Appendix IS-9

Hydrology and Water Resources
Technical Report

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HYDROLOGY & WATER RESOURCES TECHNICAL REPORT
SEPTEMBER 7, 2023

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1. INTRODUCTION

1.1. PROJECT LOCATION AND EXISTING ON-SITE USES:

The Project Site is located at 1727-1829 East Sacramento Street in the Central City North Community Plan Area of the City and within the Arts District. The Project Site is located approximately 0.4 miles west of the Los Angeles River and approximately 13 miles east of the Pacific Ocean. As shown in Figure 1 and Figure 2 on pages 2 and 3, the Project Site is an irregular-shaped corner site generally bounded by adjacent developed properties to the north and southwest, Sacramento Street to the south, and Wilson Street to the east.

Regional access to the Project Site is provided by the Santa Monica Freeway (I-10) approximately 0.2 miles to the south, the Hollywood Freeway (US-101) approximately 0.8 miles to the east, and the Golden State Freeway (I-5) approximately 0.8 miles to the east. Local access to the Project Site is provided by Sacramento Street and Wilson Street. The Project Site is well served by a variety of public transit options, including local and regional bus lines, subway stations, and regional rail service providing ample connections to local and regional destinations. In particular, the Project Site is located within 0.5 miles of Los Angeles County Metropolitan Transit Authority (Metro) Bus Lines 60 and 62 located at 7th Street and Alameda Street, and 66 located at Olympic Boulevard and Alameda Street. The Project Site is also located approximately 1.2 miles from the Metro A Line Washington Station and 1.5 miles from the Metro L Line Little Tokyo/Arts District Station, both of which provide connections to regional destinations.

1.2. PROJECT DESCRIPTION

The 1811 Sacramento Street Project ("Project") includes the development of a commercial office building on a 74,277 square foot (1.71-acre) site located at 1727–1829 East Sacramento Street ("Project Site") in the Central City North Community Plan area in the City of Los Angeles ("City"). The Project would include approximately 277,700 square feet of office space inclusive of approximately 232,500 square feet of interior office space and approximately 45,200 square feet of exterior covered office space. The Project also includes, approximately 8,000 square feet of restaurant space, and approximately 5,200 square feet of retail space, resulting in a total floor area of approximately 290,900 square feet and a floor area ratio (FAR) of approximately 3.92:1 upon completion of the Project. Additionally, the Project would include approximately 41,500 square feet of uncovered outdoor areas throughout the Project Site that include exterior office space, outdoor dining space, a rooftop deck and an outdoor amenity deck. The proposed uses would be located within a 15-story building (maximum height of 232 feet). The proposed net zero carbon office building has been designed to redefine the workplace by maximizing the use of indoor and outdoor spaces and further creating a convertible design of the parking garage to be adaptable for potential future office uses. A total of 582 parking spaces would be provided within an above-ground and visually concealed parking garage that would be integrated into levels one through six of the building. The three existing warehouse structures totaling approximately 40,479 square feet of floor area would be removed as part of the Project.

1.3. SCOPE OF WORK

This report provides a description of the existing site conditions and analyzes the Project's potential impacts to surface water hydrology, surface water quality, groundwater level, and groundwater quality.

2. REGULATORY FRAMEWORK

2.1. SURFACE WATER HYDROLOGY

County of Los Angeles Hydrology Manual

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

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

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

Los Angeles Municipal Code

Proposed drainage improvements within the street rights-of-way or any other property owned by, to be owned by, or under the control of the City, require the approval of a B-

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

permit (LAMC Section 62.105). Under the B-permit process, storm drain installation plans are subject to review and approval by the Bureau of Engineering. Additionally, connections to the MS4 system from a property line to a catch basin or a storm drain pipe require a storm drain permit from the Bureau of Engineering.

2.2. SURFACE WATER QUALITY

Clean Water Act

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

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

Federal Anti-Degradation Policy

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

[2] U.S. Environmental Protection Agency, Clean Water Act, November 2002.
[3] U.S. Environmental Protection Agency, Water Quality Standards Handbook, 2010, Chapter 4: Antidegradation.

California Porter-Cologne Act

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

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

California Anti-Degradation Policy

In 2000, the California Environmental Protection Agency (Cal-EPA) promulgated the California Toxics Rule, which establishes water quality criteria for certain toxic substances to be applied to waters in the State.[6] Cal-EPA promulgated this rule based on Cal-EPA's determination that the numeric criteria of specific concentrations of regulated substances are necessary for 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 LARWQCB as having beneficial uses protective of aquatic life or human health.

California Toxic Rule

In 2000, the California Environmental Protection Agency (Cal-EPA) promulgated the California Toxics Rule, which establishes water quality criteria for certain toxic substances

[4] State Water Resources Control Board, Porter-Cologne Water Quality Control Act, 2018.
[5] U.S. Environmental Protection Agency, Clean Water Act, December 2016, www.epa.gov/compliance/state-review-framework-compliance-and-enforcement-performance, accessed November 28, 2022.
[6] U.S. Environmental Protection Agency, Water Quality Standards, Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, February 2001, www.epa.gov/wqs-tech/water-quality-standards-establishment-numeric-criteria-priority-toxic-pollutants-state, accessed November 28, 2022.

to be applied to waters in the State.[7] Cal-EPA promulgated this rule based on Cal-EPA's determination that the numeric criteria of specific concentrations of regulated substances are necessary for 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 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 groundwaters, sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the State's anti-degradation policy, and describes implementation programs to protect all waters in the Los Angeles Region. In addition, the Basin Plan incorporates (by reference) all applicable State and Regional Board plans and policies and other pertinent water quality policies and regulations. Those of other agencies are referenced in appropriate sections throughout the Basin Plan.[8]

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

As indicated above, in California, the NPDES stormwater permitting program is administered by the SWRCB through its nine RWQCBs. This NPDES permit, referred to as General Permit for Stormwater Discharges from Construction Activities by the SWRCB, establishes a risk-based approach to stormwater control requirements for construction projects.

Construction: Stormwater Pollution Prevention Plan

For all construction activities disturbing one acre of land or more, California mandates the development and implementation of Stormwater Pollution Prevention Plans (SWPPP). The SWPPP documents the selection and implementation of best management practices (BMPs) to prevent discharges of water pollutants to surface or groundwater. The SWPPP

[7] U.S. Environmental Protection Agency, Water Quality Standards, Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, February 2001, www.epa.gov/wqs-tech/water-quality-standards-establishment-numeric-criteria-priority-toxic-pollutants-state, accessed November 28, 2022.

[8] Los Angeles Regional Water Quality Control Board. LARWQCB Basin Plan. June 2019. <http://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/> accessed November 28, 2022.

also charges owners with stormwater quality management responsibilities. The developer or contractor for a construction site subject to the General Permit must prepare and implement a SWPPP that meets the requirements of the General Permit.[9] The purpose of an SWPPP is to identify potential sources and types of pollutants associated with construction activity and list BMPs that would prohibit pollutants from being discharged from the construction site into the public stormwater system. BMPs typically address stabilization of construction areas, minimization of erosion during construction, sediment control, control of pollutants from construction materials, and post-construction stormwater management (e.g., the minimization of impervious surfaces or treatment of stormwater runoff). The SWPPP is also required to include a discussion of the proposed program to inspect and maintain all BMPs.

A site-specific SWPPP could include, but not be limited to the following BMPs:

- Erosion Control BMPs—to protect the soil surface and prevent soil particles from detaching. Selection of the appropriate erosion control BMPs would be based on minimizing areas of disturbance, stabilizing disturbed areas, and protecting slopes/channels. Such BMPs may include, but would not be limited to, use of geotextiles and mats, earth dikes, drainage swales, and slope drains.
- Sediment Control BMPs—are treatment controls that trap soil particles that have been detached by water or wind. Selection of the appropriate sediment control BMPs would be based on keeping sediments on-site and controlling the site boundaries. Such BMPs may include, but would not be limited, to use of silt fences, sediment traps, and sandbag barriers, street sweeping and vacuuming, and storm drain inlet protection.
- Wind Erosion Control BMPs—consist of applying water to prevent or minimize dust nuisance.
- Tracking Control BMPs—consist of preventing or reducing the tracking of sediment off-site by vehicles leaving the construction area. These BMPs include street sweeping and vacuuming. Project sites are required to maintain a stabilized construction entrance to prevent off-site tracking of sediment and debris.
- Non-Stormwater Management BMPs—also referred to as "good housekeeping practices," involve keeping a clean, orderly construction site.
- Waste Management and Materials Pollution Control BMPs—consist of implementing procedural and structural BMPs for handling, storing, and disposing of wastes generated by a construction project to prevent the release of waste materials into stormwater runoff or discharges through the proper management of construction waste.

The SWRCB adopted a General Permit for Stormwater Discharges from Construction Activities on September 2, 2009, and most recently amended the permit on July 17, 2012 (Order No. 2012-0006-DWQ, General NPDES Permit No. CAS000002). The Construction General Permit regulates construction activity, including clearing, grading,

[9] Construction Stormwater Program, State Water Resources Control Board, October 30, 2019, www.waterboards.ca.gov/water_issues/programs/stormwater/construction.html, accessed November 28, 2022.

and excavation of areas one acre or more in size, and prohibits the discharge of materials other than stormwater, authorized non-stormwater discharges, and all discharges that contain a hazardous substance, unless a separate NPDES permit has been issued for those discharges.

To obtain coverage under the Construction General Permit, a developer is required to file a Notice of Intent (NOI) with the appropriate RWQCB and provide proof of the NOI prior to applying for a grading or building permit from the local jurisdiction, and must prepare a State SWPPP that incorporates the minimum BMPs required under the permit as well as appropriate project-specific BMPs. The SWPPP must be completed and certified by the developer and BMPs must be implemented prior to the commencement of construction, and may require modification during the course of construction as conditions warrant. When project construction is complete, the developer is required to file a Notice of Termination with the RWQCB certifying that all the conditions of the Construction General permit, including conditions necessary for termination, have been met.

Los Angeles County Municipal Storm Water System (MS4) Permit

The County of Los Angeles and the City are two of the Co-Permittees under the Los Angeles County MS4 Permit (Order No. R4-2012-0175, NPDES Permit No. CAS004001). The Los Angeles County MS4 Permit has been determined by the State Water Resources Control Board to be consistent with the requirements of the Clean Water Act and the Porter-Cologne Act for discharges through the public storm drains in Los Angeles County to statutorily defined waters of the United States (33 United States Code [USC] §1342(p); 33 CFR Part 328.11). On September 8, 2016, the LARWQCB amended the Los Angeles County MS4 Permit to incorporate modifications consistent with the revised Ballona Creek Watershed Trash Total Maximum Daily Load (TMDL) and the revised Los Angeles River Watershed Trash TMDL, among other TMDLs incorporated into the Los Angeles County MS4 Permit and the Basin Plan for the Coastal Waters of Los Angeles and Ventura Counties.

Under the amended Los Angeles County MS4 Permit, the County and City are both required to implement development planning guidance and control measures that control and mitigate stormwater quality and runoff volume impacts to receiving waters as a result of new development and redevelopment. The County and the City also are required to implement other municipal source detection and elimination programs, as well as maintenance measures.

Under the Los Angeles County MS4 Permit, permittees are required to implement a development planning program to address stormwater pollution. This program requires project applicants for certain types of projects to implement a Low Impact Development (LID) Plan, except where the Standard Urban Stormwater Mitigation Plan (SUSMP) is proven applicable. The purpose of the LID Plan is to reduce the discharge of pollutants in stormwater by outlining BMPs, which must be incorporated into the design of new development and redevelopment. These treatment control BMPs must be sufficiently designed and constructed to treat or retain the greater of an 85th percentile rain event or first 0.75 inch of stormwater runoff from a storm event.

The Los Angeles County MS4 Permit (Part VI.D.7.c, New Development/Redevelopment Project Performance Criteria) includes design requirements for new development and substantial redevelopment. These requirements apply to all projects that create or replace more than 5,000 square feet of impervious cover. Where redevelopment results in an alteration to more than 50 percent of impervious surfaces of a previously existing development and the existing development was not subject to post-construction stormwater quality control requirements, the entire project would be subject to post-construction stormwater quality control measures.

This Enhanced Watershed Management Program for the Upper Los Angeles River (ULAR EWMP) describes a customized compliance pathway that participating agencies will follow to address the pollutant reduction requirements of the Los Angeles County MS4 Permit.[10] By electing the optional compliance pathway in the MS4 Permit, the Upper Los Angeles River Watershed Management Group (EWMP Group) has leveraged this EWMP to facilitate a robust, comprehensive approach to stormwater planning for the Upper Los Angeles River watershed. The objective of the EWMP Plan is to determine the network of control measures (BMPs) that will achieve required pollutant reductions while also providing multiple benefits to the community and leveraging sustainable green infrastructure practices. The Permit requires the identification of Watershed Control Measures, which are strategies and BMPs that will be implemented through the EWMP, individually or collectively, at watershed-scale to address the Water Quality Priorities. The EWMP Implementation Strategy is used as a recipe for compliance for each jurisdiction to address Water Quality Priorities and comply with the provisions of the MS4 Permit. The EWMP Implementation Strategy includes individual recipes for each of the 18 jurisdictions and each watershed/assessment area—Los Angeles River above Sepulveda Basin, Los Angeles River below Sepulveda Basin, Compton Creek, Rio Hondo, Verdugo Wash, Arroyo Seco, Burbank Western Channel, Tujunga Wash, Bull Creek, Aliso Wash, Bell Creek, McCoy–Dry Canyon, and Browns Canyon Wash. Implementation of the EWMP Implementation Strategy will provide a BMP-based compliance pathway for each jurisdiction under the MS4 Permit. The Permit specifies that an adaptive management process will be revisited every two years to evaluate the EWMP and update the program. The EWMP strategy will evolve based on monitoring results by identifying updates to the EWMP Implementation Plan to increase its effectiveness.

The Los Angeles County MS4 Permit contains provisions for implementation and enforcement of the Stormwater Quality Management Program. The objective of the Stormwater Quality Management Program is to reduce pollutants in urban stormwater discharges to the "maximum extent practicable," to attain water quality objectives and protect the beneficial uses of receiving waters in Los Angeles County. Special provisions are provided in the Los Angeles County MS4 Permit to facilitate implementation of the Stormwater Quality Management Program. In addition, the Los Angeles County MS4 Permit requires that permittees implement a LID Plan, as discussed above, that designates BMPs that must be used in specified categories of development projects to infiltrate water, filter, or treat stormwater runoff; control peak flow discharge; and reduce the post-project

[10] Upper Los Angeles River Watershed Management Group, Enhanced Watershed Management Program, January 2016.

discharge of pollutants into stormwater conveyance systems. In response to the Los Angeles County MS4 Permit requirements, the City adopted Ordinance No. 173,494 (Stormwater Ordinance), as authorized by Los Angeles Municipal Code (LAMC) Section 64.72.

The City supports the requirements of the Los Angeles County MS4 Permit through the City of Los Angeles' *Development Best Management Practices Handbook, Low Impact Development Manual, Part B: Planning Activities* (5th edition, May 2016) (LID Handbook),[11] which provides guidance to developers to ensure the post-construction operation of newly developed and redeveloped facilities comply with the Developing Planning Program regulations of the City's Stormwater Program. The LID Handbook assists developers with the selection, design, and incorporation of stormwater source control and treatment control BMPs into project design plans, and provides an overview of the City's plan review and permitting process.

The City implements the requirement to incorporate stormwater BMPs, including LID BMPs, through the City's plan review and approval process. During the review process, project plans are reviewed for compliance with the City's General Plan, zoning ordinances, and other applicable local ordinances and codes, including stormwater requirements. Plans and specifications are reviewed to ensure that the appropriate BMPs are incorporated to address stormwater pollution prevention goals.

Water Quality Compliance Master Plan for Urban Runoff

The Water Quality Compliance Master Plan for Urban Runoff (Water Quality Compliance Master Plan)[12] was developed by the Department of Public Works, Bureau of Sanitation, Watershed Protection Division, and was adopted in April 2009.

The Water Quality Compliance Master Plan addresses planning, budgeting, and funding for achieving clean stormwater and urban runoff for the next 20 years and presents an overview of the status of urban runoff management within the City. The Water Quality Compliance Master Plan identifies the City's four watersheds; summarizes water quality conditions in the City's receiving waters as well as known sources of pollutants; summarizes regulatory requirements for water quality; describes BMPs required by the City for stormwater quality management; and discusses related plans for water quality that are implemented within the Los Angeles region, particularly TMDL Implementation Plans and Watershed Management Plans in Los Angeles.

[11] City of Los Angeles Department of Public Works, Bureau of Sanitation, Watershed Protection Division, Planning and Land Development for Low Impact Development (LID), Part B: Planning Activities, 5th Edition, May 2016.
[12] City of Los Angeles Department of Public Works, Bureau of Sanitation, Watershed Protection Division, Planning and Land Development for Low Impact Development (LID), Part B: Planning Activities, 5th Edition, May 2016.

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.

LAMC Section 64.70, the Stormwater and Urban Runoff Pollution Control Ordinance, was added by Ordinance No. 172,176 in 1998 and prohibits the discharge of unauthorized pollutants in the City. The Watershed Protection Program (Stormwater Program) for the City is managed by the Bureau of Sanitation along with all City Flood Protection and Pollution Abatement (Water Quality) Programs, including but not limited to, regulatory compliance, implementation, operations, reporting and funding. Section 64.70 sets forth uniform requirements and prohibitions for discharges and places of discharge into the storm drain system and receiving waters necessary to adequately enforce and administer all federal and state laws, legal standards, orders and/or special orders that provide for the

protection, enhancement and restoration of water quality. Through a program employing watershed-based approaches, the regulation implements the following objectives:

1. To comply with all Federal and State laws, lawful standards and orders applicable to stormwater and urban runoff pollution control;

2. To prohibit any discharge which may interfere with the operation of, or cause any damage to the storm drain system, or impair the beneficial use of the receiving waters;

3. To prohibit illicit discharges to the storm drain system;

4. To reduce stormwater runoff pollution;

5. To reduce non-stormwater discharge to the storm drain system to the maximum extent practicable; and

6. To develop and implement effective educational outreach programs designed to educate the public on issues of stormwater and urban runoff pollution.

The Ordinance applies to all dischargers and places of discharge that discharge stormwater or non-stormwater into any storm drain system or receiving waters. While this practice is prohibited under the County's Municipal NPDES Permit, adoption of the Ordinance allows enforcement by the Department of Public Works, as well as the levy of fines for violations. General Discharge Prohibitions require that no person shall discharge, cause, permit, or contribute to the discharge any hazardous materials and substances (liquids, solids, or gases) into to the storm drain system or receiving waters that constitute a threat and/or impediment to life and the storm drain system, singly or by interaction with other materials. A specific list of prohibited substances can be found under LAMC Section 64.70.

Under LAMC Section 64.70.02.D, Requirement to Prevent, Control, and Reduce Stormwater Pollutants, any owner of a facility engaged in activities or operations as listed in the Critical Sources Categories, Section III of the Board's Rules and Regulations shall be required to implement BMPs as promulgated in the Rules and Regulations. The owner/developer of a property under construction shall be required to implement the stormwater pollution control requirements for construction activities as depicted in the project plans approved by the Department of Building and Safety. In the event a specified BMP proves to be ineffective or infeasible, the additional and/or alternative, site-specific BMPs or conditions deemed appropriate to achieve the objectives of this Ordinance as defined in Subsection B of LAMC Section 64.70.

LAMC Section 64.72, Stormwater Pollution Control Measures for Development Planning and Construction Activities, was added by Ordinance No. 173,494 (LID Ordinance) in 2000 and sets forth requirements for construction activities and facility operations of development and redevelopment projects to comply with the requirements of the NPDES permit SUSMP requirements. The provisions of this section contain requirements for construction activities and facility operations of development and redevelopment projects

to comply with the Land Development requirements of the Los Angeles County MS4 permit through integrating LID practices and standards for stormwater pollution mitigation, and maximize open, green and pervious space on all developments and redevelopments consistent with the City's Landscape Ordinance and other related requirements in the Development Best Management Practices Handbook. The LID Ordinance (see below) applies first to a project in lieu of SUSMP. If a large project cannot meet the requirements of the LID Ordinance, then SUSMP measures are applied.

Stormwater Program – Los Angeles County MS4 Permit Citywide Implementation

The Watershed Protection Division of the Department of Public Works, Bureau of Sanitation is responsible for stormwater pollution control throughout the City in compliance with the Los Angeles County MS4 Permit. The Watershed Protection Division administers the City's Stormwater Program, which has two major components: Pollution Abatement and Flood Control. The Watershed Protection Division publishes the two-part Development Best Management Practices Handbook that provides guidance to developers for compliance with the Los Angeles County MS4 permit through the incorporation of water quality management into development planning. The Development Best Management Practices Handbook, Part A: Construction Activities, provides specific minimum BMPs for all construction activities.[13] The Development Best Management Practices Handbook, Low Impact Development Manual, Part B: Planning Activities (5th edition, May 2016) (LID Handbook) provides guidance to developers to ensure the post-construction operation of newly developed and redeveloped facilities comply with the Developing Planning Program regulations of the City's Stormwater Program.[14] The LID Handbook assists developers with the selection, design, and incorporation of stormwater source control and treatment control BMPs into project design plans, and provides an overview of the City's plan review and permitting process. The LID Handbook addresses the need for frequent and/or regular inspections of infiltration facilities in order to ensure on-site compliance of BMP standards, soil quality, site vegetations, and permeable surfaces. These inspections are required to guarantee that facilities follow all proprietary operation and maintenance requirements.

During the development review process, project plans are reviewed for compliance with the City's General Plan, zoning ordinances, and other applicable local ordinances and codes, including stormwater requirements. Plans and specifications are reviewed to ensure that the appropriate BMPs are incorporated to address stormwater pollution prevention goals.

Flood Hazard Management Ordinance

Effective April 19, 2021, Ordinance No. 186,952 amends the Specific Plan for the Management of Flood Hazards, established by Ordinance No. 154,405 and amended by

[13] City of Los Angeles Department of Public Works, Bureau of Sanitation, Watershed Protection Division, Planning and Land Development for Low Impact Development (LID), Part B: Planning Activities, 5th Edition, May 2016.
[14] City of Los Angeles Department of Public Works, Bureau of Sanitation, Watershed Protection Division, Planning and Land Development for Low Impact Development (LID), Part B: Planning Activities, 5th Edition, May 2016.

Ordinance Nos. 163,913 and 172,081, to update it to meet current federal standards and to rename it the Flood Hazard Management Ordinance (Ordinance). The Ordinance applies to all public and private development and provides for the establishment, management and regulatory control of Flood Hazard areas. For properties within areas of Special Flood Hazard Areas as identified by FEMA in the Flood Insurance Study (FIS) for The Los Angeles County dated December 2, 1980, the Ordinance establishes certain polices that include development and construction standards and regulations that may require additional permitting and discretionary review. Being hazard-specific, the provisions of the Ordinance deal with the unique problems of each hazard in addition to the Citywide policies and goals.

Low Impact Development

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

The goal of LID practices is to remove nutrients, bacteria, and metals from stormwater while also reducing the quantity and intensity of stormwater flows. Through the use of various infiltration strategies, LID is aimed at minimizing impervious surface area. Where infiltration is not feasible, the use of bioretention, rain gardens, green roofs, and rain barrels that will store, evaporate, detain, and/or treat runoff can be used.[15]

The intent of LID standards is to:

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

The Citywide LID strategy addresses land development planning, as well as storm drain infrastructure. Toward this end, LID is implemented through BMPs that fall into four categories: site planning BMPs, landscape BMPs, building BMPs, and street and alley BMPs. While the LID Ordinance and the BMPs contained therein comply with Los Angeles County MS4 Permit requirements for stormwater management, the MS4

[15] City of Los Angeles Department of Public Works, Bureau of Sanitation, Watershed Protection Division, Planning and Land Development for Low Impact Development (LID), Part B: Planning Activities, 5th Edition, May 2016.

requirements apply only to proposed new development and redevelopment of a certain size, primarily address stormwater pollution prevention as opposed to groundwater recharge, and vary over time as the permit is reissued every five years. The LID Ordinance provides a consistent set of BMPs that are intended to be inclusive of, and potentially exceed, SUSMP standards, apply to existing as well as new development, and emphasize natural drainage features and groundwater recharge in addition to pollution prevention in receiving waters. The LID Ordinance requires the capture and management of the greater of an 85th percentile rain event or the first 0.75-inch of runoff flow during storm events defined in the City's LID BMPs, through one or more of the City's preferred LID improvements in priority order: on-site infiltration, capture and reuse, or biofiltration/biotreatment BMPs, to the maximum extent feasible.

Per the City's 2016 LID Manual's Figure 3.3 and Section 4.1, the City's preferred LID improvement is on-site infiltration of stormwater, since it allows for groundwater recharge and reduces the volume of stormwater entering municipal drains.[16] If Project Site conditions are not suitable for infiltration, the City requires on-site retention via stormwater capture and reuse. Should capture and reuse be deemed technically infeasible, high efficiency bio-filtration/bioretention systems should be utilized. Lastly, under the LID Ordinance (LAMC Section 64.72 (C) 6), as interpreted in the LID Manual, if no single approach listed in the LID Manual is feasible, then a combination of approaches may be used.[17]

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

2.3. GROUNDWATER

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

As required by the California Water Code, the LARWQCB has adopted the Basin Plan. Specifically, the Basin Plan designates beneficial uses for surface and ground waters, sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the State's anti-degradation policy, and describes implementation programs to protect all waters in the Los Angeles Region. In addition, the Basin Plan incorporates (by reference) all applicable State and Regional Board plans and policies and other pertinent water quality policies and regulations. Those of other agencies are referenced in appropriate sections throughout the Basin Plan.

The Basin Plan is a resource for the 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

[16] City of Los Angeles Department of Public Works, Bureau of Sanitation, Watershed Protection Division, Planning and Land Development for Low Impact Development (LID), Part B: Planning Activities, 5th Edition, May 2016.
[17] City of Los Angeles Department of Public Works, Bureau of Sanitation, Watershed Protection Division, Planning and Land Development for Low Impact Development (LID), Part B: Planning Activities, 5th Edition, May 2016.

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 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, as set forth in the Code of Federal Regulations (CFR), are referred to as the National Primary Drinking Water Regulations (Primary Standards, Title 40, CFR Part 141) and the National Secondary Drinking Water Regulations (Second Standards, 40 CFR Part 143). California passed its own 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 CCR, Title 22, Division 4, Chapter 15, that are at least as stringent as those developed by the USEPA, as required by the federal Safe Drinking Water Act.

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 Los Angeles River Watershed (Watershed) in the Los Angeles Basin. The Watershed encompasses a land area of approximately 834 square miles. The eastern portion spans from the Santa Monica Mountains to Simi Hills and in the west from the Santa Susana Mountains to the San Gabriel Mountains.

The watershed is shaped by the path of the Los Angeles River, which flows from its headwaters in the mountains eastward toward the northern corner of Griffith Park. There the channel turns southward through Glendale Narrows before it flows across the coastal plan and into San Pedro near Long Beach.

The Los Angeles River has evolved from an uncontrolled, meandering river providing a valuable source of water for early inhabitants to a major flood protection waterway.

The City of Los Angeles River Watershed Section is tasked with finding ways to restore or revitalize the channels within the watershed and thereby provide significant opportunities for recreation and aesthetic improvement for the Los Angeles metropolitan area while protecting the Los Angeles Basin from major flooding. Refer to Figure 1 for Los Angeles River Watershed Map.

3.1.2. LOCAL

There is an existing 24-inch underground storm drain pipe located along Sacramento Street that flows towards the northeast. Two catch basins located at the intersection of Sacramento Street and Wilson Street that connects to this underground storm drain line. It then connects to a 39-inch underground storm drain main located along Sacramento Street that flows toward the east. The aforementioned storm drain system is owned and maintained by the City of Los Angeles.

Stormwater runoff from the Project Site will discharge toward the offsite catch basins and underground storm drain pipes located in Sacramento Street that convey stormwater through various underground pipe networks into the Los Angeles River. The Los Angeles River flows generally southward, ultimately discharging into the Pacific Ocean at San Pedro Bay, near Long Beach. The Los Angeles River was designed to discharge up to approximately 183,000 cubic feet of stormwater per second from a 50-year frequency storm event.[18]

3.1.3. ON SITE

The Project Site consists of the majority of one city block in the Central City North Community Plan bounded by Sacramento Street, Wilson Street, Lawrence Street, and an alley. The area surrounding the Project Site consists of commercial properties and produce warehouses. The Project is proposed to disturb approximately 76,739 square feet of site area.

Based on the preliminary soils report titled "Geotechnical Engineering Investigation, Proposed Office Development, 1727 through 1829 East Sacramento Street, Los Angeles, California" by Geotechnologies, Inc., dated August 22, 2022, and the Design Survey by KPFF Consulting Engineers, dated February 13, 2023 drainage across the Project Site appears to be by sheetflow and through curb outlets to the city streets to the southwest. It appears that there is not any storm drainage infrastructure on the existing site.

See attached Figure 2 for existing onsite drainage pattern and Figure 4 for hydrology calculations.

Table 1 below shows existing volumetric flow rate generated by the 50-year storm event.

[18] <http://www.ladpw.org/wmd/watershed/bc/>; accessed September 13, 2021.

Table 1- Existing Drainage Stormwater Runoff Calculations		
Drainage Area	Area (Acres)	Q50 (cfs) (volumetric flow rate measured in cubic feet per second)
Drainage Area 1	0.70	2.18
Drainage Area 2	1.06	3.30
Total	1.76	5.48

The drainage areas were determined by the existing drainage patterns and approximating the delineations that separate the stormwater flow's discharge offsite.

The calculations were based on the Los Angeles County's HydroCalc Calculator to determine the existing and proposed peak runoff rates for the 50-year event for each of the drainage areas. Hydrocalc is a software based on the Modified Rational Method (MODRAT), as outlined by the Los Angeles County Public Works Department Hydrology Manual dated January 2006.

3.2. SURFACE WATER QUALITY

3.2.1. REGIONAL

As stated above, the Project Site lies within the Los Angeles River Watershed. Constituents of concern listed for Los Angeles River under California's Clean Water Act Section 303(d) List include cadmium (sediment), trash, coliform bacteria, copper (dissolved), lead, Escherichia (E.Coli), selenium, sediment toxicity, Shellfish Harvesting Advisory, silver, toxicity, trash, viruses (Enteric), and zinc. No TMDL data have been recorded by EPA for this waterbody[19].

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. Contaminants that may be found in stormwater from developed areas include sediments, trash, bacteria, metals, nutrients, organics and pesticides. The source of contaminants includes surface areas where precipitation falls, as well as the air through which it falls. Contaminants on surfaces such as roads, maintenance areas, parking lots, and buildings, which are usually contained in dry weather conditions, may be carried by rainfall runoff into drainage systems. The City of Los Angeles typically installs catch basins with screens to capture debris before entering the storm drain system. In addition, the City conducts routine street cleaning operations, as well as periodic cleaning and maintenance of catch basins, to reduce stormwater pollution within the City.

[19] CA Water board: 2010 CALIFORNIA 303(d) LIST OF WATER QUALITY LIMITED SEGMENTS. available at https://www.waterboards.ca.gov/water_issues/programs/tmdl/2010state_ir_reports/category5_report.shtml; accessed September 13, 2021.

3.2.3. ON SITE

Based on the project survey, Design Survey by KPFF Consulting Engineers, site observations, and the fact that the existing site was developed prior to the enforcement of storm water quality BMP design, implementation, and maintenance, it appears the Project Site currently does not implement Best Management Practices (BMPs) and has no means of treatment for stormwater runoff. As it has been explained earlier in this report, the majority of the Site is discharging to Sacramento Street and Wilson Street.

As mentioned previously, it appears that the runoff water does not get treated onsite before getting discharged to main storm drain facility as the previous geotechnical report as well as the Design Survey shows drainage across the Project Site to be by sheetflow and through curb outlets. Please see Figure 2 for existing drainage exhibit.

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 5 for the groundwater basin exhibit.

3.3.2. LOCAL

The Project Site specifically overlies the northeastern portion of the Central Subbasin. The Central Subbasin underlies the center part of the Coastal Plain of Los Angeles Groundwater Basin. The subbasin is bounded on the north by 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. Surface drainage flows southward to join Ballona Creek, then westward to the Pacific Ocean. Average annual precipitation ranges from 12 to 14 inches.[20]

Groundwater in the Central Subbasin is replenished by percolation of precipitation and stream flow from the higher areas to the north. Paving of streets and lining of drainage channels have decreased greatly the surface area open to direct percolation. Subsurface

[20] Coastal Plain of Los Angeles Groundwater Basin, Hollywood Subbasin, <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-B118-Basin-Descriptions/B118-Basin-Boundary-Description-2003---4_011_02.pdf>

inflow may take place to a limited extent from underflow through fractured rock of the Santa Monica Mountains and potentially from underflow around the La Brea High. The natural safe yield of the Subbasin is estimated to be approximately 3,300 acre-feet per year (AFY).

3.3.3. On Site

The entire existing site is approximately 100% impervious since the Project Site is fully developed with three existing warehouse buildings and associated surface parking area which cover the entirety of the Project Site. Stormwater runoff currently leaves the Site via sheetflow. Therefore, the existing site does not have any impact to ground water. Refer to Figure 2 for the existing onsite drainage pattern.

Based on the Geotechnical Engineering Investigation (Geotechnical Investigation) prepared for the Project Site, review of the Seismic Hazard Zone Report for the Los Angeles 7.5 Minute Quadrangle, Los Angeles County, California (California Division of Mines and Geology [CDMG], 1998), the historically highest groundwater level in the area is reported to be approximately 145 feet beneath the ground surface.

Since the 2022 Geotechnical report did not discover any historic Groundwater, the historic information presented in the Geotechnical Investigation is generated from data collected through the Seismic Hazard Zone Report. Based on current groundwater basin management practices, it is unlikely that groundwater levels will ever reach the historic high levels.

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 or bedrock 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 Los Angeles Regional Water Quality Control Board (LARWQCB). According to LARWQCB's Basin Plan, objectives applying to all ground waters of the region include bacteria, chemical constituents and radioactivity, mineral quality, nitrogen (nitrate, nitrite), and taste and odor.[21]

[21] Los Angeles Regional Water Quality Control Board, Basin Plan, September 2014, <http://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/electronics_documents/Final%20Chapter%203%20Text.pdf> accessed November 28, 2021.

3.4.2. LOCAL

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

3.4.3. ON SITE

The existing Project Site is fully impervious with the existing buildings and paved hardscape surfaces, and therefore does not substantially contribute to groundwater recharge. Therefore, the existing Project Site does not contribute to groundwater pollution or otherwise adversely impact groundwater quality.

Other types of risk such as underground storage tanks have a greater potential to impact groundwater. However, there are no underground storage tanks observed at the Project Site per the Phase 1 Environmental Site Assessment (Phase 1 ESA). According to the Phase 1 ESA, there had previously been multiple underground storage tanks in the Project Site that have been removed.

In addition, soil vapor sampling performed in 2019 at the eastern parking lot of the Project Site determined there had been no detected elevated concentrations of petroleum hydrocarbons. Per the subsequent Phase II Soil and Soil Vapor Investigation (Phase II Investigation), based on existing data, a conclusive statement on whether the PCE impacts in soil vapor under the Site is a result of chemical diffusion from the adjacent site, off-gassing from groundwater from upgradient sites, or a combination of both these processes cannot be made. However, multiple lines of evidence indicate PCE soil vapor impacts at 1805-1899 Sacramento Street Site are a result of migration from the 1910-1914 Bay Street & 1901 Sacramento Street site. Regardless of the source or migration mechanism of the PCE impacts in soil vapor, the path-forward recommendation is the same. An engineered vapor control system should be installed as part of any new building constructed at the Site. Therefore, it has been recommended that an engineered vapor control system should be installed as part of any proposed building constructed at the Project Site.[22]

4. SIGNIFICANCE THRESHOLDS

In accordance with the significance thresholds described by CEQA, the Project has been analyzed for potential impacts on hydrology, water quality, and groundwater. This report includes an analysis of the Project with respect to the CEQA thresholds listed below.

4.1. SURFACE WATER HYDROLOGY

Appendix G of the State of California's CEQA Guidelines provides a set of sample questions that address impacts with regard to surface water hydrology. These questions are as follows:

[22] Limited Phase II Soil Vapor Investigation, dated July 20, 2020

Would the project:

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or offsite;

- Substantially alter the existing drainage pattern of the Site or area, including through the alteration of the course of a stream or river, in a manner which would result in flooding on- or offsite;

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

- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;

- Place within a 100-year flood hazard area structures which would impede or redirect flood flows;

- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as result of the failure of levee or dam;

In the context of these questions from Appendix G of the CEQA Guidelines, the City of Los Angeles CEQA Thresholds Guide (*L.A. CEQA Thresholds Guide*) states that a project would normally have a significant impact on surface water hydrology if it would:

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

- Substantially reduce or increase the amount of surface water in a water body; or

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

4.2. SURFACE WATER QUALITY

Appendix G of the CEQA Guidelines provides a set of sample questions that address impacts with regard to surface water quality. These questions are as follows:

Would the project:

- Violate any water quality standard or waste discharge requirements; or
- Otherwise substantially degrade water quality.

In the context of the above questions from Appendix G, 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 California Water Code (CWC) or that cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or Water Quality Control Plan for the receiving water body.

The 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.[23]

4.3. GROUNDWATER HYDROLOGY

Appendix G of the CEQA Guidelines provides a sample question that addresses impacts with regard to groundwater. This question is as follows:

Would the project:

- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or lowering of the local groundwater table;

In the context of the above question from Appendix G, the *L.A. CEQA Thresholds Guide* states that a project would normally have a significant impact on groundwater if it would:

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

[23] City of Los Angeles.LA. CEQA Thresholds Guide. 2006 https://planning.lacity.org/eir/CrossroadsHwd/deir/files/references/A07.pdf

- 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

With respect to groundwater quality, and in the context of the above question from Appendix G pertaining to groundwater, the *L.A. CEQA Thresholds Guide* states that a project would normally have a significant impact on groundwater quality if it would:

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

5. METHODOLOGY

5.1. SURFACE WATER HYDROLOGY

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 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. 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 to assess the Project's potential impacts.

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 4 for the Hydrocalc Calculator results and Figure 7 for the Isohyet Map.

5.2. SURFACE WATER QUALITY

5.2.1. CONSTRUCTION

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

5.2.2. OPERATION

The Project will be required to meet the requirements of the City's LID standards.[24] 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 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

[24] 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 July 1, 2011 to reflect Low Impact Development (LID) requirements that took effect May 12, 2012.

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 BMP will 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. Per the Project's Geotechnical Investigation[25], groundwater seepage was not encountered during exploration, conducted to a maximum depth of 55 feet beneath the existing ground surface.

The historic high ground water level is 145 feet below the ground surface. Per the Geotechnical Report, infiltration will be feasible on the Project Site.

Therefore, stormwater infiltration is currently proposed to be implemented to treat the 85th percentile storm. A volume of 6,331 cubic feet will be required to infiltrate. If infiltration is later deemed to be infeasible, Capture and Use will be implemented. A storage volume of 47,356 gallons is required for capturing the runoff water from the roof and surface drains. Approximately 11,735 square feet of landscaping would be required to accept the design volume mentioned previously. However, if both infiltration Capture and Use is later determined to not be feasible, the Project would then be required to implement High Efficiency Biofiltration/Bioretention Systems. In that case, 1,117 square feet of Biofiltration Planter would be required on the structure. See Figure 6 for LID calculations.

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

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

Where:

Catchment Area[26] = (Impervious Area x 0.9) + [(Pervious Area + Undeveloped Area) x 0.1]

[25] Geotechnologies Inc. Geotechnical Investigation Project No. 21971, January 25, 2022, Revised August 22, 2022
[26] For catchment areas given in acres, multiply the above equation by 43,560 sq. ft./acre

5.3. GROUNDWATER

The significance of this Project as it relates to the level of the underlying groundwater table of the Central Subbasin Groundwater Basin included a review of the following considerations:

Analysis and Description of the Project's Existing Condition

- Identification of the Central 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 Proposed Project's 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 Central Subbasin.

Existing groundwater contaminants were assessed in the Phase I ESA and Phase II subsequent Soil and Soil Investigation. Per the Phase I ESA, soil and or groundwater impacts in the eastern parking lot associated with the adjacent northeastern property historically used for textile processing and the location of a known release of PCE Soil indicated elevated concentrations of PCE in soil vapor samples, and suggests there is a potential for this offsite release to impact soil, and possibly groundwater, beneath the Site. Additionally, historic dumping of solvents in the northwestern corner of the property indicated the potential for elevated concentrations of solvents which could negatively impact soil and soil vapor beneath the Site. Therefore, a Phase II Soil and Soil Investigation was completed to evaluate the presence of subsurface impacts of volatile organic compounds (VOCs) or petroleum hydrocarbons from historic operations. Based on existing data, a conclusive statement on whether the PCE impacts in soil vapor under the Site is a result of chemical diffusion from the adjacent site, off-gassing from groundwater from upgradient sites, or a combination of both these processes cannot be made. However, multiple lines of evidence indicate PCE soil vapor impacts at 1805-1899 Sacramento Street Site are a result of migration from the 1910-1914 Bay Street & 1901 Sacramento Street site. Regardless of the source or migration mechanism of the PCE impacts in soil vapor,

the path-forward recommendation is the same. An engineered vapor control system should be installed as part of any new building constructed at the Site.[27][28]

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

6. PROJECT IMPACT ANALYSIS

6.1. CONSTRUCTION

6.1.1. SURFACE WATER HYDROLOGY

The Project Site consists of the majority of one city block in the Central City North Community Plan area bounded by Sacramento Street, Wilson Street, Lawrence Street, and an alley. The area surrounding the Project Site consists of commercial properties and produce warehouses. The Project is proposed to disturb approximately 76,739 square feet of site area.

Construction activities for the Project include removal and/or demolition of three warehouse buildings and associated surface parking.

It is anticipated that approximately 11,800 cubic yards of soil will be exported and approximately 3 feet of soil will be over excavated and recompacted as a result of the maximum 8-foot mat foundation depth of the proposed building. These activities will temporarily expose the underlying soils and may make the Project Site temporarily more permeable. Also, exposed and stockpiled soils could be subject to wind and conveyance into nearby storm drains during storm events. In addition, onsite watering activities to reduce airborne dust could contribute to pollutant loading in runoff.

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

In addition, the Project will comply with all applicable City grading permit regulations, plans, and inspections to reduce sedimentation and erosion. Thus, through compliance with NPDES General Construction Permit requirements, implementation of BMPs, and

[27] Phase I Environmental Site Assessment, Dated July 20, 2020
[28] Limited Phase II Soil Vapor Investigation, Dated July 20, 2020

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 or siltation. The Project would not result in a permanent adverse change to the movement of surface water. 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 of construction equipment, handling of construction materials, and dewatering, can contribute to pollutant loading in stormwater runoff.

However, as previously discussed, construction contractors disturbing greater than on acre of soil would be required to obtain coverage under the NPDES General Construction Permit (order No. 2012-0006-DWQ). In accordance with the requirements of the permit, the Project would prepare and implement a site-specific SWPPP adhering to the California Stormwater Quality Association (CASQA) BMP Handbook. The SWPPP would specify BMPs to be used during construction. BMPs would include but not be limited to: erosion control, sediment control, non-stormwater management, and materials management BMPs. Refer to Exhibit 1 for typical SWPPP BMPs to be implemented during construction of the Project.

The Project is not 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.

With implementation of an Erosion Control Plan, site-specific BMPs would reduce or eliminate the discharge of potential pollutants from stormwater runoff. In addition, the Project would be required to comply with City grading permit regulations and inspections to reduce sedimentation and erosion. Construction of the Project would not result in discharge that would cause: (1) pollution which would alter the quality of the water of the State (i.e., Los Angeles River) 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; and occurs during or as a result of the treatment or disposal of wastes. Furthermore, construction of the Project would not result in discharges that would cause regulatory standards to be violated in the Los Angeles River Watershed. Therefore, temporary construction-related impacts on surface water quality would be less than significant.

6.1.3. GROUNDWATER HYDROLOGY

As described in the Geotechnical Investigation[29] prepared for the Project Site, groundwater was not observed after depths of 55 feet below ground surface. As the maximum depth of

[29] Geotechnologies Inc. Geotechnical Investigation Project No. 21971, January 25, 2022, Revised August 22, 2022

excavation for the mat foundation is 8 feet, it is unlikely groundwater will be encountered during construction. During construction, dewatering operations are not expected as the proposed building will not encounter groundwater. If groundwater is encountered during construction, temporary pumps and filtration would be utilized in compliance all applicable regulations and requirements, including with all relevant NPDES requirements related to construction and discharges from dewatering operations. 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

During onsite 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. Due to compliance with measures as listed above and the implementation of BMPs, there are no groundwater production wells or public water supply wells within one mile of the Project Site and construction activities would not be in conflict with any existing wells. Therefore, the Project would not result in any substantial increase in groundwater contamination through hazardous materials releases and impacts on groundwater quality would be less than significant.

6.2. OPERATION

6.2.1. SURFACE WATER HYDROLOGY

The Project Site's overall percentage of impervious area is expected to remain the same as the current condition of the Project Site. The Project will develop a building and paved area creating a post-project condition of approximately 100% impervious surface area.

Accordingly, there is no incremental increase in the imperviousness of the Project Site. Therefore, peak flow rates would not increase and the runoff volumes into the existing storm drain system would remain the same.

Table 2 below shows the existing and proposed peak flow rates stormwater runoff calculations for the 50-year frequency design storm event. A comparison of the pre and post peak flow rates indicates no increase in stormwater runoff. Consequently, the Project would not cause flooding during the 50-year developed storm event, would not create runoff which would exceed the capacity of existing or planned drainage systems, would not require construction of new stormwater drainage facilities or expansion of existing

facilities, would not substantially reduce or increase the amount of surface water in a water body, or result in a permanent adverse change to the movement of surface water. As such, operation of the Project would result in a less than significant impact on surface water hydrology.

Table 2 – Existing and Proposed Stormwater Runoff Calculations				
Drainage Area	Project Site Area (Acres)	Pre-Project Q_{50} (cfs)[(a)]	Post-Project Q_{50} (cfs)[(a)]	Incremental Increase from Existing to Proposed Condition
Total Site	1.76	5.48	5.48	0.00
(a) peak volumetric flow rate measured in cubic feet per second				

In the existing conditions, the whole site is considered impervious due to the existing buildings and hardscape that covers the Project Site. The amount of run-on is 5.48 cubic feet per second and, therefore, 5.48 cubic feet per second sheetflows offsite.

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. The Project BMPs, currently proposed to be stormwater infiltration for the 85th percentile storm event, will mitigate and improve the stormwater runoff quality and quantity.

Runoff will be release onto the street via curb outlet which will ultimately flow into an existing catch basin further west of the street via gravity. Since water will be discharged offsite via gravity, the stormwater will not be backed up into the Site and, therefore, the proposed conditions will not cause flooding during the 50-year developed storm event.

Lastly, no water bodies are located on or within the immediate vicinity of the Project Site, and as such, the Project would not substantially increase the amount of surface water in a local water body. As proposed currently, the stormwater infiltration system will infiltrate the majority of the stormwater captured on site. Therefore, only potential overflow from the infiltration system will be discharging from the Site. If infiltration is later deemed infeasible, the Project peak flow rate of stormwater runoff discharging to the Los Angeles River will either decrease or remain the same per the results shown in Table 2 (the local receiving water).

The Project would not cause flooding during the 50-year developed storm event, would not create runoff which would exceed the capacity of existing or planned drainage systems, would not require construction of new stormwater drainage facilities or expansion of existing facilities, would not substantially reduce or increase the amount of surface water in a water body, or result in a permanent adverse change to the movement of surface water. Therefore, potential operational impacts to site surface water hydrology would be less than significant.

The Project Site is not located within a 100-year flood plain or within an area that could be impacted by a seiche, tsunami or mudflow, see Figure 8 FEMA Floodplain Map. Earthquake-induced flooding can result from the failure of dams or other water-retaining structures. According to the City of Los Angeles General Plan Safety Element, Exhibit G: Inundation & Tsunami Hazard Areas (refer to Figure 9), the Project Site is within a potential inundation area. Dam safety regulations are the primary means of reducing damage or injury due to inundation occurring from dam failure. The California Division of Safety of Dams regulates the siting, design, construction, and periodic review of all dams in the State. In addition, the Los Angeles Department of Water and Power (LADWP) operate the dam and mitigate the potential for overflow and seiche hazard through control of water levels and dam wall height. These measures include seismic retrofits and other related dam improvements completed under the requirements of the 1972 State Dam Safety Act. The City's Local Hazard Mitigation Plan,[30] which was adopted in July 2011, provides a list of existing programs, proposed activities and specific projects that may assist the City of Los Angeles in reducing risk and preventing loss of life and property damage from natural and human-caused hazards, including dam failure. The Hazard Mitigation Plan evaluation of dam failure vulnerability classifies dam failure as a moderate risk rating. Therefore, considering the above information and risk reduction projects, the risk of flooding from inundation by a seiche or dam failure is considered low and impacts are less than significant.

6.2.2. SURFACE WATER QUALITY

The Project Site will not increase concentrations of the items listed as constituents of concern for the Los Angeles River Watershed as the LID BMP will treat the stormwater before it is discharged offsite in the case that he LID system overflows.

Under section 3.1.3. of the LID Manual, post-construction stormwater runoff from new projects must be infiltrated, evapotranspirated, captured and used, and/or treated through high efficiency BMPs onsite for the volume of water produced by the 85th percentile storm event. As indicated in section 5.2.2. of this report, stormwater infiltration is feasible and is currently being proposed as the LID BMP for the Project. A volume of 6,331 cubic feet will be required to infiltrate. If infiltration is later deemed to be not feasible, Capture and Use will be implemented. A storage volume of 47,356 gallons is required for capturing the runoff water from the roof and surface drains. Approximately 11,735 square feet of landscaping would be required to accept the design volume mentioned previously. However, if Capture and Use is later determined to not be feasible, the Project would then be required to implement High Efficiency Biofiltration/Bioretention Systems. In that case, 1,117 square feet of Biofiltration Planter would be required on the structure. The stormwater will be pumped to the landscape planters from storage tank, for irrigation. Any excess rainfall volume will be conveyed to the adjacent streets by means of curb drain outlets.

[30] City of Los Angeles Emergency Management Department, *Local Hazard Mitigation Plan,* January 2018.

The Project will implement an Infiltration System, while Capture and Use System or Biofiltration Planters are to be implemented if infiltration is later deemed infeasible, and will manage stormwater runoff in accordance with current LID requirements. LID system that will be proposed to implement are significant in the City of LA's stormwater requirements. For the currently proposed infiltration system, the drywells will be preceded by a pretreatment unit prior to infiltration the captured stormwater. Therefore, the proposed project will then be assisting in the City's goal to enhance the water quality of the overall watershed.

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., Los Angeles River) 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; and 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.

Furthermore, operation of the Project would not result in discharges that would cause regulatory standards to be violated. The Project Site will be allocated to stormwater mitigation, in compliance with LID BMP requirements, to control and treat stormwater runoff to mitigate the 85th percentile storm event. The installed BMP systems will be designed with an internal bypass overflow system to prevent upstream flooding during major storm events. Implementation of LID BMPs will serve to mitigate existing drainage in the proposed condition. As there are no stormwater mitigation efforts in the existing site, the proposed conditions improve stormwater drainage prior to discharging offsite.

6.2.3. GROUNDWATER HYDROLOGY

Regarding groundwater recharge, the entire Project Site is virtually impervious in the existing condition since the existing site is fully developed with existing buildings and parking area that covers the entirety of the Project Site, and there is minimal groundwater recharge potential. The Project will develop hardscape, landscape, and structures that cover approximately 100% of the Project Site with impervious surfaces and is not anticipated to have any impact on the groundwater recharge potential. However, the Project would include the installation of LID BMPs, which would mitigate at minimum the first flush or the equivalent of the greater between the 85th percentile storm and first 0.75-inch of rainfall for any storm event. The installed BMP systems will be designed with an internal bypass or overflow system to prevent upstream flooding due to large storm events. The stormwater which bypasses the BMP systems would discharge to an approved discharge point in the public right-of-way and not result in infiltration of a large amount of rainfall, which would affect groundwater hydrology, including the direction of groundwater flow.

The Project would include a total of 11,800 cubic yard excavations plus an additional 3 feet of over excavation and recompaction per the recommendations of the Geotechnical Report. The Project would also result in a net export of 11,800 cubic yards existing soil material. Any contaminated soils found would be captured within that volume of excavated material, removed from the Project Site, and remediated at an approved disposal facility in accordance with regulatory requirements and consistent with the recommendations in the Phase II.

As described in the Geotechnical Investigation prepared for the Project Site, the historic groundwater level in the vicinity of the Project Site was on the order of 145 feet below grade and no groundwater was observed at 55 feet below grade. As the proposed building will not incorporate subterranean levels, it is expected that groundwater will not be encountered. Permanent dewatering operations will not need to be utilized to be in compliance with all relevant NPDES requirements related to dewatering operations. 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 of water wells, or any extraction or recharge system that is in the vicinity of the coast, an area of known groundwater contamination or seawater intrusion, a municipal supply well or spreading ground facility.

Operational activities which could affect groundwater quality include hazardous material spills and leaking underground storage tanks. No underground storage tanks are currently operated or will be operated by the Project. Through the implementation of LID BMPs, the Project would not expand any potential areas of contamination, increasing the level of contamination, or cause regulatory water quality standard violations, as defined in the California Code of Regulations, Title 22, Division 4, Chapter 15 and the Safe Drinking Water Act.

The Project Operation is not anticipated to result in releases or spills of contaminants that could reach a groundwater recharge area or spreading ground or otherwise reach groundwater through percolation. The Project does not involve drilling to or through a clean or contaminated aquifer. Additionally, the Project would include the installation of structural BMPs as a means of pretreatment prior to infiltration or capture and use of the first flush or equivalent of the greater between the 85th percentile storm event and the first 0.75-inch of rainfall for any storm event, which would allow for treatment of runoff generated on-site prior to discharging to catch basins in the public right of way. Therefore, the Project's potential impact on groundwater quality 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 Los Angeles River Watershed. In accordance with City requirements, the Project and

related projects would be required to implement BMPs to manage stormwater runoff in accordance with LID guidelines. Furthermore, the City of Los Angeles Department of Public Works reviews projects on a case-by-case basis to ensure sufficient local and regional infrastructure is available to accommodate stormwater runoff. Therefore, potential cumulative impacts associated with the Project on surface water hydrology would not be cumulatively considerable and less than significant.

6.3.2. SURFACE WATER QUALITY

Future growth in the Los Angeles River Watershed would be subject to NPDES requirements relating to water quality for both construction and operation. The Project Site is located in a highly urbanized area and it is anticipated that future development projects would also be subject to LID requirements. The Project would comply with all applicable laws, rules and regulations and, therefore, would not cause a significant contribution to cumulative impacts for all the reasons stated in project level analysis.

6.3.3. GROUNDWATER HYDROLOGY

The geographic context for the cumulative impact analysis on groundwater level is the Central Subbasin.

Development of the related projects could result in changes in impervious surface area within their respective project sites. Any calculation of the extent to which the related projects would increase or decrease impervious or pervious surfaces that might affect groundwater hydrology would be speculative. In addition, as the related projects are located in a highly urbanized area, any reduction in groundwater recharge due to the overall net change in impervious area within the related project sites would be minimal in the context of the regional groundwater basin. Additionally, as infiltration systems are designed to infiltrate only the greater of the 85th percentile storm and or the first 0.75-inch of rainfall for any storm event, the infiltration of stormwater as a means of stormwater treatment and management within the Project Site and related project sites would not result in a cumulative effect to groundwater hydrology.

6.3.4. GROUNDWATER QUALITY

Future growth in the Central Subbasin would be subject to LARWQCB requirements relating to groundwater quality. In addition, since the Project is located in a highly urbanized area, future land use changes or development are not likely to cause substantial changes in regional groundwater quality. As noted above, the Project does not have an adverse impact on groundwater quality. Also, it is anticipated that the Project and other future development projects would also be subject to LARWQCB requirements and implementation of measures to comply with total maximum daily loads. Therefore, since the Project does not have an adverse impact and through compliance with all application laws, rules and regulations, cumulative impacts to groundwater quality would be less than significant.

7. LEVEL OF SIGNIFICANCE

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

APPENDIX

FIGURE 1 - LOS ANGELES RIVER WATERSHED MAP

COUNTY OF LOS ANGELES

LOS ANGELES RIVER WATERSHED

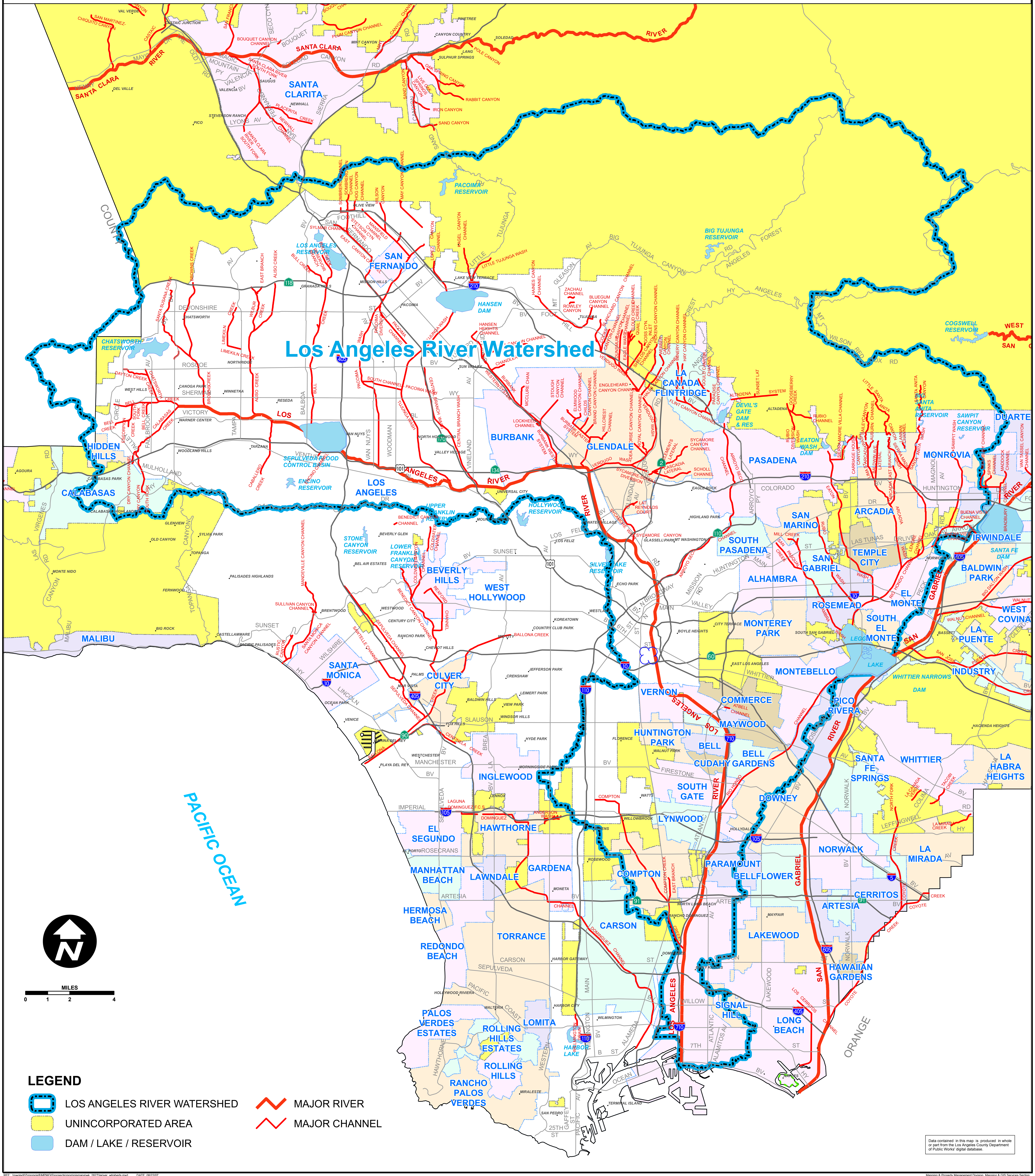


FIGURE 2 - EXISTING DRAINAGE EXHIBIT

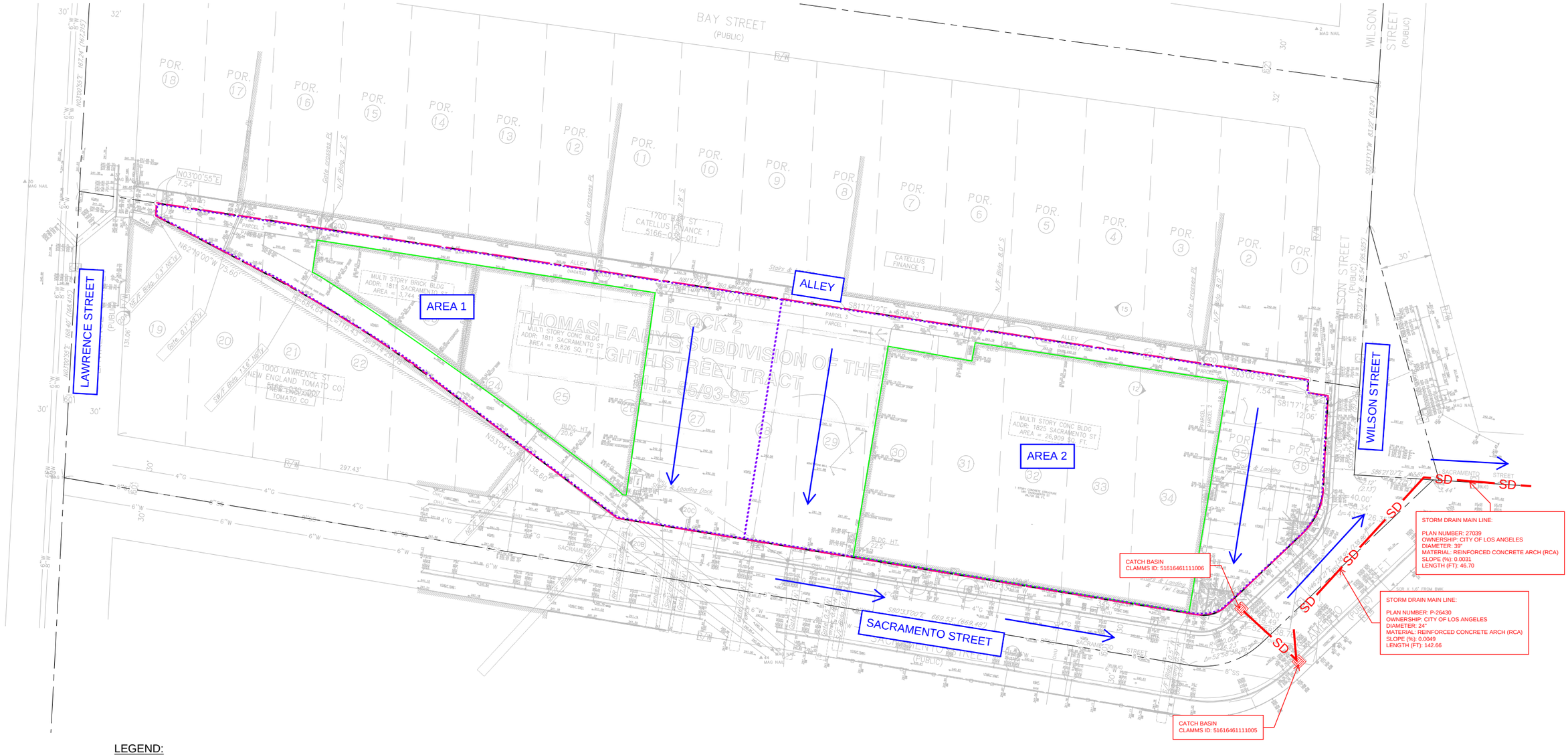
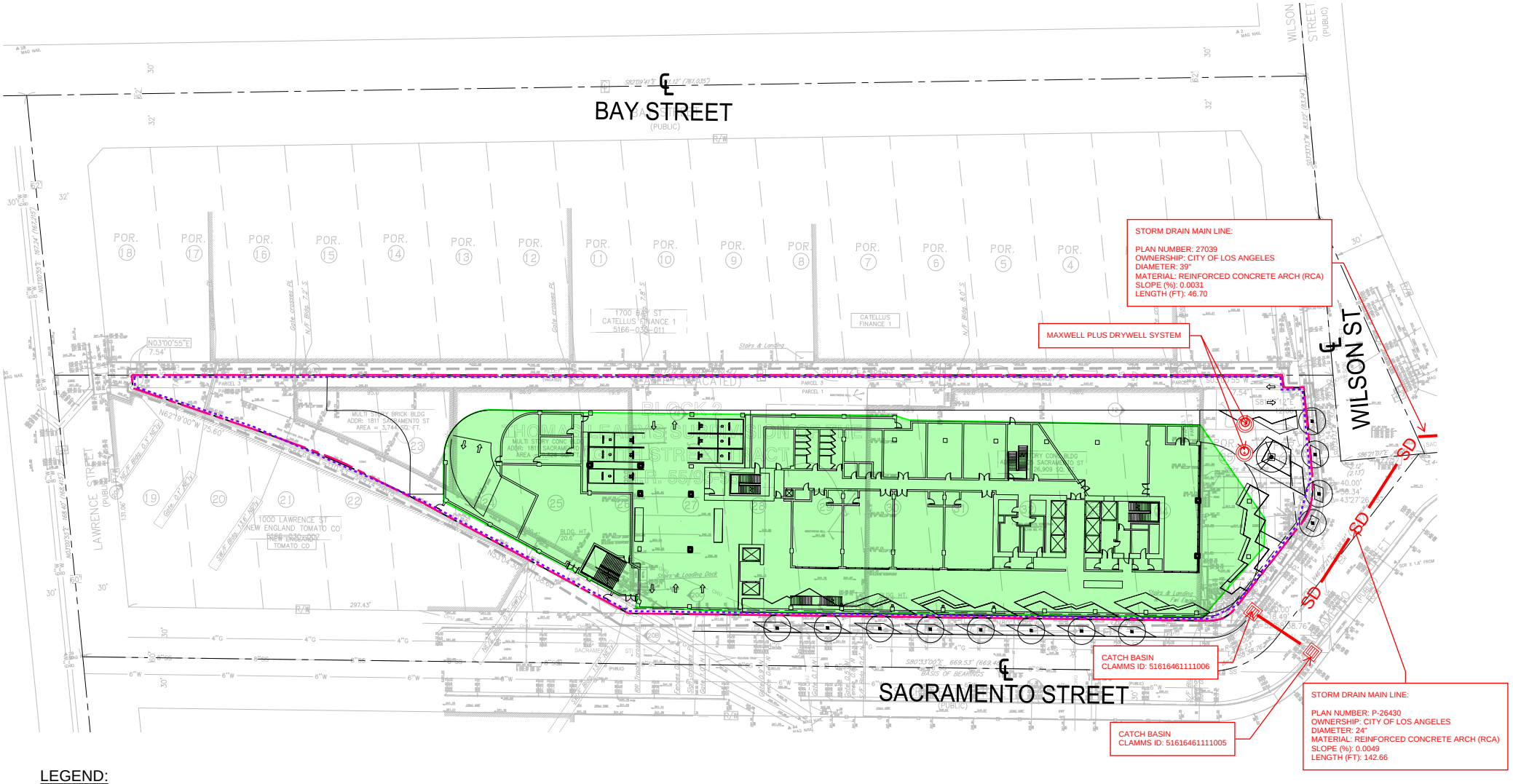


FIGURE 3 - PROPOSED DRAINAGE EXHIBIT



LEGEND:

- PROPERTY LINE
- BUILDING FOOTPRINT
- HYDROLOGY SUB-AREA BOUNDARY
- FLOW DIRECTION
- SD — STORM DRAIN LINE
- CATCH BASIN
- MAINTENANCE HOLE

FIGURE 4 - HYDROLOGY RESULTS FOR EXISTING SITE

Peak Flow Hydrologic Analysis

File location: C:/Users/lgreen/OneDrive - KPFF, Inc/Desktop/1811 Sacramento Street - Area 1.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	1811 Sacramento Street
Subarea ID	Area 1 - Existing
Area (ac)	0.7
Flow Path Length (ft)	145.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.8
Percent Impervious	1.0
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	3.4604
Undeveloped Runoff Coefficient (Cu)	0.8546
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.1801
Burned Peak Flow Rate (cfs)	2.1801
24-Hr Clear Runoff Volume (ac-ft)	0.302
24-Hr Clear Runoff Volume (cu-ft)	13154.4041

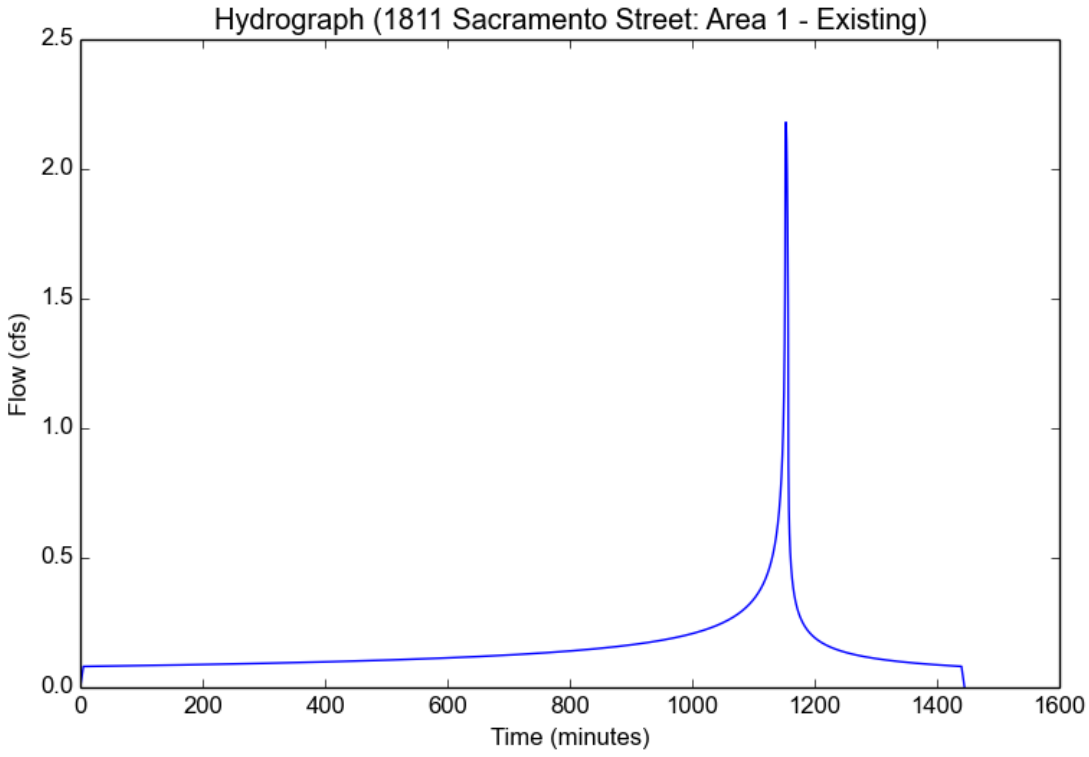


FIGURE 4 - HYDROLOGY RESULTS FOR EXISTING SITE

Peak Flow Hydrologic Analysis

File location: C:/Users/lgreen/OneDrive - KPFF, Inc/Desktop/1811 Sacramento Street - Area 2.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	1811 Sacramento Street
Subarea ID	Area 2 - Existing
Area (ac)	1.06
Flow Path Length (ft)	145.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.8
Percent Impervious	1.0
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	3.4604
Undeveloped Runoff Coefficient (Cu)	0.8546
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.3013
Burned Peak Flow Rate (cfs)	3.3013
24-Hr Clear Runoff Volume (ac-ft)	0.4573
24-Hr Clear Runoff Volume (cu-ft)	19919.5262

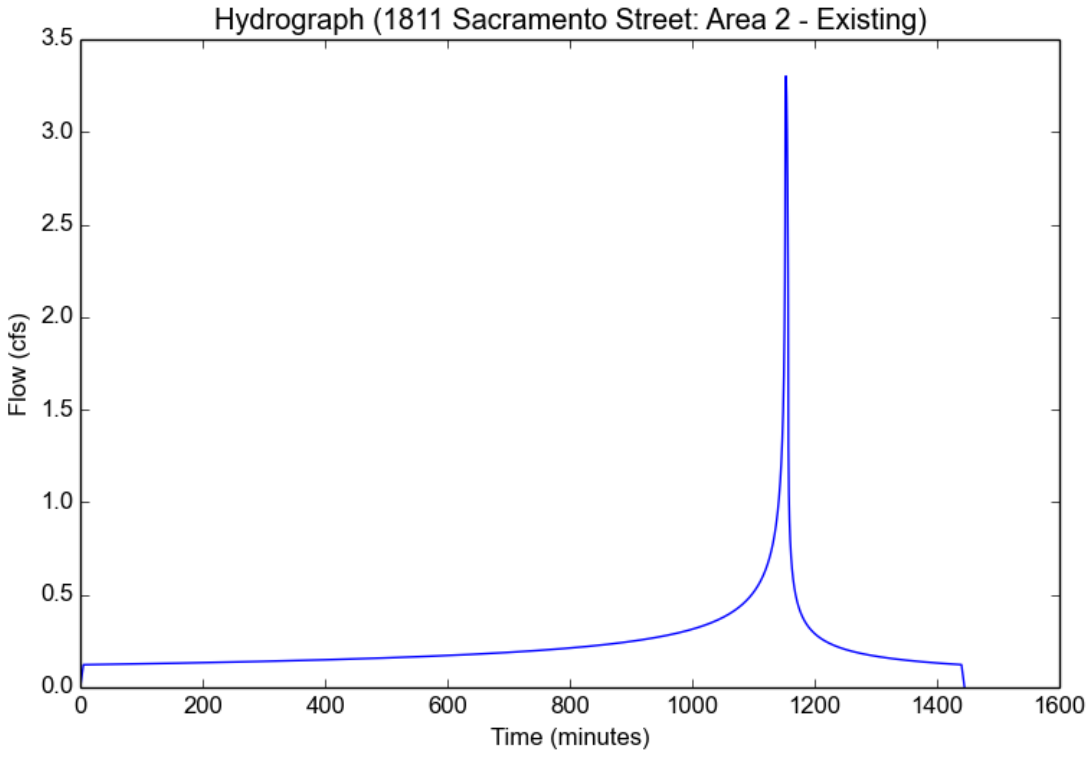


FIGURE 4 - HYDROLOGY RESULTS FOR PROPOSED SITE

Peak Flow Hydrologic Analysis

File location: C:/Users/lgreen/OneDrive - KPFF, Inc/Desktop/1811 Sacramento Street - Area 1 - Proposed.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	1811 Sacramento Street
Subarea ID	Area 1 - Proposed
Area (ac)	1.76
Flow Path Length (ft)	145.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.8
Percent Impervious	1.0
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	3.4604
Undeveloped Runoff Coefficient (Cu)	0.8546
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	5.4813
Burned Peak Flow Rate (cfs)	5.4813
24-Hr Clear Runoff Volume (ac-ft)	0.7593
24-Hr Clear Runoff Volume (cu-ft)	33073.9304

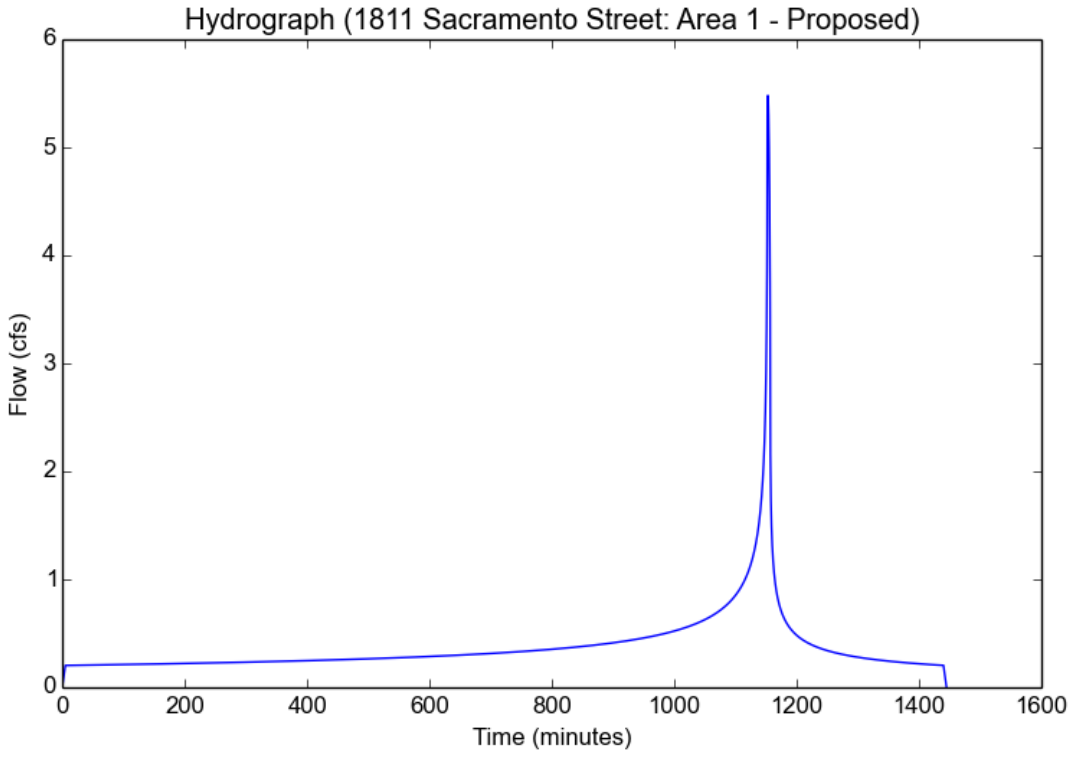


FIGURE 5 - COASTAL PLAIN OF LOS ANGELES GROUNDWATER BASIN EXHIBIT

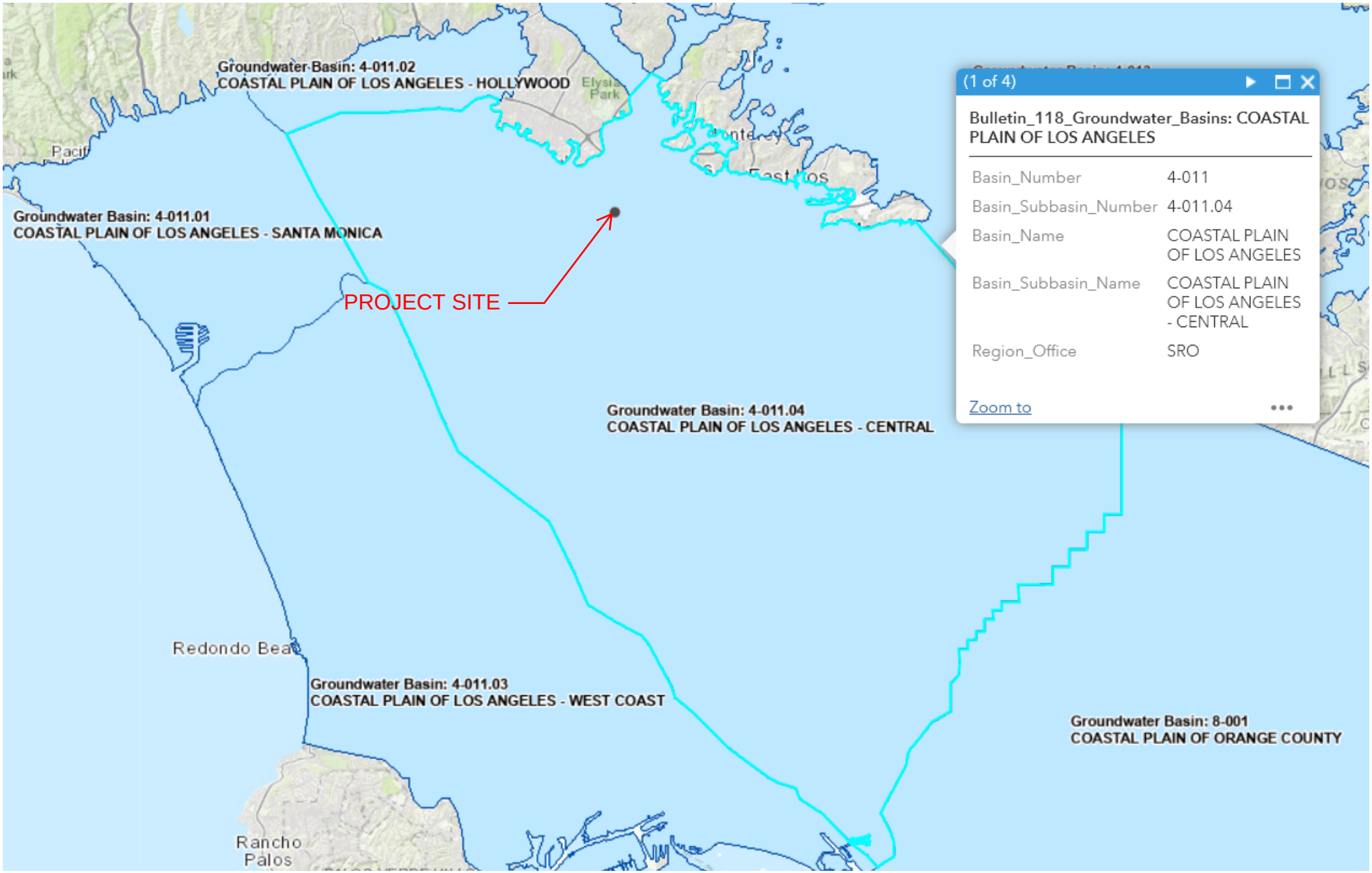


FIGURE 6 - LID CALCULATION RESULT FOR INFILTRATION

Infiltration BMP Sizing

Note:

Red values to be changed by user.
Black values are automatically calculated.

[1]	Total Area (SF)		76739
[2]	Impervious Area (SF)		76739
[3]	Pervious Area (SF)	**[1]-[2] =**	0
[4]	Catchment Area (SF)	**([2]*0.9)+([3]*0.1) =**	69065
[5]	Design Rainfall Depth (in)	**Greater of 0.75", 85th percentile**	0.98
[6]	V_{design} (CF)	**[5]/12*[4] =**	5640
[7]	$K_{sat,measured}$ (in/hr)		1.9
[8]	FS	**Use 6 if no geotech investigation**	3.0
[9]	$K_{sat,design}$ (in/hr)	**[7]/[8] =**	0.63
[10]	Drawdown Time (hr)		48
[11]	**Infiltrating Surface Area (sq. ft)**	**[6]*12/([10]*[9]) =**	**2226**

NOTE: "The calculated minimum BMP surface area only considers the surface area of the BMP where infiltration can occur."

"If depth of media is calculated as greater than 8 feet (except for dry wells), the design infiltration area shall be increased and the depth of media shall be recalculated until it is less than 8 feet."

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

FIGURE 6 - LID CALCULATION RESULT FOR CAPTURE AND REUSE

Capture & Use Sizing

Note:	Red values to be changed by user.
	Black values are automatically calculated.

[1]	Total Area (SF)		76739
[2]	Impervious Area (SF)		76739
[3]	Pervious Area (SF)	**[1]-[2] =**	0
[4]	Catchment Area (SF)	**([2]*0.9)+([3]*0.1) =**	69065
[5]	Design Rainfall Depth (in)	**Greater of 0.75", 85th percentile**	1.10
[6]	V_{design} (gal)	**[5]/12*7.48*[4] =**	**47356**
[7]	Planting Area (SF)		11735
[8]	Plant Factor*		0.3
[9]	$ETWU_{(7\text{-month})}$	**21.7*0.62*[8]*[7] =**	47365
[10]	Is $V_{design} \leq ETWU_{(7\text{-month})}$?		**YES**

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

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

FIGURE 6 - LID CALCULATION RESULT FOR BIORETENTION

Bioretention (with underdrain) Sizing

Note:

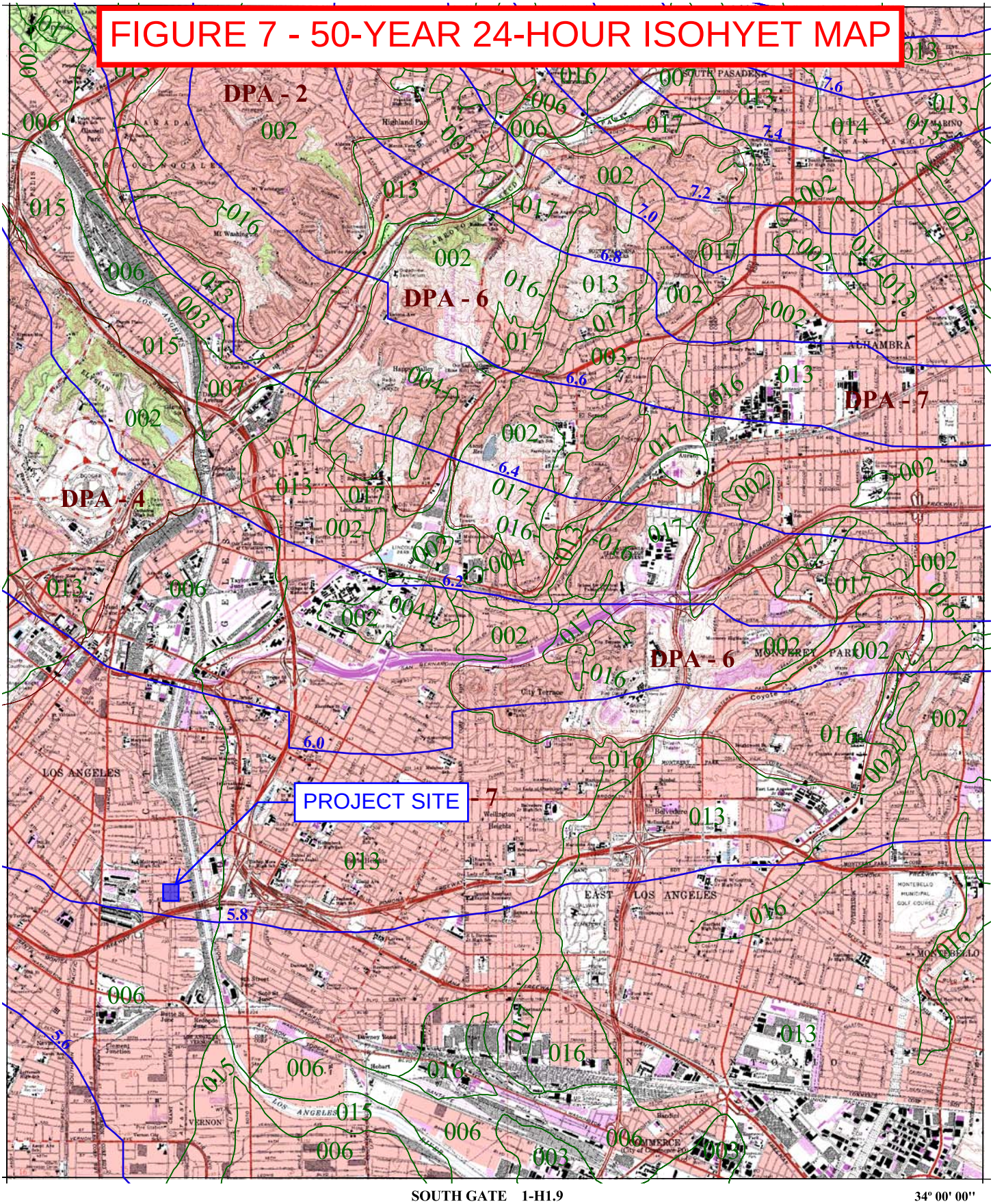
Red values to be changed by user.
Black values are automatically calculated.

[1]	Total Area (SF)		76739
[2]	Impervious Area (SF)		76739
[3]	Pervious Area (SF)	**[1]-[2] =**	0
[4]	Catchment Area (SF)	**([2]*0.9)+([3]*0.1) =**	69065
[5]	Design Rainfall Depth (in)	**Greater of 0.75", 85th percentile**	1.1
[6]	V_{design} (CF)	**1.5*[5]/12*[4] =**	9496
[7]	$K_{sat,media}$ (in/hr)		90.0
[8]	FS	**Use 6 if no geotech investigation**	3.0
[9]	$K_{sat,design}$ (in/hr)	**[7]/[8] =**	30.0
[10]	d_{p_max}, Max. Ponding Depth (ft)	**MIN(1.5, [9]*48/12) =**	1.5
[11]	d_p, Ponding Depth (ft)	**1.5' max.**	1.0
[12]	T_{fill} (hr)		3
[13]	**A_{min} (sq. ft)**	**[6]/([9]*[12]/12 + [11])**	**1117**

NOTE: "The calculated BMP surface area only considers the surface area of the BMP where infiltration through amended media can occur. The total footprint of the BMP should include a buffer for sideslopes and freeboard."

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

FIGURE 7 - 50-YEAR 24-HOUR ISOHYET MAP



N
W E
S

016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

1 0 1 2 Miles

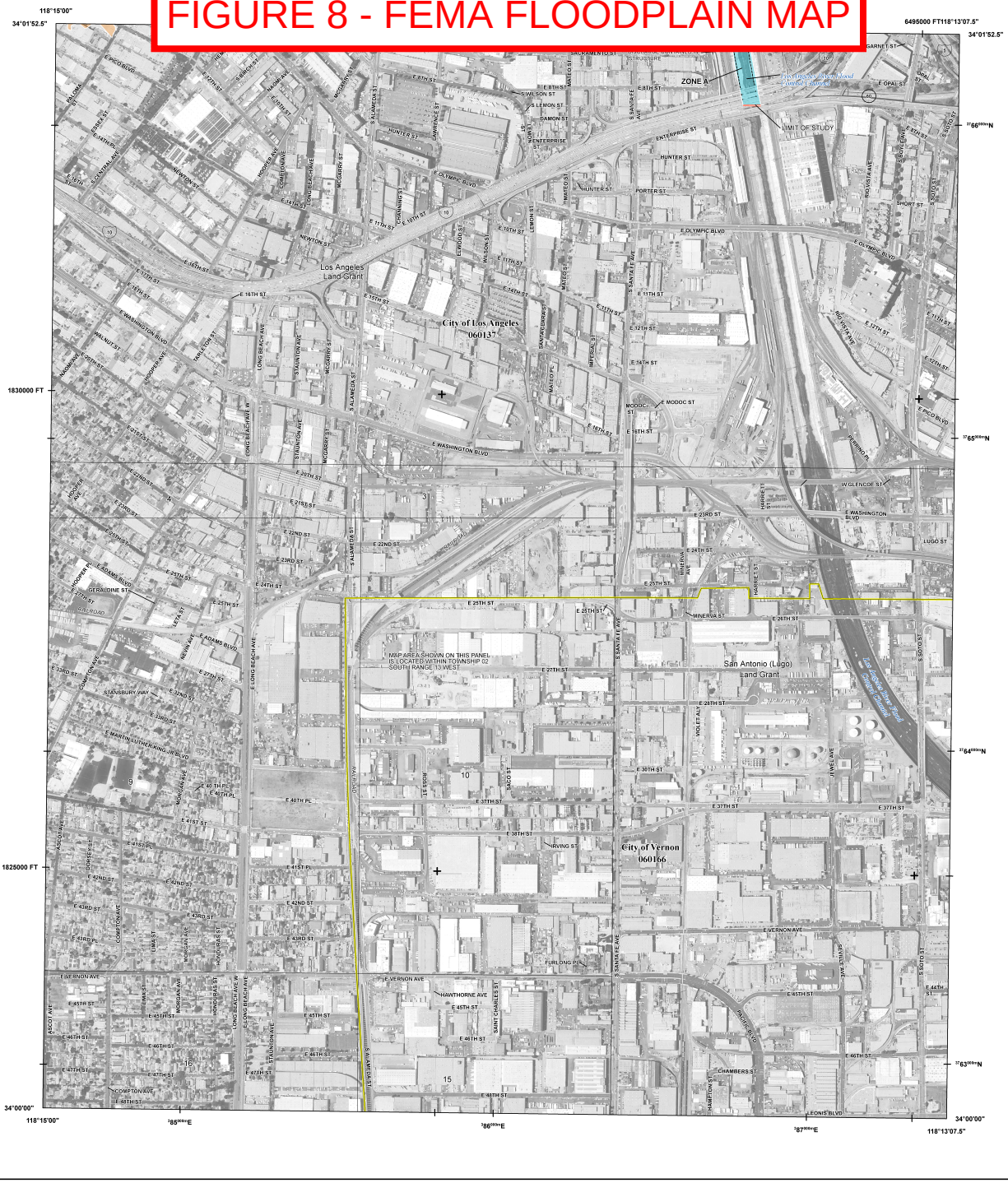
25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

LOS ANGELES
50-YEAR 24-HOUR ISOHYET

1-H1.19

LOS ANGELES COUNTY PUBLIC WORKS
Public Service That Works

FIGURE 8 - FEMA FLOODPLAIN MAP



FLOOD HAZARD INFORMATION

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

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 18.2 / 17.5 — Cross Sections with 1% Annual Chance Water Surface Elevation
- 8 — Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 — Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

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

Base map information shown on this FIRM was derived from multiple sources. Vector base map data was provided by the Los Angeles County Department of Public Works and the Los Angeles County GIS Department. Digital ortho imagery was collected by the U.S. Department of Agriculture National Agriculture Imagery Program (NAIP). This imagery was flown in 2014 and was produced with a 1-meter ground sample distance.

SCALE

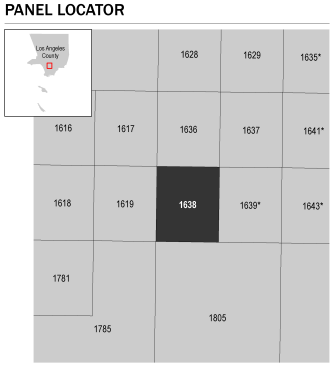
Map Projection:
Universal Transverse Mercator Zone 11N; North American Datum 1983; Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet — 1:6,000

0 250 500 750 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



*PANEL NOT PRINTED

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

LOS ANGELES COUNTY, CALIFORNIA
and Incorporated Areas

PANEL **1638** OF **2350**

Panel Contains:

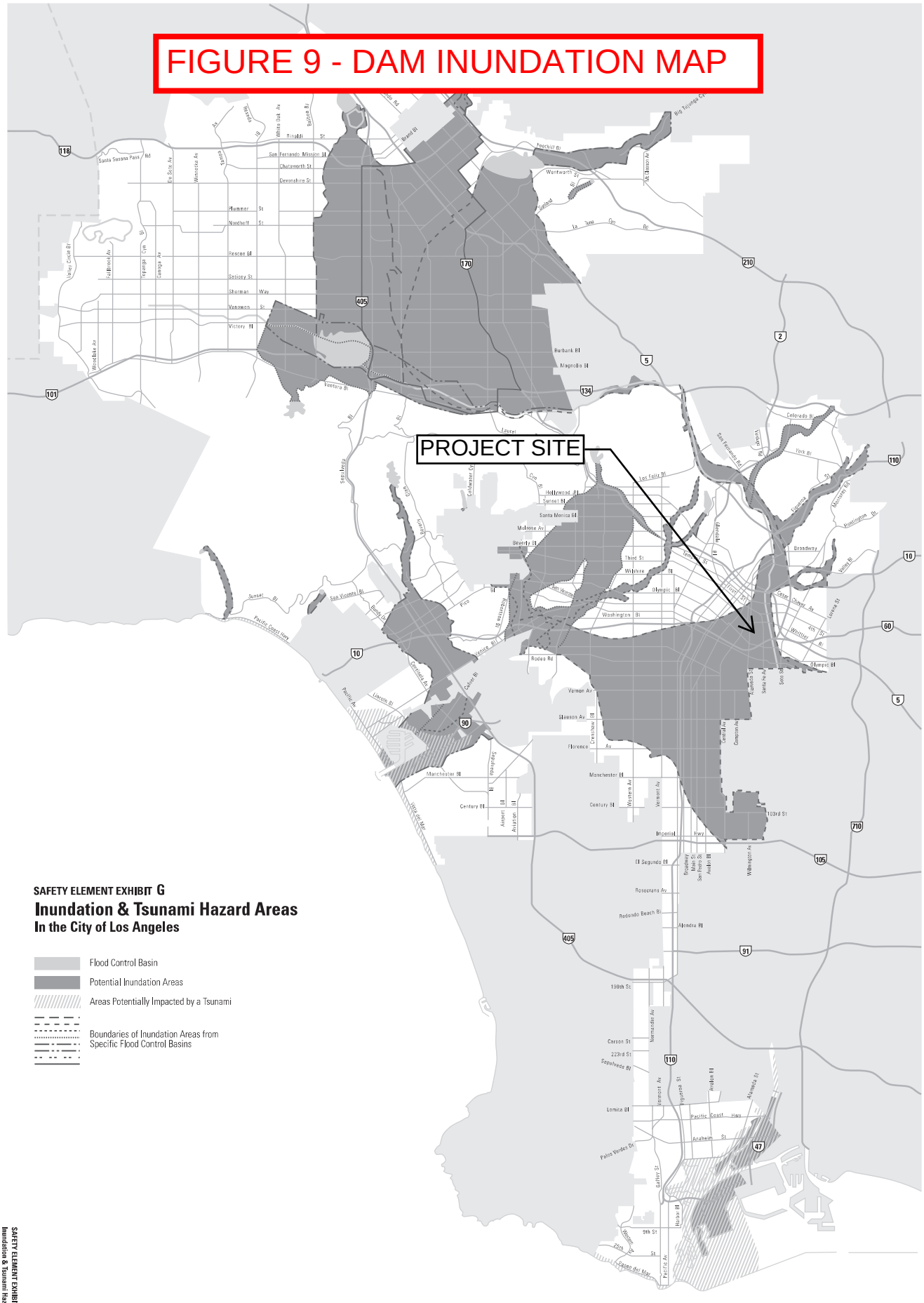
COMMUNITY	NUMBER	PANEL	SUFFIX
LOS ANGELES, CITY OF	060137	1638	G
VERNON, CITY OF	060166	1638	G

VERSION NUMBER
2.3.3.2

MAP NUMBER
06037C1638G

MAP REVISED
DECEMBER 21, 2018

FIGURE 9 - DAM INUNDATION MAP



SAFETY ELEMENT EXHIBIT G

Inundation & Tsunami Hazard Areas
In the City of Los Angeles

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

Sources: Environmental Impact Report, Framework Element, Los Angeles City General Plan, May 1995; Technical Appendix to the Safety Element of the Los Angeles County General Plan Hazard Reducation in Los Angeles County, Volume 2, Plate 6, "Flood and Inundation Hazards" January 1990; California Environmental Quality Act of 1970 (CEQA), Public Resources Code Section 21000 *et. seq*, with guidelines as amended, 1992; California Government Code Title 7 chapter 3, article 5 section 66302(g), as amended 1993.

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

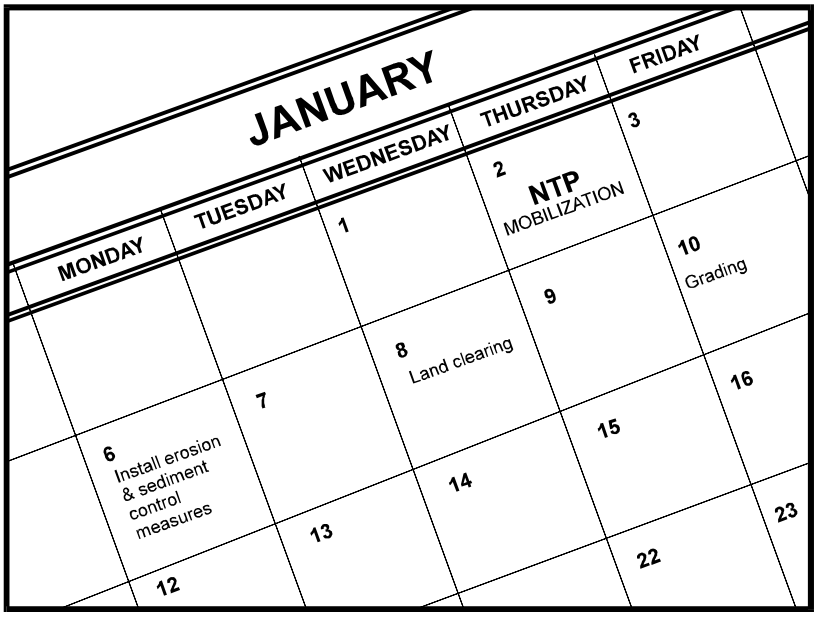
1 1/2 0 1 2 3 4 5 KILOMETERS

N 1 1/2 1/4 0 1 2 3 4 MILES

SAFETY ELEMENT EXHIBIT G
Inundation & Tsunami Hazard Areas

EXHIBIT 1 - TYPICAL EROSION CONTROL BMP'S

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**

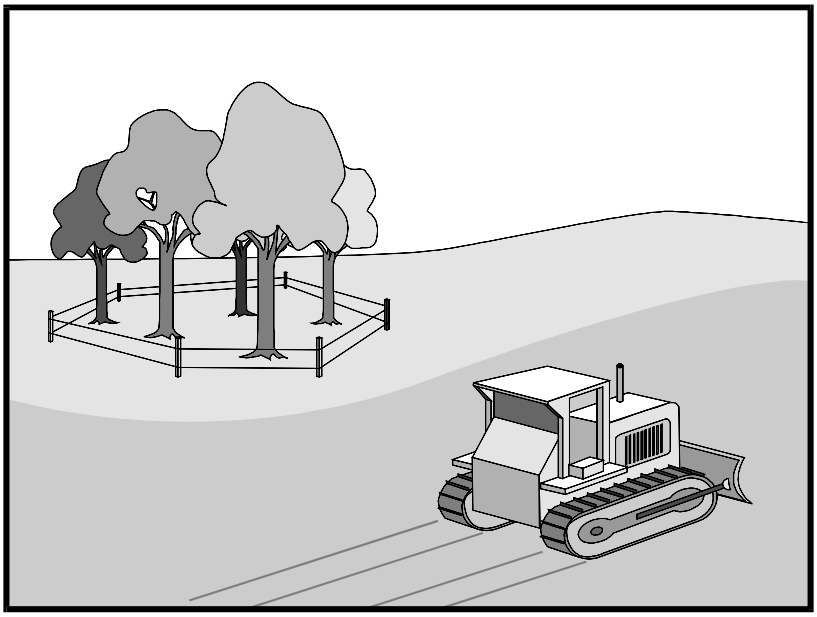
Targeted Constituents

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**

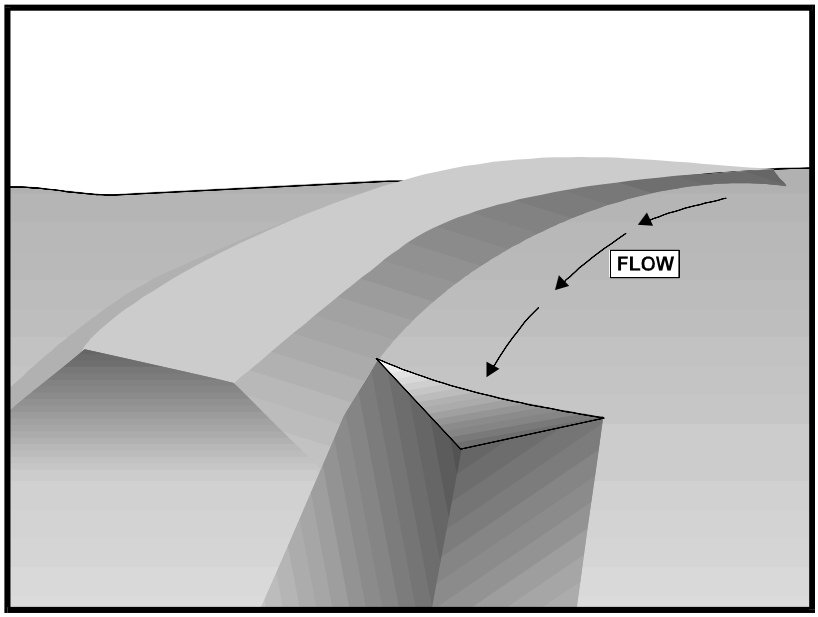
Targeted Constituents

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**

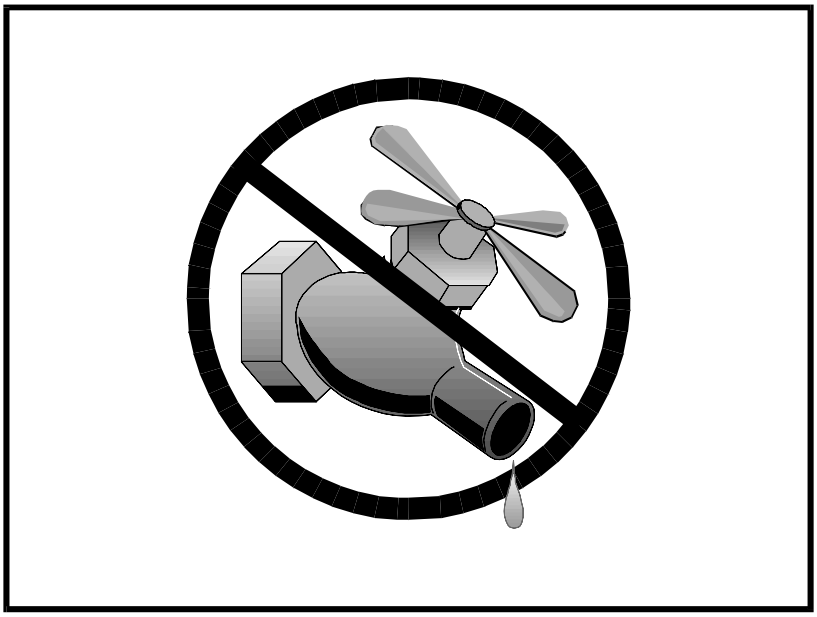
Targeted Constituents

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

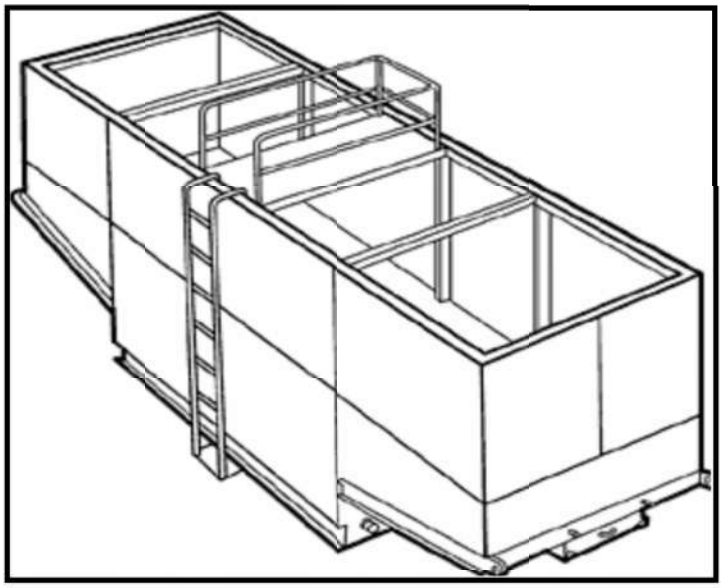
- None identified.

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

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Description and Purpose

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

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

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

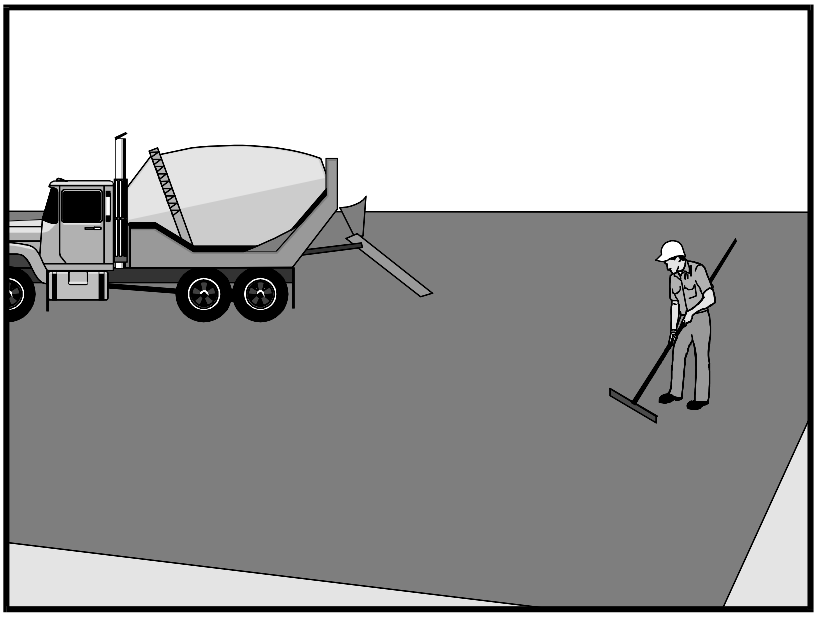
The dewatering operations described in this fact sheet are not Active Treatment Systems (ATS) and do not include the use of chemical coagulations, chemical flocculation or electrocoagulation.

Suitable Applications

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

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

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

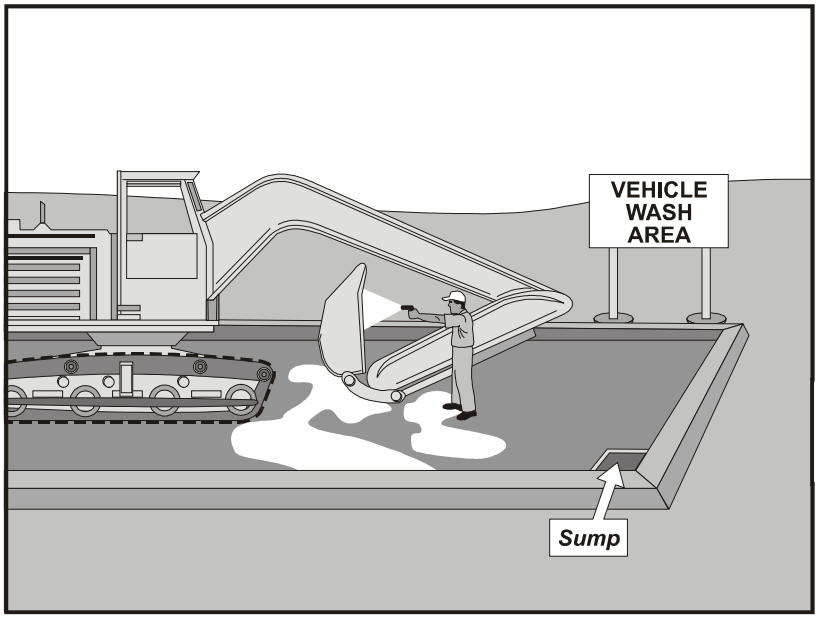
These procedures are implemented where paving, surfacing, resurfacing, or sawcutting, may pollute stormwater runoff or discharge to the storm drain system or watercourses.

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.

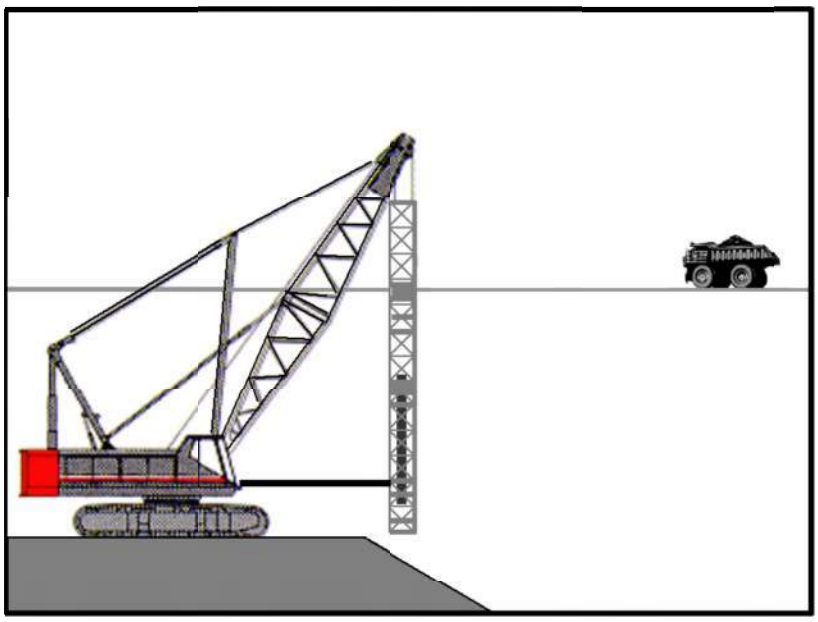
Implementation

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:

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

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

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

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.

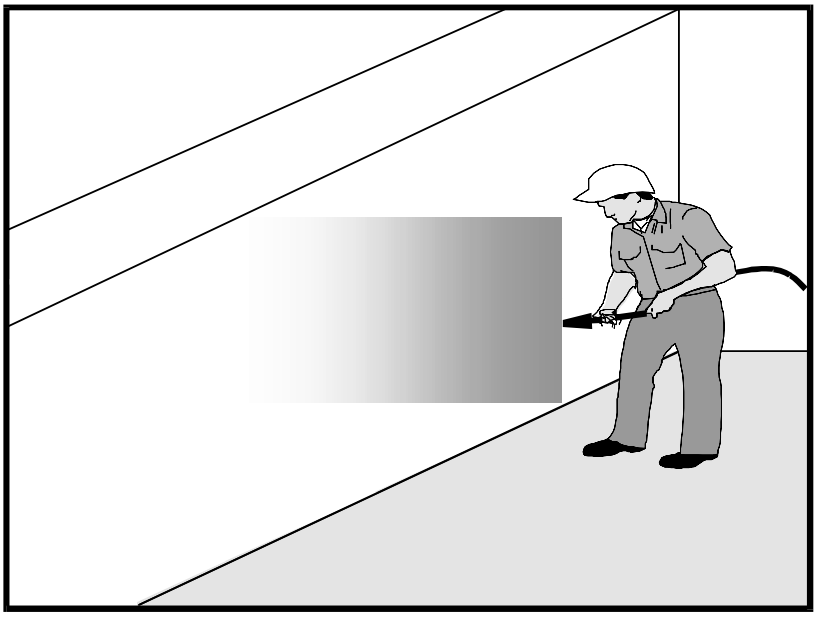
Limitations

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.

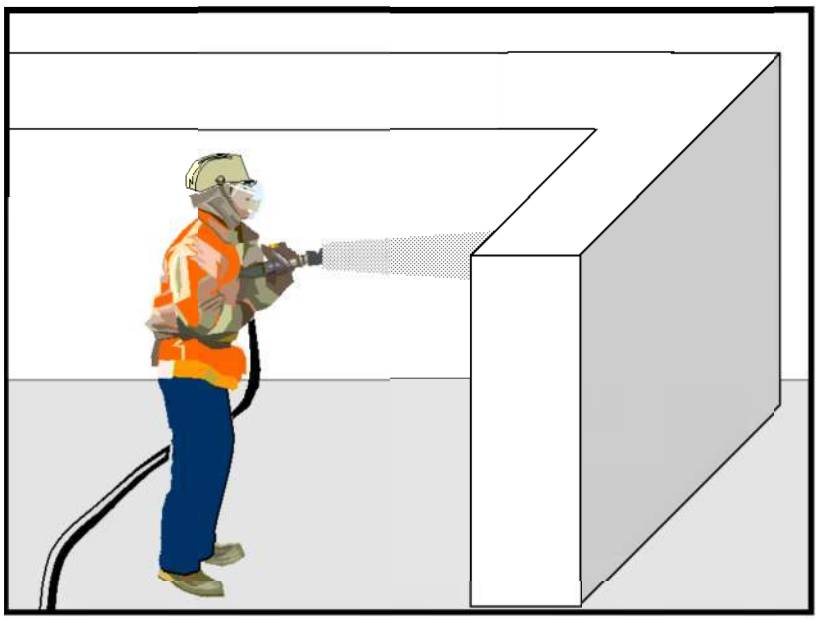
Suitable Applications

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.

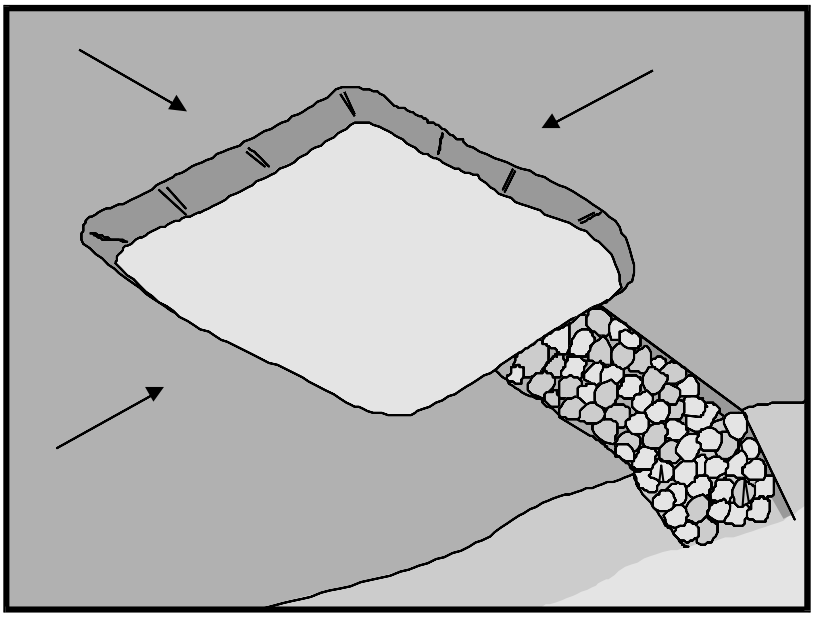
The General Permit incorporates Numeric Action Levels (NAL) for pH (see Section 2 of this handbook to determine your project's risk level and if you are subject to these requirements).

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.

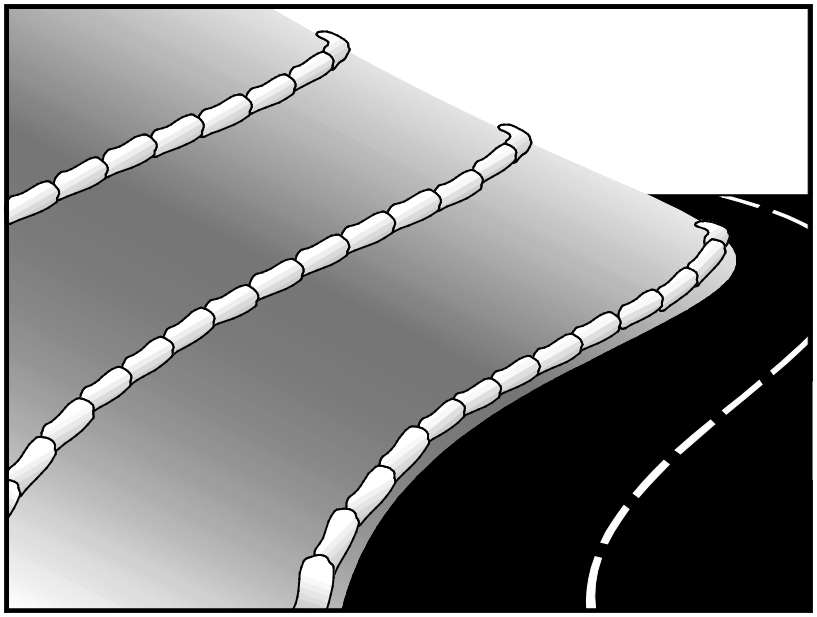
Trap design guidance provided in this fact sheet is not intended to guarantee compliance with numeric discharge limits (numeric action levels or numeric effluent limits for turbidity). Compliance with discharge limits requires a thoughtful approach to comprehensive BMP planning, implementation, and maintenance. 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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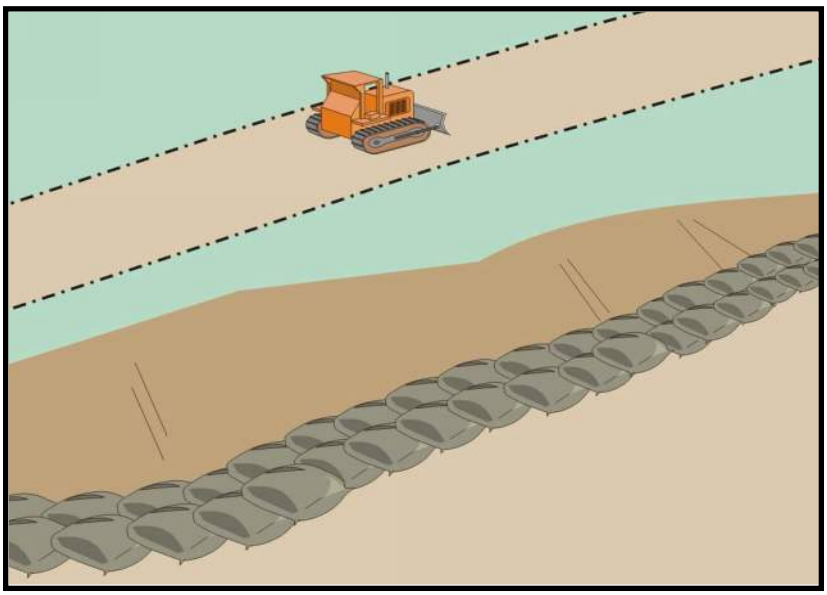
Sandbag Barrier SE-8



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

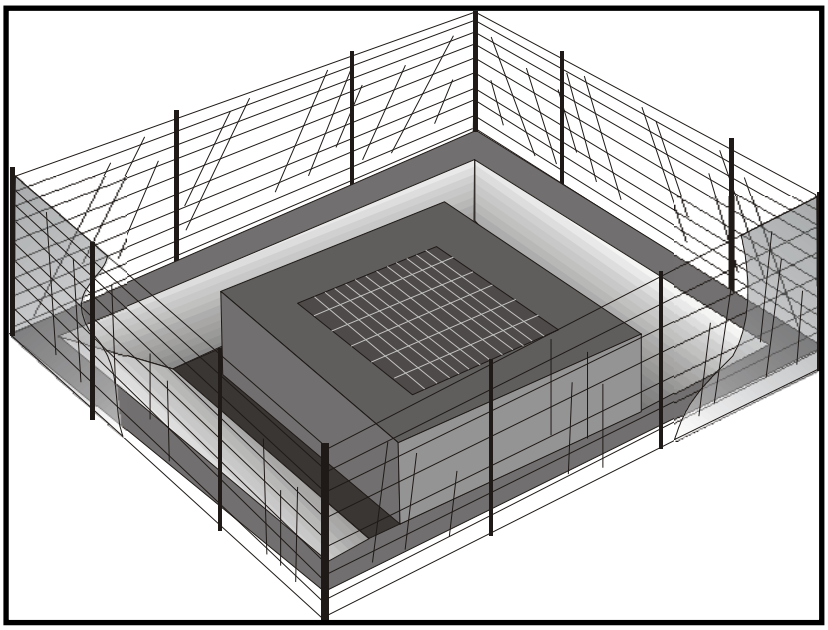
SE-5 Fiber Rolls

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

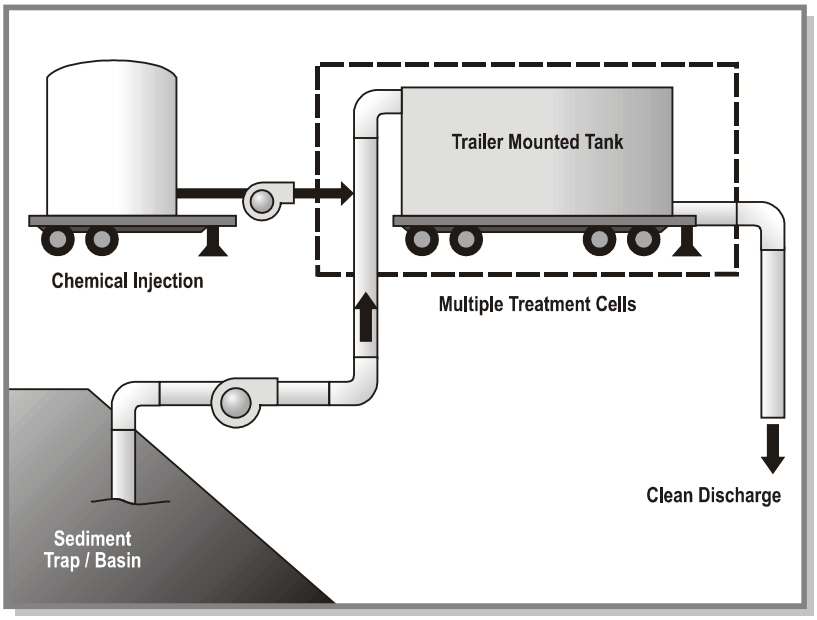
SE-6 Gravel Bag Berm

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.

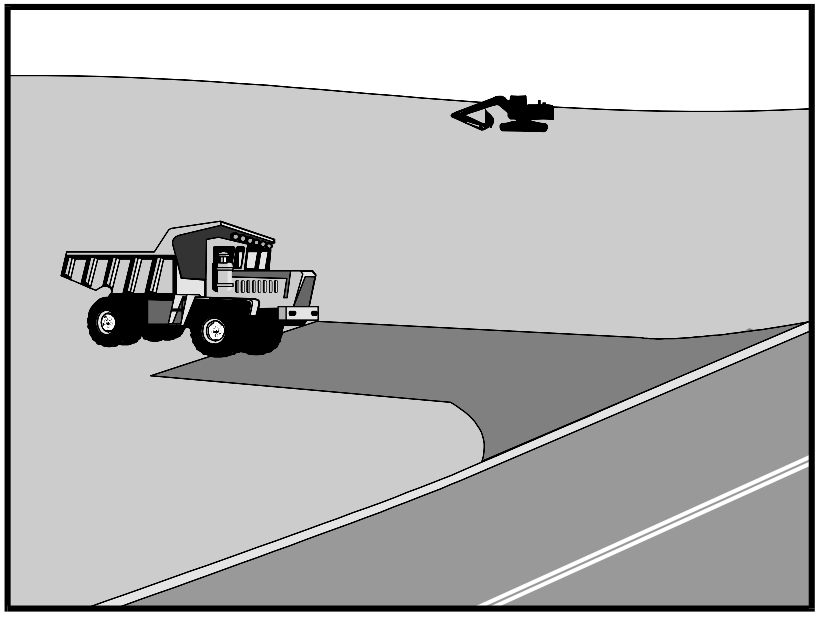
Suitable Applications

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

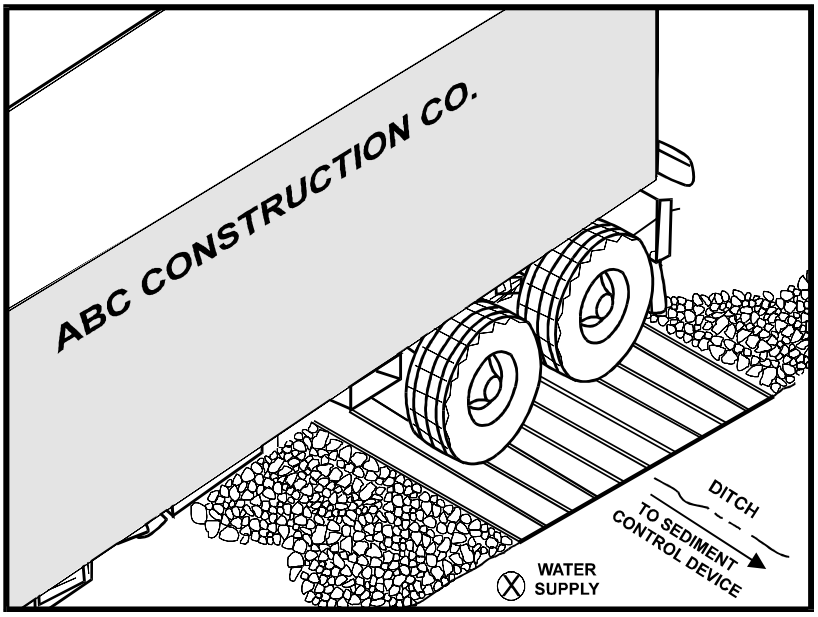
- Entrances and exits require periodic top dressing with additional stones.
- This BMP should be used in conjunction with street sweeping on adjacent public right of way.
- Entrances and exits should be constructed on level ground only.
- Stabilized construction entrances are rather expensive to construct 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**

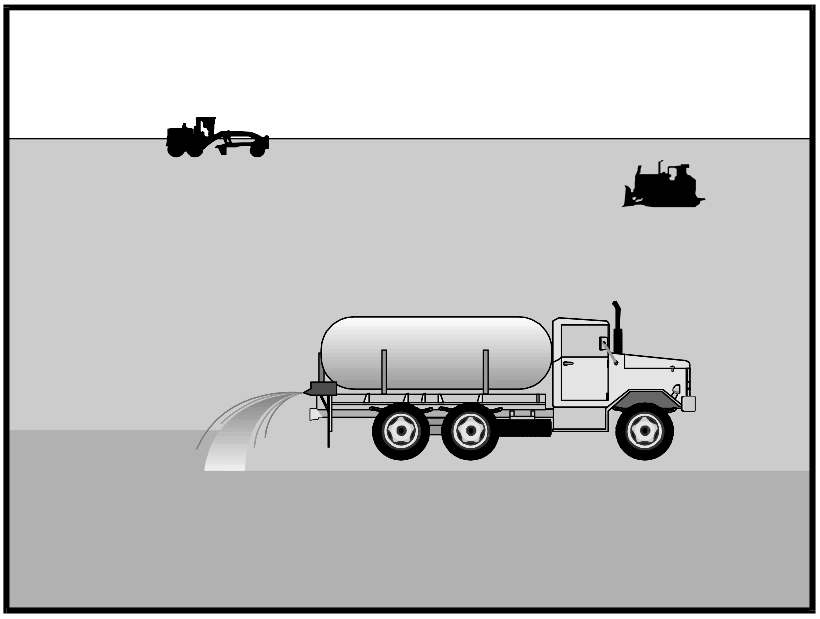
Targeted Constituents

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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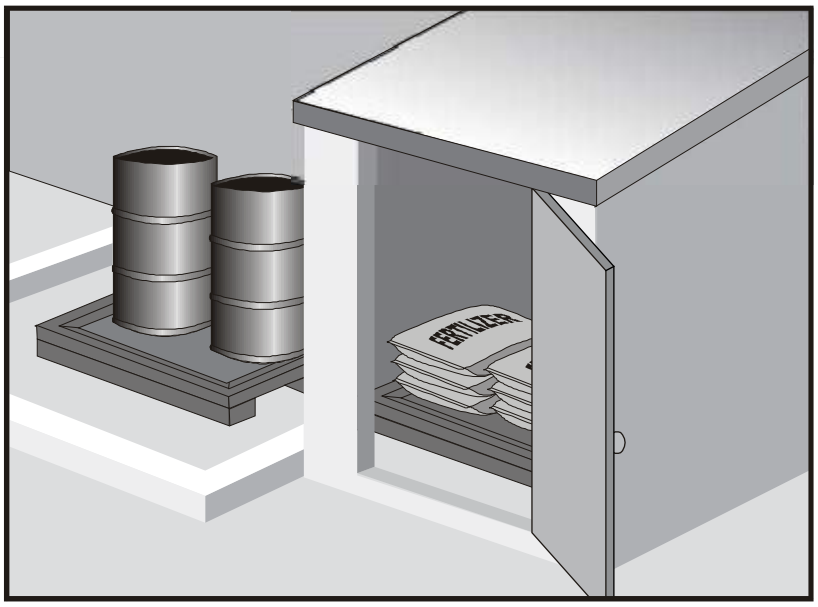
Material Delivery and Storage WM-1



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:

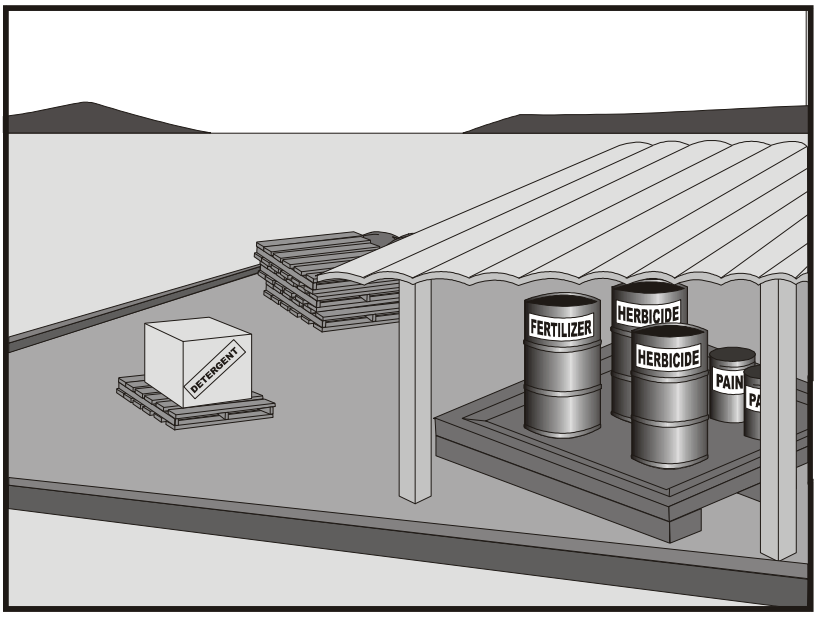
- Soil stabilizers and binders
- Pesticides and herbicides
- Fertilizers
- Detergents
- Plaster
- Petroleum products such as fuel, oil, and grease

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**

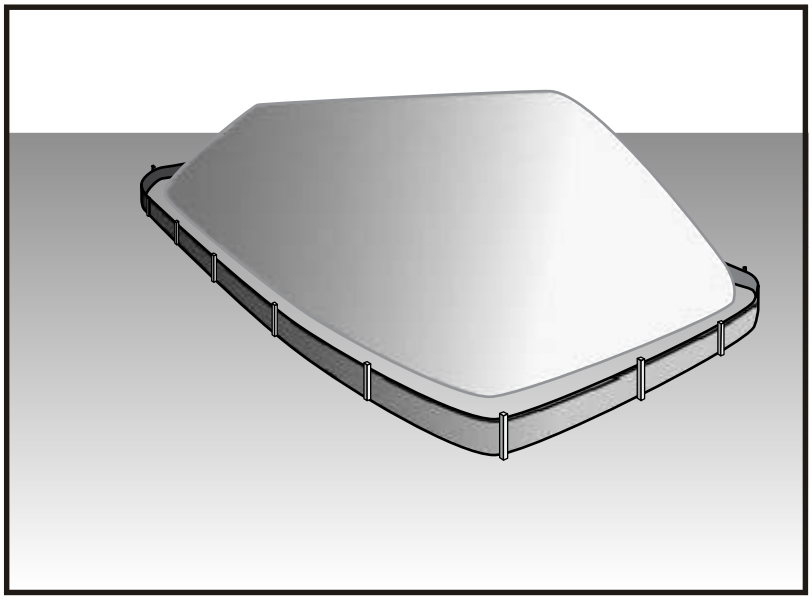
Targeted Constituents

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

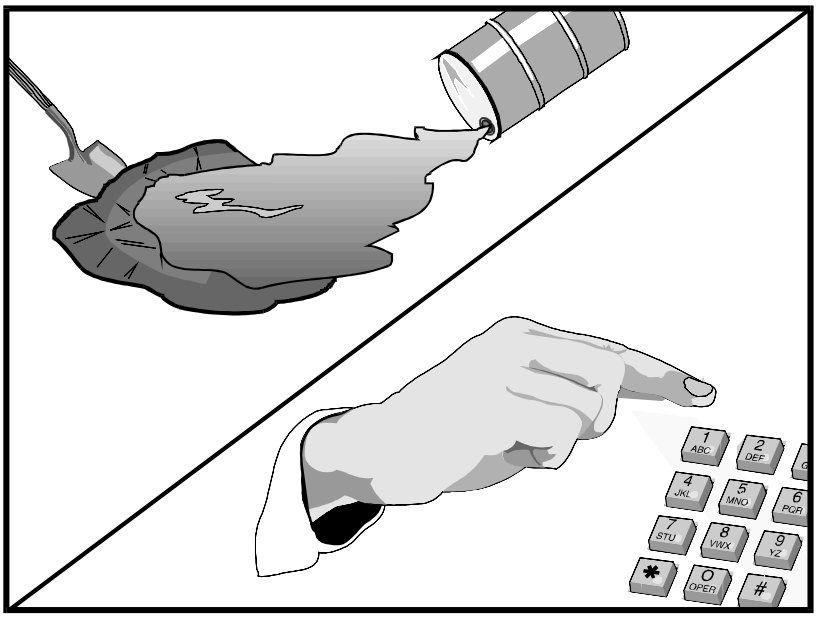
Protection of stockpiles is a year-round requirement. To properly manage stockpiles:

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**

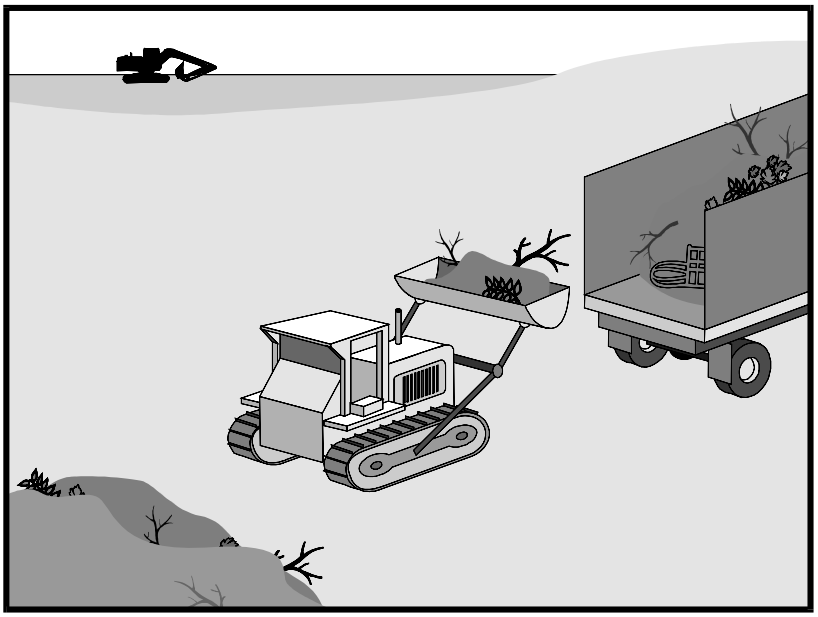
Targeted Constituents

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

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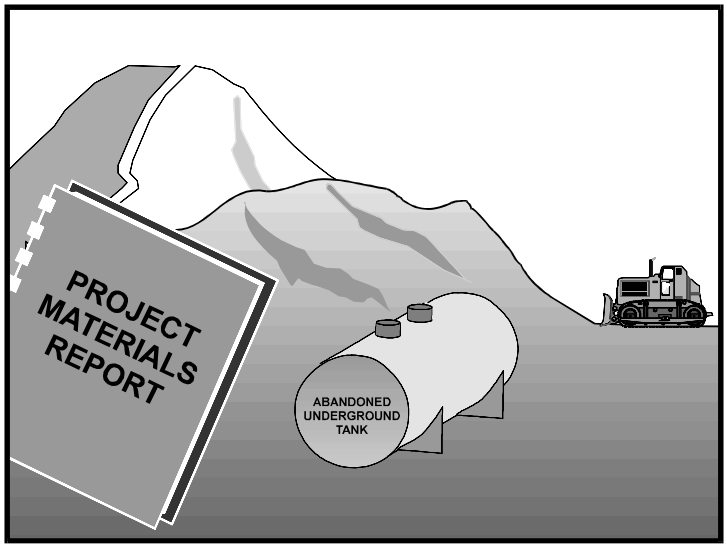
Contaminated Soil Management WM-7



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

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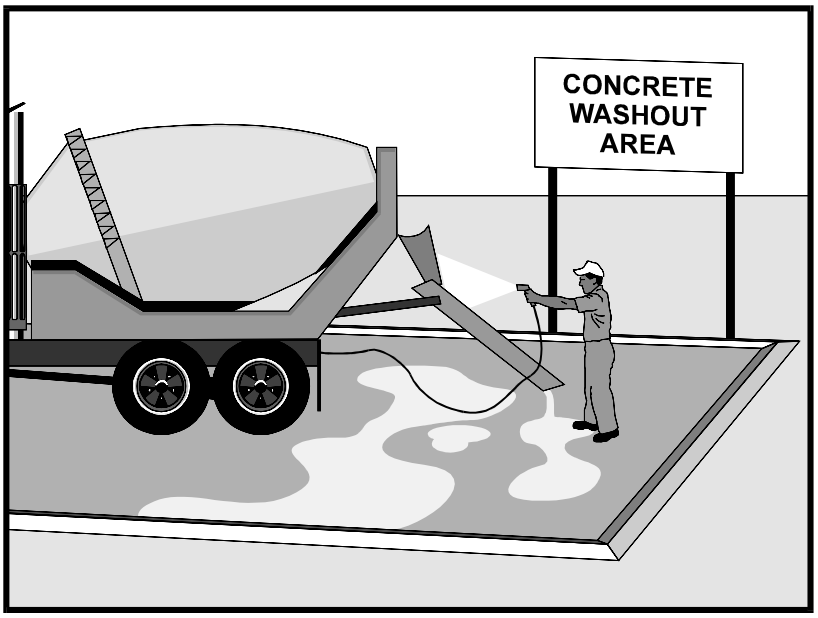
Concrete Waste Management WM-8



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).

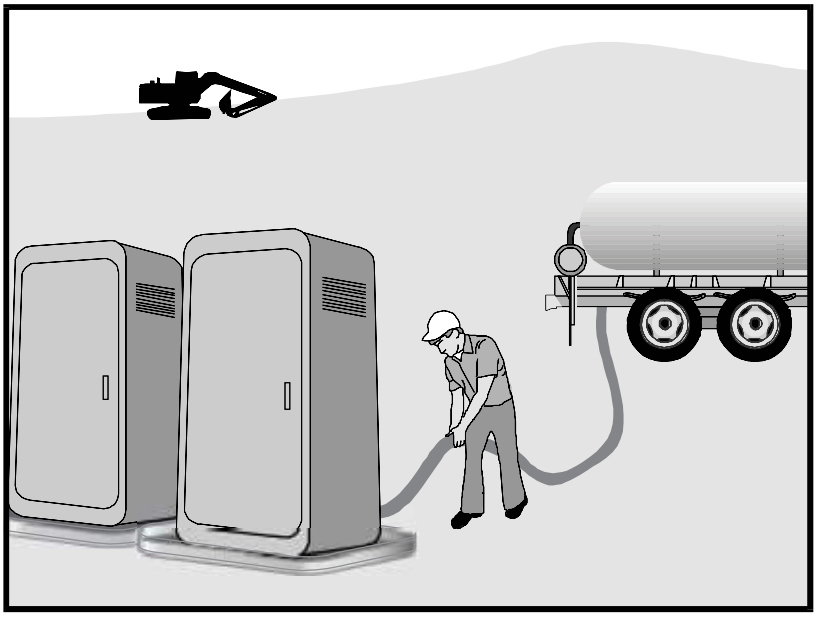
Many types of construction materials, including mortar, concrete, stucco, cement and block and their associated wastes have basic chemical properties that can raise pH levels outside of the permitted range. Additional care should be taken when managing these materials to prevent them from coming into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

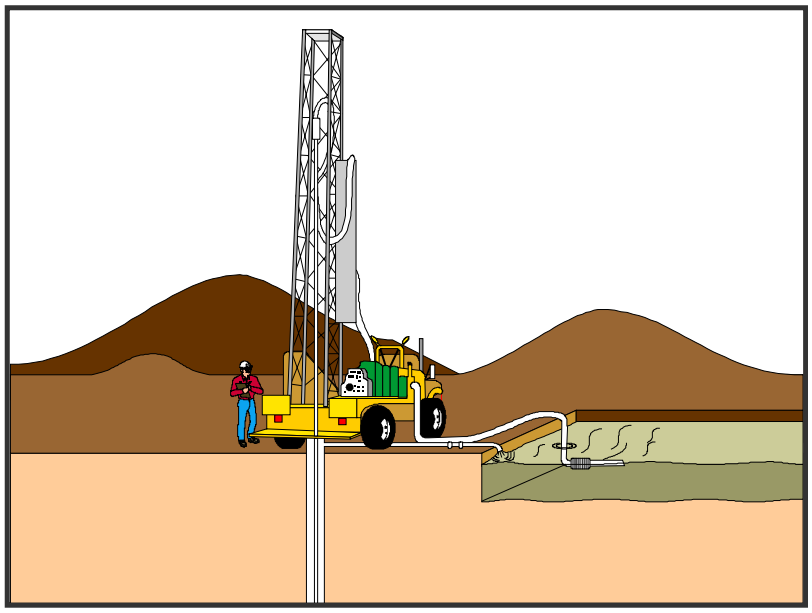
Implementation

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