Appendix H

Hydrology and Water Quality Technical Report

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2311 North Hollywood Way
Burbank, CA 91505

July 2021

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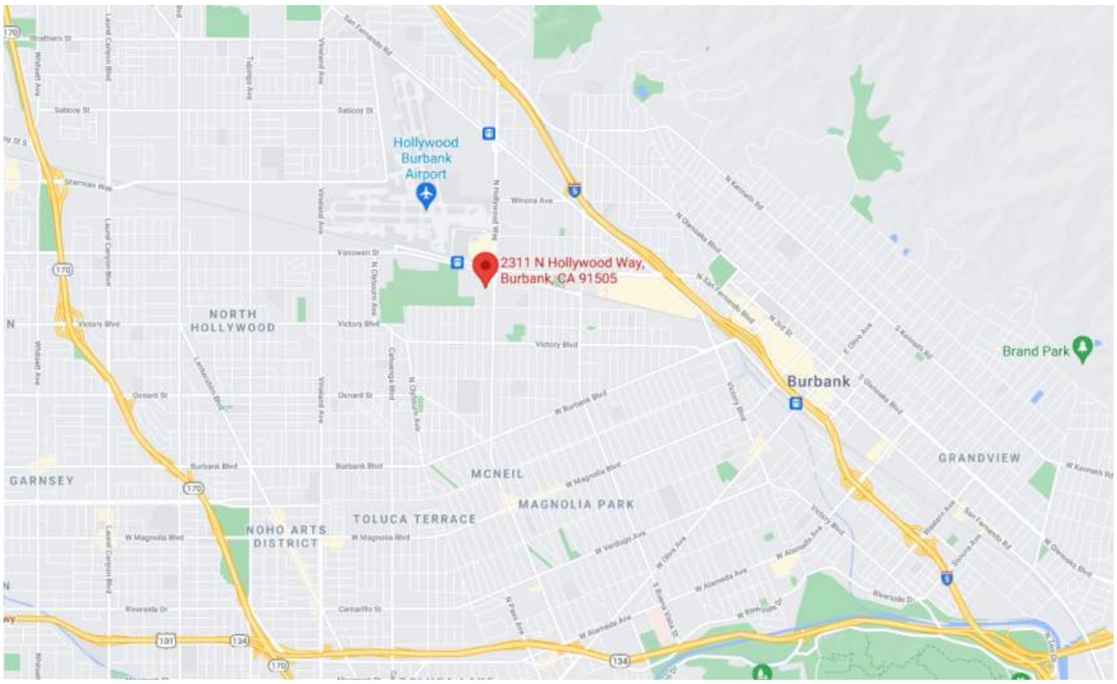
I. INTRODUCTION

A. Project Description

The project consists of the demolition of a 105,626 sf of commercial building and ancillary structures and an on-grade asphalt parking lot and the construction of two 7-story 862-unit mixed-use buildings and one 5-story office building and parking structure. The residential buildings will have 1 level of subterranean parking under part of each building with additional parking levels extend from the 1st to 5th level. The office building will not have any subterranean levels. The project is located at 2311 North Hollywood Way Burbank, CA 91505. See vicinity map below for project location.



B. Scope of Work

As a part of the Sustainable Communities Environmental Assessment for the project, the purpose of this report is to analyze the project's potential impacts related to surface water hydrology, surface water quality, groundwater level, and groundwater quality.

II. Regulatory Framework

A. Surface Water Hydrology

County of Los Angeles Hydrology Manual
The City of Burbank refers to the Los Angeles County Department of Public Works Hydrology Manual as its basis of design for storm drainage facilities. The Hydrology Manual requires that a storm drain conveyance system be designed for a 25- year storm event and that the combined capacity of a storm drain and street flow system accommodate flow from a 50-year storm event. Areas with sump conditions are required to have a storm drain conveyance system capable of conveying flow from a 50-year storm event. The County also limits the

allowable discharge into existing storm drain facilities based on the municipal separate storm sewer systems (MS4) Permit, which is enforced on all new developments that discharge directly into the County's storm drain system. Any proposed drainage improvements of County owned storm drain facilities such as catch basins and storm drain lines require approval/review from the County Flood Control District department.

City of Burbank

Any proposed drainage improvements within the public right of way or any other property owned by, to be owned by, or under the control of the City requires the review and approval by the City of Burbank Public Works Department.

B. Surface Water Quality

NPDES Permit Program

The U.S Environmental Protection Agency (USEPA) National Pollutant Discharge Elimination System (NPDES) permit program was first established under authority of the Clean Water Act (CWA) to control the discharge of pollutants from any point source into the waters of the United States. The USEPA has delegated the authority to regulate the CWA to the state of California.

NPDES Construction General Permit

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

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

The Erosion Control Plan documents the selection and implementation of Best Management Practices (BMPs) for a specific construction project, charging owners with stormwater quality management responsibilities.

Burbank Storm Water System (MS4) Permit

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

On November 8, 2012, the Los Angeles Regional Water Quality Control Board (LARWQCB) adopted Order No. R4-2012-0175 under the CWA and the Porter-Cologne Act. This Order is the NPDES permit or MS4 permit for municipal stormwater and urban runoff discharges within the City of Burbank. An amendment of the NPDES permit R4-2012-0175 was adopted on November 23, 2016 and is currently in effect.

City of Burbank Stormwater Management Program

As part of the Burbank Waste Discharge Report submitted for its NPDES permit, the City included among other programs, a stormwater management program. In accordance with the objectives of the federal CWA and the State Porter-Cologne Water Quality Control Act, the Burbank Storm Water Quality Management Program contains elements, practices, and activities to reduce or eliminate pollutants in stormwater to the maximum extent practicable. In accordance with this program, Burbank Municipal Code (BMC) Title 7-1-110 Issuance of Permit; Conditions; Revocation, Title 8-1-1004 Runoff Management Requirements, and Title 9-3-414 Stormwater Pollution Control Measures for Development Planning includes requirements relating to development planning and construction, including source control BMPs. Additional requirements include treatment control BMPs and requirements regarding erosion control, peak runoff, and BMP maintenance for projects located adjacent to or directly discharging to environmentally sensitive areas. Post-construction structural or treatment control BMPs designed to mitigate (infiltrate or treat) the volume of runoff produced from a 85th percentile or a 0.75- inch storm event (whichever is greater) prior to its discharge to a stormwater conveyance system are also required for these specific projects. In addition, in accordance BMC Title 7-1-110, construction projects are required to prepare an Erosion Control Plan that will incorporate construction site BMPs.

Given the potential for the proposed project to contribute pollutant loads to stormwater flows during construction and operation of proposed uses, the project is subject to the requirements of the NPDES permits and municipal code requirements.

The City of Burbank 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, but are not limited to, the following:

- 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.

Design Standards for Structural or Treatment Control BMPs:

- Post-construction treatment control BMPs are required to incorporate, at a 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 from one of the following:

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

City of Burbank Municipal Code

Title 8-1-1004. Runoff Management Requirements. This chapter reinforces the requirements of the Federal CWA within the City.

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 City of Burbank Municipal Code Title 7-1-110 Issuance of Permit; Conditions; Revocation and Title 8-1-1004 Runoff Management Requirements. Includes regulations pertaining to Best Management Practices for Industrial and Commercial Facilities.

Low Impact Development (LID)

The LID regulation was adopted by the City of Burbank on January 17, 2014 as Title 9-3-413 Burbank Municipal Code and approved by Ordinance No. 13-3,848; and amended on July 17, 2015 by Ordinance No. 15-3,865. The LID regulation is part of the City of Burbank's compliance with the MS4 permit.

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. Using 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.

The intent of the City of Burbank LID standards is to:

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

The City of Burbank LID Ordinance conforms to the regulations outlined in the NPDES Permit and SUSMP.

C. Groundwater Hydrology and Quality

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

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

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

III. Environmental Setting

A. Surface Water Hydrology

1. Regional

As illustrated in Appendix F, the project site is located within the Los Angeles River Watershed Reach 4 in the Los Angeles Basin. The Watershed encompasses an area of approximately 834 square miles and is bounded, at its headwaters, by the Santa Monica, Santa Susana, and San Gabriel mountains to the north and west. The southern portion of the Watershed captures runoff from urbanized areas surrounding downtown Los Angeles. Jurisdictions in the Watershed include the City of Los Angeles (33%), 42 other cities (29%), and eight agencies (37%). The 55-mile long Los Angeles River originates in western San Fernando Valley and flows through the central portion of the city south to San Pedro Bay near Burbank. Most portions of the Los Angeles River are completely channelized for flood protection, as are many of its tributaries including Compton Creek, Rio Hondo, Arroyo Seco, and Tujunga Wash. They are fed by a complex underground network of storm drains and a surface network of tributaries.

The project site is not located within a 1% (i.e., 100-year flood event) or 0.2% (i.e., 500-year flood event) annual chance floodplain area identified by the federal Emergency Management Agency (FEMA) and published in the Flood Insurance Rate Maps (FIRM). The areas of minimal flood hazard higher than the elevation of the 100-year and 500-year floodplain are labeled Zone X (unshaded). As shown in Figure G the project site is located within the Zone X (unshaded) and therefore located outside the 1% and 0.2% annual chance floodplain area.

2. Local

Underground storm drain facilities in the project vicinity (see Appendix A) consist of the following:

- **N Hollywood Way:** There is an existing 27” storm drain line 22’ west of centerline starting about halfway south along the frontage of the site then upsizes to a 33” line once at Valhalla Drive maintained by the County of Los Angeles.
- **Vanowen Street:** There is an existing 18” storm drain line 11’ north of centerline starting about halfway west along the frontage of our site maintained by the City of Burbank.

The stormwater runoff from the existing project site discharges into four off-site storm drainage catch basins, one along Vanowen St, one along N Hollywood Way, and 2 at the corner of N Hollywood Way and Valhalla Dr. The catch basins connect into underground storm drainage pipes which convey stormwater through various underground pipe networks and ultimately into the Los Angeles River (approximately 3 miles south of the site). From the project site the Los Angeles River flows towards the southeast, ultimately discharging into the Pacific Ocean at the San Pedro Bay.

3. Project Site

Based on the applicant supplied ALTA survey (see Appendix A), site observations, and city topographic maps it is determined that under the existing conditions the project site is divided into 5 drainage areas, which are described below and shown in Appendix B. The drainage areas are determined by the drainage patterns and flow path of stormwater that are tributary to a common point or area.

- **A1** – 52,975 sf northern half of the commercial building appears to drain via internal roof downspouts out to the northern parking lot and collects into a valley gutter and directly into an LA County catch basin along N Hollywood Way.
- **A2** – 50,910 sf southern half of the commercial building appears to drain via internal roof downspouts directly out to the curb in Valhalla Dr.
- **A3** – 266,209 sf north and west parking lot appears to drain into a valley gutter and directly into an LA County catch basin along N Hollywood Way.
- **A4** - 29,034 sf southeast parking lot appears to drain to a catch basin at the southeast corner of the site and directly out to curb drain along N Hollywood Way.
- **A5** – 55,202 sf west parking lot appears to sheet flow onto Valhalla Dr.

Appendix C shows all the input parameters used to analyze the existing Site. Table 1 below summarizes the existing volumetric flow rates generated by a 50-year storm event.

Table 1 - Existing Drainage Stormwater Runoff Calculations

Drainage Area	Description	Area (sf)	Area (acres)	Percent Imperviousness (%)	Q_{50} (cfs)	Volume (cf)
A1	NORTH HALF BUILDING	52,975	1.216	100	4.51	27,185
A2	SOUTH HALF BUILDING	50,910	1.169	100	4.33	26,134
A3	NORTH & WEST PARKING LOT	266,209	6.111	93	15.81	129,539
A4	SOUTHEAST PARKING LOT	29,034	0.667	97	2.44	14,527
A5	WEST PARKING LOT	55,202	1.267	100	4.69	28,325
Total	**Entire Site**	**454,330**	**10.430**	**95**	**31.78**	**225,710**

B. Surface Water Quality

1. Regional

As stated above, the project site lies within the Los Angeles River Watershed. Constituents of concern listed for Los Angeles River Reach 4 under California's Clean Water Act Section 303(d) List include: indicator bacteria, nutrients (algae), toxicity, and trash. No TMDL data have been recorded by USEPA for this waterbody.

2. Local

In general, urban stormwater runoff occurs following precipitation events, with the volume of runoff flowing into the drainage system depending on the intensity and duration of the rain event. Contaminants that may be found in stormwater from developed areas include sediments, trash, bacteria, metals, nutrients, organics and pesticides. The source of contaminants includes surface areas where precipitation falls, as well as the air through which it falls. Contaminants on surfaces such as roads, maintenance areas, parking lots, and buildings, which are usually contained in dry weather conditions, may be carried by rainfall runoff into drainage systems. The City of Burbank performs weekly street sweeping on City streets and city-owned parking lots. In addition all city owned catch basins have installed full capture trash excluder systems and are inspected/maintained 3 times a year.

3. On-Site

Based on the applicant supplied ALTA survey (see Appendix A), site observations, and the fact that the existing site was developed prior to the enforcement of storm water quality BMP design, implementation and maintenance, it appears the project site currently does not implement BMPs and has no means of treatment for stormwater runoff.

C. Groundwater Hydrology and Quality

1. Groundwater Hydrology

a. Regional

Groundwater use for domestic water supply is a major beneficial use of groundwater basins in Los Angeles County. The City of Burbank overlies the San Fernando Valley Groundwater Basin (Basin). Groundwater flow in the Basin is generally south-southeasterly 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.

b. Local

On the east the site is bounded by the San Rafael Hills and Verdugo Mountains and on the north by the San Gabriel Mountains, to the west by the Santa Susana Mountains and Simi Hills and on the south by the Santa Monica Mountains.

Natural replenishment of the Basin's groundwater supply is largely limited to the spreading grounds from Lopez, Pacoima, Hansen, and Branford Tujunga wash systems. The Los Angeles Department of Water and Power's Stormwater Capture Master Plan looks to implement several centralized projects for the future expansion of the infiltration capacity in the basin.

c. Project Site

The existing project site is currently improved with an existing asphalt parking lot, a single-story commercial building, and ancillary buildings. There is no known contribution to groundwater recharge. The below discussion is based upon a review of relevant previous investigations and on-site explorations conducted as part of the *Updated Geotechnical Investigation, Proposed Mixed-Use Development 2311 North Hollywood Way Burbank, California* on May 7, 2021. "the historically highest groundwater level in the area is approximately 50 to 60 feet beneath the existing ground surface." "Groundwater was not encountered in our field exploration, drilled to a maximum depth of 30 ½ feet below the existing ground surface." Thus "groundwater is not expected to be encountered during construction nor have a detrimental effect on the project." Groundwater levels fluctuate per seasonal rainfall so levels can be shallower than stated here.

2. Groundwater Quality

a. Regional

As stated above, the City of Burbank overlies the San Fernando Valley Basin, which falls under the jurisdiction of the LARWQCB. According to LARWQCB's Basin Plan, objectives applying to all ground waters of the region include bacteria, chemical constituents and radioactivity, mineral quality, nitrogen (nitrate, nitrite), and taste and odor.

b. Local

Based upon LARWQCB's Basin Plan, constituents of concern listed for the San Fernando Valley Basin include boron, chloride, sulfate, Total Dissolved Solids (TDS), and nitrate.

c. On-Site

The project site is 95% impervious in the existing condition and due to the minimal amount of pervious area does not contribute to groundwater recharge. It does not appear possible for surface water borne contaminants to percolate into the groundwater and affect the groundwater quality.

IV. Significance Thresholds

A. Surface Water Hydrology

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

Would the project:

- Violate any water quality standards or waste discharge requirements?
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or offsite?
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?
- Otherwise substantially degrade water quality?
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows?
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or

dam?

- Inundation by seiche, tsunami, or mudflow?

B. Surface Water Quality

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

Would the project:

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

C. Groundwater Hydrology and Quality

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

Would the project:

- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

V. Methodology

A. Surface Water Hydrology

The project site is located within the City of Burbank, and drainage collection, treatment and conveyance are regulated by the City. The City uses Los Angeles County Hydrology Manual as its basis of design for storm drainage facilities. The Los Angeles County Department of Public Works (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. To provide a more conservative analysis, this report analyzes the larger storm event threshold, i.e., the 50-year frequency design storm event.

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

Where,

Q = Volumetric flow rate (cfs)

C = Runoff coefficient (dimensionless)

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

A = Basin area (acres)

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

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

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

B. Surface Water Quality

Construction BMPs will be designed and maintained as part of the implementation of the local Erosion Control Plan in compliance with the Construction General Permit. The Erosion Control Plan shall be implemented when construction commences and, before any site clearing or demolition activity. During construction, the Erosion Control Plan will be referred to regularly and amended as changes occur throughout the construction process.

C. Groundwater Hydrology and Quality

The significance of this project as it relates to the level of the underlying groundwater table of the San Fernando Valley Basin included a review of the following considerations:

Analysis and Description of the Project's Existing Condition

- Identification of the San Fernando Valley 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.

Analysis of the Proposed Project 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 San Fernando Valley Subbasin.

Short-term groundwater quality impacts could potentially occur during construction of the project because 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 stormwater management, stormwater runoff will be infiltrated, evapotranspired, and/or captured and used through stormwater management techniques sized based on the runoff produced from the greater between the 85th percentile storm event and the 0.75-inch storm event. To meet these requirements, the project proposes the installation of storm drains capturing the entire project site runoff and through storm pipes conveying the runoff towards either a drywell, infiltration trench, capture and use system or filtration planter boxes. The typical LID systems are illustrated in Appendix H.

VI. Project Impacts

A. Construction

1.Surface Water Hydrology

Construction activities for the project would include demolition of the existing commercial building and all existing hardscape and landscape improvements, excavating down to a maximum depth of 9 feet below ground surface (bgs) to build up the underground structure, building up the structures, and constructing hardscape and landscape around the structures. It is anticipated that up to approximately 22,000 cubic yards of soil would be graded, most of which would be exported to construct the project. These activities have the potential to temporarily alter existing drainage patterns and flows on the project site by exposing the underlying soils, modifying flow direction, and making the project site temporarily more permeable. Also, exposed and stockpiled soils could be subject to erosion and conveyance into nearby storm drains during storm events. In addition, 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.

The project would be required to comply with all applicable City grading permit regulations that require necessary measures, plans, and inspections to reduce sedimentation and erosion. Thus, through compliance with all NPDES Construction General Permit requirements, implementation of BMPs, and compliance with applicable City grading regulations, the project would not substantially alter the project site drainage patterns in a manner that would result in substantial erosion, siltation, or flooding on- or off-site. Similarly, adherence to standard compliance measurements in construction activities would avoid flooding, substantially increasing or decreasing the amount of surface water flow from the project site into a water body, or a permanent, adverse change to the movement of surface water. As such, construction- related impacts to surface water hydrology would be less than significant.

2.Surface Water Quality

Construction activities such as earth moving, maintenance/operation of construction equipment, potential dewatering, and handling/storage/disposal of materials could contribute to pollutant loading in stormwater runoff. However, as previously discussed, the project would be required to obtain coverage under the NPDES Construction General Permit.

With the implementation of site-specific BMPs included as part of the required Erosion Control Plan, the project would reduce or eliminate the discharge of potential pollutants from the stormwater runoff. In addition, the project Applicant would be required to comply with City grading permit regulations, which require implementation of 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 NPDES requirements and City grading 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. Los Angeles River) to a degree which unreasonably affects beneficial uses of the waters; (2) contamination of the quality of the water of the State by waste to a degree which creates a hazard to the public health through poisoning or through the spread of diseases; or (3) nuisance that would be injurious to health; affect an entire community or neighborhood, or any considerable number of persons; and occurs during or as a result of the treatment or disposal of wastes. Furthermore, construction of the project would not result in discharges that would cause regulatory standards to be violated.

The project comprises approximately 10.43 acres thus a Storm Water Pollution Prevention Plan (SWPPP) is required to comply with California's Construction General Permit.

3. Groundwater Hydrology and Quality

As stated above, construction activities for the project would include demolition of the existing commercial building and all existing hardscape and landscape improvements, excavating down to a maximum depth of 9 feet bgs. Groundwater fluctuates per seasonal rainfall, though unlikely to rise up to 9 feet bgs. Since historic high groundwater is 50-60 feet bgs, temporary dewatering operations are not expected. Therefore, the project would not substantially deplete groundwater supplies in a manner that would result in a net deficit in aquifer volume or lowering of the local groundwater table.

The subject project site is located near previous Lockheed facilities/activities, contaminated soil and/or groundwater may exist, and additional testing could be required. During on-site grading and building construction, hazardous materials, such as fuels, paints, solvents, and concrete additives, could be used and present a risk to groundwater, 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. As previously discussed, the project would comply with the Construction General Permit, which would require the preparation and implementation of a SWPPP that would include properly managing any hazardous materials used during construction. As such, BMPs will be implemented to mitigate any hazardous materials on the project site. Furthermore 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. 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.

B. Operation

1. Surface Water Hydrology

The project will meet the requirements of the City's LID standards. Under section 3.3. 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
5. Offsite Mitigation Fee

Feasibility screening delineated in the LID manual is applied to determine which BMP will best suit the project. Based on the Geocon West Inc. geotechnical report historic high groundwater is 50-60' bgs. The LID guidelines require the infiltration systems to maintain at least ten feet of clearance to the groundwater, property line or any basement structure. Thus, due to the project's maximum estimated depth of 9 feet below the ground surface and the proposed underground footprint, infiltration is a possibility if an infiltration test is done and results in an infiltration rate of 0.5 in/hr or greater. If the project infiltration test results in lower than a 0.5 in/hr rate then either a capture and use system or planter boxes are to be implemented to satisfy the LID requirements. When onsite LID requirements are technically infeasible an Offsite Runoff Mitigation Fee can be paid in-lieu of the implementation of LID BMPs if the stormwater runoff is filtrated mechanically before discharging to the public right-of-way.

The project will decrease the percentage of impervious area compared to the existing conditions on the project site. The project site currently consists of an existing commercial building and on grade asphalt paved parking lot with some landscaping. The project will develop a 7-story mixed-use building surrounded by hardscape and landscape and rooftop and courtyard planting. The proposed improvements will also change the drainage sub areas from the existing condition. As discussed in Table 2, the proposed project will be approximately 82% impervious after construction. Based on site investigations, under the existing conditions it appears that stormwater discharges from the project site without treatment or on-site detention. The project would improve these conditions by adding BMPs to the project site.

Under the proposed conditions illustrated in Appendix B, the project site would consist of 4 proposed drainage areas that would drain via building roof drains, surface flow, and subterranean drainage to the proposed BMPs. Fry's Way and Screenland Way are proposed public accessible streets so are excluded from the proposed drainage and will not be treated by the onsite private BMPs.

Proposed runoff was analyzed for a 50-year storm event. Refer to Appendix C for the parameters used for analyzing the proposed site drainage using HydroCalc and Appendix E for the LA County Hydrology Data Map. Table 2 shows the proposed volumetric flow rates generated by a 50-year storm event.

Table 2 - Proposed Drainage Stormwater Runoff Calculations						
Drainage Area	**Description**	**Area (sf)**	**Area (acres)**	**Percent Imperviousness (%)**	**Q_{50} (cfs)**	**Volume (cf)**
A1	BUILDING 1 NORTH	64,010	1.469	83	5.05	28,037
A2	BUILDING 1 SOUTH	102,320	2.349	82	6.78	44,368
A3	BUILDING 2	153,590	3.526	80	10.89	65,250
A4	OFFICE BUILDING	88,000	2.020	85	6.78	36,611
Total	**Entire Site**	**407,920**	**9.365**	**82**	**29.50**	**174,266**

Table 3 shows the existing and the proposed 50-year frequency design storm event peak flow rates within the project site. A comparison of the pre- and post-drainage stormwater runoff indicates that there will be a decrease 7.17% in peak flow rate and 22.79% in volume.

Table 3 - Proposed Drainage Stormwater Runoff Calculations Summary		
Pre-Project Q_{50}	**Post-Project Q_{50}**	**Decrease in Stormwater peak flow rate (%)**
31.78	**29.50**	**7.17**
Pre-Project Volume	**Post-Project Volume**	**Decrease in Stormwater Volume (%)**
225,710	**174,266**	**22.79**

Consequently, the project would not increase the chances of flooding compared to the pre-existing development during a 50-year developed storm event, would not create runoff which would exceed the capacity of existing or planned drainage systems, would not substantially reduce or increase the amount of surface water in a water body, or result in a permanent adverse change to the movement of surface water.

2. Surface Water Quality

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 decrease in runoff. In order to meet the LID requirements, it is estimated that a total of 28,037 cubic feet of stormwater will need to be mitigated throughout the project site (refer to Appendix D). To achieve this design capture volume, the Applicant would need to install an infiltration system, capture and use system or planter boxes on the site. Based on the geotechnical report from Geocon West Inc. percolation testing was performed on October 14, 2020 and a design infiltration rate of 1.93 in/hr was calculated. Based on these findings infiltrating stormwater is feasible. Based on preliminary drawings from the Applicant the site will be split up so that runoff will be captured and routed to 4 separate drywell systems with stormwater cisterns to be used as temporary storage to handle the entire mitigated volume. A typical drywell and preliminary LID plan are included in Appendix I. As the LID plan is further development it will need to be review and approved by the project geotechnical engineer to ensure foundation setbacks, drywell spacing, and depths meet their recommendations.

In addition, as described above, as part of the SUSMP for the project to manage post-construction stormwater runoff, the project would include the installation of building roof drain downspouts, area drains, and planter drains throughout the project site to collect roof and Site runoff and direct stormwater away from buildings through a series of storm drain pipes. This on-site stormwater conveyance system would serve to prevent on-Site flooding and nuisance water on the project site.

The project would not increase concentrations of the items listed as constituents of concern for the Los Angeles River Reach 4.

Since it appears there are currently no existing on-Site BMPs, stormwater run-off during post- project conditions would result in improved surface water quality due to the decreased impervious area and the stormwater now being captured, treated and used for groundwater recharge and/or irrigation rather than directly entering the public storm drain system without treatment.

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., Los Angeles River Reach 1) 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 95% impervious and consists of existing paved surface parking lots. The project will decrease the percentage of impervious surface to 82%. 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.

3. Groundwater Hydrology and Quality

Regarding groundwater recharge, the project site is 95% impervious in the existing conditions, therefore there is minimal groundwater recharge potential. The project will develop hardscape, landscape and structures that cover the entire project site with mostly impervious surfaces, and therefore the groundwater recharge potential will remain minimal unless a drywell is implemented as a LID BMP. As long as any drywells or infiltration systems are designed in accordance with the City's LID Manual, the project's potential impact on groundwater recharge is less than significant.

As discussed above, it is estimated that the project development would require excavations to a depth of approximately 9 feet below grade. As described in geotechnical report by Geocon West Inc., the historic high groundwater level in the vicinity of the project site was on the order of 50'-60' feet below grade. Based on this information we do not believe dewatering and temporary pumps would be required.

To our knowledge there is no groundwater contamination. Operational activities which could affect groundwater quality include spills of hazardous materials and leaking underground storage tanks. To our knowledge no underground storage tanks are currently operated or will be operated by the project. In addition, while the project would introduce more density and land uses to the project site which would slightly increase the use of potentially hazardous materials as described above, the project would comply with all applicable existing regulations regarding the handling and potentially required cleanup of hazardous materials. 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 (SDWA).

Additionally, the project would both include the installation of drywells as a mean of treatment and disposal of the volume of water produced by the greater of the 85th percentile storm or the 0.75-inch storm event.

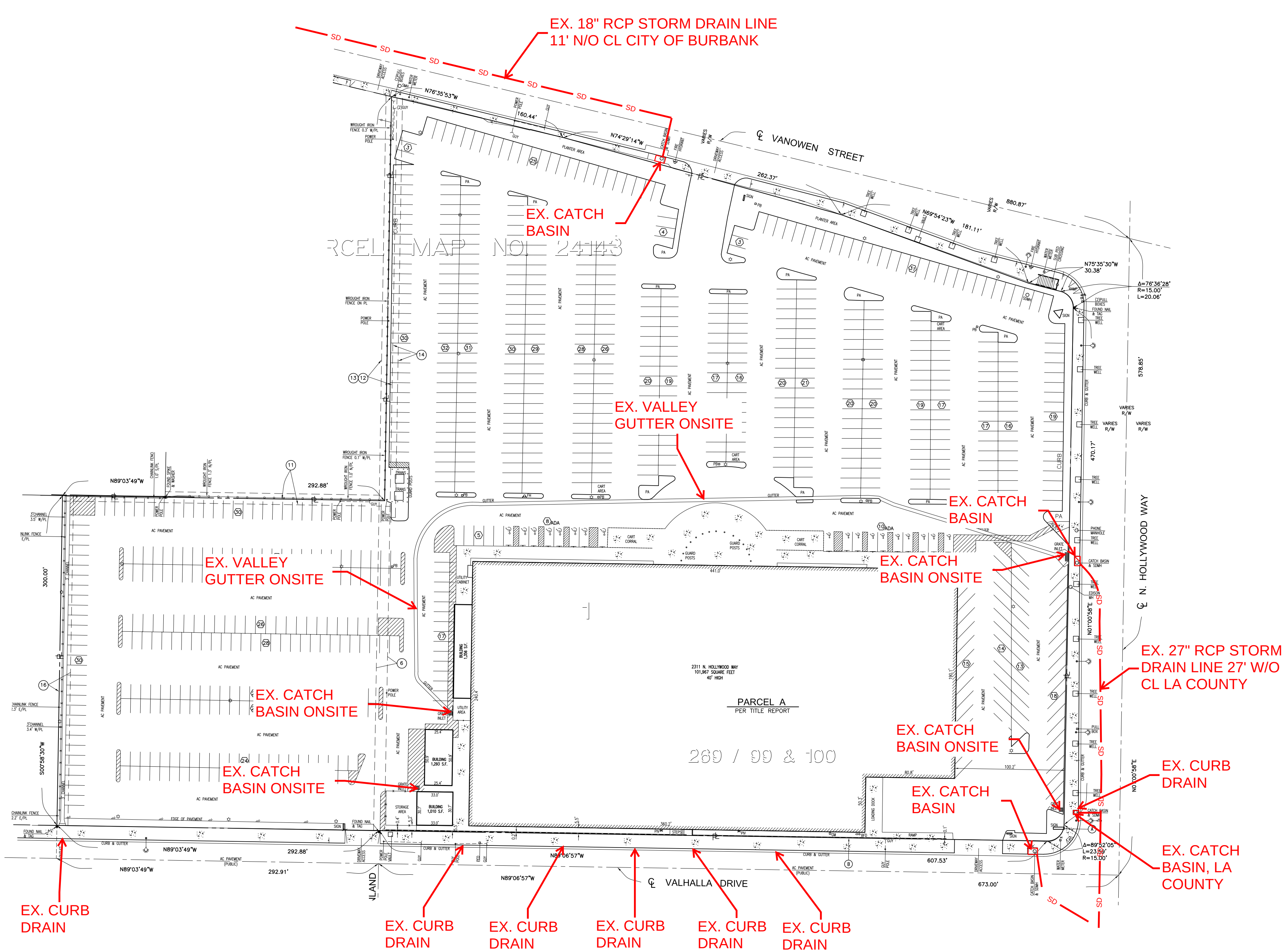
VII. Conclusion

In conclusion, the project will improve the Site's hydrologic function. The project design will likely include the implementation of a drywell system that would comply with the City's LID requirements. Whereas stormwater from the project site currently sheet flows without treatment into the underground storm drain network that ultimately discharges to the Los Angeles River Reach 4, the proposed capture and use system will capture the stormwater for irrigation. Furthermore, as evaluated above the surface water hydrology, water quality and groundwater impacts would be less than significant.

APPENDIX A

Existing Storm Drain Infrastructure

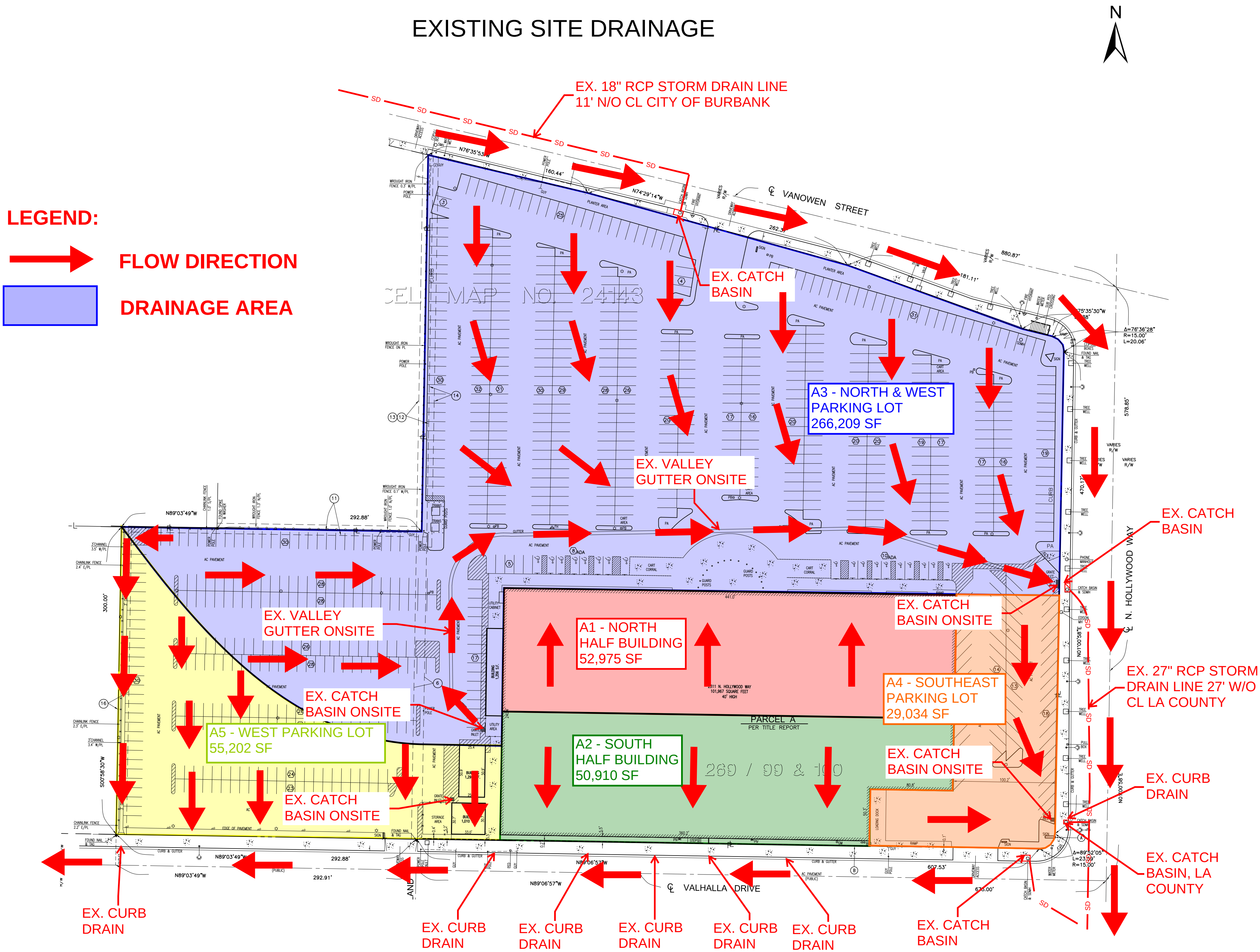
EXISTING STORM DRAIN INFRASTRUCTURE EXHIBIT



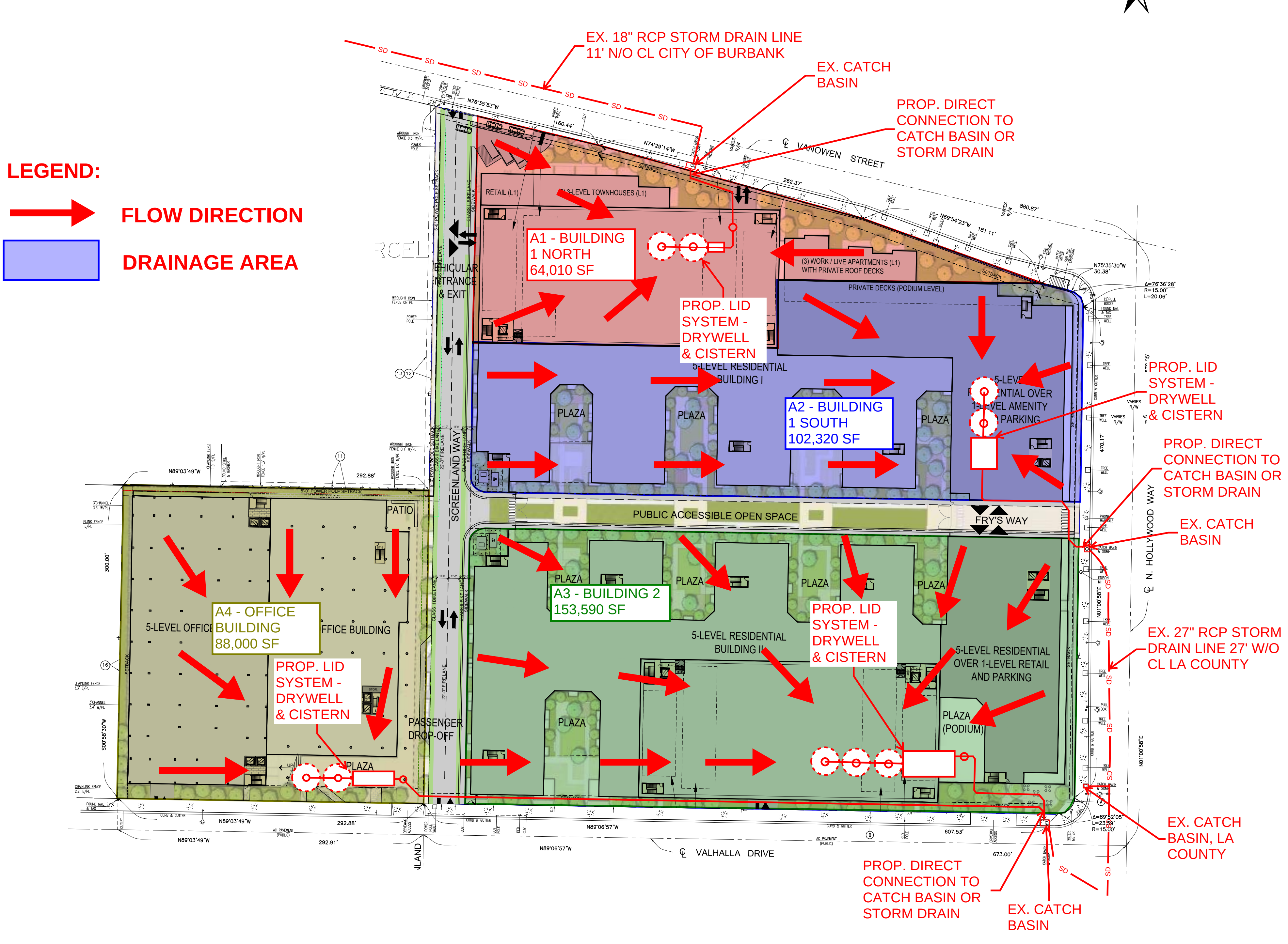
APPENDIX B

Existing and Proposed Site Drainage

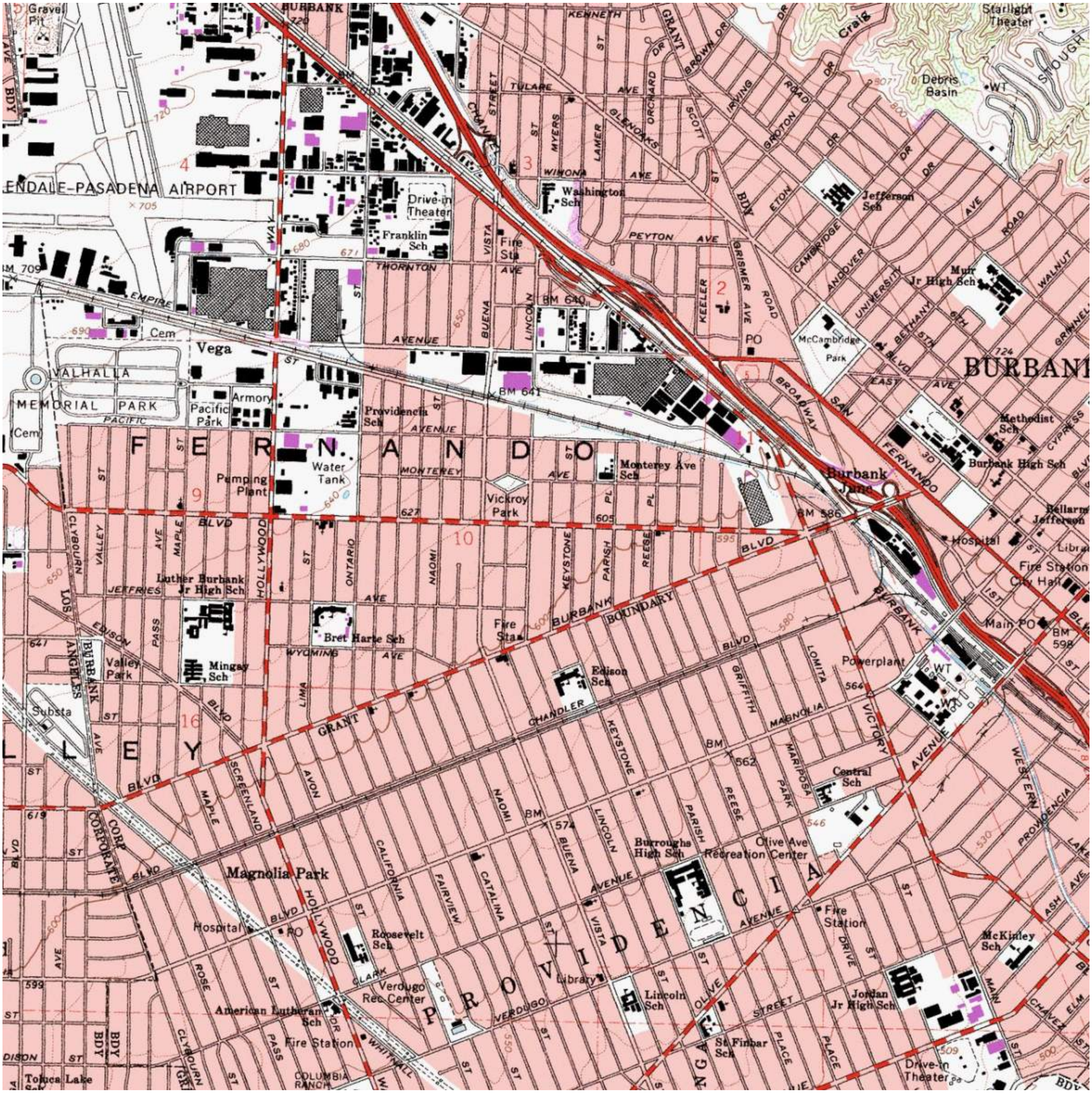
EXISTING SITE DRAINAGE



PROPOSED SITE DRAINAGE



CITY OF BURBANK TOPOGRAPHIC MAP
https://www.topoquest.com/map-detail.php?usgs_cell_id=6214



APPENDIX C

Peak Flow Hydrology Analysis (Existing and Proposed)

Peak Flow Hydrologic Analysis

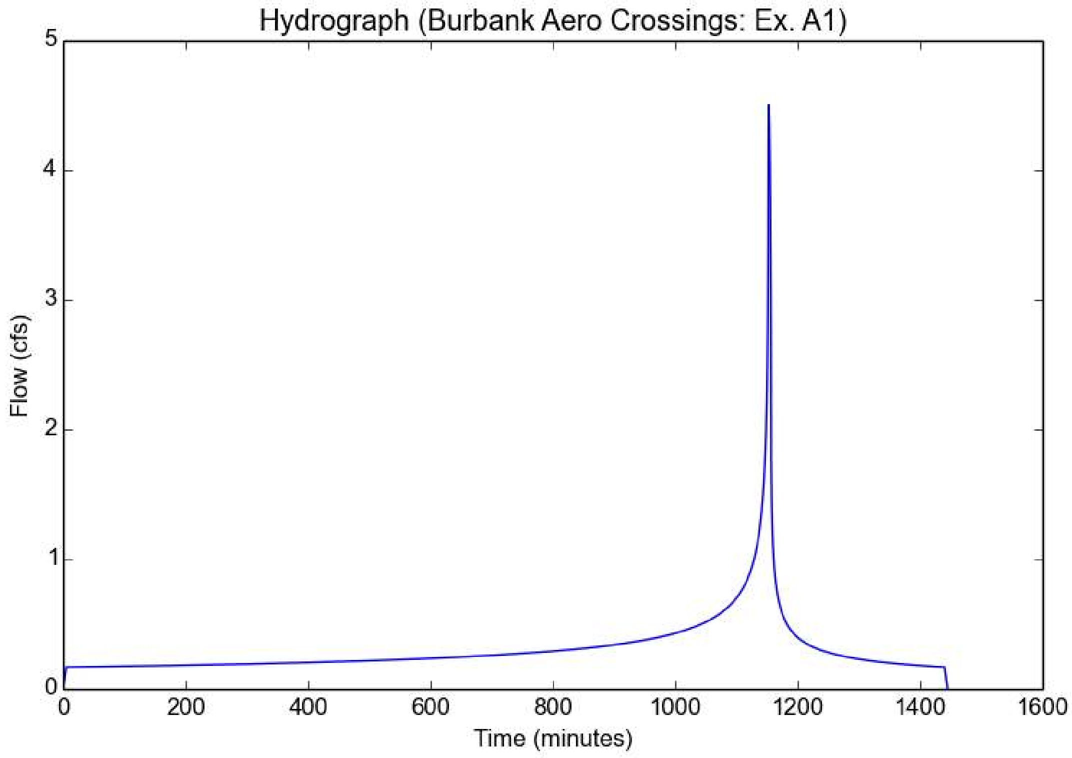
File location: Z:/Shared/Dan Krief - PROJECTS A-J/Burbank Aero Crossing - Entitlement/ENG/Hydrology/C - hydrocalc ex. and prop/Burbank Aero Cross
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Burbank Aero Crossings
Subarea ID	Ex. A1
Area (ac)	1.216
Flow Path Length (ft)	120.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	6.9
Percent Impervious	1.0
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.9
Peak Intensity (in/hr)	4.1167
Undeveloped Runoff Coefficient (Cu)	0.5152
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	4.5053
Burned Peak Flow Rate (cfs)	4.5053
24-Hr Clear Runoff Volume (ac-ft)	0.6241
24-Hr Clear Runoff Volume (cu-ft)	27184.9045



Peak Flow Hydrologic Analysis

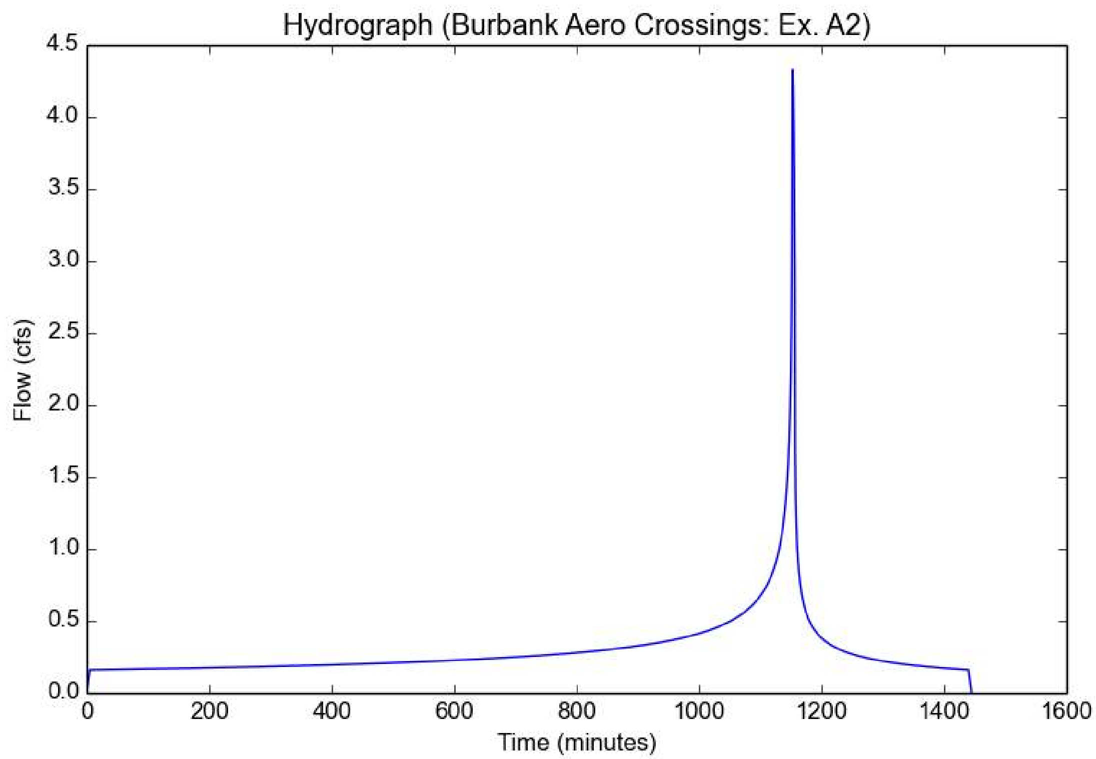
File location: Z:/Shared/Dan Krief - PROJECTS A-J/Burbank Aero Crossing - Entitlement/ENG/Hydrology/C - hydrocalc ex. and prop/Burbank Aero Cross
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Burbank Aero Crossings
Subarea ID	Ex. A2
Area (ac)	1.169
Flow Path Length (ft)	120.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	6.9
Percent Impervious	1.0
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.9
Peak Intensity (in/hr)	4.1167
Undeveloped Runoff Coefficient (Cu)	0.5152
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	4.3312
Burned Peak Flow Rate (cfs)	4.3312
24-Hr Clear Runoff Volume (ac-ft)	0.6
24-Hr Clear Runoff Volume (cu-ft)	26134.1722



Peak Flow Hydrologic Analysis

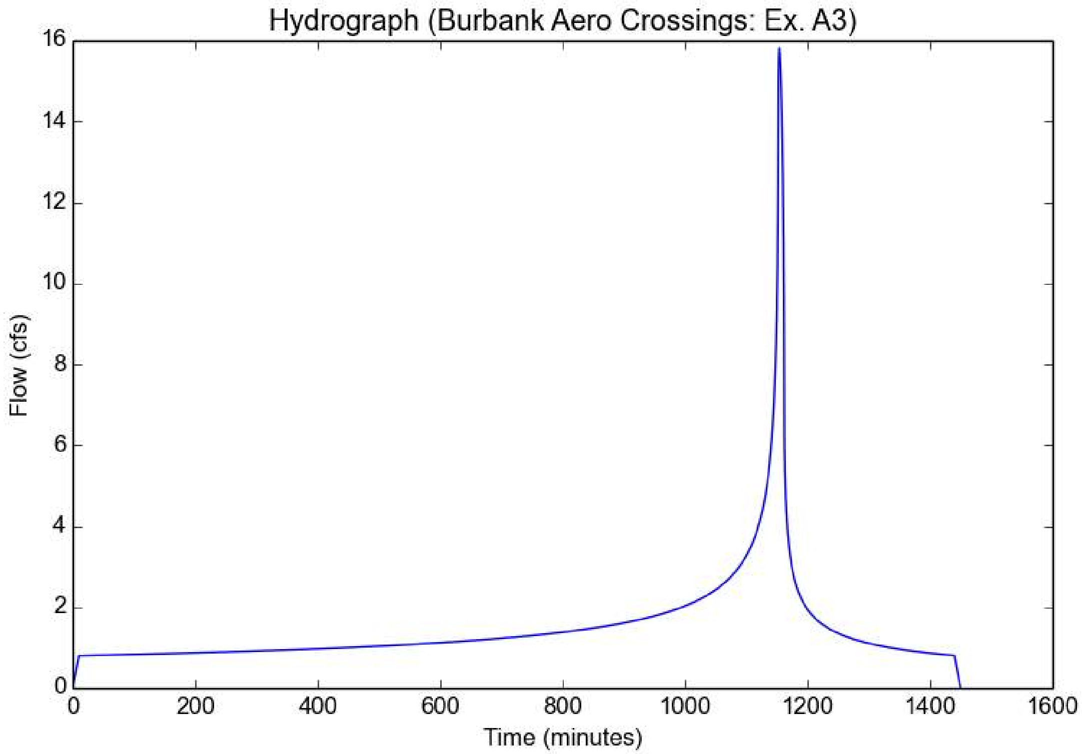
File location: Z:/Shared/Dan Krief - PROJECTS A-J/Burbank Aero Crossing - Entitlement/ENG/Hydrology/C - hydrocalc ex. and prop/Burbank Aero Cross
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Burbank Aero Crossings
Subarea ID	Ex. A3
Area (ac)	6.111
Flow Path Length (ft)	1000.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.94
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.9
Peak Intensity (in/hr)	2.9721
Undeveloped Runoff Coefficient (Cu)	0.4073
Developed Runoff Coefficient (Cd)	0.8704
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	15.8095
Burned Peak Flow Rate (cfs)	15.8095
24-Hr Clear Runoff Volume (ac-ft)	2.9738
24-Hr Clear Runoff Volume (cu-ft)	129539.4372



Peak Flow Hydrologic Analysis

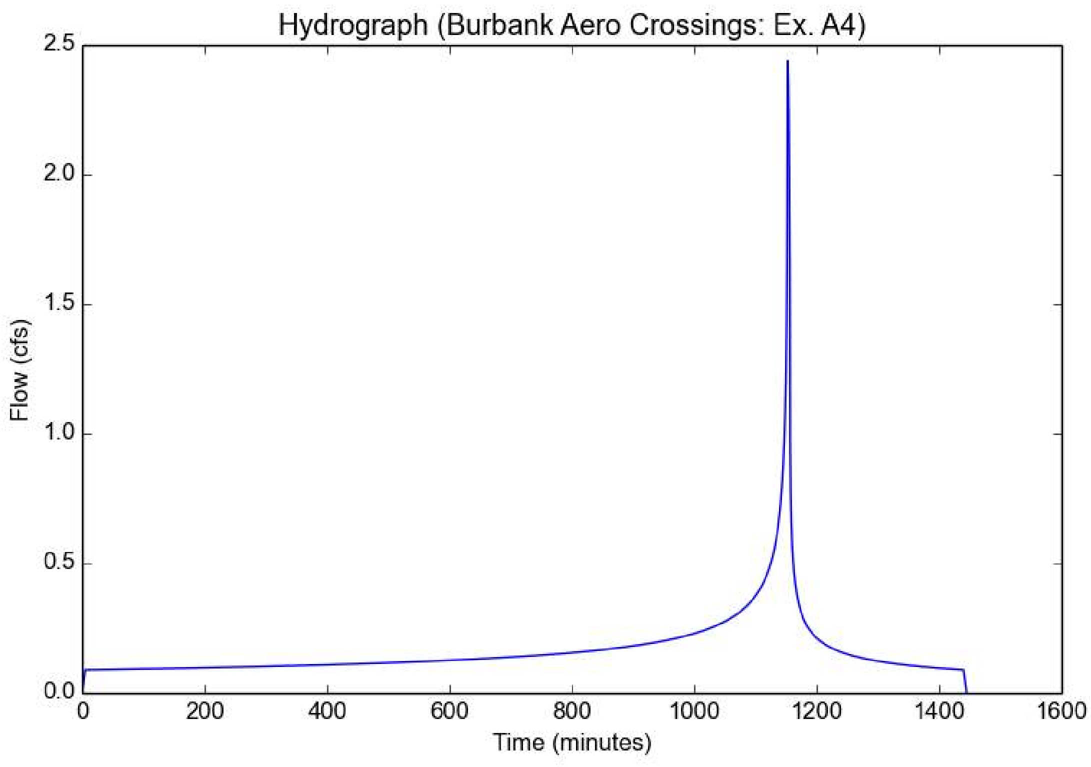
File location: Z:/Shared/Dan Krief - PROJECTS A-J/Burbank Aero Crossing - Entitlement/ENG/Hydrology/C - hydrocalc ex. and prop/Burbank Aero Cross
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Burbank Aero Crossings
Subarea ID	Ex. A4
Area (ac)	0.667
Flow Path Length (ft)	250.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.97
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.9
Peak Intensity (in/hr)	4.1167
Undeveloped Runoff Coefficient (Cu)	0.5152
Developed Runoff Coefficient (Cd)	0.8885
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.4396
Burned Peak Flow Rate (cfs)	2.4396
24-Hr Clear Runoff Volume (ac-ft)	0.3335
24-Hr Clear Runoff Volume (cu-ft)	14526.5567



Peak Flow Hydrologic Analysis

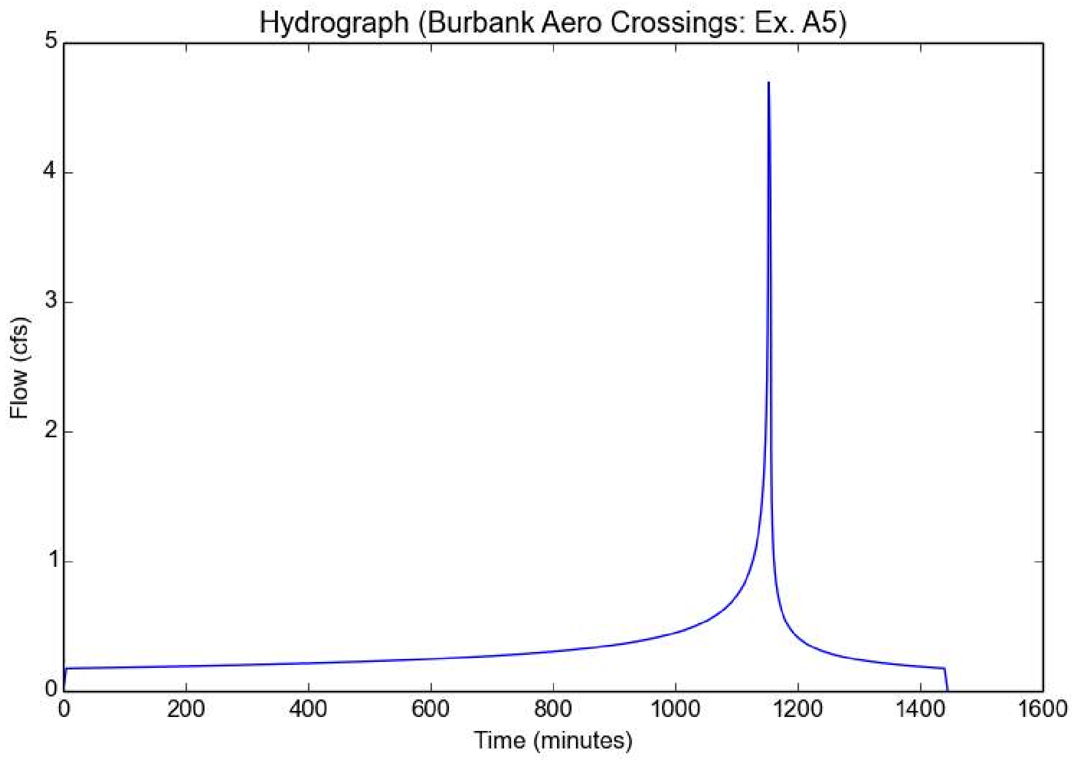
File location: Z:/Shared/Dan Krief - PROJECTS A-J/Burbank Aero Crossing - Entitlement/ENG/Hydrology/C - hydrocalc ex. and prop/Burbank Aero Cross
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Burbank Aero Crossings
Subarea ID	Ex. A5
Area (ac)	1.267
Flow Path Length (ft)	300.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	6.9
Percent Impervious	1.0
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.9
Peak Intensity (in/hr)	4.1167
Undeveloped Runoff Coefficient (Cu)	0.5152
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	4.6943
Burned Peak Flow Rate (cfs)	4.6943
24-Hr Clear Runoff Volume (ac-ft)	0.6503
24-Hr Clear Runoff Volume (cu-ft)	28325.0609



Peak Flow Hydrologic Analysis

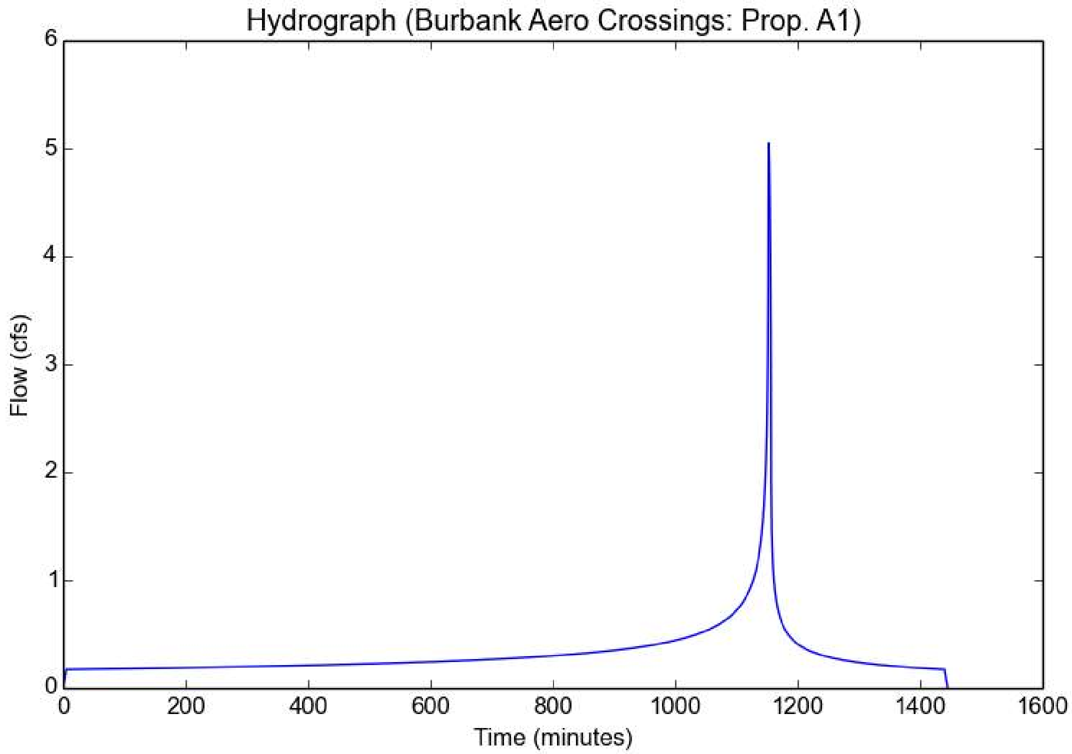
File location: Z:/Shared/Dan Krief - PROJECTS A-J/Burbank Aero Crossing - Entitlement/ENG/Hydrology/C - hydrocalc ex. and prop/Burbank Aero Cross
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Burbank Aero Crossings
Subarea ID	Prop. A1
Area (ac)	1.469
Flow Path Length (ft)	300.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.83
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.9
Peak Intensity (in/hr)	4.1167
Undeveloped Runoff Coefficient (Cu)	0.5152
Developed Runoff Coefficient (Cd)	0.8346
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	5.0471
Burned Peak Flow Rate (cfs)	5.0471
24-Hr Clear Runoff Volume (ac-ft)	0.6436
24-Hr Clear Runoff Volume (cu-ft)	28037.3229



Peak Flow Hydrologic Analysis

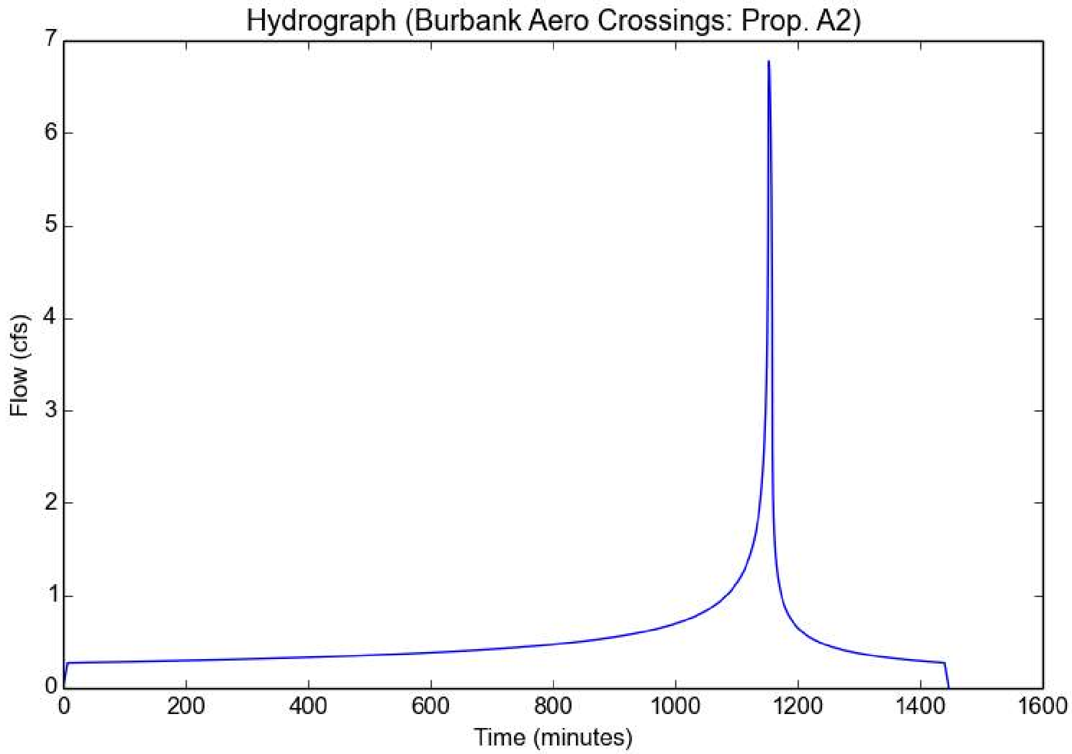
File location: Z:/Shared/Dan Krief - PROJECTS A-J/Burbank Aero Crossing - Entitlement/ENG/Hydrology/C - hydrocalc ex. and prop/Burbank Aero Cross
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Burbank Aero Crossings
Subarea ID	Prop. A2
Area (ac)	2.349
Flow Path Length (ft)	550.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.82
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.9
Peak Intensity (in/hr)	3.5146
Undeveloped Runoff Coefficient (Cu)	0.4598
Developed Runoff Coefficient (Cd)	0.8208
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	6.776
Burned Peak Flow Rate (cfs)	6.776
24-Hr Clear Runoff Volume (ac-ft)	1.0185
24-Hr Clear Runoff Volume (cu-ft)	44367.619



Peak Flow Hydrologic Analysis

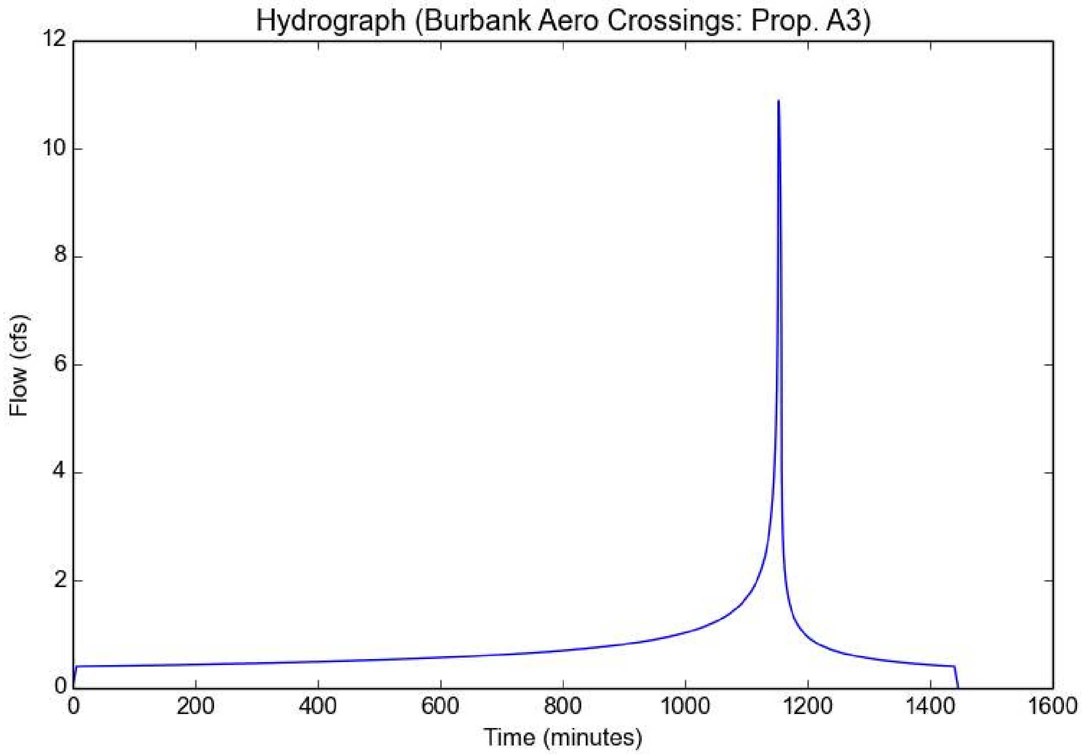
File location: Z:/Shared/Dan Krief - PROJECTS A-J/Burbank Aero Crossing - Entitlement/ENG/Hydrology/C - hydrocalc ex. and prop/Burbank Aero Cross
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Burbank Aero Crossings
Subarea ID	Prop. A3
Area (ac)	3.526
Flow Path Length (ft)	480.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.8
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.9
Peak Intensity (in/hr)	3.7787
Undeveloped Runoff Coefficient (Cu)	0.4851
Developed Runoff Coefficient (Cd)	0.817
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	10.8856
Burned Peak Flow Rate (cfs)	10.8856
24-Hr Clear Runoff Volume (ac-ft)	1.4979
24-Hr Clear Runoff Volume (cu-ft)	65250.4456



Peak Flow Hydrologic Analysis

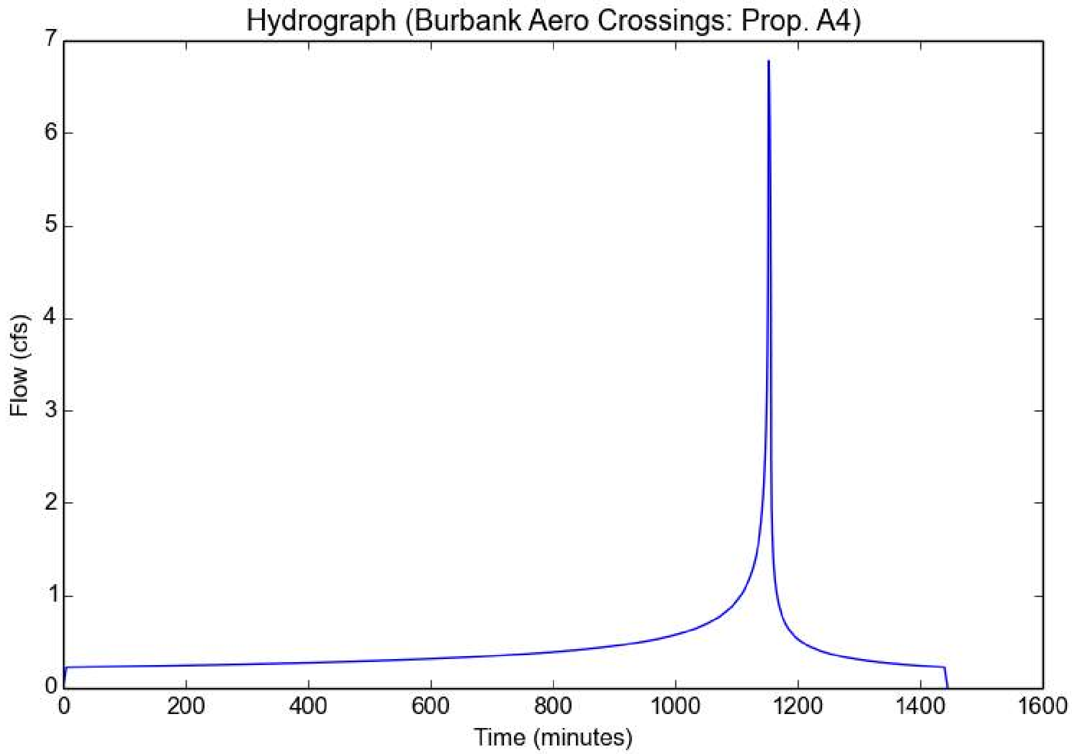
File location: Z:/Shared/Dan Krief - PROJECTS A-J/Burbank Aero Crossing - Entitlement/ENG/Hydrology/C - hydrocalc ex. and prop/Burbank Aero Cross
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Burbank Aero Crossings
Subarea ID	Prop. A4
Area (ac)	2.02
Flow Path Length (ft)	350.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.78
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.9
Peak Intensity (in/hr)	4.1167
Undeveloped Runoff Coefficient (Cu)	0.5152
Developed Runoff Coefficient (Cd)	0.8153
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	6.7802
Burned Peak Flow Rate (cfs)	6.7802
24-Hr Clear Runoff Volume (ac-ft)	0.8405
24-Hr Clear Runoff Volume (cu-ft)	36610.9314



APPENDIX D

Peak Flow Hydrologic Analysis for Proposed LID Design

Peak Flow Hydrologic Analysis

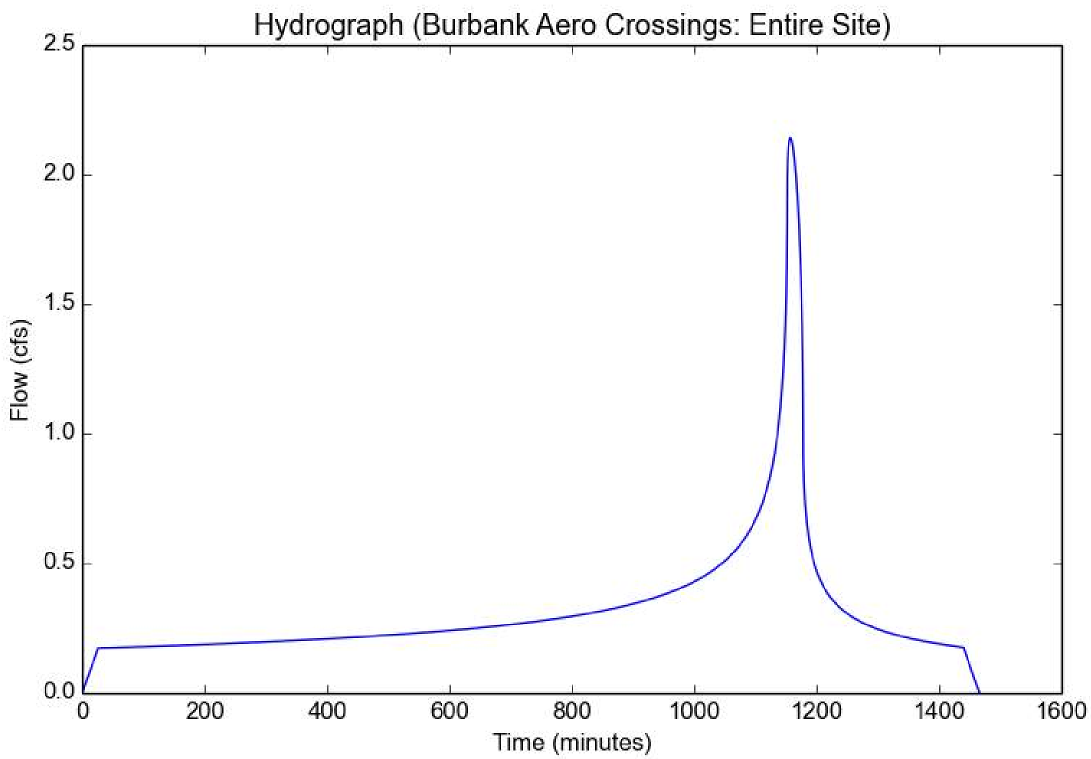
File location: Z:/Shared/Dan Krief - PROJECTS A-J/Burbank Aero Crossing - Entitlement/ENG/Hydrology/D - hydrocalc LID/Burbank Aero Crossings - Pr
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Burbank Aero Crossings
Subarea ID	Entire Site
Area (ac)	9.365
Flow Path Length (ft)	550.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.82
Soil Type	15
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)	0.3024
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.756
Time of Concentration (min)	26.0
Clear Peak Flow Rate (cfs)	2.1409
Burned Peak Flow Rate (cfs)	2.1409
24-Hr Clear Runoff Volume (ac-ft)	0.6436
24-Hr Clear Runoff Volume (cu-ft)	28036.8036

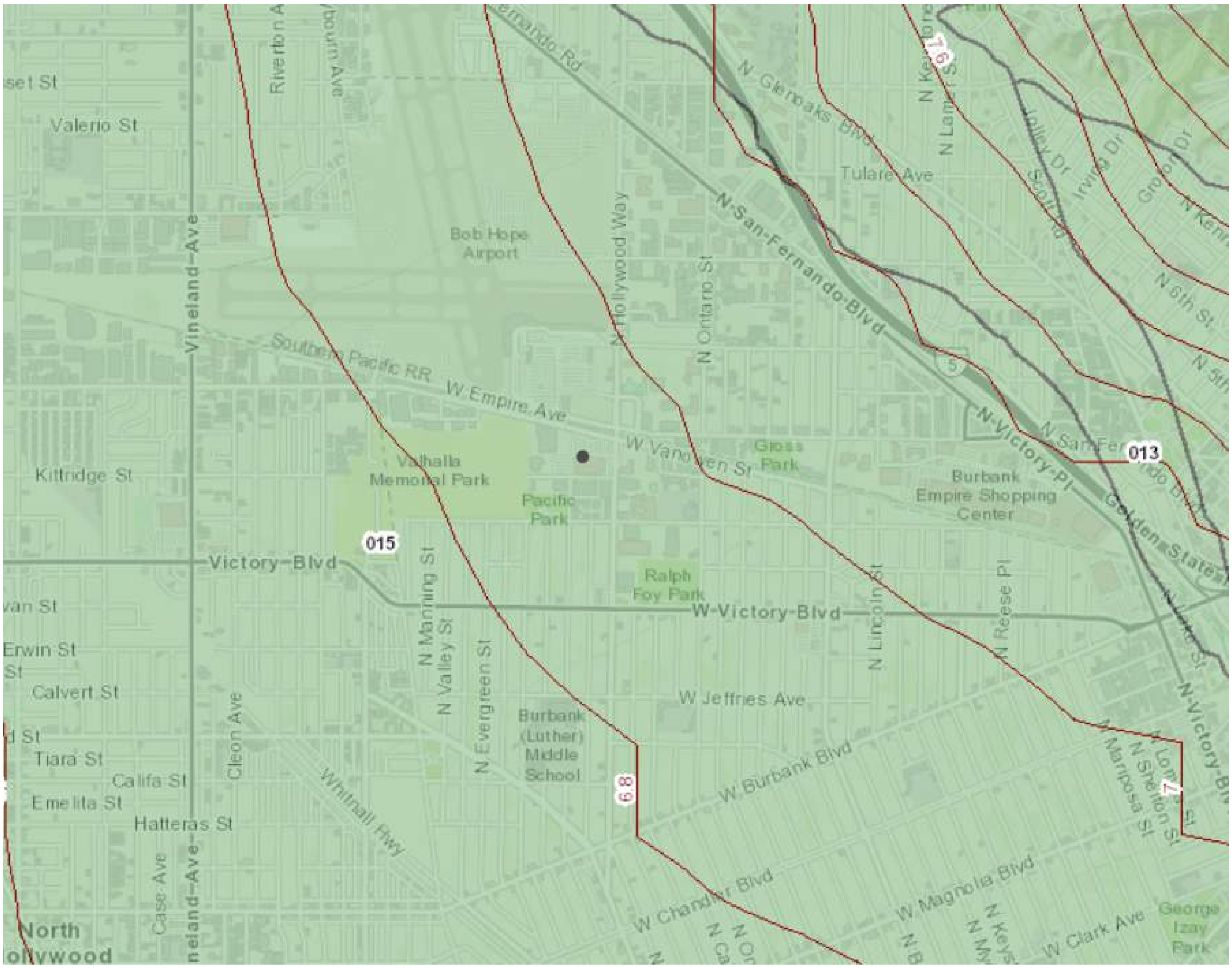


APPENDIX E

LA County Hydrology 50-yr Isohyet Map

BURBANK AERO CROSSINGS
2311 N HOLLYWOOD WAY

50 YR - 6.9"
SOIL TYPE - 015

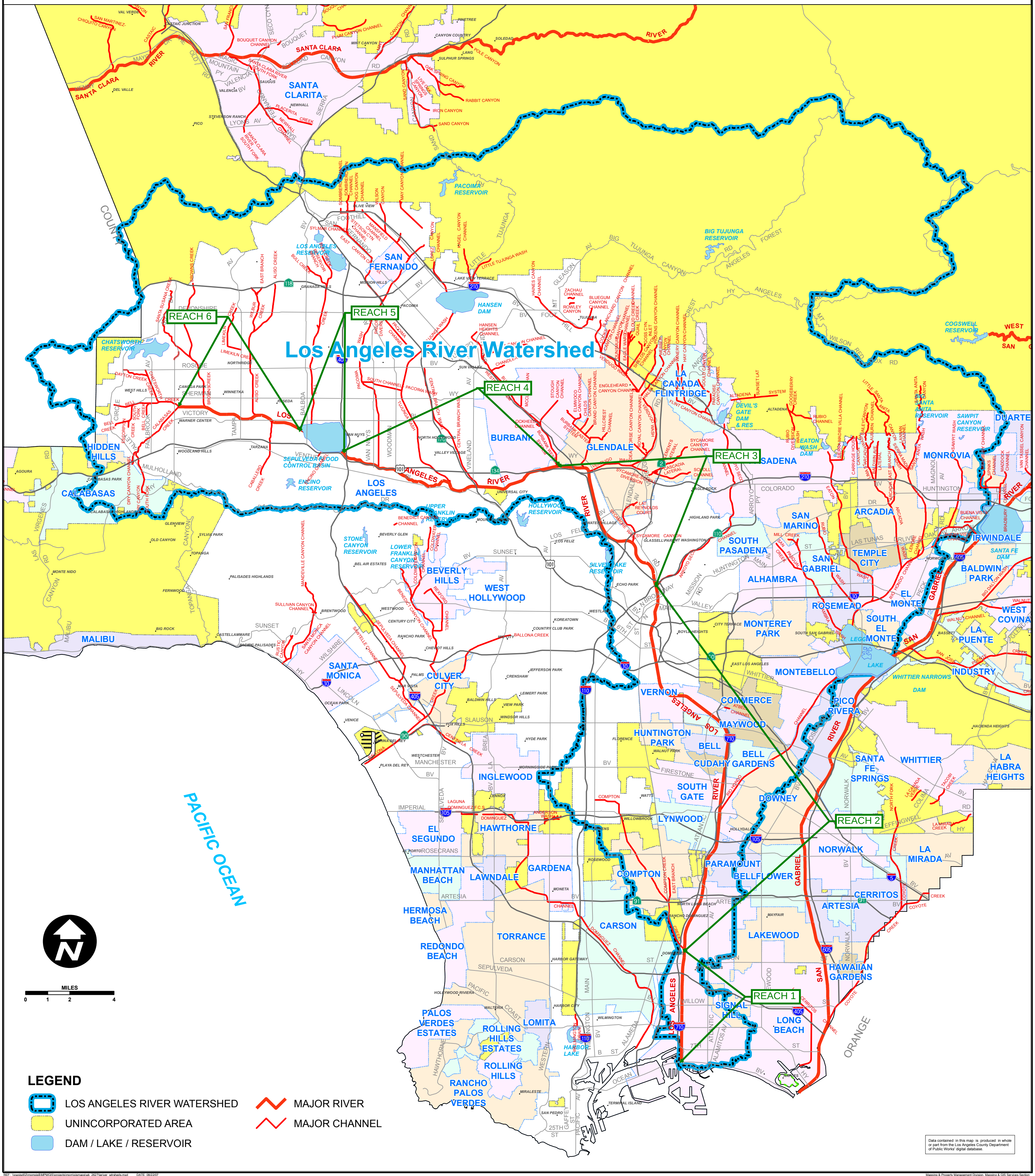


APPENDIX F

Los Angeles River Watershed Map

COUNTY OF LOS ANGELES

LOS ANGELES RIVER WATERSHED



APPENDIX G

FEMA Flood Map

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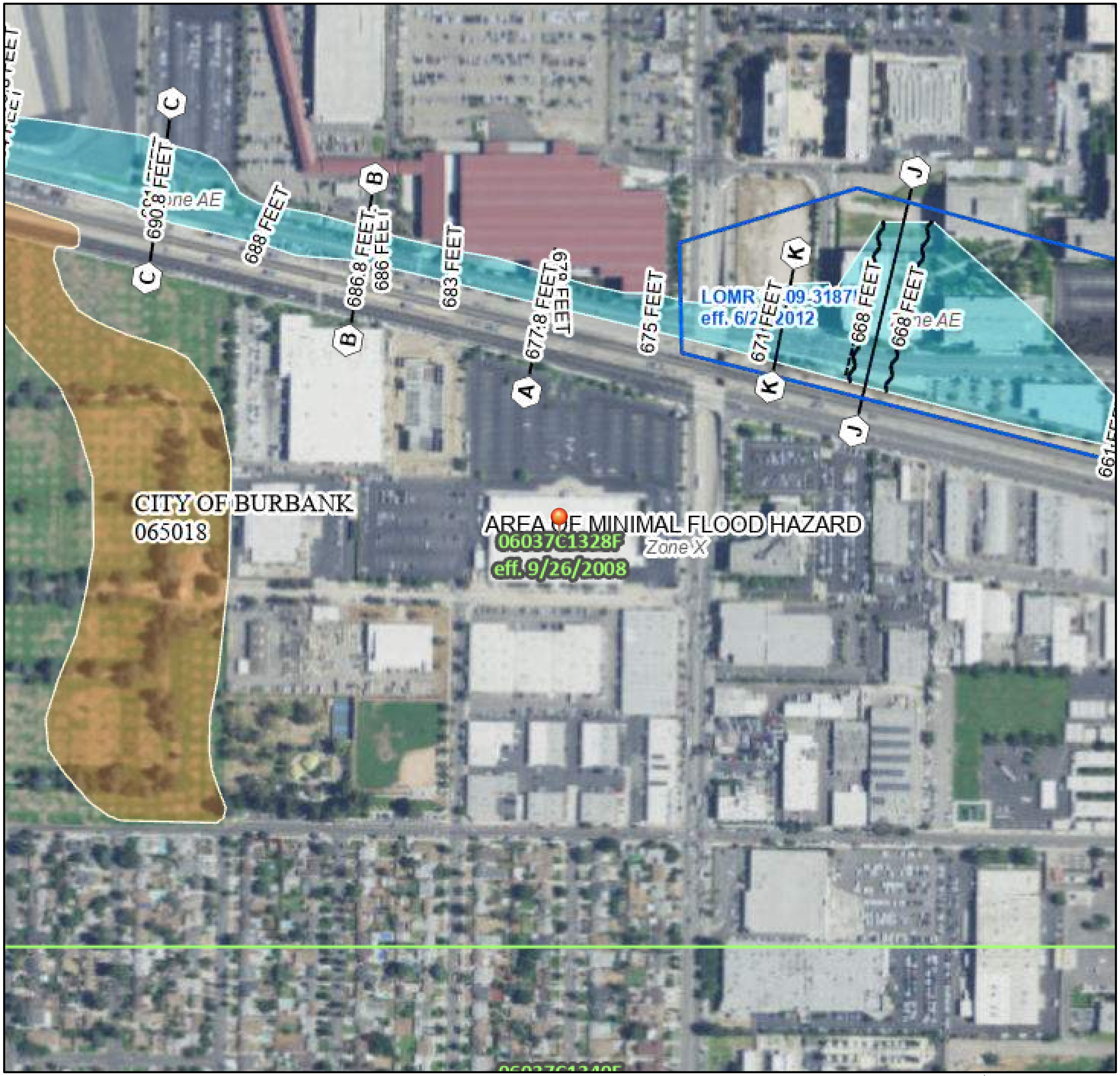
FEMA



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	:LWK %)(RU 'HSWK =RQH $($2 $+ 9($5	
	5HJXODWRU\ )ORRGZD\	
27+(5 $5($6 2))/22' +$=$5'	$QQXDO &KDQFH)ORRG +D]DUG $UHDV RI DQQXDO FKDQFH IORRG ZLWK DYHUDJH GHSWK OHVV WKDQ RQH IRRW RU ZLWK GUDLQDJH DUHDV RI OHVV WKDQ RQH VTXDUH PLOH =RQH ;	
	)XWXUH &RQGLWLRQV $QQXDO &KDQFH)ORRG +D]DUG =RQH ;	
	$UHD ZLWK 5HGXFHG)ORRG 5LVN GXH WR /HYHH 6HH 1RWHV =RQH ;	
	$UHD ZLWK)ORRG 5LVN GXH WR /HYHH =RQH '	
27+(5 $5($6	$UHD RI 0LQLPDO)ORRG +D]DUG =RQH ;	
	(IIHFWLYH /205V	
	$UHD RI 8QGHWHUPLQHG)ORRG +D]DUG =RQH '	
*(1(5$/ 6758&785(6	&KDQQHO &XOYHUW RU 6WRUP 6HZHU	
	/HYHH 'LNH RU)ORRGZDOO	
27+(5)($785(6	&URVV 6HFWLRQV ZLWK $QQXDO &KDQFH :DWHU 6XUIDFH (OHYDWLRQ	
	&RDVWDO 7UDQVHFW	
	%DVH)ORRG (OHYDWLRQ /LQH %)(	
	/LPLW RI 6WXG\	
	-XULVGLFWLRQ %RXQGDU\	
	&RDVWDO 7UDQVHFW %DVHOLQH	
	3URILOH %DVHOLQH	
	+\GURJUDSKLF)HDWXUH	
0$3 3$1(/6	'LJLWDO 'DWD $YDLODEOH	
	1R 'LJLWDO 'DWD $YDLODEOH	
	8QPDSSHG	

7KH SLQ GLVSOD\HG RQ WKH PDS LV DQ DSSUR[LPDWH SRLQW VHOHFWHG E\ WKH XVHU DQG GRHV QRW UHSUHVHQW DQ DXWKRULWDWLYH SURSHUW\ ORFDWLRQ

7KLV PDS FRPSOLHV ZLWK)(0\$V VWDQGDUGV IRU WKH XVH RI GLJLWDO IORRG PDSV LI LW LV QRW YRLG DV GHVFULEHG EHORZ 7KH EDVHPDS VKRZQ FRPSOLHV ZLWK)(0\$V EDVHPDS DFFXUDF\ VWDQGDUGV

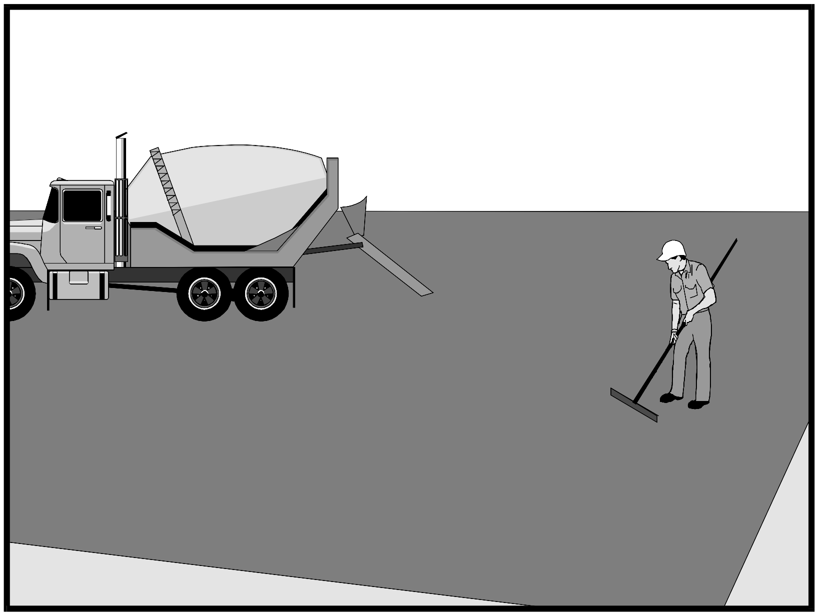
7KH IORRG KD]DUG LQIRUPDWLRQ LV GHULYHG GLUHFWO\ IURP WKH DXWKRULWDWLYH 1)+/ ZHE VHUYLFHV SURYLGHG E\ )(0\$ 7KLV PDS ZDV H[SRUWHG RQ 'DWH 3 DQG GRHV QRW UHIOHFW FKDQJHV RU DPHQGPHQWV VXEVHTXHQW WR WKLV GDWH DQG WLPH 7KH 1)+/ DQG HIIHFWLYH LQIRUPDWLRQ PD\ FKDQJH RU EHFRPH VXSHUVHGHG E\ QHZ GDWD RYHU WLPH

7KLV PDS LPDJH LV YRLG LI WKH RQH RU PRUH RI WKH IROORZLQJ PDS HOHPHQWV GR QRW DSSHDU EDVHPDS LPDJHU\ IORRG]RQH ODEHOV OHJHQG VFDOH EDU PDS FUHDWLRQ GDWH FRPPXQLW\ LGHQWLILHUV)(50 SDQHO QXPEHU DQG)(50 HIIHFWLYH GDWH 0DS LPDJHV IRU XQPDSSHG DQG XQPRGHUQL]HG DUHDV FDQQRW EH XVHG IRU UHJXODWRU\ SXUSRVHV

%DVHPDS 86*6 1DWLRQDO 0DS 2UWKRLPDJHU\ 'DWD UHIUHVKHG 2FWREHU

APPENDIX H

CASQA BMPs



Categories

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

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

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

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

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

Suitable Applications

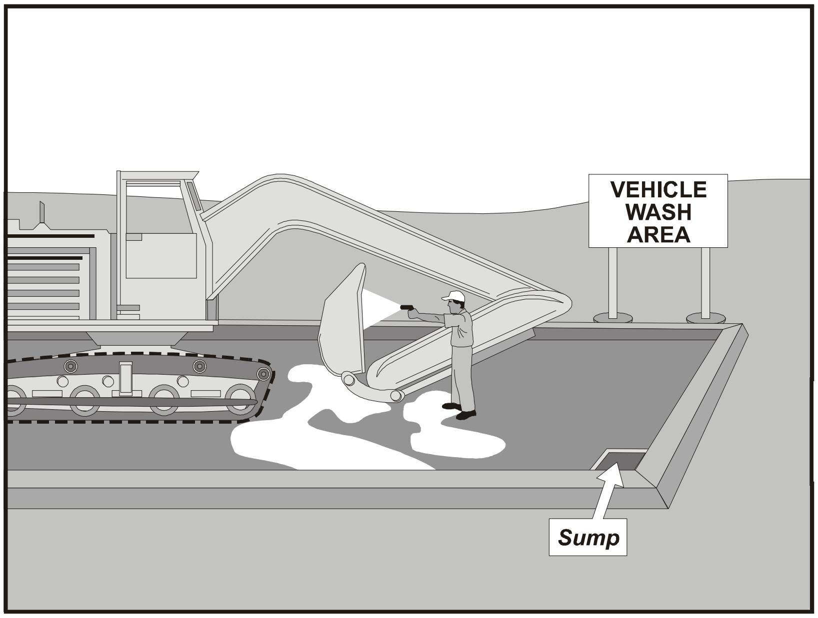
These procedures are implemented where paving, surfacing, resurfacing, or sawcutting, may pollute stormwater runoff or discharge to the storm drain system or watercourses.

Limitations

- Paving opportunities may be limited during wet weather.

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

Vehicle and Equipment Cleaning NS-8



Categories

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

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

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

Potential Alternatives

None

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

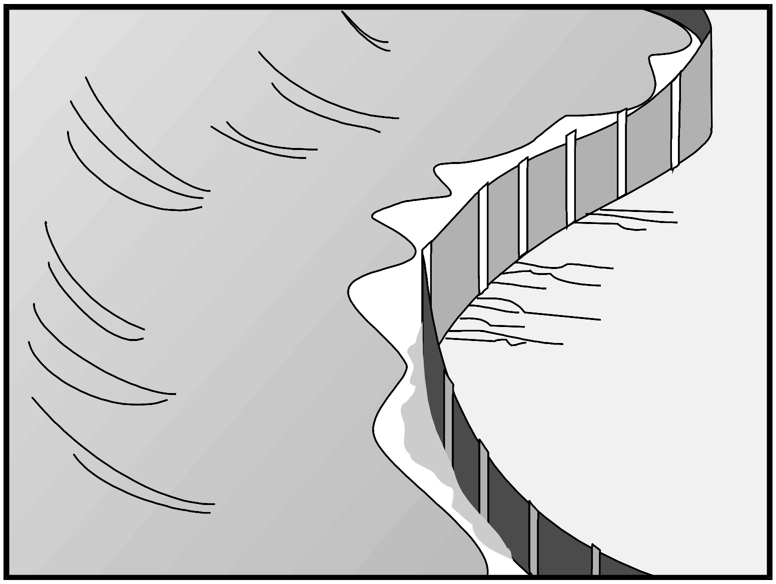
Even phosphate-free, biodegradable soaps have been shown to be toxic to fish before the soap degrades. Sending vehicles/equipment offsite should be done in conjunction with TC-1, Stabilized Construction Entrance/Exit.

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:

Silt Fence SE-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 (coarse sediment)	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-5 Fiber Rolls

SE-6 Gravel Bag Berm SE-12 Manufactured Linear Sediment Controls

SE-13 Compost Socks and Berms

SE-14 Biofilter Bags

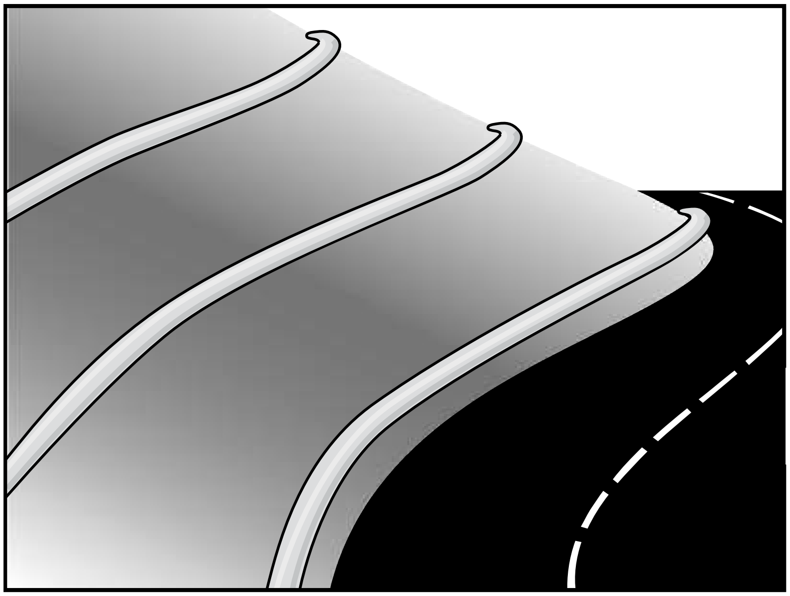
Description and Purpose

A silt fence is made of a woven geotextile that has been entrenched, attached to supporting poles, and sometimes backed by a plastic or wire mesh for support. The silt fence detains water, promoting sedimentation of coarse sediment behind the fence. Silt fence does not retain soil fine particles like clays or silts.

Suitable Applications

Silt fences are suitable for perimeter control, placed below areas where sheet flows discharge from the site. They could also be used as interior controls below disturbed areas where runoff may occur in the form of sheet and rill erosion and around inlets within disturbed areas (SE-10). Silt fences should not be used in locations where the flow is concentrated. Silt fences should always be used in combination with erosion controls. Suitable applications include:

- At perimeter of a project.
- Below the toe or down slope of exposed and erodible slopes.
- Along streams and channels.
- Around temporary spoil areas and stockpiles.
- Around inlets.
- Below other small cleared areas.



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-6 Gravel Bag Berm

SE-8 Sandbag Barrier

SE-12 Manufactured Linear Sediment Controls

SE-14 Biofilter Bags

Description and Purpose

A fiber roll consists of straw, coir, or other biodegradable materials bound into a tight tubular roll wrapped by netting, which can be photodegradable or natural. Additionally, gravel core fiber rolls are available, which contain an imbedded ballast material such as gravel or sand for additional weight when staking the rolls are not feasible (such as use as inlet protection). When fiber rolls are placed at the toe and on the face of slopes along the contours, they intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide removal of sediment from the runoff (through sedimentation). By interrupting the length of a slope, fiber rolls can also reduce sheet and rill erosion until vegetation is established.

Suitable Applications

Fiber rolls may be suitable:

- Along the toe, top, face, and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.
- At the end of a downward slope where it transitions to a steeper slope.
- Along the perimeter of a project.
- As check dams in unlined ditches with minimal grade.
- Down-slope of exposed soil areas.
- At operational storm drains as a form of inlet protection.

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

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.

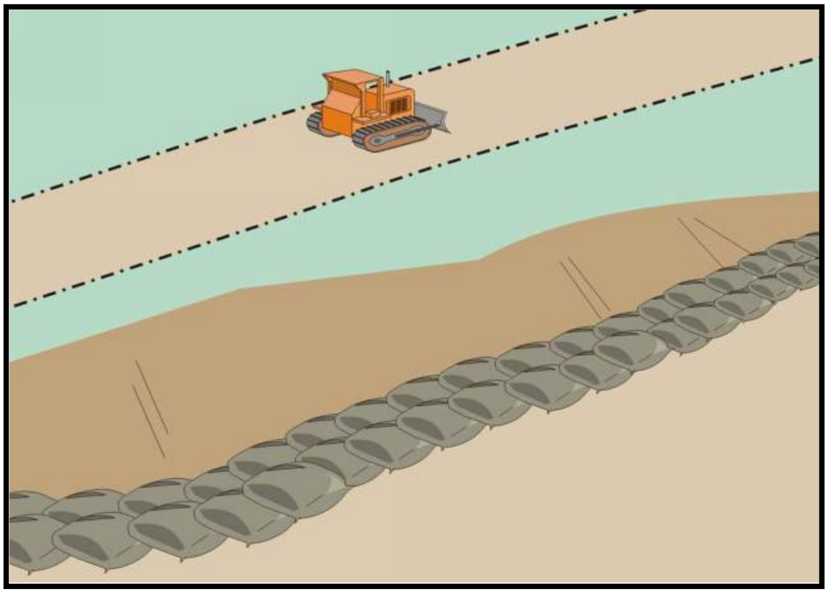
Limitations

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.

Sandbag Barrier SE-8



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.

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

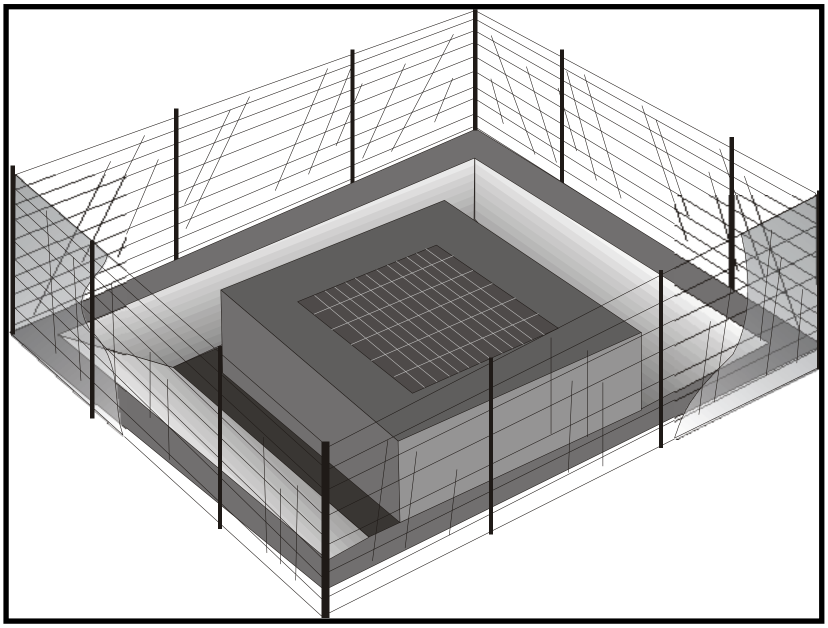
SE-5 Fiber Rolls

SE-6 Gravel Bag Berm

SE-12 Manufactured Linear Sediment Controls

SE-14 Biofilter Bags

Storm Drain Inlet Protection SE-10



Description and Purpose

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

Suitable Applications

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

Limitations

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

Categories

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

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	☒
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence

SE-5 Fiber Rolls

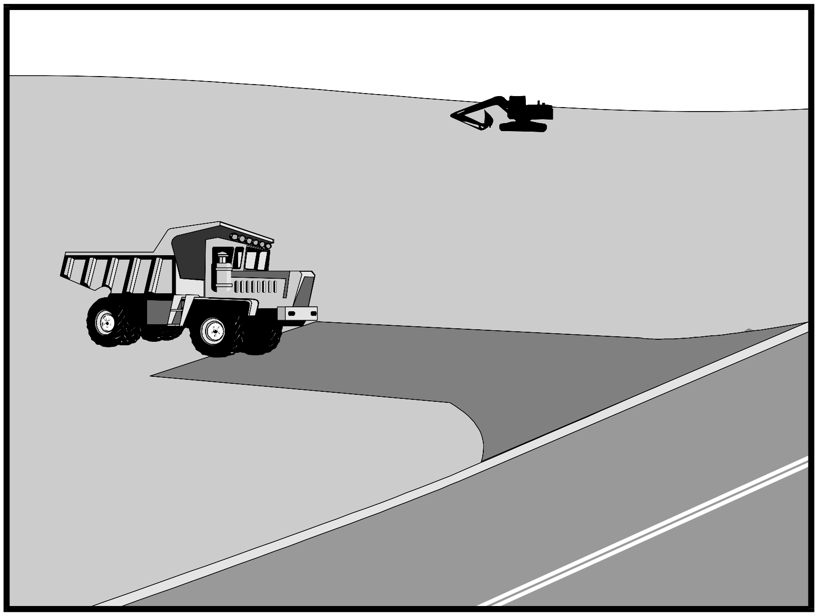
SE-6 Gravel Bag Berm

SE-8 Sandbag Barrier

SE-14 Biofilter Bags

SE-13 Compost Socks and Berms

Stabilized Construction Entrance/Exit TC-1



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.

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**

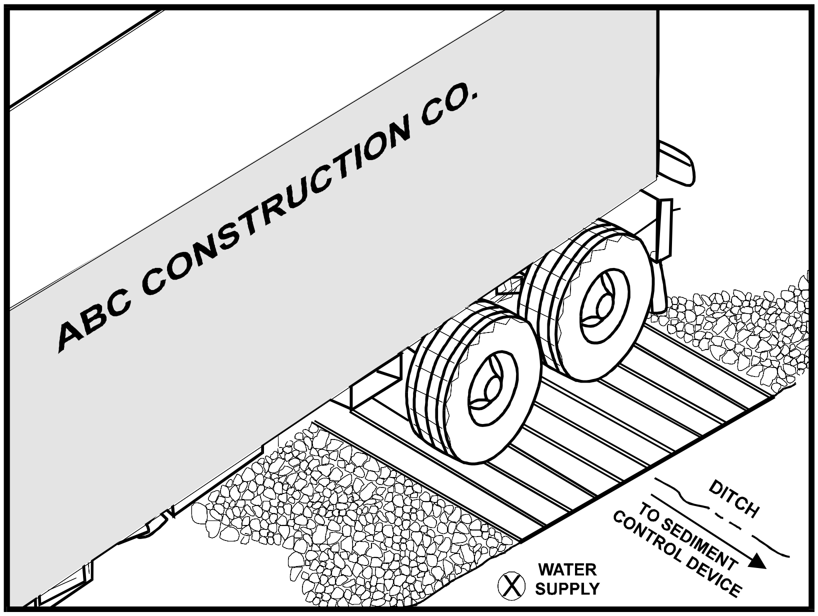
Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Entrance/Outlet Tire Wash TC-3



Description and Purpose

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

Suitable Applications

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

Limitations

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

Implementation

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

Categories

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

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

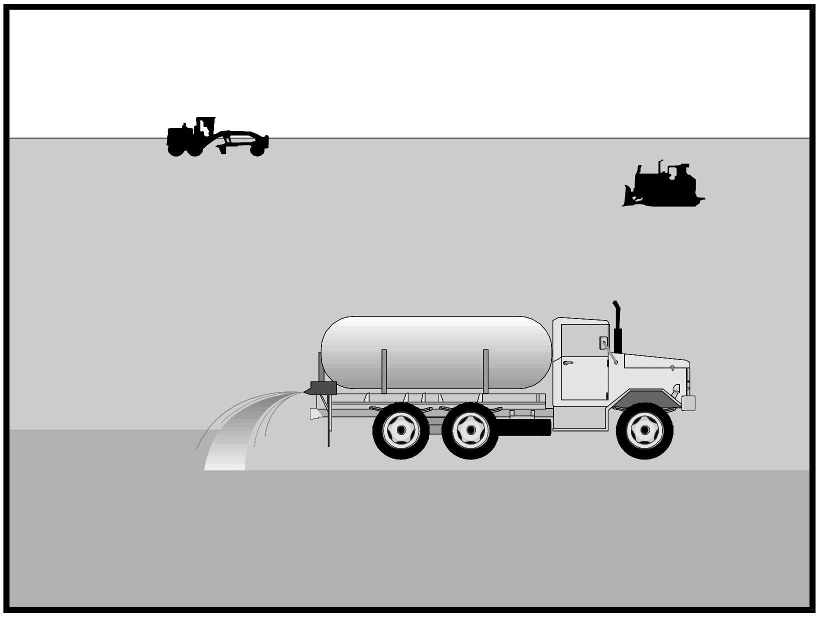
Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

TC-1 Stabilized Construction Entrance/Exit

Wind Erosion Control WE-1



Categories

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

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

EC-5 Soil Binders

Description and Purpose

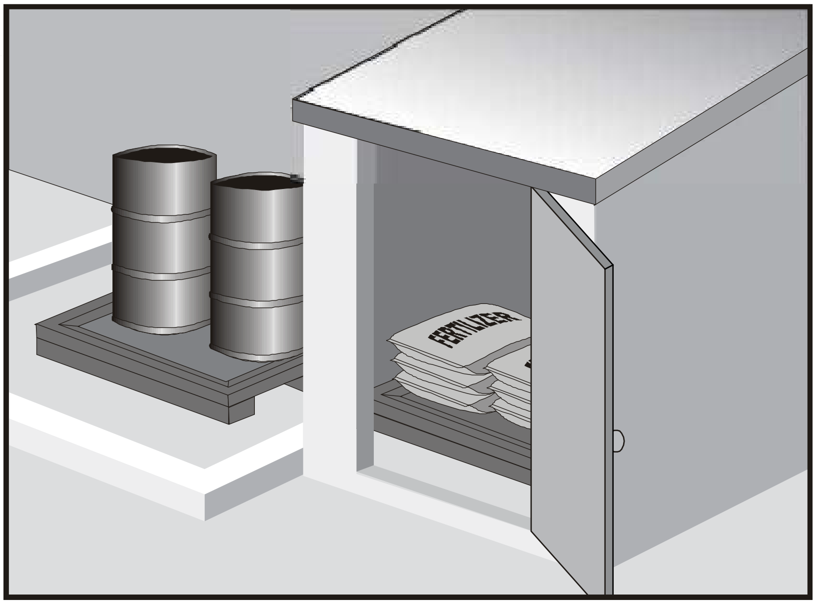
Wind erosion or dust control consists of applying water or other chemical dust suppressants as necessary to prevent or alleviate dust nuisance generated by construction activities. Covering small stockpiles or areas is an alternative to applying water or other dust palliatives.

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:

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**

Targeted Constituents

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

Potential Alternatives

None

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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.

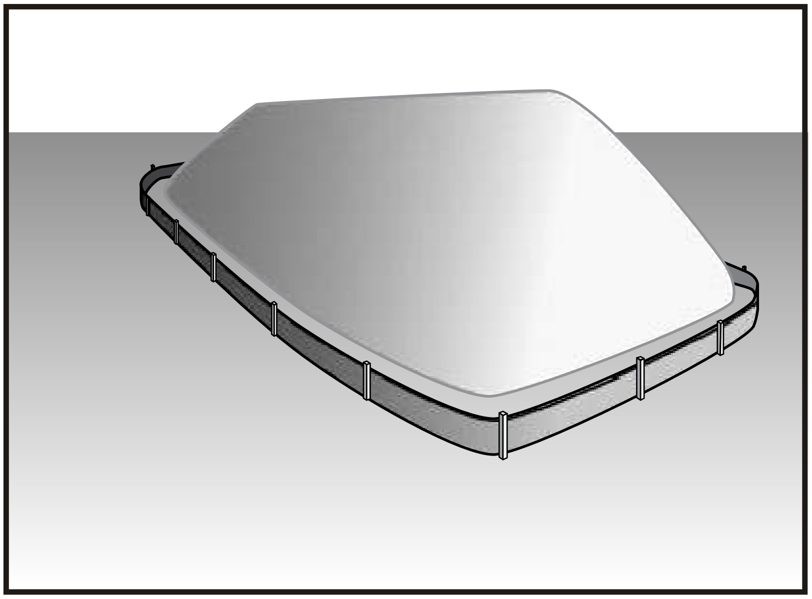
This best management practice covers only material delivery and storage. For other information on materials, see WM-2, Material Use, or WM-4, Spill Prevention and Control. For information on wastes, see the waste management BMPs in this section.

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

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**

Targeted Constituents

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

Potential Alternatives

None

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:

APPENDIX I

LID BMPs

LID BMPs - DRYWELL

Dry Wells

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