paint at the Project Site, a comprehensive survey, designed to determine if the suspect materials are regulated, is recommended. If such materials are identified and need to be disturbed, repaired, or removed, a licensed abatement contractor should be consulted.

The Phase II ESA was performed by Partner Engineering and Science Inc, and concluded the following[17]:

- Soil shallow exported off-Site during Site grading is generally expected to meet acceptable criteria for non-hazardous waste characterization. However, given the Site's prior use and the limited number of soil samples collected across the property, it would be prudent for Bardas to include a contingency budget for localized soil "hot spots" which would require Class II offsite disposal.

- The concentrations of VOCs reported in groundwater are low and not expected to drive further investigation or remediation.

- The concentrations of VOCs reported in soil vapor are relatively low and not expected to drive further investigation or remediation, especially considering the redevelopment plans for a two-level parking garage across the footprint of the Site.

In the event contaminated soils are encountered during construction, or construction occurs in areas of known or potential contamination, the nature and extent of the contamination

[17] Phase II Environmental Site Assessment Report, by Partner Engineering and Science, Inc., dated December 7, 2020

would be determined and appropriate handling, disposal, and/or treatment would be implemented in accordance with applicable regulatory requirements, including SCAQMD Rule 1166[18].

4. SIGNIFICANCE THRESHOLDS

4.1. SURFACE WATER HYDROLOGY

In accordance with Appendix G of the State of California's CEQA Guidelines, a project would have a significant impact related to surface water hydrology if it would:

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;

- Result in substantial erosion or siltation on- or off-site;

- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or

- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation;

- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

In assessing impacts related to surface water hydrology in this section, the City will use Appendix G as the thresholds of significance. The analysis utilizes factors and considerations identified in the City's 2006 L.A. CEQA Thresholds Guide, as appropriate, to assist in answering the Appendix G Threshold questions. The L.A. CEQA Thresholds Guide identifies the following factors to evaluate surface water hydrology:

- 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

[18] South Coast Air Quality Management District. Rules and Compliance, Rule 1166, http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1166.pdf?sfvrsn=4,.

- Result in a permanent, adverse change to the movement of surface water sufficient to produce a substantial change in the current or direction of water flow.

4.2. SURFACE WATER QUALITY

In accordance with Appendix G of the State of California's CEQA Guidelines, a project would have a significant impact related to surface water quality if it would:

- Violate any water quality standard or waste discharge requirements or otherwise substantially degrade surface or groundwater quality;

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

    - Result in substantial erosion or siltation on- or off-site;

    - Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;

- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation;

- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan;

In assessing impacts related to surface water quality in this section, the City will use Appendix G as the thresholds of significance. The analysis utilizes factors and considerations identified in the City's 2006 L.A. CEQA Thresholds Guide, as appropriate, to assist in answering the Appendix G Threshold questions. The L.A. CEQA Thresholds Guide states that a project would normally have a significant impact on surface water quality if it would result in discharges that would create pollution, contamination or nuisance, as defined in Section 13050 of the CWC or that cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or Water Quality Control Plan for the receiving water body.

The CWC includes the following definitions:

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

- "Contamination" means an impairment of the quality of the waters of the State by waste to a degree, which creates a hazard to the public health through poisoning or 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.[19]

4.3. GROUNDWATER HYDROLOGY

In accordance with Appendix G of the State of California's CEQA Guidelines, a project would have a significant impact related to groundwater hydrology if it would:

- Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin;

- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

In assessing impacts related to groundwater hydrology in this section, the City will use Appendix G as the thresholds of significance. The analysis utilizes factors and considerations identified in the City's 2006 L.A. CEQA Thresholds Guide, as appropriate, to assist in answering the Appendix G Threshold questions. The L.A. CEQA Thresholds Guide identifies the following factors to evaluate groundwater hydrology:

- Change potable water levels sufficiently to:

    - Reduce the ability of a water utility to use the groundwater basin for public water supplies, conjunctive use purposes, storage of imported water, summer/winter peaking, or to respond to emergencies and drought;

    - Reduce yields of adjacent wells or well fields (public or private); or

    - Adversely change the rate or direction of flow of groundwater; or

- Result in demonstrable and sustained reduction of groundwater recharge capacity.

4.4. GROUNDWATER QUALITY

In accordance with Appendix G of the State of California's CEQA Guidelines, a project would have a significant impact related to groundwater quality if it would:

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[19] City of Los Angeles.LA. CEQA Thresholds Guide. 2006 https://planning.lacity.org/eir/CrossroadsHwd/deir/files/references/A07.pdf Accessed November 30, 2022.

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

- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan;

In assessing impacts related to groundwater quality in this section, the City will use Appendix G as the thresholds of significance. The analysis utilizes factors and considerations identified in the City's 2006 L.A. CEQA Thresholds Guide, as appropriate, to assist in answering the Appendix G Threshold questions. The L.A. CEQA Thresholds Guide identifies the following factors to evaluate groundwater quality:

- 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.

5. METHODOLOGY

5.1. SURFACE WATER HYDROLOGY

As discussed above, the Project Site is located within the City of Los Angeles, and drainage collection, treatment and conveyance are regulated by the City. Per the City's Special Order No. 007-1299, December 3, 1999, the City has adopted the Los Angeles County Department of Public Works (LACDPW) Hydrology Manual as its basis of design for storm drainage facilities. The LACDPW Hydrology Manual requires projects to have drainage facilities that meet the Urban Flood level of protection. The Urban Flood is runoff from a 25-year frequency design storm falling on a saturated watershed. A 25-year frequency design storm has a probability of 1/25 of being equaled or exceeded in any year. The *L.A. CEQA Thresholds Guide*, however, establishes the 50-year frequency design storm event as the threshold to analyze potential impacts on surface water hydrology as a result of development. To provide a more conservative analysis, this report analyzes the larger storm event threshold, i.e., the 50-year frequency design storm event.

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

Where,

Q = Volumetric flow rate (cfs)

C = Runoff coefficient (dimensionless)

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

A = Basin area (acres)

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

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

LACDPW has developed a time of concentration calculator, Hydrocalc, to automate time of concentration calculations as well as the peak runoff rates and volumes using the Modified Rational Method design criteria as outlined in the Hydrology Manual. The data input requirements include: sub-area size, soil type, land use, flow path length, flow path slope and rainfall isohyet. The Hydrocalc Calculator was used to calculate the storm water peak runoff flow rate for the Project conditions by evaluating an individual sub-area independent of all adjacent subareas. See Figure 3A-D, 4A-B, and 5A-B for the Hydrocalc Calculator results and Figure 6 for the Isohyet Map.

5.2. SURFACE WATER QUALITY

5.2.1. CONSTRUCTION

Construction BMPs for the Project would be designed and maintained as part of the implementation of the SWPPP in compliance with the Construction General Permit. The SWPPP must begin when construction commences, before any site clearing and grubbing or demolition activity. During construction, the SWPPP would be referred to regularly and amended as changes occur throughout the construction process. The Notice of Intent (NOI), Amendments to the SWPPP, Annual Reports, Rain Event Action Plans (REAPs), and Non-Compliance Reporting must be posted to the State's SMARTS website in compliance with the requirements of the Construction General Permit. Refer to Exhibit 1 for typical SWPPP BMPs.

5.2.2. OPERATION

The Project would be required to implement the City's LID standards.[20] Under section 3.1.3. of the LID Manual, post-construction stormwater runoff from a new development must be infiltrated, evapotranspirated, captured and used, and/or treated through high

[20] The Development Best Management Practices Handbook, Part B Planning Activities, 5th edition was adopted by the City of Los Angeles, Board of Public Works on May 9, 2016 to reflect Low Impact Development (LID) requirements that took effect May 12, 2012.

efficiency BMPs onsite for at least the volume of water produced by the greater of the 85th percentile storm or the 0.75 inch storm event. The LID Manual prioritizes the selection of BMPs used to comply with stormwater mitigation requirement. The order of priority is:

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

Feasibility screening delineated in the LID manual is applied to determine which BMPs would best suit the Project. Specifically, LID guidelines require that infiltration systems maintain at least 10 feet of clearance to the groundwater, property line, and any building structure.

The historic high groundwater level is roughly 20 feet below the ground surface.[21] Additionally, it is the opinion of the Geotechnical engineer that the underlying soils would have poor infiltration capabilities, which would result in a perched water condition. Therefore, the soils engineer has determined that infiltration is infeasible.

Based on the size of the Project Site, the LID system implemented would be required to mitigate 108,310 gallons of runoff generated by the design storm event. See Figures 5A and 5B in the appendix for LID calculations.

Capture and use storage rooms would be implemented within the building, and the captured stormwater runoff would be used to supplemental the on-site cooling tower, which would have a demand capacity of 700,000 gallons.

According to the City's LID Handbook, the mitigated volume generated from the greater of the 85th percentile storm and the 0.75-inch storm event is calculated as follows:

V_{design} (gallons) = (85th percentile or 0.75 inch * 7.48 gallons/cubic foot) * Catchment Area (sq. ft.)

Where:

Catchment Area = (Impervious Area x 0.9) + [(Pervious Area + Undeveloped Area) x 0.1]

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

[21] Geotechnical Engineering Investigation – Proposed Commercial Development – 5601 Santa Monica Boulevard, Los Angeles, California, Updated March 3, 2022. **[Please identify where in MND this can be found]**

5.3. GROUNDWATER

The significance determination of this Project's potential impacts related to the level of the underlying groundwater table of the Hollywood Groundwater Subbasin included a review of the following considerations:

Analysis and Description of the Project's Existing Condition

- Identification of the Hollywood Subbasin as the underlying groundwater basin, and description of the level, quality, direction of flow, and existing uses for the water;
- Description of the location, existing uses, production capacity, quality, and other pertinent data for spreading grounds and potable water wells in the vicinity (usually within a one mile radius), and;
- Area and degree of permeability of soils on the Project Site, and;

Analysis of the Project's Potential Impact on Groundwater Level

- 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 (usually within a one-mile radius); and
- The projected change in local or regional groundwater flow patterns.

In addition, this report discusses the impact of both existing and proposed activities at the Project Site on the groundwater quality of the underlying Hollywood Subbasin.

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

6. PROJECT IMPACT ANALYSIS

6.1. CONSTRUCTION

6.1.1. SURFACE WATER HYDROLOGY

Construction activities for the Project would include demolition of the existing building and hardscape surfaces. The deepest portion of excavation is anticipated to be approximately 30.8 feet below the adjacent grade for subterranean parking. The Project

would consist of one building with hardscape constructed and landscape planted around the building. The mass excavation for the proposed subterranean parking is estimated to generate approximately 251,000 cubic yards of net export. These activities have the potential to temporarily alter existing drainage patterns and flows on the Project Site by exposing the underlying soils, modifying flow direction, and making the Project Site temporarily more permeable. Also, exposed and stockpiled soils could be subject to erosion and conveyance into nearby storm drains during storm events. In addition, on-site watering activities to reduce airborne dust could contribute to pollutant loading in runoff.

As noted above, the Project would implement an Erosion Control Plan that specifies BMPs and erosion control measures to be used during construction to manage runoff flows and prevent pollution. BMPs would be designed to reduce runoff and pollutant levels in runoff during construction. The Erosion Control Plan measures would be designed to (and would in fact) contain and treat, as necessary, stormwater or construction watering on the Project Site so runoff would not impact off-site drainage facilities or receiving waters. Construction activities would be only temporary and flow directions and runoff volumes during construction would be controlled.

In addition, the Project would be required to comply with all applicable City grading permit regulations that require necessary approvals, and inspections to reduce sedimentation and erosion. Thus, through mandatory compliance with all NPDES General Construction Permit requirements, mandatory implementation of BMPs, such as perimeter control, vehicle tracking, runoff water sampling, dust control, street sweeping, etc., and mandatory compliance with applicable City grading regulations, the Project would not substantially alter the Project Site drainage patterns in a manner that would result in substantial erosion, siltation, or flooding on- or off-site. Therefore, construction-related impacts to surface water hydrology would be less than significant.

6.1.2. SURFACE WATER QUALITY

Construction activities such as earth moving, maintenance/operation of construction equipment, potential dewatering, and handling/storage/disposal of materials could contribute to pollutant loading in stormwater runoff.

As discussed in Section 6.1.3 below, the Project is expected to require dewatering during construction. Dewatering operations are practices that discharge non-stormwater, such as groundwater, that must be removed from a work location to proceed with construction into the drainage system. Discharges from dewatering operations can contain high levels of fine sediments, which if not properly treated, could lead to exceedance of the NPDES requirements. If groundwater were encountered during construction, temporary pumps and filtration would be utilized in compliance with the NPDES permit. Any such temporary system would be required to comply with all relevant NPDES requirements related to construction and discharges from dewatering operations.

With implementation of the Erosion Control Plan, site-specific BMPs would reduce or eliminate the discharge of potential pollutants from stormwater runoff. In addition, the

Project Applicant would be required to be comply with City grading permit regulations and inspections to reduce sedimentation and erosion. Construction of the Project would not result in discharges that would cause: (1) pollution which would alter the quality of the water of the State (i.e., Ballona Creek) to a degree which unreasonably affects beneficial uses of the waters; (2) contamination of the quality of the water of the State by waste to a degree which creates a hazard to the public health through poisoning or through the spread of diseases; or (3) nuisance that would be injurious to health; affect an entire community or neighborhood, or any considerable number of persons; or occurs during or as a result of the treatment or disposal of wastes. Furthermore, construction of the Project would not result in discharges that would cause regulatory standards to be violated in the Ballona Creek Watershed. Project construction would not provide substantial additional sources of polluted runoff, nor would it conflict with the implementation of a water quality control plan. In addition, implementation of the Erosion Control Plan would ensure that construction activities would not result in substantial erosion or siltation on- or off-site, or risk release of other pollutants due to inundation. Therefore, temporary construction-related impacts on surface water quality would be less than significant.

6.1.3. GROUNDWATER HYDROLOGY

As stated above, construction activities for the Project would include excavating down approximately 30.8 feet for the subterranean parking, building up the structure, and hardscape and landscape around the structure.

Therefore, it is recommended that a qualified dewatering consultant be retained to establish a temporary dewatering plan during construction. Dewatering operations are expected, and appropriate compliance and containment measures would be implemented to avoid impacts associated with potential groundwater discharges. As stated above, possible dewatering systems to be used as listed in the California Stormwater Quality Association (CASQA) BMP Handbook include:

- Dewatering Tanks:
  A dewatering tank removes debris and sediment. Flow enters the tank through the top, passes through a fabric filter, and is discharged through the bottom of the tank. The filter separates the solids from the liquids.

- Sand Media Particulate Filters:
  Water is treated by passing it through canisters filled with sand media. Generally, sand filters provide a final level of treatment. They are of then used as secondary or higher level of treatment after a significant amount of sediment and other pollutants have been removed using other methods.

- Pressurized Bag Filters:
  A pressurized bag filter is a unit composed of single filter bags made from polyester felt material. The water filters through the unit and is discharged through a header.

Vendors provide bag filters in a variety of configurations. Some units include a combination of bag filters for enhanced contaminant removal.

- Cartridge Filters:
  Cartridge filters provide a high degree of pollutant removal by utilizing a number of individual cartridges as part of a larger filtering unit. Similar to sand media particulate filters, they are often used as a secondary level of treatment after a significant amount of sediment and other pollutants are removed. Units come with various cartridge configurations (for use in series with bag filters) or with a larger single cartridge filtration unit (with multiple filters within).

Due to the operation of temporary dewatering systems, local groundwater hydrology in the immediate vicinity of the Project Site would be minimally affected. The purpose of dewatering operations is to protect both existing and proposed building structures. Due to the limited and temporary nature of temporary dewatering operations, regional impacts to groundwater flow and level are not considered to be significant. Therefore, as Project development would not adversely impact the rate or direction of flow of groundwater, and no water supply wells would be affected, the Project would not result in a significant impact on groundwater hydrology during construction.

6.1.4. GROUNDWATER QUALITY

As discussed above, the Project would include excavations for the Project's subterranean parking. The Project would also result in a net export of approximately 251,000 cubic yards of soil. Although not anticipated at the Project Site, any contaminated soils or USTs found would be captured within that volume of excavated material, removed from the Project Site, and remediated at an approved disposal facility in accordance with regulatory requirements.

During on-site grading and building construction, hazardous materials, such as fuels, paints, solvents, and concrete additives, could be used and would therefore require proper management and, in some cases, disposal. The management of any resultant hazardous wastes could increase the opportunity for hazardous materials releases into groundwater. Compliance with all applicable Federal, State, and local requirements concerning the handling, storage and disposal of hazardous waste, would reduce the potential for the construction of the Project to release contaminants into groundwater that could affect existing contaminants, expand the area or increase the level of groundwater contamination, or cause a violation of regulatory water quality standards at an existing production well. In addition, as there are no groundwater production wells or public water supply wells within one mile of the Project Site, construction activities would not be anticipated to affect such existing wells. Therefore, the Project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade groundwater quality. As construction activities are not expected to encounter existing groundwater supplies, those activities would not conflict with the implementation of a sustainable groundwater

management plan. Therefore, impacts on groundwater quality would be less than significant.

6.2. OPERATION

6.2.1. SURFACE WATER HYDROLOGY

The Project would not increase the permeability of the site. All building roof drains would be directed to underground drainage devices capable of treating and storing the 85th percentile rain event, which would minimize stormwater run-off from the Project Site at the surface level. Refer to Figure 3 for illustration of the drainage tributary areas and patterns in the proposed condition.

Table 2 reports the 50-year frequency design storm event peak flow rates for the two proposed drainage areas within the Project Site.

Table 2- Proposed Drainage Stormwater Runoff Calculations				
Drainage Area	Area (Acres)	Q50 (cfs) (volumetric flow rate measured in cubic feet per second)	Q85th (cfs) (volumetric flow rate measured in cubic feet per second)	Total Q50 after LID Mitigation (Q50 – Q85th) (volumetric flow rate measured in cubic feet per second)
D-1	2.57	8.11	0.82	7.29
D-2	2.60	8.21	0.83	7.38
TOTAL	**5.17**	**16.32**	**1.65**	**14.67**

Table 3 provides a comparison of the pre- and post-peak flow rates for the street drainages of Wilton Place, which shows that there is an increase of flow at Wilton Place and Saint Andrews Place, and a decrease in Santa Monica Boulevard.

Table 3 – Pre- and Post-Project 50-year frequency peak flow rates for Project Area					
Drainage Area flow to SD Main	**Pre-Project Q50 (cfs)** (volumetric flow rate measured in cubic feet per second)	**Post-Project Q50 after LID Mitigation (cfs)** (volumetric flow rate measured in cubic feet per second)	**Increase/ Decrease from Existing to Proposed Condition (cfs)**	**Full Flow Capacity** (volumetric flow rate measured in cubic feet per second)	**Increase/Decrease of full flow capacity from Existing to Proposed Condition (%)**
Wilton Place	5.25	7.29	+2.04	5.96	+34.2%
Santa Monica Boulevard (30-inch SD Main	7.25	0	-7.25	31.77	-100%
Saint Andrews Place (30-inch main)	2.90	7.38	+4.48	31.77	+14.1%
Total (At Santa Monica Boulevard)	**15.40**	**14.67**	**-0.73**	**31.77**	**-2.3%**

Based on site investigations, it appears that, in the existing condition, stormwater runoff from the surface parking lot sheet flows to the surrounding streets before entering the City storm drain system, and that stormwater runoff from the existing commercial building is collected through roof drains that connect to the City storm drain main. As noted above, the total volumetric flow from the Project Site, which is decreasing in the proposed condition, would ultimately be directed to the Santa Monica Boulevard 30-inch storm drain main. The post-Project condition would direct stormwater flow to drains, which would in turn be directed to two on-site storage tanks located within the building for capture and reuse. Therefore, the Project would not cause flooding during a 50-year storm event or result in a permanent adverse change to the movement of surface water on the Project Site.

The Project would increase the rate or volume of stormwater runoff into North Wilton Place and North Saint Andrews Place storm drain mains. The Project would reconstruct and upsize any storm drain mains which do not have the capacity to handle flow increases from the Project Site in the proposed condition. Furthermore, 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. Therefore, the Project would ultimately reduce the total amount of surface water discharged from the Project Site into the existing Santa Monica Boulevard storm drain infrastructure or any waterbody, and would not substantially alter the pattern or quantity of runoff. Therefore, impacts related to stormwater infrastructure improvements would be less than significant.

The LID requirements for the Project Site would outline the stormwater treatment post-construction BMPs required to control pollutants associated with storm events up to the 85th percentile storm event, per the City's Stormwater Program. The Project BMPs would control stormwater runoff with no increase in runoff resulting from the Project. Refer to Exhibit 2 for typical LID BMPs. The Project would not impact existing storm drain infrastructure serving the Project Site and runoff would continue to follow the same discharge paths and drain to the same stormwater systems.

The Project would not trigger any of the thresholds listed in Section 4.1. Therefore, potential operational impacts to site surface water hydrology would be less than significant.

6.2.2. SURFACE WATER QUALITY

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

Due to the incorporation of the required LID BMP(s)[22], operation of the Project would not result in discharges that would cause: (1) pollution which would alter the quality of the waters of the State (i.e., Ballona Creek) to a degree which unreasonably affects beneficial uses of the waters; (2) contamination of the quality of the waters of the State by waste to a degree which creates a hazard to the public health through poisoning or through the spread of diseases; or (3) nuisance that would be injurious to health; affect an entire community or neighborhood, or any considerable number of persons; or occurs during or as a result of the treatment or disposal of wastes.

As is typical of most urban developments, stormwater runoff from the Project Site has the potential to introduce pollutants into the stormwater system. Anticipated and potential pollutants generated by the Project include sediment, nutrients, pesticides, metals, pathogens, and oil and grease. The Project would not have an adverse impact on water quality, and would in fact improve the quality of on-site flows, due to the introduction of new BMPs that would collect, treat, and discharge flows from the Project Site (which are not being treated under existing conditions). Also, both the Project and other future development projects would be subject to LID requirements and implementation of measures to comply with Total Maximum Daily Loads (TMDLs).

Furthermore, operation of the Project would not result in discharges that would cause regulatory standards to be violated. The existing Project Site is approximately 100 percent impervious. Under the Project, a portion of the Project Site would be allocated for

[22] https://www.lastormwater.org/wp-content/files_mf/lidmanualfinal.pdf

stormwater BMPs specifically intended to control and treat stormwater runoff in compliance with LID requirements. As stated above, it appears that stormwater runoff from the Project Site in its existing condition ultimately discharges into the Santa Monica Boulevard storm drain main via roof downspouts and sheet flow. The Project would include the installation of LID BMPs, which would mitigate at minimum the first flush or the equivalent of the greater between the 85th percentile storm and first 0.75-inch of rainfall for any storm event. The installed BMP systems would be designed with an internal bypass or overflow system to prevent upstream flooding due to large storm events. The stormwater which bypasses the BMP systems would discharge to an approved discharge point in the public right-of-way. As such, the Project would not interfere with the implementation of a water quality control plan.

Therefore, with the implementation of the SWPPP and LID BMPs, there will be no operational impacts on surface water quality.

6.2.3. GROUNDWATER HYDROLOGY

Since the Project would neither increase or decrease the imperviousness of the Project Site, the Project's potential impact on groundwater recharge would be less than significant.

As discussed above, Project development would require excavations of up to 30.8 feet for the subterranean parking. As described in the Geotechnical Investigation for the Project Site, the historic high groundwater level in the vicinity of the Project site is roughly 20 feet below grade. Due to the fact that the Project's excavation would exceed this depth, it is expected that groundwater would be encountered during construction that would require temporary dewatering operations[23]. If groundwater were encountered during construction, temporary pumps and filtration would be utilized in compliance with the NPDES permit. The temporary system would comply with all relevant NPDES requirements related to construction and discharges from dewatering operations. Furthermore, there are no existing wells or spreading grounds within one mile of the Project Site, and the Project would not include new injection or supply wells.[24]

Therefore, operation of the Project would result in a less than significant impact on groundwater hydrology, including groundwater levels.

6.2.4. GROUNDWATER QUALITY

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

[23] Geotechnical Engineering Investigation – Proposed Commercial Development – 5601 Santa Monica Boulevard, Los Angeles, California, Updated March 3, 2022

[24] https://dpw.lacounty.gov/general/wells/

Operational activities which could affect groundwater quality include spills of hazardous materials and leaking underground storage tanks. Although not anticipated at the Project Site, any contaminated soils or USTs found would be captured within that volume of excavated material, removed from the Project Site, and remediated at an approved disposal facility in accordance with regulatory requirements. In addition, while the construction of new building facilities would slightly increase the use of on-site hazardous materials as described above, compliance with all applicable existing regulations at the Project Site regarding the handling and potentially required cleanup of hazardous materials would prevent the Project from affecting or expanding any potential areas of contamination, increasing the level of contamination, or causing regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations, Title 22, Division 4, Chapter 15[25] 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.

The Project is not anticipated to result in violations of any water quality standards or waste discharge requirements or otherwise substantially degrade groundwater quality. Additionally, the Project would not involve drilling to or through a clean or contaminated aquifer. Therefore, the Project's potential impact on groundwater recharge is less than significant.

6.3. CUMULATIVE IMPACT ANALYSIS

6.3.1. SURFACE WATER HYDROLOGY

The geographic context for the cumulative impact analysis on surface water hydrology is the Ballona Creek Watershed. The Project in conjunction with forecasted growth in the Ballona Creek Watershed could cumulatively increase stormwater runoff flows. However, as noted above, the Project would be designed so that it would have no net impact on stormwater flows. Also, in accordance with City requirements, related projects and other future development projects would also be required, similar to the Project, to implement BMPs to manage stormwater in accordance with LID guidelines. The City of Los Angeles Department of Public Works would review each future development project on a case-by-case basis to ensure that sufficient local and regional infrastructure is available to accommodate stormwater runoff. Similar to the Project, related projects are located on sites that are fully developed and mainly impervious. Any new development on the related project sites may be required to implement LID BMPs to meet the City's requirements. Implementation of the LID BMPs would, at a minimum, maintain existing runoff conditions. Therefore, the impact of the Project combined with the related projects on surface water hydrology would be less than significant.

[25] https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/lawbook/RWregulations_20181001.pdf, accessed May 17, 2022

6.3.2. SURFACE WATER QUALITY

Future growth in the Ballona Creek Watershed would be subject to NPDES requirements relating to water quality for both construction and operation. 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 surface water quality. As noted above, the Project is designed so that it would not have an adverse impact on water quality, and would in fact improve the quality of on-site flows due to the introduction of new BMPs that would collect, treat, and discharge treated flows from the Project Site (which are not being treated under existing conditions). Also, it is anticipated that the Project and other future development projects would also be subject to LID requirements and implementation of measures to comply with TMDLs. Increases in regional controls associated with other elements of the MS4 Permit would improve regional water quality over time. The Project combined with the related projects would be required to comply with all applicable laws, rules, and regulations, and therefore, cumulative impacts to surface water quality would be less than significant.

6.3.3. GROUNDWATER HYDROLOGY

The geographic context for the cumulative impact analysis on groundwater level is the Hollywood Subbasin. The Project in conjunction with forecasted growth in the region above the Hollywood Subbasin could cumulatively increase groundwater demand. However, as noted above, no water supply wells, spreading grounds, or injection wells are located within a one-mile radius of the Project Site and the Project would not include a groundwater well that would draw from or otherwise have an adverse impact on groundwater level. Any calculation of the extent to which the related projects would extract or otherwise directly utilize groundwater would be speculative. Therefore, the Project's potential impact on groundwater hydrology would not be cumulatively considerable and would be less than significant.

Furthermore, as previously discussed, implementation of the Project would not result in a reduction in impervious surface area on the Project Site. Development of the related projects could result in changes in impervious surface area within their respective project sites. While 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, the development of such related projects would be subject to review and approval pursuant to all applicable regulatory requirements, including any required mitigation of potential groundwater hydrology impacts. In addition, as the related projects are located in a highly urbanized area, any potential reduction in groundwater recharge due to the overall net change in impervious area within the area encompassed by the related project sites would be minimal in the context of the regional groundwater basin, and would thus not result in a significant cumulative effect to groundwater hydrology.

Therefore, cumulative impacts to groundwater hydrology would be less than significant.

6.3.4. GROUNDWATER QUALITY

Future growth in the Hollywood Subbasin would be subject to LARWQCB requirements relating to groundwater quality. In addition, since the Project Site is located in a highly urbanized area, future land use changes or development are not likely to cause substantial changes in regional groundwater quality. As discussed above, the Project would not have an adverse impact on groundwater quality. Also, it is anticipated that, like the Project, other future development projects would also be subject to LARWQCB requirements and, where necessary, implementation of measures to comply with TMDLs in addition to requirements of California Code of Regulations, Title 22, Division 4, Chapter 15 and the Safe Drinking Water Act. The Project's potential impacts to groundwater quality would not be cumulatively considerable and would be less than significant.

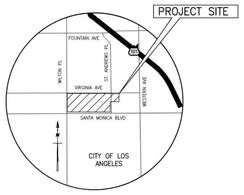
7. LEVEL OF SIGNIFICANCE

Based on the analysis contained in this report, no significant impacts have been identified for surface water hydrology, surface water quality, groundwater hydrology or groundwater quality for this Project and no mitigation measures are required.

APPENDIX

FIGURE 1 - PROJECT SURVEY

TOPOGRAPHIC SURVEY



LEGEND

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

LINETYPES

- BUILDING LINE/HATCH
- BUILDING OVERHANG
- BRICK LINE/HATCH
- CONC LINE/HATCH
- CHAINLINK FENCE
- CURB FACE WITH BACK OF CURB (0.5' O/S)
- FLOWLINE
- GRADEBREAK
- WALL
- WIRE FENCE
- WROUGHT IRON FENCE
- PROPERTY LINE
- LOT LINE
- RIGHT OF WAY LINE
- POTENTIAL RIGHT OF WAY LINE
- CENTERLINE
- EASEMENT LINE
- OHU — OVERHEAD UTILITY LINES
- FO — FIBER OPTIC LINE
- E — ELECTRICAL LINE
- TS — TRAFFIC SIGNAL LINE
- T — TELECOMMUNICATIONS LINE
- SD — STORM DRAIN LINE
- SS — SANITARY SEWER LINE
- W — WATER LINE
- G — GAS LINE
- CATV — CATV LINE

ABBREVIATIONS

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

COMMENTS

SITE ADDRESS . . . . 5609 SANTA MONICA BLVD, LOS ANGELES CALIFORNIA, 90025

APN NO. 5536-012-017

DATE OF SURVEY . . . JUNE 29, 2021
JULY 22, 2021
JULY 27, 2021

FLOOD INSURANCE RATE MAP. . . . . ZONE "X" AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN, PER FLOOD INSURANCE RATE MAP (FIRM) MAP PANEL NO. 06037C1610F EFFECTIVE DATE SEPTEMBER 26, 2008 & 06037C1605F EFFECTIVE DATE SEPTEMBER 26, 2008.

BOUNDARY LINES . . . WERE ESTABLISHED FROM THE RECOVERED CITY, COUNTY AND/OR PRIVATE ENGINEER MONUMENTS WHOSE CHARACTER AND SOURCE ARE SO NOTED ON THE SURVEY.

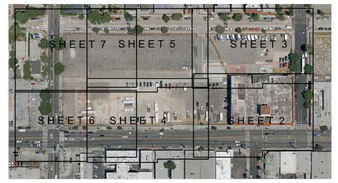
BASIS OF BEARINGS . . . . THE BEARINGS SHOWN HEREON ARE BASED ON THE BEARING NORTH 89°58'55" EAST OF THE CENTERLINE OF SANTA MONICA BOULEVARD, AS SHOWN ON LA PALOMA TRACT M.B. 4/99 SHOWN AS NORTH 89°59'15" EAST ON THIS MAP.

BENCHMARK. . . . . CITY OF LA BM# 12-18870,
CUT SPIKE 3.5FT W OF W CURB WILTON PL 5FT N OF SANTA MONICA BLVD SW COR CB
ELEV. = 324.859 FT; NAVD 88, ADJ. 2000

UTILITIES . . . . . OBSERVED EVIDENCE OF UTILITIES IS SHOWN HEREON.

PUBLIC ACCESS . . . FROM SANTA MONICA AVENUE, VIRGINIA AVENUE, WESTERN AVE, N WILTON PLACE

INDEX MAP



EXCEPTIONS

(5) AN EASEMENT AFFECTING THE PORTION OF SAID LAND AND FOR THE PURPOSES STATED HEREIN, AND INCIDENTAL PURPOSES, CONDEMNED BY FINAL DECREE.
PURPOSE: ALLEY
CASE NO.: 160427, SUPERIOR COURT
RECORDED: IN BOOK 4800, PAGE 341, OFFICIAL RECORDS
(AFFECTS PARCELS 1, 4, 5, THROUGH 11 AND 13)

(6) AN EASEMENT FOR ALLEY AND INCIDENTAL PURPOSES IN THE DOCUMENT RECORDED AS BOOK 9578, PAGE 358 OF OFFICIAL RECORDS.
(AFFECTS LOT 7 OF PARCEL 13)

(7) AN EASEMENT FOR PUBLIC STREET AND INCIDENTAL PURPOSES IN THE DOCUMENT RECORDED AS BOOK 23915 PAGE 38 OF OFFICIAL RECORDS.
(AFFECTS PARCEL 6)

(9) AN EASEMENT FOR POWER LINES AND INCIDENTAL PURPOSES IN THE DOCUMENT RECORDED JUNE 29, 1961 AS INSTRUMENT NO. 3460 OF OFFICIAL RECORDS.
(AFFECTS PARCEL 14)

(12) AN OFFER OF DEDICATION FOR PUBLIC STREET, ROAD AND HIGHWAY AND INCIDENTAL PURPOSES, RECORDED MARCH 21, 1972 AS INSTRUMENT NO. 2936 OF OFFICIAL RECORDS.
TO: CITY OF LOS ANGELES
(AFFECTS PARCELS 10 AND 11)

SAID OFFER WAS ACCEPTED FOR PUBLIC USE BY A RESOLUTION
EXECUTED BY: CITY OF LOS ANGELES
RECORDED: JULY 27, 1972, AS INSTRUMENT NO. 2927, OFFICIAL RECORD

(14) AN EASEMENT FOR POWER LINES AND CONDUITS AND INCIDENTAL PURPOSES IN THE DOCUMENT RECORDED JUNE 02, 1972 AS INSTRUMENT NO. 2880 OF OFFICIAL RECORDS.
(AFFECTS LOT 1 OF PARCEL 12)

(19) THE TERMS, PROVISIONS AND EASEMENT(S) CONTAINED IN THE DOCUMENT ENTITLED "CONSTRUCTION AND EASEMENT AGREEMENT" RECORDED OCTOBER 16, 2006 AS INSTRUMENT NO. 06-2291139 OF OFFICIAL RECORDS.
(AFFECTS PARCELS 1 THROUGH 13)

(53) AN OFFER OF DEDICATION FOR PUBLIC STREET AND INCIDENTAL PURPOSES, RECORDED FEBRUARY 16, 2017 AS INSTRUMENT NO. 20170192496 OF OFFICIAL RECORDS.
TO: THE CITY OF LOS ANGELES
(AFFECTS LOT 6 OF PARCEL 1 AND PARCELS 2 THROUGH 11)

THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "RESOLUTION" RECORDED APRIL 17, 2017 AS INSTRUMENT NO. 20170387692 OF OFFICIAL RECORDS

LEGAL DESCRIPTION

REAL PROPERTY IN THE CITY OF LOS ANGELES, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, DESCRIBED AS
FOLLOWS:

PARCEL 1:
LOTS 1 TO 6 INCLUSIVE OF BLOCK 9 OF LEMONA TRACT, IN THE CITY OF LOS ANGELES, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 5, PAGE 131 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY

PARCEL 2:
LOT 7 AND THE WEST 10 FEET OF LOT 8 IN BLOCK 9 OF LEMONA TRACT, IN THE CITY OF LOS ANGELES, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 5, PAGE 131 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL 3:
THE EAST 40 FEET OF THE SOUTH 142.84 FEET OF LOT 8 IN BLOCK 9 OF LEMONA TRACT, IN THE CITY OF LOS ANGELES, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 5, PAGE 131, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL 4:
LOT 9 IN BLOCK 9 OF LEMONA TRACT, IN THE CITY OF LOS ANGELES, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 5, PAGE 131, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPTING THEREFROM ALL OIL, GAS, HYDROCARBONS AND MINERALS IN, UNDER OR THAT MAY BE PRODUCED FROM SAID LAND WITH ALL RIGHTS INCIDENTAL THERETO, BUT NOT INCLUDING ANY RIGHT OF ENTRY UPON OR UNDER THE SURFACE OR SUBSURFACE OR ANY PART OF THE LAND TO A DEPTH OF 500 FEET BELOW THE EXISTING SURFACE THEREOF.

PARCEL 5:
LOT 10 IN BLOCK 9 OF LEMONA TRACT, IN THE CITY OF LOS ANGELES, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 5, PAGE 131, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL 6:
LOT 11 IN BLOCK 9 OF THE LEMONA TRACT, IN THE CITY OF LOS ANGELES, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 5, PAGE 131, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL 7:
THE WESTERLY 40.00 FEET OF LOT 12 IN BLOCK 9 OF THE LEMONA TRACT, IN THE CITY OF LOS ANGELES, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 5, PAGE 131, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL 8:
LOT 10 IN BLOCK 8 OF LA PALOMA TRACT, IN THE CITY OF LOS ANGELES, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 5, PAGE 80 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY AND LOT 12 IN BLOCK 9 OF LEMONA TRACT, IN THE CITY OF LOS ANGELES, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 5, PAGE 131, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT FROM SAID LOT 12, THE WESTERLY 40.00 FEET THEREOF.

PARCEL 9:
LOT 11 IN BLOCK 8 OF LA PALOMA TRACT, IN THE CITY OF LOS ANGELES, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 5, PAGE 80 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL 10:
LOT 12 IN BLOCK 8 OF LA PALOMA TRACT, IN THE CITY OF LOS ANGELES, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 5, PAGE 80 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL 11:
LOTS 13 AND 14 IN BLOCK 8 OF LA PALOMA TRACT, IN THE CITY OF LOS ANGELES, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 5, PAGE 80 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL 12:
LOTS 1, 2 AND 3 OF TRACT NO. 9834, IN THE CITY OF LOS ANGELES, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 169, PAGES 7 AND 8 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

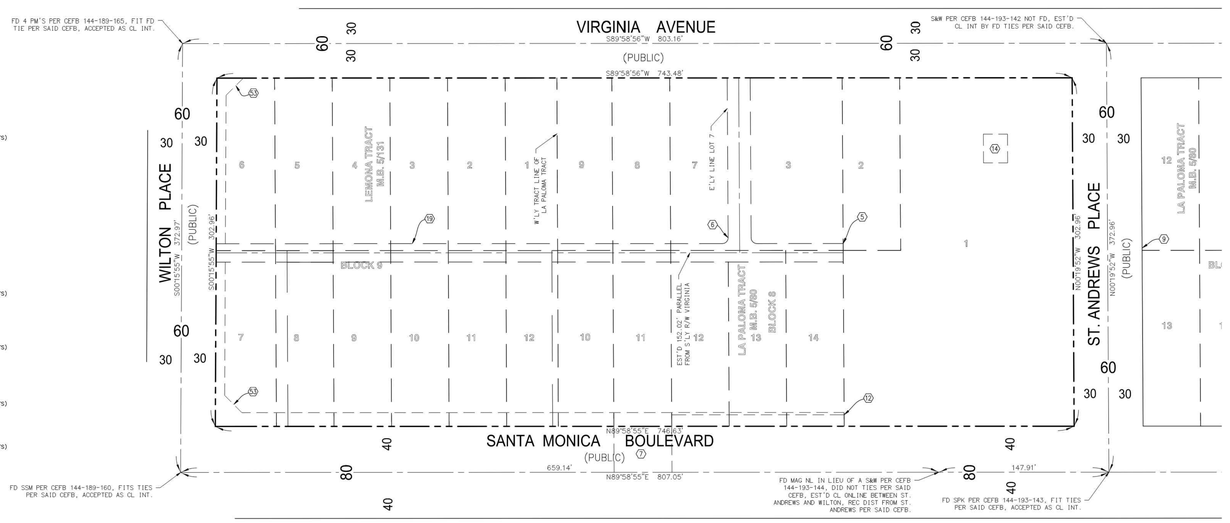
PARCEL 13:
LOTS 7, 8 AND 9 IN BLOCK 8 OF LA PALOMA TRACT, IN THE CITY OF LOS ANGELES, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 5, PAGE 80 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL 14:
LOTS 11 AND 12 IN BLOCK 9 OF LA PALOMA TRACT, IN THE CITY OF LOS ANGELES, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 5, PAGE 80 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL 15:
THE SOUTHERLY 95 FEET OF LOTS 13 AND 14 IN BLOCK 7 OF LA PALOMA TRACT, IN THE CITY OF LOS ANGELES, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 5, PAGE 80 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

DIP INFORMATION

- INV EL.. 12"Ø = 323.03' — INV EL.. 12"Ø = 322.85' — INV EL.. 12"Ø = 322.82' — INV EL.. 12"Ø = 322.68' — SEWER MANHOLE (NTS) RIM ELEV = 331.50'
- INV EL.. 12"Ø = 313.56' — INV EL.. 12"Ø = 313.71' — SEWER MANHOLE (NTS) RIM ELEV = 327.20'
- INV EL.. 12"Ø = 314.62' — INV EL.. 12"Ø = 314.70' — SEWER MANHOLE (NTS) RIM ELEV = 326.38'
- NO SERVICE — INV EL.. 12" = 320.78' — SEWER MANHOLE (NTS) RIM ELEV = 327.32'
- INV EL.. 18"Ø = 319.03' — INV EL.. 18"Ø = 318.80' — INV EL.. 18"Ø = 318.89' — INV EL.. 18"Ø = 318.66' — SEWER MANHOLE (NTS) RIM ELEV = 328.60'
- INV EL.= 321.20' — STORM DRAIN MANHOLE – CATCH BASIN (NTS) RIM ELEV = 325.20'
- INACCESSIBLE — STORM DRAIN MANHOLE – CATCH BASIN (NTS) RIM ELEV = 324.95'
- 18" Ø — INV EL.. = 317.20' — STORM DRAIN MANHOLE – CATCH BASIN (NTS) RIM ELEV = 324.84'
- INV EL.. 12"Ø = 320.68' — INV EL.. 12"Ø = 320.72' — SEWER MANHOLE (NTS) RIM ELEV = 330.05'
- INV EL.. 12"Ø = 321.96' — INV EL.. 12" = 322.03' — SEWER MANHOLE (NTS) RIM ELEV = 331.29'
- INACCESSIBLE — STORM DRAIN MANHOLE – CATCH BASIN (NTS) RIM ELEV = 324.95'
- INACCESSIBLE — STORM DRAIN MANHOLE – CATCH BASIN (NTS) RIM ELEV = 327.09'
- INACCESSIBLE — STORM DRAIN MANHOLE – CATCH BASIN (NTS) RIM ELEV = 327.53'
- INV EL.. 12"Ø = 322.60' — INV EL.. 12"Ø = 322.68' — STORM DRAIN MANHOLE – CATCH BASIN (NTS) RIM ELEV = 327.66'



NO.	DATE	REVISIONS
6		
5		
4		
3		
2		
1		

PROJECT #	2100300
DATE PREPARED	8/4/2021
DRAWN BY	DG
CHECKED BY	XS

ECHELON STUDIOS
PREPARED FOR:
MR. DAVID SIMON
BARDAS INVESTMENT GROUP
1015 NORTH FAIRFAX AVENUE
WEST HOLLYWOOD, CA 90046

kpff
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Los Angeles, CA 90017
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www.kpff.com

SHEET 1 OF 7

NOT TO SCALE

FOR REFERENCE ONLY

P:\2021\21012028p\Confidential\5 CAD\Sheets\21002299-C1.10VIM.dwg, Oct 26, 2022 - 11:32am

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STAMP

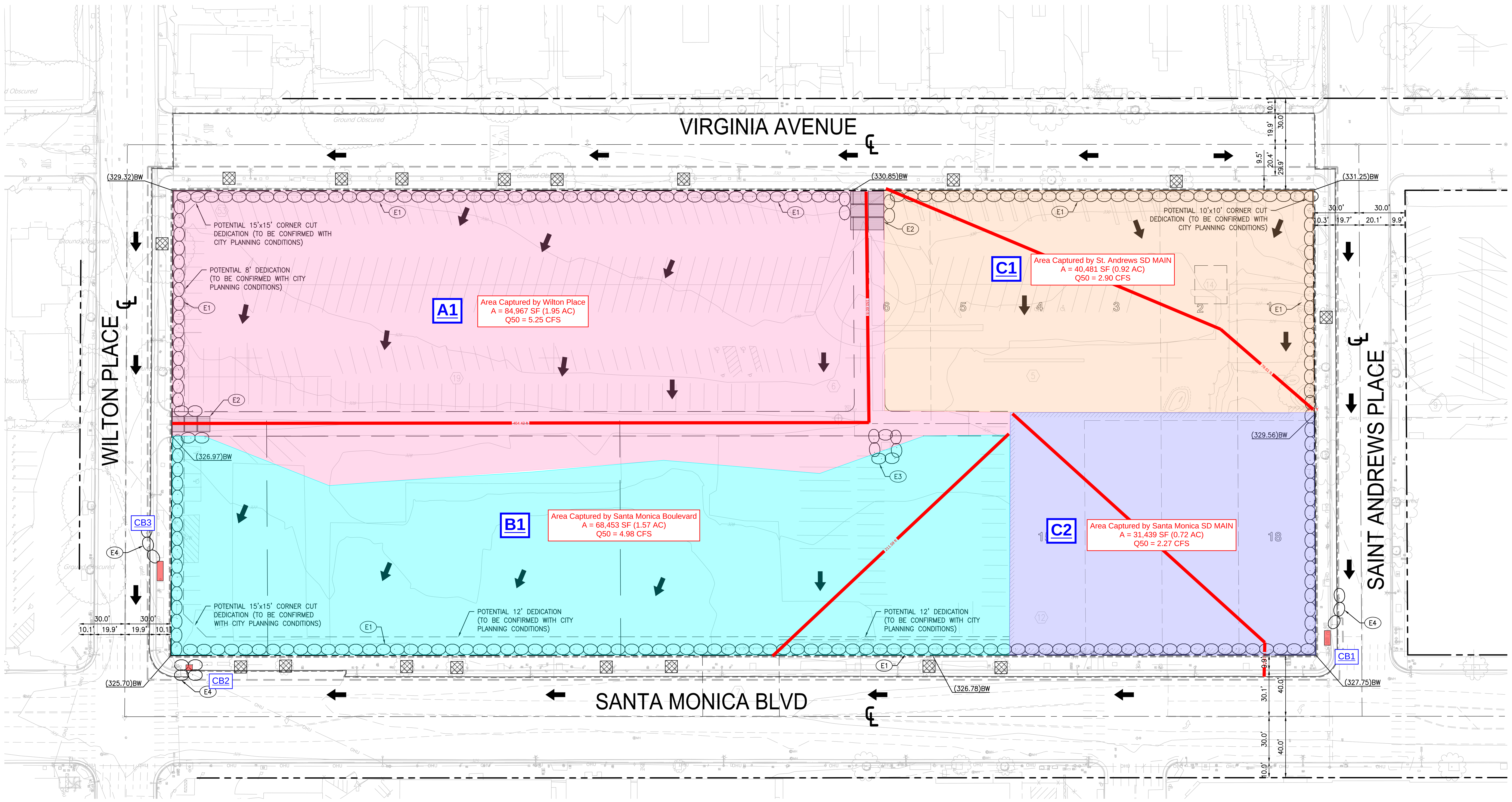
PROJECT
ECHELON STUDIOS
5603, 5663, 5693 W SANTA MONICA BLVD
LOS ANGELES, CA 90038

HRA PROJECT NO.
2112

MARK	DATE	ISSUE
	13 AUG 2021	50% DESIGN DEVELOPMENT
	08 OCT 2021	100% DESIGN DEVELOPMENT
	11 FEB 2022	50% CONSTRUCTION DOCUMENTS
	15 APR 2022	75% CONSTRUCTION DOCUMENTS
	13 AUG 2022	CD PROGRESS SET
	16 SEP 2022	GMP SET
A	02 DEC 2022	ADDENDUM A

SHEET TITLE
SURVEY - TITLE SHEET (FOR REFERENCE ONLY)
SHEET NUMBER
C100

FIGURE 2 - EXISITNG SITE DRAINAGE



A1	TRIBUTARY AREA OF EXISTING DEVELOPMENTS DRAINING TO WILTON PLACE SD MAIN
B1	TRIBUTARY AREA OF EXISTING DEVELOPMENTS DRAINING TO SANTA MONICA CATCH BASIN
C1	TRIBUTARY AREA OF EXISTING DEVELOPMENTS DRAINING TO SAINT ANDREWS SD MAIN
C2	TRIBUTARY AREA OF EXISTING DEVELOPMENTS DRAINING TO SANTA MONICA SD MAIN
CB1	CATCH BASIN @ ST. ANDREWS PLACE
CB2	CATCH BASIN @ SANTA MONICA BLVD
CB3	CATCH BASIN @ N WILTON PLACE

LEGEND

AREA A1	100% IMP
AREA B1	100% IMP
AREA C1	100% IMP
AREA C2	100% IMP
FLOW PATH	

BMP NOTES:

THE FOLLOWING BMPS AS OUTLINED IN, BUT NOT LIMITED TO, THE BEST MANAGEMENT PRACTICE HANDBOOK, CALIFORNIA STORMWATER QUALITY TASK FORCE, SACRAMENTO, CALIFORNIA, JULY 2012, MAY APPLY DURING THE CONSTRUCTION OF THIS PROJECT (ADDITIONAL MEASURES MAY BE REQUIRED IF DEEMED APPROPRIATE BY CITY INSPECTORS):

EROSION CONTROL

EC1–SCHEDULING
EC2–PRESERVATION OF EXISTING VEGETATION
~~EC3–HYDRAULIC MULCH~~
~~EC4–HYDROSEEDING~~
~~EC5–SOIL BINDERS~~
~~EC6–STRAW MULCH~~
~~EC7–GEOTEXTILES AND MATS~~
~~EC8–WOOD MULCHING~~
~~EC9–EARTH DIKES AND DRAINAGE SWALES~~
~~EC10–VELOCITY DISSIPATION DEVICES~~
~~EC11–SLOPE DRAINS~~
~~EC12–STREAMBANK STABILIZATION~~
~~EC13–RESERVED~~
~~EC14–COMPOST BLANKET~~
~~EC15–SOIL PREPARATION/ROUGHENING~~
EC16–NON–VEGETATIVE STABILIZATION

TEMPORARY SEDIMENT CONTROL

SE1–SILT FENCE
~~SE2–SEDIMENT BASIN~~
~~SE3–SEDIMENT TRAP~~
~~SE4–CHECK DAM~~
SE5–FIBER ROLLS
SE6–GRAVEL BAG BERM
SE7–STREET SWEEPING AND VACUUMING
SE8–SANDBAG BARRIER
~~SE9–STRAW BALE BARRIER~~
SE10–STORM DRAIN INLET PROTECTION
~~SE11–ACTIVE TREATMENT SYSTEMS~~
~~SE12–MANUFACTURED LINEAR SEDIMENT CONTROLS~~
~~SE13–COMPOST SOCKS AND BERMS~~
~~SE14–BIOFILTER BAGS~~

EQUIPMENT TRACKING CONTROL

TC1–STABILIZED CONSTRUCTION ENTRANCE/EXIT
TC2–STABILIZED CONSTRUCTION ROADWAY
TC3–ENTRANCE/OUTLET TIRE WASH

WIND EROSION CONTROL

WE1–WIND EROSION CONTROL

NON–STORMWATER MANAGEMENT

NS1–WATER CONSERVATION PRACTICES
NS2–DEWATERING OPERATIONS
NS3–PAVING AND GRINDING OPERATIONS
~~NS4–TEMPORARY STREAM CROSSING~~
~~NS5–CLEAR WATER DIVERSION~~
NS6–ILLICIT CONNECTION/DISCHARGE
NS7–POTABLE WATER/IRRIGATION
NS8–VEHICLE AND EQUIPMENT CLEANING
NS9–VEHICLE AND EQUIPMENT FUELING
NS10–VEHICLE AND EQUIPMENT MAINTENANCE
NS11–PILE DRIVING OPERATIONS
NS12–CONCRETE CURING
NS13–CONCRETE FINISHING
~~NS14–MATERIAL OVER WATER~~
~~NS15–DEMOLITION ADJACENT TO WATER~~
~~NS16–TEMPORARY BATCH PLANTS~~

WASTE MANAGEMENT & MATERIALS POLLUTION CONTROL

WM1–MATERIAL DELIVERY AND STORAGE
WM2–MATERIAL USE
WM3–STOCKPILE MANAGEMENT
WM4–SPILL PREVENTION AND CONTROL
WM5–SOLID WASTE MANAGEMENT
WM6–HAZARDOUS WASTE MANAGEMENT
WM7–CONTAMINATED SOIL MANAGEMENT
WM8–CONCRETE WASTE MANAGEMENT
WM9–SANITARY/SEPTIC WASTE MANAGEMENT
WM10–LIQUID WASTE MANAGEMENT

EROSION CONTROL NOTES:

1. TEMPORARY EROSION CONTROL DEVICES SHOWN ON THE GRADING PLAN WHICH INTERFERE WITH THE WORK SHALL BE RELOCATED OR MODIFIED AS AND WHEN THE INSPECTOR SO DIRECTS AS THE WORK PROGRESSES TO MEET "AS GRADED" CONDITIONS.
2. ALL LOOSE SOIL AND DEBRIS SHALL BE REMOVED FROM THE STREET AREAS UPON STARTING OPERATIONS AND PERIODICALLY THEREAFTER AS DIRECTED BY THE INSPECTOR
3. WHEN THE INSPECTOR SO DIRECTS, A 12–INCH BERM SHALL BE MAINTAINED ALONG THE TOP OF THE SLOPE OF THOSE FILLS ON WHICH GRADING IS NOT IN PROGRESS.
4. STORM AND SEWER DRAIN TRENCHES THAT ARE CUT THROUGH BASIN DIKES OR BASIN INLET DIKES SHALL BE PLUGGED WITH SANDBAGS.
5. EXCEPT WHEN THE INSPECTOR DIRECTS OTHERWISE, ALL DEVICES SHOWN SHALL BE IN PLACE AT THE END OF EACH WORKING DAY WHEN RAIN IS FORECAST, AND SHALL BE MAINTAINED DURING THE RAINY SEASON (OCTOBER 15 TO APRIL 15).
6. SANDBAGS SHALL BE STOCKPILED ON SITE, READY TO BE PLACED IN POSITION WHEN RAIN IS FORECAST, OR WHEN THE INSPECTOR SO DIRECTS.
7. A "STANDBY EMERGENCY CREW" SHALL BE ALERTED BY THE PERMITTEE OR THE CONTRACTOR TO PERFORM EMERGENCY WORK DURING RAINSTORMS. THE PARTY TO BE CONTACTED IS:
   NAME: ________________________ (TO BE FILLED IN BY CONTRACTOR)
   PHONE NUMBER: ____________________

DUST CONTROL NOTES:

1. DUST SHALL BE CONTROLLED BY WATERING AND/OR APPLYING A DUST PALLIATIVE. THE DUST PALLIATIVE SHALL BE APPLIED IN THE AMOUNT AT THE LOCATIONS AS DIRECTED BY THE ENGINEER.
2. WATER FOR DUST CONTROL SHALL BE APPLIED BY MEANS OF PRESSURE TYPE DISTRIBUTORS OR PIPE LINES EQUIPPED WITH A SPRAY SYSTEM OR HOSES WITH NOZZLES THAT WILL ENSURE A UNIFORM APPLICATION OF WATER.
3. UNLESS WATER IS APPLIED BY MEANS OF PIPE LINES, AT LEAST ONE MOBILE UNIT WITH A MINIMUM CAPACITY OF 100 GALLONS SHALL BE AVAILABLE FOR APPLYING WATER.
4. ALL SOIL MATERIALS OR DEBRIS TRUCKED FROM THE SITE SHALL BE COVERED AND SPRINKLED PRIOR TO ENTERING PUBLIC STREETS.
5. PROVIDE FOR WET SUPPRESSION OR CHEMICAL STABILIZING OF EXPOSED SOILS.
6. PROVIDE FOR RAPID CLEAN–UP OF SEDIMENTS DEPOSITED ON THE PAVED ROADS.
7. LIMIT THE AMOUNT OF AREAS DISTURBED BY CLEARING & EARTH MOVING OPERATIONS BY SCHEDULING THESE ACTIVITIES IN PHASES.

EROSION CONTROL NOTES:

(E1) PLACE GRAVEL BAGS TRIPLE ROW PER DETAIL 3, SHEET C500.
(E2) STABILIZED CONSTRUCTION ENTRANCE PER DETAIL 2, SHEET C500.
(E3) PROVIDE INLET PROTECTION PER DETAIL 1, SHEET C500.
(E4) PROVIDE STORM DRAIN INLET PROTECTION IN RIGHT–OF–WAY PER DETAIL 11, SHEET C500.

LEGEND

LIMIT OF WORK
LIMIT OF OFF–SITE WORK (UNDER SEPARATE PERMIT)
PROPERTY LINE
POTENTIAL DEDICATION
GRAVEL BAGS
DIRECTION OF FLOW
PROTECT TREE IN PLACE (REFER TO LANDSCAPE PLANS FOR ADDITIONAL DETAILS)

N
0 15' 30'
SCALE: 1"=30'

OWNER
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STAMP

PROJECT
ECHELON STUDIOS
5603, 5663, 5693 W SANTA MONICA BLVD
LOS ANGELES, CA 90038

HRA PROJECT NO.
2112

MARK	DATE	ISSUE
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	11 FEB 2022	50% CONSTRUCTION DOCUMENTS
	15 APR 2022	75% CONSTRUCTION DOCUMENTS
	03 AUG 2022	CD PROGRESS SET
	02 SEP 2022	GMP

SHEET TITLE
EROSION CONTROL PLAN

SHEET NUMBER
C110

FIGURE 2A - FLOW MASTER CALCULATIONS FOR WILTON PLACE - 15 INCH SD MAIN

Worksheet for Wilton Place 15 SD Main

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00850	ft/ft
Normal Depth	1.25	ft
Diameter	15.00	in
Discharge	5.96	ft³/s

Results

Discharge	5.96	ft³/s
Normal Depth	1.25	ft
Flow Area	1.23	ft²
Wetted Perimeter	3.93	ft
Hydraulic Radius	0.31	ft
Top Width	0.00	ft
Critical Depth	0.99	ft
Percent Full	100.0	%
Critical Slope	0.00913	ft/ft
Velocity	4.85	ft/s
Velocity Head	0.37	ft
Specific Energy	1.62	ft
Froude Number	0.00	
Maximum Discharge	6.41	ft³/s
Discharge Full	5.96	ft³/s
Slope Full	0.00850	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%

FIGURE 2A - FLOW MASTER CALCULATIONS FOR WILTON PLACE - 15 INCH SD MAIN

Worksheet for Wilton Place 15 SD Main

GVF Output Data

Normal Depth Over Rise	100.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.25	ft
Critical Depth	0.99	ft
Channel Slope	0.00850	ft/ft
Critical Slope	0.00913	ft/ft

FIGURE 2B - FLOW MASTER CALCULATIONS FOR SANTA MONICA BOULEVARD - 30 INCH SD MAIN

Worksheet for Santa Monica 30 SD Main

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00600	ft/ft
Normal Depth	2.50	ft
Diameter	30.00	in
Discharge	31.77	ft³/s

Results

Discharge	31.77	ft³/s
Normal Depth	2.50	ft
Flow Area	4.91	ft²
Wetted Perimeter	7.85	ft
Hydraulic Radius	0.63	ft
Top Width	0.00	ft
Critical Depth	1.92	ft
Percent Full	100.0	%
Critical Slope	0.00684	ft/ft
Velocity	6.47	ft/s
Velocity Head	0.65	ft
Specific Energy	3.15	ft
Froude Number	0.00	
Maximum Discharge	34.18	ft³/s
Discharge Full	31.77	ft³/s
Slope Full	0.00600	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%

FIGURE 2B - FLOW MASTER CALCULATIONS FOR SANTA MONICA BOULEVARD - 30 INCH SD MAIN

Worksheet for Santa Monica 30 SD Main

GVF Output Data

Normal Depth Over Rise	100.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.50	ft
Critical Depth	1.92	ft
Channel Slope	0.00600	ft/ft
Critical Slope	0.00684	ft/ft

FIGURE 2C - FLOW MASTER CALCULATIONS FOR SAINT ANDREWS PLACE - 24 INCH SD MAIN

Worksheet for Saint Andrew 24 SD Main

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00210	ft/ft
Normal Depth	2.00	ft
Diameter	24.00	in
Discharge	10.37	ft³/s

Results

Discharge	10.37	ft³/s
Normal Depth	2.00	ft
Flow Area	3.14	ft²
Wetted Perimeter	6.28	ft
Hydraulic Radius	0.50	ft
Top Width	0.00	ft
Critical Depth	1.15	ft
Percent Full	100.0	%
Critical Slope	0.00527	ft/ft
Velocity	3.30	ft/s
Velocity Head	0.17	ft
Specific Energy	2.17	ft
Froude Number	0.00	
Maximum Discharge	11.15	ft³/s
Discharge Full	10.37	ft³/s
Slope Full	0.00210	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%

FIGURE 2C - FLOW MASTER CALCULATIONS FOR SAINT ANDREWS PLACE - 24 INCH SD MAIN

Worksheet for Saint Andrew 24 SD Main

GVF Output Data

Normal Depth Over Rise	100.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.00	ft
Critical Depth	1.15	ft
Channel Slope	0.00210	ft/ft
Critical Slope	0.00527	ft/ft

FIGURE 2D - FLOW MASTER CALCULATIONS FOR SAINT ANDREWS PLACE - 30 INCH SD MAIN

Worksheet for Saint Andrew SD Main

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00600	ft/ft
Normal Depth	2.50	ft
Diameter	30.00	in
Discharge	31.77	ft³/s

Results

Discharge	31.77	ft³/s
Normal Depth	2.50	ft
Flow Area	4.91	ft²
Wetted Perimeter	7.85	ft
Hydraulic Radius	0.63	ft
Top Width	0.00	ft
Critical Depth	1.92	ft
Percent Full	100.0	%
Critical Slope	0.00684	ft/ft
Velocity	6.47	ft/s
Velocity Head	0.65	ft
Specific Energy	3.15	ft
Froude Number	0.00	
Maximum Discharge	34.18	ft³/s
Discharge Full	31.77	ft³/s
Slope Full	0.00600	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%

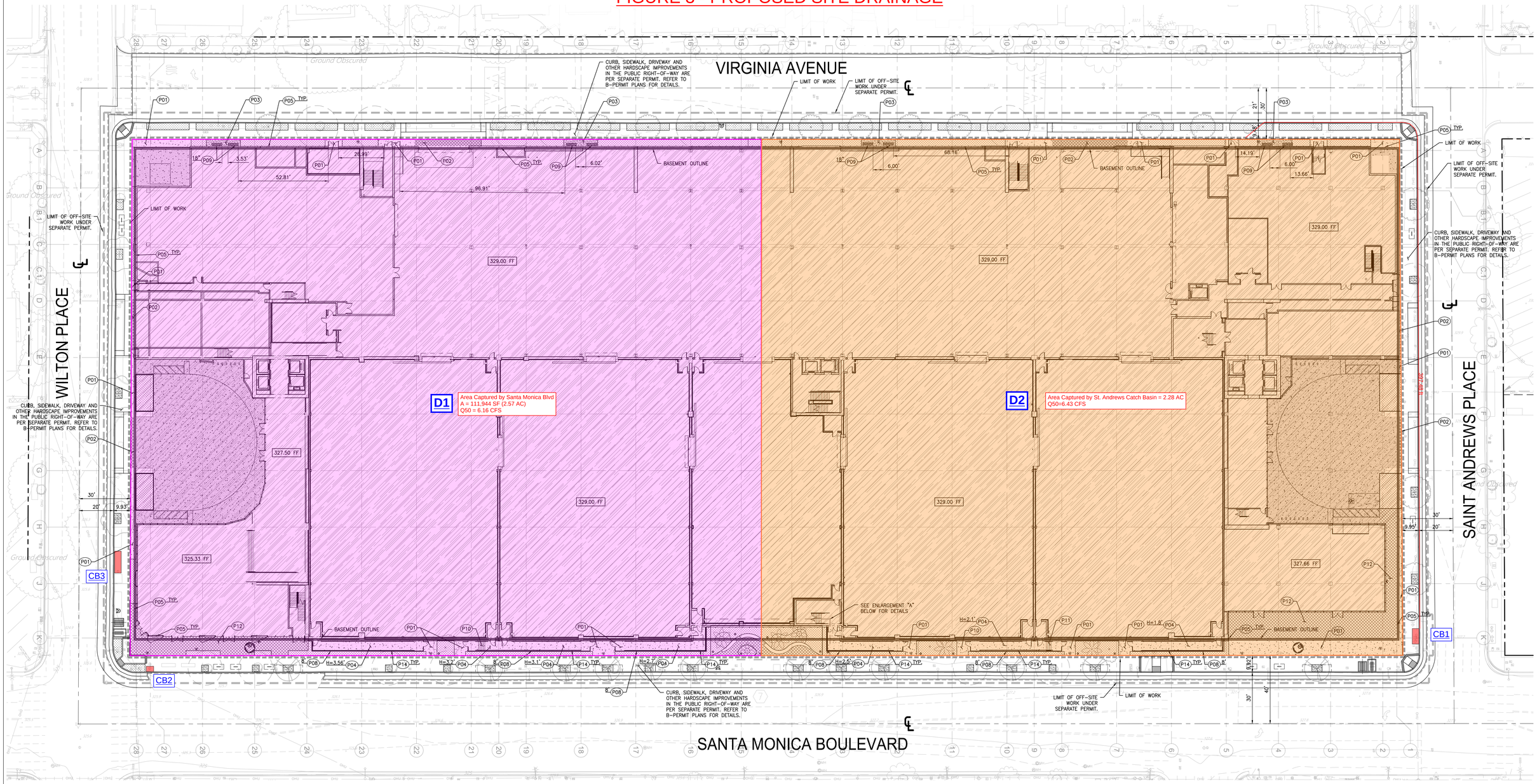
FIGURE 2D - FLOW MASTER CALCULATIONS FOR SAINT ANDREWS PLACE - 30 INCH SD MAIN

Worksheet for Saint Andrew SD Main

GVF Output Data

Normal Depth Over Rise	100.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.50	ft
Critical Depth	1.92	ft
Channel Slope	0.00600	ft/ft
Critical Slope	0.00684	ft/ft

FIGURE 3 - PROPOSED SITE DRAINAGE



D1 TRIBUTARY AREA OF PROPOSED DEVELOPMENT OVERFLOW DRAINING TO WILTON PLACE SD MAIN

D2 TRIBUTARY AREA OF PROPOSED DEVELOPMENT OVERFLOW DRAINING TO ST. ANDREWS SD MAIN

CB1 CATCH BASIN @ ST. ANDREWS PLACE

CB2 CATCH BASIN @ SANTA MONICA BLVD

CB3 CATCH BASIN @ N WILTON PLACE

LEGEND

AREA D1 — 100% IMP

AREA D2 — 100% IMP

LEGEND

- LIMIT OF WORK
- PROPERTY LINE
- LIMIT OF BASEMENT OUTLINE
- CONCRETE PAVING / CONCRETE WALK (REFER TO SHEET C500, C502 AND CITY OF LOS ANGELES STANDARD PLAN S-444-0 FOR DETAILS)
- ON-STRUCTURE PAVEMENT (REFER TO ARCHITECTURAL PLANS FOR DETAILS)
- PLANTER AREA/LANDSCAPE (REFER TO LANDSCAPING PLANS FOR DETAILS)
- PROPOSED BUILDING (REFER TO ARCHITECTURAL PLANS FOR DETAILS)
- PEDESTRIAN RATED CONCRETE PAVERS (REFER TO LANDSCAPE PLANS FOR DETAILS)
- VEHICULAR RATED CONCRETE PAVEMENT (REFER TO SHEET C502 FOR DETAILS)
- DECOMPOSED GRANITE (REFER TO SHEET C500 FOR DETAILS)

PAVING CONSTRUCTION NOTES

- P01 PEDESTRIAN RATED CONCRETE PAVEMENT PER DETAIL 4, SHEET C500.
- P02 VEHICULAR RATED CONCRETE PAVEMENT PER PER DETAIL 3, SHEET C502.
- P03 DECOMPOSED GRANITE PER DETAIL 9, SHEET C500.
- P04 CONCRETE RAMP AND FOOTING PER DETAIL 6, SHEET C502.
- P05 ISOLATION JOINT PER DETAIL 8, SHEET C500.
- P06 CONCRETE BENCH PER ARCHITECTURAL PLANS. REFER TO ARCHITECTURAL PLANS FOR ON-STRUCTURE CONDITION. REFER TO DETAIL 4, SHEET C502 FOR ON-GRADE CONDITION.
- P07 PLANTER BOX PER LANDSCAPE PLANS. SHOWN FOR COORDINATE PURPOSES ONLY.
- P08 CHAINLINK FENCE PER LANDSCAPE PLANS. SHOWN FOR COORDINATION PURPOSES ONLY.
- P09 WOOD BENCH PER ARCHITECTURAL PLANS. SHOWN FOR COORDINATION PURPOSES ONLY.
- P10 STAIRS ON GRADE PER DETAIL 5, SHEET C500.
- P11 PEDESTRIAN RATED CONCRETE UNIT PAVERS. PER DETAIL 1, SHEET C502.
- P12 ISOLATION JOINT PER ARCHITECTURAL PLANS.
- P13 6" METAL HEADER PER ARCHITECTURAL PLANS.
- P14 HANDRAIL CONNECTION PER DETAIL, 5 SHEET C502.

NOTE TO CONTRACTOR/CONSTRUCTION SURVEYOR:

CONSTRUCTION STAKING FOR IMPROVEMENTS SHOWN ON THESE PLANS SHALL BE PERFORMED BY A LICENSED LAND SURVEYOR. CONSTRUCTION STAKING SURVEYOR SHALL BE RESPONSIBLE FOR COORDINATION OF THESE PLANS WITH SOURCE DRAWINGS PREPARED BY ARCHITECT, LANDSCAPE ARCHITECT, STRUCTURAL ENGINEER, MEP CONSULTANT AND ANY OTHER DISCIPLINE PRIOR TO START OF STAKING AND CONSTRUCTION. ANY DISCREPANCIES THAT OCCUR SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO THE START OF CONSTRUCTION SO THAT A CLARIFICATION CAN BE ISSUED.

N

0 10' 20'

SCALE: 1"=20'

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OWNER BARDAS INVESTMENT GROUP 1875 CENTURY PARK EAST, SUITE 260 LOS ANGELES, CA 90067 PROJECT MANAGEMENT SEAROCK + STAFFORD CM 690 E. GREEN STREET, SUITE 201 PASADENA, CA 91101 PH: 626.773.8122 SEAROCKSTAFFORDCM.COM	EXECUTIVE ARCHITECT HRA House & Robertson ARCHITECTS HOUSE & ROBERTSON ARCHITECTS, INC. 10125 WASHINGTON BOULEVARD CULVER CITY, CALIFORNIA 90232 T. 323.935.1158 MAIL@HRARCH.COM	DESIGN / LANDSCAPE ARCHITECT RIOS RIOS 3101 W EXPOSITION PLACE LOS ANGELES, CA 90018 PH: 323.785.1800 RIOS.COM	STRUCTURAL ENGINEER SAIFUL BOUQUET STRUCTURAL ENGINEERS 155 N. LAKE AVE, 6TH FLOOR PASADENA, CA 91101 PH: 626.304.2616 SAIFULBOUQUET.COM	MEP/LV ENGINEER AMA CONSULTING ENGINEERS, PC TMTECHNOLOGY PARTNERS, LLC 2155 CAMPUS DRIVE, SUITE 220 EL SEGUNDO, CA 90245 PH: 310.846.4659 AMAPC.COM LIGHTING DESIGNER FRANCIS KRAHE & ASSOCIATES INC. 304 SOUTH BROADWAY, SUITE 300 LOS ANGELES, CA 90013 PH: 213.617.0478 FKAILD.COM	CIVIL ENGINEER KPFF CONSULTING ENGINEERS 700 SOUTH FLOWER STREET, SUITE 2100 LOS ANGELES, CA 90017 PH: 213.418.0201 KPFF.COM FACADE ACCESS OLYMPIQUE 26429 RANCHO PARKWAY SOUTH #145 LAKE FOREST, CA 92630 PH: 949.309.2820 FACADEACCESS.COM	STAMP REGISTERED PROFESSIONAL ENGINEER STEVEN M. SAIFUL No. C80536 Exp. 3/31/23 CIVIL STATE OF CALIFORNIA	PROJECT ECHELON STUDIOS 5603, 5663, 5693 W SANTA MONICA BLVD LOS ANGELES, CA 90038 HRA PROJECT NO. 2112	MARK / DATE / ISSUE 13 AUG 2021 50% DESIGN DEVELOPMENT 08 OCT 2021 100% DESIGN DEVELOPMENT 11 FEB 2022 50% CONSTRUCTION DOCUMENTS 15 APR 2022 75% CONSTRUCTION DOCUMENTS 03 AUG 2022 CD PROGRESS SET 02 SEP 2022 GMP	SHEET TITLE PAVING PLAN SHEET NUMBER C160

FIGURE 3A - HYDRO-CALC HYDROLOGY RESULTS FOR EXISTING SITE AREA A1

Peak Flow Hydrologic Analysis

File location: P:/2021/2100299 Confidential/2 ENGR/EIR/Water Resources/Appendices/calcs/Figure 3 through 5 - Hydro-Calc Hydrology Results for Exist
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Echelon
Subarea ID	A1
Area (ac)	1.95
Flow Path Length (ft)	605.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	5.88
Percent Impervious	1.0
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.88
Peak Intensity (in/hr)	2.995
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	5.2563
Burned Peak Flow Rate (cfs)	5.2563
24-Hr Clear Runoff Volume (ac-ft)	0.8528
24-Hr Clear Runoff Volume (cu-ft)	37149.8629

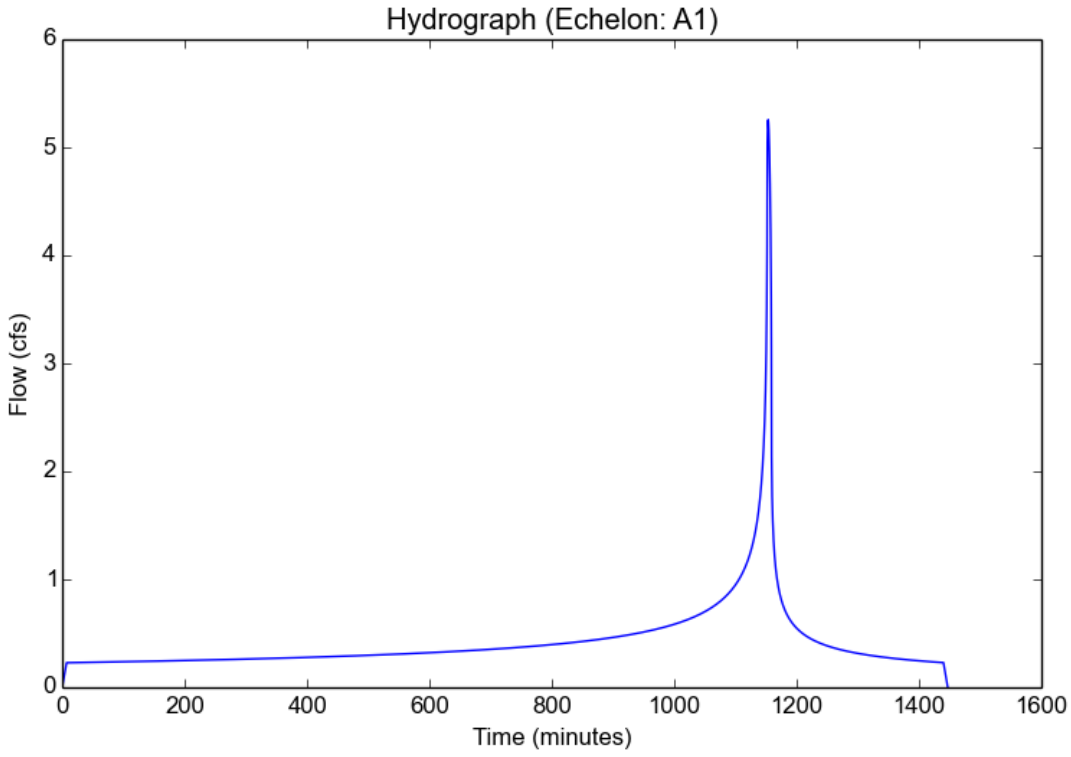


FIGURE 3B - HYDRO-CALC HYDROLOGY RESULTS FOR EXISTING SITE AREA B1

Peak Flow Hydrologic Analysis

File location: P:/2021/2100299 Confidential/2 ENGR/EIR/Water Resources/Appendices/calcs/Figure 3 through 5 - Hydro-Calc Hydrology Results for Exist
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Echelon
Subarea ID	B1
Area (ac)	1.58
Flow Path Length (ft)	211.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	5.88
Percent Impervious	1.0
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.88
Peak Intensity (in/hr)	3.5082
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	4.9886
Burned Peak Flow Rate (cfs)	4.9886
24-Hr Clear Runoff Volume (ac-ft)	0.691
24-Hr Clear Runoff Volume (cu-ft)	30100.9054

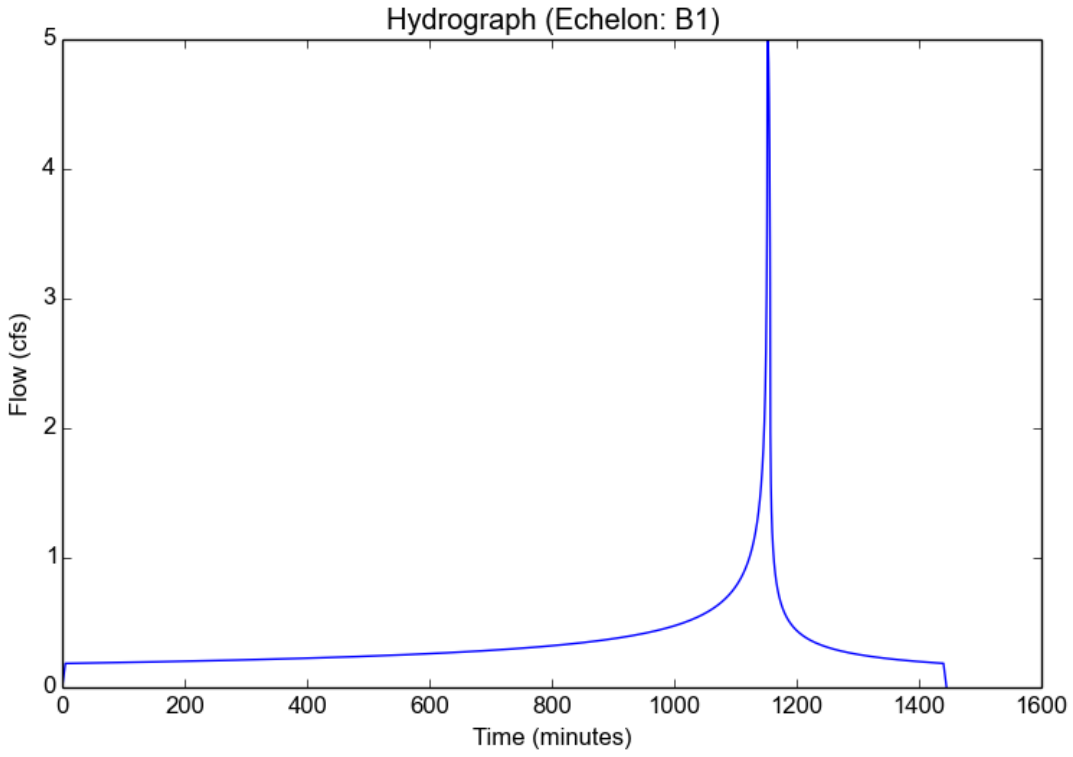


FIGURE 3C - HYDRO-CALC HYDROLOGY RESULTS FOR EXISTING SITE AREA C1

Peak Flow Hydrologic Analysis

File location: P:/2021/2100299 Confidential/2 ENGR/EIR/Water Resources/Appendices/calcs/Figure 3 through 5 - Hydro-Calc Hydrology Results for Exist
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Echelon
Subarea ID	C1
Area (ac)	0.92
Flow Path Length (ft)	316.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	5.88
Percent Impervious	1.0
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.88
Peak Intensity (in/hr)	3.5082
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.9048
Burned Peak Flow Rate (cfs)	2.9048
24-Hr Clear Runoff Volume (ac-ft)	0.4024
24-Hr Clear Runoff Volume (cu-ft)	17527.1095

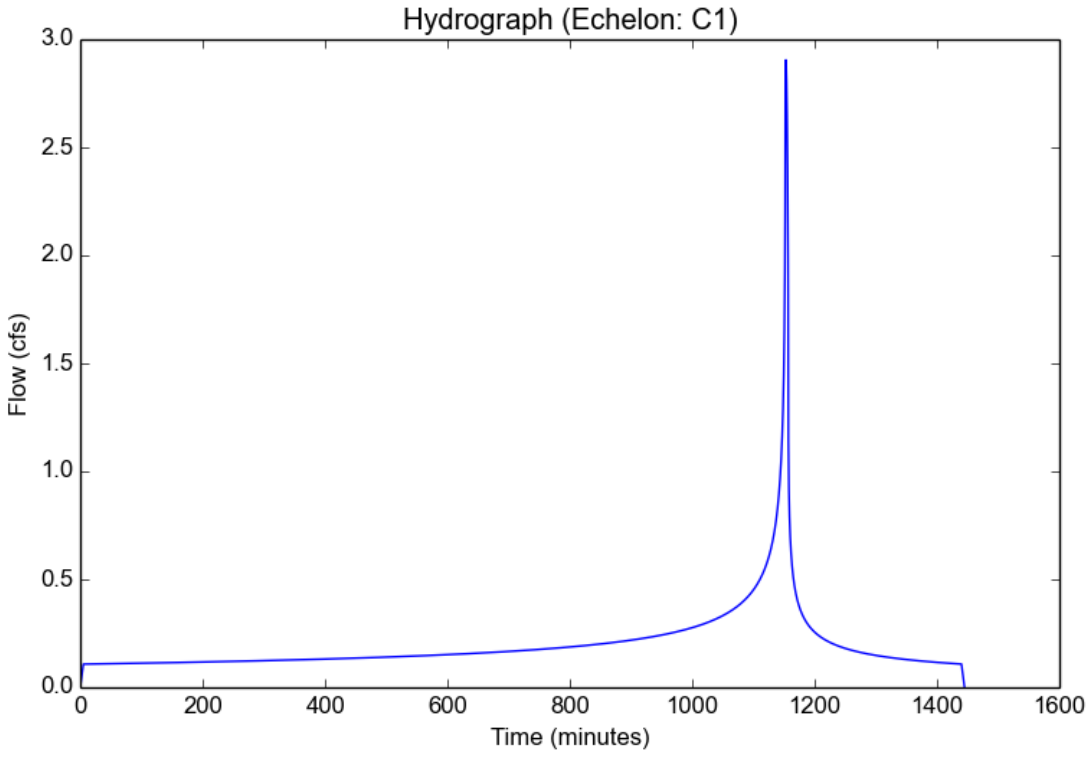


FIGURE 3D - HYDRO-CALC HYDROLOGY RESULTS FOR EXISTING SITE AREA C2

Peak Flow Hydrologic Analysis

File location: P:/2021/2100299 Confidential/2 ENGR/EIR/Water Resources/Appendices/calcs/Figure 3 through 5 - Hydro-Calc Hydrology Results for Exist
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Echelon
Subarea ID	C2
Area (ac)	0.72
Flow Path Length (ft)	251.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	5.88
Percent Impervious	1.0
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.88
Peak Intensity (in/hr)	3.5082
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.2733
Burned Peak Flow Rate (cfs)	2.2733
24-Hr Clear Runoff Volume (ac-ft)	0.3149
24-Hr Clear Runoff Volume (cu-ft)	13716.8683

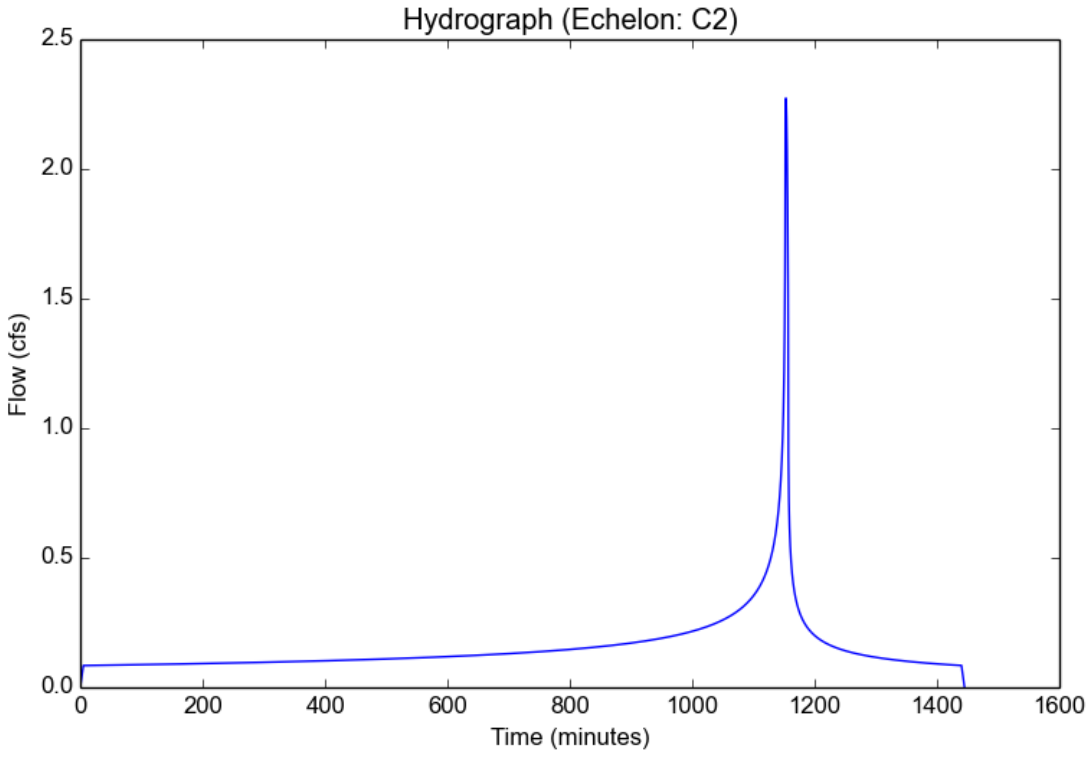


FIGURE 4A - HYDRO-CALC HYDROLOGY RESULTS FOR PROPOSED SITE AREA D1

Peak Flow Hydrologic Analysis

File location: P:/2021/2100299 Confidential/2 ENGR/EIR/Water Resources/Appendices/calcs/Figure 3 through 5 - Hydro-Calc Hydrology Results for Exist
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Echelon
Subarea ID	D1
Area (ac)	2.57
Flow Path Length (ft)	300.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	5.88
Percent Impervious	1.0
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.88
Peak Intensity (in/hr)	3.5082
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	8.1144
Burned Peak Flow Rate (cfs)	8.1144
24-Hr Clear Runoff Volume (ac-ft)	1.124
24-Hr Clear Runoff Volume (cu-ft)	48961.5993

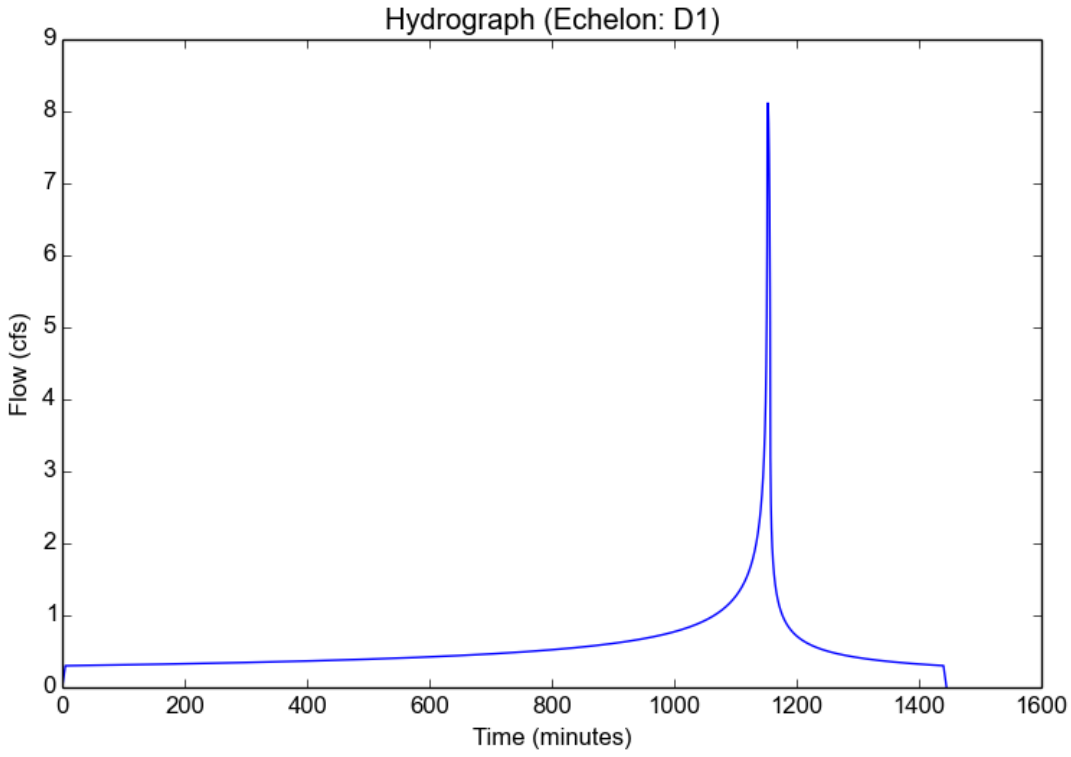


FIGURE 4B - HYDRO-CALC HYDROLOGY RESULTS FOR PROPOSED SITE AREA D2

Peak Flow Hydrologic Analysis

File location: P:/2021/2100299 Confidential/2 ENGR/EIR/Water Resources/Appendices/calcs/Figure 3 through 5 - Hydro-Calc Hydrology Results for Exis
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Echelon
Subarea ID	D2
Area (ac)	2.6
Flow Path Length (ft)	300.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	5.88
Percent Impervious	1.0
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.88
Peak Intensity (in/hr)	3.5082
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	8.2091
Burned Peak Flow Rate (cfs)	8.2091
24-Hr Clear Runoff Volume (ac-ft)	1.1371
24-Hr Clear Runoff Volume (cu-ft)	49533.1355

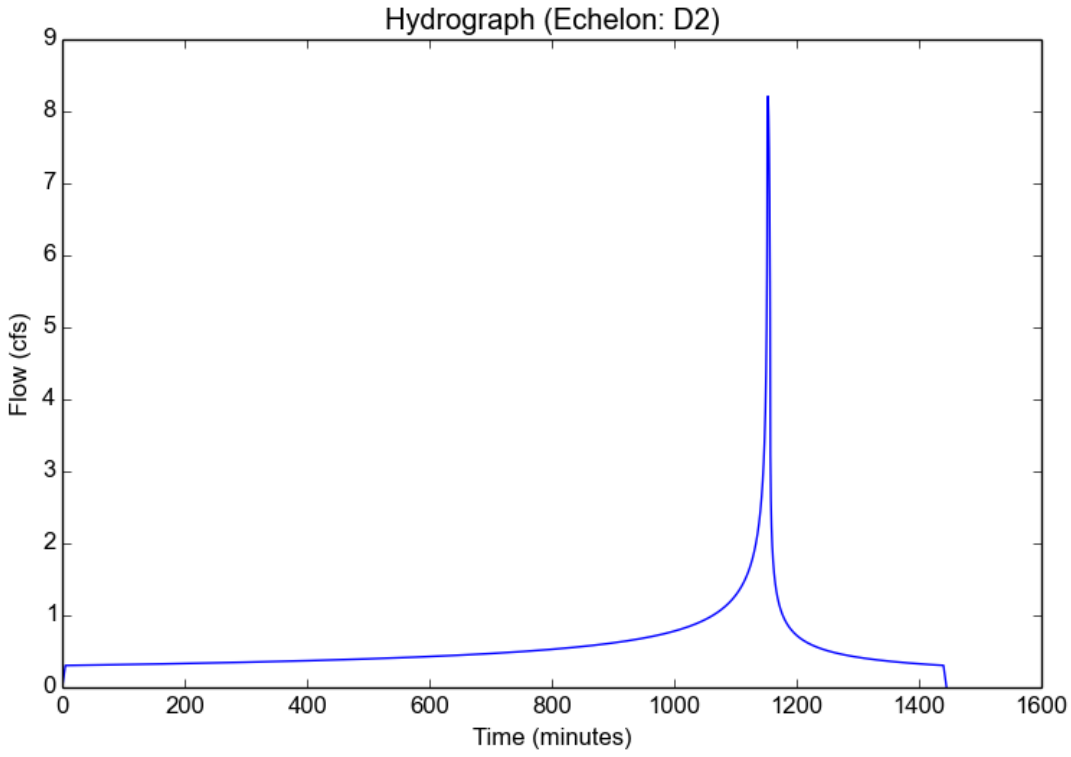


FIGURE 5A - HYDRO-CALC HYDROLOGY ANALYSIS FOR PROPOSED LID DESIGN VOLUME AREA D1

Peak Flow Hydrologic Analysis

File location: P:/2021/2100299 Confidential/2 ENGR/EIR/Water Resources/Appendices/calcs/Figure 3 through 5 - Hydro-Calc Hydrology Results for Exist
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Echelon
Subarea ID	D1
Area (ac)	2.57
Flow Path Length (ft)	300.0
Flow Path Slope (vft/hft)	0.02
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	1.0
Soil Type	13
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.356
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	0.8234
Burned Peak Flow Rate (cfs)	0.8234
24-Hr Clear Runoff Volume (ac-ft)	0.1912
24-Hr Clear Runoff Volume (cu-ft)	8326.8237

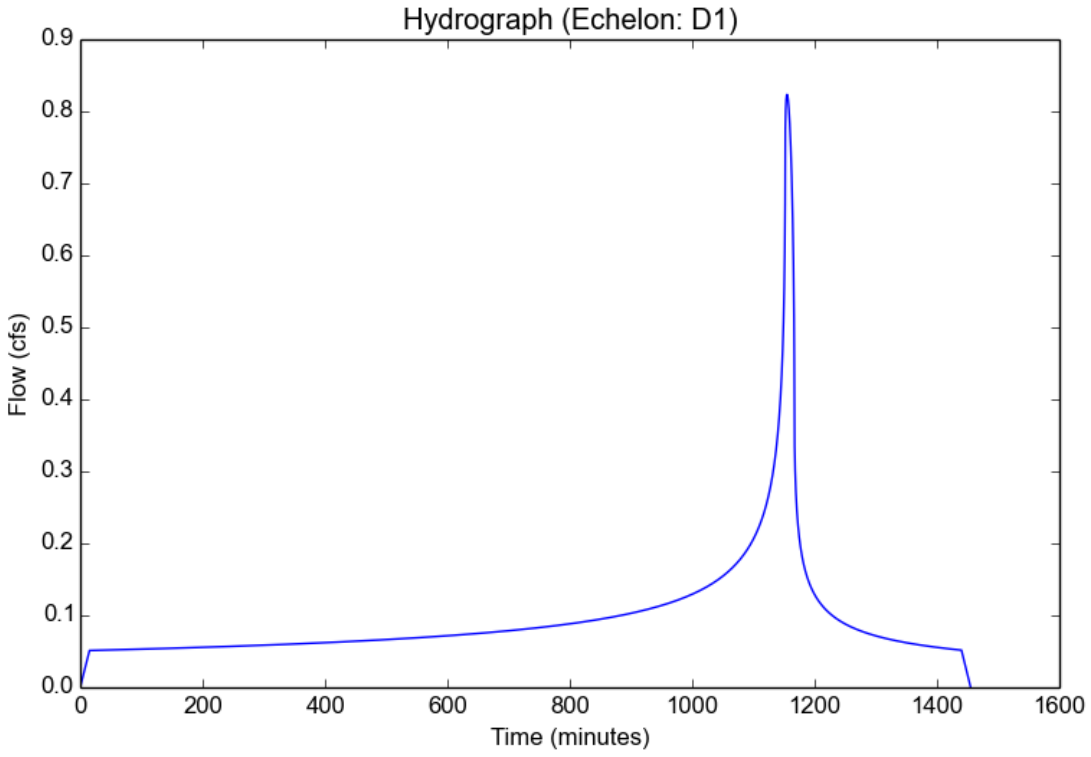


FIGURE 5B - HYDRO-CALC HYDROLOGY ANALYSIS FOR PROPOSED LID DESIGN VOLUME AREA D2

Peak Flow Hydrologic Analysis

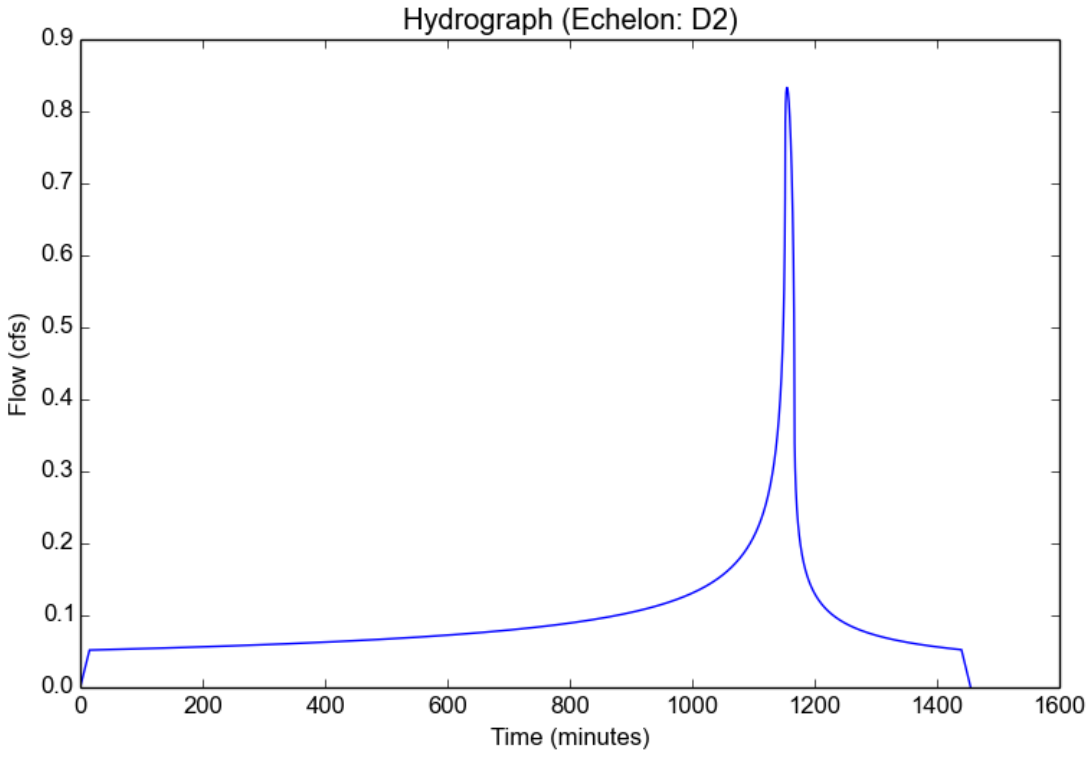
File location: P:/2021/2100299 Confidential/2 ENGR/EIR/Water Resources/Appendices/calcs/Figure 3 through 5 - Hydro-Calc Hydrology Results for Exis
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Echelon
Subarea ID	D2
Area (ac)	2.6
Flow Path Length (ft)	300.0
Flow Path Slope (vft/hft)	0.02
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	1.0
Soil Type	13
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.356
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	0.8331
Burned Peak Flow Rate (cfs)	0.8331
24-Hr Clear Runoff Volume (ac-ft)	0.1934
24-Hr Clear Runoff Volume (cu-ft)	8424.0239



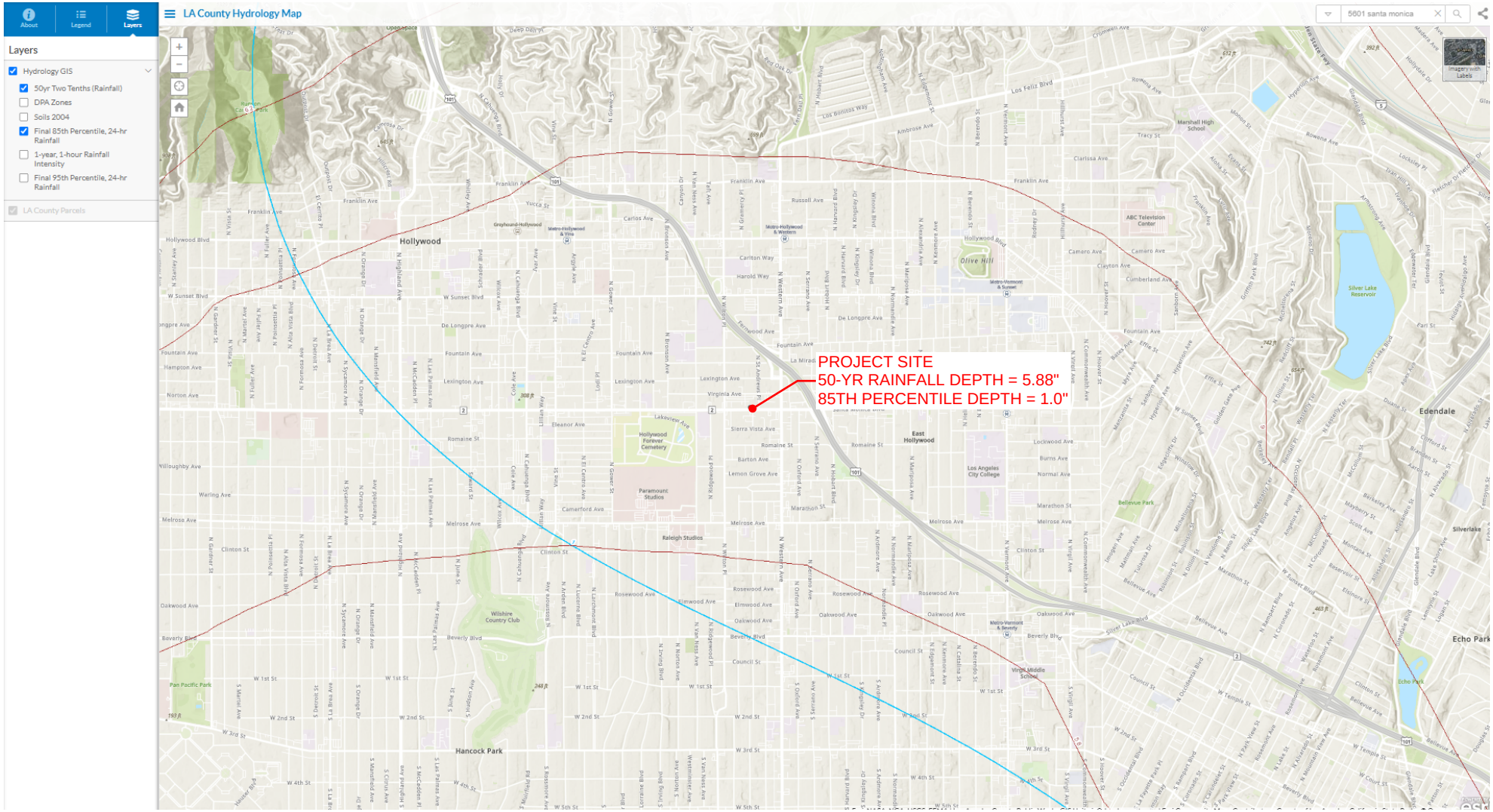
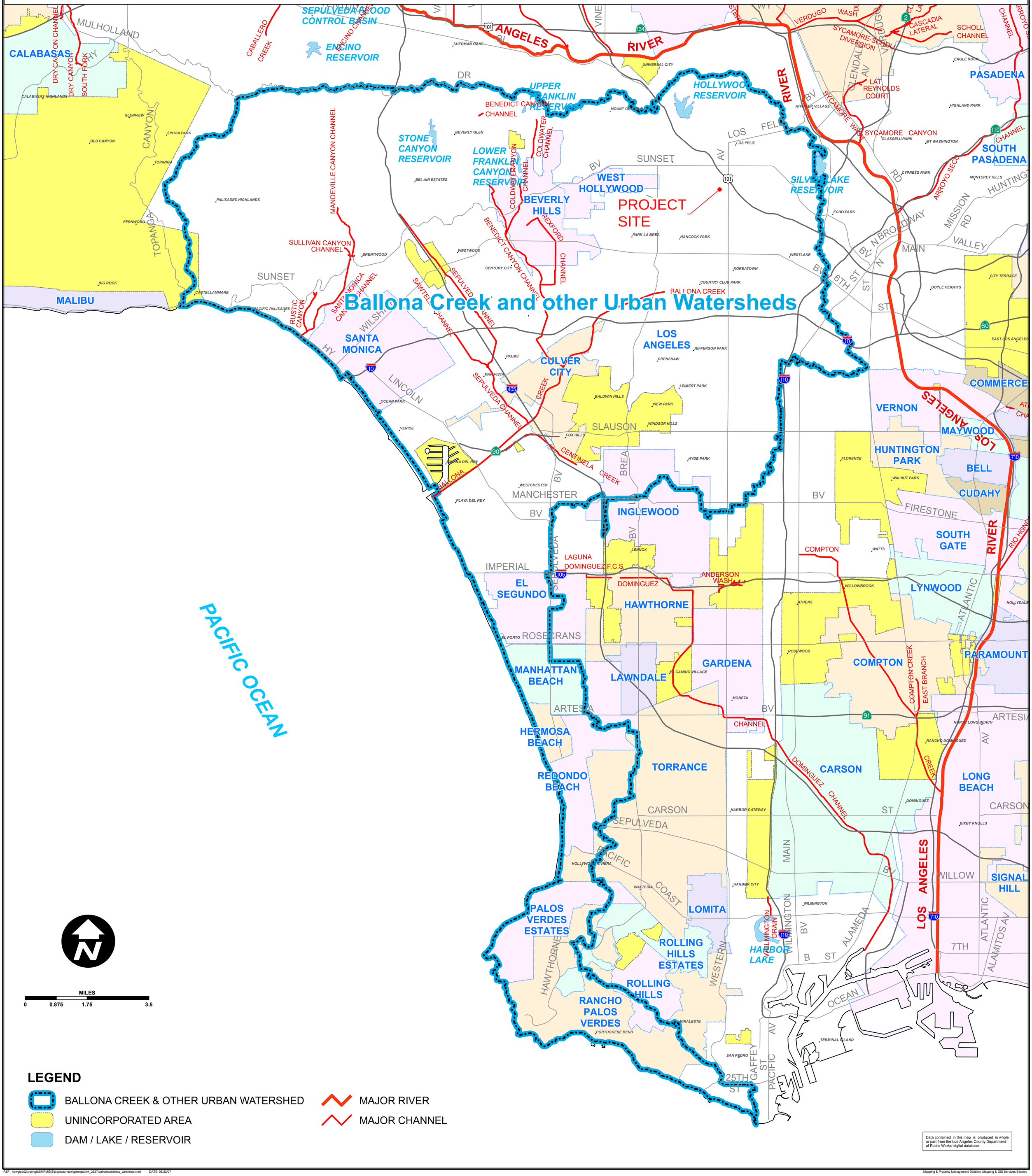


FIGURE 6 - LA COUNTY HYDROLOGY DATA MAP

COUNTY OF LOS ANGELES

BALLONA CREEK & OTHER URBAN WATERSHEDS

FIGURE 7 - BALLONA CREEK WATERSHED MAP



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

Mapping & Property Management Division, Mapping & GIS Services Section

FIGURE 8 - COSTAL PLAIN OF LOS ANGELES GRAOUNDWATER BASIN

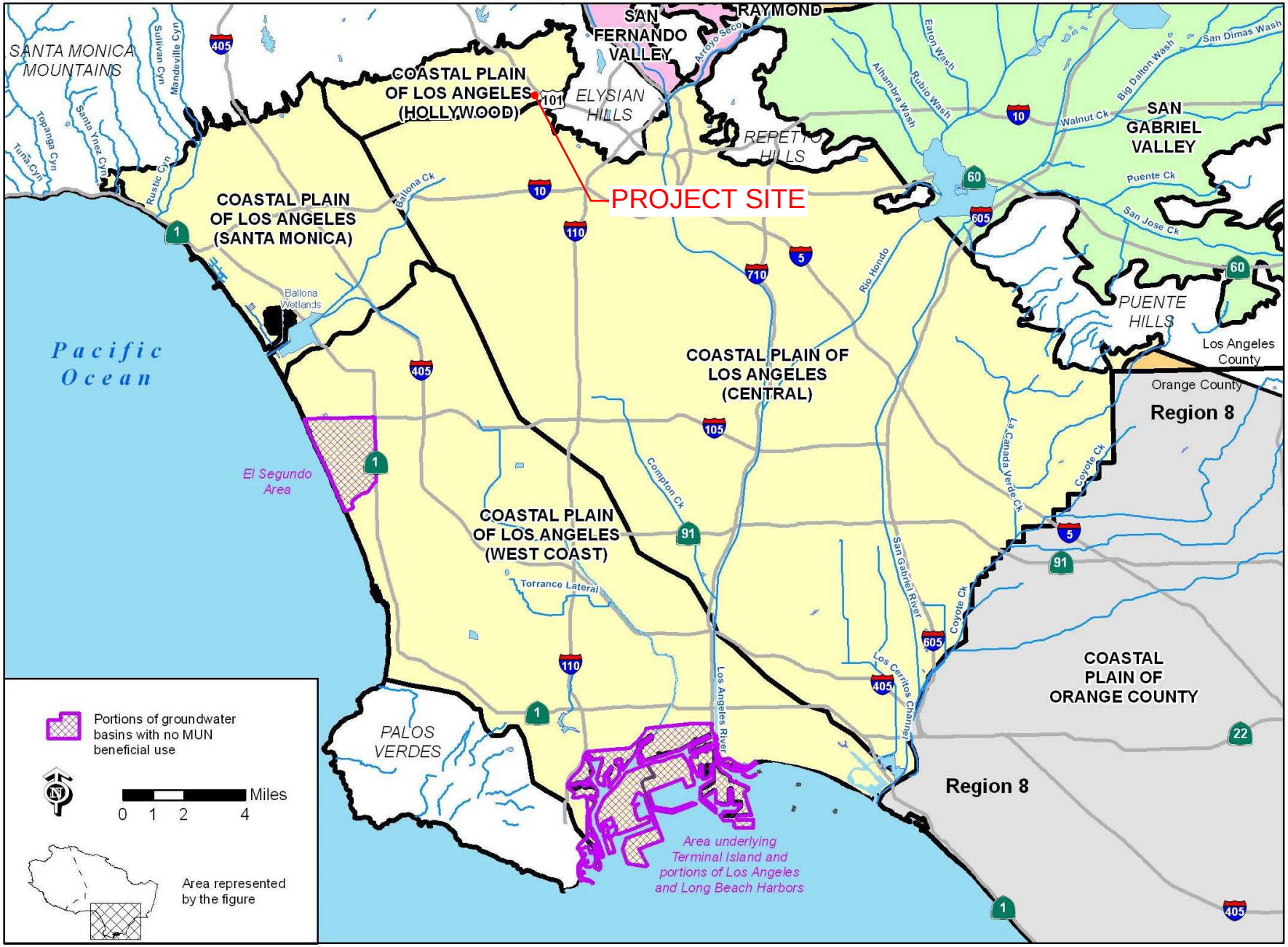
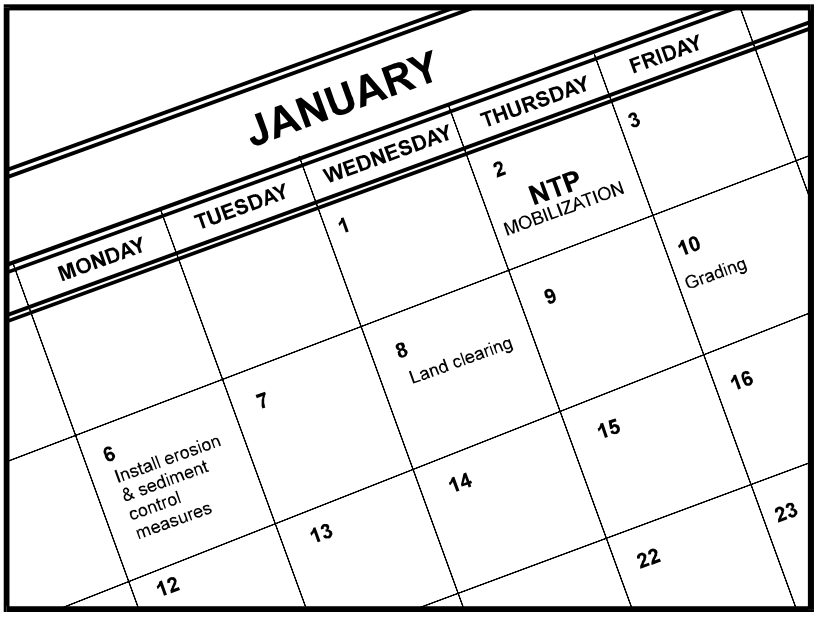


EXHIBIT 1: TYPICAL SWPPP BMPS

Scheduling

EC-1



Description and Purpose

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

Suitable Applications

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

Limitations

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

Implementation

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

Categories

EC	Erosion Control	☑
SE	Sediment Control	☒
TC	Tracking Control	☒
WE	Wind Erosion Control	☒
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

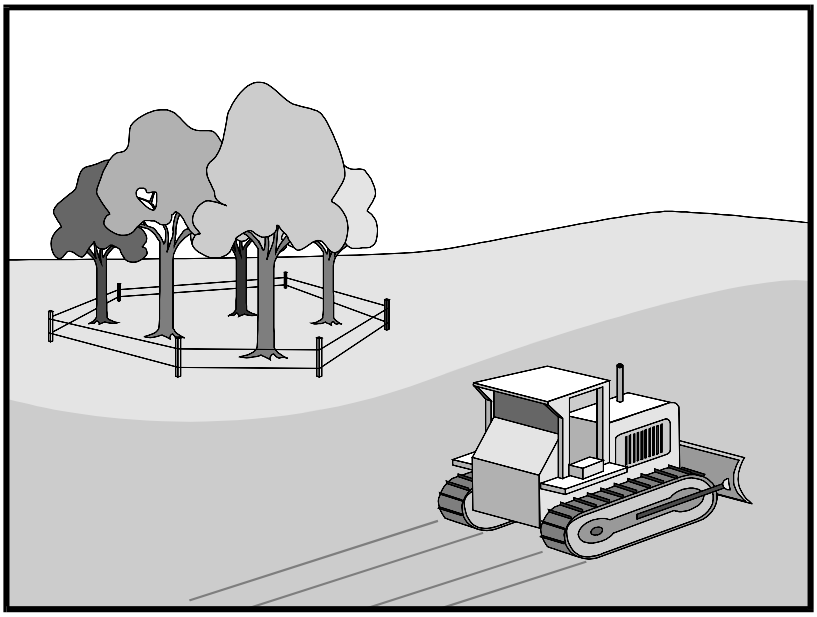
Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Preservation Of Existing Vegetation EC-2



Description and Purpose

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

Suitable Applications

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

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

Categories

EC	Erosion Control	☑
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

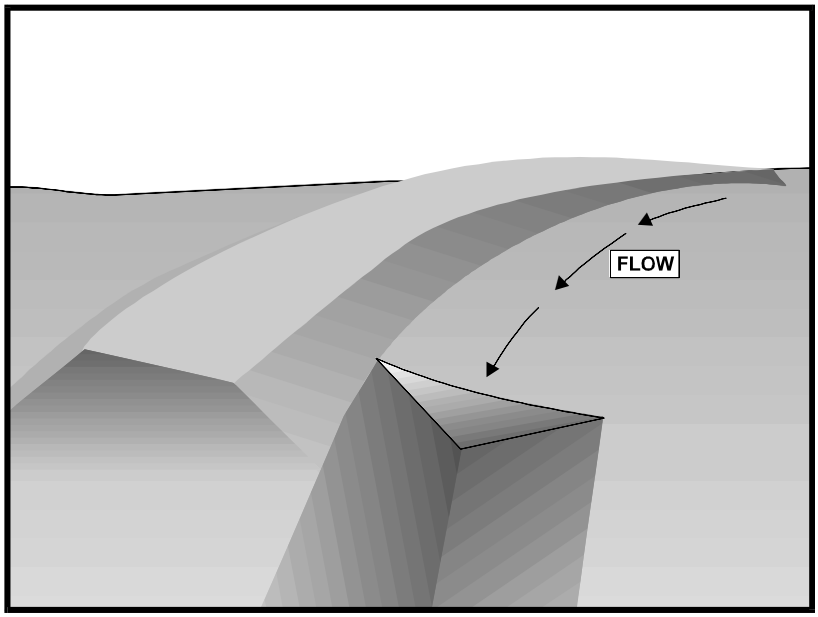
Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Earth Dikes and Drainage Swales EC-9



Description and Purpose

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

Suitable Applications

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

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

Categories

EC	Erosion Control	☑
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

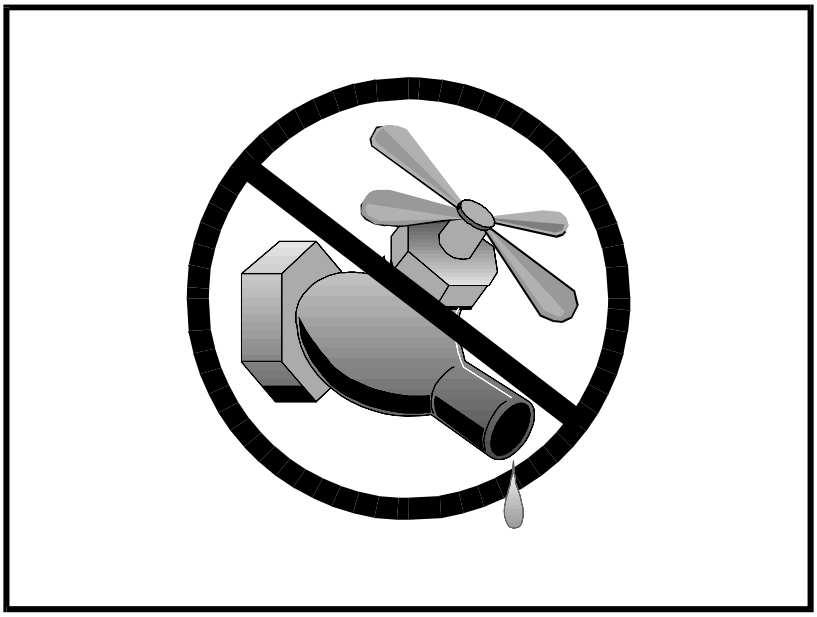
Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Water Conservation Practices NS-1



Categories		
EC	Erosion Control	☒
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

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Description and Purpose

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

Suitable Applications

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

Limitations

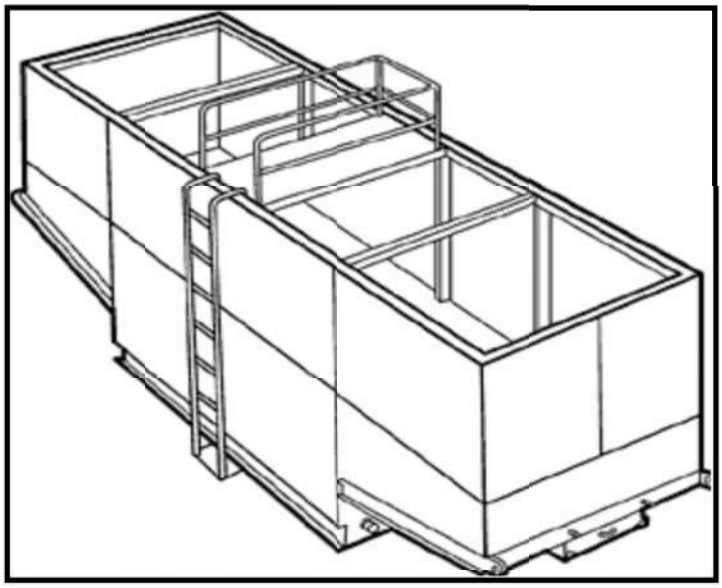
- None identified.

Implementation

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

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

Dewatering Operations NS-2



Categories		
EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

SE-5: Fiber Roll

SE-6: Gravel Bag Berm

If User/Subscriber modifies this fact sheet in any way, the CASQA name/logo and footer below must be removed from each page and not appear on the modified version.

Description and Purpose

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

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

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

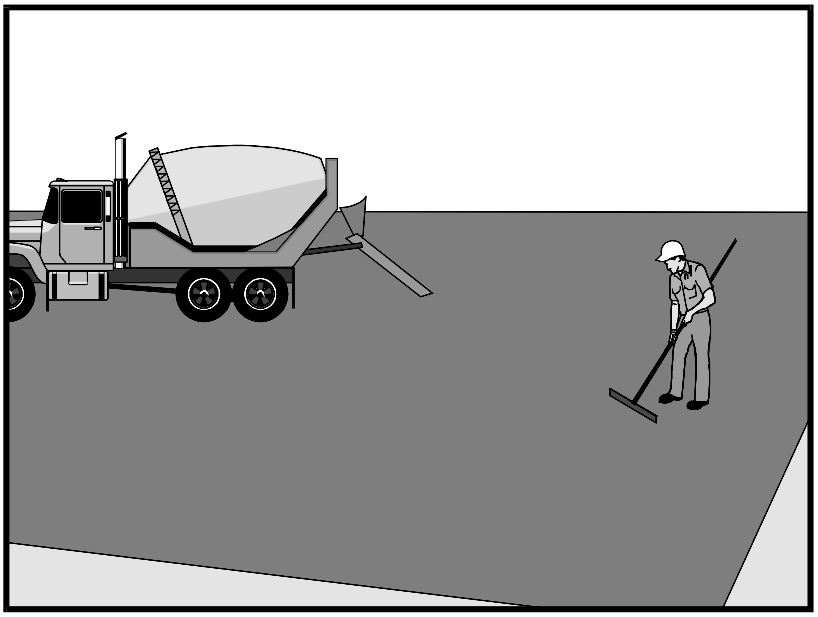
The dewatering operations described in this fact sheet are not Active Treatment Systems (ATS) and do not include the use of chemical coagulations, chemical flocculation or electrocoagulation.

Suitable Applications

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

Practices identified in this section are also appropriate for implementation when managing the removal of accumulated

Paving and Grinding Operations NS-3



Categories		
EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	☒

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

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

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

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

Suitable Applications

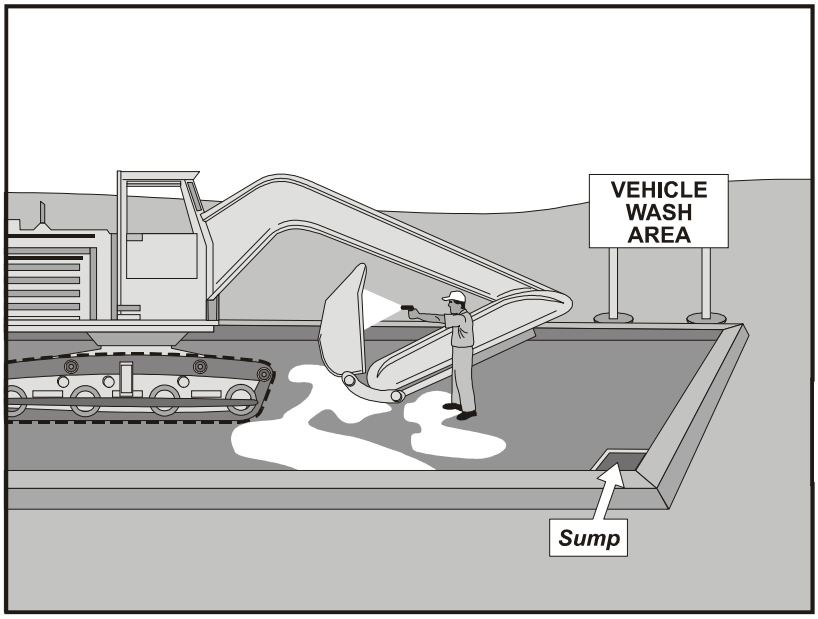
These procedures are implemented where paving, surfacing, resurfacing, or sawcutting, may pollute stormwater runoff or discharge to the storm drain system or watercourses.

Limitations

- Paving opportunities may be limited during wet weather.

  Discharges of freshly paved surfaces may raise pH to environmentally harmful levels and trigger permit violations.

Vehicle and Equipment Cleaning NS-8



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

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

Potential Alternatives

None

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Description and Purpose

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

Suitable Applications

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

Limitations

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

Implementation

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

If washing operations are to take place onsite, then:

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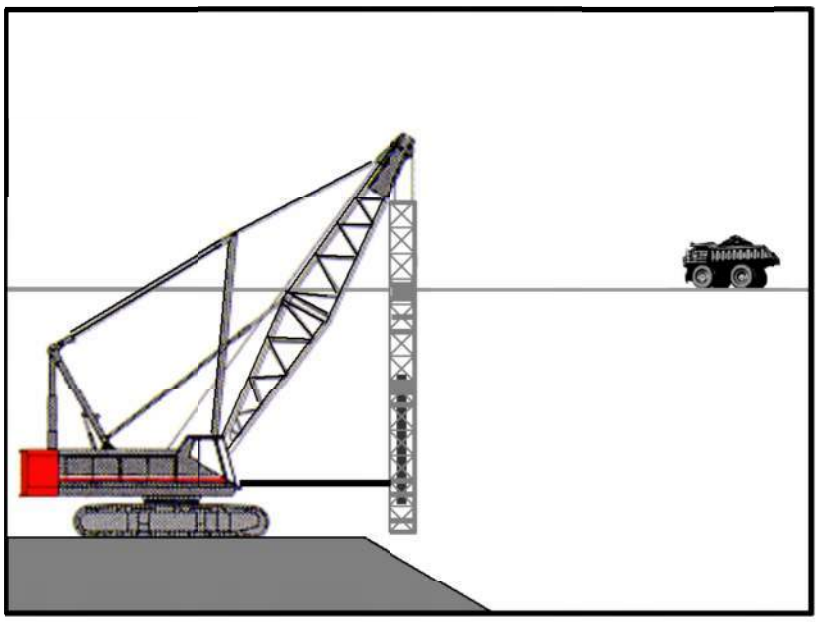
Pile Driving Operations NS-11



Categories		
EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

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Description and Purpose

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

Suitable Applications

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

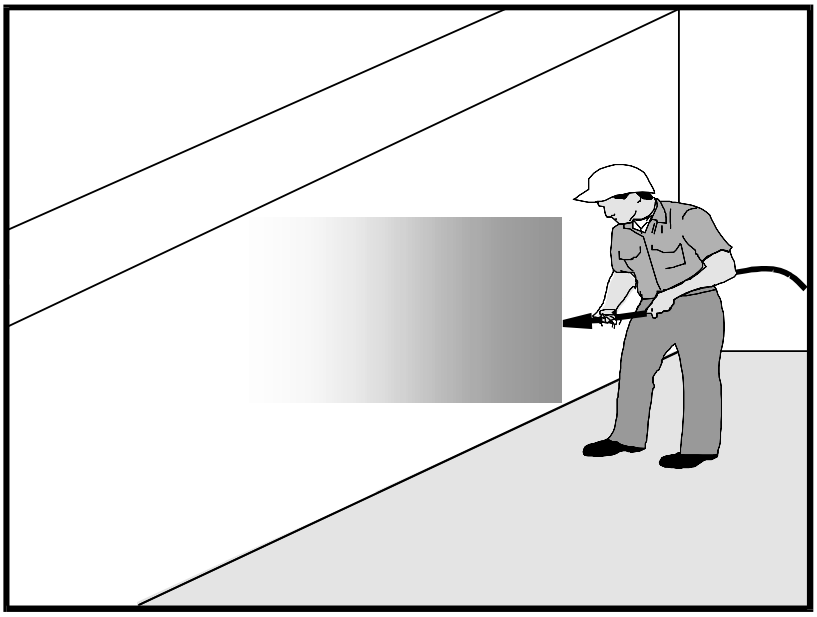
Limitations

None identified.

Implementation

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

Concrete Curing NS-12



Categories		
EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

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

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

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

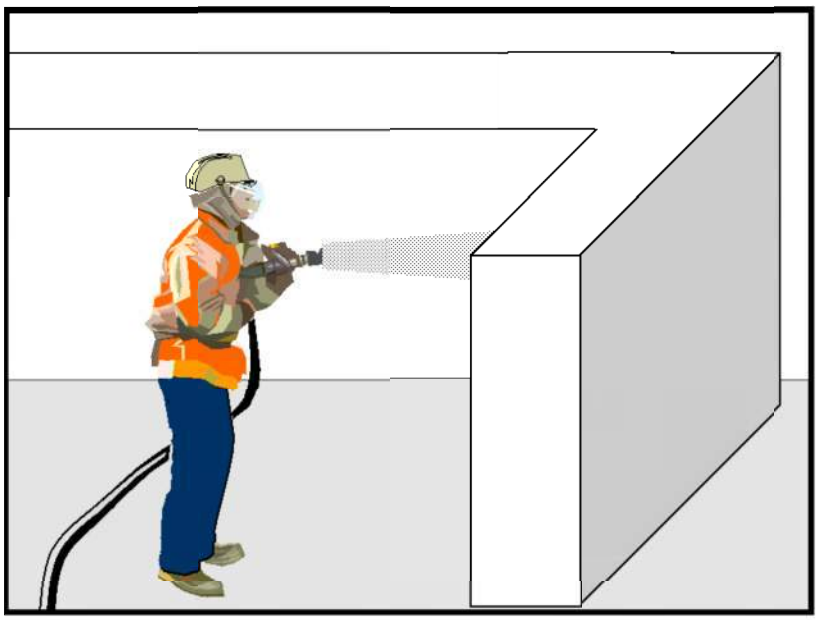
Suitable Applications

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

Limitations

- Runoff contact with concrete waste can raise pH levels in the water to environmentally harmful levels and trigger permit violations.

Concrete Finishing NS-13



Categories		
EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	☑
Bacteria	
Oil and Grease	
Organics	☑

Potential Alternatives

None

Description and Purpose

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

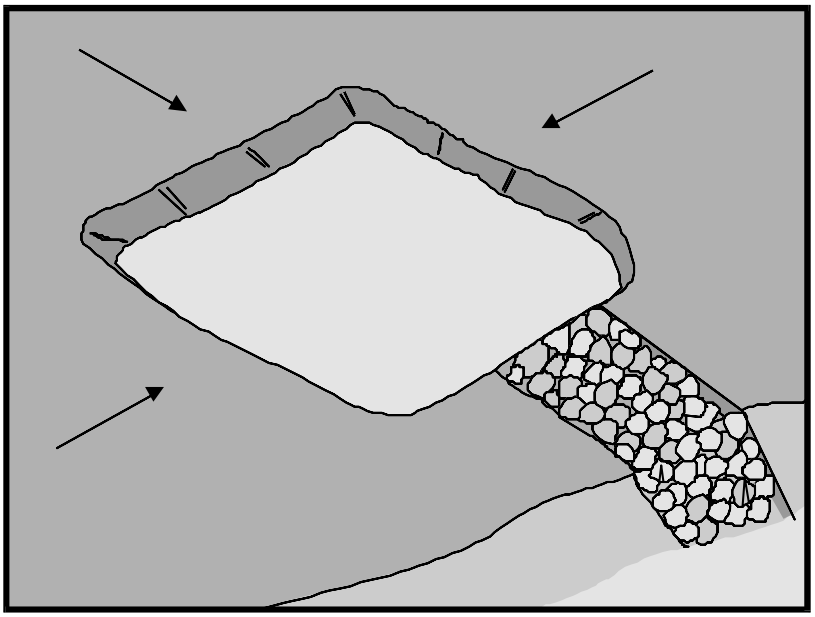
The General Permit incorporates Numeric Action Levels (NAL) for pH (see Section 2 of this handbook to determine your project's risk level and if you are subject to these requirements).

Concrete and its associated curing materials have basic chemical properties that can raise pH levels outside of the permitted range. Additional care should be taken when managing these materials to prevent them from coming into contact with stormwater flows, which could lead to exceedances of the General Permit requirements.

Suitable Applications

These procedures apply to all construction locations where concrete finishing operations are performed.

Sediment Trap SE-3



Categories		
EC	Erosion Control	
SE	Sediment Control	☑
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	☑
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-2 Sediment Basin (for larger areas)

Description and Purpose

A sediment trap is a containment area where sediment-laden runoff is temporarily detained under quiescent conditions, allowing sediment to settle out or before the runoff is discharged by gravity flow. Sediment traps are formed by excavating or constructing an earthen embankment across a waterway or low drainage area.

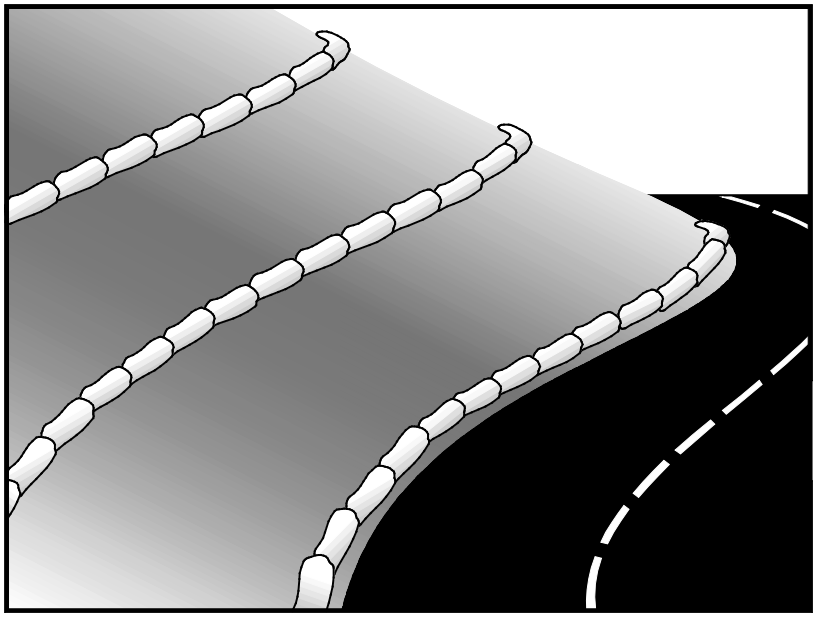
Trap design guidance provided in this fact sheet is not intended to guarantee compliance with numeric discharge limits (numeric action levels or numeric effluent limits for turbidity). Compliance with discharge limits requires a thoughtful approach to comprehensive BMP planning, implementation, and maintenance. Therefore, optimally designed and maintained sediment traps should be used in conjunction with a comprehensive system of BMPs.

Suitable Applications

Sediment traps should be considered for use:

- At the perimeter of the site at locations where sediment-laden runoff is discharged offsite.
- At multiple locations within the project site where sediment control is needed.
- Around or upslope from storm drain inlet protection measures.
- Sediment traps may be used on construction projects where the drainage area is less than 5 acres. Traps would be

Gravel Bag Berm SE-6



Description and Purpose

A gravel bag berm is a series of gravel-filled bags placed on a level contour to intercept sheet flows. Gravel bags pond sheet flow runoff, allowing sediment to settle out, and release runoff slowly as sheet flow, preventing erosion.

Suitable Applications

Gravel bag berms may be suitable:

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

Categories

EC	Erosion Control	☒
SE	Sediment Control	☑
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence

SE-5 Fiber Roll

SE-8 Sandbag Barrier

SE-12 Temporary Silt Dike

SE-14 Biofilter Bags

Street Sweeping and Vacuuming SE-7

Categories		
EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	☑
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	☑
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

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Description and Purpose

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

Suitable Applications

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

Limitations

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

Implementation

- Controlling the number of points where vehicles can leave the site will allow sweeping and vacuuming efforts to be focused, and perhaps save money.
- Inspect potential sediment tracking locations daily.
- Visible sediment tracking should be swept or vacuumed on a daily basis.

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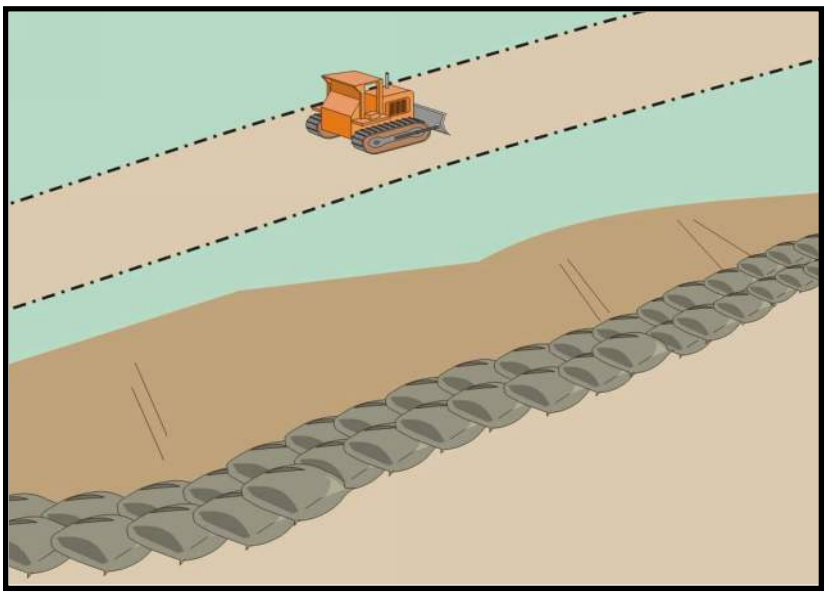
Sandbag Barrier SE-8



Categories		
EC	Erosion Control	☒
SE	Sediment Control	☑
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Description and Purpose

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

Suitable Applications

Sandbag barriers may be a suitable control measure for the applications described below. It is important to consider that sand bags are less porous than gravel bags and ponding or flooding can occur behind the barrier. Also, sand is easily transported by runoff if bags are damaged or ruptured. The SWPPP Preparer should select the location of a sandbag barrier with respect to the potential for flooding, damage, and the ability to maintain the BMP.

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

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence

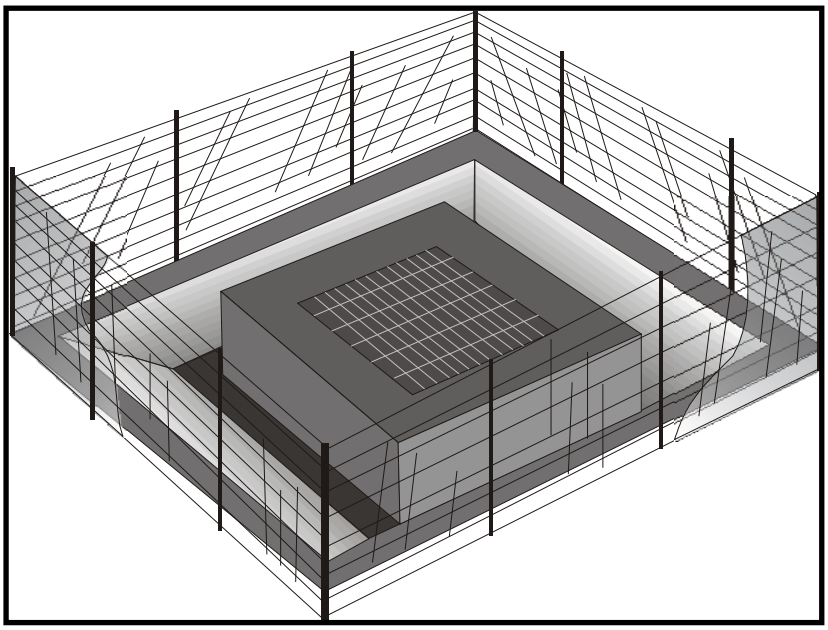
SE-5 Fiber Rolls

SE-6 Gravel Bag Berm

SE-12 Manufactured Linear Sediment Controls

SE-14 Biofilter Bags

Storm Drain Inlet Protection SE-10



Description and Purpose

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

Suitable Applications

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

Limitations

- Drainage area should not exceed 1 acre.
- In general straw bales should not be used as inlet protection.
- Requires an adequate area for water to pond without encroaching into portions of the roadway subject to traffic.
- Sediment removal may be inadequate to prevent sediment discharges in high flow conditions or if runoff is heavily sediment laden. If high flow conditions are expected, use

Categories

EC	Erosion Control	
SE	Sediment Control	☑
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	☒
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence

SE-5 Fiber Rolls

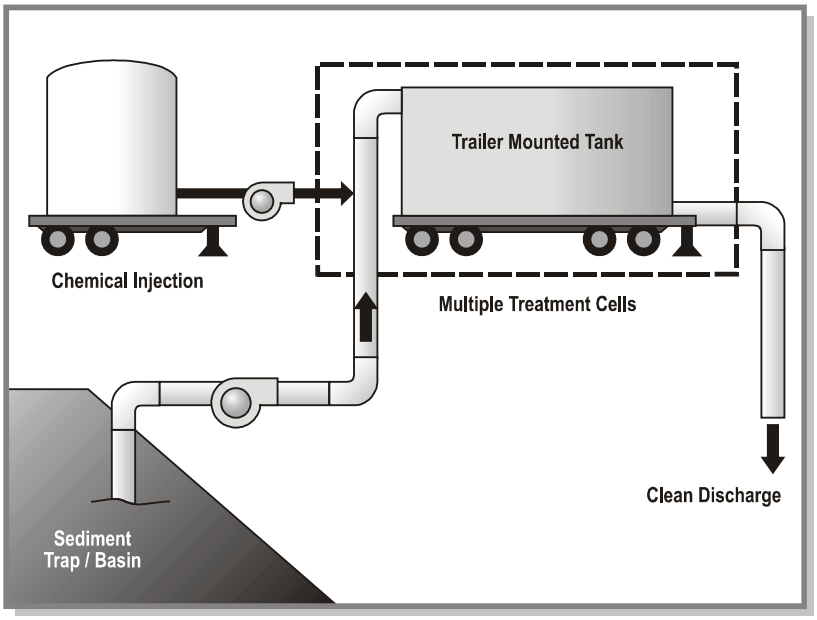
SE-6 Gravel Bag Berm

SE-8 Sandbag Barrier

SE-14 Biofilter Bags

SE-13 Compost Socks and Berms

Active Treatment Systems SE-11



Categories

EC	Erosion Control	☑
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

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Description and Purpose

Active Treatment Systems (ATS) reduce turbidity of construction site runoff by introducing chemicals to stormwater through direct dosing or an electrical current to enhance flocculation, coagulation, and settling of the suspended sediment. Coagulants and flocculants are used to enhance settling and removal of suspended sediments and generally include inorganic salts and polymers (USACE, 2001). The increased flocculation aids in sedimentation and ability to remove fine suspended sediments, thus reducing stormwater runoff turbidity and improving water quality.

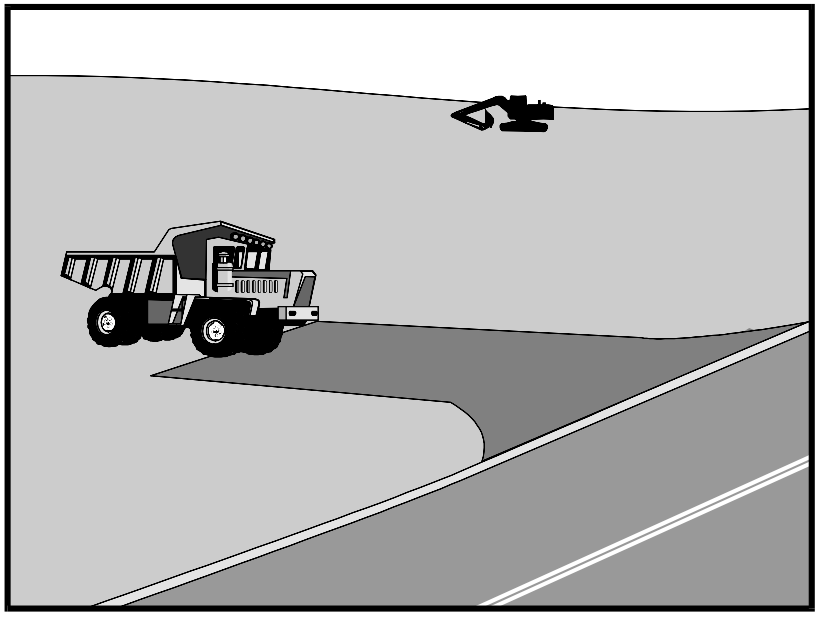
Suitable Applications

ATS can reliably provide exceptional reductions of turbidity and associated pollutants and should be considered where turbid discharges to sediment and turbidity sensitive waters cannot be avoided using traditional BMPs. Additionally, it may be appropriate to use an ATS when site constraints inhibit the ability to construct a correctly sized sediment basin, when clay and/or highly erosive soils are present, or when the site has very steep or long slope lengths.

Limitations

Dischargers choosing to utilize chemical treatment in an ATS must follow all guidelines of the Construction General Permit Attachment F – Active Treatment System Requirements. General limitations are as follows:

Stabilized Construction Entrance/Exit TC-1



Categories		
EC	Erosion Control	☒
SE	Sediment Control	☒
TC	Tracking Control	☑
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Description and Purpose

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

Suitable Applications

Use at construction sites:

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

Limitations

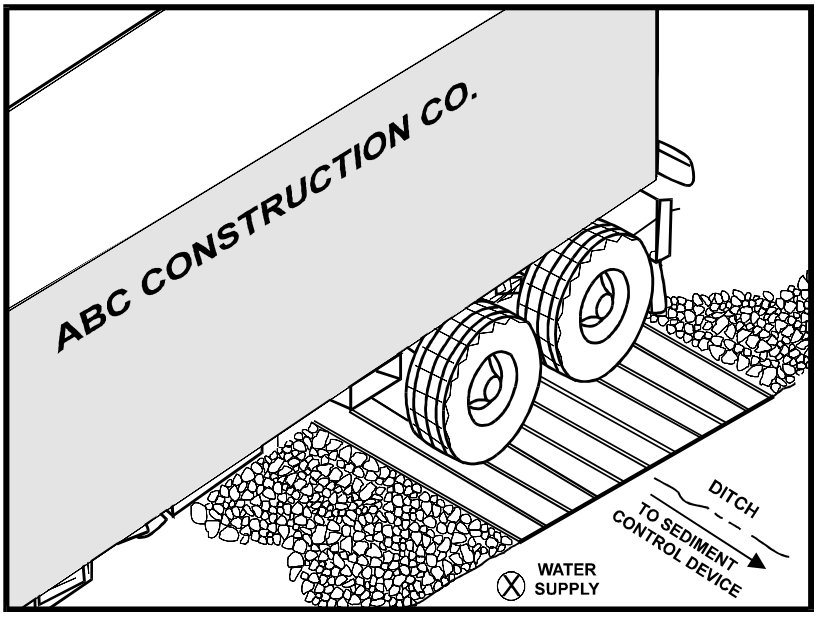
- Entrances and exits require periodic top dressing with additional stones.
- This BMP should be used in conjunction with street sweeping on adjacent public right of way.
- Entrances and exits should be constructed on level ground only.
- Stabilized construction entrances are rather expensive to construct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

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Entrance/Outlet Tire Wash TC-3



Description and Purpose

A tire wash is an area located at stabilized construction access points to remove sediment from tires and under carriages and to prevent sediment from being transported onto public roadways.

Suitable Applications

Tire washes may be used on construction sites where dirt and mud tracking onto public roads by construction vehicles may occur.

Limitations

- The tire wash requires a supply of wash water.
- A turnout or doublewide exit is required to avoid having entering vehicles drive through the wash area.
- Do not use where wet tire trucks leaving the site leave the road dangerously slick.

Implementation

- Incorporate with a stabilized construction entrance/exit. See TC-1, Stabilized Construction Entrance/Exit.
- Construct on level ground when possible, on a pad of coarse aggregate greater than 3 in. but smaller than 6 in. A geotextile fabric should be placed below the aggregate.
- Wash rack should be designed and constructed/manufactured for anticipated traffic loads.

Categories

EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	☑
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

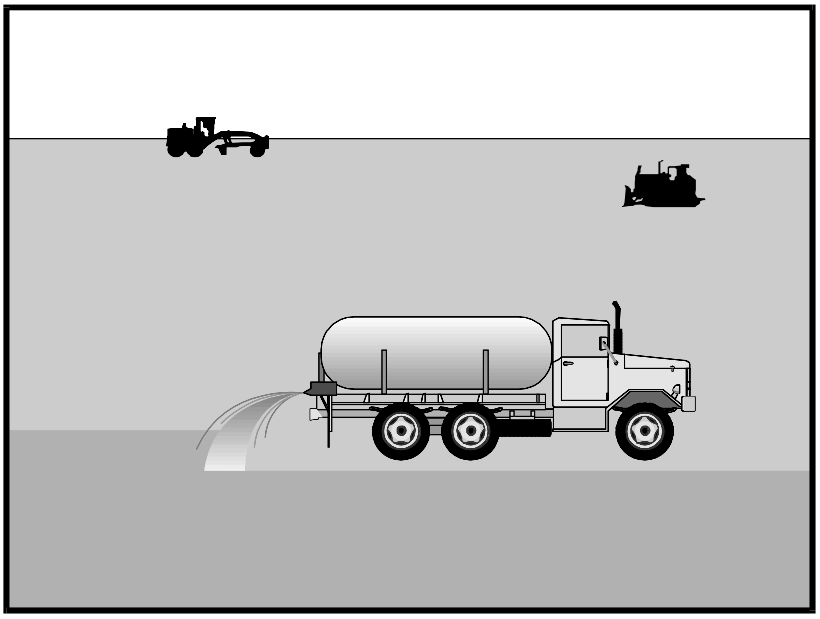
Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

TC-1 Stabilized Construction Entrance/Exit

Wind Erosion Control WE-1



Categories

EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	☑
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

EC-5 Soil Binders

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Description and Purpose

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

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

Suitable Applications

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

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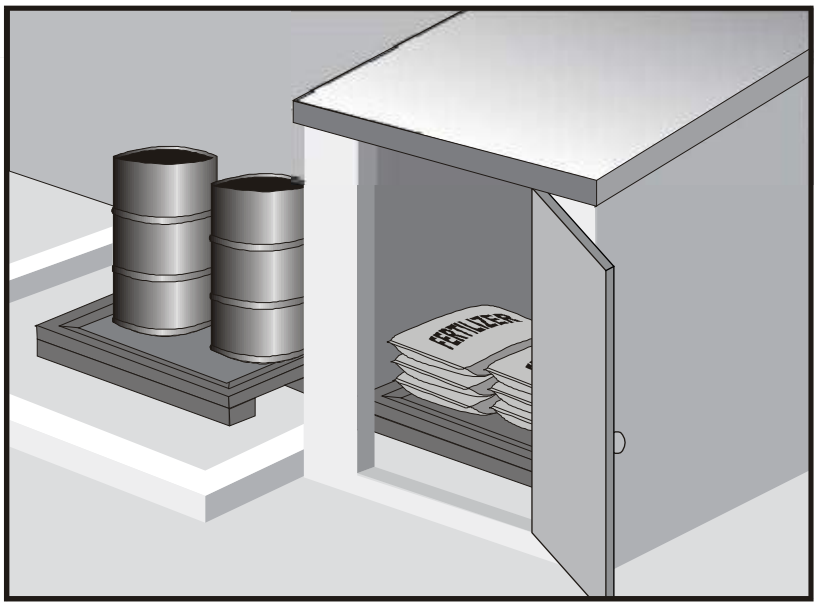
Material Delivery and Storage WM-1



Categories		
EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Description and Purpose

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

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

Suitable Applications

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

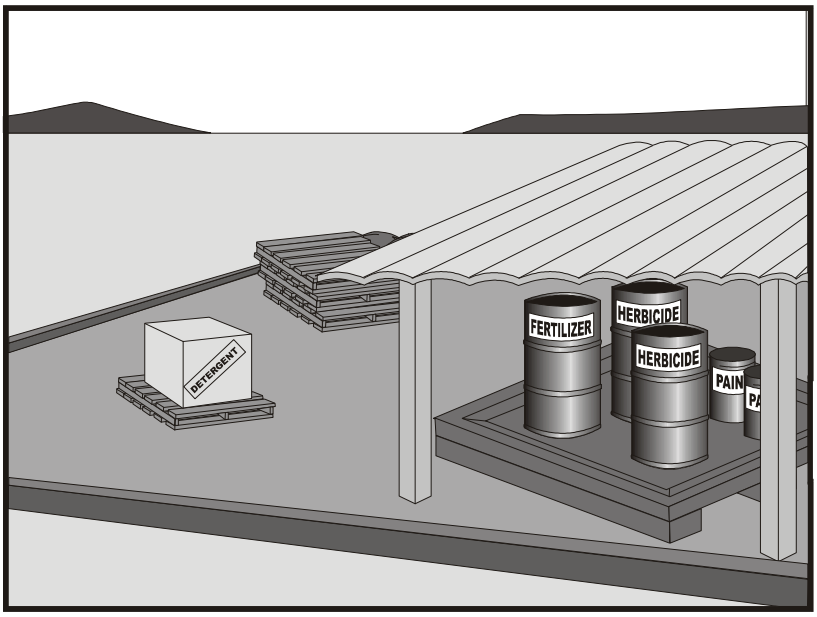
- Soil stabilizers and binders
- Pesticides and herbicides
- Fertilizers
- Detergents
- Plaster
- Petroleum products such as fuel, oil, and grease

Targeted Constituents	
Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Material Use WM-2



Description and Purpose

Prevent or reduce the discharge of pollutants to the storm drain system or watercourses from material use by using alternative products, minimizing hazardous material use onsite, and training employees and subcontractors.

Suitable Applications

This BMP is suitable for use at all construction projects. These procedures apply when the following materials are used or prepared onsite:

- Pesticides and herbicides
- Fertilizers
- Detergents
- Petroleum products such as fuel, oil, and grease
- Asphalt and other concrete components
- Other hazardous chemicals such as acids, lime, glues, adhesives, paints, solvents, and curing compounds
- Other materials that may be detrimental if released to the environment

Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Category**

☒ **Secondary Category**

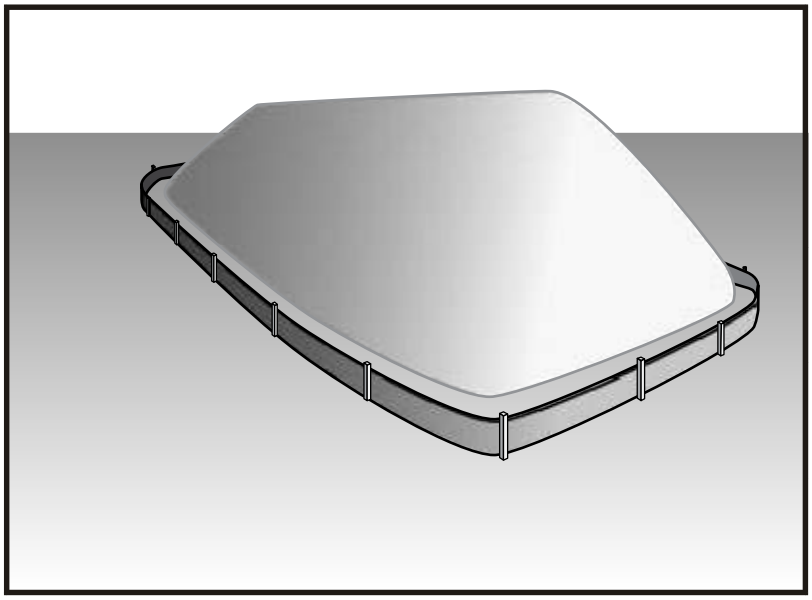
Targeted Constituents

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

Potential Alternatives

None

Stockpile Management WM-3



Categories		
EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☒
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Description and Purpose

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

Suitable Applications

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

Limitations

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

Implementation

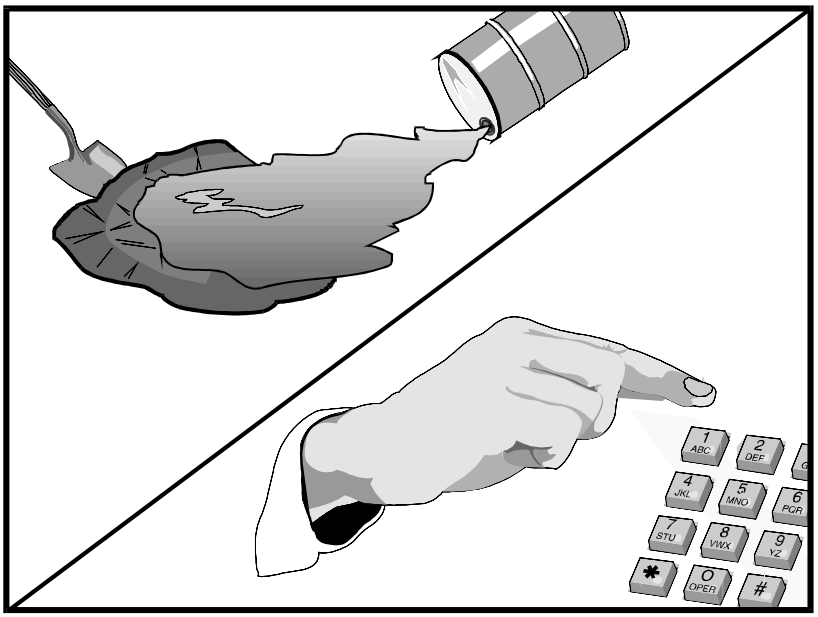
Protection of stockpiles is a year-round requirement. To properly manage stockpiles:

Targeted Constituents	
Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Spill Prevention and Control WM-4



Description and Purpose

Prevent or reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill materials, and training employees.

This best management practice covers only spill prevention and control. However, WM-1, Materials Delivery and Storage, and WM-2, Material Use, also contain useful information, particularly on spill prevention. For information on wastes, see the waste management BMPs in this section.

Suitable Applications

This BMP is suitable for all construction projects. Spill control procedures are implemented anytime chemicals or hazardous substances are stored on the construction site, including the following materials:

- Soil stabilizers/binders
- Dust palliatives
- Herbicides
- Growth inhibitors
- Fertilizers
- Deicing/anti-icing chemicals

Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

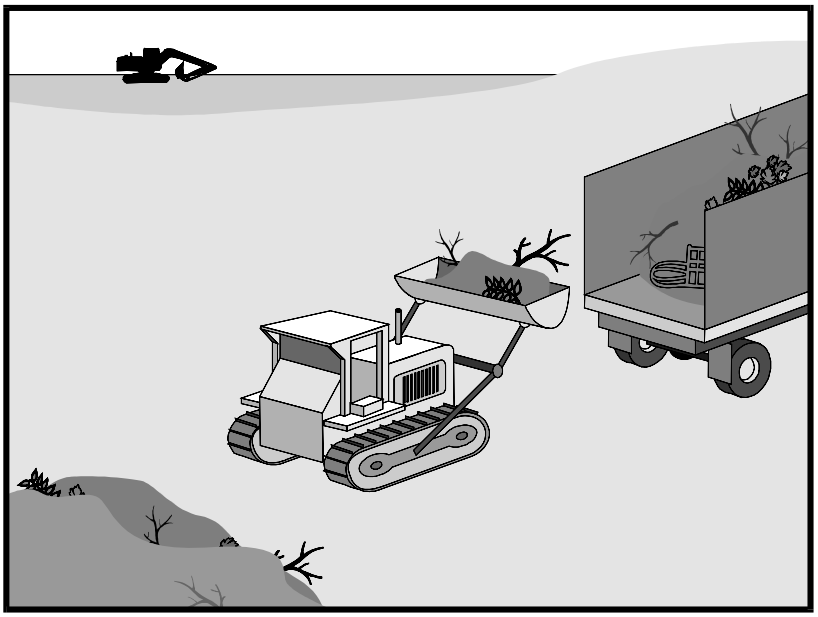
Targeted Constituents

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

Potential Alternatives

None

Solid Waste Management WM-5



Categories		
EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

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Description and Purpose

Solid waste management procedures and practices are designed to prevent or reduce the discharge of pollutants to stormwater from solid or construction waste by providing designated waste collection areas and containers, arranging for regular disposal, and training employees and subcontractors.

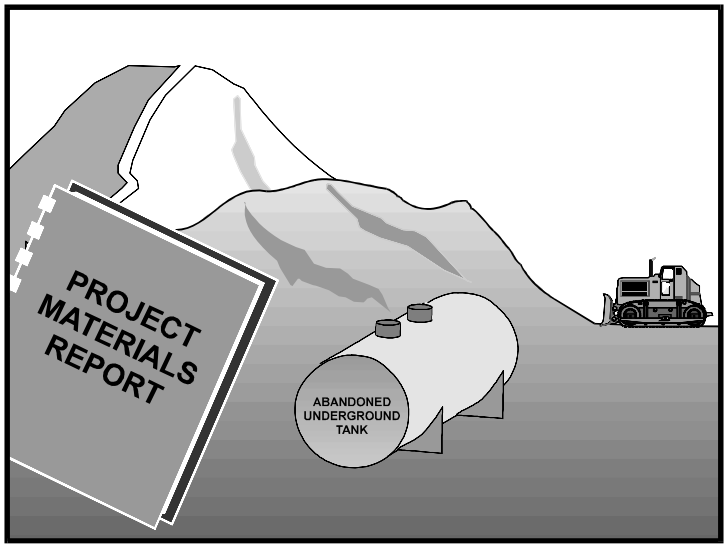
Suitable Applications

This BMP is suitable for construction sites where the following wastes are generated or stored:

- Solid waste generated from trees and shrubs removed during land clearing, demolition of existing structures (rubble), and building construction
- Packaging materials including wood, paper, and plastic
- Scrap or surplus building materials including scrap metals, rubber, plastic, glass pieces, and masonry products
- Domestic wastes including food containers such as beverage cans, coffee cups, paper bags, plastic wrappers, and cigarettes
- Construction wastes including brick, mortar, timber, steel and metal scraps, pipe and electrical cuttings, non-hazardous equipment parts, styrofoam and other materials used to transport and package construction materials

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

Contaminated Soil Management WM-7



Categories		
EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Description and Purpose

Prevent or reduce the discharge of pollutants to stormwater from contaminated soil and highly acidic or alkaline soils by conducting pre-construction surveys, inspecting excavations regularly, and remediating contaminated soil promptly.

Suitable Applications

Contaminated soil management is implemented on construction projects in highly urbanized or industrial areas where soil contamination may have occurred due to spills, illicit discharges, aerial deposition, past use and leaks from underground storage tanks.

Limitations

Contaminated soils that cannot be treated onsite must be disposed of offsite by a licensed hazardous waste hauler. The presence of contaminated soil may indicate contaminated water as well. See NS-2, Dewatering Operations, for more information.

The procedures and practices presented in this BMP are general. The contractor should identify appropriate practices and procedures for the specific contaminants known to exist or discovered onsite.

Implementation

Most owners and developers conduct pre-construction environmental assessments as a matter of routine. Contaminated soils are often identified during project planning and development with known locations identified in the plans, specifications and in the SWPPP. The contractor should review applicable reports and investigate appropriate call-outs in the

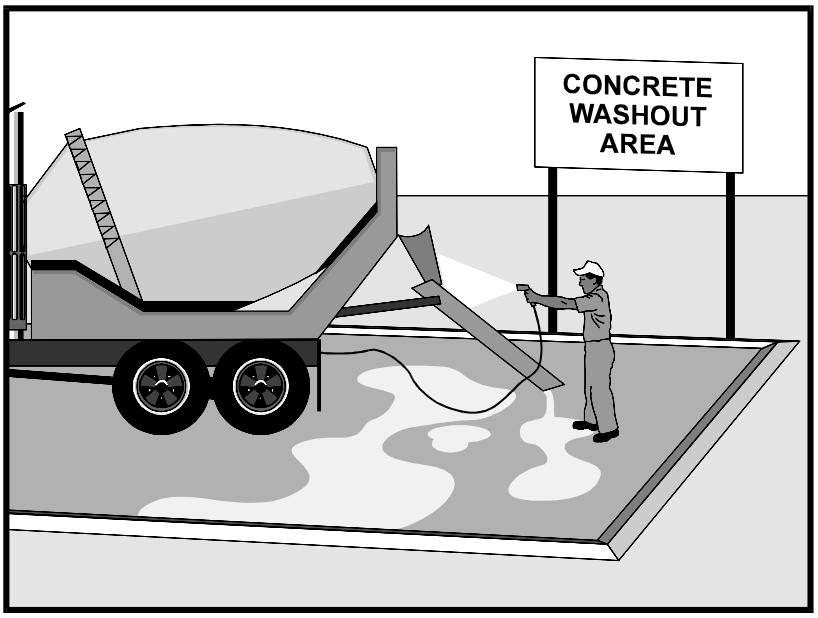
Targeted Constituents	
Sediment	
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

Concrete Waste Management WM-8



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☒
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	☑
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Prevent the discharge of pollutants to stormwater from concrete waste by conducting washout onsite or offsite in a designated area, and by employee and subcontractor training.

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

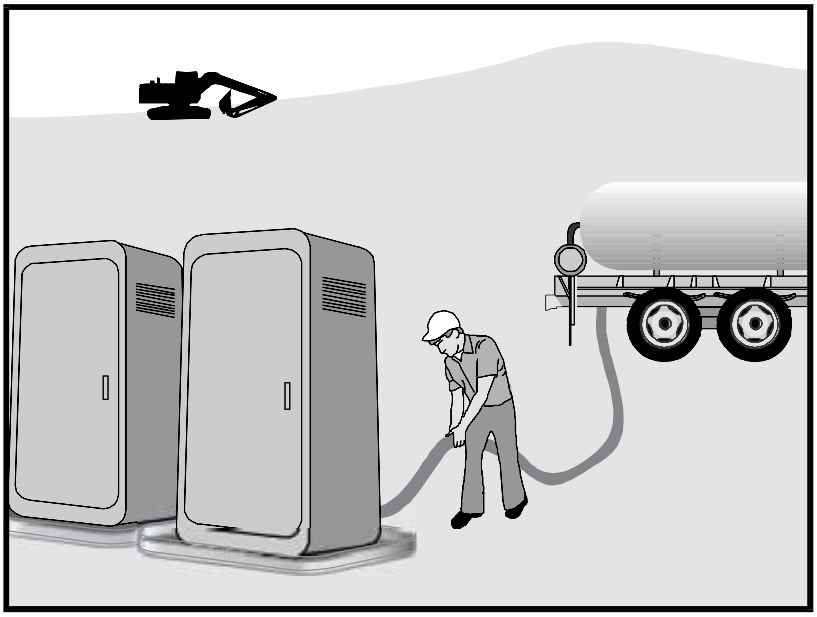
Many types of construction materials, including mortar, concrete, stucco, cement and block and their associated wastes have basic chemical properties that can raise pH levels outside of the permitted range. Additional care should be taken when managing these materials to prevent them from coming into contact with stormwater flows and raising pH to levels outside the accepted range.

Suitable Applications

Concrete waste management procedures and practices are implemented on construction projects where:

- Concrete is used as a construction material or where concrete dust and debris result from demolition activities.
- Slurries containing portland cement concrete (PCC) are generated, such as from saw cutting, coring, grinding, grooving, and hydro-concrete demolition.
- Concrete trucks and other concrete-coated equipment are washed onsite.

Sanitary/Septic Waste Management WM-9



Categories		
EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents	
Sediment	
Nutrients	☑
Trash	☑
Metals	
Bacteria	☑
Oil and Grease	
Organics	☑

Potential Alternatives

None

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Description and Purpose

Proper sanitary and septic waste management prevent the discharge of pollutants to stormwater from sanitary and septic waste by providing convenient, well-maintained facilities, and arranging for regular service and disposal.

Suitable Applications

Sanitary septic waste management practices are suitable for use at all construction sites that use temporary or portable sanitary and septic waste systems.

Limitations

None identified.

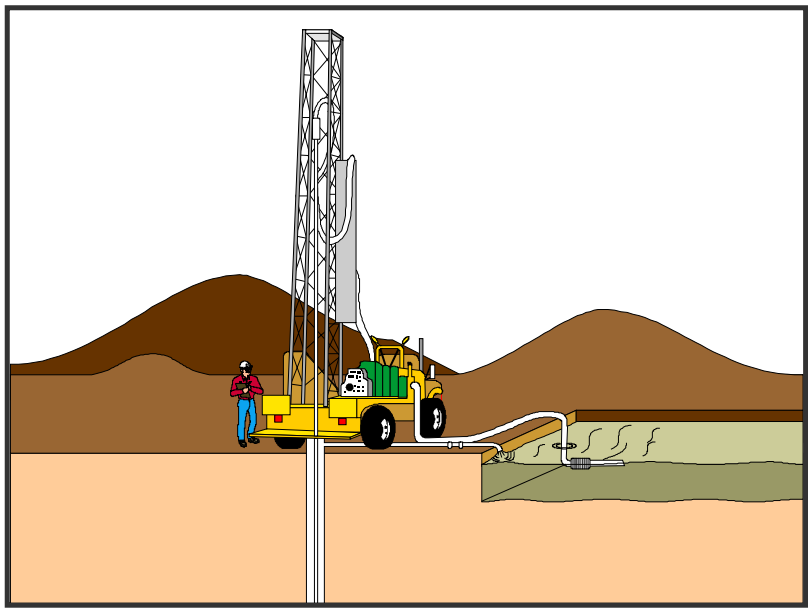
Implementation

Sanitary or septic wastes should be treated or disposed of in accordance with state and local requirements. In many cases, one contract with a local facility supplier will be all that it takes to make sure sanitary wastes are properly disposed.

Storage and Disposal Procedures

- Temporary sanitary facilities should be located away from drainage facilities, watercourses, and from traffic circulation. If site conditions allow, place portable facilities a minimum of 50 feet from drainage conveyances and traffic areas. When subjected to high winds or risk of high winds, temporary sanitary facilities should be secured to prevent overturning.

Liquid Waste Management WM-10



Description and Purpose

Liquid waste management includes procedures and practices to prevent discharge of pollutants to the storm drain system or to watercourses as a result of the creation, collection, and disposal of non-hazardous liquid wastes.

Suitable Applications

Liquid waste management is applicable to construction projects that generate any of the following non-hazardous by-products, residuals, or wastes:

- Drilling slurries and drilling fluids
- Grease-free and oil-free wastewater and rinse water
- Dredgings
- Other non-stormwater liquid discharges not permitted by separate permits

Limitations

- Disposal of some liquid wastes may be subject to specific laws and regulations or to requirements of other permits secured for the construction project (e.g., NPDES permits, Army Corps permits, Coastal Commission permits, etc.).
- Liquid waste management does not apply to dewatering operations (NS-2 Dewatering Operations), solid waste management (WM-5, Solid Waste Management), hazardous wastes (WM-6, Hazardous Waste Management), or

Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

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

Potential Alternatives

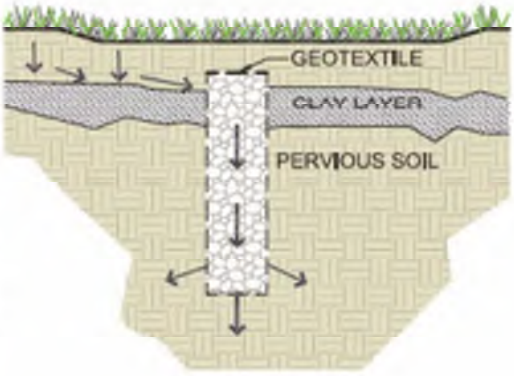
None

EXHIBIT 2

TYPICAL LID BMPs

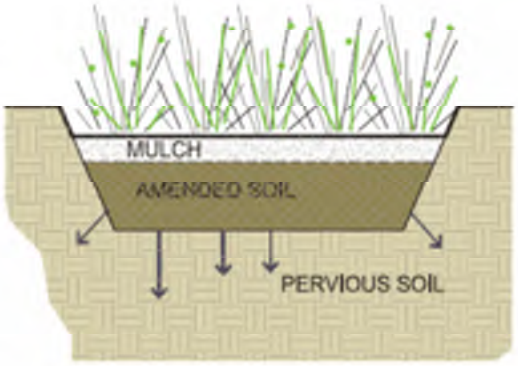
Dry Wells

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



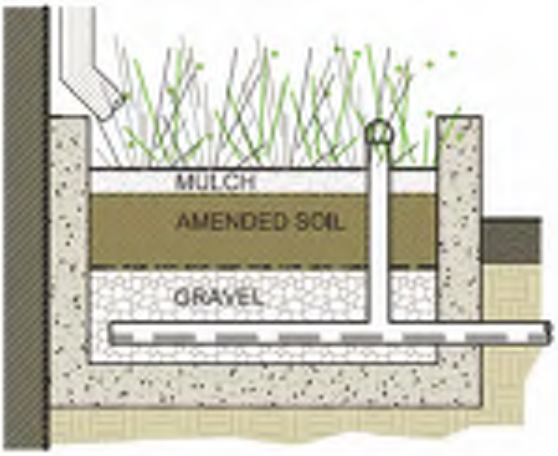
Bioretention

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



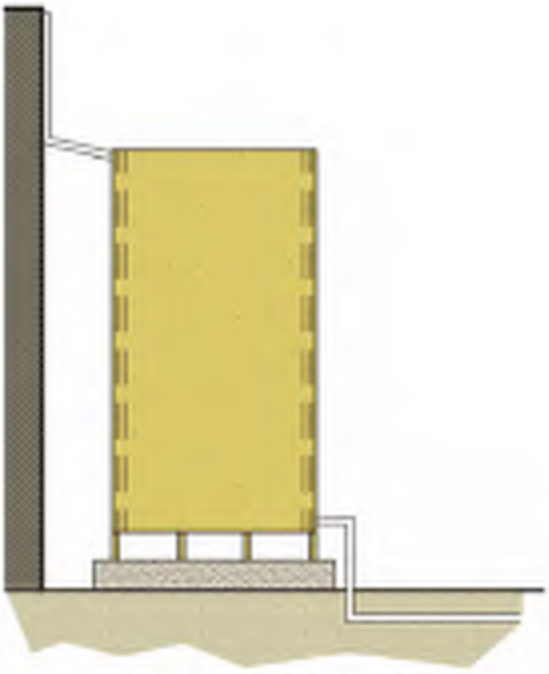
Planter Boxes

Planter boxes are bioretention treatment control measures that are completely contained within an impermeable structure with an underdrain (they do not infiltrate). They are similar to bioretention facilities with underdrains except they are situated at or above ground and are bound by impermeable walls. Planter boxes may be placed adjacent to or near buildings, other structures, or sidewalks.



4.5 CAPTURE AND USE BMPS

Capture and Use refers to a specific type of BMP that operates by capturing stormwater runoff and holding it for efficient use at a later time. On a commercial or industrial scale, capture and use BMPs are typically synonomous with cisterns, which can be implemented both above and below ground. Cisterns are sized to store a specified volume of water with no surface discharge until this volume is exceeded. The primary use of captured runoff is for subsurface drip irrigation purposes. The temporary storage of roof runoff reduces the runoff volume from a property and may reduce the peak runoff velocity for small, frequently occurring storms. In addition, by reducing the amount of stormwater runoff that flows overland into a stormwater conveyance system, less pollutants are transported through the conveyance system into local streams and the ocean. The onsite use of the harvested water for non-potable domestic purposes conserves City-supplied potable water and, where directed to unpaved surfaces, can recharge groundwater in local aquifers.



Cistern Example