APPENDIX C

Water Resources Technical Report

ESA

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Water Resources Technical Report
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1. INTRODUCTION

1.1. PROJECT DESCRIPTION

650–676 SSV Property Owner, LLC and 650 SSV Property Owner, LLC (the Applicant) proposes to develop a mixed-use medical office and retail-commercial development on an approximately 0.76 acre (33,087 square feet, 32,290 net square feet) site (Project Site) located at 656 South San Vicente Boulevard. The Project Site is located at the corner of Wilshire Boulevard and San Vicente Boulevard in the Wilshire Community Plan Area (CPA) in the City of Los Angeles (City) and is bounded by South San Vicente Boulevard to the west/southwest, Wilshire Boulevard to the south, Sweetzer Avenue to the east, and Orange Street to the north. The Project Site is currently developed with a Montessori Children's World School, which is currently vacant, and a Big 5 Sporting Goods store and associated surface parking. The Project Site is located in an urbanized and active area adjacent to commercial, office, residential, and medical related uses.

The 656 San Vicente Project (Project) would include up to of 145,305 square feet of floor area that would include 140,305 square feet of medical office space and 5,000 square feet of ground floor retail use, of which up to 4,000 square feet may be a small restaurant use and 1,000 square feet may be other commercial uses, such as a pharmacy or soft good store. The proposed building would be 12 stories and approximately 218 feet in height. The Project would include a seven floors of medical office uses over four floors of parking, and a ground level containing a lobby for the medical office and other commercial uses. The Project would include 454 parking spaces and 891 bicycle spaces.

1.2. SCOPE OF WORK

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

2. REGULATORY FRAMEWORK

2.1. SURFACE WATER HYDROLOGY

County of Los Angeles Hydrology Manual

Per the City 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. The Los Angeles County 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.[1] The County also limits the allowable discharge into existing storm drain facilities

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

based on the MS4 Permit and is enforced on all new developments that discharge directly into the County's storm drain system. Any proposed drainage improvements of County owned storm drain facilities such as catch basins and storm drain lines requires the approval/review from the County Flood Control District department.

Los Angeles Municipal Code

Any proposed drainage improvements within the street right of way or any other property owned by, to be owned by, or under the control of the City requires the approval of a B-permit (Section 62.105, LAMC). Under the B-permit process, storm drain installation plans are subject to review and approval by the City of Los Angeles Department of Public Works Bureau of Engineering. Additionally, any connections to the City's storm drain system from a property line to a catch basin or a storm drain pipe requires a storm drain permit from the City of Los Angeles Department of Public Works, Bureau of Engineering.

2.2. SURFACE WATER QUALITY

Clean Water Act

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

Since its introduction, major amendments to the Clean Water Act have been enacted (e.g., 1961, 1966, 1970, 1972, 1977, and 1987). Amendments enacted in 1970 created the U.S. Environmental Protection Agency (USEPA), while amendments enacted in 1972 deemed the discharge of pollutants into waters of the United States from any point source unlawful unless authorized by a USEPA National Pollutant Discharge Elimination System (NPDES) permit. Amendments enacted in 1977 mandated development of a "Best Management Practices" Program at the state level and provided the Water Pollution Control Act with the common name of "Clean Water Act," which is universally used today. Amendments enacted in 1987 required the USEPA to create specific requirements for discharges.

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http://ladpw.org/wrd/publication/index.cfm, accessed July 5, 2017.

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

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

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

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

Federal Anti-Degradation Policy

The Federal Anti-degradation Policy (40 C.F.R. § 131.12) requires states to develop statewide anti-degradation policies and identify methods for implementing them. Pursuant to the Code of Federal Regulations, state anti-degradation policies and implementation methods shall, at a minimum, protect and maintain (1) existing in-stream water uses; (2) existing water quality, where the quality of the waters exceeds levels necessary to support existing beneficial uses, unless the state finds that allowing lower water quality is necessary to accommodate economic and social development in the area; and (3) water quality in waters considered an outstanding national resource.

California Porter-Cologne Act

The Porter-Cologne Water Quality Control Act established the legal and regulatory framework for California's water quality control. The California Water Code (CWC)

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

[4] LARWQCB Basin Plan. April, 2019.
< https://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/>.

authorizes the SWRCB to implement the provisions of the Clean Water Act, including the authority to regulate waste disposal and require cleanup of discharges of hazardous materials and other pollutants.

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

California Anti-Degradation Policy

The California Antidegradation Policy, otherwise known as the Statement of Policy with Respect to Maintaining High Quality Water in California was adopted by the SWRCB (State Board Resolution No. 68-16) in 1968. Unlike the Federal Antidegradation Policy, the California Antidegradation Policy applies to all waters of the State, not just surface waters. The policy states that whenever the existing quality of a water body is better than the quality established in individual Basin Plans, such high quality shall be maintained and discharges to that water body shall not unreasonably affect present or anticipated beneficial use of such water resource.

California Toxic Rule

In 2000, the EPA promulgated the California Toxic Rule, which establishes water quality criteria for certain toxic substances to be applied to waters in the State. The EPA promulgated this rule based on the EPA's determination that the numeric criteria are necessary in the State to protect human health and the environment. The California Toxic Rule establishes acute (i.e., short-term) and chronic (i.e., long-term) standards for bodies of water such as inland surface waters and enclosed bays and estuaries that are designated by the LARWQCB as having beneficial uses protective of aquatic life or human health.

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

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

regulations. Those of other agencies are referenced in appropriate sections throughout the Basin Plan.[5]

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

NPDES Permit Program

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

The General Permit

SWRCB Order No. 2009-0009-DWQ known as "The General Permit" was adopted on September 2, 2009. This NPDES permit establishes a risk-based approach to stormwater control requirements for construction projects by identifying three project risk levels. The main objectives of the General Permit are to:

1. Reduce erosion;
2. Minimize or eliminate sediment in stormwater discharges;
3. Prevent materials used at a construction site from contacting stormwater;
4. Implement a sampling and analysis program;
5. Eliminate unauthorized non-stormwater discharges from construction sites;
6. Implement appropriate measures to reduce potential impacts on waterways both during and after construction of projects; and
7. Establish maintenance commitments on post-construction pollution control measures.

California mandates requirements for all construction activities disturbing more than one acre of land to develop and implement Stormwater Pollution Prevention Plans (SWPPP). The SWPPP documents the selection and implementation of Best Management Practices for a specific construction project, charging Owners with stormwater quality management

[5] Los Angeles Regional Water Quality Control Board. LARWQCB Basin Plan <http://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/> accessed July 5, 2017.

responsibilities. For any construction site subject to the General Permit, a SWPPP must be prepared and implemented that meets the requirements of the General Permit.[6] [7]

Los Angeles County Municipal Storm Water System (MS4) Permit

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

On November 8, 2012, the LARWQCB adopted Order No.R4-2012-0175 under the Clean Water Act and the Porter-Cologne Act. This Order is the NPDES Permit or MS4 permit for municipal stormwater and urban runoff discharges within Los Angeles County. The requirements of this Order (the "Permit") cover 84 cities and most of the unincorporated areas of Los Angeles County. Under the Permit, the Los Angeles County Flood Control District (LACFCD) is designated as the Principal Permittee. The Permittees are the 84 Los Angeles County cities (including the City of Los Angeles) and Los Angeles County. Collectively, these are the "Co-Permittees". The Principal Permittee helps to facilitate activities necessary to comply with the requirements outlined in the Permit but is not responsible for ensuring compliance of any of the Permittees.

Stormwater Quality Management Program (SQMP)

In compliance with the Los Angeles County MS4 Permit, the Co-Permittees are required to implement a stormwater quality management program (SQMP) with the goal of accomplishing the requirements of the Permit and reducing the amount of pollutants in stormwater runoff. The SWMP requires the County of Los Angeles and the 84 incorporated cities to:

- Implement a public information and participation program to conduct outreach on storm water pollution;
- Control discharges at commercial/industrial facilities through tracking, inspecting, and ensuring compliance at facilities that are critical sources of pollutants;
- Implement a development planning program for specified development projects;
- Implement a program to control construction runoff from construction activity at all construction sites within the relevant jurisdictions;

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[6] State Water Resources Control Board. State Water Resources Control Board. <http://www.swrcb.ca.gov/water_issues/programs/npdes/>.

[7] USEPA. U.S. Environmental Protection Agency - NPDES. July 2011 <http://cfpub.epa.gov/npdes/>.

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

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

The MS4 Permit contains the following provisions for implementation of the SQMP by the Co-Permittees:

1. General Requirements:

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

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

2. Best Management Practice Implementation:

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

3. Revision of the SQMP:

    - Permittees are required to revise the SQMP in order to comply with requirements of the RWOCB while complying with regional watershed requirements and/or waste load allocations for implementation of TMDLs for impaired waterbodies.

4. Designation and Responsibilities of the Principal Permittee:

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

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

    - Coordinating activities among Permittees;

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

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

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

5. Responsibilities of Co-Permittee:

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

   - Coordinating among internal departments to facilitate the implementation of the SQMP requirements in an efficient way;
   - Participating in coordination with other internal agencies as necessary to successfully implement the requirements of the SQMP; and
   - Preparing an annual Budget Summary of expenditures for the stormwater management program by providing an estimated breakdown of expenditures for different areas of concern, including budget projections for the following year.

6. Watershed Management Committees (WMCs):

   - Each WMC shall be comprised of a voting representative from each Permittee in the Watershed Management Area (WMA).
   - Each WMC is required to facilitate exchange of information between co-permittees, establish goals and deadlines for WMAs, prioritize pollution control measures, develop and update adequate information, and recommend appropriate revisions to the SQMP.

7. Legal Authority:

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

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

On March 2, 2007, City Council Motion 07-0663 was introduced by the City of Los Angeles City Council to develop a water quality master plan with strategic directions for planning, budgeting and funding to reduce pollution from urban runoff in the City. The Water Quality Compliance Master Plan for Urban Runoff (WQC Master Plan) was developed by the Bureau of Sanitation, Watershed Protection Division in collaboration with stakeholders to address the requirements of this Council Motion. The primary goal of the WQC Master Plan is to help meet water quality regulations. Implementation of the WQC Master Plan is intended over the next 20 to 30 years to result in cleaner neighborhoods, rivers, lakes and bays, augmented local water supply, reduced flood risk, more open space, and beaches that are safe for swimming. The WQC Master Plan also supports the Mayor and Council's efforts to make Los Angeles the greenest major city in the nation.

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

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

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

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

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

City of Los Angeles Stormwater Program

The City supports the policies of the Construction General Permit and the Los Angeles County NPDES permit through the *Development Best Management Practices Handbook. Part A Construction Activities,* 3rd Edition, and associated ordinances were adopted in September 2004. *Part B Planning Activities*, 4th Edition was adopted in June 2011. The Handbook provides guidance for developers in complying with the requirements of the Development Planning Program regulations of the City's Stormwater Program. Compliance with the requirements of this manual is required by City Ordinance No. 173,494. The handbook and ordinances also have specific minimum BMP requirements for all construction activities and require dischargers whose construction projects disturb one acre or more of soil to prepare a SWPPP and file a Notice of Intent (NOI) with the SWRCB. The NOI informs the SWRCB of a particular project and results in the issuance of a Waste Discharger Identification (WDID) number, which is needed to demonstrate compliance with the General Permit. Typical BMPs installed

The City implements the requirement to incorporate stormwater 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 storm water requirements. Plans and specifications are reviewed to ensure that the appropriate BMPs are incorporated to address storm water

pollution prevention goals. The Standard Urban Stormwater Mitigation Plan (SUSMP) provisions that are applicable to new residential and commercial developments include the following:[8]

- Peak Storm Water Runoff Discharge Rate: Post-development peak storm water runoff discharge rates shall not exceed the estimated pre-development rate for developments where the increased peak storm water discharge rate will result in increased potential for downstream erosion;

- Provide storm drain system Stenciling and Signage (only applicable if a catch basin is built on-site);

- Properly design outdoor material storage areas to provide secondary containment to prevent spills;

- Properly design trash storage areas to prevent off-site transport of trash; and

- Provide proof of ongoing BMP Maintenance of any structural BMPs installed.

Design Standards for Structural or Treatment Control BMPs:

- Conserve natural and landscaped areas;

- Provide planter boxes and/or landscaped areas in yard/courtyard spaces;

- Properly design trash storage areas to provide screens or walls to prevent off-site transport of trash; and

- Provide proof on ongoing BMP maintenance of any structural BMPs installed.

- Post-construction treatment control BMPs are required to incorporate, at minimum, either a volumetric or flow based treatment control design or both, to mitigate (infiltrate, filter or treat) storm water runoff.

In addition, project applicants subject to the SUSMP requirements must select source control and, in most cases, treatment control BMPs from the list approved by the RWQCB. The BMPs must control peak flow discharge to provide stream channel and over bank flood protection, based on flow design criteria selected by the local agency. Further, the source and treatment control BMPs must be sufficiently designed and constructed to collectively treat, infiltrate, or filter stormwater runoff to satisfy one of the following:

- The 85th percentile 24-hour runoff event determined as the maximized capture stormwater volume for the area, from the formula recommended in *Urban Runoff*

[8] City of Los Angeles Stormwater Program website, http://www.lastormwater.org/green-la/standard-urban-stormwater-mitigation-plan/; accessed November 8, 2018.

Quality Management, WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87, (1998);

- The volume of annual runoff based on unit basin storage water quality volume, to achieve 80 percent or more volume treatment by the method recommended in *California Stormwater Best Management Practices Handbook—Industrial/ Commercial, (1993)*;

- The volume of runoff produced from a 0.75-inch storm event, prior to its discharge to a stormwater conveyance system; or

- The volume of runoff produced from a historical-record based reference 24-hour rainfall criterion for "treatment" (0.75-inch average for the Los Angeles County area) that achieves approximately the same reduction in pollutant loads achieved by the 85th percentile 24-hour runoff event.

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.

Standard Urban Stormwater Mitigation Plan (SUSMP)

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

1. Single-family hillside homes;
2. Ten or more unit homes (including single family homes, multifamily homes, condominiums, and apartments);
3. Automotive service facilities;
4. Restaurants;
5. 100,000 or more square-feet of impervious surface in industrial/commercial development;
6. Retail gasoline outlet;
7. Parking lots with 5,000 square feet or more of surface area or with 25 or more parking spaces;
8. Redevelopment projects in subject categories that meet redevelopment thresholds;
9. Location within or directly adjacent to or discharging directly to an environmentally sensitive area if the discharge is likely to impact a sensitive biological species or habitat and the development creates 2,500 square feet or more of impervious surface.

Low Impact Development – City of LA (LID)

In October 2011, the City Council adopted an ordinance (Ordinance No. 181899) amending LAMC Chapter VI, Article 4.4, Sections 64.70.01 and 64.72 to expand the applicability of the existing SUSMP requirements by imposing rainwater Low Impact Development (LID) strategies on projects that require building permits. The LID ordinance became effective on May 12, 2012.

LID is a stormwater management strategy with goals to mitigate the impacts of increased runoff and stormwater pollution as close to its source as possible. LID promotes the use of natural infiltration systems, evapotranspiration, and the reuse of stormwater. The goal of these LID practices is to remove nutrients, bacteria, and metals from stormwater while also reducing the quantity and intensity of stormwater flows. Through the use of various infiltration strategies, LID is aimed at minimizing impervious surface area. Where infiltration is not feasible, the use of bioretention, rain gardens, green roofs, and rain barrels that will store, evaporate, detain, and/or treat runoff may be used. [9]

The intent of the City's LID standards is to:

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

The City's Bureau of Sanitation, Watershed Protection Division will adopt the LID standards as issued by the LARWQCB and the City's Department of Public Works. The LID Ordinance will conform to the regulations outlined in the NPDES Permit and SUSMP.

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

The Basin Plan is a resource for the Regional Board and others who use water and/or discharge wastewater in the Los Angeles Region. Other agencies and organizations

[9] City of Los Angeles. "Development Best Management Practices Handbook." June, 2011.

involved in environmental permitting and resource management activities also use the Basin Plan. Finally, the Basin Plan provides valuable information to the public about local water quality issues.

Safe Drinking Water Act (SDWA)

The Federal Safe Drinking 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 Ballona Creek Watershed (Watershed) in the Los Angeles Basin. The Watershed encompasses an area of approximately 130 square miles extending from the Santa Monica Mountains and the Ventura-Los Angeles County line on the north, to the Harbor Freeway (110) on the east, Santa Monica to the west, and to the Baldwin Hills on the south. Ballona Creek is a 9-mile-long flood protection channel that drains the Watershed to the Pacific Ocean. The major tributary areas to Ballona Creek include Centinela Creek, Sepulveda Canyon Channel, Benedict Canyon Channel, and numerous storm drains. Refer to Figure 7 for the Ballona Creek Watershed Map.

3.1.2. LOCAL

Underground storm drainage facilities along South San Vicente Boulevard and South Sweetzer Avenue are owned and maintained by the City of Los Angeles. The stormwater runoff enters the catch basins located on South San Vicente Boulevard, South Sweetzer Avenue, and Orange Street. Catch basins convey the stormwater through a 36-inch and a 24 inch storm pipe located along South San Vicente Boulevard. The existing 36-inch runs southwards from Orange Street towards the middle of the project site where it connects into a 12.5 foot wide and 10 foot tall reinforced storm drain concrete box. The 24-inch storm drain pipe runs northward along from Sweetzer Avenue towards the middle of the project site where it connects to the same reinforced concrete box. The reinforced concrete box runs across the project site along the lot line separating lots 4 and 5, and drains into Ballona Creek which is located 1.8 miles south from the project site. Ballona Creek generally flows southwest, ultimately discharging into the Pacific Ocean at the Santa Monica Bay. Ballona Creek is designed to discharge to Santa Monica Bay approximately 71,400 cubic feet per second from a 50-year frequency storm event.[10]

3.1.3. ON SITE

The existing 0.76-acre site is currently occupied by a 1-story retail store, an asphalt-paved parking lot to the south, a Montessori school to the north and another parking lot in between the buildings. The majority portion of the site sheet flows towards South San Vicente Boulevard, discharges into the existing catch basin located towards the middle of the project site. The rest of the stormwater flow into the existing catch basin located at the southern corner by South Sweetzer Avenue. The northeastern portion of the site sheet flows into the alley, where it flows along a longitudinal gutter towards both Orange Street and South Sweetzer Avenue. The flow enters into a catch basin on South Sweetzer Avenue at the northeastern corner of the South San Vicente Boulevard and South Sweetzer Avenue intersection, or into a catch basin on Orange Street at the southeastern corner of the South San Vicente Boulevard and Orange Street intersection. All catch basins connect to the reinforced concrete box described previously.

Refer to Figure 1 for existing on-site drainage pattern.

As shown in Table 1 below, the Project Site has been analyzed as one drainage area. Existing runoff was analyzed for a 50-year storm event. Refer to Figure 3 for the parameters used for analyzing the existing site using Hydrocalc, Figure 6 for the Isohyet Hydrology Map, and Figure 4 for the Hydrocalc Calculator results.

Table 1- Existing Drainage Stormwater Runoff Calculations		
Drainage Area	Area (Acres)	Q50 (cfs) (volumetric flow rate measured in cubic feet per second)
Project Site	0.76	2.37

[10] http://www.ladpw.org/wmd/watershed/bc/; accessed June 5, 2019

3.2. SURFACE WATER QUALITY

3.2.1. REGIONAL

As stated above, the Project Site lies within the Ballona Creek Watershed. Constituents of concern listed for Ballona Creek under California's Clean Water Act Section 303(d) List include Cadmium (sediment), Chlordane (Tissue & Sediment), Coliform Bacteria, Copper (Dissolved), Cyanide, DDT, Lead, PAHs, PCBs, Selenium, Sediment Toxicity, Shellfish Harvesting Advisory, Silver, Toxicity, Trash, Viruses (Enteric), and Zinc. No Total Maximum Daily Load (TMDL) data have been recorded by EPA for this waterbody.[11]

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 has installed catch basins with screens to capture debris before entering the storm drain system. In addition, the City conducts routine street cleaning operations as well as periodic cleaning and maintenance of catch basins to reduce stormwater pollution within the City.

3.2.3. ON SITE

Based on the project survey by Mollenhauer Group dated September 26, 2016, it appears the existing site for both buildings currently does not implement Best Management Practices (BMPs) and apparently has no means of treatment for stormwater runoff. As stated above, the existing site sheet flows to the adjacent streets, and further flows to adjacent City catch basins.

It appears the existing site for the proposed building currently sheet flows to the south and northeast into South San Vicente Boulevard or the alley, where they drain and enter the catch basins at South San Vicente Boulevard, South Sweetzer Avenue and Orange Street. Refer to Figure 1 for existing on-site drainage pattern.

3.3. GROUNDWATER HYDROLOGY

3.3.1. REGIONAL

Groundwater use for domestic water supply is a beneficial use of groundwater basins in Los Angeles County. The City of Los Angeles overlies the Los Angeles Coastal Plain

[11] 2012 Waterbody Report for Ballona Creek, https://iaspub.epa.gov/waters10/attains_waterbody.control?p_au_id=CAR4051300019980918142302&p_list_id=CAR4051300019980918142302&p_cycle=2012; accessed November 6, 2018.

Groundwater Basin (Basin). The Basin is comprised of the Hollywood, Santa Monica, Central, and West Coast Subbasins. Groundwater flow in the Los Angeles Coastal Plain Groundwater 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.

3.3.2. LOCAL

Within the Basin, the Project Site specifically overlies the Hollywood Subbasin (Subbasin), which underlies the northeastern portion of the Basin. The Subbasin is bounded on the north by the Santa Monica Mountains and the Hollywood fault, on the east by the Elysian Hills, on the west by the Inglewood fault zone, and on the south by the La Brea High, formed by an anticline that brings impermeable rocks close to the surface.[12]

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

The primary producer from the Subbasin is the City of Beverly Hills, which currently owns and operates 4 groundwater production wells in the Subbasin. These wells have a combined capacity of 2,083 gallons per minute (gpm) and are treated by a reverse osmosis desalter.[13] Groundwater flow within the Subbasin generally flows east to west. The Project Site is located in the west portion of the Subbasin.

3.3.3. PROJECT SITE

The Project Site is currently occupied by two buildings, hardscape, landscape and paved parking lots with 95% impervious surface coverage. Due to the 95% impervious condition of the Project Site, there is a low recharge potential. The discussion below is based upon a review of relevant previous investigations and on-site explorations conducted as part of the *Geologic and Soils Engineering Investigation report* dated July 17, 2017 by Byer Geotechnical Inc. Based on USGS map showing the historical highest groundwater contours, the historic high of the ground water level near the vicinity of the site is 15 feet below ground surface. Refer to Figure 5 for USGS map. Groundwater was measured at a depth of 34 feet below ground surface in exploratory borings drilled by the geotechnical engineer.

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[12] Coastal Plain of Los Angeles Groundwater Basin, Hollywood Subbasin, http://www.water.ca.gov/groundwater/bulletin118/basindescriptions/4-11.02.pdf; accessed November 6, 2018.

[13] City of Beverly Hills Urban Water Management Plan; accessed November 6, 2018.

Furthermore there are no groundwater production wells or public water supply wells within one mile of the Project Site.[14]

3.4. GROUNDWATER QUALITY

3.4.1. REGIONAL

As stated above, the City of Los Angeles overlies the Los Angeles Coastal Plain Groundwater Basin. This basin 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.[15]

3.4.2. LOCAL

As stated above, the Project Site specifically overlies the Hollywood Subbasin. Based upon LARWQCB's Basin Plan, constituents of concern listed for the Hollywood Subbasin include boron, chloride, sulfate, Total Dissolved Solids (TDS), and nitrate.[16]

3.4.3. EXISTING PROJECT SITE

Though it is possible for surface water borne contaminants to percolate into groundwater and affect groundwater quality, as the Project Site is 95% impervious in the existing condition, no appreciable infiltration of potential contaminants described above is expected to occur. Additionally, the good housekeeping practices described above and compliance with all existing hazardous waste regulations further reduce this potential. Therefore, groundwater quality is not impacted by existing activities at the Project Site.

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.

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[14] State Water Resources Control Board Groundwater Ambient Monitoring & Assessment GeoTracker , available at http://geotracker.waterboards.ca.gov/gama/gamamap/public/default.asp?findaddress=True&city=LA accessed July 5, 2017.

[15] http://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/electronics_documents/Final%20Chapter%203%20Text.pdf; accessed July 5, 2017

[16] Ibid.

4.1. SURFACE WATER HYDROLOGY

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

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 or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or off-site;

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

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;

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

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

In the context of these questions from Appendix G of the CEQA Guidelines, the City 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

With respect to water quality, the CEQA Guidelines inquire whether the Project would:

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

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

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.[17]

4.3. GROUNDWATER HYDROLOGY

With respect to groundwater hydrology, the CEQA Guidelines inquire whether the Project would:

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

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:

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[17] City of Los Angeles.LA. CEQA Thresholds Guide. 2006 http://www.environmentla.org/programs/Thresholds/Complete%20Threshold%20Guide%202006.pdf

- Reduce the ability of a water utility to use the groundwater basin for public water supplies, conjunctive use purposes, storage of imported water, summer/winter peaking, or to respond to emergencies and drought;
- Reduce yields of adjacent wells or well fields (public or private); or
- Adversely change the rate or direction of flow of groundwater; or

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

4.4. GROUNDWATER QUALITY

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

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,

$$Q = C*I*A$$

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

5.2.2. OPERATION

The Project will meet the requirements of the City's Low Impact Development (LID) standards.[18] 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 prioritized the selection of BMPs used to comply with stormwater mitigation requirement. The order of priority is:

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

Feasibility screening delineated in the LID manual is applied to determine which BMP will best suit the Project. Specifically, LID guidelines require at least 10 feet of clearance between the infiltration systems and the groundwater elevation, a property line shared with another private property, and any building structure.

As discussed in the Geotechnical Report, groundwater was encountered at 34 feet below the ground surface and the upper 60 to 70 feet of the earth materials underlying the subject site consists of clay and silt that are considered impermeable. Therefore infiltration is not considered feasible due to the shallow depth to groundwater and the soils types.

A stormwater capture system will likely be required and sized per LID guidelines. 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. See Exhibit 1 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:

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

Where:

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

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

For catchment areas given in acres, multiply the above equation by 43,560 sq. ft./acre. [19]

5.3. GROUNDWATER

To determine whether the Project would have a significant impact as it relates to the level of the underlying groundwater table of the Coastal Plain Groundwater Basin requires review and analysis of the following:

Description and Analysis of the Project Site's Existing Condition

- Identification of the Hollywood Subbasin as the underlying groundwater basin, and description of the level, quality, direction of flow, and existing uses for the water;

- Description of the location, existing uses, production capacity, quality, and other pertinent data for spreading grounds and potable water wells in the vicinity (usually within a one mile radius); and

- Area and degree of permeability of soils on the Project Site; and

Analysis of the Project's Impact on Groundwater Level

- Description of the rate, duration, location and quantity of extraction, dewatering, spreading, injection, or other activities;

- The projected reduction in groundwater resources and any existing wells in the vicinity (usually within a one mile radius); and

- The projected change in local or regional groundwater flow patterns.

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

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

Project Design Features

Per the LID Manual requirements governing the Project's stormwater management, facilities shall be sized to treat the design capture volume based on the runoff produced from the greater between the 85th percentile storm event and the 0.75-inch storm event (i.e., the first flush of stormwater). To meet these requirements, the Project includes the installation of storm drain inlets to capture the Project Site's runoff and storm drain pipes to convey the runoff to a capture and use and/or biofiltration system. The system will treat

[19] http://www.lastormwater.org/wp-content/files_mf/lidhandbookfinal62212.pdf

the first flush of stormwater in accordance with the City's LID standards, the standard LID BMP systems and the anticipated LID volume can be found in exhibit 1.

6. PROJECT IMPACT ANALYSIS

6.1. CONSTRUCTION

6.1.1. SURFACE WATER HYDROLOGY

Construction activities for the Project would include excavating down to approximately 6 feet to build up the structure, and construct hardscape and landscape around the structure. It is anticipated that grading activities of approximately 9,000 net cubic yards of soil would be exported for the construction of the Project. Construction activities would have the potential to temporarily alter existing drainage patterns and flows within the Project Site by exposing the underlying soils and making the Project Site temporarily more permeable. Exposed and stockpiled soils could be subject to erosion and conveyance into nearby storm drains during storm events. In addition, construction activities such as earth moving, maintenance/operation of construction equipment, and handling/storage/disposal of materials could contribute to pollutant loading in stormwater runoff.

However, as the construction site would be less than one acre, the Project would not be required to obtain coverage under the NPDES General Construction stormwater permit. The Project does not have to submit to the Los Angeles Regional Water Quality Control Board a SWPPP that specifies BMPs and erosion control measures to be used during construction to manage runoff flows and prevent pollution. However an erosion control plan will be implemented to reduce runoff and pollutant levels in runoff during construction. Construction activities are temporary and flow directions and runoff volumes during construction will be controlled. Refer to Exhibit 2 for typical BMPs implemented during the construction of development projects.

Thus, the Project would not permanently or substantially alter the Project Site drainage patterns in a manner that would result in substantial erosion, siltation, flooding on- or off-site. Similarly, adherence to standard compliance measurements in construction activities that would not cause flooding, substantially increase or decrease the amount of surface water flow from the Project Site into a water body, or 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/operation of construction equipment, and handling/storage/disposal of materials could contribute to pollutant loading in stormwater runoff.

Construction contractors disturbing less than one acre of soil is not required to obtain coverage under the NPDES General Construction Activity Permit (order No. 2012-0006-DWQ). However erosion control will be implemented during construction. Construction

BMP's, including but not limited to, erosion control, sediment control, water conservation, tracking control, and temporary dewatering operations, will be designed and maintained as part of the implementation of the erosion control plan. As discussed, the Project requires dewatering during construction. Dewatering operations are practices that discharge non-stormwater, such as ground water, that must be removed from a work location to proceed with construction into the drainage system. Discharges from dewatering operations can contain high levels of fine sediments, which if not properly treated, could lead to exceedance of the NPDES requirements. If groundwater is encountered during construction, temporary pumps and filtration would be utilized. The temporary system would comply with all relevant NPDES requirements related to construction and discharges from dewatering operations. If dewatering is required, the treatment and disposal of the dewatered water would occur in accordance with the requirements of LARWQCB's Waste Discharge Requirements for Discharges of Groundwater from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties.

In addition, the Project would be required to comply with City grading permit regulations, which require necessary measures, plans (including a wet weather erosion control plan if construction occurs during the rainy season), and inspection to reduce sedimentation and erosion.

Therefore, with compliance with City grading permit regulations, construction of the Project would not result in discharge that would cause: (1) pollution which would alter the quality of the water of the State (i.e., Ballona Creek) to a degree which unreasonably affects beneficial uses of the waters; (2) contamination of the quality of the water of the State by waste to a degree which creates a hazard to the public health through poisoning or through the spread of diseases; or (3) nuisance that would be injurious to health; affect an entire community or neighborhood, or any considerable number of persons; and occurs during or as a result of the treatment or disposal of wastes.

Furthermore, construction of the Project would not result in discharges that would cause regulatory standards to be violated in Ballona Creek. Therefore, temporary construction-related impacts on surface water quality would be less than significant.

6.1.3. GROUNDWATER HYDROLOGY

Construction activities for the Project would include excavating down an average depth of 6 feet for building up the structure, and hardscape and landscape around the structure, pile footings may be constructed up to a depth of 100 feet below the ground surface to support the structure. Based on *Geologic and Soils Engineering Investigation report* dated July 17, 2017 by Byer Geotechnical Inc. groundwater was encountered at 34 feet below grade in the current borings.

Although unlikely, if groundwater is encountered during excavation it will be directed to a temporary dewatering system, consisting of pumps and filtration system utilized in compliance with all applicable regulations and requirements, including all relevant NPDES requirements related to construction and discharges from dewatering operations.

Therefore, the Project would result in less than significant impacts related to groundwater and would not substantially deplete groundwater supplies in a manner that would result in a net deficit in aquifer volume or lowering of the local groundwater table.

6.1.4. GROUNDWATER QUALITY

As discussed above, the Project would include excavations to an average depth of approximately 6 feet below ground surface. The Project would also result in a net export of existing soil material. Although not anticipated at the Project Site, any contaminated soils found would be captured within that volume of excavated material, removed from the Project Site, and remediated at an approved disposal facility in accordance with regulatory requirements.

During on-site grading and building construction, hazardous materials, such as fuels, paints, solvents, and concrete additives, could be used and would therefore require proper management and, in some cases, disposal. The management of any resultant hazardous wastes could increase the opportunity for hazardous materials releases into groundwater. Compliance with all applicable federal, state, and local requirements concerning the handling, storage and disposal of hazardous waste, would reduce the potential for the construction of the Project to release contaminants into groundwater that could affect existing contaminants, expand the area or increase the level of groundwater contamination, or cause a violation of regulatory water quality standards at an existing production well. In addition, as there are no groundwater production wells or public water supply wells within one mile of the Project Site [20], construction activities would not be anticipated to affect 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 will decrease the percentage of impervious area. The Project Site currently consists of existing buildings and paved parking lots with little pervious surface. The Project will develop a building surrounded by hardscape and landscape. The proposed Project will be approximately 92% impervious after construction. Based on site investigation, under the existing condition it appears that stormwater discharges from the Project Site without treatment or on-site detention. The Project would improve this condition.

The Project would implement capture and use systems and/or biofiltration system to collect and store the first flush of stormwater runoff. As shown in Table 2 below, the Project Site has been analyzed as one drainage area. Proposed runoff was analyzed for a 50-year storm

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[20] Los Angeles County Department of Public Works, Groundwater wells Data, http://dpw.lacounty.gov/general/wells/ accessed July 14, 2017.

event. Refer to Figure 2 for the parameters used for analyzing the proposed site drainage using Hydrocalc, Figure 6 for the Isohyet Hydrology Map, and Figure 4 for the Hydrocalc Calculator results.

Table 2 shows the proposed 50-year frequency design storm event peak flow rate within the Project Site. A comparison of the pre- and post-Project peak flow rates indicates no increase in stormwater runoff. In fact, the post-Project runoff calculations show that the Project would result in less clear runoff volumes than existing conditions.

Table 2 – Proposed Drainage Stormwater Runoff Calculations Summary

Drainage Area	**Area (Acres)**	**Pre-Project Q_{50} (cfs)**	**Post-Project Q_{50} (cfs)**	**Incremental Increase from Existing to Proposed Condition**
Project Site	0.76	2.37	2.37	<0%

In addition, compliance with the LID requirements for the Project Site would ensure stormwater treatment with post-construction BMPs that are required to control pollutants associated with storm events up to the 85th percentile storm event, per the City's Stormwater Program. It follows that, the Project BMPs would control stormwater runoff and result in a minor decrease in runoff. As noted above, the Project will implement a capture and use systems with pre-treatment and/or a biofiltration system to collect the first flush of runoff from building roof drains and site hardscape areas. Therefore, the anticipated volume of stormwater runoff from the existing condition would decrease slightly in the 50-year storm event scenario. The post-project condition will manage stormwater flow by capturing and reusing the water for irrigation, and the overflow will be discharged to existing catch basins located on the adjacent public streets. Thus, the Project would not adversely impact the existing storm drain infrastructure or its capacity.

Furthermore, the Project would not cause flooding during the 50-year developed storm event because the peak stormwater flows would be virtually the same or less than existing conditions. As a result, the Project would not create runoff that would exceed the capacity of existing or planned drainage systems because the current drainage infrastructure has sufficient capacity to handle existing and post-project peak flows. Similarly, the Project would not require construction of new stormwater drainage facilities or expansion of existing facilities because there is no material change in pre- and post-project stormwater runoff volumes or flow rates. The Project would not substantially reduce or increase the amount of surface water in a water body because there are no such water bodies in the vicinity of the Project Site. Finally, the Project would not result in result in a permanent adverse change to the movement of surface water because the surface water that sheets flows from the Project Site currently would be channeled into the existing stormwater infrastructure with a slightly reduced peak volume flow and improved onsite detention and filtration. Therefore, potential impacts to surface water hydrology would be less than significant.

In addition, the Project Site is not located within a 100-year flood plain (Refer to Figure 8) Although the site is mapped within an inundation zone for Hollywood Reservoir (Refer to Figure 9), catastrophic failure of this dam is expected to be a very unlikely event in that dam safety regulations exist and are enforced by the Division of Safety of Dams (DSOD), Army Corp of Engineers (ACOE) and Department of Water Resources (DWR). Inspectors may require dam owners to perform work, maintenance or implement controls if issues are found with the safety of the dam. These dams are under continuous monitoring for safety against failure. It is our opinion that the potential for seismically-induced flooding to affect the site due to dam failure is low. Therefore, the potential impacts related to flooding and inundation would be less than significant.

The Project Site is also not located within areas designated by the state geologist where previous occurrence of landslide movement or local topographic, geological, geotechnical and subsurface conditions indicate a potential for permanent ground displacement. The Project Site is basically flat and paved, and the surrounding areas are similar. Therefore, potential impacts related to slope stability hazards (i.e. mudflows) are negligible and less than significant.

6.2.2. SURFACE WATER QUALITY

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

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. In accordance with the feasibility discussion in Methodology Section 5.2, Surface Water Quality, and the Project would implement capture and use system as a BMP for managing stormwater runoff in accordance with current LID requirements. Since it appears there are currently no existing onsite BMPs, stormwater run-off during post-Project conditions would result in improved surface water quality.

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

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

Furthermore, operation of the Project would not result in discharges that would cause regulatory standards to be violated. The existing Project Site is approximately 95% impervious surfaces including an existing building and paved surface lots. The Project will decrease the percentage of impervious surface to 92%. As stated above, it appears that the existing conditions on the Project Site discharge without any means of treatment. However, the Project would include the installation of LID BMPs, which would mitigate at minimum the first flush or the equivalent of the greater between the 85th percentile storm and first 0.75-inch of rainfall for any storm event. The Project BMPs will control stormwater runoff with no increase in runoff resulting from the Project.

As a result of the implementation of capture and use BMP's, there will be no operational impacts on surface water quality. Therefore, impacts to surface water quality would be less than significant.

6.2.3. GROUNDWATER HYDROLOGY

Regarding groundwater recharge, the entire Project Site is primarily impervious in the existing condition. There is very low groundwater recharge potential on the Project Site in the existing condition. Per the Geotechnical Report the groundwater level under the Project Site is expected to be approximately 34 feet below grade.

The Project will develop hardscape, structures, and landscape over structure that cover a majority of the development footprint with impervious surfaces, however there will also be permeable surfaces developed as well. The Project would include capture and use and/or biofiltration systems that would capture the first flush or first 0.75-inch of rainfall from any 50 year storm event. The capture and use systems are designed to capture a small storm events or the first 0.75-inch of rainfall for any storm event per City requirements and will be designed with an internal bypass to prevent upstream flooding in the scenario of a large storm event. In that scenario the stormwater bypasses the capture and use 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 to the underlying soils. Hence, stormwater discharges from the Project Site, or the limited onsite infiltration of stormwater, would not adversely impact groundwater hydrology. Therefore, operation of the Project would have a less than significant impact on groundwater hydrology.

6.2.4. GROUNDWATER QUALITY

Operational activities that could affect groundwater quality include use and unanticipated spills of hazardous materials or contaminants. Surface spills from the handling of hazardous materials most often involve small quantities and are cleaned up in a timely manner, thereby resulting in minimal threat to groundwater.

The Project would introduce more density and land uses to the Project Site, and that would increase the amount of potentially hazardous materials (i.e., those type of materials associated with operation of medical and retail land uses) stored and used on the Project Site. However, the Project would comply with all applicable regulations regarding the handling and cleanup of hazardous materials. There are no groundwater production wells

in the vicinity of the Project Site. Therefore, the Project would not affect or expand any potential areas of contamination, increase the level of contamination, or cause regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations, Title 22, Division 4, Chapter 15 and the Safe Drinking Water Act.

Based on the above, operations of the Project would less than significantly affect the rate or change the direction of movement of any existing contaminants, expand the area affected by contaminants, increase the level of groundwater contamination, or cause regulatory water quality standards at existing production wells. Therefore, Project would result in a less than significant impact on groundwater quality.

Additionally, the Project would include the installation of capture and use and/or biofiltration systems as a means of treatment and disposal of the first flush or first 0.75-inch of rainfall for any storm event, which would allow for treatment of the on-site stormwater.

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

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.

FIGURE 1
EXISTING ON-SITE DRAINAGE



Existing Catch Basin

Sheet Flow Direction

Reinforced Concrete Box

Existing Storm Drain Pipe

Floor 1

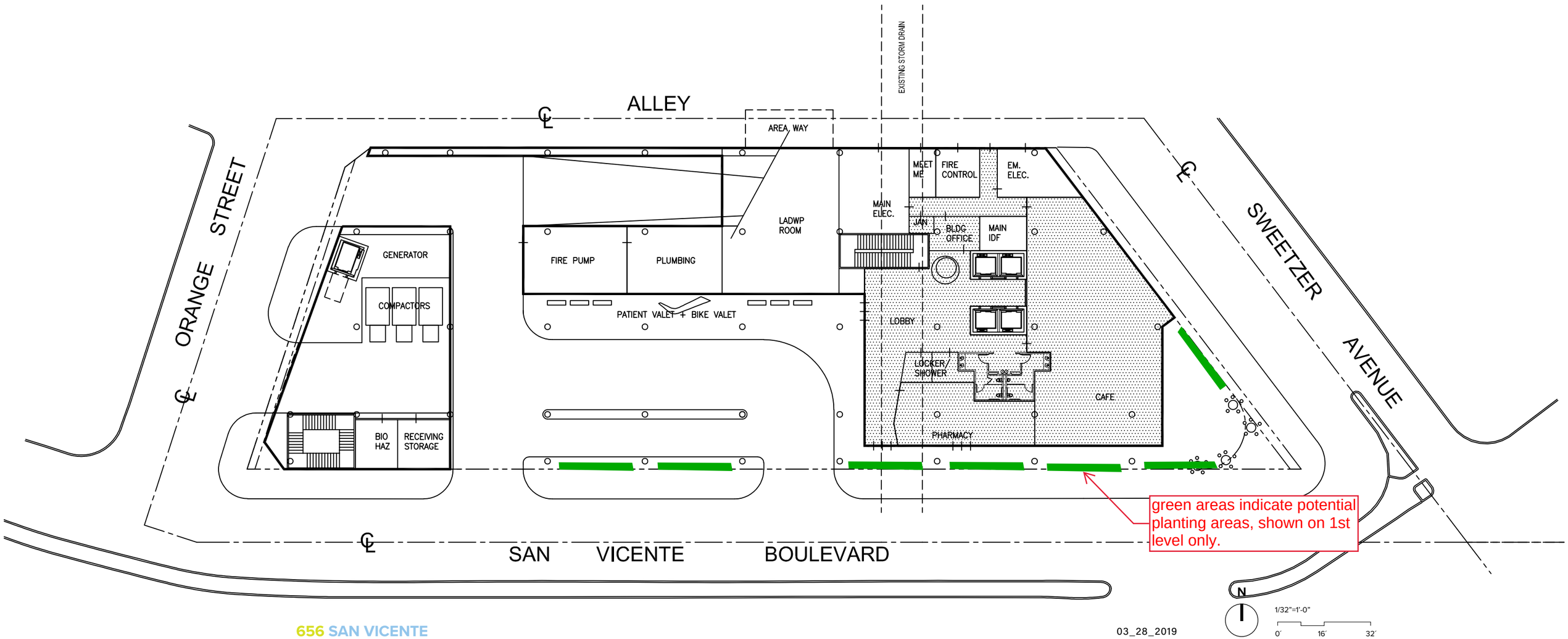
Figure 2 - Proposed Drainage

Total Project Area: 33,087 sf	(0.76 ac)
Total Pervious Area: 2,700 sf	5%
Total Impervious Area: 30,387 sf	95%

LID Volume(V_{LID}): 2,520 cf (18.850 gal)
7-Month Estimated Total Water Use ($ETWU_7$) per City of Los Angeles LID design Manual 5th Edition: 20,265 gal

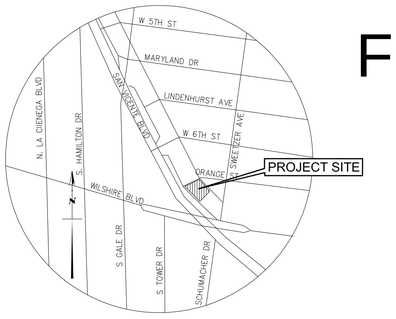
→ $V_{LID} < ETWU_7$

→ Capture And Reuse or Biofiltration System will be Implemented as LID BMP.



03_28_2019

FIGURE 3



VICINITY MAP
THOMAS GUIDE 633-A2

LINEWORK LEGEND:

CENTERLINE
PROPERTY LINE
LOT LINE
RIGHT-OF-WAY
EASEMENT LINE
BUILDING LINE
BUILDING LINE OVERHANG
EDGE OF ASPHALT
CHAINLINK FENCE
WROUGHT IRON FENCE
GUARD RAIL
WALL
OVERHEAD WIRES
WATER PAINT LINE
GAS PAINT LINE
TELEPHONE PAINT LINE
UNKNOWN PAINT LINE

LEGEND:

AREA DRAIN
BUILDING COLUMN
CURB DRAIN
FLOOD LIGHT
AREA LIGHT
GAS METER
GAS VALVE
GUARD POST
STORM DRAIN MANHOLE
SEWER MANHOLE
TELEPHONE MANHOLE
STREET LIGHT PULL BOX
UNKNOWN PULL BOX
PARKING METER
POLE GUY
ANCHOR GUY
POWER POLE
BENCHMARK SYMBOL
STREET SIGN
STREET LIGHT
POWER POLE W/LIGHT
TRAFFIC SIGNAL
WATER METER
WATER VALVE
FIRE HYDRANT
DRIVE ARROW
HANDICAP PARKING
TREE WITH TRUNK DIAMETER
PALM TREE WITH DIAMETER
FINISH SURFACE ELEVATION
CONCRETE SURFACE

ABBREVIATIONS:

AC	ASPHALT SURFACE
AD	AREA DRAIN
AG	ANCHOR GUY
APN	ASSESSOR PARCEL NUMBER
BLDG	BUILDING
BM	BENCHMARK
BW	BACK OF WALK
CF	CURB FACE
CB	CATCH BASIN
CD	CURB DRAIN
CEFB	CITY ENGINEER FIELD BOOK
C/L	CENTERLINE
CL	CHAIN LINK
COL	COLUMN
COR	CORNER
CONC	CONCRETE
DIA	DIAMETER
ESTB	ESTABLISHED
EG	EDGE OF GUTTER
EC	EDGE OF CONCRETE
ES	EDGE OF STEPS
EW	EDGE OF WALK
FB	FIELD BOOK
FD	FOUND
FF	FINISH FLOOR
FL	FLOW LINE
FS	FINISH SURFACE
GB	GRADE BREAK
GM	GAS METER
GND	GROUND
GP	GUARD POST
HT	HEIGHT
INST.	INSTRUMENT
L&TACK	LEAD & TACK
L&TAG	LEAD & TAG
S&W	SPIKE & WASHER
SSM	STANDARD SURVEY MONUMENT
LS	LICENSED SURVEYOR
MB	MAP BOOK
OH	OVERHANG
PP	POWER POLE
PM	PUNCH MARK
PROD	PRODUCED
PROP	PROPERTY
R.O.W.	RIGHT OF WAY
TP	TELEPHONE POLE
TC	TOP OF CURB
TG	TOP OF GRATE
TW	TOP OF WALL
WI	WROUGHT IRON

LEGAL DESCRIPTION:

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

LOTS 7, 8 AND 9 OF BLOCK 4, TRACT NO. 7555, IN THE CITY OF LOS ANGELES, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 80 PAGES 51 TO 53 INCLUSIVE OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

TITLE DIGEST - EXCEPTIONS TO COVERAGE

THIS SUMMARY OF ITEMS IN THE POLICY IS PREPARED FOR THE CONVENIENCE OF THOSE PERSONS USING THIS SURVEY. FOR FULL DETAILS OF TITLE ITEMS, REFER TO THE COMPLETE REPORT AND TO THOSE DOCUMENTS REFERRED TO THEREIN.

1. GENERAL AND SPECIAL TAXES AND ASSESSMENTS FOR THE FISCAL YEAR 2016–2017, A LIEN NOT YET DUE OR PAYABLE.
2. THE LIEN OF SUPPLEMENTAL TAXES, IF ANY, ASSESSED PURSUANT TO CHAPTER 3.5 COMMENCING WITH SECTION 75 OF THE CALIFORNIA REVENUE AND TAXATION CODE, AS A RESULT OF AN EVENT OCCURRING ON OR AFTER THE DATE HEREOF, INCLUDING, BUT NOT LIMITED TO, THE ACQUISITION OF TITLE TO SAID LAND BY THE INSURED.
3. AN EASEMENT FOR POLE LINES AND INCIDENTAL PURPOSES IN THE DOCUMENT RECORDED AUGUST 19, 1924 AS BOOK 3055 PAGE 394 OF OFFICIAL RECORDS.

(AFFECTS LOT 8)

4. AN EASEMENT FOR POLE LINES AND INCIDENTAL PURPOSES IN THE DOCUMENT RECORDED AUGST 7, 1924 AS BOOK 3129 PAGE 383 OF OFFICIAL RECORDS.

(AFFECTS LOT 9)

5. AN EASEMENT FOR POLE LINES AND INCIDENTAL PURPOSES IN THE DOCUMENT RECORDED DECEMBER 17, 1925 AS BOOK 4531 PAGE 320 OF OFFICIAL RECORDS , AS APPROXIMATELY SHOWN ON THE ALTA/NSPS SURVEY PREPARED BY MOLLENHAUER GROUP, DATED SEPTEMBER 26, 2016 LAST REVISED OCTOBER 20, 2016 AS JOB NO. LA20966.01 (THE "SURVEY").

(AFFECTS LOT 7)

* 6. A SUBSURFACE OIL AND GAS LEASE, EXECUTED BY HERSHEY ELIOT AND MANNIE RENOUR AS LESSOR AND STANDARD OIL COMPANY OF CALIFORNIA, A CORPORATION AS LESSEE, RECORDED FEBRUARY 01, 1965 AS BOOK M–1756 PAGE 538 OF OFFICIAL RECORDS , AFFECTING THE LAND LYING BELOW A DEPTH OF 500 FEET FROM THE SURFACE THEREOF, WITHOUT THE RIGHT OF SURFACE ENTRY.

DEFECTS, LIENS, ENCUMBRANCES OR OTHER MATTERS AFFECTING THE LEASEHOLD ESTATE, WHETHER OR NOT SHOWN BY THE PUBLIC RECORDS ARE NOT SHOWN HEREIN.

(AFFECTS LOT 9)

* 7. A SUBSURFACE OIL AND GAS LEASE, EXECUTED BY ROYALTY SERVICE CORPORATION, LTD AS LESSOR AND STANDARD OIL COMPANY OF CALIFORNIA, A CORPORATION AS LESSEE, RECORDED MARCH 22, 1965 AS INSTRUMENT NO. 3148 OF OFFICIAL RECORDS , AFFECTING THE LAND LYING BELOW A DEPTH OF 500 FEET FROM THE SURFACE THEREOF, WITHOUT THE RIGHT OF SURFACE ENTRY.

* DEFECTS, LIENS, ENCUMBRANCES OR OTHER MATTERS AFFECTING THE LEASEHOLD ESTATE, WHETHER OR NOT SHOWN BY THE PUBLIC RECORDS ARE NOT SHOWN HEREIN.

(AFFECTS LOT 8)

* 8. A SUBSURFACE OIL AND GAS LEASE, EXECUTED BY ROSALINE PETERS, A MARRIED WOMAN WATA ROSALIND GLASER, AND HERBERT GLASER, A MARRIED MAN AS HIS SOLE AND SEPARATE PROPERTY AS LESSOR AND STANDARD OIL COMPANY OF CALIFORNIA, A CORPORATION AS LESSEE, RECORDED AUGUST 17, 1972 AS INSTRUMENT NO. 3631 OF OFFICIAL RECORDS , AFFECTING THE LAND LYING * BELOW A DEPTH OF 500 FEET FROM THE SURFACE THEREOF, WITHOUT THE RIGHT OF SURFACE ENTRY.

DEFECTS, LIENS, ENCUMBRANCES OR OTHER MATTERS AFFECTING THE LEASEHOLD ESTATE, WHETHER OR NOT SHOWN BY THE PUBLIC RECORDS ARE NOT SHOWN HEREIN.

(AFFECTS LOT 7)

9. AN AGREEMENT OR COVENANT TO HOLD LAND AS ONE PARCEL RECORDED APRIL 27, 1982 AS INSTRUMENT NO. 82–431340 OF OFFICIAL RECORDS.
10. THIS ITEM HAS BEEN INTENTIONALLY DELETED.
11. WATER RIGHTS, CLAIMS OR TITLE TO WATER, WHETHER OR NOT SHOWN BY THE PUBLIC RECORDS. (AFFECTS LOT 7)
12. THIS ITEM HAS BEEN INTENTIONALLY DELETED.
13. RIGHTS OF TENANTS, AS TENANTS ONLY, UNDER THE TERMS OF THE LEASES SET FORTH ON SCHEDULE 1 ATTACHED HERETO WITH NO RIGHTS OF FIRST REFUSAL OR OPTIONS TO PURCHASE ALL OR ANY PART OF THE PROPERTY.
14. ANY FACTS, RIGHTS, INTERESTS OR CLAIMS THAT MAY EXIST OR ARISE BY REASON OF THE FOLLOWING MATTERS DISCLOSED BY AN ALTA/NSPS SURVEY MADE BY MOLLENHAUER GROUP ON SEPTEMBER 26, 2016 LAST REVISED SEPTEMBER 29, 2016, DESIGNATED JOB NUMBER LA20966.01:

(A) INTENTIONALLY DELETED
(B) (B) FENCE ALONG NORTHEAST BOUNDARY OF SUBJECT PROPERTY CROSSES NORTH AND NORTHEAST BOUNDARIES INTO ORANGE STREET AND ALLEY RIGHT OF WAYS BY DISTANCES, MAXIMUM OF 2.92 FEET;
(C) (C) NORTHWEST WALL OF 6,067 SQUARE FOOT BUILDING ON SUBJECT PROPERTY CROSSES NORTHWEST BOUNDARY INTO ORANGE STREET RIGHT OF WAY BY A DISTANCE, MAXIMUM OF 0.04 FEET;
(D) (D) PLANTER AREA ALONG SOUTHWEST BOUNDARY OF SUBJECT PROPERTY CROSSES SOUTHWEST BOUNDARY INTO SAN VICENTE BOULEVARD RIGHT OF WAY BY AN UNDISCLOSED DISTANCE;
(E) (E) GUARD POST AT SOUTH SECTION OF SUBJECT PROPERTY LIES ON SOUTHWEST BOUNDARY OF SUBJECT PROPERTY BY AN UNDISCLOSED DISTANCE;
(F) INTENTIONALLY DELETED
(G) INTENTIONALLY DELETED.
* = BLANKET EASEMENT

SURVEYOR'S NOTES:

1. THIS SURVEY DOES NOT INCLUDE EASEMENTS EXCEPT THOSE SPECIFICALLY DELINEATED HEREON, NOR DOES IT SHOW THE LOCATION OF, OR ENCROACHMENTS BY SUBSURFACE FOOTINGS AND/OR FOUNDATIONS OF BUILDINGS SHOWN ON THIS MAP.
2. INFORMATION PERTAINING TO UNDERGROUND PUBLIC UTILITIES, FLOOD ZONE DATA, ZONING AND SETBACK DATA, IF SHOWN HEREIN, HAVE BEEN OBTAINED FROM RELIABLE AND RESPONSIBLE SOURCES NOT CONNECTED WITH THIS COMPANY. NO GUARANTY, WARRANTY OR REPRESENTATION, EITHER EXPRESS OR IMPLIED, IS MADE AS TO THE ACCURACY OR THOROUGHNESS OF SUCH INFORMATION. USERS OF SAID INFORMATION IS URGED TO CONTACT THE UTILITY OR LOCAL AGENCY DIRECTLY.
3. ALL STREETS SHOWN HEREON ARE PUBLIC STREETS UNLESS OTHERWISE NOTED.
4. THE SUBJECT PROPERTY HAS DIRECT PHYSICAL ACCESS TO SAN VICENTE BLVD AND ALLEY AT SWEETZER AVENUE, DEDICATED PUBLIC STREETS OR HIGHWAY.
5. THERE IS NO OBSERVABLE EVIDENCE OF EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS OR RECENT STREET OR SIDEWALK CONSTRUCTION OR REPAIRS ON THE SUBJECT PROPERTY.
6. THERE IS NO OBSERVABLE EVIDENCE OF SITE USE AS A SOLID WASTE DUMP, SUMP OR SANITARY LANDFILL
7. THERE IS NO OBSERVABLE EVIDENCE OF WETLAND AREAS ON THE SUBJECT PROPERTY.
8. LOTS ARE CONTIGUOUS WITHOUT ANY GAPS, GORES, HIATUSES OR OVERLAPS
9. THERE ARE NO PLOTTABLE OFFSITE EASEMENTS DISCLOSED IN TITLE REPORT

SURVEYOR'S CERTIFICATE:

TO STOCKDALE CAPITAL PARTNERS, LLC, THEIR SUCCESSORS AND/OR ASSIGNS,
FIRST AMERICAN TITLE INSURANCE COMPANY:

THIS IS TO CERTIFY, THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 2, 3, 4, 6(A), 6(B) 7(A), 7(B)(1), 7(B)(2), 8, 9, 11, 13, 14, 16, 19 AND 20 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON SEPTEMBER 26, 2016.

GREGORY D. HINDSON, P.L.S. 5670 — DATE

NOTE: SECTION 8770.6 OF THE CALIFORNIA BUSINESS AND PROFESSIONS CODE STATES THAT THE USE OF THE WORD CERTIFY OR CERTIFICATE BY A LICENSED SURVEYOR IN THE PRACTICE OF LAND SURVEYING OR THE PREPARATION OF MAPS, PLATS REPORTS, DESCRIPTIONS OR OTHER SURVEYING DOCUMENTS, ONLY CONSTITUTES AN EXPRESSION OF PROFESSIONAL OPINION REGARDING THOSE FACTS OR FINDINGS WHICH ARE SUBJECT OF THE CERTIFICATION AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE, EITHER EXPRESSED OR IMPLIED.

GREGORY D. HINDSON LAND SURVEYOR No. 5670 STATE OF CALIFORNIA

COMMENTS:

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

LEGAL DESCRIPTION . . . . . FROM INFORMATION SUPPLIED BY THE CLIENT. USUALLY A TITLE POLICY OR TITLE REPORT.

TITLE REPORT . . . . . FIRST AMERICAN TITLE INSURANCE COMPANY PRO–FORMA NO.. NCS–811256–LA2

⬡ = INDICATES PLOTTED EXCEPTION ITEM NO.

BASIS OF BEARINGS. . . . . THE BEARING N 07°49'20" E ALONG THE CENTERLINE OF SWEETZER AVENUE AS SHOWN ON THE MAP OF TRACT NO. 7555 FILED IN BOOK 80, PAGES 51 THROUGH 53 INCLUSIVE, OF MAPS.

BENCHMARK . . . . . CITY OF LOS ANGELES BENCHMARK NO. 13–12250
CUT SPK; 9FT N OF N PL WILSHIRE BLVD; 3.5 FT E/O E CURB LINE SWEETZER AV;
NE COR CB 50 FT E/O E PL SAN VICENTE BL
ELEVATION = 141.712 FEET (NAVD88 – 2000 ADJUSTMENT)

AREA. . . . . BASED UPON MEASURED BEARINGS AND DISTANCES AS SHOWN HEREON, THE AREA IS:

13,632.465 SQ. FT. OR 0.313 ACRES

ASSESSOR PARCEL NO. . . . 5510–022–033, 5510–022–034 AND 5510–022–035

PROPERTY ADDRESS. . . . . 650 SAN VICENTE BLVD LOS ANGELES CA 90048

PARKING COUNT. . . . . BASED UPON ON–SITE STRIPING, THE PARKING IS:

REGULAR SPACES 7
COMPACT SPACES. 1
HANDICAP SPACES. 1
TOTAL = 9

FLOOD ZONE . . . . . SUBJECT PROPERTY LIES WITHIN FLOOD ZONE X (UNSHADED), AREAS OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, AS SHOWN ON FLOOD INSURANCE RATE MAP NUMBER 06037C1615F, COMMUNITY PANEL NO. 065043 1615 WITH AN EFFECTIVE DATE OF SEPTEMBER 26, 2008 PUBLISHED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.

UTILITIES . . . . . SURFACE UTILITIES ARE PLOTTED BASED ON OBSERVED EVIDENCE ONLY. THIS SURVEY DOES NOT SHOW THE LOCATION OF UNDERGROUND UTILITIES BASED ON PLANS PROVIDED BY UTILITY COMPANIES AND OTHER APPROPRIATE SOURCES.

COMMENTS CONTINUED:

ZONING/BUILDING SETBACK . ZONING AND BUILDING SETBACK DATA SHOWN BELOW HAVE BEEN OBTAINED FROM THE CITY OF LOS ANGELES ZONE INFORMATION & MAP ACCESS SYSTEM (ZIMAS), AT ZIMAS.LACITY.ORG. NO REPRESENTATION IS MADE AS TO THE ACCURACY OR COMPLETENESS OF SAID INFORMATION AND ANY USER OF THIS INFORMATION SHOULD CONTACT THE CITY OF LOS ANGELES PLANNING DEPT. DIRECTLY AT CITYPLANNING.LACITY.ORG OR (213) 482–7077.

ZONE: C1–1VL–O
LIMITED COMMERCIAL

FRONT YARD: THERE SHALL BE A FRONT YARD OF NOT LESS THAN 10 FEET IN DEPTH.

SIDE YARDS: SIDE YARDS SHALL BE REQUIRED ONLY IN THE FOLLOWING INSTANCES:
(A) ALONG THE SIDE STREET LOT LINE OF EVERY CORNER LOT IN THE C1 ZONE.
(B) WHERE THE SIDE LOT LINE OF THE LOT IN THE C1 ZONE ABUTS UPON THE SIDE OF A LOT IN AN A OR R ZONE.
(C) FOR ALL PORTIONS OF BUILDINGS ERECTED AND USED FOR RESIDENTIAL PURPOSES. THE WIDTH OF SUCH REQUIRED SIDE YARD SHALL NOT BE LESS THAN 10 PERCENT OF THE LOT WIDTH, BUT NEED NOT EXCEED FIVE FEET AND SHALL NOT BE LESS THAN THREE FEET IN WIDTH. PROVIDED, HOWEVER, THAT ONE FOOT SHALL BE ADDED TO THE WIDTH OF THE REQUIRED SIDE YARD FOR EACH ADDITIONAL STORY ABOVE THE SECOND STORY, BUT SUCH SIDE YARD NEED NOT EXCEED 16 FEET IN WIDTH.
IN ALL OTHER CASES, A SIDE YARD FOR A COMMERCIAL BUILDING SHALL NOT BE REQUIRED, BUT IF PROVIDED, IT SHALL NOT BE LESS THAN THREE FEET IN WIDTH.

REAR YARD: A REAR YARD SHALL BE PROVIDED ONLY IN THE FOLLOWING INSTANCES:
(A) WHERE THE REAR OF THE LOT IN THE C1 ZONE ABUTS UPON A LOT IN AN A OR R ZONE.
(B) FOR ALL PORTIONS OF BUILDINGS ERECTED AND USED FOR RESIDENTIAL PURPOSES. SUCH YARD SHALL BE PROVIDED AND MAINTAINED AT AND ABOVE THE FLOOR LEVEL OF THE LOWEST STORY DESIGNED OR USED FOR RESIDENTIAL PURPOSES, AND THE FULL HEIGHT OF THE BUILDING SHALL BE USED IN COMPUTING THE REQUIRED DEPTH OF REAR YARD. THE DEPTH OF SUCH REQUIRED REAR YARD SHALL BE NOT LESS THAN 15 FEET. ONE FOOT SHALL BE ADDED TO THE DEPTH OF SUCH REAR YARD FOR EACH ADDITIONAL STORY ABOVE THE THIRD STORY, BUT SUCH REAR YARD NEED NOT EXCEED 20 FEET IN DEPTH.

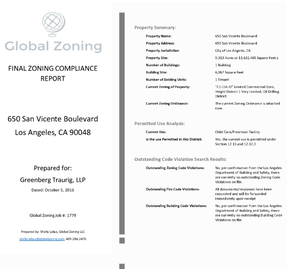
LOT AREA: THE LOT AREA REQUIREMENTS OF THE R3 ZONE (SECTION 12.10– C.4) SHALL APPLY TO ALL PORTIONS OF BUILDINGS ERECTED AND USED FOR RESIDENTIAL PURPOSES. PROVIDED, HOWEVER, THAT WHERE THE LOT IS IN THE "H" HILLSIDE OR MOUNTAINOUS AREA, THERE SHALL BE NOT MORE THAN ONE DWELLING UNIT FOR EACH 5,000 SQUARE FEET OF LOT AREA.

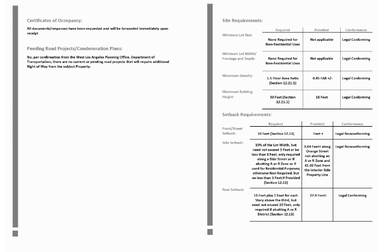
BUILDING HEIGHT: NOT TO EXCEED 6 STORIES OR 75 FEET*
FLOOR AREA RATIO: 1.5:1

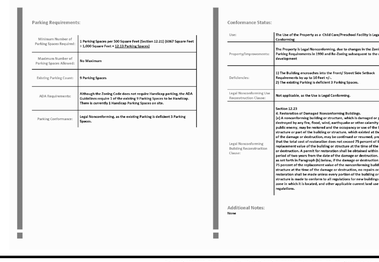
*A BUILDING DESIGNED AND USED ENTIRELY FOR RESIDENTIAL PURPOSES SHALL ONLY BE LIMITED TO THE NUMBER OF FEET IN HEIGHT.

PROPERTY FURTHER QUALIFIED BY AND SUBJECT TO THE FOLLOWING:
DEVELOPMENT LIMITATION WHICH RESTRICTS HEIGHTS, FLOOR AREA RATIO, PERCENT OF LOT COVERAGE, BUILDING SETBACKS
ZI–2443 NEIGHBORHOOD CONSERVATION ICO–LOWER COUNCIL DIST. 5
ZI–2410 METRO WESTSIDE SUBWAY EXTENSION PROJECT









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SURVEYING+MAPPING
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DATE	REVISION	BY
10/14/2016	ZONING REPORT , ENCROACHMENTS	GDH
10/20/2016	REVISED PRO–FORMA	GDH

ALTA/NSPS LAND TITLE SURVEY

SHOWING

LOTS 7, 8 AND 9, BLOCK 4 OF TRACT 7555, AS PER MAP RECORDED IN BOOK 80, PAGES 51 TO 53 INCLUSIVE OF MAPS

CITY OF LOS ANGELES, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

SCALE: 1" = 20'	CAD FILE: LA20966.01–ARCH_2016–12–05.dwg
DRAFTED: MK	CHECKED: MBD

SURVEY PREPARED FOR:
STOCKDALE CAPITAL PARTNERS LLC
1900 UNIVERSITY AVE 5TH FL
EAST PALO ALTO CA 94303

PROJECT ADDRESS:
650 SAN VICENTE BLVD
LOS ANGELES CA 90048

SHEET NO. 1 OF 1 SHEETS

SURVEY DATE: 09/26/2016	JOB NO. LA20966.01

P:\2016\1600789 656 South San Vicente\2WD\SUPPORT\MJV\FY2017–06–09 (consolidated survey files)\LA20966.01–ARCH_2016–12–05\LA20966.01–ARCH_2016–12–05.dwg Date:08/08/17 10:49p stheuves

Figure 4 - Existing Flow Calculations

Peak Flow Hydrologic Analysis

Input Parameters

Project Name	656 South San Vicente
Subarea ID	656 South San Vicente
Area (ac)	0.76
Flow Path Length (ft)	1.0
Flow Path Slope (vft/hft)	1.0
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.95
Soil Type	17
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)	0.9102
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.3669
Burned Peak Flow Rate (cfs)	2.3669
24-Hr Clear Runoff Volume (ac-ft)	0.3161
24-Hr Clear Runoff Volume (cu-ft)	13767.8619

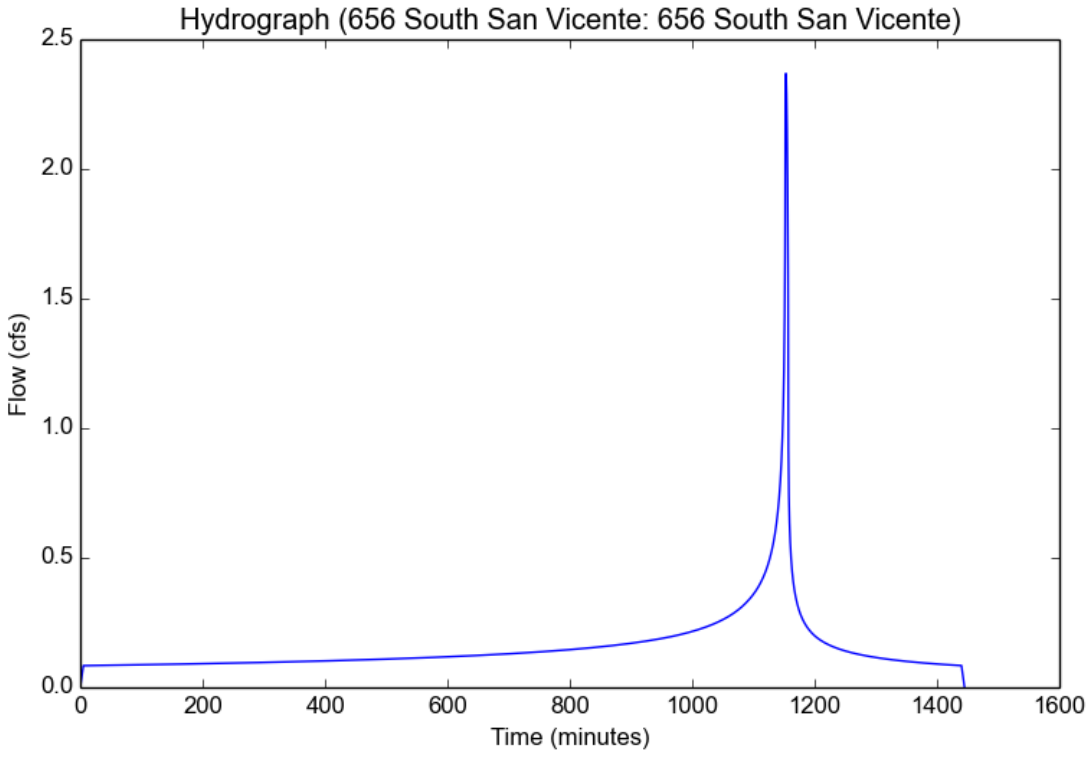


Figure 4 - Proposed Flow Calculations

Peak Flow Hydrologic Analysis

File location: P:/2016/1600769 656 South San Vicente/ENGR/EIR/Appendices_KPFF/Water Resources Appendices/Fig 4_Proposed Flow Calcs.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	656 South San Vicente
Subarea ID	Proposed
Area (ac)	0.76
Flow Path Length (ft)	100.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.92
Soil Type	17
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)	0.9102
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.3669
Burned Peak Flow Rate (cfs)	2.3669
24-Hr Clear Runoff Volume (ac-ft)	0.309
24-Hr Clear Runoff Volume (cu-ft)	13459.4243

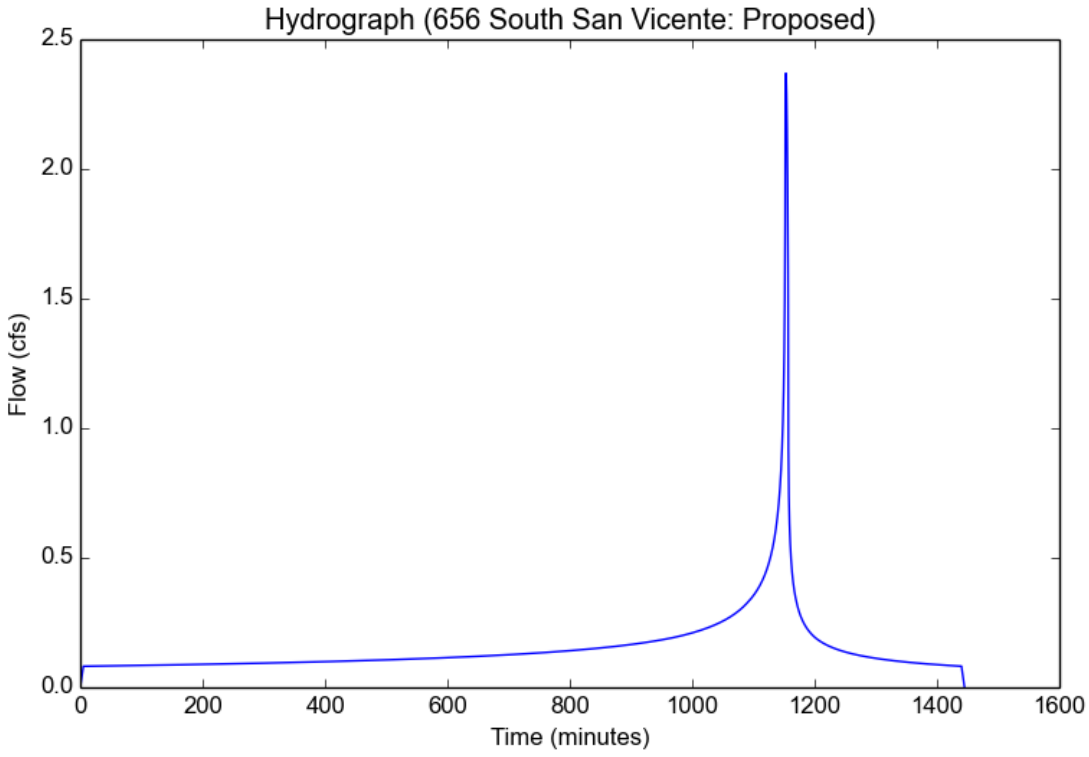
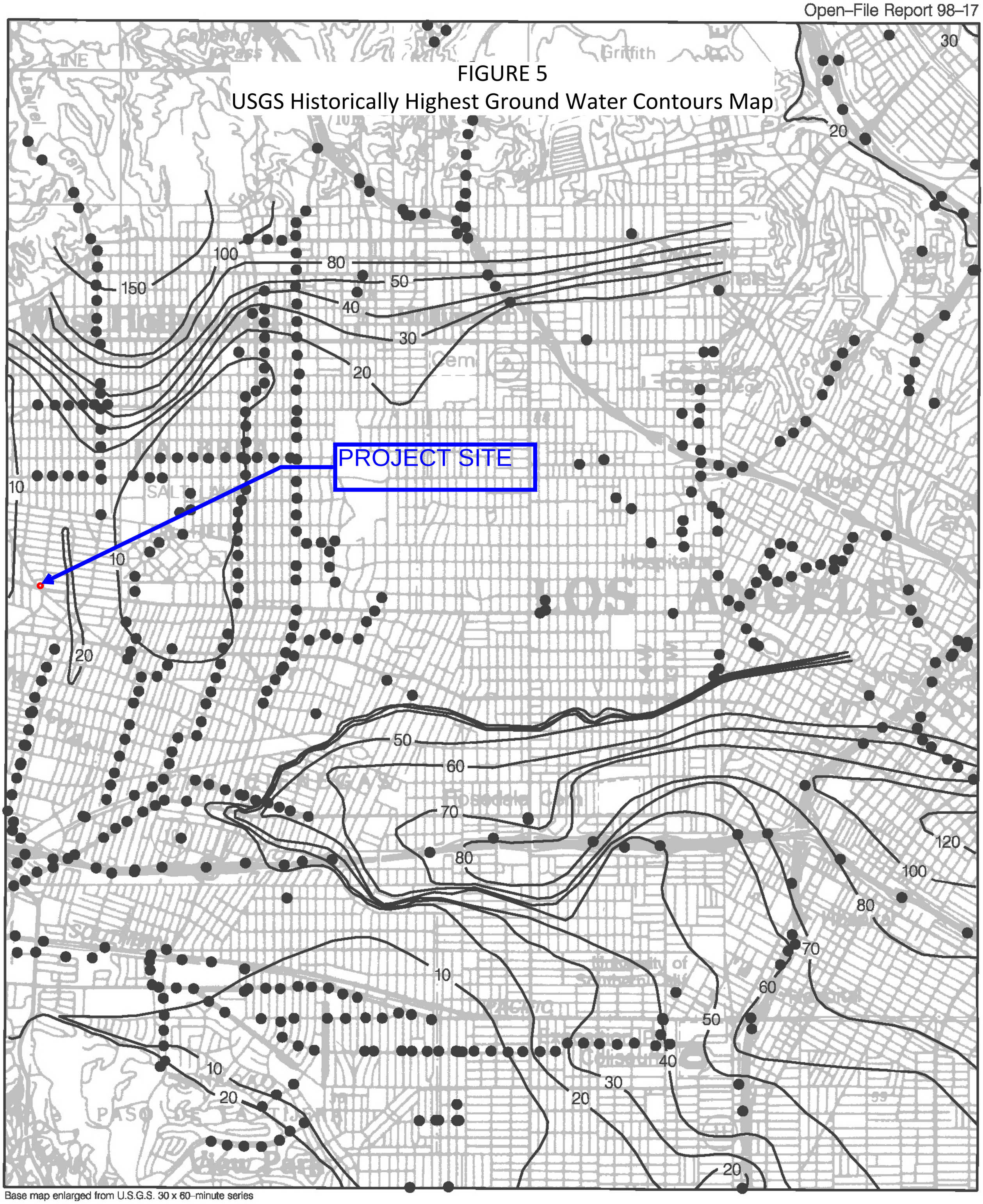


FIGURE 5
USGS Historically Highest Ground Water Contours Map



Base map enlarged from U.S.G.S. 30 x 60–minute series

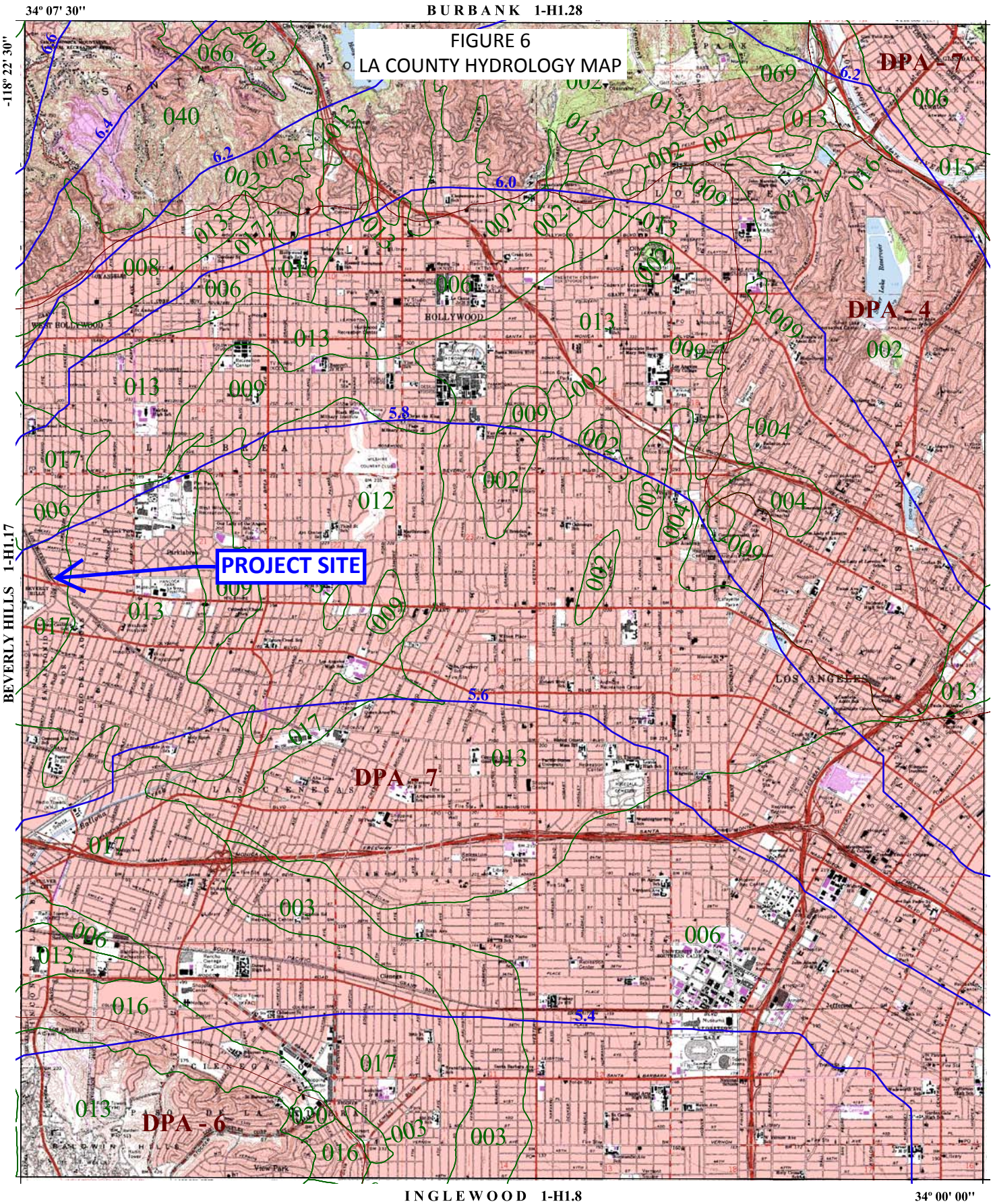
Plate 1.2 Historically Highest Ground Water Contours and Borehole Log Data Locations, Hollywood Quadrangle.

● Borehole Site

— 30 — Depth to ground water in feet

ONE MILE

SCALE



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

N W E S

1 0 1 2 Miles

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

HOLLYWOOD
50-YEAR 24-HOUR ISOHYET

1-H1.18

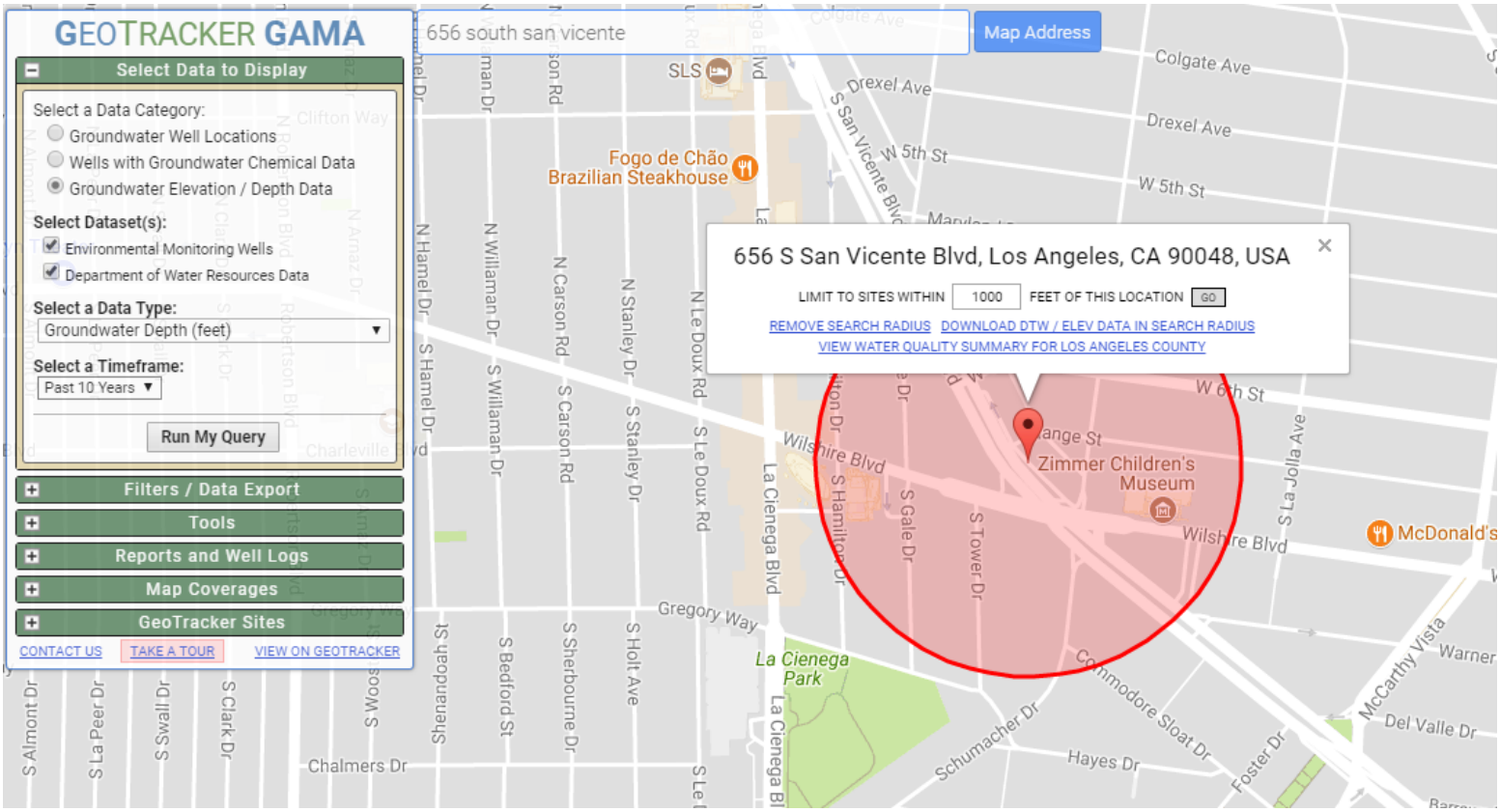
LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

FIGURE 7
WATERSHED MAP AND GROUNDWATER BASIN MAP
(1/2)



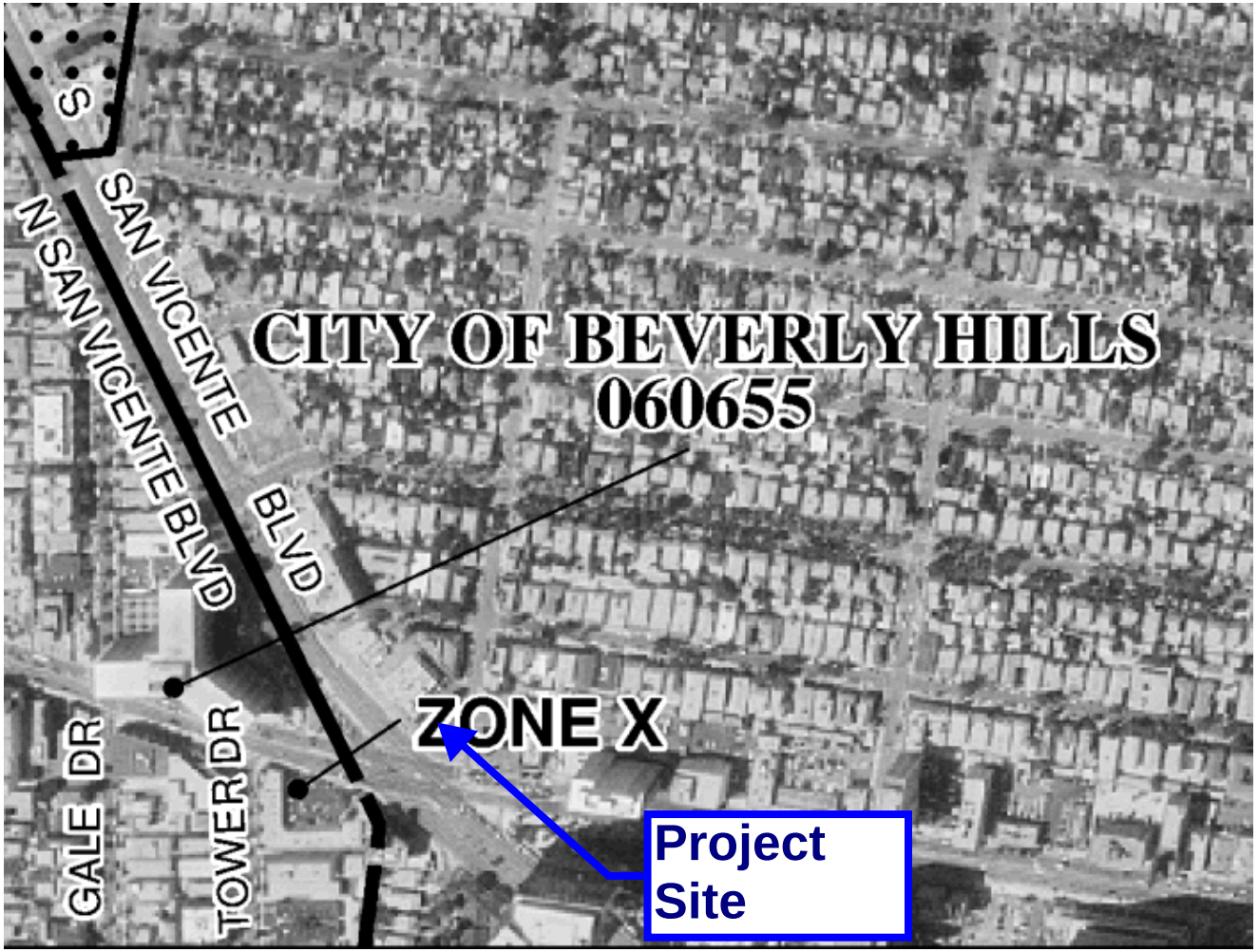
Resource
https://watersgeo.epa.gov/mwm/

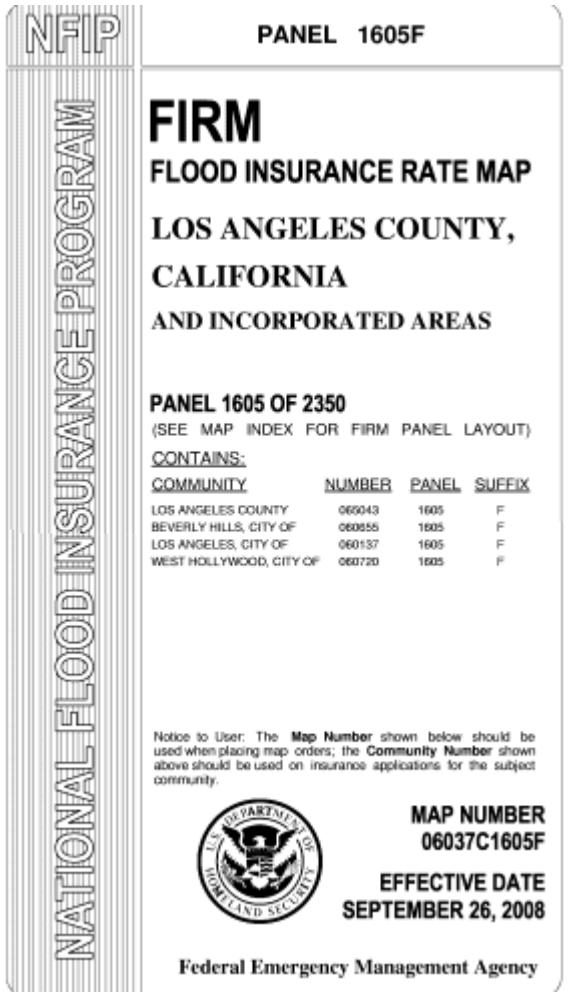
FIGURE 7
WATERSHED MAP AND GROUNDWATER BASIN MAP
(2/2)



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

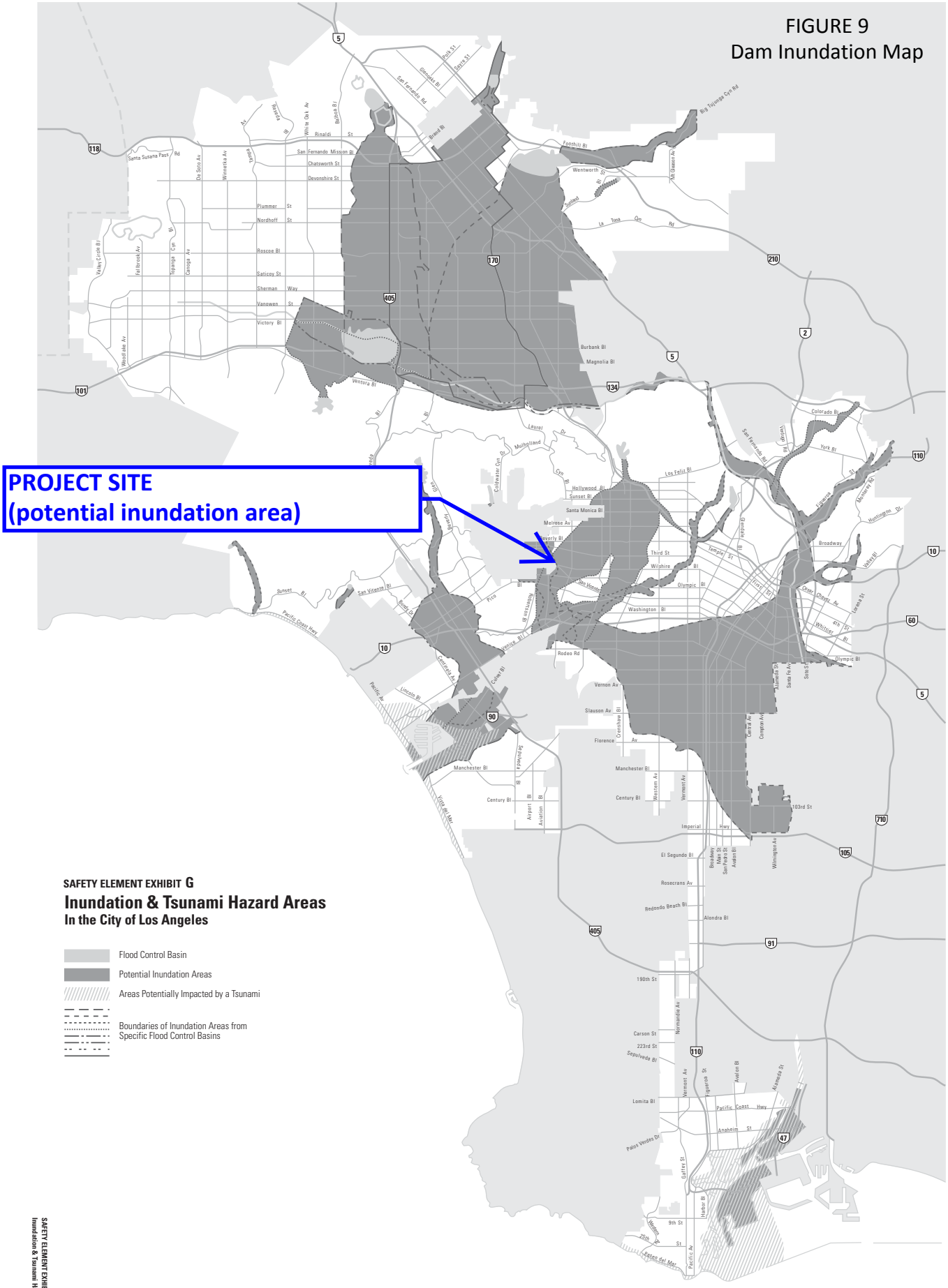
Figure 8
FEMA Flood Map





ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

FIGURE 9
Dam Inundation Map



SAFETY ELEMENT EXHIBIT G
Inundation & Tsunami Hazard Areas

Sources: Environmental Impact Report, Framework Element, Los Angeles City General Plan, May 1995; Technical Appendix to the Safety Element of the Los Angeles County General Plan Hazard 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 65302(g), as amended 1993.

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

Exhibit 1 - BMP: LID Calculations

Peak Flow Hydrologic Analysis

File location: P:/2016/1600769 656 South San Vicente/ENGR/EIR/Appendices_KPFF/Water Resources Appendices/Exhibit 1_LIDCalcs_.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	656 South San Vicente
Subarea ID	Proposed LID
Area (ac)	0.76
Flow Path Length (ft)	100.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.92
Soil Type	17
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.5262
Undeveloped Runoff Coefficient (Cu)	0.4806
Developed Runoff Coefficient (Cd)	0.8664
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	0.3465
Burned Peak Flow Rate (cfs)	0.3465
24-Hr Clear Runoff Volume (ac-ft)	0.0579
24-Hr Clear Runoff Volume (cu-ft)	2520.6554

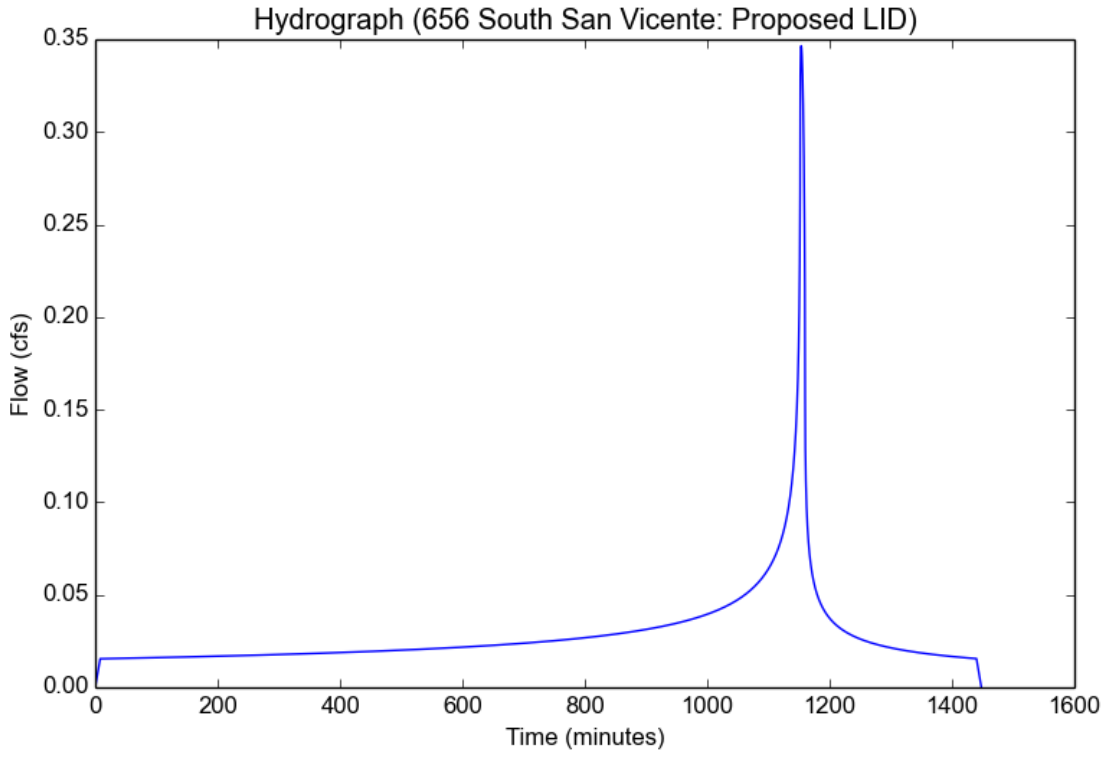
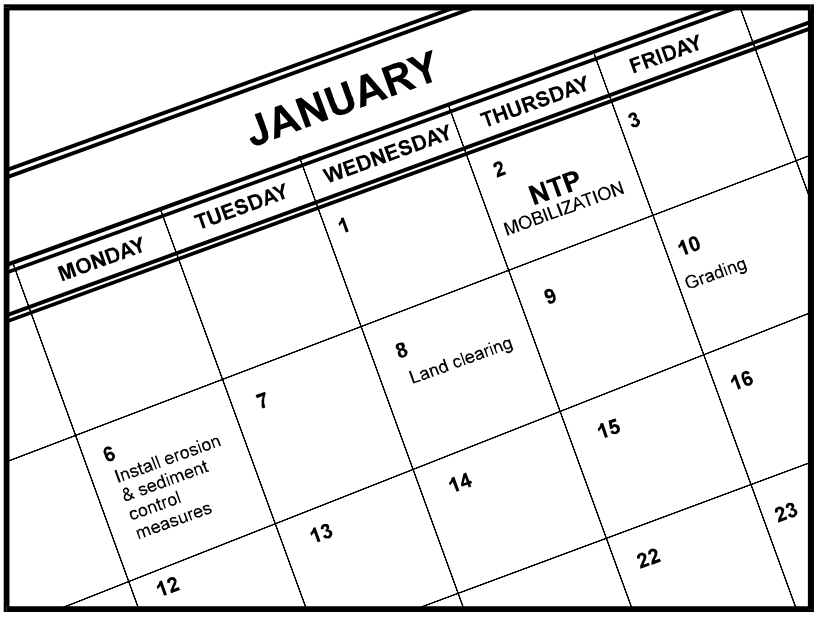


EXHIBIT 2
SWPPP BMPS

Scheduling EC-1



Description and Purpose

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

Suitable Applications

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

Limitations

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

Implementation

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

Categories

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

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

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

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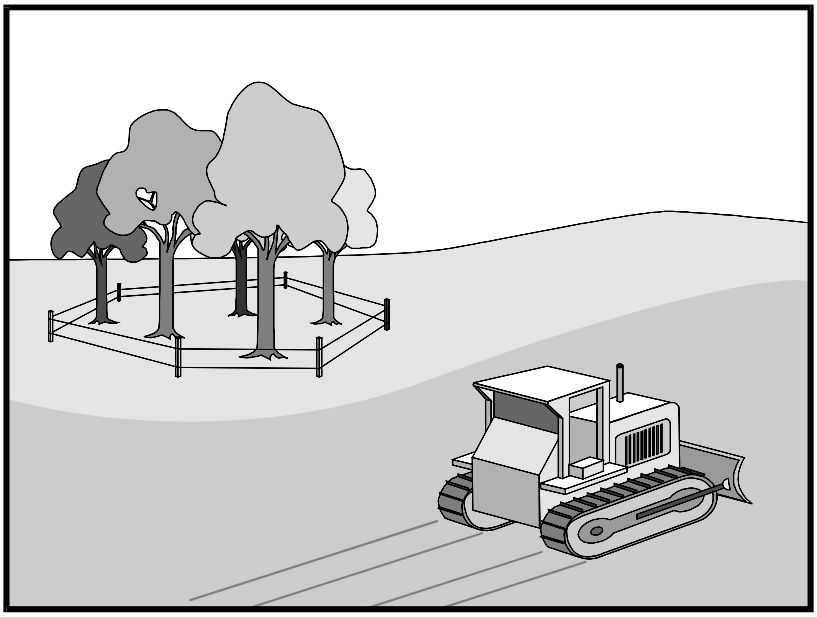
Preservation Of Existing Vegetation EC-2



Description and Purpose

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

Suitable Applications

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

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

Categories

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

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

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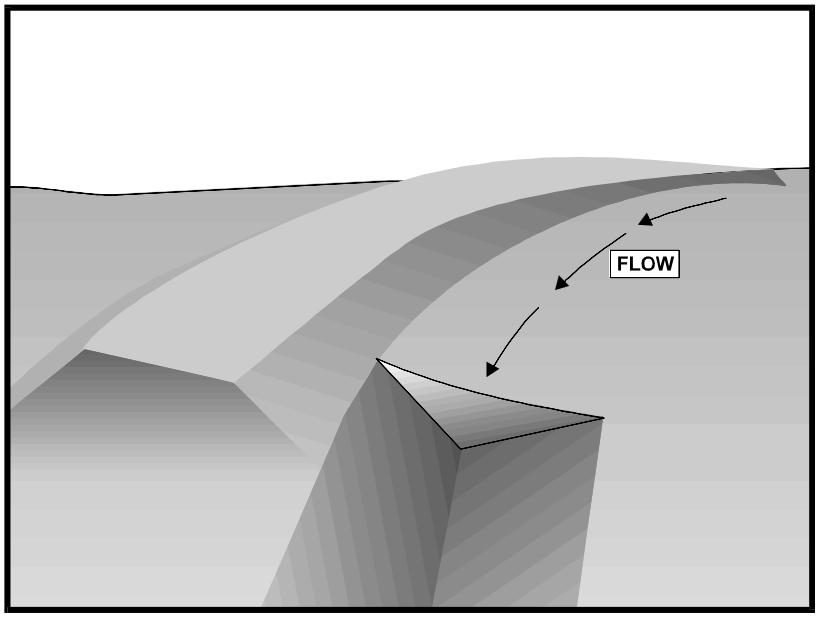
Earth Dikes and Drainage Swales EC-9



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

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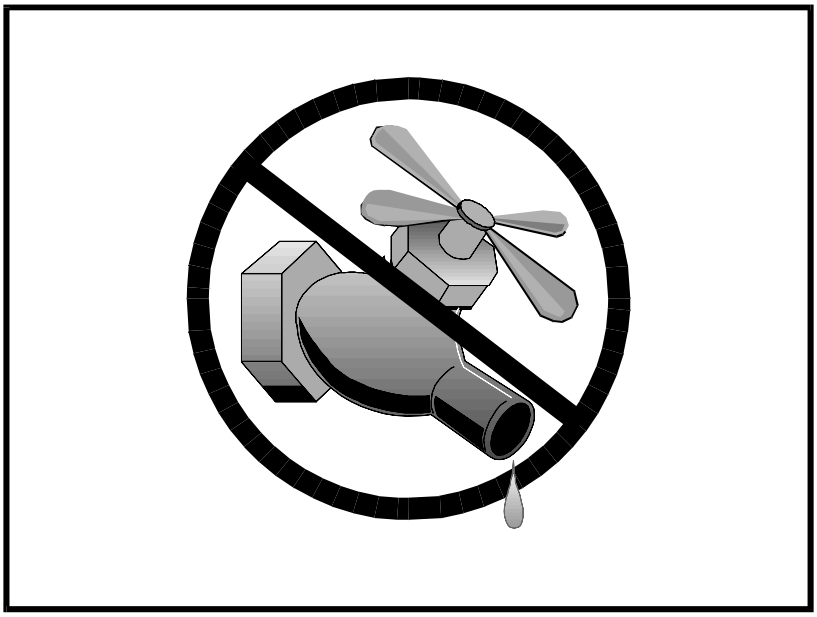
Water Conservation Practices NS-1



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

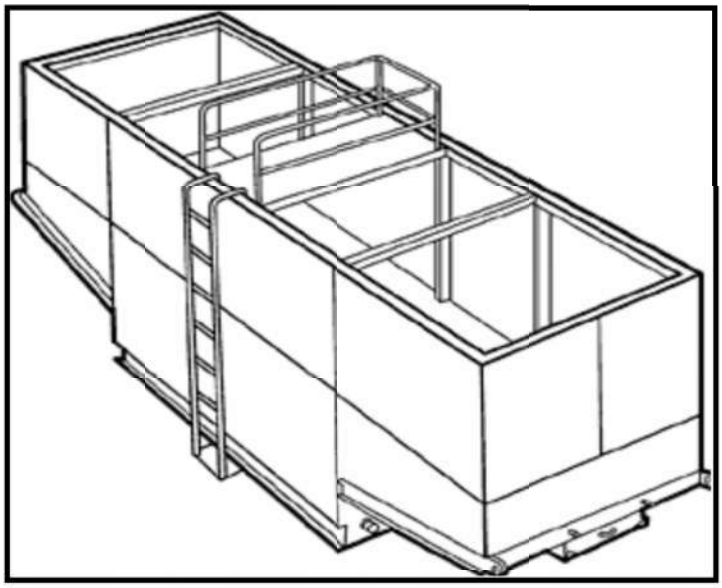
- None identified.

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.

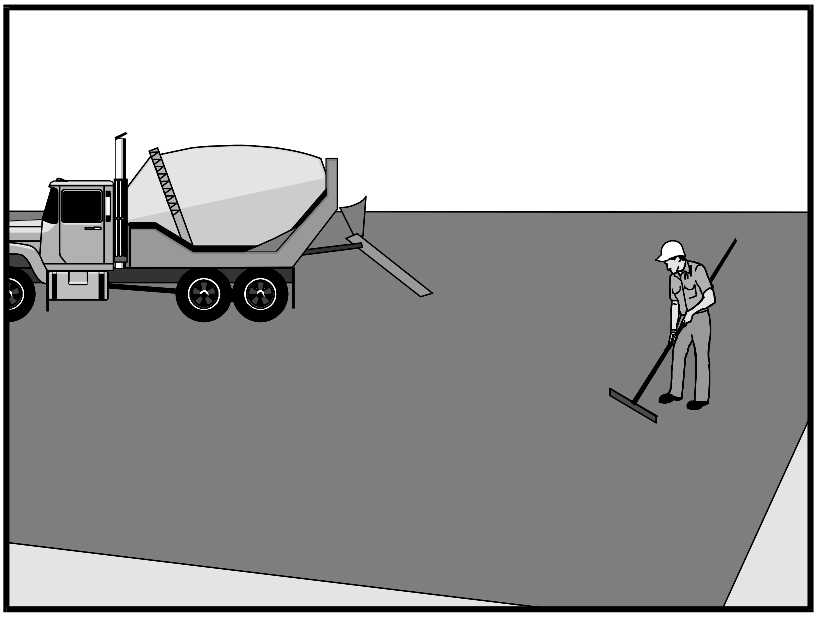
The dewatering operations described in this fact sheet are not Active Treatment Systems (ATS) and do not include the use of chemical coagulations, chemical flocculation or electrocoagulation.

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

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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

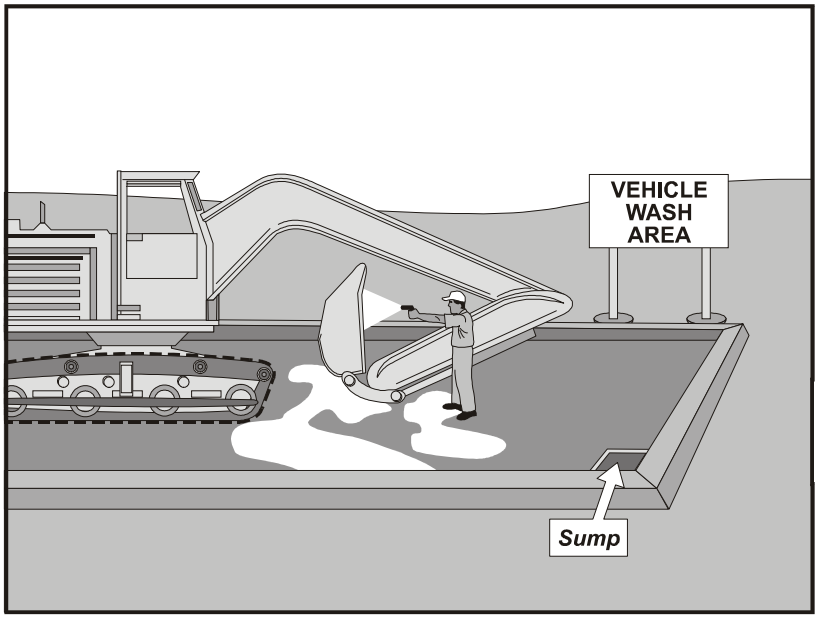
These procedures are implemented where paving, surfacing, resurfacing, or sawcutting, may pollute stormwater runoff or discharge to the storm drain system or watercourses.

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.

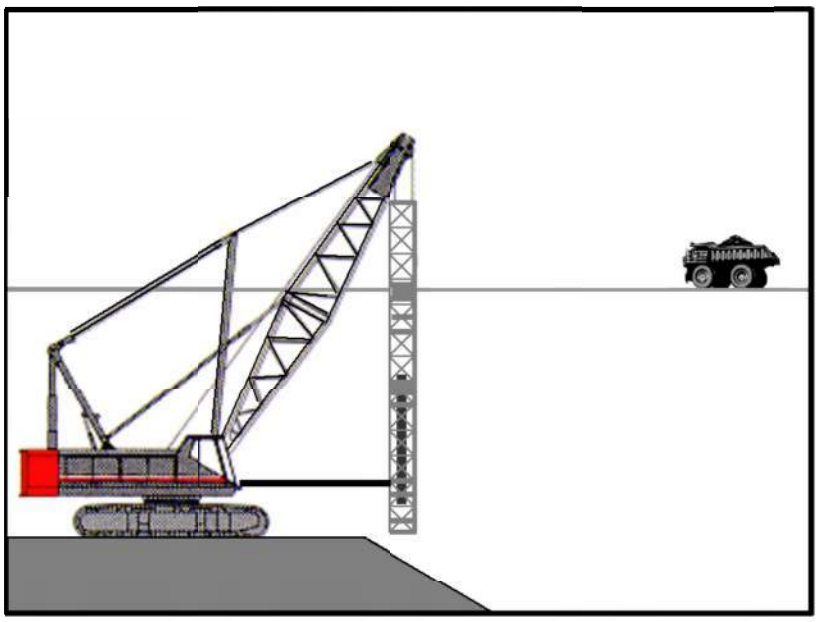
Implementation

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

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Description and Purpose

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

Suitable Applications

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

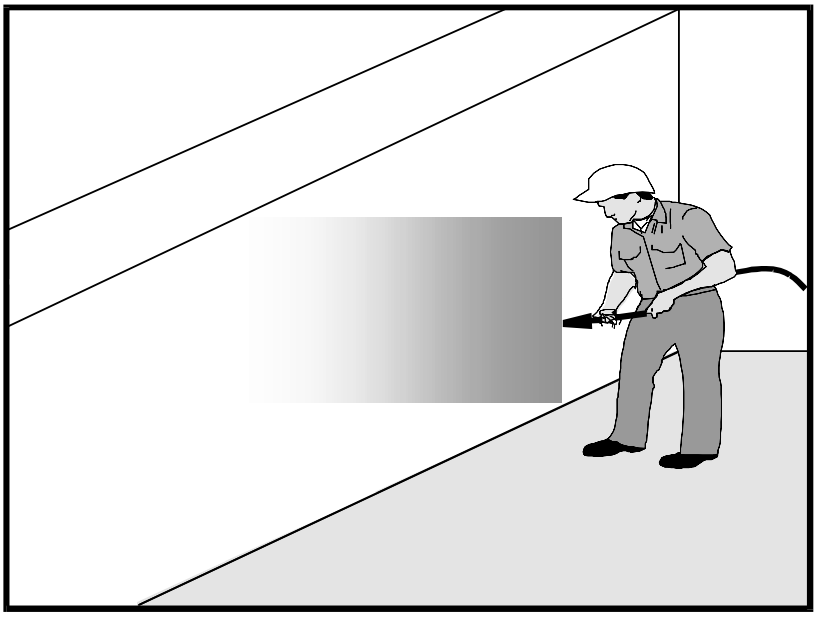
Limitations

None identified.

Implementation

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

Concrete Curing NS-12



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

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

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

Potential Alternatives

None

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

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.

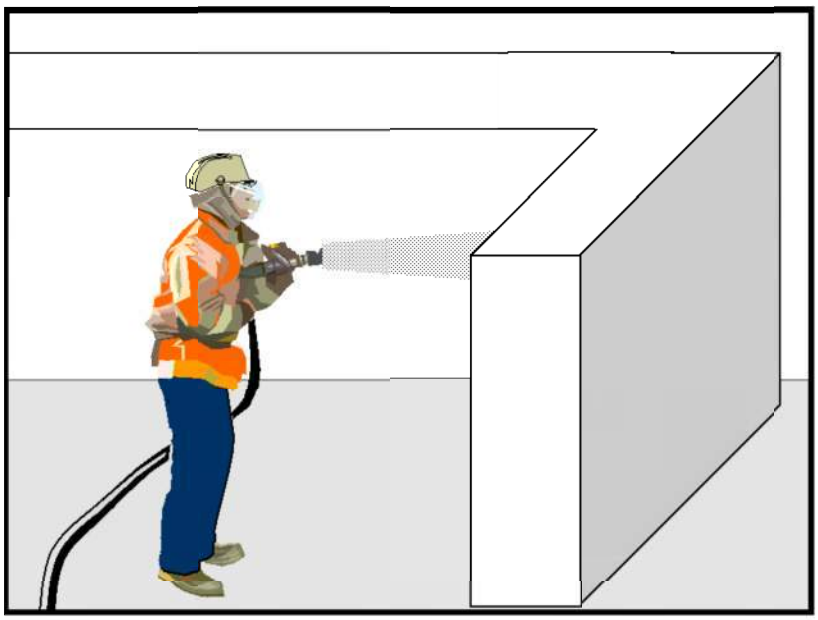
Suitable Applications

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

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Description and Purpose

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

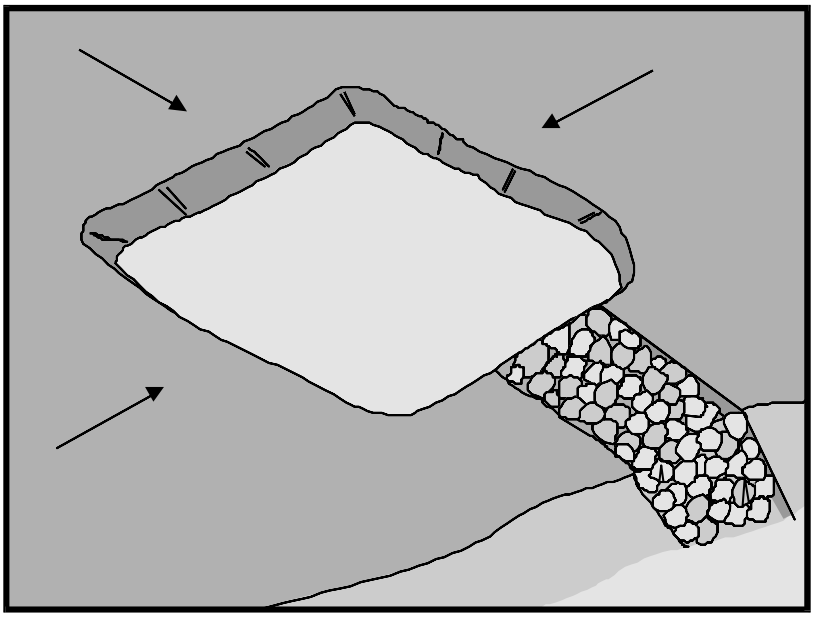
The General Permit incorporates Numeric Action Levels (NAL) for pH (see Section 2 of this handbook to determine your project's risk level and if you are subject to these requirements).

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

Suitable Applications

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

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)

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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.

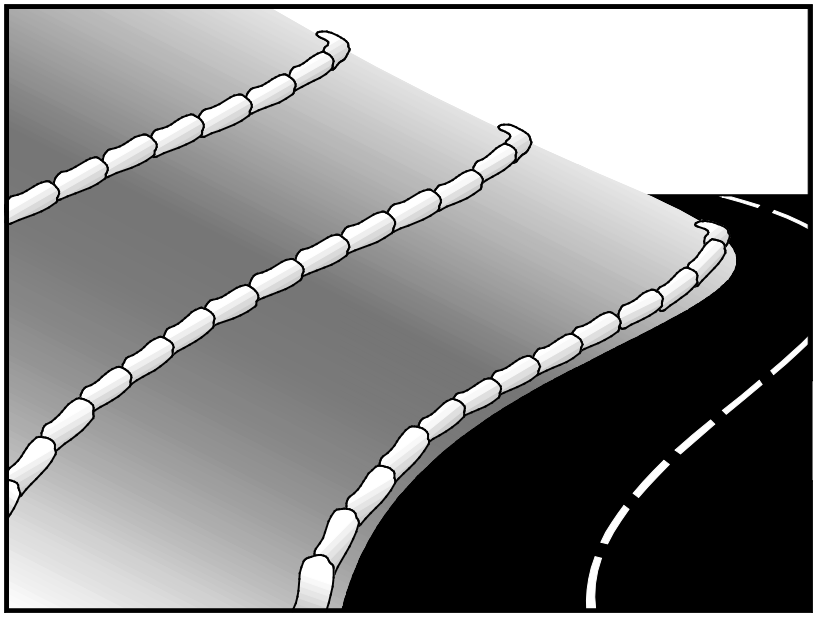
Trap design guidance provided in this fact sheet is not intended to guarantee compliance with numeric discharge limits (numeric action levels or numeric effluent limits for turbidity). Compliance with discharge limits requires a thoughtful approach to comprehensive BMP planning, implementation, and maintenance.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

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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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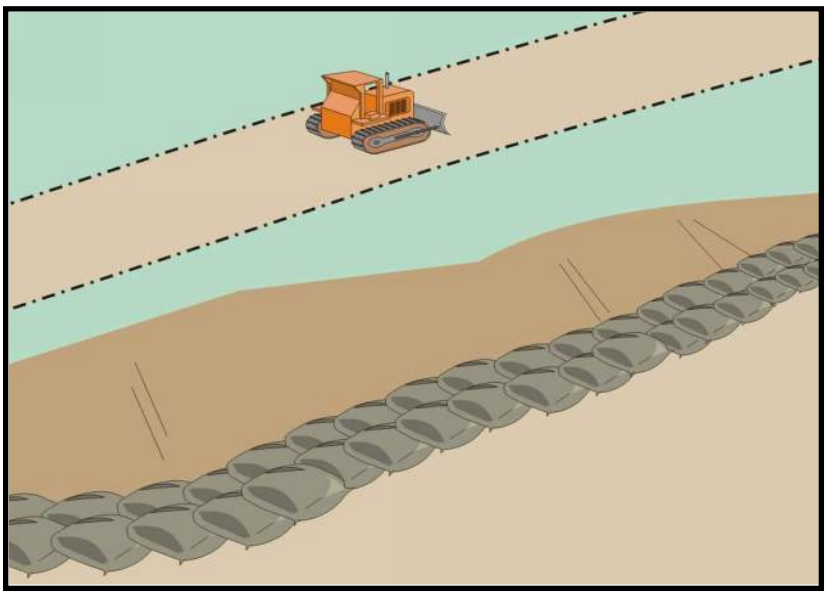
CALIFORNIA STORMWATER QUALITY ASSOCIATION

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

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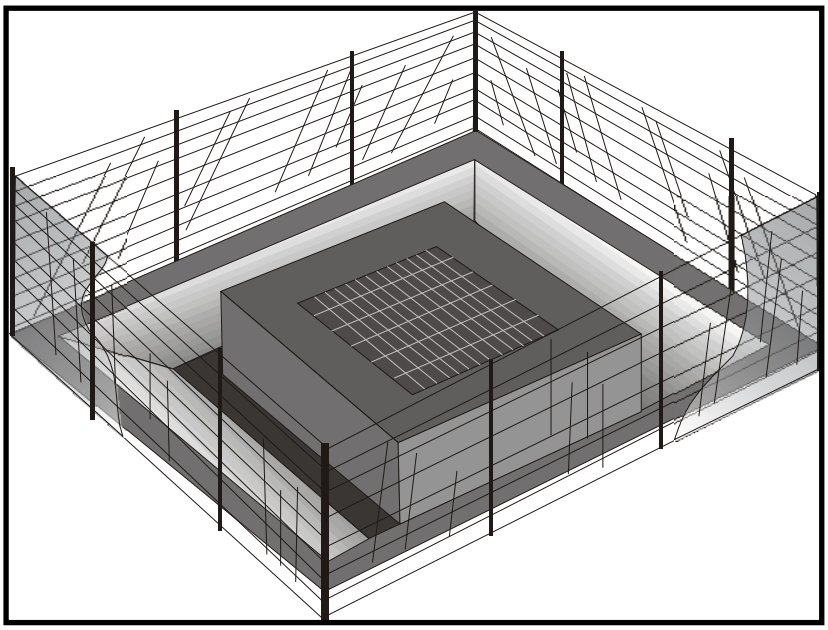
Storm Drain Inlet Protection SE-10



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

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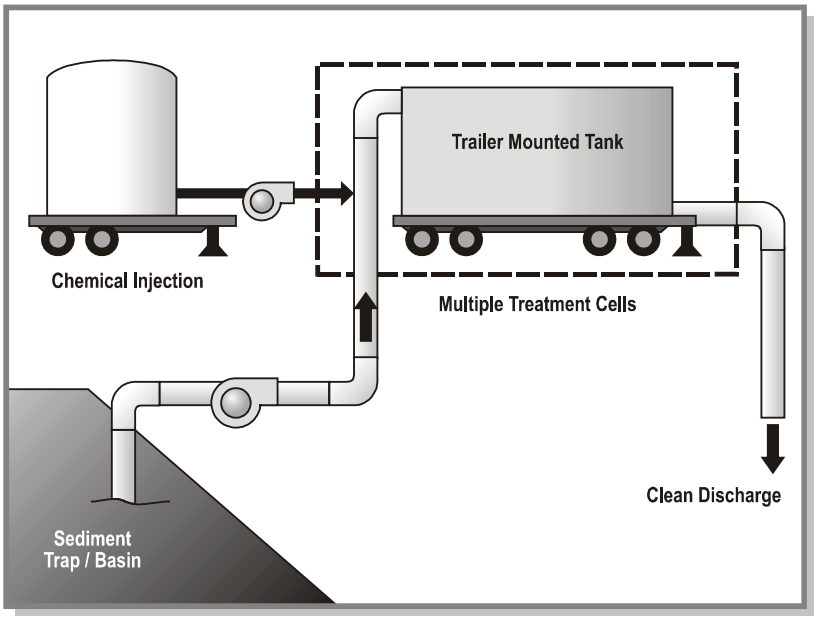
Active Treatment Systems SE-11



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.

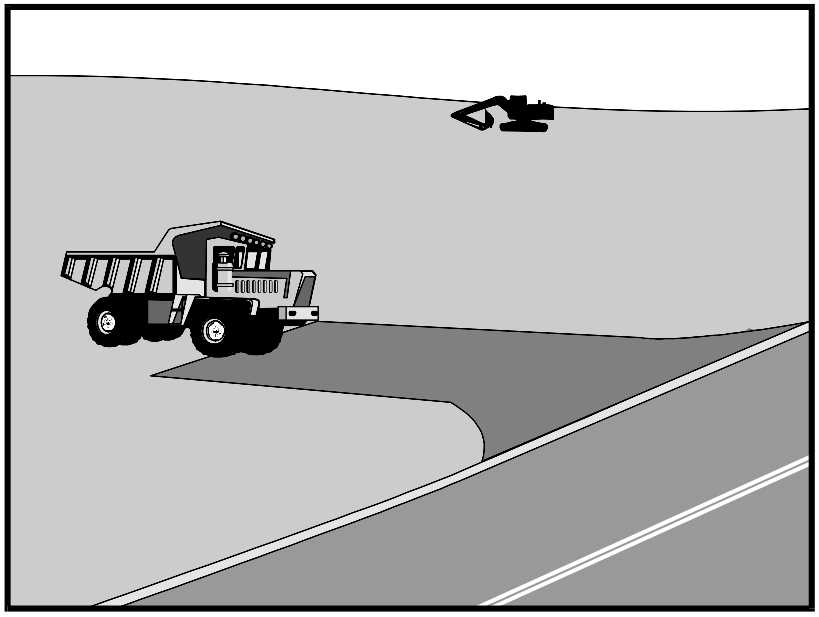
Suitable Applications

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

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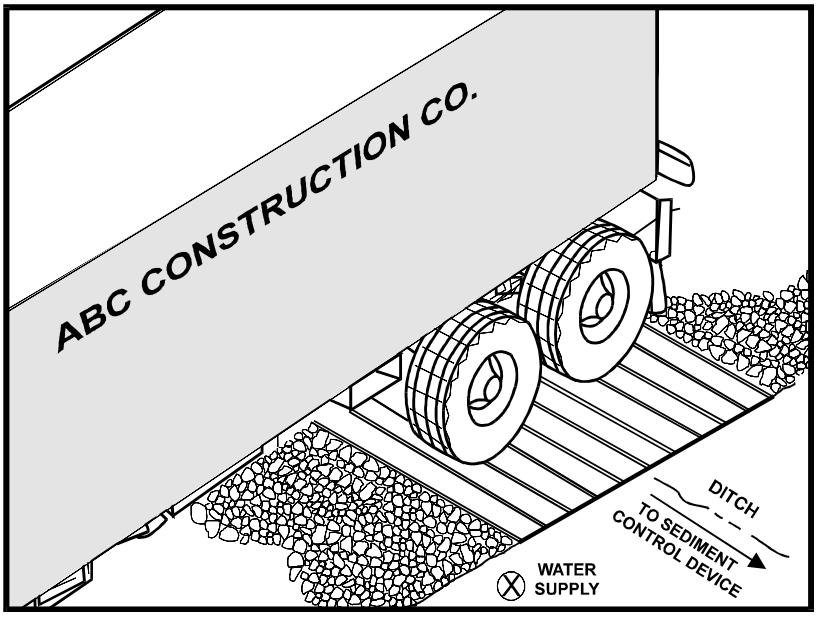
Entrance/Outlet Tire Wash TC-3



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

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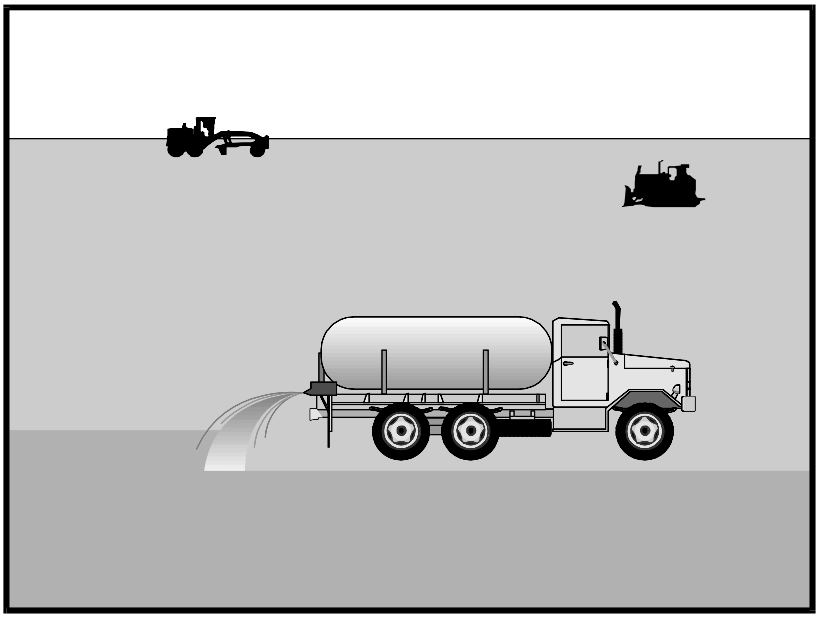
Wind Erosion Control WE-1



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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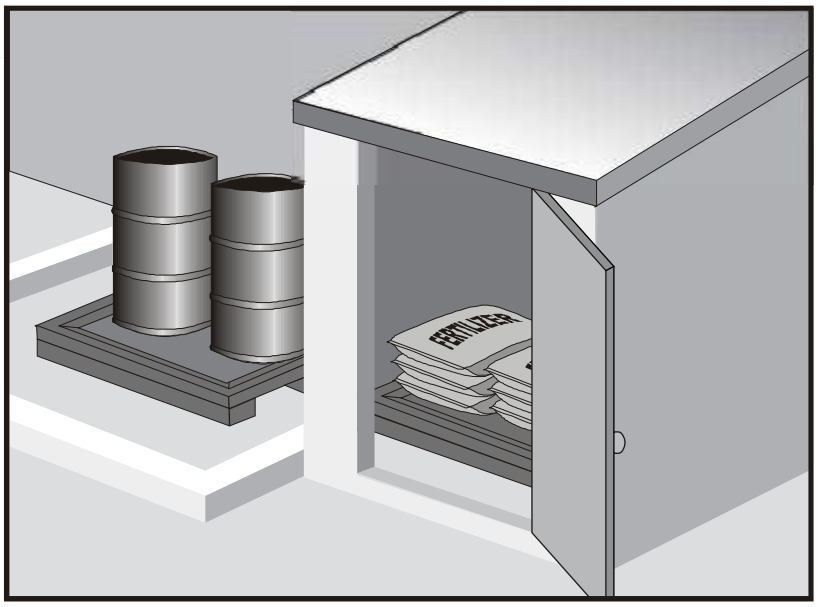
Material Delivery and Storage WM-1



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

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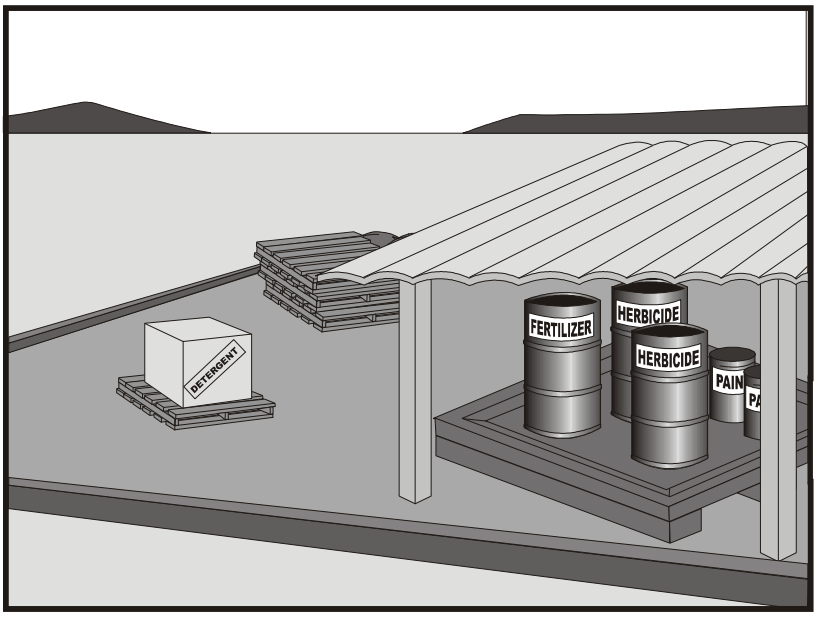
Material Use WM-2



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

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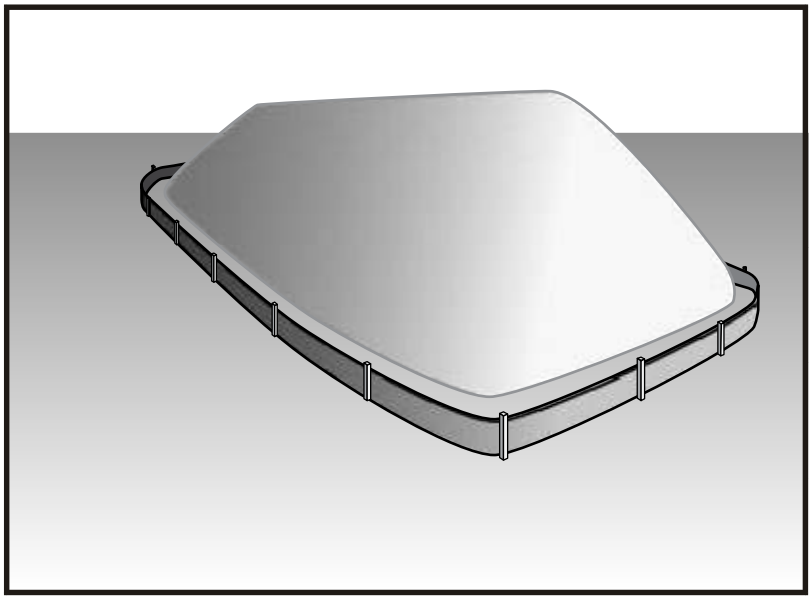
Stockpile Management WM-3



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

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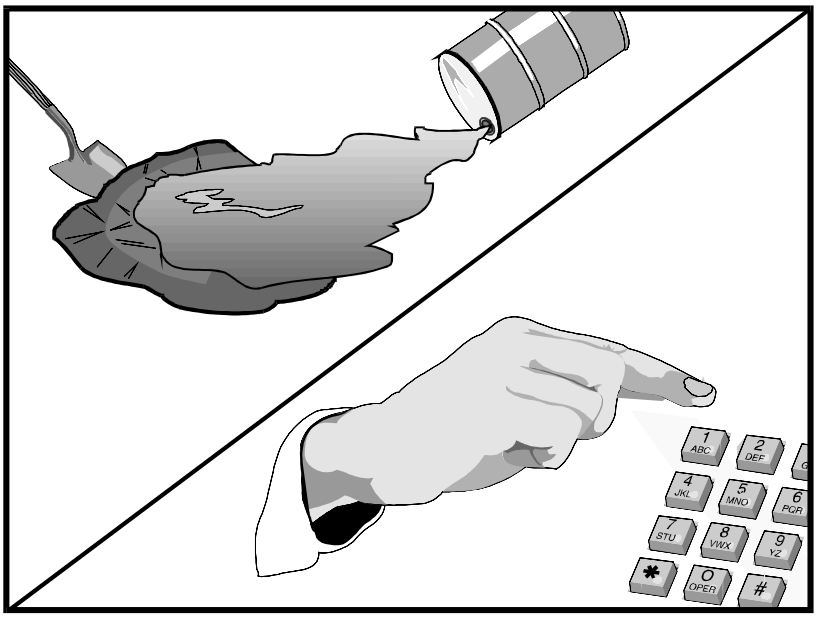
Spill Prevention and Control WM-4



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

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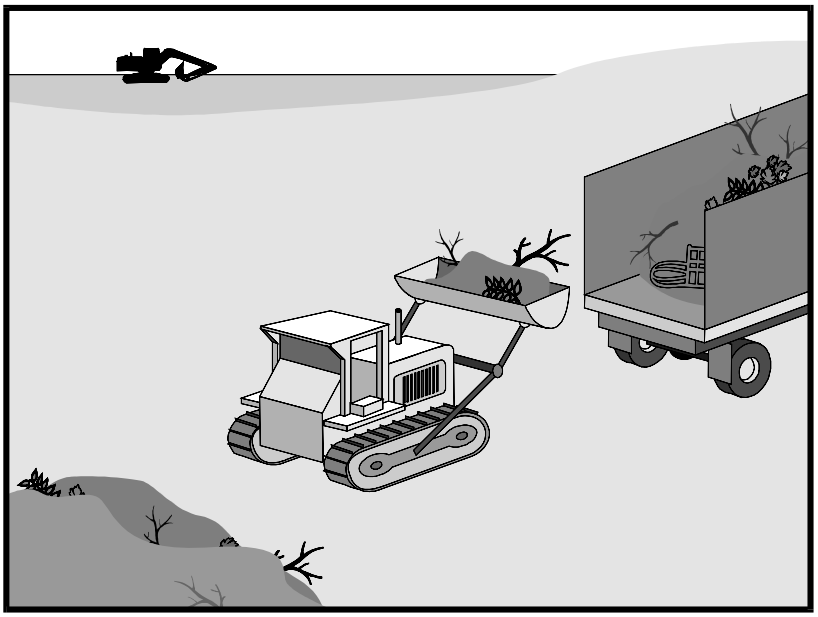
Solid Waste Management WM-5



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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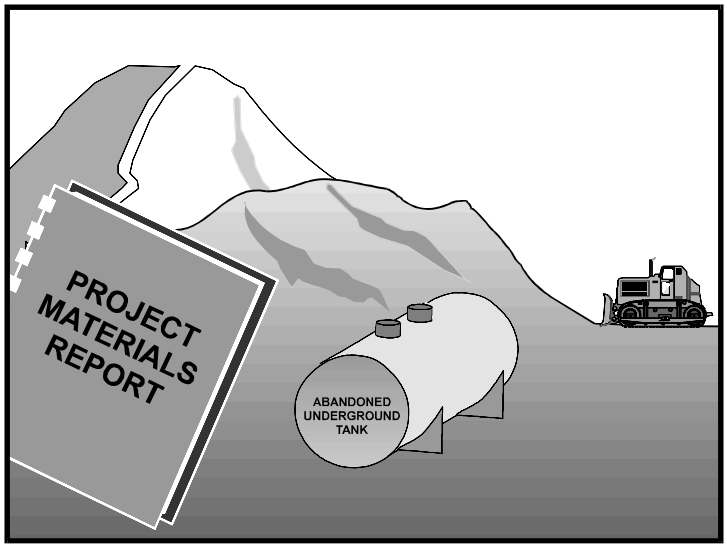
Contaminated Soil Management WM-7



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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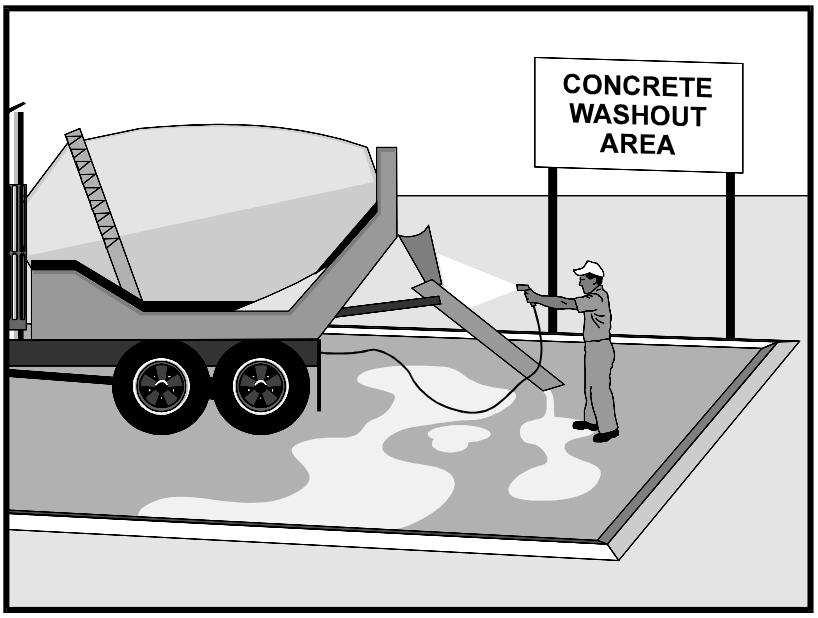
Concrete Waste Management WM-8



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

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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).

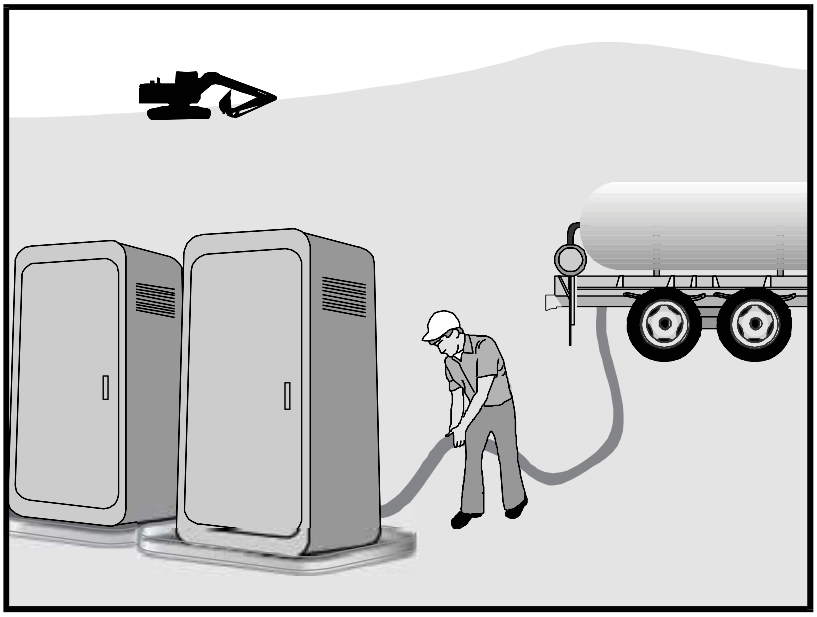
Many types of construction materials, including mortar, concrete, stucco, cement and block and their associated wastes have basic chemical properties that can raise pH levels outside of the permitted range. Additional care should be taken when managing these materials to prevent them from coming into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

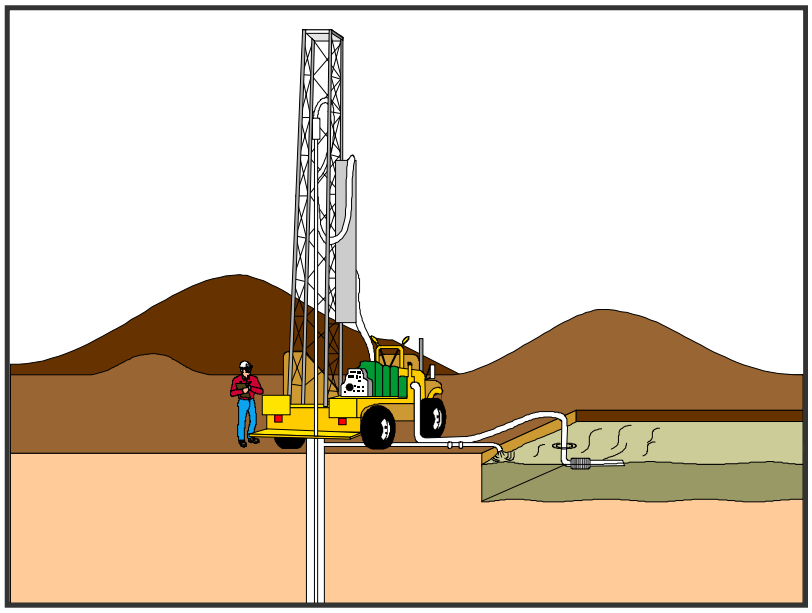
Implementation

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

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