Initial Study
and
Mitigated Negative Declaration
for

Los Angeles Reservoir Water Quality Improvement Project

Los Angeles Department of Water and Power
Environmental Services
111 North Hope Street, Room 1044
Los Angeles, California 90012

April 2012

CEQA Initial Study and Mitigated Negative Declaration

Los Angeles Reservoir Water Quality Improvement Project

April 20, 2012

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CITY OF LOS ANGELES
OFFICE OF THE CITY CLERK
ROOM 395, CITY HALL
LOS ANGELES, CALIFORNIA 90012
CALIFORNIA ENVIRONMENTAL QUALITY ACT

PROPOSED MITIGATED NEGATIVE DECLARATION

(Article I, City CEQA Guidelines)

LEAD CITY AGENCY AND ADDRESS:	COUNCIL DISTRICT
Los Angeles Department of Water and Power 111 N. Hope Street, Room 1044 Los Angeles, CA 90012	N/A
PROJECT TITLE: Van Norman Complex Water Quality Improvement Project	**LOG REFERENCE** N/A

PROJECT LOCATION:
The VNC property is located at 13101 Sepulveda Boulevard in the City of Los Angeles, along the west side of Interstate Highway 5 (Golden State Freeway, I-5) and Interstate Highway 405 (San Diego Freeway, I-405). It consists of 1,340 acres of LADWP-owned property that has been largely cleared and is currently occupied by facilities devoted primarily to the production, storage, and/or transmission of drinking water and electricity or to regional flood control functions.

DESCRIPTION:
The Los Angeles Department of Water and Power (LADWP) proposes to make improvements to Bull Creek Extension Channel (BCEC), a concrete-lined storm water conveyance and flood control facility located within the Van Norman Complex (VNC) in the Sylmar area of Los Angeles. This project is being undertaken to comply with updated drinking water quality regulations promulgated by the United States Environmental Protection Agency (EPA) and updated requirements related to maintaining the integrity of several VNC water impoundment dams that fall under the jurisdiction of the State of California Division of Safety and Dams (DSOD).

NAME AND ADDRESS OF APPLICANT IF OTHER THAN CITY AGENCY:

FINDING:
See the attached Initial Study.

SEE ATTACHED INITIAL STUDY FOR THE MITIGATION MEASURES IMPOSED.

THE INITIAL STUDY PREPARED FOR THIS PROJECT IS ATTACHED.

PERSON PREPARING THIS FORM	ADDRESS	TELEPHONE NUMBER
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SIGNATURE (Official)	DATE
Charles C. Holloway Charles C. Holloway, Manager of Environmental Assessment and Planning	4/20/2012

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Acronyms and Abbreviations

BCEC	Bull Creek Extension Channel
CARB	California Air Resources Board
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CH_4	Methane
CMP	Congestion Management Plan
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DBA	A-weighted decibel
DSOD	State of California Division of Safety of Dams
EPA	Environmental Protection Agency
GHG	Greenhouse gas emissions
I-5	Interstate 5
I-210	Interstate 210
I-405	Interstate 405
LADOT	City of Los Angeles Department of Transportation
LADWP	Los Angeles Department of Water and Power
LAFD	Los Angeles Fire Department
LAPD	Los Angeles Police Department
L_{eq}	Community noise equivalent level
LT2ESWTR	Long-Term 2 Enhanced Surface Water Treatment Rule
$\mu g/m^3$	Microgram per cubic meter
MND	Mitigated negative declaration
N_2O	Nitrous oxide
NO_x	Nitrogen oxide
O_3	Ozone
$PM_{2.5}$	Particulate matter less than 2.5 microns in diameter
PM_{10}	Particulate matter 10 microns in diameter or less
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SO_x	Sulfur oxide
TAC	Toxic air contaminant
USFWS	U.S. Fish and Wildlife Service
V/C	Volume-to-capacity ratio
VOC	Volatile organic compound
VNC	Van Norman Complex

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SECTION 1
PROJECT DESCRIPTION

1.1 Overview of the Project

The Los Angeles Department of Water and Power (LADWP) proposes to make improvements to Bull Creek Extension Channel (BCEC), a concrete-lined storm water conveyance and flood control facility located within the Van Norman Complex (VNC) in the Sylmar area of Los Angeles. This project is being undertaken to comply with updated drinking water quality regulations promulgated by the United States Environmental Protection Agency (EPA) and updated requirements related to maintaining the integrity of several VNC water impoundment dams that fall under the jurisdiction of the State of California Division of Safety and Dams (DSOD).

1.2 California Environmental Quality Act

The California Environmental Quality Act (CEQA) applies to proposed projects initiated by, funded by, or requiring discretionary approvals from state or local government agencies. The proposed storm water improvements at the VNC property constitute a project as defined by CEQA (California Public Resources Code Section 21000 et seq.). The CEQA Guidelines Section 15367 states that "'Lead Agency' means the public agency which has the principal responsibility for carrying out or approving a project." Therefore, LADWP is the lead agency responsible for compliance with CEQA for the proposed project.

As lead agency for the proposed project, LADWP must complete an environmental review to determine if implementation of the proposed project would result in significant adverse environmental impacts. To fulfill the purpose of CEQA, an Initial Study has been prepared to assist in making that determination. Based on the nature and scope of the proposed project and the evaluation contained in the Initial Study environmental checklist (contained herein), LADWP, as the lead agency, has concluded that a Mitigated Negative Declaration (MND) would be the proper level of analysis for this project. The MND will show that impacts caused by the proposed project are either less than significant or significant but mitigable with incorporation of appropriate mitigation measures as defined herein. This conclusion is supported by CEQA Guidelines Section 15070, which states that an MND can be prepared when "(a) the initial study shows that there is not substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment, or (b) the initial study identifies potentially significant effects, but (1) revisions in the project plans or proposals made by, or agreed to by the applicant before a proposed mitigated negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur; and (2) there is no substantial evidence, in light of the whole record before the agency, that the project as revised may have a significant effect on the environment."

1.3 Project Location and Setting

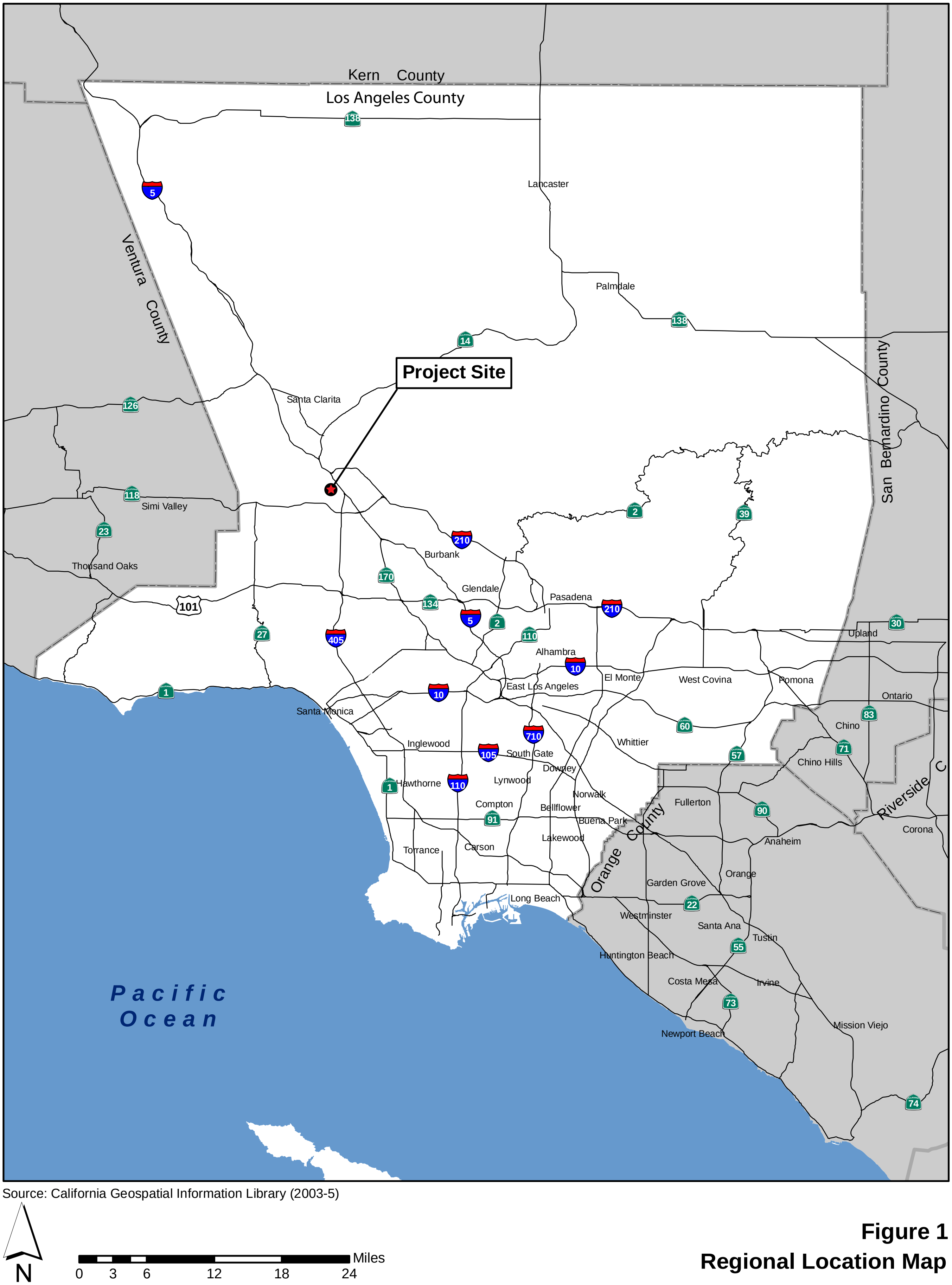
The VNC property is located at 13101 Sepulveda Boulevard in the City of Los Angeles, along the west side of Interstate 5 (Golden State Freeway, I-5) and Interstate 405 (San Diego Freeway, I-405). It consists of 1,340 acres of LADWP-owned property that has been largely cleared and is currently occupied by facilities devoted primarily to the production, storage, and/or transmission of drinking water and electricity or to regional flood control functions. These functions impart a generally industrial character to the property. Other facilities located within the VNC include a Los Angeles Police Department (LAPD) training facility (which includes a driver training track and a covered outdoor shooting range), a Los Angeles Fire Department (LAFD) structure fire training facility, a large green waste recycling facility, the LADWP helipad, and various vehicle storage and construction materials supply yards. Other than an approximately 12-acre area in the southwestern corner of the VNC property (along Rinaldi Street) occupied by public gardens and youth baseball fields, the property is inaccessible by the public. The perimeter of the complex is fenced or walled, and 24-hour manned security is provided. Figure 1 shows the regional location of the project site, while Figure 2 shows an aerial view of the VNC.

The VNC is surrounded by single- and multi-family residential uses along Rinaldi Street to the south, single-family residential uses along Woodley Avenue to the west, the Metropolitan Water District Jensen Water Filtration Plant to the northwest, and the Golden State and San Diego Freeways to the east. Various residential, commercial, and institutional uses lie to the east of the freeways. Due to its original singular function as a major drinking water reservoir site, the VNC is set largely within a basin. This low-lying setting, in combination with the terrain, vegetation, and structural features of the surrounding area, limits visibility of the complex from locations outside the property boundaries. From the east, the Golden State and San Diego Freeways obstruct most views of the VNC. Intermittent views of the eastern portions of the VNC from the Golden State Freeway itself are available for a short duration as the freeway parallels the reservoir. Views of the vast majority of the VNC property from off-site locations to the south are entirely obstructed by existing development and terrain, including the original Lower San Fernando Dam. Views from residential neighborhoods located to the west are generally obstructed by the ridgeline that runs along the western perimeter of the VNC property. Views from off-site locations to the north of the VNC are generally obstructed by terrain, vegetation, and development, including elements of the Jensen Water Filtration Plant, located along the northwestern boundary of the VNC.

1.4 Existing Drinking Water Supply and Storm Water Control Facilities

The VNC has been an integral component of the City of Los Angeles drinking water supply system since early in the previous century, when the Lower and Upper San Fernando Dams were constructed, creating the Lower and Upper Van Norman Reservoirs at the terminus of the Owens Valley Los Angeles Aqueduct. The Lower Van Norman Reservoir occupied a large portion of the existing VNC property until the Lower San Fernando Dam was severely damaged during the 1971 Sylmar Earthquake, and the lower reservoir was taken out of service. To partially replace the storage capacity of the retired reservoir, the smaller Los Angeles Reservoir was constructed in its place in 1976. The Upper Van Norman Reservoir was subsequently also removed from service in the late 1970s.

The VNC still serves as the terminus for the First and Second Los Angeles Aqueducts, which provide approximately 35 percent of the City’s water supply during normal precipitation and water use years. With numerous open reservoirs removed from the City’s treated water storage system over the past decades, Los Angeles Reservoir is currently the single largest storage facility remaining within the in-City system, at approximately 3.3 billion gallons capacity.



Source: California Geospatial Information Library (2003-5)

Figure 1
Regional Location Map

Source: ESRI (2012)

Figure 2
Project Vicinity Map

Along with the adjacent 80-million gallon Van Norman Bypass Reservoir, Los Angeles Reservoir is directly linked to the Los Angeles Aqueduct Filtration Plant, which provides the primary treatment for water delivered to the City from the Los Angeles Aqueducts. Los Angeles Reservoir not only provides for the critical storage of large volumes of treated water that can be utilized during emergencies, it is also an essential element of the City's drinking water distribution system because it helps accommodate large fluctuations in daily and seasonal demand for drinking water while aqueduct inflows to the Los Angeles Aqueduct Filtration Plant remain relatively constant. Water from Los Angeles Reservoir is distributed throughout the City, including to a number of smaller downstream reservoirs and storage facilities.

Primary flood control facilities at the VNC include the Lower San Fernando Storm Water Detention Basin, which occupies a large portion of the VNC south of the Los Angeles Reservoir. It is confined by the Lower San Fernando Dam, which was the original impoundment dam for the Lower Van Norman Reservoir. A large drain outlet that conveys collected storm water beneath the Lower San Fernando Dam and into the local storm drainage system is located at the southern end of the detention basin. The basin serves as a regional flood control facility capable of accommodating flows from a probable maximum precipitation event in the surrounding area. Several smaller debris basins are located within the VNC, including the Upper and Middle Debris Basins, located along the northwestern perimeter of the property; the Upper San Fernando Storm Water Detention Basin and the Yarnell Debris Basin, located north of Los Angeles Reservoir; and the Lower Debris Basin, located adjacent to Los Angeles Reservoir to the west. Two large concrete storm water channels located within the VNC convey water through the property and to and from the various on-site debris and detention basins. The East Storm Channel begins north of the Los Angeles Reservoir and collects runoff from the east side of the VNC and releases from the Yarnell Debris and the Upper San Fernando Storm Water Detention Basin. The East Storm Channel and Los Angeles Reservoir emergency spillway releases flows to the Lower San Fernando Storm Water Detention Basin. BCEC, the channel in this proposed project, conveys storm water along the western side of the VNC from the Middle Debris Basin, through the Lower Debris Basin, and eventually off site at the southwest corner of the property.

1.5 Project Objectives

In 2006, the EPA promulgated the final Long-Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) intended to reduce the incidence of disease associated with certain pathogenic microorganisms that have the potential to exist in drinking water. This rule limits the presence of certain protozoan pathogens, especially Cryptosporidium, which cause gastrointestinal illness that can be severe or fatal for sensitive groups such as the elderly, infants, or those with compromised immune systems. The water treatment system currently used at the Los Angeles Aqueduct Filtration Plant at the VNC adequately destroys and/or removes Cryptosporidium protozoa during treatment. However, regardless of this primary treatment, the LT2ESWTR also includes provisions to ensure that uncovered treated water storage facilities, such as Los Angeles Reservoir, are managed to maintain the microbial protection of the treated water they receive before the water is discharged from the storage facilities and enters the distribution system. An important aim of the LT2ESWTR is to limit contamination of drinking water supplies by pathogenic microorganisms potentially contained in surface storm water runoff.

Since it was originally constructed in the mid-1970s, Los Angeles Reservoir, in addition to serving as a primary drinking water storage facility, has also functioned as a potential receptacle for storm water overflow from the Lower Debris Basin. The Lower Debris Basin serves as a detention basin for excess water from BCEC in the event that storm flows exceed the capacity of the channel. During a probable maximum precipitation event as defined by the DSOD and the National Weather Service, the flows from BCEC into the Lower Debris Basin could exceed the capacity of the basin, and untreated storm water would then flow into Los Angeles Reservoir via a spillway that connects the basin to the reservoir. While such an event has never occurred, the potential for significant contamination of the drinking water supply in Los Angeles Reservoir from storm water nonetheless exists.

To avoid such contamination in accordance with the LT2ESWTR, the proposed BCEC improvements would remove the Lower Debris Basin as a receptacle for overflow from the channel, thereby eliminating the potential for contaminated storm water to enter Los Angeles Reservoir from the basin via the interconnecting spillway. Instead of entering the Lower Debris Basin, excess storm water flows from BCEC would be rerouted downstream to a new diversion structure that would direct the water into the Lower San Fernando Storm Water Detention Basin, which has a substantially larger storage capacity than the Lower Debris Basin. Typical storm flows not exceeding the capacity of BCEC would continue to be discharged through the channel past the proposed diversion structure and off site, similar to existing storm drainage flows.

As mentioned above, the DSOD retains jurisdiction relative to the safety and structural integrity of several dams within the VNC. These include the north and south dams of Los Angeles Reservoir, the Van Norman Bypass Reservoir Dam, and the old Lower and Upper San Fernando Dams. Because BCEC would be modified under this project to eliminate the potential for contamination of the drinking water stored in Los Angeles Reservoir, a review of the hydrologic characteristics of the channel and other storm water detention and conveyance facilities within the VNC was required to assure that the dams in the complex will be adequately protected during a probable maximum precipitation event according to the current DSOD standards. This review has identified the necessity to modify additional portions of BCEC and other flood control facilities in the VNC.

1.6 Description of the Proposed Project Construction

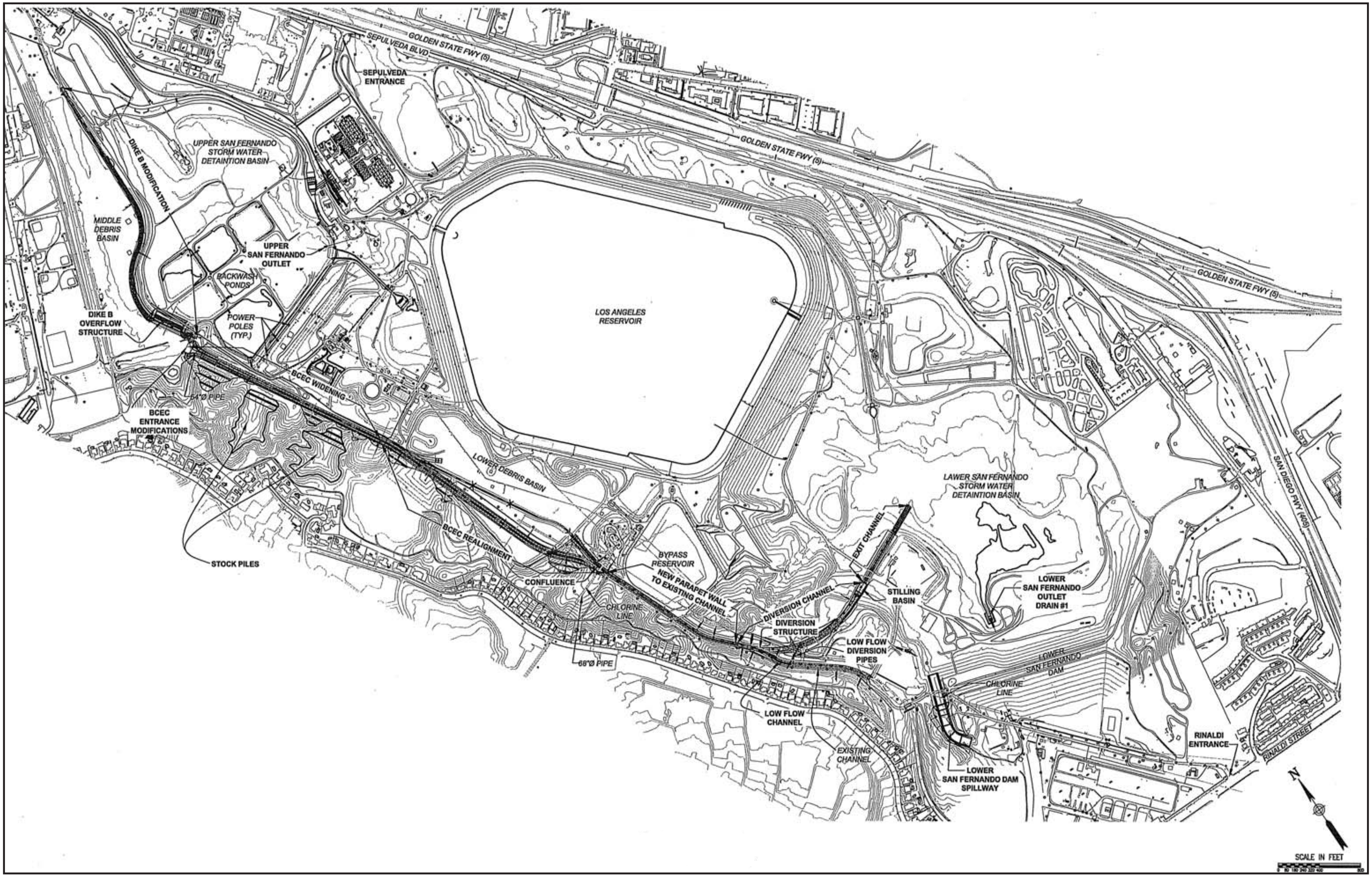
In order to implement the above described improvements, several separate but related actions would be required. The overall construction effort for the proposed project is estimated to take approximately 3 years to complete. Construction activity would generally occur Mondays through Fridays from 7:00 a.m. to approximately 3:30 p.m., although work may continue beyond this time on occasion to complete a component of work that cannot be interrupted. During the majority of the construction period, the existing BCEC, including the overflow into the Lower Debris Basin, must be kept functional to accommodate storm water flows until the proposed improvements are completed and are capable of properly conveying storm water and controlling flows during high precipitation events. The phases of construction would generally occur sequentially in that some tasks must precede other tasks. While a certain amount of overlap between phases may occur as construction proceeds in different locations within the project site, in order to analyze the potential environmental impacts related to the construction phase of the project, a preliminary plan was prepared that considers the phases separately as a means of identifying the overall sequence of construction and establishing the general level of activity related to functions such as equipment operations, truck deliveries, worker commute trips, and earthwork. Construction of the proposed project would consist of six primary phases of work: hillside grading; realignment of BCEC within the Lower Debris Basin; the construction of the new diversion channel; the widening of BCEC north of the Lower Debris Basin; modifying and enlarging the existing Lower San Fernando Dam spillway structure; and increasing the height of the dike along the east side of Bull Creek and construction of an overflow structure on the dike north of the concrete-lined portion of the channel. In addition, the outlet to the Upper San Fernando Detention Basin would be modified to prevent clogging in case of storm events. A spreadsheet that reflects the type, duration, and level of activities for these various construction phases in terms of personnel, off-site truck trips, and on-site equipment operations is included as Appendix A of this MND. Figure 3 provides an overview of the proposed flood control improvements, and Figures 4 through 7 illustrate the various portions of work indicated by the phases of construction.

To accommodate the widened and in some cases realigned BCEC, portions of the existing hillside west of the channel must first be cut back. This would entail removing earth, processing the earth so it is suitable as structural fill material for channel construction, and placing it within the Lower Debris Basin to provide the support and flow elevations required for the realigned section of BCEC. Any excess earth material would be stockpiled within the VNC, including within the Lower Debris Basin, ravines along western perimeter of the complex, or other areas.

In order to bypass the Lower Debris Basin with storm flows, the section of BCEC located within the basin must be reconfigured to eliminate the diversion structures that currently direct high-water flows into the basin. Since BCEC must remain functional throughout most of the construction period, a new realigned channel would be constructed essentially parallel to and west of the existing channel (see Figures 3 and 4). This new channel section would be connected at either end to the existing BCEC only once the other portions of the channel reconstruction, including the downstream diversion structure and upstream channel widening, were completed.

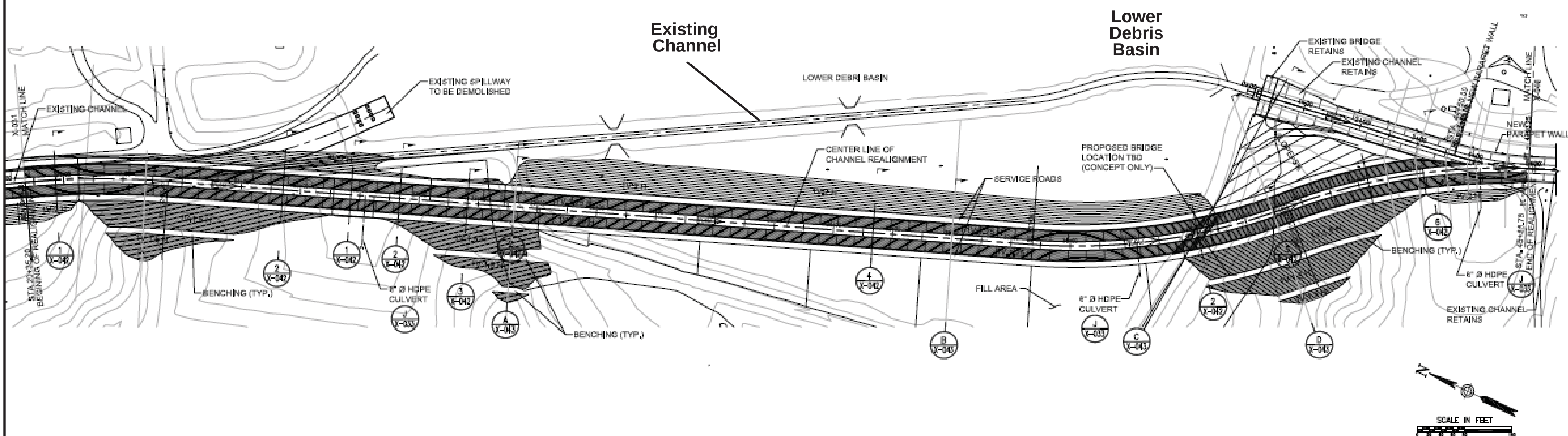
The new diversion structure, which would be located approximately 1,500 feet south of the southern end of the realigned portion of BCEC, would be a concrete box channel. It would include a stilling basin structure to reduce the energy of the storm water flow as it enters the Lower San Fernando Storm Water Detention Basin (sees Figures 3 and 5). The new diversion channel would be connected to the existing BCEC only once the other portions of the channel reconstruction, including the upstream channel realignment and channel widening, were completed.

In order to accommodate flows entering the concrete-lined portion of BCEC in accordance with updated DSOD guidelines required to adequately protect Upper San Fernando Dam and the north dam of Los Angeles Reservoir during maximum precipitation events, the segment of BCEC north of the Lower Debris Basin must be widened. However, there is not adequate space available to construct a new realigned channel parallel to the existing channel (as would be done within the Lower Debris Basin). Therefore, this segment of the existing channel must be demolished to accommodate the new widened channel (see Figures 3 and 6). Because this phase of work would effectively remove BCEC from service, it must be accomplished during the dry season, generally from May to October. Once this phase of work is completed, the connections between the reconstructed portions of BCEC (including the diversion channel) and the existing BCEC would be made.



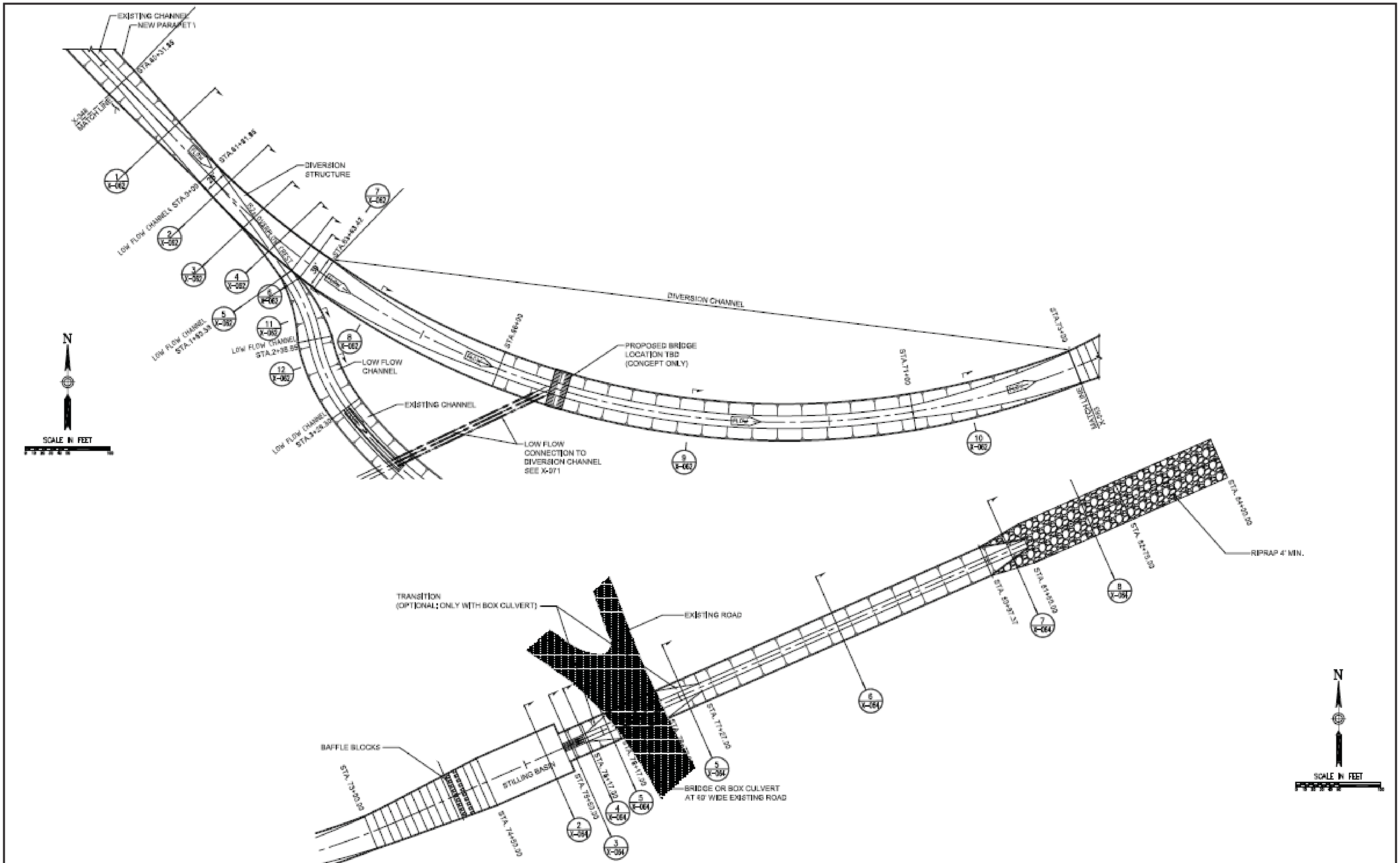
Source: LADWP (2012)

Figure 3
Overview of Proposed Improvements



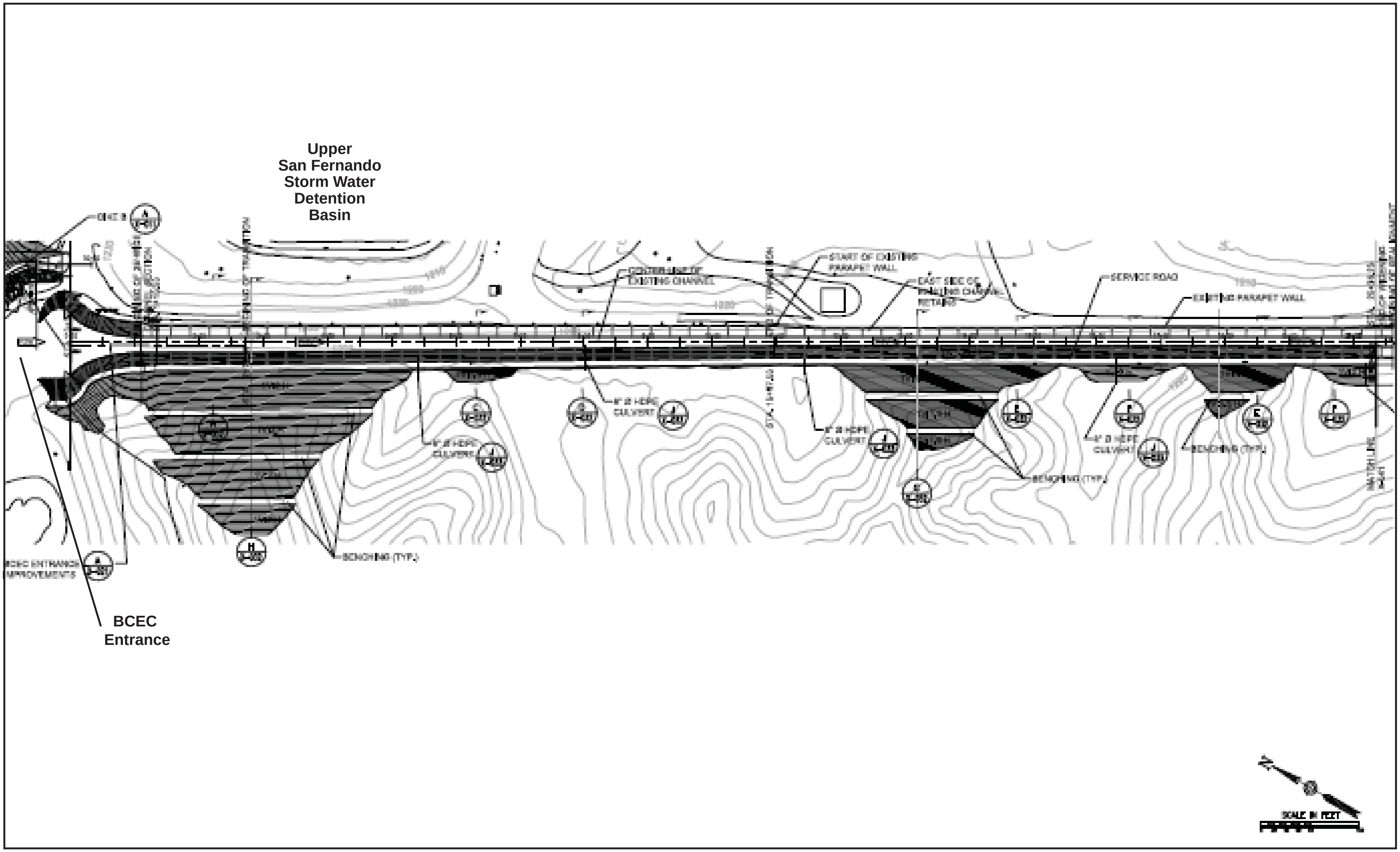
Source: LADWP (2012)

Figure 4
Proposed BCEC Realignment



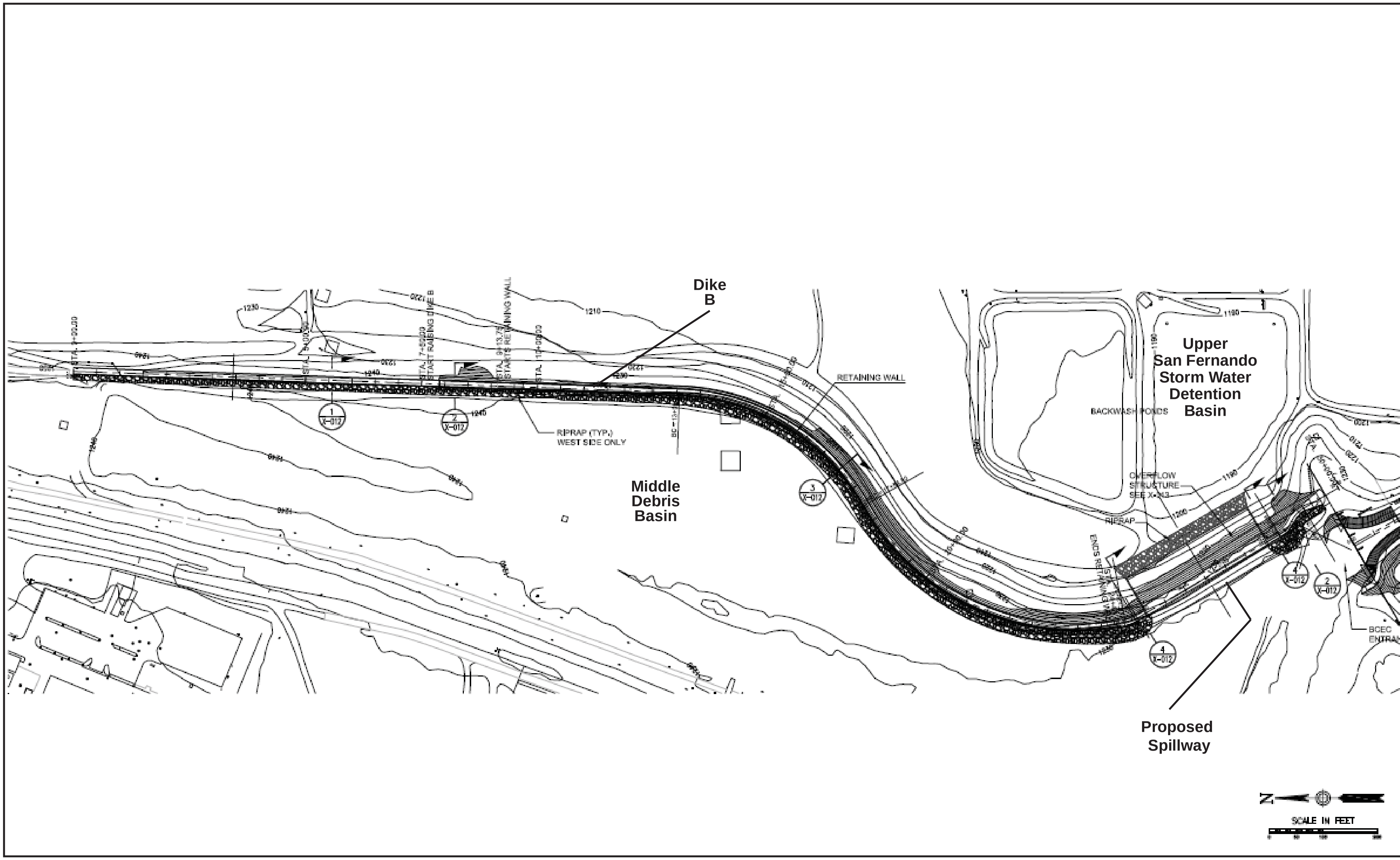
Source: LADWP (2012)

Figure 5
Proposed Diversion Structure



Source: LADWP (2012)

Figure 6
Proposed BCEC Widening



Source: LADWP (2012)

Figure 7
Proposed Dike Structure Improvements

The existing BCEC within the Lower Debris Basin would be abandoned in place. Although the spillway between the Lower Debris Basin and Los Angeles Reservoir would remain physically in place, the potential for storm water to be released over the spillway would be eliminated since the BCEC overflow would be relocated downstream to the diversion channel that would direct flows to the Lower San Fernando Storm Water Detention Basin rather than the Lower Debris Basin.

The Lower San Fernando Dam no longer functions as an impoundment for Lower Van Norman Reservoir, which, as discussed above, was removed from service after the 1971 Sylmar Earthquake. However, the dam continues to serve a flood control function by retaining water in the Lower San Fernando Storm Water Detention Basin. Based on updated DSOD criteria, the existing spillway of Lower San Fernando Dam may not provide adequate release of flood waters retained behind the dam during a probable maximum precipitation event to prevent overtopping of and severe damage to the dam. Therefore, as part of the proposed project, the existing spillway must be demolished and enlarged to accommodate the required increased release flows. This work would occur essentially after the completion of BCEC realignment and widening work.

In order to contain flows during a maximum precipitation event within the unchannelized portion of Bull Creek located along the northwestern perimeter of the VNC and to prevent overtopping of an existing dike structure that protects the basin at the north end of the VNC that contains the water filtration plant backwash ponds, the dike structure must be raised. This would entail a combination of raising the earth embankments and constructing a concrete parapet wall atop the embankment and construction of an overflow (spillway) structure (see Figure3 and 7). The embankment would also be protected with riprap. This work would also occur essentially after BCEC realignment and widening work was completed.

To implement the above work and maintain functionality at the VNC to support existing operations, several concrete bridges would also be constructed during the proposed project, including across BCEC and the new diversion channel.

After the completion of the proposed project construction, the new facilities would require minimal maintenance that would involve no increase in personnel, equipment operations, or truck deliveries at the VNC beyond current levels.

1.7 Construction Schedule and Procedures

Construction is anticipated to begin in fall of 2012 and take approximately 3 years to complete, concluding in fall 2015. As discussed above, construction has been appropriately sequenced to schedule certain activities during the dry season. A spreadsheet that reflects the various construction activities by month is included as Appendix A of this MND.

An appropriate combination of monitoring and resource impact avoidance would be employed during all phases of the proposed project, including implementation of the following Best Management Practices:

- The proposed project would implement Rule 403 dust control measures required by the South Coast Air Quality Management District (SCAQMD), which would include the following:

1) Water would be applied to exposed surfaces at least two times per day to prevent generation of dust plumes.
2) The construction contractor would utilize at least one of the following measures at each vehicle egress from the project site to a paved public road:
    a. Install a pad consisting of washed gravel maintained in clean condition to a depth of at least six inches and extending at least 30 feet wide and at least 50 feet long;
    b. Pave the surface extending at least 100 feet and at least 20 feet wide;
    c. Utilize a wheel shaker/wheel spreading device consisting of raised dividers at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle undercarriages; or
    d. Install a wheel washing system to remove bulk material from tires and vehicle undercarriages.
3) All haul trucks hauling soil, sand, and other loose materials off site would be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).
4) Construction activity on exposed or unpaved dirt surface would be suspended when wind speed exceeds 25 miles per hour, or would comply with Table 3 in order to continue work when wind speeds exceed 25 miles per hour.
5) Ground cover in disturbed areas would be replaced in a timely fashion when work is completed in the area.
6) Identify a community liaison concerning on-site construction activity, including issues related to dust generation.
7) Apply non-toxic soil stabilizer according to manufacturers' specification to all inactive construction areas (previously graded area inactive for 10 days or more).
8) Traffic speeds on all unpaved roads to be limited to 15 mph or less.
9) Sweep streets at the end of the day if visible soil is carried onto adjacent public paved roads. If feasible, use water sweepers with reclaimed water.

- The construction contractor would develop and implement an erosion control plan and Storm Water Pollution Prevention Plan for construction activities. Erosion control and grading plans may include, but would not be limited to, the following:
    - Minimizing the extent of disturbed areas and duration of exposure;
    - Stabilizing and protecting disturbed areas;
    - Keeping runoff velocities low; and
    - Retaining sediment within the construction area.
- Construction erosion control Best Management Practices may include the following:
    - Temporary desilting basins;
    - Silt fences;
    - Gravel bag barriers;
    - Temporary soil stabilization with mattresses and mulching;
    - Temporary drainage inlet protection; and
    - Diversion dikes and interceptor swales.
- The proposed project would comply with the Regional Water Quality Control Board's National Pollution Discharge Elimination System Phase II Rule.
- Construction would comply with the City of Los Angeles Noise Ordinance, which limits the hours of construction to between 7:00 a.m. and 9:00 p.m., Monday through

Friday, and between 8:00 a.m. and 6:00 p.m. on Saturday. No construction would occur on Sundays or City holidays.

- Residences near the project site would be notified prior to the start of construction (e.g., via flyers). The notices would include a telephone number for comments or questions related to construction activities.
- The proposed project construction would incorporate source reduction techniques and recycling measures and maintain a recycling program to divert waste in accordance with the Citywide Construction and Demolition Debris Recycling Ordinance.

1.8 Required Permits and Approvals

Numerous approvals and/or permits would be required to implement the proposed project. The environmental documentation for the project would be used to facilitate compliance with federal and state laws and the granting of permits by various state and local agencies having jurisdiction over one or more aspects of the project. These approvals and permits may include, but may not be limited, to the following:

City of Los Angeles, Department of Water and Power

- Certification by the City of Los Angeles Board of Water and Power Commissioners that the MND was prepared in accordance with CEQA and other applicable codes and guidelines
- Approval by the City of Los Angeles Board of Water and Power Commissioners of the proposed project

State of California, Los Angeles Regional Water Quality Control Board

- National Pollution Discharge Elimination System Permit
- Section 401 Permit

U.S. Army Corps of Engineers

- Section 404 Permit

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SECTION 2
INITIAL STUDY CHECKLIST

The following discussion of potential environmental effects was completed in accordance with Section 15063(d)(3) of the CEQA Guidelines (2012) to determine if the proposed project may have a significant effect on the environment.

CEQA INITIAL STUDY FORM

Project Title:
Los Angeles Reservoir Water Quality Improvement Project

Lead Agency Name and Address:
Los Angeles Department of Water and Power
Environmental Planning and Assessment
111 North Hope Street, Room 1044
Los Angeles, CA 90012

Contact Person and Phone Number:
Nancy Chung
Environmental Services
Los Angeles Department of Water and Power
(213) 367-0404

Project Sponsor's Name and Address:
Los Angeles Department of Water and Power
Water Engineering and Technical Services
111 North Hope Street
Los Angeles, CA 90012

Project Location:
Van Norman Reservoir Complex (VNC), located at 13101 Sepulveda Boulevard in the City of Los Angeles.

City Council District:
District 12

Neighborhood Council District:
Granada Hills North

General Plan Designation:
The VNC is designated as Public Facilities and Open Space in the City of Los Angeles General Plan. The proposed project site is located within the Granada Hills-Knollwood Community Planning Area.

Zoning:
The zoning designation for the VNC is Public Facilities (PF) and Open Space ([Q]OS-1XL).

Description of Project:
To avoid contamination in accordance with the LT2ESWTR, the proposed improvements would remove the Lower Debris Basin as a receptacle for overflow from BCEC, thereby eliminating the potential for contaminated storm water to enter Los Angeles Reservoir from the basin via the interconnecting spillway. Instead of entering the Lower Debris Basin, excess storm water flows from BCEC would be rerouted downstream to a new diversion structure that would direct the water into the Lower San Fernando Storm Water Detention Basin, which has a substantially larger storage capacity than the Lower Debris Basin. Typical storm flows not exceeding the capacity of BCEC would continue to be discharged through the channel past the proposed diversion structure and off site, similar to the existing storm drainage flows.

The DSOD retains jurisdiction relative to the safety and structural integrity of several dams within the VNC. These include the north and south dams of the Los Angeles Reservoir, the Van Norman Bypass Reservoir Dam, and the old Lower and Upper San Fernando Dams. Because BCEC would be modified under this project to eliminate the potential for contamination of the drinking water stored in Los Angeles Reservoir, a review of the hydrologic characteristics of the channel and other storm water detention and conveyance facilities within the VNC was required to assure that the dams in the complex will be adequately protected during a probable maximum precipitation event according to the current DSOD standards. This review has identified the necessity to modify additional portions of BCEC and other flood control facilities in the VNC.

Surrounding Land Uses and Setting:
The proposed project would be located entirely within the interior of the existing VNC property, currently occupied by drinking water storage reservoirs, water treatment facilities, flood control facilities, electrical generation and transmission facilities, materials storage yards, and other industrial or public facility uses. The Golden State Freeway (I-5) is located to the east; residential uses are located to the west and south; and Metropolitan Water District treatment facilities are located to the north.

Responsible/Trustee Agencies:
- State of California, Los Angeles Regional Water Quality Control Board
- State of California, Department of Public Health
- State of California, Division of Safety of Dams
- U.S. Army Corps of Engineers

Reviewing Agencies:
- City of Los Angeles Department of Planning
- City of Los Angeles Department of Fire
- California Department of Fish and Game

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the Environmental Impacts discussion in Section 3.

☐ Aesthetics	☐ Agriculture Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Geology/Soils
☐ Hazards & Hazardous Materials	☐ Hydrology/Water Quality	☐ Land Use Planning
☐ Mineral Resources	☐ Noise	☐ Population/Housing
☐ Public Services	☐ Recreation	☐ Transportation/Traffic
☐ Utilities/Service Systems	☐ Mandatory Findings of Significance	

DETERMINATION

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an environmental impact report is required.

☐ I find that the proposed project may have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Charles C. Holloway (signature) — 4/20/2012

Signature — Date

Charles Holloway

Manager of Environmental Assessment and Planning

Los Angeles Department of Water and Power

		Potentially Significant Impact	Less than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
I.	**AESTHETICS**. Would the project:				
a.	Have a substantial adverse effect on a scenic vista?				**X**
b.	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				**X**
c.	Substantially degrade the existing visual character or quality of the site and its surroundings?				**X**
d.	Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?				**X**
II.	**AGRICULTURE AND FORESTRY RESOURCES**. In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a.	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				**X**
b.	Conflict with existing zoning for agricultural use, or a Williamson act contract?				**X**
c.	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				**X**
d.	Result in the loss of forest land or conversion of forest land to non-forest use?				**X**
e.	Involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				**X**

		Potentially Significant Impact	Less than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
III.	**AIR QUALITY**. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a.	Conflict with or obstruct implementation of the applicable air quality plan?			X	
b.	Violate any air quality standard or contribute substantially to an existing or projected air quality violation?		X		
c.	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?		X		
d.	Expose sensitive receptors to substantial pollutant concentrations?			X	
e.	Create objectionable odors affecting a substantial number of people?			X	
IV.	**BIOLOGICAL RESOURCES**. Would the project:				
a.	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		X		
b.	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		X		
c.	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?		X		
d.	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?		X		
e.	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
f.	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X

		Potentially Significant Impact	Less than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
V.	**CULTURAL RESOURCES**. Would the project:				
a.	Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5?			X	
b.	Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?			X	
c.	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			X	
d.	Disturb any human remains, including those interred outside of formal cemeteries?			X	
VI.	**GEOLOGY AND SOILS**. Would the project:				
a.	Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
	i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.			X	
	ii) Strong seismic ground shaking?			X	
	iii) Seismic-related ground failure, including liquefaction?			X	
	iv) Landslides?			X	
b.	Result in substantial soil erosion, loss of topsoil, or changes in topography or unstable soil conditions from excavation, grading, or fill?			X	
c.	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			X	
d.	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?			X	
e.	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				X
VII.	**GREENHOUSE GAS EMISSIONS**: Would the project:				
a.	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impacts on the environment?			X	
b.	Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?				X

		Potentially Significant Impact	Less than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII.	**HAZARDS AND HAZARDOUS MATERIALS**: Would the project:				
a.	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
b.	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			X	
c.	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
d.	Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
e.	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				X
f.	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X
g.	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
h.	Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				X
IX.	**HYDROLOGY AND WATER QUALITY**. Would the project:				
a.	Violate any water quality standards or waste discharge requirements?			X	
b.	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 pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			X	
c.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of stream or river, in a manner that would result in substantial erosion or siltation on- or off-site?			X	

		Potentially Significant Impact	Less than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
d.	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 that would result in flooding on- or off-site?			X	
e.	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?			X	
f.	Otherwise substantially degrade water quality?			X	
g.	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?				X
h.	Place within a 100-year flood hazard area structures that would impede or redirect flood flows?				X
i.	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?			X	
j.	Inundation by seiche, tsunami, or mudflow?			X	
X.	**LAND USE AND PLANNING**. Would the project:				
a.	Physically divide an established community?				X
b.	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				X
c.	Conflict with any applicable habitat conservation plan or natural community conservation plan?				X
XI.	**MINERAL RESOURCES**. Would the project:				
a.	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
b.	Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X
XII.	**NOISE**. Would the project result in:				
a.	Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			X	
b.	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?			X	
c.	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				X

		Potentially Significant Impact	Less than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
d.	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?				X
e.	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X
f.	For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X
XIII.	**POPULATION AND HOUSING**. Would the project:				
a.	Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
b.	Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
c.	Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X
XIV.	**PUBLIC SERVICES**.				
a.	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
	i) Fire protection?				X
	ii) Police protection?				X
	iii) Schools?				X
	iv) Parks?				X
	v) Other public facilities?				X
XV.	**RECREATION**.				
a.	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				X
b.	Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?				X

	Potentially Significant Impact	Less than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. TRANSPORTATION/TRAFFIC. Would the project:				
a. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?			X	
b. Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?			X	
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				X
d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X
e. Result in inadequate emergency access?				X
f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?				X
XVII. UTILITIES AND SERVICE SYSTEMS. Would the project:				
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?			X	
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
c. Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			X	
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?				X
e. Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				X
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			X	

		Potentially Significant Impact	Less than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
g.	Comply with federal, state, and local statutes and regulations related to solid waste?			X	
XVIII.	**MANDATORY FINDINGS OF SIGNIFICANCE**.				
a.	Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		X		
b.	Does the project have impacts that are individually limited, but cumulatively considerable? “Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.		X		
c.	Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?		X		

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SECTION 3
ENVIRONMENTAL IMPACT ASSESSMENT

INTRODUCTION

The following discussion addresses impacts to various environmental resources per the Initial Study checklist questions contained in Appendix G of the CEQA Guidelines.

I. AESTHETICS

Would the project:

a) Have a substantial adverse effect on a scenic vista?

No Impact. The proposed project would not have an adverse effect on a scenic vista. Scenic views or vistas are the panoramic public views to various natural features, including the ocean, striking or unusual natural terrain, or unique urban or historic features. Public access to these views may be from park lands, private and publicly owned sites, and public right-of-way.[1] The project site is located entirely within the interior of the existing VNC property. The VNC is owned by LADWP and is occupied by facilities devoted primarily to water treatment and storage, flood control, electrical power generation and distribution, and other industrial functions. The Granada Hills-Knollwood Community Plan does not identify any official scenic vistas at or near the site.[2] The proposed project involves improvements to portions of BCEC within the VNC property. While intermittent views of the eastern portions of the VNC from the Golden State Freeway itself are available for a short duration as the freeway parallels the reservoir, views of the vast majority of the VNC property from off-site locations to the south are entirely obstructed by existing development and terrain, including the original Lower San Fernando Dam. Views from residential neighborhoods located to the west are generally obstructed by the ridgeline that runs along the western perimeter of the VNC property. Views from off-site locations to the north of the VNC are generally obstructed by terrain, vegetation, and development, including elements of the Jensen Water Filtration Plant, located along the northwestern boundary of the VNC. The views from vantage points adjacent to the site would remain similar to existing conditions. No impact to a scenic vista would occur.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. Implementation of the proposed project would not damage scenic resources within a state scenic highway. Located to the northeast of the VNC, Interstate 210 (I-210, Foothill Freeway) eastward from its intersection with I-5, and I-5 northward from its intersection with I-210 are both designated as eligible California Scenic Highways. These segments of I-210 and I-5 are also Designated Scenic Highways in the Transportation Element of the City of Los

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[1] City of Los Angeles Department of City Planning, *City of Los Angeles General Plan, Conservation Element*, adopted September 26, 2001.

[2] City of Los Angeles Department of City Planning, *Granada Hills-Knollwood Community Plan*, adopted July 10, 1996.

Angeles General Plan.[3] In addition, Balboa Boulevard between I-5 and Sesnon Boulevard, Sesnon Boulevard west of Balboa Boulevard (to the northwest of the VNC), and Rinaldi Street (to the south of the VNC) are Designated Scenic Highways in the City of Los Angeles General Plan.[4] However, the proposed project is located entirely within the interior of the existing VNC property and would not create changes to these scenic corridors. Furthermore, the project site is not within the viewshed of these highways. No impact would occur.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?

No Impact. The proposed project would be located within the interior of the existing VNC property. As discussed in Section I(a) above, the VNC is occupied by facilities devoted primarily to water treatment and storage, flood control, electrical power generation and distribution, and other industrial functions. These facilities occupy the majority of the property, and they impart a generally industrial character to the site. The proposed project would involve the realignment of a portion of BCEC, as well as other channel improvements. The project components would represent modifications to existing functions and would be consistent with the existing visual quality of the site and its surroundings. The proposed project would not substantially alter the visual appearance of the existing BCEC or VNC. Further, views of BCEC and proposed improvements are distant and limited. Intermittent views of the eastern portions of the VNC from the Golden State Freeway are available for a short duration as the freeway parallels the reservoir. However, these views are at freeway speeds where the viewer’s attention is focused on the road ahead. Views of the vast majority of the VNC property from off-site locations to the south are entirely obstructed by existing development and terrain, including the original Lower San Fernando Dam. Views from residential neighborhoods located to the west are generally obstructed by the ridgeline that runs along the western perimeter of the VNC property. Views from off-site locations to the north of the VNC are generally obstructed by terrain, vegetation, and development, including elements of the Jensen Water Filtration Plant, located along the northwestern boundary of the VNC. Because the project would make relatively minor modifications to existing facilities within the interior of the VNC, no impact would occur to the visual quality of the site or its surroundings.

d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

No Impact. Implementation of the proposed project would not create a new source of light or glare that would adversely affect day or nighttime views. The project site is located within the interior of the VNC property. This property is owned by LADWP and is occupied by facilities devoted primarily to water treatment and storage, flood control, electrical power generation and distribution, and other industrial functions. The proposed project involves improvements to portions of BCEC and other flood control facilities within the VNC property. The construction phase would be temporary, and activities would only occur during

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[3] State of California Department of Transportation. *State Scenic Highway Program*. Website http://www.dot.ca.gov/hq/LandArch/scenic_highways/scenic_hwy.htm, accessed February 27, 2012.

[4] City of Los Angeles Department of City Planning, *City of Los Angeles General Plan, Transportation Element*, adopted September 8, 1999.

daylight hours (generally Monday through Friday, 7:00 a.m. to 3:30 p.m.). No temporary lights would be required during construction, and no permanent night lighting would be installed for use during project operations. Therefore, no impact would occur.

II. AGRICULTURE AND FORESTRY RESOURCES

Would the project:

a) Convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

No Impact. The project site is located in a developed urban area adjacent to a major freeway and is zoned for public facilities and open space uses. The proposed project would be located within the boundaries of the VNC property, which is owned by LADWP and is occupied by facilities devoted primarily to water treatment and storage, flood control, electrical power generation and distribution, and other industrial functions. The project site is designated as Urban and Built-Up Land on the "Important Farmland in California" map prepared by the California Resources Agency pursuant to the Farmland Mapping and Monitoring Program. Thus, no part of the proposed project would be located on or near Prime Farmland, Unique Farmland, or Farmland of Statewide Importance.[5] Additionally, the project site is not developed for farming or agricultural use. Therefore, the proposed project would not convert farmland to a non-agricultural use, and no impact to farmland would occur.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. The project site is zoned for public facilities and open space uses. Additionally, the project site is designated for public facilities and open space in the City's General Plan and the Granada Hills-Knollwood Community Plan. As discussed in Section II(a) above, the proposed project would be located within the boundaries of the VNC property, which is owned by LADWP and is occupied by facilities devoted primarily to water treatment and storage, flood control, electrical power generation and distribution, and other industrial functions. The project site is not zoned or developed for agricultural use. Furthermore, the County of Los Angeles does not offer Williamson Act contracts.[6] Therefore, the proposed project would not conflict with existing zoning or a Williamson Act contract. No impact would occur.

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5 State of California Department of Conservation, Division of Land Resource Protection, Farmland Mapping & Monitoring Program, *Important Farmland in California, 2008* map. Website: ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/statewide/2008/fmmp2008_08_11.pdf, accessed October 12, 2011.

6 State of California Department of Conservation, Division of Land Resource Protection, Williamson Act Program – Basic Contract Provisions. Website: http://www.conservation.ca.gov/dlrp/lca/basic_contract_provisions, accessed October 12, 2011.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

No Impact. The project site is zoned for public facilities and open space uses, and is designated as open space and public facilities in the General Plan and the Community Plan. No portion of the project site is zoned for or developed as forest land or timberland as defined in Public Resources Code Section 12220(g) and Government Code Section 4526, respectively.[7] Therefore, the proposed project would not conflict with existing zoning for or cause a rezoning of forest or timberland. No impact would occur.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. The project site is zoned for public facilities and open space uses, and is designated as open space and public facilities in the General Plan and the Community Plan. As discussed above, the proposed improvements would occur within the boundaries of the VNC property, which is owned by LADWP and is occupied by facilities devoted primarily to water treatment and storage, flood control, electrical power generation and distribution, and other industrial functions. No portion of the project site is zoned or developed for a forest land use.[8] Furthermore, the area surrounding the VNC property is developed with single family residences and commercial uses, and the I-5 Freeway forms the eastern boundary of the VNC property. No forest lands exist within or adjacent to the project site. The nearest forest lands are located in the Angeles National Forest, approximately 3 miles north of the project site, and these lands would not be affected by implementation of the proposed project. Therefore, the proposed project would not result in the loss of forest land or conversion of forest land to non-forest use. No impact would occur.

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

No Impact. The project site and adjacent properties are designated as "Urban and Built-Up Land;" no portion of the project site or surrounding area is identified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance.[9] Additionally, no forest lands exist on or adjacent to the project site. As previously discussed, the area surrounding the project site is completely developed, and the nearest forest lands are located approximately three miles north of the VNC. The proposed project involves improvements to portions of the existing BCEC and other flood control facilities within the VNC that would not alter their basic function. Therefore, the proposed project would not change the existing

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7 City of Los Angeles Zoning Information and Map Access System (ZIMAS). Website: http://zimas.lacity.org/, accessed October 12, 2011.

8 Ibid.

9 State of California Department of Conservation, Division of Land Resource Protection, Farmland Mapping & Monitoring Program, *Important Farmland in California, 2008* map. Website: ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/statewide/2008/fmmp2008_08_11.pdf, accessed October 12, 2011.

environment in a way that would result in the conversion of Farmland to non-agricultural use or forest land to non-forest use. No impact would occur.

III. AIR QUALITY

Would the project:

a) Conflict with or obstruct implementation of the applicable air quality plan (e.g., the SCAQMD Plan or Congestion Management Plan)?

Less Than Significant Impact. The SCAQMD and the Southern California Association of Governments (SCAG) have responsibility for preparing an Air Quality Management Plan, which implements federal Clean Air Act and California Clean Air Act requirements and details goals, policies, and programs for improving air quality in the South Coast Air Basin. The 2007 Air Quality Management Plan was adopted by the SCAQMD Governing Board on June 1, 2007, and the California Air Resources Board (CARB) on September 27, 2007. The purpose of the 2007 Air Quality Management Plan for the South Coast Air Basin is to set forth a comprehensive program that will lead the region into compliance with federal 8-hour ozone (O_3) and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) air quality standards.

According to the SCAQMD, there are two key indicators of AQMP consistency: 1) whether the project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the Air Quality Management Plan; and 2) whether the project will not exceed the assumptions in the Air Quality Management Plan based on the year of project build out and phase.[10] The first consistency criterion refers to violations of the California Ambient Air Quality Standards. One measure to determine whether the proposed project would cause or contribute to a violation of an air quality standard would be based on the estimated Carbon Monoxide (CO) concentrations at intersections that would be affected by the proposed project. The amount of vehicle trips during post-construction facility operations would be similar to the existing conditions. Also, the 2007 Air Quality management Plan and the 2007 South Coast Air Basin State Implementation Plan demonstrates attainment of the federal $PM_{2.5}$ standard in the South Coast Air Basin by 2014, and attainment of the federal 8-hour O_3 standard by 2023. As a result of state and local control strategies, the South Coast Air Basin has not exceeded the federal CO standard since 2002. Therefore, the project would comply with Consistency Criterion No. 1.

The second consistency criterion requires that the proposed project not exceed the assumptions in the Air Quality Management Plan. A project is consistent with the Air Quality Management Plan if it is consistent with the population, housing, and employment assumptions that were used in the development of the Air Quality Management Plan. The proposed project does not include a residential component, and therefore, would not increase population or housing in the area. In addition, the project would not increase employment since upon completion of

[10] SCAQMD, *The CEQA Air Quality Handbook,* 1993.

construction of the storm water improvements, the project area would return to existing conditions. As such, the proposed project is considered to be consistent with growth assumptions included in the Air Quality Management Plan, and it would comply with Consistency Criterion No. 2.

Therefore, the proposed project would not conflict with or obstruct implementation of the applicable air quality management plan. The impact would be less than significant.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Less Than Significant Impact With Mitigation Incorporated. The proposed project could violate an air quality standard or contribute substantially to an existing or projected air quality violation. The project site is located within the Los Angeles County portion of the South Coast Air Basin, which is designated a non-attainment area for O_3, particulate matter smaller than or equal to 10 microns in diameter (PM_{10}), and $PM_{2.5}$. The SCAQMD maintains an extensive air quality monitoring network to measure criteria pollutant concentrations throughout South Coast Air Basin.

Construction of the proposed project has the potential to create air quality impacts through the use of heavy-duty construction equipment, truck delivery and haul trips, and vehicle trips generated by construction workers traveling to and from the project site. Fugitive dust emissions would primarily result from site preparation (e.g., grading and excavation) activities. Nitrogen oxide (NO_X) emissions would primarily result from the use of construction equipment. The assessment of construction air quality impacts considers each of these potential sources. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation and, for dust, the prevailing weather conditions.

It is mandatory for all construction projects in the South Coast Air Basin to comply with SCAQMD Rule 403 for Fugitive Dust. As discussed in Section 1.7 above, Specific Rule 403 control requirements include, but are not limited to, applying water in sufficient quantities to prevent the generation of visible dust plumes, applying soil binders to uncovered areas, reestablishing ground cover as quickly as possible, utilizing a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the project site, and maintaining effective cover over exposed areas. Compliance with Rule 403 would reduce regional $PM_{2.5}$ and PM_{10} emissions associated with construction activities by approximately 61 percent in accordance with SCAQMD guidance.

Table 1 shows the maximum daily emissions associated with each construction year (see also Appendix B). As indicated in the table, maximum daily NO_X emissions would exceed the SCAQMD regional significance threshold. Therefore, the proposed project would result in a significant impact related to regional construction emissions without the implementation of appropriate mitigation measures.

Table 1 Regional Construction Emissions – Unmitigated

Construction Year	Pounds Per Day					
	VOC	**NO_X**	**CO**	**SO_X**	**$PM_{2.5}$**	**PM_{10}**
Year 2012[a]	17	138	68	<1	13	22
Year 2013[b]	16	129	69	<1	15	29
Year 2014[c]	14	104	62	<1	8	19
Year 2015[d]	9	67	41	<1	3	3
Maximum Regional Total	17	138	69	<1	15	29
Significance Threshold	*75*	*100*	*550*	*150*	*55*	*150*
Exceed Threshold?	No	Yes	No	No	No	No

[a] Maximum daily emissions would occur in November 2012.
[b] Maximum daily VOC. NO_X, and CO emissions would occur in December 2013 and maximum daily $PM_{2.5}$ and PM_{10} emissions would occur in October 2013.
[c] Maximum daily emissions would occur in October 2014.
[d] Maximum daily emissions would occur in May 2015.
Source: Terry A. Hayes and Associates, 2012.

Implementation of mitigation measure AQ-1 would reduce NO_X emissions from construction equipment by at least 40 percent, and mitigation measure AQ-2 would reduce all pollutant emissions by approximately 5 percent. Implementation of mitigation measures AQ-3 and AQ-4, although difficult to quantify, would also reduce NO_X emissions. The mitigation measures would reduce maximum 2012 NO_X emissions from 138 to 94 pounds per day. Maximum 2013 NO_X emissions would be reduced from 129 to 88 pounds per day. The mitigated emissions would be less than the SCAQMD significance thresholds of 100 pounds per day. With implementation of these mitigation measures, the regional air quality impact would be less than significant, and construction activities would not violate an air quality standard.

The proposed project would require no post-construction increase in personnel, equipment operations, or truck deliveries at the VNC. Operational activities following completion of construction of the proposed project would be the same as current levels. Therefore, no impact to regional operational emissions would occur.

Mitigation Measures

AQ-1 The construction contractor shall utilize a diesel oxidation catalyst capable of reducing NO_X emissions by at least 40 percent on heavy-duty construction equipment, including bulldozers wheeled loaders, compactors, excavators, materials processing units, graders, and concrete crushers.

AQ-2 Equipment and vehicle engines shall be maintained in good condition and in proper tune per manufacturers' specifications.

AQ-3 Electricity shall be utilized from power supply sources rather than temporary gasoline or diesel power generators, as feasible.

AQ-4 Heavy-duty trucks shall be prohibited from idling in excess of five minutes, both on and off site.

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Less Than Significant Impact With Mitigation Incorporated. The proposed project could potentially result in a cumulatively considerable net increase of a criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard. The project site and the whole of the Los Angeles metropolitan area are located within the South Coast Air Basin, which is characterized by relatively poor air quality. The South Coast Air Basin is currently classified as a federal and state nonattainment area for O_3, PM_{10}, and PM_{25} and a federal attainment/maintenance area for CO. It is classified as a state attainment area for CO, and it currently meets the federal and state standards for nitrogen dioxide, sulfur dioxide, and lead.

As discussed in Section 111(b) above, construction activities associated with implementation of the proposed project would result in increases in air pollutant emissions, which individually or cumulatively, would exceed established thresholds for NO_x. However, with implementation of mitigation measures AQ-1 through AQ-4, NO_x emissions would be reduced to a less than significant level.

The proposed project would require no post-construction increase in personnel, equipment operations, or truck deliveries at the VNC. Operational activities following completion of construction of the proposed project would be the same as current levels. Therefore, no impact to a cumulatively considerable net increase in emissions during operations would occur.

d) Expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact. Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. CARB has identified the following groups who are most likely to be affected by air pollution: children less than 14 years of age, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. According to the SCAQMD, sensitive receptors include residences, schools, playgrounds, child care centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes.

Sensitive receptors near the project site include single-family residences located to the west and the Granada Hills Youth Recreation Center located to the northwest (see Appendix B). These sensitive receptors represent the nearest sensitive land uses with the potential to be impacted by the proposed project. Additional sensitive receptors are located farther from the project site in the surrounding community and would be less impacted by air emissions than the above sensitive receptors.

Construction activity would generate on-site pollutant emissions associated with equipment exhaust and fugitive dust. Table 2 shows the estimated localized emissions associated with each construction year. Because the threshold would be exceeded, based on SCAQMD guidance, a detailed $PM_{2.5}$ concentration assessment was completed. The AERMOD dispersion model indicated that maximum concentrations would occur at the exterior of the single-family residences along Knollbrook Drive. It was estimated that the maximum daily $PM_{2.5}$ concentration would be 6.4 micrograms per cubic meter (μg/m^3), which would be less than the $PM_{2.5}$ significance threshold of 10.4 μg/m^3. Therefore, construction activities would not exceed the localized threshold of significance, and the impact to sensitive receptors would be less than significant.

Table 2 Localized Construction Emissions

	Pounds Per Day			
Construction Year	**NO_X**	**CO**	**$PM_{2.5}$**	**PM_{10}**
Year 2012[a]	132	68	13	22
Year 2013[b]	127	68	15	29
Year 2014[c]	102	61	7	19
Year 2015[d]	66	40	3	3
Maximum Localized Total	132	68	15	29
Localized Significance Threshold	*212*	*1,537*	*8*	*35*
Exceed Threshold?	No	No	Yes	No
	Micrograms per Cubic Meter			
	NO_2	**CO**	**$PM_{2.5}$**	**PM_{10}**
Maximum Modeled Concentration	N/A	N/A	6.4	N/A
Ambient Air Quality Standard	*N/A*	*N/A*	*10.4*	*N/A*
Exceed Threshold?	N/A	N/A	No	N/A

[a] Maximum daily emissions would occur in November 2012.
[b] Maximum daily VOC. NO_X, and CO emissions would occur in December 2013 and maximum daily $PM_{2.5}$ and PM_{10} emissions would occur in October 2013.
[c] Maximum daily emissions would occur in September 2014.
[d] Maximum daily emissions would occur in May 2015.
Source: Terry A. Hayes and Associates, 2012.

The greatest potential for toxic air contaminant (TAC) emissions during construction would be diesel particulate emissions associated with heavy-duty equipment operations. The SCAQMD has not published guidance for assessing the risk from construction projects. The California Air Pollution Control Officers Association has published *Health Risk Assessments for Proposed Land Use Projects*. Page 2 of the document states that, “this guidance does not include how risk assessments for construction projects should be addressed in CEQA. As this is intended to be a ‘living document’, the risks near construction projects are expected to be included at a later time as the toxic emissions from construction activities are better quantified. State risk assessment policy is likely to change to reflect current science, and therefore this document will need modification as this occurs.”[11] Nonetheless, because regional and localized particulate matter emissions resulting from construction activities would not result in significant impacts, it is similarly anticipated that diesel particulate emissions would not result in a significant health impact. Therefore, construction of the proposed project would result in a less than significant impact to sensitive receptors related to construction TAC emissions.

[11] California Air Pollution Control Officers Association, *Health Risk Assessments for Proposed Land Use Projects,* 2009.

The proposed project operation would require no post-construction increase in personnel, equipment operations, or truck deliveries at the VNC. Operational activities would be the same as the current levels. Therefore, no air quality impact to sensitive receptors would occur during operations.

e) Create objectionable odors affecting a substantial number of people?

Less Than Significant Impact. Potential sources that may emit odors during construction activities include equipment exhaust. Odors from these sources would be localized and generally confined to the immediate area surrounding the project site. The proposed project would utilize typical construction techniques, and the odors would be typical of most construction sites and temporary in nature. Therefore, the odor impact during construction would be less than significant.

The proposed project would require no post-construction increase in personnel, equipment operations, or truck deliveries at the VNC. Operational activities would be the same as the current levels. Therefore, no odor impact would occur during operations.

IV. BIOLOGICAL RESOURCES

Would the project:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Less Than Significant Impact With Mitigation Incorporated. This section evaluates the existing biological resources at the VNC property and surrounding areas and potential impacts to those resources associated with implementation of the proposed project. Information in this section was gathered through literature review, examination of available databases, and field reconnaissance. Biological surveys were conducted as part of the proposed project in 2011. Potential impacts to biological resources associated with the proposed project were determined from the results presented in the Biological Survey Report (see Appendix C). In addition, a Biological Resources Assessment was prepared in support of the unimplemented Van Norman Complex Water Quality Improvement Project.[12]

Sensitive plants include those listed as threatened or endangered, proposed for listing, or candidates for listing by the U.S. Fish and Wildlife Service (USFWS) and/or California Department of Fish and Game (CDFG) or those listed by the California Native Plant Society (CNPS). Sensitive wildlife species are those listed as threatened or endangered, proposed for listing, or candidates for listing by the USFWS and/or CDFG, or considered special status by CDFG. Sensitive habitats

[12] Michael Brandman Associates 2010 (February 18). *Biological Resources Assessment: Van Norman Complex Property, Van Norman Complex Water Quality Improvement Project, City of Los Angeles, Los Angeles County, California*. Prepared for LADWP.

are those that are regulated by USFWS, U.S. Army Corps of Engineers, and/or those considered sensitive by the CDFG.

The VNC generally consists of rolling terrain and is largely occupied by facilities devoted primarily to water treatment and storage, flood control, electrical power generation and distribution, and other industrial functions. Most of the approximately 1,340-acre property has been disturbed by previous development and continuing site operations. However, remnants of the property, including along the west side of Los Angeles Reservoir in the area of the proposed project are relatively undisturbed. Literature reviews were conducted to determine sensitive plant species, animal species, and vegetation communities with the potential to occur in the project site based upon its geographic proximity to reported occurrences. The California Natural Diversity DataBase (CNDDB) RareFind 3 program and the CNPS *Inventory of Rare and Endangered Plants* were reviewed for any information on known occurrences of sensitive species and communities within a 10-mile radius of the project site; it included the San Fernando, Oat Mountain, Simi Valley East, San Fernando, Mint Canyon, Agua Dulce, Newhall, Canoga Park, Calabasas, Sunland, Burbank, and Van Nuys USGS 7.5-minute topographic quadrangle maps.[13,14] The CNDDB GIS database was also used together with ArcGIS software, to confirm the locations of CNDDB records.[15] Based on the above literature review, 16 sensitive wildlife species, 28 sensitive plant species, and 9 sensitive plant communities were identified as having the potential to occur in the vicinity (i.e., within 10 miles) of the VNC. Sensitive status, general habitat requirements, and habitat presence or absence within the project site for the species identified during the literature review are provided in Appendix C. In addition to the literature review, field reconnaissance surveys of the entire VNC were conducted in 2009, and areas to be disturbed during construction of the proposed project were surveyed on April 28 and October 7, 2011.

Sensitive Plants

Of the 16 sensitive plant species identified in the CNDDB search, 4 have been determined to have some likelihood to occur within the VNC based on habitat requirements, including the following: Nevin’s barberry (*Berberis nevinii*), slender mariposa-lily (*Calochortus clavatus* var. *gracilis*), San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*), and Davidson’s bush-mallow (*Malacothamnus davidsonii*). Focused surveys for these four species were conducted in spring 2009 in suitable habitat areas during their known blooming periods. Based on the surveys, it was determined that these species did not

[13] California Department of Fish and Game. 2011 (April). RareFind: California Department of Fish and Game Natural Diversity Database (Version 3.1.0). California Department of Fish and Game, Biogeographic Data Branch.

[14] California Native Plant Society. 2011. Inventory of Rare and Endangered Plants (online edition, v7-11). California Native Plant Society. Sacramento, CA. Website http://www.cnps.org/inventory, accessed October 2011.

[15] California Department of Fish and Game. 2011. California Department of Fish and Game Natural Diversity Database GIS Data for Sensitive Species Occurrences for California in Polygon Format. Website http://www.dfg.ca.gov/biogeodata/cnddb/rf_ftpinfo.asp, October 2011.

occur within the area of potential impact.[16] In addition, none of these or other special status species were detected during 2011 surveys.

Sensitive Wildlife Species

Of the 28 sensitive wildlife species identified in the CNDDB search, two special status wildlife species, coastal California gnatcatcher and least Bell's vireo, to have some likelihood to occur within the VNC.[17]

The coastal California gnatcatcher is listed as a federally threatened species and California species of special concern. It is a species with restricted habitat requirements, being an obligate resident of coastal sage scrub habitats that are dominated by coastal sage scrub and generally occur below 750 feet in elevation in coastal regions and below 1,500 feet inland.[18] Suitable habitat for coastal California gnatcatcher occurs within the northern and western portion of the VNC. Protocol presence/absence surveys for coastal California gnatcatcher were conducted in April and May 2009 in coastal sage scrub habitat with potential to be affected by the proposed project. The survey findings concluded that no coastal California gnatcatchers occurred within the VNC and was presumed to be absent.[19]

The least Bell's vireo is a state and federally endangered migratory bird that nests within low, dense riparian growth along water or along dry parts of intermittent streams. Suitable habitat for least Bell's vireo occurs within the southern cottonwood-willow riparian forest and southern willow scrub portions of the VNC. The species was previously recorded as occurring within Bull Creek on the northern portion of the VNC, most likely within the portion mapped as southern cottonwood-willow riparian forest. The riparian scrub plant community on the project site is too open and sparse to be considered suitable habitat for the species. Furthermore, the species was not observed during any of the surveys conducted in 2009 or 2011 and is presumed to be absent.[20]

Sensitive Vegetation Communities

Three of the 9 sensitive vegetation communities identified by the CNDDB occur on the project site: southern cottonwood-willow riparian forest, (southern) riparian scrub, and southern willow scrub (see map in Appendix C).

Southern cottonwood-willow riparian forest is characterized by a tall, open, broad-leafed winter-deciduous riparian forest typically dominated by mature

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16 Michael Brandman Associates 2010 (February 18). *Biological Resources Assessment: Van Norman Complex Property, Van Norman Complex Water Quality Improvement Project, City of Los Angeles, Los Angeles County, California*. Prepared for LADWP.

17 California Department of Fish and Game. 2011d (April). RareFind: California Department of Fish and Game Natural Diversity Database (Version 3.1.0). California Department of Fish and Game, Biogeographic Data Branch.

18 Atwood, J.L., and J. Bolsinger. 1992 (Spring). "Elevational Distribution of California Gnatcatchers in the United States." Journal of Field Ornithology, 63 (2):159-168.

19 Michael Brandman Associates 2010 (February 18). *Biological Resources Assessment: Van Norman Complex Property, Van Norman Complex Water Quality Improvement Project, City of Los Angeles, Los Angeles County, California*. Prepared for LADWP.

20 Ibid.

Fremont cottonwood (*Populus fremontii*), black cottonwood (*Populus trichocarpa*), Goodding's willow (*Salix gooddingii*), and other developed emergent willow species. These communities are associated with sub-irrigated and frequently overflowed lands along rivers and streams. Three stands of southern cottonwood-willow riparian forest occur within the VNC. The first is located along the northwestern boundary and is associated with Bull Creek. The second stand is located in an isolated basin just north of Los Angeles Reservoir. The third area comprises the riparian area south of Los Angeles Reservoir in the Lower San Fernando Storm Water Detention Basin. Habitat quality of the southern cottonwood-willow riparian forest on site is considered moderate.

Riparian scrub habitat is characterized as disturbed areas with scattered or emergent, native riparian shrubs. The habitat is an upland-riparian transitional area that is generally associated with an adjacent water feature. The riparian scrub community within the VNC is associated with heavy soil disturbance or soil compaction. This community within the VNC is located adjacent to the riparian area within the Lower San Fernando Storm Water Detention Basin and within and adjacent to Bull Creek in the northern part of the property. A small stand of riparian scrub also occurs within the upland non-native grassland area along the western boundary of the VNC; however, this is not associated with any drainage or water feature. All the stands contain sparse vegetation, but the dominant plant species present is mulefat *(Baccharis salicifolia)*. Sparse occurrences of willow (*Salix* sp.) saplings were also observed within the stand along Bull Creek. The habitat quality of riparian scrub areas is low due to the sparse, disturbed nature of the community.

Southern willow scrub communities are characterized by dense, broad-leafed, winter-deciduous riparian thickets of vegetation, and are dominated by several species of willow tree. Southern willow scrub is typically found on loose, sandy, or fine gravelly alluvium deposits near stream channels during flood flows. Stands of southern willow scrub are scattered throughout the northern portion of the VNC. The most continuous stand is associated with Bull Creek and is located along the northwestern boundary of the VNC. The habitat quality of the most continuous stand of southern willow scrub along Bull Creek is moderate, despite its limited size. The other, scattered stands of southern willow scrub comprise very poor quality habitat as a result of their small size and the proximity of regular disturbances.

Coastal sage scrub is also found within the VNC. Coastal sage scrub habitat is defined by a sparse to dense arrangement of low-growing, drought-deciduous, and evergreen shrubs. This community is dominated by native shrubs averaging 2 to 3 feet in height, and is characterized by an herbaceous understory typically consisting of non-native grasses and forbs. Because of its function as valuable wildlife habitat for both common and special-status plant and animal species, and because of its declining quantity in the state, coastal sage scrub is generally considered to be of special status by CDFG. The coastal sage scrub plant community occurs in moderately large stands throughout the VNC. Most of the stands are well established and exhibit dense shrub cover. These stands include those located due south of Los Angeles Reservoir, and the stands located along the western and the southern boundaries of the VNC. The smaller stands of coastal sage scrub located north and east of Los Angeles Reservoir are sparse and heavily disturbed. The stands of coastal sage scrub along the western and the southern VNC boundaries provide relatively good quality habitat for wildlife species common to this habitat. The stands comprised predominantly of brittlebush *(Encilia farinosa)* provide a lower quality habitat to many wildlife species as a result of the limited plant diversity present. The sparse stands of coastal sage scrub east and north of Los Angeles Reservoir provide the lowest quality of habitat due to the frequency of disturbances and the dominant presence of ruderal plant species.

As discussed above, the project site contains several natural habitats suitable for some sensitive plant species. However, directed survey results for sensitive plant species were negative in 2009.[21] Therefore, the potential to impact sensitive plant species is considered low, and construction of the proposed project would not impact sensitive plant species. Focused protocol-level surveys for coastal California gnatcatcher were conducted in 2009.[22] No coastal California gnatcatcher was observed or detected during any of the surveys. Least Bell's vireo was not observed during 2009 or 2011 surveys. Therefore, the potential to impact sensitive wildlife species is considered low.

The VNC does contain sensitive vegetation communities and coastal sage scrub. Construction of the proposed project would require disturbance of the slopes west of BCEC, which currently contain coastal sage scrub. Installation of the spillway where Bull Creek meets BCEC and raising of the dike structure would require disturbance of small areas of (southern) riparian scrub and southern willow scrub. Construction of the new BCEC diversion structure would require disturbance of small areas of coastal sage scrub and southern cottonwood-willow riparian forest. These activities would result in the direct removal of sensitive vegetation communities. The impact would be significant, and implementation of mitigation measure BR-1 is required to reduce the level of impact to less than significant.

Indirect impacts to native vegetation could also occur, including fugitive dust deposition on native vegetation during construction, soil compaction, and increased soil erosion. These indirect temporary impacts would be significant, and implementation of mitigation measure BR-2 is required to reduce the level of impact to less than significant.

The VNC contains suitable conditions to support nesting migratory native bird species protected under the Migratory Bird Treaty Act. Significant indirect impacts to these species could occur during the nesting/breeding bird season. These temporary, direct impacts would be significant, and implementation of mitigation measure BR-3 is required to reduce the level of impact to less than significant.

[21] Ibid.
[22] Ibid.

Mitigation Measures

BR-1 Prior to commencement of proposed project construction, a qualified restoration ecologist shall prepare a formal restoration plan to implement the replanting of coastal sage scrub, (southern) riparian scrub, southern willow scrub, and southern cottonwood-willow riparian forest areas disturbed during project construction. Impacts shall be mitigated at a ratio of 1:1. These areas shall be replanted in areas near or adjacent to the existing plant communities. Implementation of the restoration plan shall occur within one year of completion of construction. A three-year maintenance and monitoring program shall be conducted to ensure that native plant cover is achieved and aggressive nonnative species do not out-compete the native species.

BR-2 Prior to the start of construction, to minimize incidental impacts to adjacent vegetation, the construction contractor shall place construction fencing (chain link, silt fencing, or other fencing as appropriate) along the construction limits of work. The City of Los Angeles Department of Water and Power shall be responsible for hiring a qualified biologist to inspect the fencing upon installation.

BR-3 Project-related activities, such as vegetation clearance, that would be likely to have the potential to disturb suitable bird nesting habitat shall be prohibited from February 15 through September 15 unless a qualified biologist surveys the construction area prior to disturbance to confirm the absence of active nests. Disturbance shall be defined as any activity that physically removes and/or damages vegetation or habitat. Surveys shall be conducted weekly, beginning no earlier than 30 days and ending no later than 3 days prior to the commencement of disturbance. If an active nest is discovered, a buffer area shall be demarcated with flagging or fencing to avoid disturbance of nesting birds. Once a flagged nest is determined to be no longer active, the biological monitor shall remove all flagging, and construction activities may proceed in the area.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Less Than Significant Impact With Mitigation Incorporated. As discussed in Section IV(a) above, proposed project construction would result in disturbance to riparian areas, specifically (southern) riparian southern willow scrub and southern cottonwood-willow riparian forest. Additionally, proposed project construction would result in the disturbance of coastal sage scrub communities. The impact would be significant, and implementation of mitigation measures BR-1 and BR-2 are required to reduce the level of impact to less than significant.

c) **Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?**

Less Than Significant Impact With Mitigation Incorporated. The VNC contains jurisdictional waterways, including the naturalized portion of Bull Creek located in the northern part of the VNC. There is also a potential wetland area located within the southwestern part of the Lower San Fernando Storm Water Detention Basin. As part of the proposed project, construction activities would be confined to the channelized concrete portions of BCEC and the dike structure north of the concrete channel. Some construction activity would occur along the upland edge of the Lower San Fernando Storm Water Detention Basin, but no work is proposed within the wetland portion. Additionally, no changes to the naturalized Bull Creek (north of BCEC) are planned as part of the proposed project. Construction of the proposed project would not have any direct effects on the drainage that traverses the project area. However, as discussed in Section IV(a) above, indirect impacts to waterways could occur during construction. Implementation of mitigation measure BR-4 is required to reduce the level of impact to less than significant.

Mitigation Measures

BR-4 Best management practices shall be employed during construction to assure that no discharge of debris, soil, sand, construction waste, cement or concrete washings, asphalt, paint, oil, or other harmful substances occurs in any potential nearby drainages, waterways, or other water bodies. None of these materials shall be placed where they may run off into drainages, waterways, or other water bodies. Clean-up of spills shall begin immediately. Stationary heavy equipment such as motors, generators, and welders shall not be placed in potential drainages, waterways or other water bodies, and they shall have suitable containment to handle a spill or leak.

d) **Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery/breeding sites?**

Less Than Significant Impact With Mitigation Incorporated. In an urban context, a wildlife migration corridor can be defined as a linear landscape feature of sufficient width and buffer to allow animal movement between two comparatively undisturbed habitat fragments, or between a habitat fragment and some vital resources, thereby encouraging population growth and diversity. A viable wildlife migration corridor consists of more than a path between fragmented habitats. A wildlife migration corridor must also include adequate vegetative cover and food sources for transient species as well as resident populations of less mobile animals to survive. They must be extensive enough to allow for large animals to pass relatively undetected, be free of obstacles, and lack any other distraction that may hinder wildlife passage such as lights or noise.

The project site is bordered to the west, east, and south by expansive, continuous tracts of development. Due to significant levels of disturbances from existing land uses and complete perimeter fencing, the likelihood of the VNC to be used as a regional wildlife corridor is low. Areas within the project site, however, may contain areas of habitat for wildlife species. While the VNC does not act as part of a major contiguous linkage between two or more large areas of open space, the project site provides suitable nesting habitat for migratory and resident bird populations.

As discussed in Section IV(a) above, the VNC contains vegetation communities that are suitable for use by migratory birds. Should removal of vegetation occur during the breeding season for migratory non-game native bird species (February 15 through September 15), construction activity would conflict with the Migratory Bird Treaty Act. Implementation of mitigation measure BR-3 is required to reduce the level of impact to less than significant.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (e.g., oak trees or California walnut woodlands)?

No Impact. The proposed project would not conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. Although construction would require removal of vegetation, including some trees, none of these trees are under the protection of the City of Los Angeles Tree Protection Ordinance.[23] No impact to protected trees would occur.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact. The proposed project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. The project site is not within any Significant Ecological Areas or designated Critical Habitat. No regional habitat conservation plans or Natural Community Conservation Plans have been adopted that apply to the VNC.[24] No impact would occur.

V. CULTURAL RESOURCES

Would the project:

a) Cause a substantial adverse change in the significance of a historical resource as defined in California Code of Regulations Section 15064.5?

Less Than Significant Impact. The proposed project would not cause an adverse change in the significance of a historical resource. An archival records search of the project area was conducted at the South Central Coastal Information Center at California State University, Fullerton, on April 5, 2011 (see Appendix D, Cultural Resources Assessment). The focus of the research was on

23 City of Los Angeles Municipal Code, Section 17.02.
24 County of Los Angeles, *Draft General Plan, Conservation & Open Space, Proposed Significant Ecological Areas Map*, 2007.

the identification of previously recorded historic resources within or adjacent to the project area. The record search involved review of historical maps, previously recorded historic sites, building inventories and reports. The record search revealed that no previously recorded historic properties (such as National Register of Historic Places or California Register of Historic Resources eligible properties) are located within or adjacent to the VNC. Pedestrian surveys of the project area were also conducted on April 28 and October 7, 2011, to record any potentially eligible historic resources that might be affected by the proposed project.

BCEC was constructed in 1940 and was operational the following year. It was constructed to protect the Upper San Fernando and Lower San Fernando Reservoirs from silting, contamination, and water discoloration caused by storm runoff from the surrounding drainage area. In the 1960s, additions were made to BCEC in the form of a diversion structure and flow-through channel at the Lower Debris Basin to provide better flood control for the Upper and Lower San Fernando Reservoirs. Because BCEC was determined to be historic in age (older than 45 years), it was evaluated for eligibility for listing on the California Register of Historic Resources.

For BCEC to be considered eligible under CEQA, it must meet one or more of the criteria for listing on the California Register of Historic Resources (Public Resources Code Section 5024.1; California Code of Regulations, Title 14, Section 4852). A resource is considered significant it: 1) is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage; 2) is associated with the lives of persons important in our past; 3) embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or 4) has yielded, or may be likely to yield, information important in prehistory or history. BCEC was evaluated against these eligibility criteria and was not found to be eligible for listing as a historic resource on the California Register of Historic Resources.

BCEC did not demonstrate sufficient importance to be associated with significant events (Criterion 1). BCEC does not have a special association with an important person's life or is not closely associated with an important person (Criterion 2). BCEC is not an innovative design of a significant method of construction or a bold engineering achievement (Criterion 3). Criterion 4 is usually reserved for archaeological sites. Since BCEC has been fully researched and there is not further information potential for BCEC, it is not considered eligible under Criterion 4. Based on this evaluation, BCEC was not found to be eligible for listing as a historic resource, and the impact to historical resources, as defined in CEQA Guidelines Section 15064.5, would be less than significant.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to California Code of Regulations Section 15064.5?

Less Than Significant Impact. An archival records search for archaeological resources of the project area was conducted at South Central Coast Information Center at California State University, Fullerton, on April 5, 2011 (see Appendix

D). The research focused on the identification of previously recorded archaeological resources within a 0.5-mile radius of the project area. The records search indicated that a total of 11 cultural resources have been previously recorded within the study radius. Of the 11 resources, 10 are prehistoric sites, and one resource has both prehistoric and historic components. None of the aforementioned resources occur within the area of disturbance for the proposed project improvements.

The 10 prehistoric resources and one multi-component site (CA-LAN-475, CA-LAN-490, CA-LAN-491, CA-LAN-492, CA-LAN-493, CA-LAN-629, CA-LAN-642, CA-LAN-643, CA-LAN-644, CA-LAN-645, and CA-LAN-646) are located less than 0.25-miles from BCEC, 10 to the east and one (CA-LAN-646) to the southwest of the project site. After the Sylmar earthquake of 1971 badly damaged Lower Van Norman Reservoir, the 11 sites were recorded during surveys of the drained reservoir and during excavation for the construction of Los Angeles Reservoir. Many of the prehistoric archaeological sites recorded within the VNC are characterized as temporary habitation sites. Flaked stone tools and debitage are common at these sites, as well as shell and faunal remains (CA-LAN-475, CA-LAN-490, CA-LAN-491, CA-LAN-492, CA-LAN-493, CA-LAN-642, CA-LAN-643, CA-LAN-644, and CA-LAN-645). Archaeological testing of these sites conducted in the 1970s demonstrated evidence of native occupation spanning back 5,000 to 6,000 years ago and continuing into the Mission Era. Site CA-LAN-629 was a human burial feature located less than 0.25-miles directly east of the project site. This burial has been removed. Site CA-LAN-646 is a prehistoric site located southeast of the southern portion of the project area. This site is listed on the California Register of Historic Resources and includes prehistoric artifacts and a possible historic burial. It is believed this site has been preserved in place.

Recently, additional resources have been found during construction monitoring within the VNC and included three sites: VNCS 1 consisted of isolated prehistoric artifacts recorded as a single prehistoric site; VNCS 2 includes a prehistoric and historic archaeological site; and VNCS 2-1 is a historic refuse deposit. Site VNCS 1 is located within 0.25-miles to the east of the project site and the remaining two sites are located within 0.5-miles to the southeast of the project area.

In addition to archival research, pedestrian surveys of the project area were conducted on April 28 and October 7, 2011, to determine the presence of any archaeological resources that might be impacted by the proposed project. No archaeological resources were observed during the survey.

A Native American contact program was conducted to determine if the project area may contain sacred lands. A letter was prepared and mailed to the Native American Heritage Commission requesting that a Sacred Lands File check be conducted for the proposed project and that contact information be provided for Native American groups or individuals that may have concerns about cultural resources in the project area. The Sacred Lands File search did not identify any Native American cultural resources within 0.5-mile radius of the project area.

Although no archaeological resources have been previously recorded within the project area itself, it is possible that subsurface archaeological resources may be present. Further, ground disturbing activities in previously undisturbed soils undertaken within the VNC are governed by the Permanent (Q) Qualified Conditions of City Plan Case No. 90-0596, which reads, "all subsurface excavation work in the VNC requires observation by archaeological and Native American Monitors." This stipulation is due to the discoveries of human remains and archaeological sites previously documented within the VNC, as discussed above. In addition, in the event that previously unknown archaeological resources are encountered during construction, CEQA Guidelines Section 15064.5(f) requires all construction activity in the area of the find cease until the discovery can be evaluated by a qualified archaeologist. Therefore, compliance with the Permanent Qualified (Q) Conditions and CEQA Guidelines Section 15064.5(f) would ensure a less than significant impact to archaeological resources.

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less Than Significant Impact. A paleontological resources assessment was conducted by Dr. Samuel McLeod, Vertebrate Paleontology Division of the Natural History Museum of Los Angeles County. While no fossil vertebrate localities have been recorded within the boundaries of the project area, there are known fossil resources located within the VNC property (see Appendix D). However, the likelihood of uncovering paleontological resources during construction of the proposed project would be low.

Surficial deposits in the entire VNC consist of younger Quaternary Alluvium, derived primarily as fluvial deposits from the drainages leading into the VNC. These deposits typically do not contain significant vertebrate fossil remains, at least in the uppermost layers. However, there are exposures of the terrestrial Plio-Pleistocene Saugus Formation, and this rock unit may also occur in the project area. Vertebrate fossils have been recovered from this formation from four nearby localities. Grading or very shallow excavations in the uppermost few feet of younger Quaternary Alluvium in the project area are unlikely to uncover significant vertebrate fossils. Although not expected to occur, deeper excavations that extend down into older Quaternary deposits including possibly the Saugus Formation could encounter fossil vertebrate remains. Therefore, in the event previously uncovered paleontological resources are encountered during project construction, the construction manager shall halt construction activities in the immediate area, in accordance with CEQA Guidelines Section 15064.5(f). LADWP shall retain a qualified paleontological monitor to make an immediate evaluation of the significance and appropriate treatment of the resource. Construction activities may continue on other parts of the construction site while evaluation and treatment of paleontological resources takes place, if necessary. Compliance with existing regulations would ensure a less than significant impact in the event that previously unknown paleontological resources are discovered during construction.

d) Disturb any human remains, including those interred outside of formal cemeteries?

Less Than Significant Impact. No formal cemeteries or other places of human internment are known to exist within the project site. No evidence of human remains was observed on the surface during site surveys within the VNC property (see Appendix D). In addition, as discussed in Section V(b) above, a Sacred Lands File search and Native American contact program were conducted for the proposed project. Human remains are not expected to be encountered during construction, and the impact would be less than significant. In the event that any human remains or related resources are discovered, such resources would be treated in accordance with state and local regulations and guidelines for disclosure, recovery, relocation, and preservation, as appropriate, including CEQA Guidelines Section 15064.5(e). If human remains are discovered, they will require evaluation by the county coroner as to the nature of the remains. If the remains are determined to be of Native American origin, the Native American Heritage Commission shall be contacted and a Most Likely Descendent identified.

VI. GEOLOGY AND SOILS

Would the project:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

Less Than Significant Impact. The proposed project would not expose people or structures to new adverse effects associated with rupture of a known earthquake fault. There are numerous known earthquake faults in the vicinity of the project site. These include the Santa Susana Fault Zone, located to the north of the VNC property, and the San Fernando Fault Zone, which extends into the VNC property, including a portion of the project site. Both of these fault zones are designated Alquist-Priolo Special Study Zone Areas.[25] Additionally, the project site is located within a City designated fault rupture study area.[26] As such, all proposed channel improvements would be designed and constructed in accordance with the latest version of the City of Los Angeles Building Code and other applicable federal, state, and local codes relative to seismic criteria. Additionally, the proposed project involves channel improvements and realignment of sections along BCEC and does not include any habitable structures. Therefore, the impact related to fault rupture would be less than significant.

[25] State of California Department of Conservation, California Geological Survey, Alquist-Priolo Earthquake Fault Zone Maps, *San Fernando Quadrangle Map*, Effective January 1, 1979. Website: http://www.quake.ca.gov/gmaps/ap/ap_maps.htm, accessed February 24, 2012.

[26] City of Los Angeles Department of City Planning, Environmental and Public Facilities Maps, *Alquist-Priolo Special Study Zones & Fault Rupture Study Areas* Map, September 1996.

ii) Strong seismic ground shaking?

Less Than Significant Impact. The project site is located within the seismically active southern California region, and like all locations within the area, is subject to strong seismic ground shaking. However, as discussed in Section VI(a)(i) above, all proposed flood control improvements would be designed and constructed in accordance with the latest version of the City of Los Angeles Building Code and other applicable federal, state, and local codes relative to seismic criteria. Additionally, the proposed project involves channel improvements and realignment of sections along BCEC and does not include any habitable structures. Therefore, the impact from strong seismic ground shaking would be less than significant.

iii) Seismic-related ground failure, including liquefaction?

Less Than Significant Impact. The project site is located within a City designated liquefiable area.[27] However, the project would be in compliance with the latest version of the City of Los Angeles Building Code and other applicable federal, state, and local codes relative to liquefaction criteria. Additionally, the proposed project involves channel improvements and realignment of sections along BCEC and does not include any habitable structures. Therefore, the impact of seismic-related ground failure, including liquefaction, would be less than significant.

iv) Landslides?

Less Than Significant Impact. The part of the VNC where BCEC would be realigned and widened is located within a City designated hillside area.[28] Some of these hillside areas have been identified as susceptible to landslides. As discussed in Section 1.6 above, to accommodate the widened and realigned portions of BCEC, some of the existing hillside west of the channel must first be cut back. This process would entail removing earth, processing the earth so it would suitable as structural fill material for channel construction, and placing it within the Lower Debris Basin to provide the support and flow elevations required for the realigned section of BCEC. Construction and grading activities could potentially increase the risk of landslides in the hillside areas. However, all construction work in areas containing slopes would be stabilized as necessary to prevent landslides. Additionally, the proposed project would comply with the requirements of the City Hillside Grading Ordinance. Compliance with existing regulations would ensure that the impact to landslides would be less than significant.

b) Result in substantial soil erosion or the loss of topsoil?

Less Than Significant Impact. Construction activities associated with the proposed project would expose soils for a limited time, allowing for possible erosion. As discussed in Section 1.6 above, the proposed project involves cutting back the hillside area west of BCEC, processing the removed earth for use as fill material, and placing it within the Lower Debris Basin to support the realigned

[27] City of Los Angeles Department of City Planning, Environmental and Public Facilities Maps, *Areas Susceptible to Liquefaction* Map, September 1996.

[28] City of Los Angeles Department of City Planning, Environmental and Public Facilities Maps, *Landslide Inventory & Hillside Areas* Map, September 1996.

section of BCEC. Any excess fill material would be stockpiled within the VNC property. All grading and site preparation would comply with all applicable provisions of Chapter IX, Division 70 of the Los Angeles Municipal Code, which addresses grading, excavation, and fill.

During construction, transport of sediments from the project site by storm water runoff and winds would be prevented through the use of appropriate Best Management Practices. As discussed in Section 1.7 above, Rule 403 dust control measures would be implemented as required by the SCAQMD. Additionally, the construction contractor would develop and implement an erosion control plan and a Storm Water Pollution Prevention Plan for construction activities, in compliance with the latest National Pollutant Discharge Elimination System requirements for storm water discharges. Implementation of the required construction Best Management Practices would ensure that soil erosion impacts would be less than significant.

No large areas of exposed soils subject to erosion would be created or affected by operation of the proposed project. Therefore, there would be no long-term impact to erosion and loss of topsoil.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Less Than Significant Impact. One of the major types of liquefaction induced ground failure is lateral spreading of mildly sloping ground. Lateral spreading involves primarily side-to-side movement of earth materials due to ground shaking, and is evidenced by near-vertical cracks to predominantly horizontal movement of the soil mass involved. As discussed in Sections VI(a)(iii) and VI(a)(iv) above, the project site is located in an area identified as being at risk for liquefaction and is designated hillside area. However, all construction work in areas containing slopes would be stabilized as necessary to prevent landslides. Additionally, the proposed project would adhere to the City's Hillside Grading Ordinance, the latest version of the City of Los Angeles Building Code, and other applicable federal, state, and local codes relative to liquefaction criteria. The proposed project does not include any habitable structures.

Subsidence is the lowering of surface elevation due to changes occurring underground, such as the extraction of large amounts of groundwater, oil, or gas. When groundwater is extracted from aquifers at a rate that exceeds the rate of replenishment, overdraft occurs, which can lead to subsidence. However, the proposed project does not involve the extraction of any groundwater, oil, or gas from the project site. Therefore, subsidence would not occur.

Collapsible soils consist of loose dry materials that collapse and compact under the addition of water or excessive loading. Collapsible soils are prevalent throughout the southwestern United States, specifically in areas of young alluvial fans. Soil collapse occurs when the land surface is saturated at depths greater than those reached by typical rain events. However, the project site is primarily underlain by young alluvium consisting of sand, silt, and clay, as well as artificial fill.[29] As discussed above, excavated soils would be processed and properly compacted so that it would suitable as structural fill material. Additionally, the proposed project would be constructed in accordance with the most current versions of applicable federal, state, and local codes related to seismic criteria. These building codes are designed to ensure safe construction. With adherence to existing regulations, the impact from unstable soils would be less than significant.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Less Than Significant Impact. Expansive soils are clay-based soils that tend to expand (increase in volume) as they absorb water and shrink (lessen in volume) as water is drawn away. If soils consist of expansive clays, foundation movement and/or damage can occur if wetting and drying of the clay does not occur uniformly across the entire area. The on-site geologic materials consist of loose to moderately dense sand, silt, and sandy clay.[30] Due to the mix of earth materials underlying the project site, these soils are not expected to be high clay bearing, and expansion potential is considered low. Additionally, any excavated soils would be processed to be suitable for use as structural fill material. Furthermore, the proposed project would be constructed in accordance with applicable federal, state, and local codes. Therefore, the proposed project would not create a substantial risk to life or property resulting from expansive soils, and the impact would be less than significant.

e) Have soils incapable of adequately supporting use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No Impact. The proposed project involves improvements to and the realignment of sections of BCEC. No septic tanks or alternative wastewater disposal systems are proposed. Therefore, no impact associated with the use of such systems would occur.

VII. GREENHOUSE GAS EMISSIONS

Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less Than Significant Impact. Greenhouse gas (GHG) emissions refer to a group of emissions that are generally believed to affect global climate conditions. The greenhouse effect compares the Earth and the atmosphere surrounding it to a greenhouse with glass panes. The glass panes in a greenhouse let heat from sunlight in and reduce the amount of heat that escapes. GHGs, such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), keep the average surface temperature of the Earth close to 60 degrees Fahrenheit. Of all the GHGs, CO_2 is the most abundant gas that contributes to climate change through fossil fuel

[29] California Department of Conservation, *Seismic Hazard Zone Report for the San Fernando 7.5-Minute Quadrangle, Los Angeles County, California*, 1998.

[30] Ibid.

combustion. The other GHGs are less abundant, but have higher global warming potential than CO_2. To account for this higher potential, emissions of other GHGs are frequently expressed in the equivalent mass of CO_2, denoted as CO_2e.

GHG emissions were estimated for equipment exhaust, truck trips, and worker commute trips during project construction (see Appendix B). As shown in Table 3, maximum GHG emissions would be 425 tons per year and would occur in April 2013. Estimated GHG emissions would be less than the 10,000 metric tons of CO_2e per year quantitative significance threshold. The impact would be less than significant.

Table 3 Annual Greenhouse Gas Emissions

Year	**Carbon Dioxide Equivalent (Metric Tons per Year)**
Year 2012	240
Year 2013	425
Year 2014	349
Year 2015	269
Maximum Annual Emissions	425
Significance Threshold	*10,000*
Exceed Threshold?	No

Source: Terry A. Hayes and Associates, 2012.

The proposed project would require no post-construction increase in personnel, equipment operations, or truck deliveries at the VNC. Operational activities would be the same as the current levels. Therefore, no impact to greenhouse gas emissions would occur during operations.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

No Impact. The proposed project would not generate substantial sources of construction and operational emissions, as shown in Table 3 above. The purpose of the proposed project is to comply with an updated EPA water quality regulation for Los Angeles Reservoir and DSOD requirements related to the integrity and safety of the VNC dams. The proposed project would not conflict with any state or local climate change policy or regulation adopted for the purpose of reducing the emissions of GHGs. No impact would occur.

VIII. HAZARDS AND HAZARDOUS MATERIALS

Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less than Significant Impact. Implementation of the proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Construction activities would be temporary in nature and would involve the limited transportation, storage, usage, and disposal of hazardous materials. Such hazardous materials could include on-site fueling/servicing of construction equipment, and the transport of fuels, lubricating fluids, and solvents. These types of materials are not acutely hazardous, and all storage, handling, and disposal of these materials are regulated by the California Department of Toxic Substances Control, EPA, the Occupational Safety & Health Administration, the Los Angeles County Fire Department, and the Los Angeles County Health Department. The transport, use, and disposal of construction-related hazardous materials would occur in conformance with applicable federal, state, and local regulations governing such activities. Therefore, the short-term construction impact would be less than significant.

Long-term operation of the proposed project would not involve the transport, storage, use, or disposal of hazardous materials. Additionally, the proposed project would not generate industrial wastes or toxic substances during operation. Therefore, project operation would not pose a significant hazard to the public or the environment. No operational impact related to the use or transport of hazardous materials would occur.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Less Than Significant Impact. The proposed project construction would not create a significant hazard to the public or the environment through the reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. As discussed in Section VII(a) above, construction activities may involve limited transport, storage, use, or disposal of some hazardous materials, such as on-site fueling/servicing of construction equipment, and the transport of fuels, lubricating fluids, and solvents. These types of materials are not acutely hazardous, and compliance with existing federal, state, and local regulations would ensure that construction impacts related to reasonably foreseeable upset and accident conditions involving the release of hazardous materials would be less than significant. No operational impact would occur.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school?

No Impact. The proposed project would be located within the interior of the VNC property. This property is owned by LADWP and is occupied by facilities devoted primarily to water treatment and storage, flood control, electrical power generation and distribution, and other industrial functions. The nearest school is located approximately 0.8 miles southwest of the VNC. Therefore, the proposed project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. No impact would occur.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

No Impact. The proposed project would be located within the boundaries of the VNC property. This property is owned by LADWP and is occupied by facilities devoted primarily to water treatment and storage, flood control, electrical power generation and distribution, and other industrial functions. The project site is not included on any hazardous waste site lists including the Department of Toxic Substances Control's EnviroStor database, the State Water Resources Control Board's GeoTracker site, the Cortese list, Superfund Site list, or other lists compiled pursuant to Section 65962.5 of the Government Code.[31,32,33,34] As such, the proposed project would not create a significant hazard to the public or the environment, and no impact would occur.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

No Impact. The proposed project is not located within 2 miles of a public airport, nor is it located within an airport land use plan. The nearest public airport/public use airport is Whiteman Airport, located approximately 7 miles southeast of the project site. Given this distance, the proposed project would not result in a safety hazard for people residing or working in the project area. No impact would occur.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

No Impact. The project site is not located within the vicinity of a private airstrip.[35] However, the VNC is the base for the LADWP helicopter fleet, and helicopters regularly take off from and land at the heliport facility located southeast of Los Angeles Reservoir. Based on the approach and departure patterns of the helicopters, the location of the existing on-site obstructions (such as transmission lines), and the location, height, and nature of the proposed BCEC realignment and improvements, the proposed project would not result in a safety hazard related to the helicopter operations for people residing or working in the project area. No impact would occur.

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[31] California Department of Toxic Substances Control, EnviroStor *Database*. Website: http://www.envirostor.dtsc.ca.gov/public/, accessed March 12, 2012.

[32] California State Water Resources Control Board, *GeoTracker Database*, Search by Map Location. Website: http://geotracker.waterboards.ca.gov/, accessed March 12, 2012.

[33] California Department of Toxic Substances Control, *DTSC's Hazardous Waste and Substances Site List – Site Cleanup (Cortese List)*. Website: http://www.dtsc.ca.gov/SiteCleanup/Cortese_List.cfm, accessed March 12, 2012.

[34] United States Environmental Protection Agency, *National Priorities List*, Search by Location. Website: http://www.epa.gov/superfund/sites/query/queryhtm/nplmapsg.htm, accessed March 12, 2012.

[35] Airnav.com, Airports search. Website: http://www.airnav.com/airports/, accessed March 13, 2012.

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

No Impact. The nearest disaster route to the project site is I-5, which is adjacent to the eastern boundary of the VNC property. The proposed project would be located entirely within the boundaries of the VNC property. Staging areas for construction would also be located within the VNC property. No temporary or permanent street closures would occur as part of the project. As such, the proposed project would not impede public access to or travel upon I-5. Additionally, as discussed in Section XVI(a) below, project-generated traffic impacts would be less than significant. Furthermore, LADWP employs an on-site Emergency Response Plan, which would be revised as required to address the proposed project construction. Therefore, no impact to emergency response plans would occur.

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

No Impact. The project site is not located within a City designated Wildfire Hazard Area or Fire Buffer Zone.[36] Therefore, the proposed project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. No impact would occur.

IX. HYDROLOGY AND WATER QUALITY

Would the project:

a) Violate any water quality standards or waste discharge requirements?

Less Than Significant Impact. The proposed project would not violate a water quality standard or waste discharge requirement. Construction activities, such as grading, would result in the disturbance of soil and temporarily increase the potential for soil erosion. Additionally, construction activities and equipment would require the on-site use and storage of fuels, lubricants, and other hydrocarbon fluids. Storm events occurring during the construction phase would have the potential to carry disturbed sediments and spilled substances from construction activities off site to nearby receiving waters.

Prior to the start of construction, the construction contractor would be required to obtain a General Construction Activity Stormwater Permit, issued by the State Water Resources Control Board. One of the conditions of the General Permit is the development and the implementation of a Storm Water Pollution Prevention Plan, which would identify structural and nonstructural Best Management Practices to be implemented during the construction phase. As discussed in Section 1.7 above, the construction contractor would also develop and implement an erosion control plan for the proposed project. Best Management Practices developed for the Stormwater Pollution Prevention Plan and the erosion control plan may include, but not be limited to, minimizing the extent of disturbed areas and duration of exposure, stabilizing and protecting disturbed areas, keeping

[36] City of Los Angeles Department of City Planning, Environmental and Public Facilities Maps, *Selected Wildfire Hazard Areas* Map, September 1996.

runoff velocities low, and retaining sediment within the construction area, as well as the use of temporary desilting basins, silt fences, gravel bag barriers, temporary soil stabilization, temporary drainage inlet protection, and diversion dikes and interceptor swales. With implementation of Best Management Practices, the proposed project would not violate any water quality standards or waste discharge requirements. Therefore, impacts on water quality from construction activities would be less than significant.

Upon completion of the proposed project, BCEC would operate as required by EPA to eliminate the potential for storm water intrusion into Los Angeles Reservoir. All storm flows would be carried within the improved BCEC, similar to existing conditions. There would be no exposed soils remaining at completion of the construction phase; therefore, there would be no potential for soil erosion or contamination. No impact to water quality would occur during project operations.

b) 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 pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

Less Than Significant Impact. No groundwater wells exist on the project site. The nearest groundwater wells are maintained by the County of Los Angeles Department of Public Works (well numbers 5928A and 4812C). These wells are located approximately 0.45 miles southwest and 0.75 miles east of the project site, respectively. The historic high groundwater levels were measured at approximately 17 feet below ground surface for well number 5928A, and approximately 117.8 feet below ground surface for well number 4821C.[37] Additionally, the proposed project does not involve any direct extraction of groundwater. However, groundwater levels are typically found to be relatively shallow in the project area.[38] As such, it is possible that groundwater may be encountered during construction activities. In the event that groundwater is encountered, dewatering would be required; however, dewatering is not expected to occur in quantities that would substantially deplete the groundwater supply. Although some new structures would be built and some demolished, the project site would remain primarily covered with permeable surfaces. Therefore, the proposed project would neither decrease the amount of stormwater entering the groundwater table through an increase in impermeable surfaces, nor deplete groundwater through extraction. The impact to groundwater supply and recharge would be less than significant.

[37] Los Angeles County Department of Public Work, Ground Water Wells Website. Website: http://gis.dpw.lacounty.gov/wells/viewer.asp, accessed March 15, 2012.
[38] California Department of Conservation. *Seismic Hazard Zone Report for the San Fernando 7.5-Minute Quadrangle, Los Angeles County, California*, 1998.

c) 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 off-site?

Less Than Significant Impact. The project site lies entirely within the boundaries of the VNC property, which is owned by LADWP and occupied by facilities devoted primarily to water treatment and storage, flood control, electrical power generation and distribution, and other industrial functions. Construction of the proposed project involves channel improvements along BCEC, including the widening of some portions and the realignment of the channel within the Lower Debris Basin. Other improvements include the construction of a new diversion channel for excess storm water flows. All drainage flows would be routed through existing storm water infrastructure at the project site until construction of the new facilities is completed. After construction, storm water flows would be channelized, similar to the current condition, and they would generally follow the same course as existing flows. The new diversion structure would direct high storm water flows into the Lower San Fernando Storm Water Detention Basin during maximum precipitation events. It would include a stilling basin structure to reduce the energy of the flow as it enters the basin, reducing the potential for erosion to a less than significant level. Construction and demolition activities would temporarily increase the potential for erosion due to grading, excavation, and stockpiling of soil materials. However, compliance with the Storm Water Pollution Prevention Plan and the erosion control plan developed for the proposed project would minimize impacts. Therefore, impacts related to erosion resulting from altered drainage patterns would be less than significant.

d) 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?

Less Than Significant Impact. The project site lies entirely within the boundaries of the VNC property, which is owned by LADWP and occupied by facilities devoted primarily to water treatment and storage, flood control, electrical power generation and distribution, and other industrial functions. Construction of the proposed project involves channel improvements along BCEC, including the widening of some portions and the realignment of the channel within the Lower Debris Basin. Other improvements include the construction of a new diversion channel for excess storm water flows. All drainage flows would be routed through existing storm water infrastructure at the project site until construction of the new facilities is completed. After construction, storm water flows would be channelized, similar to the current condition, and the project does not have the potential to increase the rate of surface runoff. During high precipitation events, the new diversion structure would direct high storm water flows into the Lower San Fernando Storm Water Detention Basin, which is large enough to accommodate the anticipated flows. As discussed in Section IX(a) above, Best Management Practices would be implemented to control runoff from the project site during construction. Therefore, no flooding is expected to occur on or off site as a result of the proposed project. The impact would be less than significant.

e) 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?

Less Than Significant Impact. Currently, normal storm water flows through BCEC and is discharged off site. The existing system is designed such that the Lower Debris Basin serves as a receptacle to receive overflow from the channel in the event that storm water flows exceed the capacity of BCEC. With implementation of the proposed project, instead of entering the Lower Debris Basin, excess storm water flows from BCEC would be directed to the Lower San Fernando Storm Water Detention Basin. Typical storm flows not exceeding the capacity of BCEC would continue to be discharged through the channel past the proposed diversion structure and off site, similar to the existing storm drainage flows. Therefore, the proposed project would not contribute runoff water exceeding the capacity of stormwater drainage systems. Additionally, Best Management Practices would be identified in the Storm Water Pollution Prevention Plan developed for the proposed project pursuant to the National Pollutant Discharge Elimination System permit requirements to control runoff from the project site during construction. The impact would be less than significant.

f) Otherwise substantially degrade water quality?

Less Than Significant Impact. Other than the sources described for construction activities (i.e., potential soil erosion and fuels for construction equipment), the proposed project does not include other potential sources of contaminants that could potentially degrade water quality. Additionally, as discussed in Section IX(a) above, a Storm Water Pollution Prevention Plan and an erosion control plan would be developed and implemented for the proposed project construction to prevent the degradation of water quality. Compliance with existing regulations would ensure less than significant impacts related to water quality.

g) 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?

No Impact. A 100-year flood is a flood defined as having a 1.0 percent chance of occurring in any given year. With the exception of Los Angeles Reservoir itself, the entire VNC property is located within an area designated as Zone X on the Federal Emergency Management Agency flood insurance rate map for the area. The Zone X designation indicates areas determined to be outside the 0.2 percent annual chance floodplain.[39] In addition, the proposed project does not include a residential component; therefore, it would not place housing within a 100-year flood hazard area. No impact would occur.

[39] Federal Emergency Management Agency, Flood Insurance Rate Maps, Search by Street Address. Website: http://msc.fema.gov/webapp/wcs/stores/servlet/FemaWelcomeView?storeId=10001&catalogId=10001&langId=-1, accessed October 17, 2011.

h) Place within a 100-year flood area structures to impede or redirect flood flows?

No Impact. With the exception of Los Angeles Reservoir, the entire VNC property is located within an area designated as Zone X on the Federal Emergency Management Agency flood insurance rate map for the area. The Zone X designation indicates areas determined to be outside the 100-year floodplain.[40] However, BCEC is not located within the areas of the VNC property at risk for a 100-year flood. Therefore, this channel and the proposed improvements would not have the potential to impede or redirect flood flows within a 100-year flood area. No impact to flooding would occur.

i) 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?

Less Than Significant Impact. The proposed project is located entirely within the boundaries of the existing VNC property. The project site is owned by LADWP and is occupied by facilities devoted primarily to water treatment and storage, flood control, electrical power generation and distribution, and other industrial functions. The Lower San Fernando Storm Water Detention Basin is located within the designated inundation area of Los Angeles Reservoir. The proposed improvements at the southern end of BCEC would be located within the designated inundation area within the Lower San Fernando Storm Water Detention Basin. Nonetheless, the Lower San Fernando Strom Water Detention Basin functions as a flood control basin to detain excessive flows and reduce the risk of flooding in areas located hydraulically down-gradient. Additionally, DSOD retains jurisdiction relative to the safety and structural integrity of several dams within the VNC, and continually monitors these dams to guard against the threat of dam failure.[41] Implementation of the proposed project is specifically intended to provide increased protection of dams under the DSOD jurisdiction and reduce the risk of flooding. Therefore, impacts related to inundation resulting from failure of a levee or dam would be less than significant.

j) Inundation by seiche, tsunami, or mudflow?

Less Than Significant Impact. Seiches are oscillations generated in enclosed bodies of water usually as a result of earthquake related ground shaking. A seiche wave has the potential to overflow the sides of a containing basin to inundate adjacent or downstream areas. The VNC property contains Los Angeles Reservoir, which is the largest enclosed drinking water reservoir within the in-City LADWP system. As such, a large earthquake has the potential to result in seiche waves within Los Angeles Reservoir. As discussed in Section IX(i) above, the Lower San Fernando Storm Water Detention Basin is located within the designated inundation area of Los Angeles Reservoir. The proposed improvements at the southern end of BCEC would be located within the designated inundation area within the Lower San Fernando Storm Water Detention Basin. Nonetheless, the Lower San Fernando Strom Water Detention

[40] City of Los Angeles Department of City Planning, Environmental and Public Facilities Maps, *100-Year & 500-Year Flood Plains* Map, September 1, 1996.

[41] California Division of Safety of Dams. Website: http://www.water.ca.gov/damsafety/FAQAnswer/index.cfm#safety, accessed October 17, 2011.

Basin functions as a flood control basin to detain excessive flows and reduce the risk of inundation in areas located hydraulically down-gradient. Additionally, implementation of the proposed project would not increase the risk of inundation due to seiche within Los Angeles Reservoir.

Tsunamis are large ocean waves caused by the sudden water displacement that results from an underwater earthquake, landslide, or volcanic eruption. Tsunamis affect low-lying areas along the coastline. The project site is located approximately 18 miles northeast of the Pacific Ocean at an elevation of approximately 1,100 feet above sea level. Additionally, the project site is not located within a designated Tsunami Hazard Area.[42]

As discussed in Section VI(a)(iv) above, a portion of BCEC realignment area would be located within a City designated hillside area. However, all slopes involved in project construction would be stabilized as necessary. Additionally, the proposed project would adhere to the City Hillside Grading Ordinance during construction.

Therefore, construction of the proposed project would not expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow. The impact would be less than significant.

X. LAND USE AND PLANNING

Would the project:

a) Physically divide an established community?

No Impact. The proposed project would not divide an established community. The proposed project site is located entirely within the boundaries of the existing VNC property. The project site is owned by LADWP and is occupied by facilities devoted primarily to water treatment and storage, flood control, electrical power generation and distribution, and other industrial functions. Construction would not occur outside of LADWP property, and no roads would be closed within the project vicinity. No separation of uses or disruption of access between land use types would occur as a result of development of the proposed project. As such, the project would not divide an established community, and no impact would occur.

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

No Impact. The proposed project site is located entirely within the boundaries of the existing VNC property. The VNC is owned by LADWP and is occupied by facilities devoted primarily to water treatment and storage, flood control, electrical power generation and distribution, and other industrial functions. The project site

[42] City of Los Angeles Department of City Planning, Environmental and Public Facilities Maps, *Inundation & Tsunami Hazard Areas* Map, September 1, 1996.

is zoned PF for public facilities uses and [Q]OS-1XL for open space uses.[43] The project site is located within the Granada Hills-Knollwood Community Plan area, and is designated for public facilities and open space uses in both the Community Plan and the General Plan.[44]

The purpose of the PF Zone is to provide regulations for the use and development of publicly owned land in order to implement the City's adopted General Plan, including the service systems element. The OS Zone allows for development of public water supply reservoirs and accessory uses that are incidental to the operation and continued maintenance of such reservoirs, provided that certain conditions are met.[45] The proposed project involves improvements to portions of BCEC and other existing flood control facilities within the VNC. The proposed improvements are consistent with the existing zoning and General Plan designations for the project site. Therefore, implementation of the proposed project would not conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect. No impact would occur.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

No Impact. The project site is located within an urbanized area and is currently occupied by facilities devoted primarily to water treatment and storage, flood control, electrical power generation and distribution, and other industrial functions. There are no adopted habitat conversation plans in the Granada Hills-Knollwood area due to its highly urbanized nature, nor is the project site located in or near any natural community conservation plan areas (refer to Section IV[f] above). Therefore, the proposed project would not conflict with any such plan. No impact would occur.

XI. MINERAL RESOURCES

Would the project:

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

No Impact. The project site is currently developed with facilities devoted primarily to water treatment and storage, flood control, electrical power generation and distribution, and other industrial functions. No classified or designated mineral deposits of regional or statewide significance are known to occur on the project site.[46] According to the State of California Department of Conservation, Division of Oil, Gas, and Geothermal Resources, one oil well

43 City of Los Angeles Zoning Information and Map Access System (ZIMAS). Website: http://zimas.lacity.org/, accessed October 13, 2011.
44 Ibid.
45 Los Angeles Municipal Code Section 12.04.09 A.
46 City of Los Angeles Department of City Planning, Environmental and Public Facilities Maps, Areas Containing Significant Mineral Deposits Map, September 1, 1996.

exists on the VNC property near the Los Angeles Reservoir.[47] However, this oil well is plugged, abandoned, and inactive, and is considered a "dry hole".[48] Additionally, should any future mineral resource be discovered on or near the project site, development of the proposed project would not preclude the mineral's extraction. Therefore, the proposed project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. No impact would occur.

b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

No Impact. The project site is not delineated as a locally-important mineral resource recovery site on any City plans.[49,50] Further, as discussed in Section XI(a) above, no active oil wells exist on the project site. Therefore, implementation of the proposed project would not result in the loss of availability of a locally-important mineral resource recovery site, and no impact would occur.

XII. NOISE

a) Exposure of persons to or generation of noise levels in excess of applicable standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less Than Significant Impact. A significant impact would occur if the proposed project would expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance or other applicable standards. The City of Los Angeles regulates noise through several sections of its municipal code. These include Section 41.40, which establishes time prohibitions on noise due to construction activity, and Section 112.05, which establishes maximum noise levels for powered equipment and powered hand tools. According to Section 41.40, no construction activity that might create loud noises in or near residential areas or buildings shall be conducted before 7:00 a.m. or after 9:00 p.m. on weekdays, before 8:00 a.m. or after 6:00 p.m. on Saturday, or at any time on Sunday or City holidays. As discussed above, the proposed project construction activities would generally occur only on weekdays from 7:00 a.m. and approximately 3:30 p.m., although work may continue beyond this time on occasion to complete a component of work that cannot be interrupted. Although not anticipated, if occasional Saturday work were required, it would not commence before 8:00 a.m., and it would cease by 6:00 p.m. No construction work would occur on Sundays or City holidays. According to Section 112.05, powered equipment and hand tools may not produce a maximum noise level exceeding 75 A-weighted decibels (dBA) at a

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47 State of California Department of Conservation, Division of Oil, Gas, and Geothermal Resources, DOGGR Online Mapping System. Website: http://maps.conservation.ca.gov/doms/doms-app.html, accessed October 17, 2011.

48 State of California Department of Conservation, Division of Oil, Gas, and Geothermal Resources, Maps, District Maps, Map No. W1-2. Website: ftp://ftp.consrv.ca.gov/pub/oil/maps/dist1/w1-2/Mapw1-2.pdf, accessed October 17, 2011.

49 City of Los Angeles Department of City Planning, Environmental and Public Facilities Maps, Oil Field & Oil Drilling Areas Map, September 1, 1996.

50 City of Los Angeles Department of City Planning, Granada Hills-Knollwood Community Plan, Adopted July 10, 1996

distance of 50 feet. However, this noise limitation does not apply where compliance is technically infeasible, including with the use of such equipment as mufflers or other noise reduction devices during the operation of equipment. In addition, the 75 dBA limit may be superseded by limits established by the federal government for various powered tools and pieces of operating equipment. Table 4 indicates these limits for the types of equipment that would be utilized on the proposed project. All equipment and tools would comply with the established federal noise limits. Therefore, the construction of the proposed project would not generate noise levels in excess of local standards.

Table 4 Construction Equipment Noise Levels

Construction Equipment	Noise Level at 50 feet (dBA, L_{eq})
Front Loader	80
Trucks	89
Jackhammers	90
Pumps	70
Generators	77
Compressors	81
Concrete Mixers	82
Concrete Pumps	83
Back Hoe	84
Tractor	88
Scraper/Grader	87

Source: EPA, Noise from Construction Equipment and Operations*, Building Equipment and Home Appliances,* PB 206717, 1917.

Furthermore, the noise generated from construction would be temporary in any given section of BCEC. The noise would also diminish substantially when transmitted over the soft surfaces between the construction site and the western boundary of the VNC, which lies approximately 170 feet from construction activities at its closest point, but usually in excess of 400 feet. Noise from construction would also be further reduced at the residential properties west of the VNC by the intervening ridgeline.

Operational Noise

Based on the nature of project facilities, operation of the proposed project would require no increase in personnel, equipment operations, or truck deliveries at the VNC. Operational activities would be the same as current levels. The proposed project would not create new sources of noise. Therefore, no operational noise impact would occur.

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Less Than Significant Impact. A significant impact would occur if the proposed project would cause excessive vibration levels. Vibration levels rarely affect human health. Instead, most people consider vibration to be an annoyance that may affect concentration or disturb sleep. In addition, high levels of vibration may damage fragile buildings.

Construction activity can result in varying degrees of vibration, depending on the equipment and methods employed. Operation of construction equipment causes vibrations that spread through the ground and diminish in strength with distance. The Federal Transit Administration has indicated that non-engineered timber and masonry buildings can be exposed to vibration levels up to 0.2 inches per second without experiencing damage. As shown in Table 5 below, use of heavy equipment (e.g., a large bulldozer) generates vibration levels of 0.089 inches per second at a distance of 25 feet. The residences nearest to the project site would be approximately 250 feet from heavy-duty equipment activity and could experience vibration levels of 0.003 inches per second. Project-related vibration levels would be well below the building damage threshold of 0.2 inches per second at any receptor locations. Therefore, the proposed project would result in a less than significant impact related to construction vibration.

Table 5 Vibration Velocities for Construction Equipment

Equipment	Peak Particle Velocity at 25 feet (Inches/Second)
Large Bulldozer	0.089
Loaded Trucks	0.076
Jackhammer	0.035

Source: Federal Transit Authority, *Transit Noise and Vibration Impact Assessment*, May 2006.

The proposed project would require no increase in personnel, equipment operations, or truck deliveries at the VNC after completion of construction. Operational activities would be the same as current levels, and there would be no change to existing vibration levels. Therefore, no vibration impact would occur during project operations.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

No Impact. A significant impact would occur if the proposed project would cause a substantial permanent increase in noise levels above existing ambient levels. As discussed in Section XII(a) above, operation of the proposed project would create no new permanent sources of noise. The proposed project would require no increase in personnel, equipment operations, or truck deliveries at the VNC after completion of construction. Operational activities would be the same as current levels. Therefore, the proposed project would not create a substantial permanent increase in noise levels above existing ambient levels. No impact would occur.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

No Impact. A significant impact would occur if the proposed project would result in a substantial temporary or periodic increase in ambient noise levels. As discussed in Section XII(a) above, operation of the proposed project would require no increase in personnel, equipment operations, or vehicle deliveries at the VNC after completion of construction. Operational activities would be the same as current levels. Therefore, the proposed project would not create a substantial temporary or periodic increase in noise levels above existing ambient levels. No impact would occur.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. A significant impact would occur if the proposed project would expose people residing or working in the project area to excessive noise levels from a public airport or public use airport. The closest airport to the project site is the Whiteman Airport, located approximately 7 miles southeast of the VNC. Airport noise from Whiteman Airport is not audible at the project site. In addition, the project site is not located within an airport land use plan. Furthermore, the project would include no occupied facilities that would expose people to excessive noise levels related to aircraft use. Therefore, no impacts related to exposing people residing or working in the project area to excessive noise levels from a public airport or public use airport would occur.

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. A significant impact would occur if the proposed project would expose people residing or working in the project area to excessive noise levels from a private airstrip. The VNC is not located within 10 miles of a private airstrip, and noise levels generated at private airports are not audible at the project site. Furthermore, the project would include no occupied facilities that would expose people to excessive noise levels related to aircraft use. Therefore, no impact related exposing people residing or working in the project area to excessive noise levels from a private airstrip would occur.

XIII. POPULATION AND HOUSING

Would the project:

a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

No Impact. The proposed project does not include any residential or commercial land uses and, therefore, would not result in a direct population increase from construction of new homes or businesses. The proposed project involves improvements to portions of BCEC and other flood control facilities within the VNC property, which would also limit contamination of the drinking water supply stored in Los Angeles Reservoir. However, the proposed project would not increase the capacity of the drinking water provided through treatment and storage at the VNC. Therefore, the proposed project would not result in indirect population growth. No impact to population growth would occur.

b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

No Impact. The VNC property is owned by LADWP and is occupied by facilities devoted primarily to water treatment and storage, flood control, electrical power generation and distribution, and other industrial functions. No residential uses currently exist on the project site and, therefore, the proposed project would not require the removal of existing housing. Neither construction nor operation of the proposed project would impact the number or availability of existing housing in the area. Furthermore, the proposed project would not necessitate the construction of replacement housing elsewhere. No impact to housing would occur.

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

No Impact. As discussed in Section XIII(b) above, there are currently no residential uses on the project site. As such, no persons would be displaced as a result of implementation of the proposed project. Construction of replacement housing would not be necessary. No impact would occur.

XIV. PUBLIC SERVICES

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

i) Fire protection?

No Impact. The LAFD Battalion 15 provides fire protection services to the communities in the northwest San Fernando Valley. Specifically, LAFD Fire Station 18, located approximately 0.75 miles west of the project site at 12050 Balboa Boulevard, serves the communities of Granada Hills and Knollwood and would be the first responding fire station serving the project site.[51]

The proposed project involves improvements to portions of BCEC and other flood control facilities, which would also limit contamination of the drinking water supply stored in Los Angeles Reservoir. There would be no increase in the capacity of the drinking water treated and stored at the VNC. Therefore, the proposed project would not generate population growth or include the building of any new habitable structures. Construction and operation of the proposed project would not require additional fire protection services or facilities. Additionally, no road closures would be required during the construction phase, as all construction activities would be contained within the VNC property. No impact to fire protection services would occur.

51 LAFD, Battalion 15. Website: http://lafd.org/batt15.htm, accessed October 19, 2011.

ii) Police protection?

No Impact. The LAPD is the local law enforcement agency responsible for providing police protection services to the project site and surrounding area. The project site is served by the Devonshire Community Police Station, located approximately 3.5 miles southwest of the project site at 10250 Etiwanda Avenue. The Devonshire Community Police Station has jurisdiction over an approximate 48-square-mile area of the San Fernando Valley, and serves the neighborhoods of Chatsworth and Northridge, as well as parts of Canoga Park, Granada Hills, and Winnetka.[52]

As previously stated, the proposed project would not generate population growth. Therefore, construction and operation of the proposed project would not require additional police protection services or facilities. Additionally, no road closures would be required during the construction phase, as all construction activities would be contained within the VNC property. No impact to police protection services would occur.

iii) Schools?

No Impact. The proposed project involves improvements to portions of BCEC and other flood control facilities within the VNC. As the proposed project does not include development of any residential uses, no increase in residential population would occur. Additionally, no housing or employment opportunities would be provided by the proposed project. Further, the proposed project would not increase the capacity of drinking water treatment and storage at the VNC; therefore, no indirect population growth would occur. No new students would be generated, and no increase in demand for local schools would result. No impact to schools would occur.

iv) Parks?

No Impact. Residential developments typically have the greatest potential to result in impacts to parks since these types of developments generate a permanent increase in residential population. As stated previously, the proposed project does not include development of any residential uses and would not generate any new permanent residents that would increase the demand for local and regional park facilities. Therefore, no impact to parks would occur.

v) Other public facilities?

No Impact. The proposed project does not include development of residential or commercial uses and would not increase the demand for other public facilities. The proposed project involves improvements to portions of BCEC and other flood control facilities, and would not increase the capacity of the drinking water treatment and storage at the VNC. Therefore, the proposed project would not result in indirect population growth, which could increase

[52] LAPD, Devonshire Community Police Station, About Devonshire. Website: http://www.lapdonline.org/devonshire_community_police_station/content_basic_view/1589, accessed October 19, 2011.

demand for other public facilities. No impact to other public facilities would occur.

XV. RECREATION

Would the project:

a) **Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?**

No Impact. The proposed project involves improvements to portions of BCEC and other flood control facilities within the VNC. Neither construction nor operation of the proposed project would generate new permanent residents that would increase the use of existing parks and recreational facilities. Therefore, substantial physical deterioration of these facilities would not occur or be accelerated with implementation of the proposed project. No impact would occur.

b) **Include recreational facilities or require construction or expansion of recreational facilities which might have an adverse physical effect on the environment?**

No Impact. The proposed project does not include development of any residential uses and, thus, would not generate new permanent residents that would increase the demand for recreational facilities. Further, the proposed project would not promote or indirectly induce new development that would require the construction or expansion of recreational facilities. Therefore, no impact would occur.

XVI. TRANSPORTATION/TRAFFIC

Would the project:

a) **Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?**

Less Than Significant Impact. This section evaluates the existing and future (cumulative) traffic conditions surrounding the VNC property and potential impacts to the study intersections associated with implementation of the proposed project. A copy of the traffic study by is included as Appendix E of this MND.

Construction

Construction of the proposed project would result in temporarily increases in traffic volumes associated with construction activities and reduced roadway capacities during brief periods of time. However, this condition would be temporary, related only to the peak period of construction of the proposed project (construction of the diversion channel and widening of a portion of BCEC north of the Lower Debris Basin). Analyses were performed to estimate the maximum trip generation that could occur during construction. Off-site trips would be generated by worker commute trips, concrete truck trips, and delivery/haul truck trips. This analysis assumes that three-quarters of the construction workers would arrive and leave the project site prior to the morning and evening traffic peak periods based on the predicted typical hours of construction from 7:00 a.m. to 3:30 p.m. Construction workers, concrete deliveries, and haul/delivery truck trips were assumed to access the site via the Sepulveda Boulevard gate just north of Roxford Street.

During the peak phase of construction for vehicle traffic (August 2014), there would be approximately 45 construction workers traveling to and from the project site. Assuming that approximately 75 percent of construction workers would arrive at the project site before the morning peak period and leave the site prior to the evening peak period, approximately 11 construction worker vehicle trips would occur during the peak traffic periods. Additional off-site worker vehicle trips may occur during the day, but would not occur during the peak traffic periods in the morning and evening and would be fewer than the total number of workers. Compared to other phases of work, a relatively high volume of truck traffic also occurs during this phase (August 2014) at approximately 24 one-way truck trips per day. These trips, however, would be distributed throughout the day such that 3 might occur each hour, including during the morning and evening peak traffic periods. In order to derive the traffic impact of these truck trips, they have been converted to passenger car equivalents (a factor of 2.5 per trip), totaling up to 8 passenger car equivalent truck trips during a peak traffic hour. Overall, a total of 19 peak hour trips (11 construction worker trips and 8 passenger car equivalent truck trips) would be anticipated in the peak hour during the peak phase of construction (August 2014). This increase in traffic would be temporary and related only to peak activity during construction.

To determine the impacts of peak construction activity on the roadway system, construction generated traffic was added to existing (2012) traffic conditions, as shown in Table 6 below.

Table 6 Existing With Project Study Intersection Level of Service

#	Intersection	Peak Hour	Existing (2012) Delay (sec) and/or V/C	LOS	Existing With Project (2012) Delay (sec) and/or V/C	LOS	Diff.	Sig. Impact ?
1	I-5 Southbound Ramps & Roxford Street[a]	AM	OVRFLW 0.822	F	OVRFLW 0.823	F	0.001	No
		PM	OVRFLW 0.660	F	OVRFLW 0.677	F	0.007	No
2	I-5 Northbound Off-Ramp & Roxford Street[a]	AM	15.0 0.566	B	15.6 0.569	C	0.6 0.003	No
		PM	16.1 0.675	C	16.3 0.675	C	0.2 0.000	No
3	I-5 Northbound Ramp/Encinitas Avenue & Roxford Street[b]	AM	0.825	D	0.825	D	0.000	No
		PM	0.667	B	0.670	B	0.003	No

[a] Unsignalized Intersection. Vehicle delay or V/C ratio is expressed in seconds and is measured on a scale of 0.0 to 100.0 or OVRFLW, which exceeds 100.0. Critical Movement Analysis methodology is used to determine the V/C ratio, which is measured on a scale of 0.000 to 1.000.

[b] Signalized Intersection. Analysis is based on the LADOT Critical Movement Analysis methodology worksheet. V/C is measured on a scale of 0.000 to 1.000.

Source: KOA Corporation, 2012.

The City of Los Angeles Department of Transportation (LADOT) has established specific thresholds for project related increases in the volume-to-capacity ratio (V/C) of signalized study intersections. The following increases in peak-hour V/C ratios are considered significant impacts:

Table 7 LADOT Significance Thresholds

Level of Service	Final V/C*	Project Related V/C Increase
C	< 0.70 – 0.80	Equal to or greater than 0.040
D	< 0.80 – 0.90	Equal to or greater than 0.020
E and F	0.90 or more	Equal to or greater than 0.010

Note: Final V/C is the V/C ratio at an intersection, considering impacts from the project, ambient and related project growth, and without proposed traffic impact mitigations.

As shown in Table 6 above, the addition of project traffic to existing (2012) conditions would not exceed the thresholds of significance established by LADOT. The project-level traffic impact during construction would be less than significant.

In addition, an analysis of cumulative traffic was conducted to determine the impacts of peak construction activity on the roadway system in the peak year of construction activity (2014). In this cumulative scenario, project traffic was added to existing traffic, traffic generated by other proposed projects in the surrounding area, and ambient (background) growth in traffic volumes. The future traffic condition with peak construction traffic generated by the proposed project is shown in Table 8 below.

Table 8 Future With Project Study Intersection Level of Service

#	Intersection	Peak Hour	Future Without Project (2014) Delay (sec) and/or V/C	LOS	Future With Project (2014) Delay (sec) and/or V/C	LOS	Diff.	Sig. Impact ?
1	I-5 Southbound Ramps & Roxford Street[a]	AM	OVRFLW 0.849	F	OVRFLW 0.850	F	0.001	No
		PM	OVRFLW 0.735	F	OVRFLW 0.742	F	0.007	No
2	I-5 Northbound Off-Ramp & Roxford Street[a]	AM	16.0 0.583	C	16.7 0.586	C	0.7 0.003	No
		PM	20.1 0.750	C	20.5 0.750	C	0.4 0.000	No
3	I-5 Northbound Ramp/Encinitas Avenue & Roxford Street[b]	AM	0.856	D	0.856	D	0.000	No
		PM	0.775	C	0.779	C	0.004	No

[a] Unsignalized Intersection. Vehicle delay or V/C ratio is expressed in seconds and is measured on a scale of 0.0 to 100.0 or OVRFLW, which exceeds 100.0. Critical Movement Analysis methodology is used to determine the V/C ratio, which is measured on a scale of 0.000 to 1.000.

[b] Signalized Intersection. Analysis is based on the LADOT Critical Movement Analysis methodology worksheet. V/C is measured on a scale of 0.000 to 1.000.

Source: KOA Corporation, 2012.

As shown in Table 8, the addition of project traffic to future (2014) conditions would not exceed the thresholds of significance established by LADOT. The cumulative construction traffic impact would be less than significant.

Operation

Operation of the proposed project would not cause any increase in traffic in relation to the existing traffic load and capacity of the street system. The proposed project would require no increase in personnel, equipment operations, or truck deliveries at the VNC. Operational activities would be the same as current levels. Therefore, no impact would occur during operations.

b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Less Than Significant Impact. The closest Congestion Management Plan (CMP) arterial monitoring intersection is located approximately 10 miles by freeway from the project site and is not within the project study area. However, both I-5 north of State Route 170 and I-210 east of Polk Avenue are CMP mainline freeway monitoring locations. As stated in Section XVI(a) above, construction of the proposed project is anticipated to generate 19 peak hour trips during peak construction activity (August 2014), including 11 worker vehicle trips and 8 passenger car equivalent truck trips. This increase in traffic would be temporary and related only to peak construction activity. Additionally, it would not contribute 150 vehicle trips per hour, in either direction, to I-5 or I-210. Therefore, construction of the proposed project would not conflict with the CMP, and the impact would be less than significant.

Operation of the proposed project would not increase the amount of daily traffic or conflict with the CMP. As stated in Section XVI(a) above, the proposed project would require no increase in personnel, equipment operations, or truck deliveries at the VNC. Operational activities would be the same as current levels. Therefore, no impact to CMP facilities would occur during operations.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

No Impact. The proposed project would not result in a change in air traffic patterns. The VNC is not located within 2 miles of a public airport or within an airport land use plan.[53,54] Construction and operation of the proposed project would not generate air traffic. Further, the proposed project would not include any high-rise structures that could act as a hazard to aircraft navigation. No impact would occur.

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

No Impact. Implementation of the proposed project would not increase hazards due to design features or incompatible uses. The proposed project involves improvements to portions of BCEC and other flood control facilities. The proposed project is located entirely within the boundaries of the VNC property. The project would not temporarily or permanently alter any existing roadways outside the VNC boundaries. No incompatible uses on public roads would occur from either the construction or operations of the project.

e) Result in inadequate emergency access?

No Impact. The proposed project would not result in inadequate emergency access. The proposed project would not hinder emergency access in the area, as no road closures are proposed as part of the project. All construction activities and staging would take place within the VNC property. No impact to emergency access would occur.

f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

No Impact. The proposed project would not conflict with adopted policies regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the safety of such facilities. Construction activities would take place entirely within the VNC property and would not require the removal or relocation of alternative transportation facilities. Once construction activities are complete in a work area, no additional employees would travel to the project site, and no new vehicle trips would be generated. Accordingly, no impact to alternative transportation would occur.

53 Thomas Bros. Maps, *The Thomas Guide of Los Angeles and Orange Counties*, 2012.
54 City of Los Angeles General Plan, Noise Element, February 3, 1999.

XVII. UTILITIES AND SERVICE SYSTEMS

Would the project:

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Less Than Significant Impact. The proposed project involves improvements to BCEC and other flood control facilities within the VNC. As discussed, a Storm Water Pollution Prevention Plan and erosion control plan would be prepared for the proposed project that would specify appropriate Best Management Practices to control runoff from the site. Additionally, any wastewater discharged by the proposed project must comply with National Pollutant Discharge Elimination System requirements. Improvements associated with the proposed project would comply with all applicable wastewater treatment requirements of the Regional Water Quality Control Board. The impact would be less than significant.

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

No Impact. The proposed project involves improvements to BCEC and other flood control facilities within the VNC. These improvements would not increase the amount of water used or wastewater generated at the project site. Thus, no new or expanded water or wastewater treatment facilities would be required due to implementation of the proposed project. No impact would occur.

c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Less Than Significant Impact. The proposed project entails the construction of new storm water drainage facilities and the expansion of existing facilities within the VNC to assure that the dams in the VNC will be adequately protected during a probable maximum precipitation event according to the current DSOD standards. The environmental effects of this work have been evaluated in the appropriate sections of the MND. As discussed, typical storm water currently flows through BCEC and is discharged off site. The existing system is designed so that the Lower Debris Basin serves as a receptacle to receive overflow from the channel in the event that storm water flows exceed the capacity of BCEC. With implementation of the proposed project, instead of entering the Lower Debris Basin, excess storm water flows from BCEC would be directed into the Lower San Fernando Storm Water Detention Basin. Typical storm flows not exceeding the capacity of BCEC would continue to be discharged through the channel past the proposed diversion structure and off site, similar to the existing storm drainage flows. Implementation of the proposed project would produce similar amounts of runoff from the site compared to existing conditions. Therefore, the proposed project would not require or result in the construction or expansion of storm water drainage facilities downstream of the VNC. The impact would be less than significant.

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

No Impact. The VNC is occupied by facilities devoted primarily to water treatment and storage, flood control, electrical power generation and distribution, and other industrial functions. The proposed project would not change the nature of the site usage. The proposed project involves improvements to BCEC and other flood control facilities within the VNC. The proposed project would not result in an increase in personnel or a change to the industrial functions or processes at the property; therefore, additional water supplies would not be needed. No impact would occur.

e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

No Impact. The VNC is occupied by facilities devoted primarily to water treatment and storage, flood control, electrical power generation and distribution, and other industrial functions. The proposed project would not change the nature of the site usage. The proposed project involves improvements to BCEC and other flood control facilities within the VNC. The proposed project would not result in an increase in personnel or a change to the industrial functions or processes at the property. Therefore, no additional demand for wastewater treatment would be created. No impact to wastewater treatment capacity would occur.

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Less Than Significant Impact. Construction activities would generate construction waste, such as demolition debris. As discussed in Section 1.7 above, the proposed project construction would incorporate source reduction techniques and recycling measures and maintain a recycling program to divert waste in accordance with the Citywide Construction and Demolition Debris Recycling Ordinance. These measures would minimize the amount of construction debris generated by the proposed project that would need to be disposed of in an area landfill. Any non-recyclable construction waste generated would be disposed of at a landfill approved to accept such materials. Operation of the proposed project would not result in an increase in personnel or a change to the industrial functions or processes at the project site. As such, the amount of solid waste would be similar to that generated under existing conditions. The impact would be less than significant.

g) Comply with federal, state, and local statutes and regulations related to solid waste?

Less Than Significant Impact. The proposed project would comply with federal, state, and local statutes and regulations related to solid waste. As discussed in Section XVII(f) above, construction debris would be recycled or disposed of according to local and regional standards. All materials would be handled and disposed of in accordance with existing local, state, and federal regulations. Compliance with existing regulations would ensure a less than significant impact.

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?

Less Than Significant Impact With Mitigation Incorporated. The VNC is primarily industrial and disturbed. However, some areas contain native vegetation. As discussed in Section IV(a) above, implementation of the proposed project is anticipated to result in some disturbance to the following sensitive vegetation communities: coastal sage scrub, (southern) riparian southern willow scrub, and southern cottonwood-willow riparian forest. The project area also contains vegetation that is suitable for use by migratory birds. In order to minimize potential impacts to sensitive habitat, the implementation of mitigation measures BR-1 through BR-4 listed in Sections IV(a) and IV(c) above would be required. With implementation of mitigation, the impact to biological resources would be less than significant.

Based on the surveys conducted by the qualified archaeologists, no archaeological sites or historic resources were observed on the project site or have been previously recorded within the proposed project area itself. However, the VNC is known to contain important archaeological sites and resources have been found during construction monitoring within the VNC. These resources included isolated prehistoric artifacts and a historic refuse deposit. Based on these recent monitoring finds and because the surrounding area contains known historic and prehistoric sites, it is possible that archaeological resources may be present within the project area. However, compliance with the Q Conditions and CEQA Guidelines Section 15064.5(f) described in Section V(b) above would ensure a less than significant impact to archaeological resources.

b) Does the project have environmental effects that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

Less Than Significant Impact with Mitigation Incorporated. As discussed in Section III(d) above, the proposed project is located within the Los Angeles County portion of the South Coast Air Basin, which is designated a non-attainment area for O_3, PM_{10}, and $PM_{2.5}$. In order to maintain attainment status of the South Coast Air Basin and comply with the State Implementation Plan, the SCAQMD has developed project-level thresholds of significance for criteria pollutants. The proposed project would generate regional construction emissions of NO_x in excess of the SCAQMD thresholds. Therefore, the impact would be cumulatively considerable. With implementation of mitigation measures AQ-1 through AQ-4, the cumulative impact would be reduced to a less than significant level.

As discussed in Section VII(a) above, GHG emissions contribute to the global condition known as the greenhouse effect. Because this is issue is by its very nature cumulative, CARB established a threshold of significance and climate reduction strategies. The proposed project would generate short-term emissions of GHGs during construction. However, these emissions would be far less than the thresholds of significance. The cumulative impact would be less than significant.

As discussed in Sections XII(c) and XII(d) above, completion of the proposed improvements to BCEC and other flood control facilities within the VNC would not result in the need for additional personnel, equipment, or vehicle trips within or to the VNC. Project operations would be the same as existing conditions. Therefore, there would be no permanent or temporary increase in ambient noise levels, and the proposed project would not result in a cumulatively considerable noise impact.

As discussed in Section XVI(a) above, the cumulative traffic analysis considered the addition of background traffic growth and other proposed projects combined with project construction traffic. However, the future traffic volumes with project traffic would not exceed LADOT's thresholds of significance, and the cumulative construction traffic impact would be less than significant. Operation of the proposed project would not result in additional employees traveling to the project site, and no new employee vehicles trips would be generated. Therefore, there would be no cumulative traffic impact during operations.

c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?

Less Than Significant With Mitigation Incorporated. The analysis presented in this document identifies potentially significant impacts for air quality. However, mitigation measures (AQ-1 through AQ-4) have been identified to reduce the impacts to a less than significant level. All other environmental effects with the potential to adversely impact humans would be less than significant. Therefore, the proposed project would not have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly.

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SECTION 4.0
LIST OF PREPARERS

LEAD AGENCY

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APPENDICES

APPENDIX A

CONSTRUCTION WORKSHEET

LARWQIP BCEC Realignment

GENERAL CONSTRUCTION SCHEDULE

20 work days per month average

				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
	Material	Quantity	Unit	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
Mobilization	N/A	1	LS																																						
Hillside Grading																																									
Clearing and grubbing	debris	25	AC																																						
Hillside grading	earth	160,000	CY																																						
Material processing	earth	160,000	CY																																						
Filling and Compaction	earth	120,000	CY																																						
Power Pole Relocation	N/A	1	LS																																						
Channel Between 20+35 to 45+88																																									
Excavate channel (from compacted fill in Lower Debris Basin)	earth	33,700	CY																																						
Hillside grading (remaining portion after power pole relocation)	earth	50,000	CY																																						
Construct new channel	concrete	4,470	CY																																						
Demolish concrete at confluence and construct confluence	concrete debris	300	CY																																						
Diversion Channel																																									
Excavate	earth	45,000	CY																																						
Construct channel	concrete	3,550	CY																																						
Construct road bridges (3)	concrete	200	CY																																						
Demolish concrete at confluence and construct confluence	concrete debris	420	CY																																						
Channel Between 0+00 to 20+35																																									
Demolish existing concrete channel	concrete debris	3,000	CY																																						
Widen and realign channel (excavation and fill)	earth	1,833	CY																																						
Construct new channel	concrete	3,600	CY																																						
Lower San Fernando Spillway																																									
Demolition	concrete debris	1,000	CY																																						
Upper San Fernando Basin low flow outlet	concrete	30	Cy																																						
Construct new spillway	concrete	2,300	CY																																						
Dike B																																									
Excavate for overflow structure and embankment raise	earth	6,600	CY																																						
Raise Dike B	earth	12,000	CY																																						
Construct parapet	concrete	260	CY																																						
Construct overflow structure	concrete	2,000	CY																																						
Rip Rap	riprap	8,620	LCY																																						
Pave access road	CMB	3,200	CY																																						
Demobilization	N/A	1	LS																																						

ON-SITE PERSONNEL (person-days)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
Hillside Grading																																						
Clearing and grubbing	120	280																																				
Hillside grading			280	280	280	280	280	280	280	280																												
Material processing			80	80	80	80	80	80	80	80																												
Filling and Compaction			160	160	160	160	160	160	160	160																												
Power Pole Relocation											320	320	320	320																								
Channel Between 20+35 to 45+88																																						
Excavate channel (from compacted fill in Lower Debris Basin)															240	320																						
Hillside grading (remaining portion after power pole relocation)															240	320	240																					
Construct new channel																	400	400	100																			
Demolish concrete at confluence and construct confluence																											40											
Diversion Channel																																						
Excavate																		360	360	360																		
Construct channel																					400	300																
Construct road bridges (3)																							400	400	400	400												
Demolish concrete at confluence and construct confluence																											40											
Channel Between 0+00 to 20+35																																						
Demolish existing concrete channel																						240	120															
Widen and realign channel (excavation and fill)																								120														
Construct new channel																									400	320												
Lower San Fernando Spillway																																						
Demolition																										120												
Upper San Fernando Basin low flow outlet																											180											
Construct new spillway																											50	400	400									
Dike B																																						
Excavate for overflow structure and embankment raise																											130											
Raise Dike B																												240	120									
Construct parapet																														240								
Construct overflow structure																															400							
Rip Rap																																260	260	260				
Pave access road																																		240	240	240	240	
Total person-days per month	**120**	**280**	**520**	**520**	**520**	**520**	**520**	**520**	**520**	**520**	**320**	**320**	**320**	**320**	**480**	**640**	**640**	**760**	**460**	**360**	**400**	**540**	**520**	**520**	**800**	**840**	**440**	**640**	**520**	**240**	**400**	**260**	**260**	**500**	**240**	**240**	**240**	**-**
Average daily field personnel	**6**	**14**	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**16**	**16**	**16**	**16**	**24**	**32**	**32**	**38**	**23**	**18**	**20**	**27**	**26**	**26**	**40**	**42**	**22**	**32**	**26**	**12**	**20**	**13**	**13**	**25**	**12**	**12**	**12**	**-**
Average daily office and supervisory personnel	**3**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**3**	**3**	**3**	**3**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**3**
Average daily personnel	**9**	**19**	**31**	**31**	**31**	**31**	**31**	**31**	**31**	**31**	**19**	**19**	**19**	**19**	**29**	**37**	**37**	**43**	**28**	**23**	**25**	**32**	**31**	**31**	**45**	**47**	**27**	**37**	**31**	**17**	**25**	**18**	**18**	**30**	**17**	**17**	**17**	**3**

OFF-SITE TRUCK TRIPS (inbound and outbound)

				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
	Truck Capacity	Quantity	Unit	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
Mobilization	N/A	1	LS	40																																					
Relocate power poles	N/A	1	LS											6	2	2	2																								
Construct new channel (20+35 to 45 + 88)	9	4,470	CY																	444	444	104																			
Construct diversion channel	9	3,550	CY																					444	344																
Construct road bridges (3)	9	200	CY																							11	11	11	11												
Construct new channel (0+00 to 20+35)	9	3,600	CY																									444	356												
Upper San Fernando Basin low flow outlet	9	30	CY																											7											
Construct new spillway	9	2,300	CY																											444	67										
Construct parapet (Dike B)	9	260	CY																														58								
Construct overflow structure (Dike B)	9	2,000	CY																															444							
Riprap (Dike B)	10	8,620	LCY																																800	800	124				
Pave access road (Dike B)	10	3,200	CY																																		208	208	208	16	
Demobilization	N/A	1	LS																																						40
Fuel trucks	N/A	1	LS	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
Total one-way truck trips per month				**60**	**20**	**20**	**20**	**20**	**20**	**20**	**20**	**20**	**20**	**26**	**22**	**22**	**22**	**20**	**20**	**464**	**464**	**124**	**20**	**464**	**364**	**31**	**31**	**476**	**387**	**471**	**87**	**20**	**78**	**464**	**820**	**820**	**352**	**228**	**228**	**36**	**40**
Average daily one-way truck trips				**3**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**2**	**2**	**2**	**2**	**1**	**1**	**24**	**24**	**7**	**1**	**24**	**19**	**2**	**2**	**24**	**20**	**24**	**5**	**1**	**4**	**24**	**41**	**41**	**18**	**12**	**12**	**2**	**2**

EQUIPMENT OPERATIONS (hours)

	Maximum Number	Max. Hrs/day ea.	Maximum Hrs/Mth	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
				Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
Bob Cat	2	8	320	80	160	320	320	320	320	320	320	320	320	80	80	80	80	320	320	320	320	320	320	320	320	320	160	320	320	320	320	320	160	320	160	160	320	160	160	160	
Bull Dozer	2	8	320	160	320	320	320	320	320	320	320	320	320					160	160	160																					
Dump Truck	10	8	1,600	400	1,200	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600					1,280	1,280	1,280	1,280	1,280	1,280	640	640	640	640	640	640	1,280	1,280	1,280	640	640	640	640	960	640	640	640	
Generator	2	8	320	80	160	320	320	320	320	320	320	320	320	160	160	160	160	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	
Water Truck	1	8	160	80	160	160	160	160	160	160	160	160	160	80	80	80	80	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	
Wheel Loader	3	8	480	120	240	480	480	480	480	480	480	480	480					480	480	480	480	480	480	480	480	480	240	480	480	480	480	480	240	480	240	240	480	240	240	240	
Compactor	2	8	320			320	320	320	320	320	320	320	320					320	320	320	320	320	320	160	160	160	160	160	160	320	320	320	160	160	160	160	160	160	160	160	
Excavator	2	8	320			320	320	320	320	320	320	320	320					320	320	160	320	320	160				160			160	160	160									
Material Processing Unit	2	8	320			320	320	320	320	320	320	320	320					160	160	160	160	160	160	80	80	80	80	80	80	160	160	160	80	80	80	80	80	80	80	80	
Auger/Pole Setter	1	8	160											80	80	80																									
Manlift	1	8	160												80	80																									
Puller/Tensioner Unit	1	8	160														80																								
Concrete pump	1	8	160											40	40	40				160	160	160		160	160			160	160	160	160	160	80	160							
Concrete breaker mounted on an excavator	2	8	320																						320	160			80	80											
Concrete crusher	1	8	160																						160	160	160		160	160											
Motor Grader	1	8	160																																		160	160	160	160	
Total hours per month				**920**	**2,240**	**4,160**	**4,160**	**4,160**	**4,160**	**4,160**	**4,160**	**4,160**	**4,160**	**440**	**520**	**520**	**400**	**3,520**	**3,520**	**3,520**	**3,520**	**3,520**	**3,200**	**2,320**	**2,800**	**2,480**	**2,080**	**2,320**	**2,560**	**3,600**	**3,360**	**3,360**	**1,840**	**2,320**	**1,760**	**1,760**	**2,640**	**1,920**	**1,920**	**1,920**	**-**
Average daily equipment units				**6**	**14**	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**3**	**4**	**4**	**3**	**22**	**22**	**22**	**22**	**22**	**20**	**15**	**18**	**16**	**13**	**15**	**16**	**23**	**21**	**21**	**12**	**15**	**11**	**11**	**17**	**12**	**12**	**12**	**-**

APPENDIX B

AIR QUALITY REPORT

VAN NORMAN COMPLEX WATER QUALITY IMPROVEMENT PROJECT AIR QUALITY IMPACT REPORT

taha
environmental planners

Prepared for

AECOM

Prepared by

TERRY A. HAYES ASSOCIATES INC.

April 10, 2012
taha 2010-093

VAN NORMAN COMPLEX WATER QUALITY IMPROVEMENT PROJECT

AIR QUALITY IMPACT REPORT

Prepared for

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April 10, 2012

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1.0 SUMMARY OF FINDINGS

Terry A. Hayes Associates Inc. has completed an air quality analysis for the proposed Van Norman Complex Water Quality Improvement Project. Key findings are listed below.

- Unmitigated nitrogen oxide (NO_X) construction emissions would exceed the applicable significance threshold. Mitigation Measures **AQ1** though **AQ4** would reduce the potential impact to less than significant.

  AQ1 The construction contractor shall utilize a diesel oxidation catalyst capable of reducing NO_X emissions by at least 40 percent on heavy-duty construction equipment including bull dozers, wheeled loaders, compactors, excavators, materials processing units, graders, and concrete crushers.

  AQ2 Equipment and vehicle engines shall be maintained in good condition and in proper tune per manufacturers' specifications.

  AQ3 Electricity shall be utilized from power supply sources rather than temporary gasoline or diesel power generators, as feasible.

  AQ4 Heavy-duty trucks shall be prohibited from idling in excess of five minutes, both on- and off-site.

- Localized construction emissions would result in a less-than-significant impact and no mitigation is required.

- Toxic air contaminant construction emissions would result in a less-than-significant impact and no mitigation measures are required.

- Construction odors would result in a less-than-significant impact and no mitigation measures are required.

- The proposed project would require no increase in personnel, equipment operations, or truck deliveries at the Van Norman Complex. Operational activities at the new facilities would be similar to the current levels. Therefore, no impacts related to operational emissions would occur.

- The proposed project would result in a less-than significant impact related to greenhouse gas emissions and no mitigation is required.

2.0 INTRODUCTION

2.1 PURPOSE

The purpose of this report is to evaluate the potential for air quality impacts of the proposed Van Norman Complex Water Quality Improvement Project. Potential air quality emissions are analyzed for construction of the proposed project. Mitigation measures for potentially significant impacts are recommended when appropriate to reduce air quality emissions.

2.2 PROJECT DESCRIPTION

The Van Norman Complex (VNC), located at 13101 Sepulveda Boulevard in the Sylmar community of the City of Los Angeles, is an integral component of the City of Los Angeles drinking water supply system. The VNC provides approximately 35 percent of the City's water supply during normal precipitation and water use years. The Los Angeles Department of Water and Power (LADWP) proposes to make improvements to Bull Creek Extension Channel (BCEC), a concrete-lined storm water conveyance and flood control facility located within the VNC property. These improvements are proposed to comply with recent revisions to water quality standards enacted by the United States Environmental Protection Agency (USEPA) and, by extension, the California Department of Public Health.

The VNC consist of two large concrete storm water channels (i.e., the East Storm Channel and the BCEC) that convey water through the property and to and from the various on-site debris and detention basins. The BCEC conveys storm water along the western side of the VNC from the Middle Debris Basin, through the Lower Debris Basin, and eventually off-site at the southwest corner of the property.

The Lower Debris Basin serves as a detention basin for excess water from BCEC in the event that storm flows exceed the capacity of the channel. During a probable maximum precipitation event as defined by the Division Safety of Dams (DSOD) and the National Weather Service, the flows from BCEC into the Lower Debris Basin could exceed the capacity of the basin. Consequently, untreated storm water would then flow into the Los Angeles Reservoir via a spillway that connects the basin to the reservoir. While such an event has never occurred, the potential for significant contamination to the drinking water supply in the Los Angeles Reservoir from storm water nonetheless exists.

In 2006, the USEPA promulgated the final Long-Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR), which aimed to limit contamination of drinking water supplies by pathogenic microorganisms potentially contained in a surface storm water runoff. To avoid such contamination in accordance with the LT2ESWTR, the proposed BCEC improvements would remove the Lower Debris Basin as a receptacle for overflow from the channel, thereby eliminating the potential for contaminated storm water to enter Los Angeles Reservoir from the basin via the interconnecting spillway. Excess storm water flows from BCEC would be rerouted downstream to a new diversion structure that would direct the water into the Lower San Fernando Storm Water Detention Basin, which has a substantially larger storage capacity than the Lower Debris Basin. Typical storm flows not exceeding the capacity of BCEC would continue to be discharged through the channel past the proposed diversion structure and off site, similar to the existing storm drainage flow.

In order to implement the above described improvements, the proposed project will consist of six primary phases of work: hillside grading, the realignment of BCEC within the Lower Debris Basin, the construction of the new diversion channel, the widening of BCEC north of the Lower Debris Basin, modifying and enlarging the existing Lower San Fernando Dam spillway structure, and increasing the height of the dike along the east side of Bull Creek (**Figure 2-1**). The following summarizes each construction phases:

- To accommodate the widening and realigning of BCEC, portions of the existing hillside west of the channel must first be cut back. This would entail removing earth, processing the earth so it is suitable as structural fill material for channel construction, and placing it within the Lower Debris Basin to provide the support and flow elevations required for the realigned section of BCEC.

- In order to bypass the Lower Debris Basin with storm flows, the section of BCEC located within the basin must be reconfigured to eliminate the diversion structures that currently direct high-water flows into the basin. Since BCEC must remain functional throughout most of the construction period, a new realigned channel would be constructed parallel to and west of the existing channel. This new channel section would be connected at either end to the existing BCEC only once the other portions of the channel reconstruction, including the downstream diversion structure and upstream channel widening, were completed.

- The new diversion structure, which would be located approximately 1,500 feet south of the southern end of the realigned portion of BCEC, would be a concrete box channel. It would include a stepped chute energy dissipation structure to reduce the energy of the storm water flow as it enters the Lower San Fernando Storm Water Detention Basin. The new diversion channel would be connected to the existing BCEC only once the other portions of the channel reconstruction, including the upstream channel realignment and channel widening, were completed.

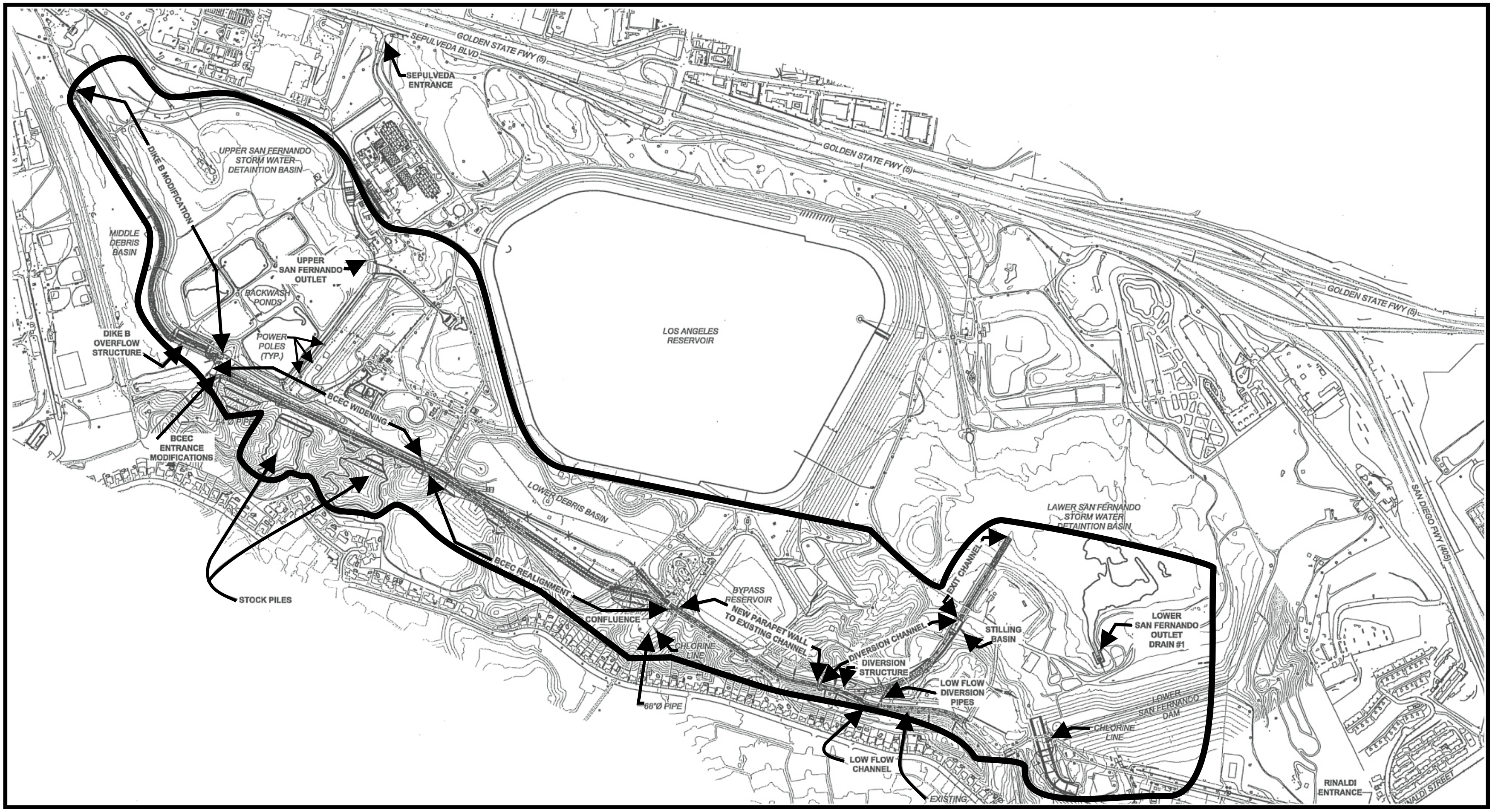
- In order to accommodate flow entering the concrete-lined portion of BCEC in accordance with updated DSOD guidelines required to adequately protect Upper San Fernando Dam and the north dam of Los Angeles Reservoir during maximum precipitation events, the segment of BCEC north of the Lower Debris Basin must be widened. However, there is no adequate space available to construct a new realigned channel parallel to the existing channel (as would be done within the Lower Debris Basin).

- To accommodate the widening of BCEC, segments of the existing channel must be demolished. Because this phase of work would effectively remove BCEC from service, it must be accomplished during the dry season, generally from May to October. Once this phase of work is completed, the connections between the reconstructed portions of BCEC (including the diversion channel) and the existing BCEC would be made. The existing BCEC within the Lower Debris Basin would be abandoned in place. Although the spillway between the Lower Debris Basin and Los Angeles Reservoir would remain physically in place, the potential for storm water to be released over the spillway would be eliminated since the BCEC overflow would be relocated downstream to the diversion channel that would direct flow to the Lower San Fernando Storm Water Detention Basin.

- In order to contain flow during a maximum precipitation event within the unchannelized portion of Bull Creek located along the northwestern perimeter of the VNC and to prevent overtopping of an existing dike structure that protects the basin at the north end of the VNC that contains the water filtration plant backwash ponds, the dike structure must be raised. This would entail a combination of raising the earth embankments and constructing a parapet wall atop the embankment. The embankment would also be protected with riprap. This work would also occur after the BCEC realignment and widening work has been completed.

The overall construction effort for the proposed project is anticipated to begin in August 2012 and is estimated to take approximately three years to complete. During the majority of this time, the existing BCEC, including the overflow into the Lower Debris Basin, must be kept functional to accommodate storm water flows until the proposed improvements are completed and are capable of properly conveying storm water and controlling flow during high precipitation events.

After the completion of the proposed project construction, the new facilities would require minimal maintenance, which would involve no increase in personnel, equipment operations, or truck deliveries at the VNC beyond current levels.



LEGEND:

Project Area

SOURCE: AECOM, 2012 and TAHA, 2012.

APPROX. SCALE

0 180 360 FEET

LADWP Van Norman Complex Water Quality Improvement
Air Quality Impact Report

taha 2010-093 AECOM

FIGURE 2-1

SITE PLAN

3.0 AIR QUALITY

This analysis examines the degree to which the proposed project may cause significant adverse changes to air quality. Both short-term construction emissions occurring from activities, such as site grading and haul truck trips, and long-term effects related to the ongoing operation of the proposed project are discussed in this section. The analysis focuses on air pollution from two perspectives: daily emissions and pollutant concentrations. “Emissions” refer to the quantity of pollutants released into the air, measured in pounds per day (ppd). “Concentrations” refer to the amount of pollutant material per volumetric unit of air, measured in parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$).

3.1 POLLUTANTS & EFFECTS

Criteria air pollutants are defined as pollutants for which the federal and State governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The federal and State standards have been set at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern include carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter 2.5 microns or less in diameter ($PM_{2.5}$), particulate matter ten microns or less in diameter (PM_{10}), and lead (Pb). These pollutants are discussed below.

Carbon Monoxide. CO is a colorless and odorless gas formed by the incomplete combustion of fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft and trains. In urban areas such as the project location, automobile exhaust accounts for the majority of CO emissions. CO is a non-reactive air pollutant that dissipates relatively quickly, so ambient CO concentrations generally follow the spacial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions, primarily wind speed, topography and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, a typical situation at dusk in urban areas between November and February.[1] The highest levels of CO typically occur during the colder months of the year when inversion conditions are more frequent. In terms of health, CO competes with oxygen, often replacing it in the blood, thus reducing the blood’s ability to transport oxygen to vital organs. The results of excess CO exposure can be dizziness, fatigue, and impairment of central nervous system functions.

Ozone. O_3 is a colorless gas that is formed in the atmosphere when reactive organic gases (ROG), which includes volatile organic compounds (VOC) and nitrogen oxides (NO_X) react in the presence of ultraviolet sunlight. O_3 is not a primary pollutant; it is a secondary pollutant formed by complex interactions of two pollutants directly emitted into the atmosphere. The primary sources of ROG and NO_X, the components of O_3, are automobile exhaust and industrial sources. Meteorology and terrain play major roles in O_3 formation. Ideal conditions occur during summer and early autumn, on days with low wind speeds or stagnant air, warm temperatures and cloudless skies. The greatest source of smog-producing gases is the automobile. Short-term exposure (lasting for a few hours) to O_3 at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity,

[1]Inversion is an atmospheric condition in which a layer of warm air traps cooler air near the surface of the earth, preventing the normal rising of surface air.

increased susceptibility to infections, inflammation of the lung tissue and some immunological changes.

Nitrogen Dioxide. NO_2, like O_3, is not directly emitted into the atmosphere but is formed by an atmospheric chemical reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO_2 are collectively referred to as NO_X and are major contributors to O_3 formation. NO_2 also contributes to the formation of PM_{10}. High concentrations of NO_2 can cause breathing difficulties and result in a brownish-red cast to the atmosphere with reduced visibility. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase of bronchitis in children (two and three years old) has also been observed at concentrations below 0.3 ppm.

Sulfur Dioxide. SO_2 is a colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels. Main sources of SO_2 are coal and oil used in power plants and industries. Generally, the highest levels of SO_2 are found near large industrial complexes. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels. SO_2 is an irritant gas that attacks the throat and lungs. It can cause acute respiratory symptoms and diminished ventilator function in children. SO_2 can also yellow plant leaves and erode iron and steel.

Particulate Matter. Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids and metals. Particulate matter also forms when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. $PM_{2.5}$ and PM_{10} represent fractions of particulate matter. Fine particulate matter, or $PM_{2.5}$, is roughly 1/28 the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g., motor vehicles, power generation and industrial facilities), residential fireplaces and wood stoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as SO_2, NO_X and VOC. Inhalable particulate matter, or PM_{10}, is about 1/7 the thickness of a human hair. Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood burning stoves and fireplaces; dust from construction, landfills and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions.

$PM_{2.5}$ and PM_{10} pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. $PM_{2.5}$ and PM_{10} can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances, such as lead, sulfates and nitrates can cause lung damage directly. These substances can be absorbed into the blood stream and cause damage elsewhere in the body. These substances can transport absorbed gases, such as chlorides or ammonium, into the lungs and cause injury. Whereas PM_{10} tends to collect in the upper portion of the respiratory system, $PM_{2.5}$ is so tiny that it can penetrate deeper into the lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle, as well as produce haze and reduce regional visibility.

Lead. Pb in the atmosphere occurs as particulate matter. Sources of lead include leaded gasoline; the manufacturers of batteries, paint, ink, ceramics, ammunition and secondary lead smelters. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phase-out of leaded gasoline reduced the overall inventory of airborne lead by nearly 95 percent. With the phase-out of leaded gasoline, secondary lead smelters, battery recycling, and manufacturing facilities have become lead-emission sources of greater concern.

Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level lead exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance, including intelligence quotient performance, psychomotor performance, reaction time and growth.

Toxic Air Contaminants. Toxic air contaminants (TACs) are generally defined as those contaminants that are known or suspected to cause serious health problems, but do not have a corresponding ambient air quality standard. TACs are also defined as an air pollutant that may increase a person’s risk of developing cancer and/or other serious health effects; however, the emission of a toxic chemical does not automatically create a health hazard. Other factors, such as the amount of the chemical; its toxicity, and how it is released into the air, the weather, and the terrain, all influence whether the emission could be hazardous to human health. TACs are emitted by a variety of industrial processes such as petroleum refining, electric utility and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust and may exist as PM_{10} and $PM_{2.5}$ or as vapors (gases). TACs include metals, other particles, gases absorbed by particles, and certain vapors from fuels and other sources.

The emission of toxic substances into the air can be damaging to human health and to the environment. Human exposure to these pollutants at sufficient concentrations and durations can result in cancer, poisoning, and rapid onset of sickness, such as nausea or difficulty in breathing. Other less measurable effects include immunological, neurological, reproductive, developmental, and respiratory problems. Pollutants deposited onto soil or into lakes and streams affect ecological systems and eventually human health through consumption of contaminated food. The carcinogenic potential of TACs is a particular public health concern because many scientists currently believe that there is no "safe" level of exposure to carcinogens. Any exposure to a carcinogen poses some risk of contracting cancer.

The public’s exposure to TACs is a significant public health issue in California. The Air Toxics “Hotspots” Information and Assessment Act is a state law requiring facilities to report emissions of TACs to air districts. The program is designated to quantify the amounts of potentially hazardous air pollutants released, the location of the release, the concentrations to which the public is exposed, and the resulting health risks.

The State Air Toxics Program (AB 2588) identified over 200 TACs, including the 188 TACs identified in the federal Clean Air Act. The Unites States Environmental Protection Agency (USEPA) has assessed this expansive list of toxics and identified 21 TACs as Mobile Source Air Toxics (MSATs). MSATs are compounds emitted from highway vehicles and nonroad equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline. USEPA also extracted a subset of these 21 MSAT compounds that it now labels as the six priority MSATs: benzene, formaldehyde, acetaldehyde, diesel particulate matter/diesel exhaust organic gases, acrolein, and 1,3-butadiene. While these six MSATs are considered the priority transportation toxics, USEPA stresses that the lists are subject to change and may be adjusted in future rules.

To date, the most comprehensive study on air toxics in the Basin is the Multiple Air Toxics Exposure Study (MATES-III), conducted by the SCAQMD. The monitoring program measured more than 30 air pollutants, including both gases and particulates. The monitoring study was accompanied by a computer modeling study in which SCAQMD estimated the risk of cancer from breathing toxic air pollution throughout the region based on emissions and weather data. MATES-III found that the average cancer risk in the region from carcinogenic air pollutants ranges from about 870 in a million to 1,400 in a million, with an average regional risk of about 1,200 in a million.

Diesel Particulate Matter. According to the 2006 California Almanac of Emissions and Air Quality, the majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being particulate matter from the exhaust of diesel-fueled engines (diesel PM). Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances.

Diesel exhaust is composed of two phases, gas and particle, and both phases contribute to the health risk. The gas phase is composed of many of the urban hazardous air pollutants, such as acetaldehyde, acrolein, benzene, 1,3-butadiene, formaldehyde and polycyclic aromatic hydrocarbons. The particle phase is also composed of many different types of particles by size or composition. Fine and ultra fine diesel particulates are of the greatest health concern, and may be composed of elemental carbon with adsorbed compounds such as organic compounds, sulfate, nitrate, metals and other trace elements. Diesel exhaust is emitted from a broad range of diesel engines; the on road diesel engines of trucks, buses and cars and the off road diesel engines that include locomotives, marine vessels and heavy duty equipment. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present.

The most common exposure to diesel PM is breathing the air that contains diesel PM. The fine and ultra-fine particles are respirable (similar to $PM_{2.5}$), which means that they can avoid many of the human respiratory system defense mechanisms and enter deeply into the lung. Exposure to diesel PM comes from both on-road and off-road engine exhaust that is either directly emitted from the engines or lingering in the atmosphere.

Diesel exhaust causes health effects from both short-term or acute exposures, and long-term chronic exposures. The type and severity of health effects depends upon several factors including the amount of chemical exposure and the duration of exposure. Individuals also react differently to different levels of exposure. There is limited information on exposure to just diesel PM but there is enough evidence to indicate that inhalation exposure to diesel exhaust causes acute and chronic health effects.

Acute exposure to diesel exhaust may cause irritation to the eyes, nose, throat and lungs, some neurological effects such as lightheadedness. Acute exposure may also elicit a cough or nausea as well as exacerbate asthma. Chronic exposure to diesel PM in experimental animal inhalation studies have shown a range of dose-dependent lung inflammation and cellular changes in the lung and immunological effects. Based upon human and laboratory studies, there is considerable evidence that diesel exhaust is a likely carcinogen. Human epidemiological studies demonstrate an association between diesel exhaust exposure and increased lung cancer rates in occupational settings.

Unlike other TACs, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. However, California Air Resources Board (CARB) has made preliminary concentration estimates based on a PM exposure method. This method uses the CARB emissions inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of diesel PM.

Diesel PM poses the greatest health risk among these ten TACs mentioned. Based on receptor modeling techniques, SCAQMD estimated that diesel PM accounts for 84 percent of the total risk in the South Coast Air Basin.

Greenhouse Gases. Greenhouse gas (GHG) emissions refer to a group of emissions that are generally believed to affect global climate conditions. Simply put, the greenhouse effect compares the Earth and the atmosphere surrounding it to a greenhouse with glass panes. The glass panes in a greenhouse let heat from sunlight in and reduce the amount of heat that escapes. GHGs, such as carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) keep the average surface temperature of the Earth close to 60 degrees Fahrenheit (°F). Without the greenhouse effect, the Earth would be a frozen globe with an average surface temperature of about 5°F.

In addition to CO_2, CH_4, and N_2O, GHGs include hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and water vapor. Of all the GHGs, CO_2 is the most abundant pollutant that contributes to climate change through fossil fuel combustion. CO_2 comprised 81 percent of the total GHG emissions in California in 2002 and non-fossil fuel CO_2 comprised 2.3 percent.[2] The other GHGs are less abundant but have higher global warming potential than CO_2. To account for this higher potential, emissions of other GHGs are frequently expressed in the equivalent mass of CO_2, denoted as CO_2e. The CO_2e of CH_4 and N_2O represented 6.4 and 6.8 percent, respectively, of the 2002 California GHG emissions. Other high global warming potential gases represented 3.5 percent of these emissions.[3] In addition, there are a number of man-made pollutants, such as CO, NO_X, non-methane VOC, and SO_2, that have indirect effects on terrestrial or solar radiation absorption by influencing the formation or destruction of other climate change emissions.

3.2 REGULATORY SETTING

Federal

United States Environmental Protection Agency. The Federal Clean Air Act (CAA) governs air quality in the United States. The USEPA is responsible for enforcing the CAA. USEPA is also responsible for establishing the National Ambient Air Quality Standards (NAAQS). NAAQS are required under the 1977 CAA and subsequent amendments. USEPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain types of locomotives. USEPA has jurisdiction over emission sources outside State waters (e.g., beyond the outer continental shelf) and establishes various emission standards, including those for vehicles sold in States other than California. Automobiles sold in California must meet stricter emission standards established by CARB.

As required by the CAA, NAAQS have been established for seven major air pollutants: CO, NO_2, O_3, $PM_{2.5}$, PM_{10}, SO_2, and Pb. The CAA requires USEPA to designate areas as attainment, nonattainment, or maintenance (previously nonattainment and currently attainment) for each criteria pollutant based on whether the NAAQS have been achieved. The federal standards are summarized in **Table 3-1**. The USEPA has classified the South Coast Air Basin as maintenance for CO and nonattainment for O_3, $PM_{2.5}$, and PM_{10}.

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[2]California Environmental Protection Agency, Climate Action Team Report to Governor Schwarzenegger and the Legislature, March 2006, p. 11.
[3]*Ibid.*

TABLE 3-1: STATE AND NATIONAL AMBIENT AIR QUALITY STANDARDS AND ATTAINMENT STATUS FOR THE SOUTH COAST AIR BASIN

Pollutant	Averaging Period	California		Federal	
		Standards	Attainment Status	Standards	Attainment Status
Ozone (O_3)	1-hour	0.09 ppm (180 µg/m^3)	Nonattainment	--	--
	8-hour	0.070 ppm (137 µg/m^3)	n/a	0.075 ppm (147 µg/m^3)	Nonattainment
Respirable Particulate Matter (PM_{10})	24-hour	50 µg/m^3	Nonattainment	150 µg/m^3	Nonattainment
	Annual Arithmetic Mean	20 µg/m^3	Nonattainment	--	--
Fine Particulate Matter ($PM_{2.5}$)	24-hour	--	--	35 µg/m^3	Nonattainment
	Annual Arithmetic Mean	12 µg/m^3	Nonattainment	15.0 µg/m^3	Nonattainment
Carbon Monoxide (CO)	8-hour	9.0 ppm (10 mg/m^3)	Attainment	9 ppm (10 mg/m^3)	Unclassified/ Attainment
	1-hour	20 ppm (23 mg/m^3)	Attainment	35 ppm (40 mg/m^3)	Unclassified/ Attainment
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	Nonattainment	53 ppb (100 µg/m^3)	Unclassified/ Attainment
	1-hour	0.18 ppm (338 µg/m^3)	Nonattainment	100 ppb (188 µg/m^3)	n/a
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	--	--	0.030 ppm (80 µg/m^3)	Attainment
	24-hour	0.04 ppm (105 µg/m^3)	Attainment	0.14 ppm (365 µg/m^3)	Attainment
	3-hour	--	--	--	--
	1-hour	0.25 ppm (655 µg/m^3)	Attainment	--	--
Lead (Pb)	30-day average	1.5 µg/m^3	Attainment	--	--
	Calendar Quarter	--	--	0.15 µg/m^3	Attainment

n/a = not available
SOURCE: CARB, *Ambient Air Quality Standards*, March 8, 2012.

State

California Air Resources Board. In addition to being subject to the requirements of CAA, air quality in California is also governed by more stringent regulations under the California Clean Air Act (CCAA). In California, the CCAA is administered by the California Air Resources Board (CARB) at the State level and by the air quality management districts and air pollution control districts at the regional and local levels. The CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for meeting the State requirements of the CAA, administering the CCAA, and establishing the California Ambient Air Quality

Standards (CAAQS). The CCAA, as amended in 1992, requires all air districts in the State to endeavor to achieve and maintain the CAAQS. CAAQS are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. CARB regulates mobile air pollution sources, such as motor vehicles. CARB is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. CARB established passenger vehicle fuel specifications, which became effective in March 1996. CARB oversees the functions of local air pollution control districts and air quality management districts, which, in turn, administer air quality activities at the regional and county levels. The State standards are summarized in **Table 3-1**.

The CCAA requires CARB to designate areas within California as either attainment or nonattainment for each criteria pollutant based on whether the CAAQS have been achieved. Under the CCAA, areas are designated as nonattainment for a pollutant if air quality data shows that a State standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events are not considered violations of a State standard and are not used as a basis for designating areas as nonattainment. Under the CCAA, the Los Angeles County portion of the Basin is designated as a nonattainment area for O_3, $PM_{2.5}$, PM_{10}, and NO_2.[4]

Toxic Air Contaminants (TACs). CARB's statewide comprehensive air toxics program was established in the early 1980's. The Toxic Air Contaminant Identification and Control Act created California's program to reduce exposure to air toxics. Under the Toxic Air Contaminant Identification and Control Act, CARB is required to use certain criteria in the prioritization for the identification and control of air toxics. In selecting substances for review, CARB must consider criteria relating to "the risk of harm to public health, amount or potential amount of emissions, manner of, and exposure to, usage of the substance in California, persistence in the atmosphere, and ambient concentrations in the community" [Health and Safety Code Section 39666(f)]. The Toxic Air Contaminant Identification and Control Act also requires CARB to use available information gathered from the Air Toxics "Hot Spots" Information and Assessment Act program to include in the prioritization of compounds.

California has established a two-step process of risk identification and risk management to address the potential health effects from air toxic substances and protect the public health of Californians. During the first step (identification), CARB and the Office of Environmental Health Hazard Assessment (OEHHA) determine if a substance should be formally identified as a TAC in California. During this process, ACRB and the OEHHA staff draft a report that serves as the basis for this determination. CARB staff assesses the potential for human exposure to a substance and the OEHHA staff evaluates the health effects. After CARB and the OEHHA staff hold several comment periods and workshops, the report is then submitted to an independent, nine-member Scientific Review Panel (SRP), who reviews the report for its scientific accuracy. If the SRP approves the report, they develop specific scientific findings which are officially submitted to CARB. CARB staff then prepares a hearing notice and draft regulation to formally identify the substance as a TAC. Based on the input from the public and the information gathered from the report, the CARB Board decides whether to identify a substance as a TAC. In 1993, the California Legislature amended the Toxic Air Contaminant Identification and Control Act by requiring CARB to identify 189 federal hazardous air pollutants as State TACs.

[4] CARB, Area Designation Maps, available at http://www.arb.ca.gov/desig/adm/adm.htm, accessed March 8, 2012.

In the second step (risk management), CARB reviews the emission sources of an identified TAC to determine if any regulatory action is necessary to reduce the risk. The analysis includes a review of controls already in place, the available technologies and associated costs for reducing emissions, and the associated risk.

The Air Toxics "Hot Spots" Information and Assessment Act (Health and Safety Code Section 44360) supplements the Toxic Air Contaminant Identification and Control Act by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks. The "Hot Spots" Act also requires facilities that pose a significant health risk to the community to reduce their risk through a risk management plan.

California's Diesel Risk Reduction Program. The CARB identified particulate emissions from diesel-fueled engines (diesel PM) TACs in August 1998. Following the identification process, the ARB was required by law to determine if there is a need for further control, which led to the risk management phase of the program.

For the risk management phase, CARB formed the Diesel Advisory Committee to assist in the development of a risk management guidance document and a risk reduction plan. With the assistance of the Advisory Committee and its subcommittees, CARB developed the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles and the Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines. The Board approved these documents on September 28, 2000, paving the way for the next step in the regulatory process: the control measure phase.

During the control measure phase, specific Statewide regulations designed to further reduce diesel PM emissions from diesel-fueled engines and vehicles have and continue to be evaluated and developed. The goal of each regulation is to make diesel engines as clean as possible by establishing state-of-the-art technology requirements or emission standards to reduce diesel PM emissions.

Local

South Coast Air Quality Management District. The 1977 Lewis Air Quality Management Act created the SCAQMD to coordinate air quality planning efforts throughout Southern California. This Act merged four county air pollution control agencies into one regional district to better address the issue of improving air quality in Southern California. Under the Act, renamed the Lewis-Presley Air Quality Management Act in 1988, the SCAQMD is the agency principally responsible for comprehensive air pollution control in the region. Specifically, the SCAQMD is responsible for monitoring air quality, as well as planning, implementing, and enforcing programs designed to attain and maintain State and federal ambient air quality standards in the district. Programs that were developed include air quality rules and regulations that regulate stationary sources, area sources, point sources, and certain mobile source emissions. The SCAQMD is also responsible for establishing stationary source permitting requirements and for ensuring that new, modified, or relocated stationary sources do not create net emission increases.

The SCAQMD monitors air quality within the project area. The SCAQMD has jurisdiction over an area of 10,743 square miles, consisting of Orange County; the non-desert portions of Los Angeles, Riverside, and San Bernardino counties; and the Riverside County portion of the Salton Sea Air Basin and Mojave Desert Air Basin. The Basin is a subregion of the SCAQMD and covers an area of 6,745 square miles. The Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. The Basin is bounded by the Pacific Ocean to the west; the San Gabriel, San Bernardino and San Jacinto mountains to the north and east; and the San Diego County line to the south (**Figure 3-1**).

Air Quality Management Plan. All areas designated as nonattainment under the CCAA are required to prepare plans showing how the area would meet the State air quality standards by its attainment dates. The Air Quality Management Plan (AQMP) is the SCAQMD plan for improving regional air quality. It addresses CAA and CCAA requirements and demonstrates attainment with State and federal ambient air quality standards. The AQMP is prepared by SCAQMD and the Southern California Association of Governments (SCAG). The AQMP provides policies and control measures that reduce emissions to attain both State and federal ambient air quality standards by their applicable deadlines. Environmental review of individual projects within the Basin must demonstrate that daily construction and operational emissions thresholds, as established by the SCAQMD, would not be exceeded. The environmental review must also demonstrate that individual projects would not increase the number or severity of existing air quality violations.

The 2007 AQMP was adopted by the SCAQMD on June 1, 2007. The 2007 AQMP proposes attainment demonstration of the federal $PM_{2.5}$ standards through a more focused control of SO_X, directly-emitted $PM_{2.5}$, and NO_X supplemented with VOC by 2015. The eight-hour ozone control strategy builds upon the $PM_{2.5}$ strategy, augmented with additional NO_X and VOC reductions to meet the standard by 2024. The 2007 AQMP also addresses several federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The 2007 AQMP is consistent with and builds upon the approaches taken in the 2003 AQMP. However, the 2007 AQMP highlights the significant amount of reductions needed and the urgent need to identify additional strategies, especially in the area of mobile sources, to meet all federal criteria pollutant standards within the time frames allowed under the CAA.

Toxic Air Contaminants. The SCAQMD has a long and successful history of reducing air toxics and criteria emissions in the South Coast Air Basin (Basin). SCAQMD has an extensive control program, including traditional and innovative rules and policies. These policies can be viewed in the SCAQMD's *Air Toxics Control Plan for the Next Ten Years* (March 2000). To date, the most comprehensive study on air toxics in the Basin is the Multiple Air Toxics Exposure Study (MATES-III), conducted by the SCAQMD. The monitoring program measured more than 30 air pollutants, including both gases and particulates. The monitoring study was accompanied by a computer modeling study in which SCAQMD estimated the risk of cancer from breathing toxic air pollution throughout the region based on emissions and weather data. MATES-III found that the cancer risk in the region from carcinogenic air pollutants ranges from about 870 in a million to 1,400 in a million, with an average regional risk of about 1,200 in a million.

An addendum to the plan was completed in March 2004 that included a status update on the implementation of the various mobile and stationary source strategies. Revised projections were based on accomplishments thus far and a new inventory was included to reflect the updated 2003 Air Quality Management Plan.

LADWP Van Norman Complex Water Quality Improvement
Air Quality Impact Report

taha 2010-093 AECOM

FIGURE 3-1

SOUTH COAST AIR BASIN

Global Climate Change

In response to growing scientific and political concern with global climate change, California adopted a series of laws to reduce emissions of GHGs into the atmosphere. Applicable regulations are provided below.

Executive Order (E.O.) S-3-05. On June 1, 2005, E.O. S-3-05 set the following GHG emission reduction targets: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels. The Executive Order establishes State GHG emission targets of 1990 levels by 2020 (the same as AB 32) and 80 percent below 1990 levels by 2050. It calls for the Secretary of California Environmental Protection Agency (Cal/EPA) to be responsible for coordination of State agencies and progress reporting. A recent California Energy Commission report concludes, however, that the primary strategies to achieve this target should be major “decarbonization” of electricity supplies and fuels, and major improvements in energy efficiency.

In response to the Executive Order, the Secretary of the Cal/EPA created the Climate Action Team (CAT). California’s CAT originated as a coordinating council organized by the Secretary for Environmental Protection. It included the Secretaries of the Natural Resources Agency, and the Department of Food and Agriculture, and the Chairs of the Air Resources Board, Energy Commission, and Public Utilities Commission. The original council was an informal collaboration between the agencies to develop potential mechanisms for reductions in GHG emissions in the State. The council was given formal recognition in E.O. S-3-05 and became the CAT.

The original mandate for the CAT was to develop proposed measures to meet the emission reduction targets set forth in the executive order. The CAT has since expanded and currently has members from 18 State agencies and departments. The CAT also has ten working groups which coordinate policies among their members. The working groups and their major areas of focus are:

- Agriculture: Focusing on opportunities for agriculture to reduce GHG emissions through efficiency improvements and alternative energy projects, while adapting agricultural systems to climate change;
- Biodiversity: Designing policies to protect species and natural habitats from the effects of climate change;
- Energy: Reducing GHG emissions through extensive energy efficiency policies and renewable energy generation;
- Forestry: Coupling GHG mitigation efforts with climate change adaptation related to forest preservation and resilience, waste to energy programs and forest offset protocols;
- Land Use and Infrastructure: Linking land use and infrastructure planning to efforts to reduce GHG from vehicles and adaptation to changing climatic conditions;
- Oceans and Coastal: Evaluating the effects sea level rise and changes in coastal storm patterns on human and natural systems in California;
- Public Health: Evaluating the effects of GHG mitigation policies on public health and adapting public health systems to cope with changing climatic conditions;
- Research: Coordinating research concerning impacts of and responses to climate change in California;
- State Government: Evaluating and implementing strategies to reduce GHG emissions resulting from State government operations; and

- Water: Reducing GHG impacts associated with the State's water systems and exploring strategies to protect water distribution and flood protection infrastructure.

The CAT is responsible for preparing reports that summarize the State's progress in reducing GHG emissions. The most recent CAT Report was published in December 2010. The CAT Report discusses mitigation and adaptation strategies, State research programs, policy development, and future efforts.

Assembly Bill 32 (AB 32). In September 2006, the State passed the California Global Warming Solutions Act of 2006, also known as AB 32, into law. AB 32 focuses on reducing GHG emissions in California, and requires the ARB to adopt rules and regulations that would achieve greenhouse gas emissions equivalent to Statewide levels in 1990 by 2020. To achieve this goal, AB 32 mandates that the CARB establish a quantified emissions cap, institute a schedule to meet the cap, implement regulations to reduce Statewide GHG emissions from stationary sources, and develop tracking, reporting, and enforcement mechanisms to ensure that reductions are achieved. Because the intent of AB 32 is to limit 2020 emissions to the equivalent of 1990, it is expected that the regulations would affect many existing sources of GHG emissions and not just new general development projects. Senate Bill (SB) 1368, a companion bill to AB 32, requires the California Public Utilities Commission and the California Energy Commission to establish GHG emission performance standards for the generation of electricity. These standards will also apply to power that is generated outside of California and imported into the State.

AB 32 charges CARB with the responsibility to monitor and regulate sources of GHG emissions in order to reduce those emissions. On June 1, 2007, CARB adopted three discrete early action measures to reduce GHG emissions. These measures involved complying with a low carbon fuel standard, reducing refrigerant loss from motor vehicle air conditioning maintenance, and increasing methane capture from landfills. On October 25, 2007, CARB tripled the set of previously approved early action measures. The approved measures include improving truck efficiency (i.e., reducing aerodynamic drag), electrifying port equipment, reducing perfluorocarbons from the semiconductor industry, reducing propellants in consumer products, promoting proper tire inflation in vehicles, and reducing sulfur hexaflouride emission from the non-electricity sector. The CARB has determined that the total Statewide aggregated GHG 1990 emissions level and 2020 emissions limit is 427 million metric tons of CO_2e. The 2020 target reductions are currently estimated to be 174 million metric tons of CO_2e.

The CARB AB 32 Scoping Plan contains the main strategies to achieve the 2020 emissions cap. The Scoping Plan was developed by the CARB with input from the CAT and proposes a comprehensive set of actions designed to reduce overall carbon emissions in California, improve the environment, reduce oil dependency, diversify energy sources, and enhance public health while creating new jobs and improving the State economy. The GHG reduction strategies contained in the Scoping Plan include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system. Key approaches for reducing greenhouse gas emissions to 1990 levels by 2020 include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a Statewide renewable electricity standard of 33 percent;

- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets; and
- Adopting and implementing measures to reduce transportation sector emissions, including California's.

CARB has also developed the GHG mandatory reporting regulation, which required reporting beginning on January 1, 2008 pursuant to requirements of AB 32. The regulations require reporting for certain types of facilities that make up the bulk of the stationary source emissions in California. The regulation language identifies major facilities as those that generate more than 25,000 metric tons of CO_2 per year. Cement plants, oil refineries, electric generating facilities/providers, co-generation facilities, and hydrogen plants and other stationary combustion sources that emit more than 25,000 metric tons of CO_2 per year, make up 94 percent of the point source CO_2 emissions in California.

CEQA Guidelines Amendments. California Senate Bill (SB) 97 required the Governor's Office of Planning and Research (OPR) to develop California Environmental Quality Act (CEQA) Guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions." The CEQA Guidelines amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in CEQA documents. Noteworthy revisions to the CEQA Guidelines include:

- Lead agencies should quantify all relevant GHG emissions and consider the full range of project features that may increase or decrease GHG emissions as compared to the existing setting;
- Consistency with the ARB Scoping Plan is not a sufficient basis to determine that a project's GHG emissions would not be cumulatively considerable;
- A lead agency may appropriately look to thresholds developed by other public agencies, including the ARB's recommended CEQA thresholds;
- To qualify as mitigation, specific measures from an existing plan must be identified and incorporated into the project. General compliance with a plan, by itself, is not mitigation;
- The effects of GHG emissions are cumulative and should be analyzed in the context of CEQA's requirements for cumulative impact analysis; and
- Given that impacts resulting from GHG emissions are cumulative, significant advantages may result from analyzing such impacts on a programmatic level. If analyzed properly, later projects may tier, incorporate by reference, or otherwise rely on the programmatic analysis.

Senate Bill 375 (SB 375). SB 375, adopted in September 30, 2008, provides a means for achieving AB 32 goals through the reduction in emissions of cars and light trucks. SB 375 requires new RTPs to include Sustainable Communities Strategies (SCSs). This legislation also allows the development of an Alternative Planning Strategy (APS) if the targets cannot be feasibly met through an SCS. The APS is not included as part of the RTP. In adopting SB 375, the Legislature expressly found that improved land use and transportation systems are needed in order to achieve the GHG emissions reduction target of AB 32. Further, the staff analysis for the bill prepared for the Senate Transportation and Housing Committee's August 29, 2008 hearing on SB 375 (hereby incorporated by reference) began with the following statement: "According to the author, this bill will help implement AB 32 by aligning planning for housing, land use, transportation and greenhouse gas emissions for the 17 MPOs in the State."

CARB Guidance. The CARB has published draft guidance for setting interim GHG significance thresholds (October 24, 2008). The guidance is the first step toward developing the recommended Statewide interim thresholds of significance for GHG emissions that may be adopted by local agencies for their own use. The guidance does not attempt to address every type of project that may be subject to CEQA, but instead focuses on common project types that are responsible for substantial GHG emissions (i.e., industrial, residential, and commercial projects). The CARB believes that thresholds in these important sectors will advance climate objectives, streamline project review, and encourage consistency and uniformity in the CEQA analysis of GHG emissions throughout the State.

SCAQMD Guidance. The SCAQMD has convened a GHG CEQA Significance Threshold Working Group to provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents. Members of the working group include government agencies implementing CEQA and representatives from various stakeholder groups that will provide input to the SCAQMD staff on developing GHG CEQA significance thresholds. On December 5, 2008, the SCAQMD Governing Board adopted the staff proposal for an interim GHG significance threshold for projects where the SCAQMD is lead agency. The SCAQMD has not adopted guidance for CEQA projects under other lead agencies.

Green LA Action Plan. The City of Los Angeles has issued guidance promoting green building to reduce GHG emissions. The goal of the Green LA Action Plan (Plan) is to reduce greenhouse gas emissions 35 percent below 1990 levels by 2030.[5] The Plan identifies objectives and actions designed to make the City a leader in confronting global climate change. The measures would reduce emissions directly from municipal facilities and operations, and create a framework to address City-wide GHG emissions. The Plan lists various focus areas in which to implement GHG reduction strategies. Focus areas listed in the Plan include energy, water, transportation, land use, waste, port, airport, and ensuring that changes to the local climate are incorporated into planning and building decisions. The Plan discusses City goals for each focus area, as follows:

Energy

- Increase the generation of renewable energy;
- Encourage the use of mass transit;
- Develop sustainable construction guidelines;
- Increase City-wide energy efficiency; and
- Promote energy conservation.

Water

- Decrease per capita water use to reduce electricity demand associated with water pumping and treatment.

Transportation

- Power the City vehicle fleet with alternative fuels; and
- Promote alternative transportation (e.g., mass transit and rideshare).

[5] City of Los Angeles, Green LA: An Action Plan to Lead the Nation in Fighting Global Warming, May 2007.

Other Goals

- Create a more livable City through land use regulations;
- Increase recycling, reducing emissions generated by activity associated with the Port of Los Angeles and regional airports;
- Create more City parks, promoting the environmental economic sector; and
- Adapt planning and building policies to incorporate climate change policy.

The City adopted an ordinance to establish a green building program in April 2008. The ordinance establishes green building requirements for projects involving 50 or more dwelling units. The Green Building Program was established to reduce the use of natural resources, create healthier living environments and minimize the negative impacts of development on local, regional, and global ecosystems. The program addresses the following five areas:

- Site: location, site planning, landscaping, storm water management, construction and demolition recycling
- Water Efficiency: efficient fixtures, wastewater reuse, and efficient irrigation
- Energy and Atmosphere: energy efficiency, and clean/renewable energy
- Materials and Resources: materials reuse, efficient building systems, and use of recycled and rapidly renewable materials
- Indoor Environmental Quality: improved indoor air quality, increased natural lighting, and thermal comfort/control

3.3 EXISTING AIR QUALITY

3.3.1 Air Pollution Climatology

The project site is located within the Los Angeles County portion of the Basin. Ambient pollution concentrations recorded in Los Angeles County are among the highest in the four counties comprising the Basin.

The Basin is in an area of high air pollution potential due to its climate and topography. The general region lies in the semi-permanent high pressure zone of the eastern Pacific, resulting in a mild climate tempered by cool sea breezes with light average wind speeds. The Basin experiences warm summers, mild winters, infrequent rainfalls, light winds, and moderate humidity. This usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The Basin is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean to the west and high mountains around the rest of its perimeter. The mountains and hills within the area contribute to the variation of rainfall, temperature, and winds throughout the region.

The Basin experiences frequent temperature inversions. Temperature typically decreases with height. However, under inversion conditions, temperature increases as altitude increases, thereby preventing air close to the ground from mixing with the air above it. As a result, air pollutants are trapped near the ground. During the summer, air quality problems are created due to the interaction between the ocean surface and the lower layer of the atmosphere. This interaction creates a moist marine layer. An upper layer of warm air mass forms over the cool marine layer, preventing air pollutants from dispersing upward. Additionally, hydrocarbons and NO_2 react under strong sunlight, creating smog. Light, daytime winds, predominantly from the west, further aggravate the condition by driving air pollutants inland, toward the mountains.

During the fall and winter, air quality problems are created due to CO and NO_2 emissions. CO concentrations are generally worse in the morning and late evening (around 10:00 p.m.). In the morning, CO levels are relatively high due to cold temperatures and the large number of cars traveling. High CO levels during the late evenings are a result of stagnant atmospheric conditions trapping CO in the area. Since CO emissions are produced almost entirely from automobiles, the highest CO concentrations in the Basin are associated with heavy traffic. NO_2 concentrations are also generally higher during fall and winter days.

3.3.2 Local Climate

The mountains and hills within the Basin contribute to the variation of rainfall, temperature, and winds throughout the region. Within the project site and its vicinity, the average wind speed, as recorded at the Reseda Wind Monitoring Station, is 1.9 miles per hour, with calm winds occurring 12.8 percent of the time. Wind in the vicinity of the project site predominately blows from the southwest.[6]

The annual average temperature in the project area is 63.7°F.[7] The project area experiences an average winter temperature of 55.0°F and an average summer temperature of 72.5°F. Total precipitation in the project area averages approximately 16.16 inches annually. Precipitation occurs mostly during the winter and relatively infrequently during the summer. Precipitation averages 9.8 inches during the winter, 4.0 inches during the spring, 2.3 inches during the fall, and less than one inch during the summer.[8]

3.3.3 Air Monitoring Data

The SCAQMD monitors air quality conditions at 38 locations throughout the Basin. The project site is located in SCAQMD's West San Fernando Valley Air Monitoring Subregion, which is served by the Reseda Monitoring Station. The Reseda Monitoring Station is located on 18330 Gault Street and is approximately 11 miles southwest of the project site (**Figure 3-2**). Historical data from the Reseda Monitoring Station were used to characterize existing conditions in the vicinity of the project area. Criteria pollutants monitored at the Reseda Monitoring Station include O_3, CO, $NO_{2,5}$, $PM_{2.5}$, and SO_2. The Reseda Monitoring Station does not monitor PM_{10} and SO_2. The most representative monitoring station that measures PM_{10} and SO_2 concentrations is the Burbank – West Palm Avenue Monitoring Station, located approximately 16 miles southeast of the project site.

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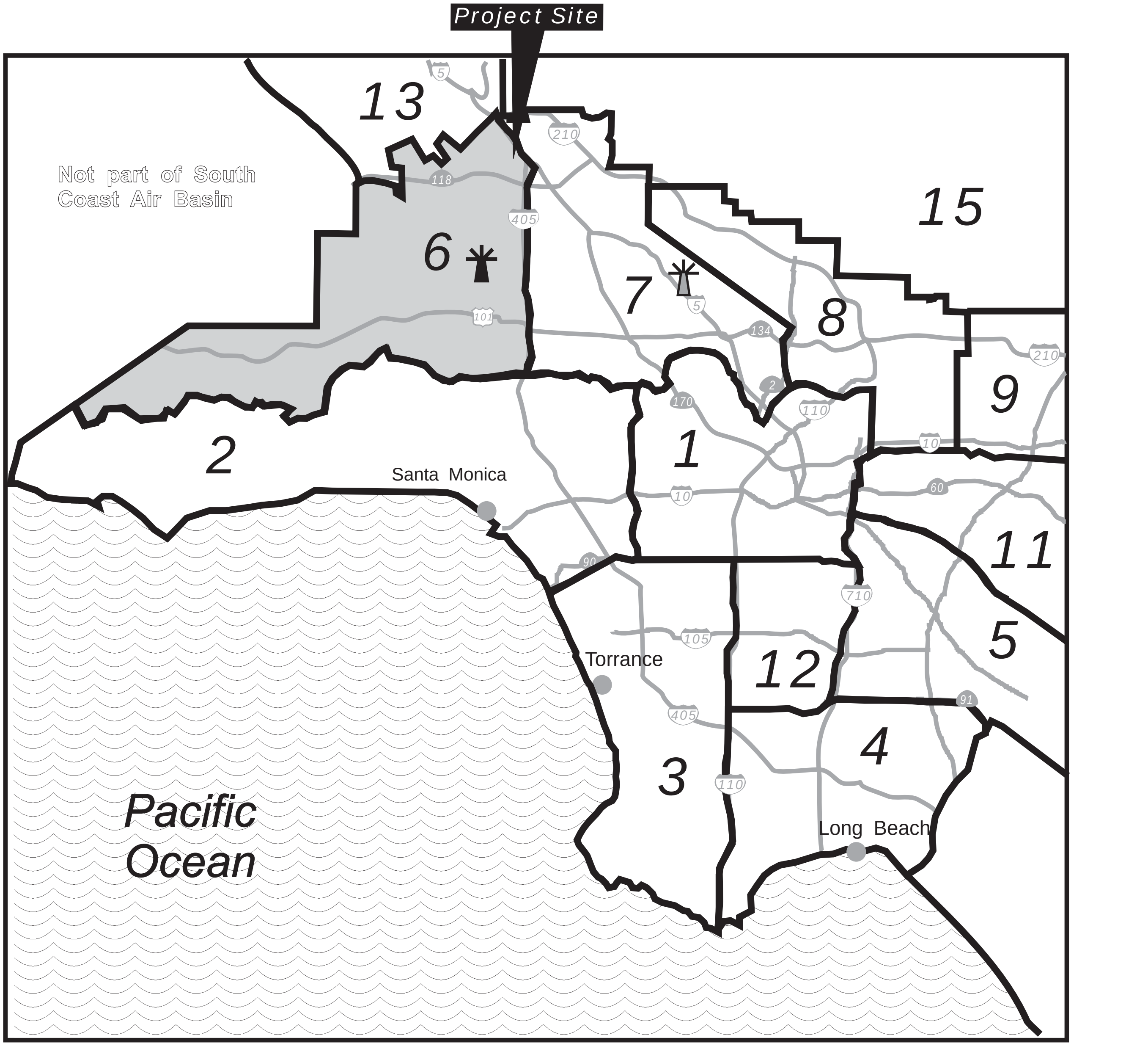
[6] SCAQMD, Meteorological Data, available at http://www.aqmd.gov/smog/metdata/MeteorologicalData.html, accessed March 8, 2012. See Appendix A.

[7] Western Regional Climate Center, Historical Climate Information, available at http://www.wrcc.dri.edu, accessed March 8, 2012.

[8] Ibid.



LEGEND: Reseda Monitoring Station

Burbank - West Palm Avenue Monitoring Station

Air Monitoring Areas in Los Angeles County:

1.Central Los Angeles
2.Northwest Coastal
3.Southwest Coastal
4.South Coastal
5.Southeast Los Angeles County
6.West San Fernando Valley
7.East San Fernando Valley
8.West San Gabriel Valley

9. East San Gabriel Valley
10. Pomona/Walnut Valley (not shown)
11. South San Gabriel Valley
12. South Central Los Angeles
13. Santa Clarita Valley
15. San Gabriel Mountains

SOURCE: South Coast Air Quality Management District Air Monitoring Areas Map, 1999

FIGURE 3-2

AIR MONITORING AREAS

Table 3-2 shows pollutant levels, the State standards, and the number of exceedances recorded at the Reseda and Burbank Monitoring Station from 2008 to 2010.[9] As **Table 3-2** indicates, criteria pollutants CO, NO_2, and SO_2 did not exceed the State standards from 2008 to 2010. However, the one-hour State standard for O_3 was exceeded 11 to 23 times during this period. The eight-hour State standard for O_3 was exceeded 31 to 39 times. The 24-hour State standard for PM_{10} was exceeded five to ten times during this period and the annual State standard for $PM_{2.5}$ was also exceeded each year from 2008 to 2010.

TABLE 3-2: 2008-2010 AMBIENT AIR QUALITY DATA

		Reseda and Burbank – West Palm Avenue Monitoring Station		
		Number of Days Above State Standard		
Pollutant	**Pollutant Concentration & Standards**	**2008**	**2009**	**2010**
Ozone (O_3)	Maximum 1-hr Concentration (ppm) Days > 0.09 ppm (State 1-hr standard) Maximum 8-hr Concentration (ppm) Days > 0.07 ppm (State 1-hr standard)	0.123 23 0.103 39	0.135 15 0.100 31	0.122 11 0.092 37
Carbon Monoxide (CO)	Maximum 1-hr concentration (ppm) Days > 20 ppm (State1-hr standard) Maximum 8-hr concentration (ppm) Days > 9.0 ppm (State 8-hr standard)	4 0 2.88 0	4 0 3.31 0	n/a n/a 2.60 0
Nitrogen Dioxide (NO_2)	Maximum 1-hr Concentration (ppm) Days > 0.18 ppm (State 1-hr standard)	0.091 0	0.070 0	0.075 0
Respirable Particulate Matter (PM_{10})	Maximum 24-hr concentration (µg/m^3) Days > 50 µg/m^3 (State 24-hr standard)	61.0 5	76.0 10	n/a n/a
Fine Particulate Matter ($PM_{2.5}$)	Maximum 24-hr concentration (µg/m^3) Exceed State Standard (12 µg/m^3)	50.5 Yes	54.4 Yes	50.3 Yes
Sulfur Dioxide(SO_2)	Maximum 24-hr Concentration (ppm) Days > 0.04 ppm (State 24-hr standard)	0.003 0	0.003 0	0.004 0

'n/a' = not available
SOURCE: CARB, Air Quality Data Statistics, *Top 4 Summary*, http://www.arb.ca.gov/adam/topfour/topfour1.php, accessed March 8, 2012.
CO pollutant concentration was obtained from SCAQMD, Historical Data by Year, available at http://www.aqmd.gov/smog/historicaldata.htm, accessed March 8, 2012.

3.3.3 Greenhouse Gas Emissions

The primary effect of rising global concentrations of atmospheric GHG levels is a rise in the average global temperature of approximately 0.2 degrees Celsius per decade, determined from meteorological measurements worldwide between 1990 and 2005. Climate change modeling using 2000 emission rates shows that further warming is likely to occur given the expected rise in global atmospheric GHG concentrations from innumerable sources of GHG emissions worldwide, which would induce further changes in the global climate system during the current century.[10] Adverse impacts from global climate change worldwide and in California include:

[9] Monitored data for 2011 was not available when this analysis was completed.
[10] USEPA, Draft Endangerment Finding, 74 Fed. Reg. 18886, 18904, April 24, 2009.

- Declining sea ice and mountain snowpack levels, thereby increasing sea levels and sea surface evaporation rates with a corresponding increase in atmospheric water vapor due to the atmosphere's ability to hold more water vapor at higher temperatures;[11]

- Rising average global sea levels primarily due to thermal expansion and the melting of glaciers, ice caps, and the Greenland and Antarctic ice sheets;[12]

- Changing weather patterns, including changes to precipitation, ocean salinity, and wind patterns, and more energetic aspects of extreme weather including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones;[13]

- Declining Sierra Mountains snowpack levels, which account for approximately half of the surface water storage in California, by 70 percent to as much as 90 percent over the next 100 years;[14]

- Increasing the number of days conducive to ozone formation (e.g., clear days with intense sun light) by 25 to 85 percent (depending on the future temperature scenario) in high ozone areas located in the Southern California area and the San Joaquin Valley by the end of the 21st Century;[15] and

- Increasing the potential for erosion of California's coastlines and seawater intrusion into the Sacramento Delta and associated levee systems due to the rise in sea level.[16]

Scientific understanding of the fundamental processes responsible for global climate change has improved over the past decade. However, there remain significant scientific uncertainties, for example, in predictions of local effects of climate change, occurrence of extreme weather events, and effects of aerosols, changes in clouds, shifts in the intensity and distribution of precipitation, and changes in oceanic circulation. Due to the complexity of the climate system, the uncertainty surrounding the implications of climate change may never be completely eliminated. Because of these uncertainties, there continues to be significant debate as to the extent to which increased concentrations of GHGs have caused or will cause climate change, and with respect to the appropriate actions to limit and/or respond to climate change. In addition, it may not be possible to link specific development projects to future specific climate change impacts, though estimating project-specific impacts is possible.

California is the fifteenth largest emitter of GHG on the planet, representing about two percent of the worldwide emissions.[17] **Table 3-3** shows the California GHG emissions inventory for years 2000 to 2008. Statewide GHG emissions slightly decreased in 2008 due to a noticeable drop in on-road transportation emissions. Also, 2008 was the beginning of the economic recession and fuel prices spiked.

[11] *Ibid*.
[12] Intergovernmental Panel on Climate Change, *Climate Change 2007*, 2007.
[13] *Ibid*.
[14] California Environmental Protection Agency, Climate Action Team, *Climate Action Team Report to Governor Schwarzenegger and the Legislature*, 2006.
[15] *Ibid*.
[16] *Ibid*.
[17] CARB, Climate Change Scoping Plan, December 2008.

TABLE 3-3: CALIFORNIA GREENHOUSE GAS EMISSIONS INVENTORY

	CO_2e Emissions (Million Metric Tons)								
Sector	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Transportation	171	174	180	178	182	184	184	184	175
Electric Power	104	121	106	110	120	111	108	111	116
Commercial and Residential	44	41	44	41	43	41	41	42	43
Industrial	97	95	97	96	91	91	90	94	93
Recycling and Waste	6.2	6.3	6.2	6.3	6.2	6.5	6.6	6.5	6.7
High Global Warming Potential	11	11	12	13	14	14	15	15	16
Agriculture	25	25	28	28	29	29	30	28	28
Forest Net Emissions	(4.7)	(4.5)	(4.4)	(4.3)	(4.3)	(4.2)	(4.0)	(4.1)	(4.0)
Emissions Total	**453**	**469**	**470**	**469**	**480**	**473**	**471**	**477**	**474**

SOURCE: CARB, *California Greenhouse Gas Inventory*, 2011.

The transportation sector – largely the cars and trucks that move people and goods – is the largest contributor with 37 percent of the State's total GHG emissions in 2008. On-road emissions (from passenger vehicles and heavy duty trucks) constitute 93 percent of the transportation sector total emissions. On-road emissions grew to a maximum of 171 million metric tons of CO_2e in 2005, plateaued until 2007, and decreased in 2008 to 163 million. The amount of gasoline and diesel fuel consumed by on-road vehicles followed a similar trend.

The electricity and commercial/residential energy sectors are the next largest contributor with more than 30 percent of the Statewide GHG emissions. In-State generation accounts for 47 percent of GHG emissions and emissions associated with imported electricity accounts for 53 percent of GHG emissions. Electricity imported into California accounts for only about a quarter of the State's electricity but imported electricity represents more than half of the GHG emissions. This is because much of it is generated by coal-fired power plants, which is among the highest electricity generation sources of GHG emissions. AB 32 specifically requires CARB to address emissions from electricity sources both inside and outside of the State.

California's industrial sector includes refineries, cement plants, oil and gas production, food processors, and other large industrial sources. This sector contributes almost 20 percent of California's GHG emissions, but the sector's emissions are not projected to grow significantly in the future as the State focuses on renewable energy.

The sector termed recycling and waste management is a unique system, encompassing not just emissions from waste facilities but also the emissions associated with the production, distribution and disposal of products throughout the economy.

Although high global warming potential gases (e.g., PFCs, HFCs, and SF6) are a small contributor to historic GHG emissions, levels of these gases are projected to increase sharply over the next several decades making them a significant source by 2020. These gases are used in growing industries such as semiconductor manufacturing.

The forest sector greenhouse gas inventory includes CO_2 uptake and greenhouse gas emissions from wild and prescribed fires, the decomposition and combustion of residues from harvest and conversion/development, and wood products decomposition. The forest sector is unique in that forests both emit GHGs and absorb CO_2 through carbon sequestration. While the current inventory shows forests absorb 4.7 million metric tons of CO_2e, carbon sequestration has declined since 1990. For this reason, the 2020 projection assumes no net emissions from forests.

The agricultural GHG emissions shown are largely methane emissions from livestock, both from the animals and their waste. Emissions of GHG from fertilizer application are also important contributors from the agricultural sector. Opportunities to sequester CO_2 in the agricultural sector may also exist; however, additional research is needed to identify and quantify potential sequestration benefits.

3.3.4 Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. CARB has identified the following groups who are most likely to be affected by air pollution: children less than 14 years of age, the elderly over 65 years of age, athletes and people with cardiovascular and chronic respiratory diseases. According to the SCAQMD, sensitive receptors include residences, schools, playgrounds, child care centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers and retirement homes.

As shown in **Figure 3-3**, sensitive receptors near the project site include single-family residences located on the bluff adjacent and to the west and the Granada Hills Youth Recreation Center located approximately 485 feet to the northwest. These sensitive receptors represent the nearest residential land uses with the potential to be impacted by the proposed project. Additional sensitive receptors are located further from the project site in the surrounding community and would be less impacted by air emissions than the above sensitive receptors.

3.4 METHODOLOGY AND SIGNIFICANCE CRITERIA

3.4.1 Methodology

Potential impacts associated with air emissions were evaluated based on current SCAQMD guidance. This includes the SCAQMD *CEQA Air Quality Handbook* and associated updates on the SCAQMD website, and the *Localized Significance Methodology for CEQA Evaluations*.[18] In addition, emissions estimations formulas were obtained from the USEPA AP-42 *Compilation of Air Pollutant Emission Factors*.

The estimate of emissions was based upon a detailed spreadsheet provided by LADWP that described the construction process. The spreadsheet included construction phases, equipment type and hours, truck trips, and worker commute trips. The full detailed spreadsheet is included in the attached Construction Appendix. The spreadsheet was used to characterize daily activity throughout the construction process. Equipment engine emissions were estimated using OFFROAD2007 and truck and commute trips emissions were estimated using EMFAC2007. Fugitive dust emissions from sources including excavation, scraping, grading, truck loading, and materials sorting were estimated using AP-42 emission factors. The analysis compares the worst-case emissions day from each year of construction activity to the SCAQMD regional significance thresholds.

[18]SCAQMD, *Localized Significance Methodology*, June 2003, revised July 2008.

LEGEND:

Project Area

Sensitive Receptor Locations

1. Granada Hills Youth Recreation Center

2 Single-Family Residences

SOURCE: TAHA, 2012.

Approx. Scale

0 1,465 2,930 Feet

N

LADWP Van Norman Complex Water Quality Improvement
Air Quality Impact Report

taha 2010-093 AECOM

FIGURE 3-3

AIR QUALITY SENSITIVE RECEPTOR LOCATIONS

Localized on-site emissions (i.e., equipment exhaust and fugitive dust) were estimated as described above. The mass emissions were compared to the localized screening thresholds (LSTs) established by the SCAQMD. The SCAQMD has stated that if project emissions exceed the relevant LSTs, the lead agency may estimate concentrations at sensitive receptors using an air dispersion model (i.e., AERMOD). The concentrations obtained from the air dispersion model are compared to ambient air quality standards to determine the level of significance.

3.4.2 Significance Criteria

The following are significance criteria that SCAQMD has established to assess construction and operational impacts.

Construction Phase Significance Criteria

The proposed project would have a significant impact if:

- Daily localized or regional, construction emissions were to exceed SCAQMD thresholds for VOC, NO_X, CO, SO_X, $PM_{2.5}$ or PM_{10}, as presented in **Table 3-4**;
- Localized emissions exceed the thresholds listed in **Table 3-4** and exceed the State one- and eight-hour CO standards of 20 and 9.0 ppm, respectively, the State one-hour NO_2 standard of 0.18 ppm, and/or $PM_{2.5}$ or PM_{10} concentrations of 10.4 $\mu g/m^3$;
- The proposed project would generate significant emissions of TACs; and/or
- The proposed project would create an odor nuisance.

TABLE 3-4: SCAQMD DAILY CONSTRUCTION EMISSIONS THRESHOLDS

Criteria Pollutant	Regional Emissions (Pounds Per Day)	Localized Emissions (Pounds Per Day) /a/
Volatile Organic Compounds (VOC)	75	--
Nitrogen Oxides (NO_X)	100	212
Carbon Monoxide (CO)	550	1,537
Sulfur Oxides (SO_X)	150	--
Fine Particulates ($PM_{2.5}$)	55	8
Particulates (PM_{10})	150	35

/a/ Localized thresholds based on 50-meter receptor distance and a five-acre project site.
SOURCE: SCAQMD, 2012.

Greenhouse Gas Significance Criteria

The SCAQMD has not approved a GHG significance threshold for the development of non-SCAQMD and non-industrial projects. The significance threshold is based on the methodologies recommended by the California Air Pollution Control Officers Association (CAPCOA) CEQA and Climate Change white paper (January 2008). CAPCOA conducted an analysis of various approaches and significance thresholds, ranging from a zero threshold (all projects are cumulatively considerable) to a high of 40,000 to 50,000 metric tons of CO_2e per year. For example, an approach assuming a zero threshold and compliance with AB 32 2020 targets would require all discretionary projects to achieve a 33 percent reduction from projected “business-as-usual” emissions to be considered less than significant. A zero threshold approach could be considered on the basis that climate change is a global phenomenon, and not controlling small source emissions would potentially neglect a major portion of the GHG inventory. However, the CEQA Guidelines also recognize that there may be a point where a project's contribution, although above zero, would not be a considerable contribution to the cumulative impact (CEQA Guidelines, Section 15130 (a)). Therefore, a threshold of greater than zero is considered more appropriate for the analysis of GHG emissions under CEQA.

Another method would use a quantitative threshold of greater than 900 metric tons CO_2e per year based on a market capture approach that requires mitigation for greater than 90 percent of likely future discretionary development. This threshold would generally correspond to office projects of approximately 35,000 square feet, retail projects of approximately 11,000 square feet, or supermarket space of approximately 6,300 square feet. Another potential threshold would be the 10,000 metric tons standard used by the Market Advisory Committee for inclusion in a GHG Cap and Trade System in California. A 10,000 metric ton significance threshold would correspond to the GHG emissions of approximately 550 residential units, 400,000 square feet of office space, 120,000 square feet of retail, and 70,000 square feet of supermarket space. This threshold would capture roughly half of new residential or commercial development. The basic concepts for the various approaches suggested by CAPCOA are used herein to determine whether or not the proposed project's GHG emissions are "cumulatively considerable."

CAPCOA's suggested quantitative thresholds are generally more applicable to development on sites at the periphery of metropolitan areas, also known as "greenfield" sites, where there would be an increase in vehicle miles traveled (VMT) and associated GHG emissions than to infill development, which would generally reduce regional VMT and associated emissions. As the City of Los Angeles is generally built out, most commercial development within the City is infill or redevelopment and would be expected to generally reduce VMT and reliance on the drive-alone automobile use as compared to further suburban growth at the periphery of the region. A reduction in vehicle use and vehicle miles traveled can result in a reduction in fuel consumption and in air pollutant emissions, including GHG emissions. Recent research indicates that infill development reduces VMT and associated air pollutant emissions, as compared to greenfield sites. For example, a 1999 simulation study conducted for the USEPA, comparing infill development to greenfield development, found that infill development results in substantially fewer VMT per capita (39 percent to 52 percent) and generates fewer emissions of most air pollutants and greenhouse gases.

For this reason, the most conservative (i.e., lowest) thresholds, suggested by CAPCOA, would not be appropriate for the proposed project given that it is located in a community that is highly urbanized. Similarly, the 900-ton threshold was also determined to be too conservative for general development in the South Coast Air Basin. Consequently, the threshold of 10,000 metric tons CO_2e is used as a quantitative benchmark for significance.

3.5 ENVIRONMENTAL IMPACTS

3.5.1 Construction Phase

Regional Impacts

Construction of the proposed project has the potential to create air quality impacts through the use of heavy-duty construction equipments and through vehicle trips generated by construction workers traveling to and from the project site. Fugitive dust emissions would primarily result from demolition and site preparation (e.g., excavation) activities. NO_X emissions would primarily result from the use of construction equipment. The assessment of construction air quality impacts considers each of these potential sources. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation and, for dust, the prevailing weather conditions.

It is mandatory for all construction projects in the Basin to comply with SCAQMD Rule 403 for Fugitive Dust. Specific Rule 403 control requirements include, but are not limited to, applying water in sufficient quantities to prevent the generation of visible dust plumes, applying soil binders to uncovered areas, reestablishing ground cover as quickly as possible, utilizing a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the project site, and maintaining effective cover over exposed areas. Compliance with Rule 403 would reduce regional $PM_{2.5}$ and PM_{10} emissions associated with construction activities by approximately 61 percent.

Table 3-5 shows the maximum daily emissions associated with each construction year. Maximum daily NO_X emissions would exceed the SCAQMD regional significance threshold. Therefore, the proposed project would result in a significant impact related to regional construction emissions without mitigation measures.

TABLE 3-5: REGIONAL CONSTRUCTION EMISSIONS – UNMITIGATED

	Pounds Per Day					
Construction Year	**VOC**	**NO_X**	**CO**	**SO_X**	**$PM_{2.5}$**	**PM_{10}**
Year 2012 /a/	17	138	68	<1	13	22
Year 2013 /b/	16	129	69	<1	15	29
Year 2014 /c/	14	104	62	<1	8	19
Year 2015 /d/	9	67	41	<1	3	3
Maximum Regional Total	17	138	69	<1	15	29
REGIONAL SIGNIFICANCE THRESHOLD	**75**	**100**	**550**	**150**	**55**	**150**
Exceed Threshold?	No	Yes	No	No	No	No

/a/ Maximum daily emissions would occur in November 2012.
/b/ Maximum daily VOC. NO_X, and CO emissions would occur in December 2013 and maximum daily $PM_{2.5}$ and PM_{10} emissions would occur in October 2013.
/c/ Maximum daily emissions would occur in October 2014.
/d/ Maximum daily emissions would occur in May 2015.
SOURCE: TAHA, 2012.

Localized Impacts

Construction activity would generate on-site pollutant emissions associated with equipment exhaust and fugitive dust. **Table 3-6** shows the estimated localized emissions associated with each construction year. Maximum daily $PM_{2.5}$ emissions would exceed the SCAQMD LST. Based on SCAQMD guidance, a detailed $PM_{2.5}$ concentration assessment was completed using the AERMOD dispersion model. The model indicated that maximum concentrations would occur at the exterior of the single-family residences along Knollbrook Drive. It was estimated that the maximum daily $PM_{2.5}$ concentration would be 6.4 $\mu g/m^3$, which would be less than the $PM_{2.5}$ significance threshold of 10.4 $\mu g/m^3$. Therefore, the proposed project would result in a less-than-significant impacts related to localized concentrations.

TABLE 3-6: LOCALIZED CONSTRUCTION EMISSIONS				
	Pounds Per Day			
Construction Year	**NO_X**	**CO**	**$PM_{2.5}$**	**PM_{10}**
Year 2012 /a/	132	68	13	22
Year 2013 /b/	127	68	15	29
Year 2014 /c/	102	61	7	19
Year 2015 /d/	66	40	3	3
Maximum Localized Total	132	68	15	29
Localized Significance Threshold	212	1,537	8	35
Exceed Threshold?	No	No	Yes	No
	Micrograms per Cubic Meter			
	NO_2	**CO**	**$PM_{2.5}$**	**PM_{10}**
Maximum Modeled Concentration	N/A	N/A	6.4	N/A
Ambient Air Quality Standard	N/A	N/A	10.4	N/A
Exceed Threshold?	N/A	N/A		N/A

/a/ Maximum daily emissions would occur in November 2012.
/b/ Maximum daily VOC. NO_X, and CO emissions would occur in December 2013 and maximum daily $PM_{2.5}$ and PM_{10} emissions would occur in October 2013.
/c/ Maximum daily emissions would occur in October 2014.
/d/ Maximum daily emissions would occur in May 2015.
SOURCE: TAHA, 2012.

Toxic Air Contaminant Impacts

The greatest potential for TAC emissions during construction would be diesel particulate emissions associated with heavy-duty equipment operations. The SCAQMD has not published guidance for assessing the risk from construction projects. The California Air Pollution Control Officers Association (CAPCOA) has published *Health Risk Assessments for Proposed Land Use Projects* (July 2009). Page 2 of the document states that, “This guidance does not include how risk assessments for construction projects should be addressed in CEQA. As this is intended to be a ‘living document’, the risks near construction projects are expected to be included at a later time as the toxic emissions from construction activities are better quantified. State risk assessment policy is likely to change to reflect current science, and therefore this document will need modification as this occurs.” As regional and localized particulate matter emissions would not result in significant impacts, it is similarly anticipated that diesel particulate emissions would not result in a significant health impact. Therefore, the proposed project would result in a less-than-significant impact related to construction TAC emissions.

Odor Impacts

Potential sources that may emit odors during construction activities include equipment exhaust and architectural coatings. Odors from these sources would be localized and generally confined to the immediate area surrounding the project site. The proposed project would utilize typical construction techniques, and the odors would be typical of most construction sites and temporary in nature. Therefore, the proposed project would result in a less-than-significant impact related to construction odors.

Construction Phase Mitigation Measures

AQ1 The construction contractor shall utilize a diesel oxidation catalyst capable of reducing NO_X emissions by at least 40 percent on heavy-duty construction equipment including bull dozers, wheeled loaders, compactors, excavators, materials processing units, graders, and concrete crushers.

AQ2 Equipment and vehicle engines shall be maintained in good condition and in proper tune per manufacturers' specifications.

AQ3 Electricity shall be utilized from power supply sources rather than temporary gasoline or diesel power generators, as feasible.

AQ4 Heavy-duty trucks shall be prohibited from idling in excess of five minutes, both on- and off-site.

Impacts After Mitigation

Regional Impacts. Impacts related to regional air emissions were determined to be significant without mitigation. Mitigation Measure **AQ1** would reduce NO_X emissions from the listed equipment by at least 40 percent and Mitigation Measure **AQ2** would reduce all pollutant emissions by approximately five percent. Mitigation Measure **AQ3** and **AQ4**, although difficult to quantify, would also reduce NO_X emissions. The mitigation measures would reduce maximum 2012 NO_X emissions from 138 to 94 pounds per day. Maximum 2013 NO_X emissions would be reduced from 129 to 88 pounds per day. The mitigated emissions would be less than the SCAQMD significance thresholds of 100 pounds per day. Mitigation Measures **AQ1** through **AQ1** would reduce the regional NO_X impact to less than significant.

Localized Impacts. Impacts related to regional air emissions were determined to be less than significant without mitigation.

Toxic Air Contaminant Impacts. Impacts related to toxic air contaminant emissions were determined to be less than significant without mitigation.

Odor Impacts. Impacts related to odors were determined to be less than significant without mitigation.

3.5.2 Operational Phase

The proposed project would require no increase in personnel, equipment operations, or truck deliveries at the Van Norman Complex. Operational activities at the new facilities would be similar to the current levels. Therefore, no impacts related to regional operational emissions would occur.

Operational Phase Mitigation Measures

No impacts related to operational air quality emissions would occur. No mitigation measures are required.

Impacts After Mitigation

No impacts related to operational air quality emissions would occur.

3.6 CUMULATIVE IMPACTS

3.6.1 SCAQMD Methodology

A significant impact would occur if the proposed project resulted in a cumulative net increase in any criteria pollutant above threshold standards. The SCAQMD's approach for assessing cumulative air quality impacts is based on the AQMP forecasts of attainment of ambient air quality standards in accordance with the requirements of the federal and State Clean Air Acts. The SCQAMD has set forth significance thresholds designed to assistant in the attainment of ambient air quality standards. The proposed project would not result in significant emissions after the implementation of mitigation. Therefore, the proposed project would not result in a cumulatively considerable impact related to construction air quality.

3.6.2 Global Climate Change

The GHG and climate change analysis considered project emissions and consistency with applicable GHG reduction plans and policies.

GHG Emissions

Greenhouse gas emissions were estimated for equipment exhaust, truck trips, and worker commute trips. As shown in **Table 3-7**, maximum GHG emissions would be 425 tons per year and would occur in April 2013. Estimated GHG emissions would be less than the 10,000 metric tons of CO_2e per year quantitative significance threshold. In addition, the proposed project would help ensure the quality of the City of Los Angeles drinking water supply and to ensure compliance with updated USEPA water quality regulations and to maintain local water storage. The proposed project would not include significant sources of constructional and operational emissions. The proposed project and alternatives would in no way conflict with any State or local climate change policy or regulation. Therefore, the proposed project would result in a less-than-significant impact related to GHG emissions.

TABLE 3-7: ANNUAL GREENHOUSE GAS EMISSIONS

Year	Carbon Dioxide Equivalent (Metric Tons per Year)
Year 2012	240
Year 2013	425
Year 2014	349
Year 2015	269
Maximum Annual Emissions	425
Significance Threshold	10,000
Exceed Threshold?	No

SOURCE: TAHA, 2012.

Air Quality Appendix

A. Wind and Climate Information
B. Ambient Air Data
C. Regional Construction Emissions
D. Localized Construction Modeling
E. Greenhouse Gas Emissions
F. SCAQMD Rule 403

Appendix A

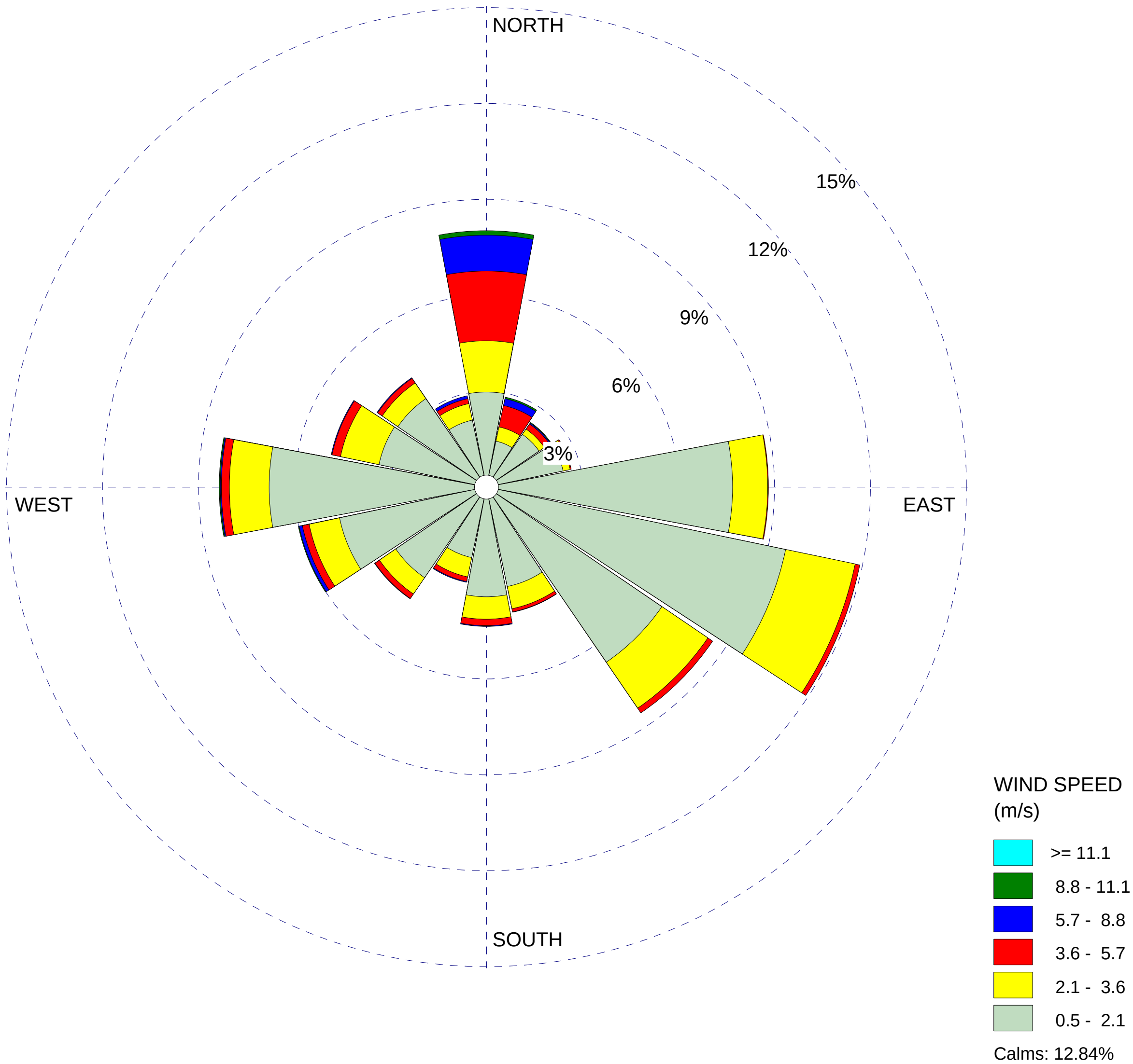
Wind and Climate Information

WIND ROSE PLOT:

Van Norman Reservoir

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS:

DATA PERIOD:

Start Date: 1/1/1981 - 00:00
End Date: 12/31/1981 - 23:00

COMPANY NAME:

MODELER:

CALM WINDS:

12.84%

TOTAL COUNT:

8760 hrs.

AVG. WIND SPEED:

1.56 m/s

DATE:

3/12/2012

PROJECT NO.:

2010-093

WRPLOT View - Lakes Environmental Software

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NOTE:
To print data frame (right side), click on right frame before printing.

1981 - 2010

- Daily Temp. & Precip.
- Daily Tabular data (~23 KB)
- Monthly Tabular data (~1 KB)
- NCDC 1981-2010 Normals (~3 KB)

1971 - 2000

- Daily Temp. & Precip.
- Daily Tabular data (~23 KB)
- Monthly Tabular data (~1 KB)
- NCDC 1971-2000 Normals (~3 KB)

1961 - 1990

- Daily Temp. & Precip.
- Daily Tabular data (~23 KB)
- Monthly Tabular data (~1 KB)
- NCDC 1961-1990 Normals (~3 KB)

Period of Record

- Station Metadata
- Station Metadata Graphics

General Climate Summary Tables
- Temperature
- Precipitation
- Heating Degree Days
- Cooling Degree Days
- Growing Degree Days

Temperature
- Daily Extremes and Averages
- Spring 'Freeze' Probabilities
- Fall 'Freeze' Probabilities
- 'Freeze Free' Probabilities
- Monthly Temperature Listings
  - Average
  - Average Maximum
  - Average Minimum

Precipitation
- Monthly Average
- Daily Extreme and Average
- Daily Average
- Precipitation Probability by Duration.
- Precipitation Probability by Quantity.

SAN FERNANDO, CALIFORNIA

Period of Record General Climate Summary - Precipitation

Station:(047759) SAN FERNANDO

From Year=1927 To Year=1974

	Precipitation											Total Snowfall		
	Mean	High	Year	Low	Year	1 Day Max.		>= 0.01 in.	>= 0.10 in.	>= 0.50 in.	>= 1.00 in.	Mean	High	Year
	in.	in.	-	in.	-	in.	dd/yyyy or yyyymmdd	# Days	# Days	# Days	# Days	in.	in.	-
January	3.53	15.06	1969	0.00	1948	7.55	01/1934	6	4	2	1	0.1	4.5	1949
February	3.37	13.04	1962	0.00	1933	4.45	20/1944	6	4	2	1	0.0	0.0	1931
March	2.34	10.48	1941	0.00	1940	4.50	07/1952	5	4	2	1	0.0	0.0	1933
April	1.38	6.84	1965	0.00	1934	2.95	12/1956	4	3	1	0	0.0	0.0	1930
May	0.24	1.56	1957	0.00	1929	1.05	11/1957	2	1	0	0	0.0	0.0	1929
June	0.07	0.57	1934	0.00	1928	0.50	01/1948	1	0	0	0	0.0	0.0	1928
July	0.02	0.39	1969	0.00	1928	0.39	11/1969	0	0	0	0	0.0	0.0	1928
August	0.03	0.51	1942	0.00	1928	0.51	10/1942	0	0	0	0	0.0	0.0	1928
September	0.10	0.95	1967	0.00	1928	0.44	17/1950	1	0	0	0	0.0	0.0	1930
October	0.41	1.92	1957	0.00	1929	1.52	28/1942	2	1	0	0	0.0	0.0	1929
November	1.79	12.27	1965	0.00	1929	3.70	07/1966	3	2	1	0	0.0	0.0	1930
December	2.86	10.59	1938	0.00	1929	4.31	15/1938	5	4	2	1	0.1	2.0	1931
Annual	16.16	37.87	1941	4.76	1972	7.55	19340101	36	23	10	5	0.2	4.5	1949
Winter	9.77	24.91	1969	1.35	1961	7.55	19340101	17	12	6	3	0.2	4.5	1949
Spring	3.97	15.80	1941	0.02	1934	4.50	19520307	11	7	3	1	0.0	0.0	1933
Summer	0.12	0.59	1934	0.00	1928	0.51	19420810	2	0	0	0	0.0	0.0	1928
Fall	2.30	12.84	1965	0.10	1937	3.70	19661107	6	4	1	0	0.0	0.0	1930

Table updated on Apr 5, 2006
For monthly and annual means, thresholds, and sums:
Months with 5 or more missing days are not considered
Years with 1 or more missing months are not considered
Seasons are climatological not calendar seasons
Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May
Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Western Regional Climate Center, wrcc@dri.edu

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1981 - 2010

- Daily Temp. & Precip.
- Daily Tabular data (~23 KB)
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1971 - 2000

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1961 - 1990

- Daily Temp. & Precip.
- Daily Tabular data (~23 KB)
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- Daily Average
- Precipitation Probability by Duration.
- Precipitation Probability by Quantity.
- Monthly Precipitation Listings
  - Monthly Totals

Snowfall
- Daily Extreme and Average
- Daily Average
- Monthly Snowfall Listings
  - Monthly Totals

SAN FERNANDO, CALIFORNIA

Period of Record General Climate Summary - Temperature

Station:(047759) SAN FERNANDO

From Year=1927 To Year=1974

	Monthly Averages			Daily Extremes				Monthly Extremes				Max. Temp.		Min. Temp.	
	Max.	Min.	Mean	High	Date	Low	Date	Highest Mean	Year	Lowest Mean	Year	>= 90 F	<= 32 F	<= 32 F	<= 0 F
	F	F	F	F	dd/yyyy or yyyymmdd	F	dd/yyyy or yyyymmdd	F	-	F	-	# Days	# Days	# Days	# Days
January	65.0	43.2	54.1	92	01/1948	26	30/1949	61.0	1961	43.3	1937	0.0	0.0	2.9	0.0
February	67.1	43.5	55.3	92	11/1971	26	10/1929	63.1	1954	49.5	1949	0.0	0.0	1.6	0.0
March	70.5	44.1	57.3	97	31/1966	28	02/1951	65.6	1934	50.6	1952	0.4	0.0	0.9	0.0
April	75.3	46.7	61.0	103	03/1961	30	05/1929	65.8	1959	52.7	1967	2.6	0.0	0.2	0.0
May	78.7	49.8	64.3	105	20/1942	32	11/1933	69.7	1943	60.4	1930	4.3	0.0	0.0	0.0
June	84.3	52.5	68.3	114	15/1961	36	09/1941	74.2	1957	63.6	1941	9.3	0.0	0.0	0.0
July	92.7	56.3	74.5	113	26/1933	40	11/1970	79.8	1931	69.3	1944	21.5	0.0	0.0	0.0
August	92.6	56.6	74.6	112	11/1933	41	31/1941	81.4	1967	69.5	1940	21.5	0.0	0.0	0.0
September	89.6	54.7	72.1	114	13/1971	39	23/1941	77.6	1963	65.9	1941	15.1	0.0	0.0	0.0
October	81.9	51.1	66.5	106	02/1933	32	20/1949	73.3	1965	62.4	1941	7.7	0.0	0.0	0.0
November	73.8	47.9	60.9	97	01/1966	29	23/1931	68.0	1956	54.6	1952	1.4	0.0	0.3	0.0
December	66.4	45.0	55.7	90	03/1958	26	23/1968	62.5	1929	49.4	1971	0.0	0.0	1.3	0.0
Annual	78.2	49.3	63.7	114	19610615	26	19290210	65.8	1958	61.3	1949	84.0	0.0	7.4	0.0
Winter	66.2	43.9	55.0	92	19480101	26	19290210	59.4	1961	47.5	1949	0.1	0.0	5.9	0.0
Spring	74.8	46.9	60.9	105	19420520	28	19510302	66.1	1934	57.4	1935	7.4	0.0	1.1	0.0
Summer	89.9	55.2	72.5	114	19610615	36	19410609	75.6	1957	68.7	1941	52.3	0.0	0.0	0.0
Fall	81.8	51.2	66.5	114	19710913	29	19311123	70.4	1958	63.4	1944	24.3	0.0	0.4	0.0

Table updated on Apr 5, 2006
For monthly and annual means, thresholds, and sums:
Months with 5 or more missing days are not considered
Years with 1 or more missing months are not considered
Seasons are climatological not calendar seasons
Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May
Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Western Regional Climate Center, wrcc@dri.edu

Appendix B

Ambient Air Data

Highest 4 Daily Maximum Hourly Ozone Measurements

Reseda

Year:	2008		2009		2010	
	Date	Measurement	Date	Measurement	Date	Measurement
First High:	Aug 14	0.123	Aug 31	0.135	Sep 3	0.122
Second High:	Aug 13	0.121	Sep 2	0.119	Jul 15	0.120
Third High:	May 18	0.119	Aug 28	0.117	Aug 25	0.116
Fourth High:	Aug 1	0.116	Jun 28	0.115	Aug 24	0.114
# Days Above State Standard:		23		15		11
California Designation Value:		0.14		0.13		0.12
Expected Peak Day Conc.:		0.138		0.129		0.126
# Days Above Nat'l Standard:		*0*		*1*		*0*
National Design Value:		*0.130*		*0.123*		*0.121*
Year Coverage:		98		98		96

Go Backward One Year | New Top 4 Summary | Go Forward One Year

Notes: All concentrations are expressed in parts per million.

The national 1-hour ozone standard was revoked in June 2005 and is no longer in effect. Statistics related to the revoked standard are shown in *italics* or *italics*.

State exceedances are shown in yellow. Exceedances of the revoked national 1-hour standard are shown in *orange*.

An exceedance is not necessarily a violation.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

* There was insufficient (or no) data available to determine the value.

Switch: 8-Hour Ozone | PM2.5 | PM10 | Carbon Monoxide | Nitrogen Dioxide | Sulfur Dioxide | Hydrogen Sulfide

Go to: Data Statistics Home Page | Top 4 Summaries Start Page

Highest 4 Daily Maximum Hourly Nitrogen Dioxide Measurements

Reseda

FAQs

Year:	2008		2009		2010	
	Date	Measurement	Date	Measurement	Date	Measurement
First High:	Nov 13	0.091	Oct 22	0.070	Dec 3	0.075
Second High:	Oct 29	0.083	Oct 17	0.058	Jan 7	0.066
Third High:	Oct 25	0.069	Nov 3	0.056	Sep 27	0.064
Fourth High:	Oct 24	0.066	Sep 25	0.055	Sep 26	0.062
# Days Above State Standard:		0		0		0
Annual Average:		0.018		0.017		0.017
Year Coverage:		97		99		99

Go Backward One Year | New Top 4 Summary | Go Forward One Year

Notes: All averages are expressed in parts per million.
National exceedances are shown in orange. State exceedances are shown in yellow.
An exceedance is not necessarily a violation.
Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.
* There was insufficient (or no) data available to determine the value.

Switch: Hourly Ozone | 8-Hour Ozone | PM2.5 | PM10 | Carbon Monoxide | Sulfur Dioxide | Hydrogen Sulfide

Go to: Data Statistics Home Page | Top 4 Summaries Start Page

Highest 4 Daily Maximum 8-Hour Ozone Averages

Reseda

FAQs

Year:	2008		2009		2010	
	Date	8-Hr Average	Date	8-Hr Average	Date	8-Hr Average
National:						
First High:	May 18	0.103	Aug 30	0.100	Jul 10	0.091
Second High:	Aug 2	0.099	Aug 28	0.094	Aug 25	0.089
Third High:	Aug 1	0.095	Sep 27	0.094	Jun 5	0.087
Fourth High:	Aug 14	0.095	Sep 2	0.093	Jul 15	0.086
California:						
First High:	May 18	0.103	Aug 30	0.100	Jul 10	0.092
Second High:	Aug 2	0.099	Sep 27	0.095	Aug 25	0.090
Third High:	Aug 1	0.095	Aug 28	0.094	Jun 5	0.087
Fourth High:	Aug 14	0.095	Sep 2	0.094	Jul 15	0.086
National:						
# Days Above '08 Nat'l Std.:		25		19		19
'08 Nat'l Std. Design Value:		0.097		0.093		0.091
National Year Coverage:		99		97		97
California:						
# Days Above State Standard:		39		31		37
California Designation Value:		0.109		0.105		0.103
Expected Peak Day Conc.:		0.111		0.108		0.106
California Year Coverage:		98		97		95

Go Backward One Year | New Top 4 Summary | Go Forward One Year

Notes: All averages are expressed in parts per million.
National exceedances are shown in orange. State exceedances are shown in yellow.
An exceedance is not necessarily a violation.
Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.
* There was insufficient (or no) data available to determine the value.

Switch: Hourly Ozone | PM2.5 | PM10 | Carbon Monoxide | Nitrogen Dioxide | Sulfur Dioxide | Hydrogen Sulfide

Go to: Data Statistics Home Page | Top 4 Summaries Start Page

Welcome to California

Air Resources Board

iADAM

Highest 4 Daily Maximum 8-Hour Carbon Monoxide Averages

Reseda

FAQs

Year:	2008		2009		2010	
	Date	8-Hr Average	Date	8-Hr Average	Date	8-Hr Average
National:						
First High:	Dec 2	2.88	Jan 1	2.84	Dec 3	2.60
Second High:	Dec 31	2.80	Dec 25	2.57	Dec 4	2.51
Third High:	Dec 12	2.73	Jan 2	2.54	Dec 25	2.24
Fourth High:	Nov 22	2.59	Jan 8	2.53	Dec 10	2.17
California:						
First High:	Dec 1	2.88	Jan 1	3.31	Dec 2	2.60
Second High:	Dec 30	2.80	Dec 25	2.57	Dec 3	2.51
Third High:	Dec 31	2.78	Jan 2	2.54	Dec 25	2.24
Fourth High:	Dec 11	2.73	Jan 7	2.53	Dec 10	2.17
# Days Above Nat'l Standard:		0		0		0
# Days Above State Standard:		0		0		0
Year Coverage:		97		97		99

Go Backward One Year | New Top 4 Summary | Go Forward One Year

Notes: All averages are expressed in parts per million.
National exceedances are shown in orange. State exceedances are shown in yellow.
An exceedance is not necessarily a violation.
Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.
* There was insufficient (or no) data available to determine the value.

Switch: Hourly Ozone | 8-Hour Ozone | PM2.5 | PM10 | Nitrogen Dioxide | Sulfur Dioxide | Hydrogen Sulfide

Go to: Data Statistics Home Page | Top 4 Summaries Start Page

Highest 4 Daily 24-Hour PM10 Averages

Burbank-W Palm Avenue

FAQs

Year:	2008		2009		2010	
	Date	24-Hr Average	Date	24-Hr Average	Date	24-Hr Average
National:						
First High:	May 21	118.5	Oct 27	130.3	Aug 24	51.0
Second High:	Jul 5	84.8	Nov 25	105.5	Jun 1	50.0
Third High:	Jan 15	67.0	Nov 24	91.9	Jul 19	46.0
Fourth High:	Jul 4	62.9	Nov 29	61.9	Jan 14	43.0
California:						
First High:	Dec 2	61.0	Sep 22	76.0	Aug 24	50.0
Second High:	Nov 20	60.0	Jan 1	75.0	Jun 1	49.0
Third High:	Jun 5	55.0	Mar 20	66.0	Jul 19	45.0
Fourth High:	Mar 25	51.0	Aug 11	62.0	Jan 14	42.0
Measured:						
# Days Above Nat'l Standard:		0		0		0
# Days Above State Standard:		5		10		0
Estimated:						
3-Yr Avg # Days Above Nat'l Std:		*		*		*
# Days Above Nat'l Standard:		*		*		*
# Days Above State Standard:		*		60.9		*
State 3-Yr Maximum Average:		*		39		*
State Annual Average:		*		38.9		*
National 3-Year Average:		*		*		*34*
National Annual Average:		*32.5*		*25.7*		*27.5*
Year Coverage:		0		0		95

Go Backward One Year | New Top 4 Summary | Go Forward One Year

Notes: All concentrations are expressed in micrograms per cubic meter.

The national annual average PM10 standard was revoked in December 2006 and is no longer in effect.
Statistics related to the revoked standard are shown in *italics* or *italics*.

National exceedances are shown in orange. State exceedances are shown in yellow.

An exceedance is not necessarily a violation.

Statistics may include data that are related to an exceptional event.

State and national statistics may differ for the following reasons:

State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods.
State and national statistics may therefore be based on different samplers.

State statistics for 1998 and later are based on *local* conditions (except for sites in the South Coast Air Basin, where State statistics for 2002 and later are based on *local* conditions).
National statistics are based on *standard* conditions.

State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.

Measurements are usually collected every six days. Measured days counts the days that a measurement was greater than the level of the standard; Estimated days mathematically estimates how many days concentrations would have been greater than the level of the standard had each day been monitored.

3-Year statistics represent the listed year and the 2 years before the listed year.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

* There was insufficient (or no) data available to determine the value.

Switch:	Hourly Ozone	8-Hour Ozone	PM2.5	Carbon Monoxide	Nitrogen Dioxide	Sulfur Dioxide	Hydrogen Sulfide
Go to:	Data Statistics Home Page			Top 4 Summaries Start Page			

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Air Resources Board

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Highest 4 Daily 24-Hour PM2.5 Averages

Reseda

FAQs

Year:	2008		2009		2010	
	Date	24-Hr Average	Date	24-Hr Average	Date	24-Hr Average
National:						
First High:	Jul 5	50.5	Mar 20	39.9	Dec 4	40.7
Second High:	Nov 23	39.5	Dec 27	32.2	Dec 25	33.8
Third High:	Feb 18	26.1	Dec 24	27.2	Oct 14	30.4
Fourth High:	Nov 29	24.6	Jan 7	24.8	Feb 1	22.4
California:						
First High:	Jul 5	50.5	Mar 20	54.4	Oct 15	50.3
Second High:	Nov 23	39.5	Dec 25	46.4	Oct 14	49.3
Third High:	Feb 18	26.1	Dec 26	41.7	Dec 4	45.3
Fourth High:	Nov 29	24.6	Dec 27	34.6	Nov 17	41.4
Estimated Days > Nat'l 24-Hr Std:		6.6		3.1		*
Measured Days > Nat'l 24-Hr Std:		2		1		1
Nat'l 24-Hr Std Design Value:		*		*		*
Nat'l 24-Hr Std 98th Percentile:		26.1		27.2		*
National Annual Std Design Value:		*		*		*
National Annual Average:		11.8		11.3		*
State Ann'l Std Designation Value:		12		12		12
State Annual Average:		11.8		*		*
Year Coverage:		92		91		82

Go Backward One Year | New Top 4 Summary | Go Forward One Year

Notes: All concentrations are expressed in micrograms per cubic meter.
National exceedances are shown in orange. State exceedances are shown in yellow.
An exceedance is not necessarily a violation.
State and national statistics may differ for the following reasons:
State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods.
State and national statistics may therefore be based on different samplers.
State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.
Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.
* There was insufficient (or no) data available to determine the value.

Highest 4 Daily Maximum State 24-Hour Sulfur Dioxide Averages

Burbank-W Palm Avenue

Year:	2008		2009		2010	
	Date	24-Hr Average	Date	24-Hr Average	Date	24-Hr Average
First High:	Jul 5	0.003	Aug 6	0.003	Feb 26	0.004
Second High:	Jan 16	0.003	Aug 5	0.003	Jan 5	0.004
Third High:	Apr 14	0.003	Aug 2	0.003	Feb 28	0.004
Fourth High:	Jun 22	0.003	Aug 3	0.002	Jan 4	0.004
Annual Average:		0.000		*		*
Year Coverage:		97		49		83

Go Backward One Year | New Top 4 Summary | Go Forward One Year

Notes: All averages are expressed in parts per million.
State exceedances are shown in yellow.
An exceedance is not necessarily a violation.
Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.
* There was insufficient (or no) data available to determine the value.

Switch: Hourly Ozone | 8-Hour Ozone | PM2.5 | PM10 | Carbon Monoxide | Nitrogen Dioxide | Hydrogen Sulfide

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Appendix C

Regional Construction Emissions

Van Norman Complex Water Quality Improvement Project - Construction Equipment Emissions

Estimated Equipment Construction Emissions

Equipment Type	Qty	Operating Hrs/WD/ each	Operating Hours per Day	Number of Operating Days	Rog Rate (lbs/hr)	Rog (lbs/day)	CO rate (lbs/hr)	CO (lbs/day)	NOX rate (lbs/hr)	NOX (lbs/day)	SOX rate (lbs/hr)	SOX (lbs/day)	PM rate (lbs/hr)	PM (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)	CO2 Rate (lbs/hr)	CO2 (lbs/day)	CO2 (lbs)	CH4 rate (lbs/hr)	CH4 (lbs/day)	CH4 (lbs)
August Year 2012 - Construction Equipments																						
Bob Cat	2	8	16	10	0.0534	0.85	0.2360	3.78	0.2686	4.30	0.0004	0.01	0.0207	0.33078	0.3308	0.3043	30	484	4845	0.0048	0.08	0.77
Bull Dozer	2	8	16	20	0.3114	4.98	1.2491	19.99	2.6866	42.99	0.0025	0.04	0.1137	1.81898	1.8190	1.6735	239	0	9	0.0281	0.45	8.99
Dump Truck	10	8	80	50	0.0100	0.80	0.0324	2.59	0.0614	4.91	0.0001	0.01	0.0031	0.25006	0.2501	0.2301	8	0	4	0.0009	0.07	3.60
Generator	2	8	16	10	0.0832	1.33	0.3121	4.99	0.5779	9.25	0.0007	0.01	0.0351	0.56206	0.5621	0.5171	61	0	1	0.0075	0.12	1.20
Water Truck	1	8	8	10	0.0925	0.74	0.3847	3.08	0.8599	6.88	0.0013	0.01	0.0366	0.29283	0.2928	0.2694	123	0	1	0.0083	0.07	0.67
Wheel Loader	3	8	24	15	0.1272	3.05	0.4855	11.65	1.0034	24.08	0.0012	0.03	0.0558	1.33877	1.3388	1.2317	109	0	4	0.0115	0.28	4.13
Compactor	2	8	16	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Excavator	2	8	16	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Material Processing Unit	2	8	16	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Auger/Pole Setter	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Manlift	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Puller/Tensioner	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete pump	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete breaker mounted on an excavator	2	8	16	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete crusher	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Motor Grader	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
August Year 2012 Construction Equipment Total Emissions				**115**		**11.76**		**46.08**		**92.40**		**0.10**			**4.59**	**4.23**		**485**	**4,863**		**1.0608**	**19.3564**
September Year 2012 - Construction Equipments																						
Bob Cat	2	8	16	20	0.0534	0.85	0.2360	3.78	0.2686	4.30	0.0004	0.01	0.0207	0.33078	0.3308	0.3043	30	484	9689	0.0048	0.08	1.54
Bull Dozer	2	8	16	40	0.3114	4.98	1.2491	19.99	2.6866	42.99	0.0025	0.04	0.1137	1.81898	1.8190	1.6735	239	3826	153022	0.0281	0.45	17.98
Dump Truck	10	8	80	150	0.0100	0.80	0.0324	2.59	0.0614	4.91	0.0001	0.01	0.0031	0.25006	0.2501	0.2301	8	610	91493	0.0009	0.07	10.79
Generator	2	8	16	20	0.0832	1.33	0.3121	4.99	0.5779	9.25	0.0007	0.01	0.0351	0.56206	0.5621	0.5171	61	976	19518	0.0075	0.12	2.40
Water Truck	1	8	8	20	0.0925	0.74	0.3847	3.08	0.8599	6.88	0.0013	0.01	0.0366	0.29283	0.2928	0.2694	123	982	19631	0.0083	0.07	1.34
Wheel Loader	3	8	24	30	0.1272	3.05	0.4855	11.65	1.0034	24.08	0.0012	0.03	0.0558	1.33877	1.3388	1.2317	109	2607	78201	0.0115	0.28	8.26
Compactor	2	8	16	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Excavator	2	8	16	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Material Processing Unit	2	8	16	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Auger/Pole Setter	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Manlift	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Puller/Tensioner	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete pump	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete breaker mounted on an excavator	2	8	16	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete crusher	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Motor Grader	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0			0.00	0.00
September Year 2012 Construction Equipment Total Emissions				**280**		**11.76**		**46.08**		**92.40**		**0.10**			**4.59**	**4.23**		**9,484.11**	**371,554.07**		**1.06**	**42.31**
October Year 2012 - Construction Equipments																						
Bob Cat	2	8	16	40	0.0534	0.85	0.2360	3.78	0.2686	4.30	0.0004	0.01	0.0207	0.33078	0.3308	0.3043	30	484	19378	0.0048	0.08	3.08
Bull Dozer	2	8	16	40	0.3114	4.98	1.2491	19.99	2.6866	42.99	0.0025	0.04	0.1137	1.81898	1.8190	1.6735	239	0	18	0.0281	0.45	17.98
Dump Truck	10	8	80	200	0.0100	0.80	0.0324	2.59	0.0614	4.91	0.0001	0.01	0.0031	0.25006	0.2501	0.2301	8	0	14	0.0009	0.07	14.38
Generator	2	8	16	40	0.0832	1.33	0.3121	4.99	0.5779	9.25	0.0007	0.01	0.0351	0.56206	0.5621	0.5171	61	0	5	0.0075	0.12	4.81
Water Truck	1	8	8	20	0.0925	0.74	0.3847	3.08	0.8599	6.88	0.0013	0.01	0.0366	0.29283	0.2928	0.2694	123	0	1	0.0083	0.07	1.34
Wheel Loader	3	8	24	60	0.1272	3.05	0.4855	11.65	1.0034	24.08	0.0012	0.03	0.0558	1.33877	1.3388	1.2317	109	0	17	0.0115	0.28	16.52
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.50	0.0001	0.00	0.0013	0.02009	0.0201	0.0185	4	0	0	0.0005	0.01	0.29
Excavator	2	8	16	40	0.1300	2.08	0.5401	8.64	0.9817	15.71	0.0013	0.02	0.0536	0.85683	0.8568	0.7883	120	0	8	0.0117	0.19	7.50
Material Processing Unit	2	8	16	40	0.1566	2.51	0.5108	8.17	1.4125	22.60	0.0015	0.02	0.0613	0.98017	0.9802	0.9018	141	0	9	0.0141	0.23	9.04
Auger/Pole Setter	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Manlift	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Puller/Tensioner	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete pump	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete breaker mounted on an excavator	2	8	16	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete crusher	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Motor Grader	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
October Year 2012 Construction Equipment Total Emissions				**520**		**16.42**		**63.31**		**131.21**		**0.15**		**6.45**	**6.45**	**5.93**		**485.86**	**19449.95**		**1.48**	**74.95**

November Year 2012 - Construction Equipments																						
Bob Cat	2	8	16	40	0.0534	0.85	0.2360	3.78	0.2686	4.30	0.0004	0.01	0.0207	0.33078	0.3308	0.3043	30	484	19378	0.0048	0.08	3.08
Bull Dozer	2	8	16	40	0.3114	4.98	1.2491	19.99	2.6866	42.99	0.0025	0.04	0.1137	1.81898	1.8190	1.6735	239	0	18	0.0281	0.45	17.98
Dump Truck	10	8	80	200	0.0100	0.80	0.0324	2.59	0.0614	4.91	0.0001	0.01	0.0031	0.25006	0.2501	0.2301	8	0	14	0.0009	0.07	14.38
Generator	2	8	16	40	0.0832	1.33	0.3121	4.99	0.5779	9.25	0.0007	0.01	0.0351	0.56206	0.5621	0.5171	61	0	5	0.0075	0.12	4.81
Water Truck	1	8	8	20	0.0925	0.74	0.3847	3.08	0.8599	6.88	0.0013	0.01	0.0366	0.29283	0.2928	0.2694	123	0	1	0.0083	0.07	1.34
Wheel Loader	3	8	24	60	0.1272	3.05	0.4855	11.65	1.0034	24.08	0.0012	0.03	0.0558	1.33877	1.3388	1.2317	109	0	17	0.0115	0.28	16.52
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.50	0.0001	0.00	0.0013	0.02009	0.0201	0.0185	4	0	0	0.0005	0.01	0.29
Excavator	2	8	16	40	0.1300	2.08	0.5401	8.64	0.9817	15.71	0.0013	0.02	0.0536	0.85683	0.8568	0.7883	120	0	8	0.0117	0.19	7.50
Material Processing Unit	2	8	16	40	0.1566	2.51	0.5108	8.17	1.4125	22.60	0.0015	0.02	0.0613	0.98017	0.9802	0.9018	141	0	9	0.0141	0.23	9.04
Auger/Pole Setter	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Manlift	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Puller/Tensioner	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete pump	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete breaker mounted on an excavator	2	8	16	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete crusher	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Motor Grader	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
November Year 2012 Construction Equipment Total Emissions				**520**		**16.42**		**63.31**		**131.21**		**0.15**		**6.45**	**6.45**	**5.93**		**485.86**	**19449.95**		**1.48**	**74.95**
December Year 2012 - Construction Equipments																						
Bob Cat	2	8	16	40	0.0534	0.85	0.2360	3.78	0.2686	4.30	0.0004	0.01	0.0207	0.33078	0.3308	0.3043	30	484	19378	0.0048	0.08	3.08
Bull Dozer	2	8	16	40	0.3114	4.98	1.2491	19.99	2.6866	42.99	0.0025	0.04	0.1137	1.81898	1.8190	1.6735	239	0	18	0.0281	0.45	17.98
Dump Truck	10	8	80	200	0.0100	0.80	0.0324	2.59	0.0614	4.91	0.0001	0.01	0.0031	0.25006	0.2501	0.2301	8	0	14	0.0009	0.07	14.38
Generator	2	8	16	40	0.0832	1.33	0.3121	4.99	0.5779	9.25	0.0007	0.01	0.0351	0.56206	0.5621	0.5171	61	0	5	0.0075	0.12	4.81
Water Truck	1	8	8	20	0.0925	0.74	0.3847	3.08	0.8599	6.88	0.0013	0.01	0.0366	0.29283	0.2928	0.2694	123	0	1	0.0083	0.07	1.34
Wheel Loader	3	8	24	60	0.1272	3.05	0.4855	11.65	1.0034	24.08	0.0012	0.03	0.0558	1.33877	1.3388	1.2317	109	0	17	0.0115	0.28	16.52
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.50	0.0001	0.00	0.0013	0.02009	0.0201	0.0185	4	0	0	0.0005	0.01	0.29
Excavator	2	8	16	40	0.1300	2.08	0.5401	8.64	0.9817	15.71	0.0013	0.02	0.0536	0.85683	0.8568	0.7883	120	0	8	0.0117	0.19	7.50
Material Processing Unit	2	8	16	40	0.1566	2.51	0.5108	8.17	1.4125	22.60	0.0015	0.02	0.0613	0.98017	0.9802	0.9018	141	0	9	0.0141	0.23	9.04
Auger/Pole Setter	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Manlift	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Puller/Tensioner	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete pump	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete breaker mounted on an excavator	2	8	16	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete crusher	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Motor Grader	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
December Year 2012 Construction Equipment Total Emissions				**520**		**16.42**		**63.31**		**131.21**		**0.15**		**6.45**	**6.45**	**5.93**		**485.86**	**19449.95**		**1.48**	**74.95**

Van Norman Complex Water Quality Improvement Project - Construction Equipment Emissions

Estimated Equipment Construction Emissions

Equipment Type	Qty	Operating Hrs/WD/ each	Operating Hours per Day	Number of Operating Days	Rog Rate (lbs/hr)	Rog (lbs/day)	CO rate (lbs/hr)	CO (lbs/day)	NOX rate (lbs/hr)	NOX (lbs/day)	SOX rate (lbs/hr)	SOX (lbs/day)	PM rate (lbs/hr)	PM (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)	CO2 Rate (lbs/hr)	CO2 (lbs/day)	CO2 (lbs)	CH4 rate (lbs/hr)	CH4 (lbs/day)	CH4 (lbs)
January Year 2013 - Construction Equipments																						
Bob Cat	2	8	16	40	0.0468	0.75	0.2309	3.69	0.2522	4.04	0.0004	0.01	0.0179	0.28611	0.2861	0.2632	30	484	19377	0.0042	0.07	2.70
Bull Dozer	2	8	16	40	0.2986	4.78	1.1749	18.80	2.5452	40.72	0.0025	0.04	0.1064	1.70247	1.7025	1.5663	239	3826	153021	0.0269	0.43	17.25
Dump Truck	10	8	80	200	0.0097	0.77	0.0320	2.56	0.0601	4.81	0.0001	0.01	0.0029	0.23185	0.2319	0.2133	8	610	121990	0.0009	0.07	13.94
Generator	2	8	16	40	0.0767	1.23	0.3045	4.87	0.5430	8.69	0.0007	0.01	0.0324	0.51794	0.5179	0.4765	61	976	39035	0.0069	0.11	4.43
Water Truck	1	8	8	20	0.0872	0.70	0.3765	3.01	0.7938	6.35	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	981	19626	0.0079	0.06	1.26
Wheel Loader	3	8	24	60	0.1195	2.87	0.4763	11.43	0.9346	22.43	0.0012	0.03	0.0508	1.21926	1.2193	1.1217	109	2607	156401	0.0108	0.26	15.53
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.50	0.0001	0.00	0.0012	0.01971	0.0197	0.0181	4	69	2761	0.0005	0.01	0.29
Excavator	2	8	16	40	0.1220	1.95	0.5338	8.54	0.9071	14.51	0.0013	0.02	0.0481	0.76896	0.7690	0.7074	120	1913	76532	0.0110	0.18	7.04
Material Processing Unit	2	8	16	40	0.1473	2.36	0.4951	7.92	1.3132	21.01	0.0015	0.02	0.0562	0.89844	0.8984	0.8266	141	2259	90364	0.0133	0.21	8.51
Auger/Pole Setter	1	8	8	0																		
Manlift	1	8	8	0																		
Puller/Tensioner	1	8	8	0																		
Concrete pump	1	8	8	0																		
Concrete breaker mounted on an excavator	2	8	16	0																		
Concrete crusher	1	8	8	0																		
Motor Grader	1	8	8	0																		
January Year 2013 Construction Equipment Total Emissions				**520**		**15.48**		**61.25**		**123.06**		**0.15**			**5.91**	**5.44**		**13,725**	**679,108**		**1.3969**	**70.9436**
February Year 2013 - Construction Equipments																						
Bob Cat	2	8	16	40	0.0468	0.75	0.2309	3.69	0.2522	4.04	0.0004	0.01	0.0179	0.28611	0.2861	0.2632	30	484	19377	0.0042	0.07	2.70
Bull Dozer	2	8	16	40	0.2986	4.78	1.1749	18.80	2.5452	40.72	0.0025	0.04	0.1064	1.70247	1.7025	1.5663	239	3826	153021	0.0269	0.43	17.25
Dump Truck	10	8	80	200	0.0097	0.77	0.0320	2.56	0.0601	4.81	0.0001	0.01	0.0029	0.23185	0.2319	0.2133	8	610	121990	0.0009	0.07	13.94
Generator	2	8	16	40	0.0767	1.23	0.3045	4.87	0.5430	8.69	0.0007	0.01	0.0324	0.51794	0.5179	0.4765	61	976	39035	0.0069	0.11	4.43
Water Truck	1	8	8	20	0.0872	0.70	0.3765	3.01	0.7938	6.35	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	981	19626	0.0079	0.06	1.26
Wheel Loader	3	8	24	60	0.1195	2.87	0.4763	11.43	0.9346	22.43	0.0012	0.03	0.0508	1.21926	1.2193	1.1217	109	2607	156401	0.0108	0.26	15.53
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.50	0.0001	0.00	0.0012	0.01971	0.0197	0.0181	4	69	2761	0.0005	0.01	0.29
Excavator	2	8	16	40	0.1220	1.95	0.5338	8.54	0.9071	14.51	0.0013	0.02	0.0481	0.76896	0.7690	0.7074	120	1913	76532	0.0110	0.18	7.04
Material Processing Unit	2	8	16	40	0.1473	2.36	0.4951	7.92	1.3132	21.01	0.0015	0.02	0.0562	0.89844	0.8984	0.8266	141	2259	90364	0.0133	0.21	8.51
Auger/Pole Setter	1	8	8	0																		
Manlift	1	8	8	0																		
Puller/Tensioner	1	8	8	0																		
Concrete pump	1	8	8	0																		
Concrete breaker mounted on an excavator	2	8	16	0																		
Concrete crusher	1	8	8	0																		
Motor Grader	1	8	8	0																		
February Year 2013 Construction Equipment Total Emissions				**520**		**15.48**		**61.25**		**123.06**		**0.15**			**5.91**	**5.44**		**13,725**	**679,108**		**1.3969**	**70.9436**

March Year 2013 - Construction Equipments																						
Bob Cat	2	8	16	40	0.0468	0.75	0.2309	3.69	0.2522	4.04	0.0004	0.01	0.0179	0.28611	0.2861	0.2632	30	484	19377	0.0042	0.07	2.70
Bull Dozer	2	8	16	40	0.2986	4.78	1.1749	18.80	2.5452	40.72	0.0025	0.04	0.1064	1.70247	1.7025	1.5663	239	3826	153021	0.0269	0.43	17.25
Dump Truck	10	8	80	200	0.0097	0.77	0.0320	2.56	0.0601	4.81	0.0001	0.01	0.0029	0.23185	0.2319	0.2133	8	610	121990	0.0009	0.07	13.94
Generator	2	8	16	40	0.0767	1.23	0.3045	4.87	0.5430	8.69	0.0007	0.01	0.0324	0.51794	0.5179	0.4765	61	976	39035	0.0069	0.11	4.43
Water Truck	1	8	8	20	0.0872	0.70	0.3765	3.01	0.7938	6.35	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	981	19626	0.0079	0.06	1.26
Wheel Loader	3	8	24	60	0.1195	2.87	0.4763	11.43	0.9346	22.43	0.0012	0.03	0.0508	1.21926	1.2193	1.1217	109	2607	156401	0.0108	0.26	15.53
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.50	0.0001	0.00	0.0012	0.01971	0.0197	0.0181	4	69	2761	0.0005	0.01	0.29
Excavator	2	8	16	40	0.1220	1.95	0.5338	8.54	0.9071	14.51	0.0013	0.02	0.0481	0.76896	0.7690	0.7074	120	1913	76532	0.0110	0.18	7.04
Material Processing Unit	2	8	16	40	0.1473	2.36	0.4951	7.92	1.3132	21.01	0.0015	0.02	0.0562	0.89844	0.8984	0.8266	141	2259	90364	0.0133	0.21	8.51
Auger/Pole Setter	1	8	8	0																		
Manlift	1	8	8	0																		
Puller/Tensioner	1	8	8	0																		
Concrete pump	1	8	8	0																		
Concrete breaker mounted on an excavator	2	8	16	0																		
Concrete crusher	1	8	8	0																		
Motor Grader	1	8	8	0																		
March Year 2013 Construction Equipment Total Emissions				**520**		**15.48**		**61.25**		**123.06**		**0.15**			**5.91**	**5.44**		**########**	**#########**		**1.40**	**70.94**
April Year 2013 - Construction Equipments																						
Bob Cat	2	8	16	40	0.0468	0.75	0.2309	3.69	0.2522	4.04	0.0004	0.01	0.0179	0.28611	0.2861	0.2632	30	484	19377	0.0042	0.07	2.70
Bull Dozer	2	8	16	40	0.2986	4.78	1.1749	18.80	2.5452	40.72	0.0025	0.04	0.1064	1.70247	1.7025	1.5663	239	3826	153021	0.0269	0.43	17.25
Dump Truck	10	8	80	200	0.0097	0.77	0.0320	2.56	0.0601	4.81	0.0001	0.01	0.0029	0.23185	0.2319	0.2133	8	610	121990	0.0009	0.07	13.94
Generator	2	8	16	40	0.0767	1.23	0.3045	4.87	0.5430	8.69	0.0007	0.01	0.0324	0.51794	0.5179	0.4765	61	976	39035	0.0069	0.11	4.43
Water Truck	1	8	8	20	0.0872	0.70	0.3765	3.01	0.7938	6.35	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	981	19626	0.0079	0.06	1.26
Wheel Loader	3	8	24	60	0.1195	2.87	0.4763	11.43	0.9346	22.43	0.0012	0.03	0.0508	1.21926	1.2193	1.1217	109	2607	156401	0.0108	0.26	15.53
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.50	0.0001	0.00	0.0012	0.01971	0.0197	0.0181	4	69	2761	0.0005	0.01	0.29
Excavator	2	8	16	40	0.1220	1.95	0.5338	8.54	0.9071	14.51	0.0013	0.02	0.0481	0.76896	0.7690	0.7074	120	1913	76532	0.0110	0.18	7.04
Material Processing Unit	2	8	16	40	0.1473	2.36	0.4951	7.92	1.3132	21.01	0.0015	0.02	0.0562	0.89844	0.8984	0.8266	141	2259	90364	0.0133	0.21	8.51
Auger/Pole Setter	1	8	8	0																		
Manlift	1	8	8	0																		
Puller/Tensioner	1	8	8	0																		
Concrete pump	1	8	8	0																		
Concrete breaker mounted on an excavator	2	8	16	0																		
Concrete crusher	1	8	8	0																		
Motor Grader	1	8	8	0																		
April Year 2013 Construction Equipment Total Emissions				**520**		**15.48**		**61.25**		**123.06**		**0.15**		**5.91**	**5.91**	**5.44**		**13725.20**	**679107.96**		**1.40**	**70.94**
May Year 2013 - Construction Equipments																						
Bob Cat	2	8	16	40	0.0468	0.75	0.2309	3.69	0.2522	4.04	0.0004	0.01	0.0179	0.28611	0.2861	0.2632	30	484	19377	0.0042	0.07	2.70
Bull Dozer	2	8	16	40	0.2986	4.78	1.1749	18.80	2.5452	40.72	0.0025	0.04	0.1064	1.70247	1.7025	1.5663	239	3826	153021	0.0269	0.43	17.25
Dump Truck	10	8	80	200	0.0097	0.77	0.0320	2.56	0.0601	4.81	0.0001	0.01	0.0029	0.23185	0.2319	0.2133	8	610	121990	0.0009	0.07	13.94
Generator	2	8	16	40	0.0767	1.23	0.3045	4.87	0.5430	8.69	0.0007	0.01	0.0324	0.51794	0.5179	0.4765	61	976	39035	0.0069	0.11	4.43
Water Truck	1	8	8	20	0.0872	0.70	0.3765	3.01	0.7938	6.35	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	981	19626	0.0079	0.06	1.26
Wheel Loader	3	8	24	60	0.1195	2.87	0.4763	11.43	0.9346	22.43	0.0012	0.03	0.0508	1.21926	1.2193	1.1217	109	2607	156401	0.0108	0.26	15.53
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.50	0.0001	0.00	0.0012	0.01971	0.0197	0.0181	4	69	2761	0.0005	0.01	0.29
Excavator	2	8	16	40	0.1220	1.95	0.5338	8.54	0.9071	14.51	0.0013	0.02	0.0481	0.76896	0.7690	0.7074	120	1913	76532	0.0110	0.18	7.04
Material Processing Unit	2	8	16	40	0.1473	2.36	0.4951	7.92	1.3132	21.01	0.0015	0.02	0.0562	0.89844	0.8984	0.8266	141	2259	90364	0.0133	0.21	8.51
Auger/Pole Setter	1	8	8	0																		
Manlift	1	8	8	0																		
Puller/Tensioner	1	8	8	0																		
Concrete pump	1	8	8	0																		
Concrete breaker mounted on an excavator	2	8	16	0																		
Concrete crusher	1	8	8	0																		
Motor Grader	1	8	8	0																		
May Year 2013 Construction Equipment Total Emissions				**520**		**15.48**		**61.25**		**123.06**		**0.15**		**5.91**	**5.91**	**5.44**		**13725.20**	**679107.96**		**1.40**	**70.94**

June Year 2013 - Construction Equipments																						
Bob Cat	2	8	16	10	0.0468	0.75	0.2309	3.69	0.2522	4.04	0.0004	0.01	0.0179	0.28611	0.2861	0.2632	30	484	4844	0.0042	0.07	0.68
Bull Dozer	2	8	16	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Dump Truck	10	8	80	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Generator	2	8	16	20	0.0767	1.23	0.3045	4.87	0.5430	8.69	0.0007	0.01	0.0324	0.51794	0.5179	0.4765	61	976	19518	0.0069	0.11	2.21
Water Truck	1	8	8	10	0.0872	0.70	0.3765	3.01	0.7938	6.35	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	981	9813	0.0079	0.06	0.63
Wheel Loader	3	8	24	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Compactor	2	8	16	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Excavator	2	8	16	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Material Processing Unit	2	8	16	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Auger/Pole Setter	1	8	8	10	0.0786	0.63	0.1925	1.54	0.3059	2.45	0.0004	0.00	0.0202	0.16146	0.1615	0.1485	35	278	2778	0.0048	0.04	0.38
Manlift	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Puller/Tensioner	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete pump	1	8	8	5	0.0748	0.60	0.2926	2.34	0.4705	3.76	0.0006	0.00	0.0323	0.25863	0.2586	0.2379	50	397	1984	0.0067	0.05	0.27
Concrete breaker mounted on an excavator	2	8	16	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete crusher	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Motor Grader	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
June Year 2013 Construction Equipment Total Emissions				**55**		**3.90**		**15.46**		**25.29**		**0.04**		**1.49**	**1.49**	**1.37**		**3116.24**	**38936.98**		**0.33**	**4.17**
July Year 2013 - Construction Equipments																						
Bob Cat	2	8	16	10	0.0468	0.75	0.2309	3.69	0.2522	4.04	0.0004	0.01	0.0179	0.28611	0.2861	0.2632	30	484	4844	0.0042	0.07	0.68
Bull Dozer	2	8	16	0																		
Dump Truck	10	8	80	0																		
Generator	2	8	16	20	0.0767	1.23	0.3045	4.87	0.5430	8.69	0.0007	0.01	0.0324	0.51794	0.5179	0.4765	61	976	19518	0.0069	0.11	2.21
Water Truck	1	8	8	10	0.0872	0.70	0.3765	3.01	0.7938	6.35	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	981	9813	0.0079	0.06	0.63
Wheel Loader	3	8	24	0																		
Compactor	2	8	16	0																		
Excavator	2	8	16	0																		
Material Processing Unit	2	8	16	0																		
Auger/Pole Setter	1	8	8	10	0.0786	0.63	0.1925	1.54	0.3059	2.45	0.0004	0.00	0.0202	0.16146	0.1615	0.1485	35	278	2778	0.0048	0.04	0.38
Manlift	1	8	8	10	0.0529	0.42	0.1925	1.54	0.3059	2.45	0.0004	0.00	0.0202	0.16146	0.1615	0.1485	35	278	2778	0.0048	0.04	0.38
Puller/Tensioner	1	8	8	0																		
Concrete pump	1	8	8	5	0.0748	0.60	0.2926	2.34	0.4705	3.76	0.0006	0.00	0.0323	0.25863	0.2586	0.2379	50	397	1984	0.0067	0.05	0.27
Concrete breaker mounted on an excavator	2	8	16	0																		
Concrete crusher	1	8	8	0																		
Motor Grader	1	8	8	0																		
July Year 2013 Construction Equipment Total Emissions				**65**		**4.32**		**17.00**		**27.73**		**0.04**			**1.65**	**1.52**		**3,394**	**41,715**		**0.3716**	**4.5537**
August Year 2013 - Construction Equipments																						
Bob Cat	2	8	16	10	0.0468	0.75	0.2309	3.69	0.2522	4.04	0.0004	0.01	0.0179	0.28611	0.2861	0.2632	30	484	4844	0.0042	0.07	0.68
Bull Dozer	2	8	16	0																		
Dump Truck	10	8	80	0																		
Generator	2	8	16	20	0.0767	1.23	0.3045	4.87	0.5430	8.69	0.0007	0.01	0.0324	0.51794	0.5179	0.4765	61	976	19518	0.0069	0.11	2.21
Water Truck	1	8	8	10	0.0872	0.70	0.3765	3.01	0.7938	6.35	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	981	9813	0.0079	0.06	0.63
Wheel Loader	3	8	24	0																		
Compactor	2	8	16	0																		
Excavator	2	8	16	0																		
Material Processing Unit	2	8	16	0																		
Auger/Pole Setter	1	8	8	10	0.0786	0.63	0.1925	1.54	0.3059	2.45	0.0004	0.00	0.0202	0.16146	0.1615	0.1485	35	278	2778	0.0048	0.04	0.38
Manlift	1	8	8	10	0.0529	0.42	0.1925	1.54	2.3376	18.70	0.0062	0.05	0.0715	0.57182	0.5718	0.5261	615	4921	49207	0.0231	0.19	1.85
Puller/Tensioner	1	8	8	0		0.00													0		0.00	0.00
Concrete pump	1	8	8	5	0.0748	0.60	0.2926	2.34	0.4705	3.76	0.0006	0.00	0.0323	0.25863	0.2586	0.2379	50	397	1984	0.0067	0.05	0.27
Concrete breaker mounted on an excavator	2	8	16	0																		
Concrete crusher	1	8	8	0																		
Motor Grader	1	8	8	0																		
August Year 2013 Construction Equipment Total Emissions				**65**		**4.32**		**17.00**		**43.99**		**0.08**			**2.06**	**1.90**		**8,037**	**88,144**		**0.5185**	**6.0230**

September Year 2013 - Construction Equipments																						
Bob Cat	2	8	16	10	0.0468	0.75	0.2309	3.69	0.2522	4.04	0.0004	0.01	0.0179	0.28611	0.2861	0.2632	30	484	4844	0.0042	0.07	0.68
Bull Dozer	2	8	16	0																		
Dump Truck	10	8	80	0																		
Generator	2	8	16	20	0.0767	1.23	0.3045	4.87	0.5430	8.69	0.0007	0.01	0.0324	0.51794	0.5179	0.4765	61	976	19518	0.0069	0.11	2.21
Water Truck	1	8	8	10	0.0872	0.70	0.3765	3.01	0.7938	6.35	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	981	9813	0.0079	0.06	0.63
Wheel Loader	3	8	24	0																		
Compactor	2	8	16	0																		
Excavator	2	8	16	0																		
Material Processing Unit	2	8	16	0																		
Auger/Pole Setter	1	8	8	0																		
Manlift	1	8	8	0																		
Puller/Tensioner	1	8	8	10	0.0872	0.70	0.3765	3.01	0.7938	6.35	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	981	9813	0.0079	0.06	0.63
Concrete pump	1	8	8	0																		
Concrete breaker mounted on an excavator	2	8	16	0																		
Concrete crusher	1	8	8	0																		
Motor Grader	1	8	8	0																		
September Year 2013 Construction Equipment Total Emissions				**50**		**3.37**		**14.59**		**25.42**		**0.04**			**1.33**	**1.23**		**3,423**	**43,988**		**0.3042**	**4.1493**
October Year 2013 - Construction Equipments																						
Bob Cat	2	8	16	40	0.0468	0.75	0.2309	3.69	0.2522	4.04	0.0004	0.01	0.0179	0.28611	0.2861	0.2632	30	484	19377	0.0042	0.07	2.70
Bull Dozer	2	8	16	20	0.2986	4.78	1.1749	18.80	2.5452	40.72	0.0025	0.04	0.1064	1.70247	1.7025	1.5663	239	3826	76511	0.0269	0.43	8.62
Dump Truck	10	8	80	160	0.0097	0.77	0.0320	2.56	0.0601	4.81	0.0001	0.01	0.0029	0.23185	0.2319	0.2133	8	610	97592	0.0009	0.07	11.15
Generator	2	8	16	40	0.0767	1.23	0.3045	4.87	0.5430	8.69	0.0007	0.01	0.0324	0.51794	0.5179	0.4765	61	976	39035	0.0069	0.11	4.43
Water Truck	1	8	8	20	0.0872	0.70	0.3765	3.01	0.7938	6.35	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	981	19626	0.0079	0.06	1.26
Wheel Loader	3	8	24	60	0.1195	2.87	0.4763	11.43	0.9346	22.43	0.0012	0.03	0.0508	1.21926	1.2193	1.1217	109	2607	156401	0.0108	0.26	15.53
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.50	0.0001	0.00	0.0012	0.01971	0.0197	0.0181	4	69	2761	0.0005	0.01	0.29
Excavator	2	8	16	40	0.1220	1.95	0.5338	8.54	0.9071	14.51	0.0013	0.02	0.0481	0.76896	0.7690	0.7074	120	1913	76532	0.0110	0.18	7.04
Material Processing Unit	2	8	16	20	0.1473	2.36	0.4951	7.92	1.3132	21.01	0.0015	0.02	0.0562	0.89844	0.8984	0.8266	141	2259	45182	0.0133	0.21	4.25
Auger/Pole Setter	1	8	8	0																		
Manlift	1	8	8	0																		
Puller/Tensioner	1	8	8	0																		
Concrete pump	1	8	8	0																		
Concrete breaker mounted on an excavator	2	8	16	0																		
Concrete crusher	1	8	8	0																		
Motor Grader	1	8	8	0																		
October Year 2013 Construction Equipment Total Emissions				**440**		**15.48**		**61.25**		**123.06**		**0.15**			**5.91**	**5.44**		**13,725**	**533,017**		**1.3969**	**55.2790**
November Year 2013 - Construction Equipments																						
Bob Cat	2	8	16	40	0.0468	0.75	0.2309	3.69	0.2522	4.04	0.0004	0.01	0.0179	0.28611	0.2861	0.2632	30	484	19377	0.0042	0.07	2.70
Bull Dozer	2	8	16	20	0.2986	4.78	1.1749	18.80	2.5452	40.72	0.0025	0.04	0.1064	1.70247	1.7025	1.5663	239	0	9	0.0269	0.43	8.62
Dump Truck	10	8	80	160	0.0097	0.77	0.0320	2.56	0.0601	4.81	0.0001	0.01	0.0029	0.23185	0.2319	0.2133	8	0	11	0.0009	0.07	11.15
Generator	2	8	16	40	0.0767	1.23	0.3045	4.87	0.5430	8.69	0.0007	0.01	0.0324	0.51794	0.5179	0.4765	61	0	4	0.0069	0.11	4.43
Water Truck	1	8	8	20	0.0872	0.70	0.3765	3.01	0.7938	6.35	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	0	1	0.0079	0.06	1.26
Wheel Loader	3	8	24	60	0.1195	2.87	0.4763	11.43	0.9346	22.43	0.0012	0.03	0.0508	1.21926	1.2193	1.1217	109	0	16	0.0108	0.26	15.53
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.50	0.0001	0.00	0.0012	0.01971	0.0197	0.0181	4	0	0	0.0005	0.01	0.29
Excavator	2	8	16	40	0.1220	1.95	0.5338	8.54	0.9071	14.51	0.0013	0.02	0.0481	0.76896	0.7690	0.7074	120	0	7	0.0110	0.18	7.04
Material Processing Unit	2	8	16	20	0.1473	2.36	0.4951	7.92	1.3132	21.01	0.0015	0.02	0.0562	0.89844	0.8984	0.8266	141	0	4	0.0133	0.21	4.25
Auger/Pole Setter	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Manlift	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Puller/Tensioner	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete pump	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete breaker mounted on an excavator	2	8	16	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete crusher	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Motor Grader	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
November Year 2013 Construction Equipment Total Emissions				**440**		**15.48**		**61.25**		**123.06**		**0.15**			**5.91**	**5.44**		**486**	**19,429**		**1.3969**	**55.2790**

December Year 2013 - Construction Equipments																						
Bob Cat	2	8	16	40	0.0468	0.75	0.2309	3.69	0.2522	4.04	0.0004	0.01	0.0179	0.28611	0.2861	0.2632	30	484	19377	0.0042	0.07	2.70
Bull Dozer	2	8	16	20	0.2986	4.78	1.1749	18.80	2.5452	40.72	0.0025	0.04	0.1064	1.70247	1.7025	1.5663	239	0	9	0.0269	0.43	8.62
Dump Truck	10	8	80	160	0.0097	0.77	0.0320	2.56	0.0601	4.81	0.0001	0.01	0.0029	0.23185	0.2319	0.2133	8	0	11	0.0009	0.07	11.15
Generator	2	8	16	40	0.0767	1.23	0.3045	4.87	0.5430	8.69	0.0007	0.01	0.0324	0.51794	0.5179	0.4765	61	0	4	0.0069	0.11	4.43
Water Truck	1	8	8	20	0.0872	0.70	0.3765	3.01	0.7938	6.35	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	0	1	0.0079	0.06	1.26
Wheel Loader	3	8	24	60	0.1195	2.87	0.4763	11.43	0.9346	22.43	0.0012	0.03	0.0508	1.21926	1.2193	1.1217	109	0	16	0.0108	0.26	15.53
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.50	0.0001	0.00	0.0012	0.01971	0.0197	0.0181	4	0	0	0.0005	0.01	0.29
Excavator	2	8	16	20	0.1220	1.95	0.5338	8.54	0.9071	14.51	0.0013	0.02	0.0481	0.76896	0.7690	0.7074	120	0	4	0.0110	0.18	3.52
Material Processing Unit	2	8	16	20	0.1473	2.36	0.4951	7.92	1.3132	21.01	0.0015	0.02	0.0562	0.89844	0.8984	0.8266	141	0	4	0.0133	0.21	4.25
Auger/Pole Setter	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Manlift	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Puller/Tensioner	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete pump	1	8	8	20	0.0748	0.60	0.2926	2.34	0.4705	3.76	0.0006	0.00	0.0323	0.25863	0.2586	0.2379	50	0	1	0.0067	0.05	1.08
Concrete breaker mounted on an excavator	2	8	16	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete crusher	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Motor Grader	1	8	8	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
December Year 2013 Construction Equipment Total Emissions				**440**		**16.08**		**63.60**		**126.83**		**0.15**			**6.17**	**5.67**		**486**	**19,427**		**1.4509**	**52.8371**

Van Norman Complex Water Quality Improvement Project - Construction Equipment Emissions

Estimated Equipment Construction Emissions

Equipment Type	Qty	Operating Hrs/WD/ each	Operating Hours per Day	Number of Operating Days	Rog Rate (lbs/hr)	Rog (lbs/day)	CO rate (lbs/hr)	CO (lbs/day)	NOX rate (lbs/hr)	NOX (lbs/day)	NOX (lbs)	SOX rate (lbs/hr)	SOX (lbs/day)	PM rate (lbs/hr)	PM (lbs/day)	PM10 (lbs/day)	PM10 (lbs)	PM2.5 (lbs/day)	CO2 Rate (lbs/hr)	CO2 (lbs/day)	CO2 (lbs)	CH4 rate (lbs/hr)	CH4 (lbs/day)	CH4 (lbs)
January Year 2014 - Construction Equipments																								
Bob Cat	2	8	16	40	0.0406	0.65	0.2262	3.62	0.2369	3.79	151.64	0.0004	0.01	0.0152	0.24346	0.2435	9.7383	0.2240	30	484	19377	0.0037	0.06	2.35
Bull Dozer	2	8	16	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000	0.0000		0	0		0.00	0.00
Dump Truck	10	8	80	160	0.0095	0.76	0.0317	2.54	0.0595	4.76	761.40	0.0001	0.01	0.0027	0.21555	0.2156	34.4884	0.1983	8	610	97592	0.0009	0.07	10.93
Generator	2	8	16	40	0.0702	1.12	0.2974	4.76	0.5083	8.13	325.28	0.0007	0.01	0.0296	0.47303	0.4730	18.9210	0.4352	61	976	39035	0.0063	0.10	4.06
Water Truck	1	8	8	20	0.0820	0.66	0.3697	2.96	0.7168	5.73	114.70	0.0013	0.01	0.0296	0.2366	0.2366	4.7319	0.2177	123	981	19621	0.0074	0.06	1.18
Wheel Loader	3	8	24	60	0.1122	2.69	0.4683	11.24	0.8620	20.69	1241.27	0.0012	0.03	0.0461	1.10606	1.1061	66.3635	1.0176	109	2607	156401	0.0101	0.24	14.58
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.50	20.13	0.0001	0.00	0.0012	0.01961	0.0196	0.7844	0.0180	4	69	2761	0.0005	0.01	0.29
Excavator	2	8	16	40	0.1143	1.83	0.5289	8.46	0.8299	13.28	531.16	0.0013	0.02	0.0428	0.68556	0.6856	27.4224	0.6307	120	1913	76532	0.0103	0.16	6.60
Material Processing Unit	2	8	16	20	0.1381	2.21	0.4814	7.70	1.2068	19.31	386.17	0.0015	0.02	0.0511	0.81718	0.8172	16.3437	0.7518	141	2259	45182	0.0125	0.20	3.99
Auger/Pole Setter	1	8	8	0																				
Manlift	1	8	8	0																				
Puller/Tensioner	1	8	8	0																				
Concrete pump	1	8	8	20	0.0683	0.55	0.2873	2.30	0.4427	3.54	70.83	0.0006	0.005	0.0295	0.23596	0.2360	4.7192	0.2171	50	397	7937	0.0062	0.05	0.99
Concrete breaker mounted on an excavator	2	8	16	0																				
Concrete crusher	1	8	8	0																				
Motor Grader	1	8	8	0																				
January Year 2014 Construction Equipment Total Emissions				**440**		**10.54**		**44.00**		**79.74**	**3,602.58**		**0.12**			**4.03**	**183.51**	**3.71**		**10,296**	**464,438**		**0.9514**	**44.9542**
February Year 2014 - Construction Equipments																								
Bob Cat	2	8	16	40	0.0406	0.65	0.2262	3.62	0.2369	3.79	151.64	0.0004	0.01	0.0152	0.24346	0.2435	9.7383	0.2240	30	484	19377	0.0037	0.06	2.35
Bull Dozer	2	8	16	0																				
Dump Truck	10	8	80	160	0.0095	0.76	0.0317	2.54	0.0595	4.76	761.40	0.0001	0.01	0.0027	0.21555	0.2156	34.4884	0.1983	8	610	97592	0.0009	0.07	10.93
Generator	2	8	16	40	0.0702	1.12	0.2974	4.76	0.5083	8.13	325.28	0.0007	0.01	0.0296	0.47303	0.4730	18.9210	0.4352	61	976	39035	0.0063	0.10	4.06
Water Truck	1	8	8	20	0.0820	0.66	0.3697	2.96	0.7168	5.73	114.70	0.0013	0.01	0.0296	0.2366	0.2366	4.7319	0.2177	123	981	19621	0.0074	0.06	1.18
Wheel Loader	3	8	24	60	0.1122	2.69	0.4683	11.24	0.8620	20.69	1241.27	0.0012	0.03	0.0461	1.10606	1.1061	66.3635	1.0176	109	2607	156401	0.0101	0.24	14.58
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.50	20.13	0.0001	0.00	0.0012	0.01961	0.0196	0.7844	0.0180	4	69	2761	0.0005	0.01	0.29
Excavator	2	8	16	40	0.1143	1.83	0.5289	8.46	0.8299	13.28	531.16	0.0013	0.02	0.0428	0.68556	0.6856	27.4224	0.6307	120	1913	76532	0.0103	0.16	6.60
Material Processing Unit	2	8	16	20	0.1381	2.21	0.4814	7.70	1.2068	19.31	386.17	0.0015	0.02	0.0511	0.81718	0.8172	16.3437	0.7518	141	2259	45182	0.0125	0.20	3.99
Auger/Pole Setter	1	8	8	0																				
Manlift	1	8	8	0																				
Puller/Tensioner	1	8	8	0																				
Concrete pump	1	8	8	20	0.0683	0.55	0.2873	2.30	0.4427	3.54	70.83	0.0006	0.00	0.0295	0.23596	0.2360	4.7192	0.2171	50	397	7937	0.0062	0.05	0.99
Concrete breaker mounted on an excavator	2	8	16	0																				
Concrete crusher	1	8	8	0																				
Motor Grader	1	8	8	0																				
February Year 2014 Construction Equipment Total Emissions				**440**		**10.54**		**44.00**		**79.74**	**3,602.58**		**0.12**			**4.03**	**183.51**	**3.71**		**10,296**	**464,438**		**0.9514**	**44.9542**

March Year 2014 - Construction Equipments																								
Bob Cat	2	8	16	40	0.0406	0.65	0.2262	3.62	0.2369	3.79	151.64	0.0004	0.01	0.0152	0.24346	0.2435	9.7383	0.2240	30	484	19377	0.0037	0.06	2.35
Bull Dozer	2	8	16	0																				
Dump Truck	10	8	80	160	0.0095	0.76	0.0317	2.54	0.0595	4.76	761.40	0.0001	0.01	0.0027	0.21555	0.2156	34.4884	0.1983	8	610	97592	0.0009	0.07	10.93
Generator	2	8	16	40	0.0702	1.12	0.2974	4.76	0.5083	8.13	325.28	0.0007	0.01	0.0296	0.47303	0.4730	18.9210	0.4352	61	976	39035	0.0063	0.10	4.06
Water Truck	1	8	8	20	0.0820	0.66	0.3697	2.96	0.7168	5.73	114.70	0.0013	0.01	0.0296	0.2366	0.2366	4.7319	0.2177	123	981	19621	0.0074	0.06	1.18
Wheel Loader	3	8	24	60	0.1122	2.69	0.4683	11.24	0.8620	20.69	1241.27	0.0012	0.03	0.0461	1.10606	1.1061	66.3635	1.0176	109	2607	156401	0.0101	0.24	14.58
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.50	20.13	0.0001	0.00	0.0012	0.01961	0.0196	0.7844	0.0180	4	69	2761	0.0005	0.01	0.29
Excavator	2	8	16	20	0.1143	1.83	0.5289	8.46	0.8299	13.28	265.58	0.0013	0.02	0.0428	0.68556	0.6856	13.7112	0.6307	120	1913	38266	0.0103	0.16	3.30
Material Processing Unit	2	8	16	20	0.1381	2.21	0.4814	7.70	1.2068	19.31	386.17	0.0015	0.02	0.0511	0.81718	0.8172	16.3437	0.7518	141	2259	45182	0.0125	0.20	3.99
Auger/Pole Setter	1	8	8	0																				
Manlift	1	8	8	0																				
Puller/Tensioner	1	8	8	0																				
Concrete pump	1	8	8	0																				
Concrete breaker mounted on an excavator	2	8	16	0																				
Concrete crusher	1	8	8	0																				
Motor Grader	1	8	8	0																				
March Year 2014 Construction Equipment Total Emissions				**400**		**10.00**		**41.70**		**76.20**	**3266.17**		**0.11**			**3.80**	**165.08**	**3.49**		**9,899.41**	**418,235.19**		**0.90**	**40.67**
April Year 2014 - Construction Equipments																								
Bob Cat	2	8	16	40	0.0406	0.65	0.2262	3.62	0.2369	3.79	151.64	0.0004	0.01	0.0152	0.24346	0.2435	9.7383	0.2240	30	484	19377	0.0037	0.06	2.35
Bull Dozer	2	8	16	0																				
Dump Truck	10	8	80	80	0.0095	0.76	0.0317	2.54	0.0595	4.76	380.70	0.0001	0.01	0.0027	0.21555	0.2156	17.2442	0.1983	8	610	48796	0.0009	0.07	5.46
Generator	2	8	16	40	0.0702	1.12	0.2974	4.76	0.5083	8.13	325.28	0.0007	0.01	0.0296	0.47303	0.4730	18.9210	0.4352	61	976	39035	0.0063	0.10	4.06
Water Truck	1	8	8	20	0.0820	0.66	0.3697	2.96	0.7168	5.73	114.70	0.0013	0.01	0.0296	0.2366	0.2366	4.7319	0.2177	123	981	19621	0.0074	0.06	1.18
Wheel Loader	3	8	24	60	0.1122	2.69	0.4683	11.24	0.8620	20.69	1241.27	0.0012	0.03	0.0461	1.10606	1.1061	66.3635	1.0176	109	2607	156401	0.0101	0.24	14.58
Compactor	2	8	16	20	0.0050	0.08	0.0263	0.42	0.0314	0.50	10.06	0.0001	0.00	0.0012	0.01961	0.0196	0.3922	0.0180	4	69	1380	0.0005	0.01	0.14
Excavator	2	8	16	0	0.1143	1.83	0.5289	8.46	0.8299	13.28	0.00	0.0013	0.02	0.0428	0.68556	0.6856	0.0000	0.6307	120	1913	0	0.0103	0.16	0.00
Material Processing Unit	2	8	16	10	0.1381	2.21	0.4814	7.70	1.2068	19.31	193.08	0.0015	0.02	0.0511	0.81718	0.8172	8.1718	0.7518	141	2259	22591	0.0125	0.20	1.99
Auger/Pole Setter	1	8	8	0																				
Manlift	1	8	8	0																				
Puller/Tensioner	1	8	8	0																				
Concrete pump	1	8	8	20	0.0683	0.55	0.2873	2.30	0.4427	3.54	70.83	0.0006	0.00	0.0295	0.23596	0.2360	4.7192	0.2171	50	397	7937	0.0062	0.05	0.99
Concrete breaker mounted on an excavator	2	8	16	0																				
Concrete crusher	1	8	8	0																				
Motor Grader	1	8	8	0																				
April Year 2014 Construction Equipment Total Emissions				**290**		**10.54**		**44.00**		**79.74**	**2487.57**		**0.12**		**4.03**	**4.03**	**130.28**	**3.71**		**10296.26**	**315138.90**		**0.95**	**30.75**

May Year 2014 - Construction Equipments																								
Bob Cat	2	8	16	40	0.0406	0.65	0.2262	3.62	0.2369	3.79	151.64	0.0004	0.01	0.0152	0.24346	0.2435	9.7383	0.2240	30	484	19377	0.0037	0.06	2.35
Bull Dozer	2	8	16	0																				
Dump Truck	10	8	80	80	0.0095	0.76	0.0317	2.54	0.0595	4.76	380.70	0.0001	0.01	0.0027	0.21555	0.2156	17.2442	0.1983	8	610	48796	0.0009	0.07	5.46
Generator	2	8	16	40	0.0702	1.12	0.2974	4.76	0.5083	8.13	325.28	0.0007	0.01	0.0296	0.47303	0.4730	18.9210	0.4352	61	976	39035	0.0063	0.10	4.06
Water Truck	1	8	8	20	0.0820	0.66	0.3697	2.96	0.7168	5.73	114.70	0.0013	0.01	0.0296	0.2366	0.2366	4.7319	0.2177	123	981	19621	0.0074	0.06	1.18
Wheel Loader	3	8	24	60	0.1122	2.69	0.4683	11.24	0.8620	20.69	1241.27	0.0012	0.03	0.0461	1.10606	1.1061	66.3635	1.0176	109	2607	156401	0.0101	0.24	14.58
Compactor	2	8	16	20	0.0050	0.08	0.0263	0.42	0.0314	0.50	10.06	0.0001	0.00	0.0012	0.01961	0.0196	0.3922	0.0180	4	69	1380	0.0005	0.01	0.14
Excavator	2	8	16	0																				
Material Processing Unit	2	8	16	10	0.1381	2.21	0.4814	7.70	1.2068	19.31	193.08	0.0015	0.02	0.0511	0.81718	0.8172	8.1718	0.7518	141	2259	22591	0.0125	0.20	1.99
Auger/Pole Setter	1	8	8	0																				
Manlift	1	8	8	0																				
Puller/Tensioner	1	8	8	0																				
Concrete pump	1	8	8	20	0.0683	0.55	0.2873	2.30	0.4427	3.54	70.83	0.0006	0.00	0.0295	0.23596	0.2360	4.7192	0.2171	50	397	7937	0.0062	0.05	0.99
Concrete breaker mounted on an excavator	2	8	16	40	0.1143	1.83	0.5289	8.46	0.8299	13.28	531.16	0.0013	0.02	0.0428	0.68556	0.6856	27.4224	0.6307	120	1913	76532	0.0103	0.16	6.60
Concrete crusher	1	8	8	20	0.1597	1.28	0.6651	5.32	1.0867	8.69	173.88	0.0015	0.01	0.0677	0.5416	0.5416	10.8320	0.4983	132	1058	21169	0.0144	0.12	2.31
Motor Grader	1	8	8	0																				
May Year 2014 Construction Equipment Total Emissions				**350**		**11.82**		**49.32**		**88.43**	**3192.61**		**0.13**		**4.57**	**4.57**	**168.54**	**4.21**		**11354.73**	**412839.90**		**1.07**	**39.66**
June Year 2014 - Construction Equipments																								
Bob Cat	2	8	16	40	0.0406	0.65	0.2262	3.62	0.2369	3.79	151.64	0.0004	0.01	0.0152	0.24346	0.2435	9.7383	0.2240	30	484	19377	0.0037	0.06	2.35
Bull Dozer	2	8	16	0																				
Dump Truck	10	8	80	80	0.0095	0.76	0.0317	2.54	0.0595	4.76	380.70	0.0001	0.01	0.0027	0.21555	0.2156	17.2442	0.1983	8	610	48796	0.0009	0.07	5.46
Generator	2	8	16	40	0.0702	1.12	0.2974	4.76	0.5083	8.13	325.28	0.0007	0.01	0.0296	0.47303	0.4730	18.9210	0.4352	61	976	39035	0.0063	0.10	4.06
Water Truck	1	8	8	20	0.0820	0.66	0.3697	2.96	0.7168	5.73	114.70	0.0013	0.01	0.0296	0.2366	0.2366	4.7319	0.2177	123	981	19621	0.0074	0.06	1.18
Wheel Loader	3	8	24	60	0.1122	2.69	0.4683	11.24	0.8620	20.69	1241.27	0.0012	0.03	0.0461	1.10606	1.1061	66.3635	1.0176	109	2607	156401	0.0101	0.24	14.58
Compactor	2	8	16	20	0.0050	0.08	0.0263	0.42	0.0314	0.50	10.06	0.0001	0.00	0.0012	0.01961	0.0196	0.3922	0.0180	4	69	1380	0.0005	0.01	0.14
Excavator	2	8	16	0																				
Material Processing Unit	2	8	16	10	0.1381	2.21	0.4814	7.70	1.2068	19.31	193.08	0.0015	0.02	0.0511	0.81718	0.8172	8.1718	0.7518	141	2259	22591	0.0125	0.20	1.99
Auger/Pole Setter	1	8	8	0																				
Manlift	1	8	8	0																				
Puller/Tensioner	1	8	8	0																				
Concrete pump	1	8	8	0																				
Concrete breaker mounted on an excavator	2	8	16	20	0.1143	1.83	0.5289	8.46	0.8299	13.28	265.58	0.0013	0.02	0.0428	0.68556	0.6856	13.7112	0.6307	120	1913	38266	0.0103	0.16	3.30
Concrete crusher	1	8	8	20	0.1597	1.28	0.6651	5.32	1.0867	8.69	173.88	0.0015	0.01	0.0677	0.5416	0.5416	10.8320	0.4983	132	1058	21169	0.0144	0.12	2.31
Motor Grader	1	8	8	0																				
June Year 2014 Construction Equipment Total Emissions				**310**		**11.28**		**47.02**		**84.89**	**2856.20**		**0.12**		**4.34**	**4.34**	**150.11**	**3.99**		**10957.88**	**366637.08**		**1.02**	**35.37**

July Year 2014 - Construction Equipments

Bob Cat	2	8	16	20	0.0406	0.65	0.2262	3.62	0.2369	3.79	75.82	0.0004	0.01	0.0152	0.24346	0.2435	4.8691	0.2240	30	484	9688	0.0037	0.06	1.17
Bull Dozer	2	8	16	0																				
Dump Truck	10	8	80	80	0.0095	0.76	0.0317	2.54	0.0595	4.76	380.70	0.0001	0.01	0.0027	0.21555	0.2156	17.2442	0.1983	8	610	48796	0.0009	0.07	5.46
Generator	2	8	16	40	0.0702	1.12	0.2974	4.76	0.5083	8.13	325.28	0.0007	0.01	0.0296	0.47303	0.4730	18.9210	0.4352	61	976	39035	0.0063	0.10	4.06
Water Truck	1	8	8	20	0.0820	0.66	0.3697	2.96	0.7168	5.73	114.70	0.0013	0.01	0.0296	0.2366	0.2366	4.7319	0.2177	123	981	19621	0.0074	0.06	1.18
Wheel Loader	3	8	24	30	0.1122	2.69	0.4683	11.24	0.8620	20.69	620.64	0.0012	0.03	0.0461	1.10606	1.1061	33.1817	1.0176	109	2607	78201	0.0101	0.24	7.29
Compactor	2	8	16	20	0.0050	0.08	0.0263	0.42	0.0314	0.50	10.06	0.0001	0.00	0.0012	0.01961	0.0196	0.3922	0.0180	4	69	1380	0.0005	0.01	0.14
Excavator	2	8	16	20	0.1143	1.83	0.5289	8.46	0.8299	13.28	265.58	0.0013	0.02	0.0428	0.68556	0.6856	13.7112	0.6307	120	1913	38266	0.0103	0.16	3.30
Material Processing Unit	2	8	16	10	0.1381	2.21	0.4814	7.70	1.2068	19.31	193.08	0.0015	0.02	0.0511	0.81718	0.8172	8.1718	0.7518	141	2259	22591	0.0125	0.20	1.99
Auger/Pole Setter	1	8	8	0																				
Manlift	1	8	8	0																				
Puller/Tensioner	1	8	8	0																				
Concrete pump	1	8	8	0																				
Concrete breaker mounted on an excavator	2	8	16	0																				
Concrete crusher	1	8	8	20	0.1597	1.28	0.6651	5.32	1.0867	8.69	173.88	0.0015	0.01	0.0677	0.5416	0.5416	10.8320	0.4983	132	1058	21169	0.0144	0.12	2.31
Motor Grader	1	8	8	0																				
July Year 2014 Construction Equipment Total Emissions				**260**		**11.28**		**47.02**		**84.89**	**2,159.74**		**0.12**			**4.34**	**112.06**	**3.99**		**10,958**	**278,748**		**1.0174**	**26.9098**

August Year 2014 - Construction Equipments

Bob Cat	2	8	16	40	0.0406	0.65	0.2262	3.62	0.2369	3.79	151.64	0.0004	0.01	0.0152	0.24346	0.2435	9.7383	0.2240	30	484	19377	0.0037	0.06	2.35
Bull Dozer	2	8	16	0																				
Dump Truck	10	8	80	80	0.0095	0.76	0.0317	2.54	0.0595	4.76	380.70	0.0001	0.01	0.0027	0.21555	0.2156	17.2442	0.1983	8	610	48796	0.0009	0.07	5.46
Generator	2	8	16	40	0.0702	1.12	0.2974	4.76	0.5083	8.13	325.28	0.0007	0.01	0.0296	0.47303	0.4730	18.9210	0.4352	61	976	39035	0.0063	0.10	4.06
Water Truck	1	8	8	20	0.0820	0.66	0.3697	2.96	0.7168	5.73	114.70	0.0013	0.01	0.0296	0.2366	0.2366	4.7319	0.2177	123	981	19621	0.0074	0.06	1.18
Wheel Loader	3	8	24	60	0.1122	2.69	0.4683	11.24	0.8620	20.69	1241.27	0.0012	0.03	0.0461	1.10606	1.1061	66.3635	1.0176	109	2607	156401	0.0101	0.24	14.58
Compactor	2	8	16	20	0.0050	0.08	0.0263	0.42	0.0314	0.50	10.06	0.0001	0.00	0.0012	0.01961	0.0196	0.3922	0.0180	4	69	1380	0.0005	0.01	0.14
Excavator	2	8	16	0																				
Material Processing Unit	2	8	16	10	0.1381	2.21	0.4814	7.70	1.2068	19.31	193.08	0.0015	0.02	0.0511	0.81718	0.8172	8.1718	0.7518	141	2259	22591	0.0125	0.20	1.99
Auger/Pole Setter	1	8	8	0																				
Manlift	1	8	8	0																				
Puller/Tensioner	1	8	8	0																				
Concrete pump	1	8	8	20	0.0683	0.55	0.2873	2.30	0.4427	3.54	70.83	0.0006	0.00	0.0295	0.23596	0.2360	4.7192	0.2171	50	397	7937	0.0062	0.05	0.99
Concrete breaker mounted on an excavator	2	8	16	0																				
Concrete crusher	1	8	8	0																				
Motor Grader	1	8	8	0																				
August Year 2014 Construction Equipment Total Emissions				**290**		**8.72**		**35.53**		**66.46**	**2,487.57**		**0.09**			**3.35**	**130.28**	**3.08**		**8,383**	**315,139**		**0.7865**	**30.7521**

September Year 2014 - Construction Equipments																								
Bob Cat	2	8	16	40	0.0406	0.65	0.2262	3.62	0.2369	3.79	151.64	0.0004	0.01	0.0152	0.24346	0.2435	9.7383	0.2240	30	484	19377	0.0037	0.06	2.35
Bull Dozer	2	8	16	0																				
Dump Truck	10	8	80	80	0.0095	0.76	0.0317	2.54	0.0595	4.76	380.70	0.0001	0.01	0.0027	0.21555	0.2156	17.2442	0.1983	8	610	48796	0.0009	0.07	5.46
Generator	2	8	16	40	0.0702	1.12	0.2974	4.76	0.5083	8.13	325.28	0.0007	0.01	0.0296	0.47303	0.4730	18.9210	0.4352	61	976	39035	0.0063	0.10	4.06
Water Truck	1	8	8	20	0.0820	0.66	0.3697	2.96	0.7168	5.73	114.70	0.0013	0.01	0.0296	0.2366	0.2366	4.7319	0.2177	123	981	19621	0.0074	0.06	1.18
Wheel Loader	3	8	24	60	0.1122	2.69	0.4683	11.24	0.8620	20.69	1241.27	0.0012	0.03	0.0461	1.10606	1.1061	66.3635	1.0176	109	2607	156401	0.0101	0.24	14.58
Compactor	2	8	16	20	0.0050	0.08	0.0263	0.42	0.0314	0.50	10.06	0.0001	0.00	0.0012	0.01961	0.0196	0.3922	0.0180	4	69	1380	0.0005	0.01	0.14
Excavator	2	8	16	0																				
Material Processing Unit	2	8	16	10	0.1381	2.21	0.4814	7.70	1.2068	19.31	193.08	0.0015	0.02	0.0511	0.81718	0.8172	8.1718	0.7518	141	2259	22591	0.0125	0.20	1.99
Auger/Pole Setter	1	8	8	0																				
Manlift	1	8	8	0																				
Puller/Tensioner	1	8	8	0																				
Concrete pump	1	8	8	20	0.0683	0.55	0.2873	2.30	0.4427	3.54	70.83	0.0006	0.00	0.0295	0.23596	0.2360	4.7192	0.2171	50	397	7937	0.0062	0.05	0.99
Concrete breaker mounted on an excavator	2	8	16	10	0.1143	1.83	0.5289	8.46	0.8299	13.28	132.79	0.0013	0.02	0.0428	0.68556	0.6856	6.8556	0.6307	120	1913	19133	0.0103	0.16	1.65
Concrete crusher	1	8	8	20	0.1597	1.28	0.6651	5.32	1.0867	8.69	173.88	0.0015	0.01	0.0677	0.5416	0.5416	10.8320	0.4983	132	1058	21169	0.0144	0.12	2.31
Motor Grader	1	8	8	0																				
September Year 2014 Construction Equipment Total Emissions				**320**		**11.82**		**49.32**		**88.43**	**2,794.24**		**0.13**			**4.57**	**147.97**	**4.21**		**11,355**	**355,441**		**1.0667**	**34.7080**
October Year 2014 - Construction Equipments																								
Bob Cat	2	8	16	40	0.0406	0.65	0.2262	3.62	0.2369	3.79	151.64	0.0004	0.01	0.0152	0.24346	0.2435	9.7383	0.2240	30	484	19377	0.0037	0.06	2.35
Bull Dozer	2	8	16	0																				
Dump Truck	10	8	80	160	0.0095	0.76	0.0317	2.54	0.0595	4.76	761.40	0.0001	0.01	0.0027	0.21555	0.2156	34.4884	0.1983	8	610	97592	0.0009	0.07	10.93
Generator	2	8	16	40	0.0702	1.12	0.2974	4.76	0.5083	8.13	325.28	0.0007	0.01	0.0296	0.47303	0.4730	18.9210	0.4352	61	976	39035	0.0063	0.10	4.06
Water Truck	1	8	8	20	0.0820	0.66	0.3697	2.96	0.7168	5.73	114.70	0.0013	0.01	0.0296	0.2366	0.2366	4.7319	0.2177	123	981	19621	0.0074	0.06	1.18
Wheel Loader	3	8	24	60	0.1122	2.69	0.4683	11.24	0.8620	20.69	1241.27	0.0012	0.03	0.0461	1.10606	1.1061	66.3635	1.0176	109	2607	156401	0.0101	0.24	14.58
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.50	20.13	0.0001	0.00	0.0012	0.01961	0.0196	0.7844	0.0180	4	69	2761	0.0005	0.01	0.29
Excavator	2	8	16	20	0.1143	1.83	0.5289	8.46	0.8299	13.28	265.58	0.0013	0.02	0.0428	0.68556	0.6856	13.7112	0.6307	120	1913	38266	0.0103	0.16	3.30
Material Processing Unit	2	8	16	20	0.1381	2.21	0.4814	7.70	1.2068	19.31	386.17	0.0015	0.02	0.0511	0.81718	0.8172	16.3437	0.7518	141	2259	45182	0.0125	0.20	3.99
Auger/Pole Setter	1	8	8	0																				
Manlift	1	8	8	0																				
Puller/Tensioner	1	8	8	0																				
Concrete pump	1	8	8	20	0.0683	0.55	0.2873	2.30	0.4427	3.54	70.83	0.0006	0.00	0.0295	0.23596	0.2360	4.7192	0.2171	50	397	7937	0.0062	0.05	0.99
Concrete breaker mounted on an excavator	2	8	16	10	0.1143	1.83	0.5289	8.46	0.8299	13.28	132.79	0.0013	0.02	0.0428	0.68556	0.6856	6.8556	0.6307	120	1913	19133	0.0103	0.16	1.65
Concrete crusher	1	8	8	20	0.1597	1.28	0.6651	5.32	1.0867	8.69	173.88	0.0015	0.01	0.0677	0.5416	0.5416	10.8320	0.4983	132	1058	21169	0.0144	0.12	2.31
Motor Grader	1	8	8	0																				
October Year 2014 Construction Equipment Total Emissions				**450**		**13.65**		**57.78**		**101.71**	**3,643.67**		**0.15**			**5.26**	**187.49**	**4.84**		**13,268**	**466,475**		**1.2317**	**45.6108**

November Year 2014 - Construction Equipments																								
Bob Cat	2	8	16	40	0.0406	0.65	0.2262	3.62	0.2369	3.79	151.64	0.0004	0.01	0.0152	0.24346	0.2435	9.7383	0.2240	30	484	19377	0.0037	0.06	2.35
Bull Dozer	2	8	16	0																				
Dump Truck	10	8	80	160	0.0095	0.76	0.0317	2.54	0.0595	4.76	761.40	0.0001	0.01	0.0027	0.21555	0.2156	34.4884	0.1983	8	610	97592	0.0009	0.07	10.93
Generator	2	8	16	40	0.0702	1.12	0.2974	4.76	0.5083	8.13	325.28	0.0007	0.01	0.0296	0.47303	0.4730	18.9210	0.4352	61	976	39035	0.0063	0.10	4.06
Water Truck	1	8	8	20	0.0820	0.66	0.3697	2.96	0.7168	5.73	114.70	0.0013	0.01	0.0296	0.2366	0.2366	4.7319	0.2177	123	981	19621	0.0074	0.06	1.18
Wheel Loader	3	8	24	60	0.1122	2.69	0.4683	11.24	0.8620	20.69	1241.27	0.0012	0.03	0.0461	1.10606	1.1061	66.3635	1.0176	109	2607	156401	0.0101	0.24	14.58
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.50	20.13	0.0001	0.00	0.0012	0.01961	0.0196	0.7844	0.0180	4	69	2761	0.0005	0.01	0.29
Excavator	2	8	16	20	0.1143	1.83	0.5289	8.46	0.8299	13.28	265.58	0.0013	0.02	0.0428	0.68556	0.6856	13.7112	0.6307	120	1913	38266	0.0103	0.16	3.30
Material Processing Unit	2	8	16	20	0.1381	2.21	0.4814	7.70	1.2068	19.31	386.17	0.0015	0.02	0.0511	0.81718	0.8172	16.3437	0.7518	141	2259	45182	0.0125	0.20	3.99
Auger/Pole Setter	1	8	8	0																0	0			
Manlift	1	8	8	0																0	0			
Puller/Tensioner	1	8	8	0																0	0			
Concrete pump	1	8	8	20	0.0683	0.55	0.2873	2.30	0.4427	3.54	70.83	0.0006	0.005	0.0295	0.23596	0.2360	4.7192	0.2171	50	397	7937	0.0062	0.05	0.99
Concrete breaker mounted on an excavator	2	8	16	0																				
Concrete crusher	1	8	8	0																				
Motor Grader	1	8	8	0																				
November Year 2014 Construction Equipment Total Emissions				**420**		**10.54**		**44.00**		**79.74**	**3,337.00**		**0.12**			**4.03**	**169.80**	**3.71**		**10,296**	**426,172**		**0.9514**	**41.6549**

December Year 2014 - Construction Equipments																								
Bob Cat	2	8	16	40	0.0406	0.65	0.2262	3.62	0.2369	3.79	151.64	0.0004	0.01	0.0152	0.24346	0.2435	9.7383	0.2240	30	484	19377	0.0037	0.06	2.35
Bull Dozer	2	8	16	0																0	0			
Dump Truck	10	8	80	160	0.0095	0.76	0.0317	2.54	0.0595	4.76	761.40	0.0001	0.01	0.0027	0.21555	0.2156	34.4884	0.1983	8	610	97592	0.0009	0.07	10.93
Generator	2	8	16	40	0.0702	1.12	0.2974	4.76	0.5083	8.13	325.28	0.0007	0.01	0.0296	0.47303	0.4730	18.9210	0.4352	61	976	39035	0.0063	0.10	4.06
Water Truck	1	8	8	20	0.0820	0.66	0.3697	2.96	0.7168	5.73	114.70	0.0013	0.01	0.0296	0.2366	0.2366	4.7319	0.2177	123	981	19621	0.0074	0.06	1.18
Wheel Loader	3	8	24	60	0.1122	2.69	0.4683	11.24	0.8620	20.69	1241.27	0.0012	0.03	0.0461	1.10606	1.1061	66.3635	1.0176	109	2607	156401	0.0101	0.24	14.58
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.50	20.13	0.0001	0.00	0.0012	0.01961	0.0196	0.7844	0.0180	4	69	2761	0.0005	0.01	0.29
Excavator	2	8	16	20	0.1143	1.83	0.5289	8.46	0.8299	13.28	265.58	0.0013	0.02	0.0428	0.68556	0.6856	13.7112	0.6307	120	1913	38266	0.0103	0.16	3.30
Material Processing Unit	2	8	16	20	0.1381	2.21	0.4814	7.70	1.2068	19.31	386.17	0.0015	0.02	0.0511	0.81718	0.8172	16.3437	0.7518	141	2259	45182	0.0125	0.20	3.99
Auger/Pole Setter	1	8	8	0																				
Manlift	1	8	8	0																				
Puller/Tensioner	1	8	8	0																				
Concrete pump	1	8	8	20	0.0683	0.55	0.2873	2.30	0.4427	3.54	70.83	0.0006	0.00	0.0295	0.23596	0.2360	4.7192	0.2171	50	397	7937	0.0062	0.05	0.99
Concrete breaker mounted on an excavator	2	8	16	0																				
Concrete crusher	1	8	8	0																				
Motor Grader	1	8	8	0																				
December Year 2014 Construction Equipment Total Emissions				**420**		**10.54**		**44.00**		**79.74**	**3,337.00**		**0.12**			**4.03**	**169.80**	**3.71**		**10,296**	**426,172**		**0.9514**	**41.6549**

Van Norman Complex Water Quality Improvement Project - Construction Equipment Emissions

Estimated Equipment Construction Emissions

Equipment Type	Qty	Operating Hrs/WD/ each	Operating Hours per Day	Number of Operating Days	Rog Rate (lbs/hr)	Rog (lbs/day)	Rog (lbs)	CO rate (lbs/hr)	CO (lbs/day)	CO (lbs)	NOX rate (lbs/hr)	NOX (lbs/day)	NOX (lbs)	SOX rate (lbs/hr)	SOX (lbs/day)	SOX (lbs)	PM rate (lbs/hr)	PM (lbs/day)	PM10 (lbs/day)	PM10 (lbs)	PM2.5 (lbs/day)	PM2.5 (lbs)	CO2 Rate (lbs/hr)	CO2 (lbs/day)	CO2 (lbs)	CH4 rate (lbs/hr)	CH4 (lbs/day)	CH4 (lbs)
January Year 2015 - Construction Equipments																												
Bob Cat	2	8	16	20	0.0352	0.56	11.25	0.2220	3.55	71.03	0.2198	3.52	70.35	0.0004	0.01	0.12	0.0128	0.20442907	0.2044	4.0886	0.1881	3.7615	30	484	9688	0.0032	0.05	1.02
Bull Dozer	2	8	16	0																								
Dump Truck	10	8	80	80	0.0093	0.75	59.77	0.0315	2.52	201.82	0.0591	4.73	378.03	0.0001	0.01	0.62	0.0025	0.20111629	0.2011	16.0893	0.1850	14.8022	8	610	48796	0.0008	0.07	5.39
Generator	2	8	16	40	0.0640	1.02	40.95	0.2913	4.66	186.41	0.4717	7.55	301.88	0.0007	0.01	0.45	0.0268	0.42842637	0.4284	17.1371	0.3942	15.7661	61	976	39035	0.0058	0.09	3.70
Water Truck	1	8	8	20	0.0768	0.61	12.29	0.3645	2.92	58.32	0.6392	5.11	102.26	0.0013	0.01	0.20	0.0264	0.21095882	0.2110	4.2192	0.1941	3.8816	123	981	19616	0.0069	0.06	1.11
Wheel Loader	3	8	24	30	0.1050	2.52	75.61	0.4615	11.07	332.25	0.7838	18.81	564.35	0.0012	0.03	0.86	0.0416	0.99954758	0.9995	29.9864	0.9196	27.5875	109	2607	78200	0.0095	0.23	6.82
Compactor	2	8	16	20	0.0050	0.08	1.61	0.0263	0.42	8.43	0.0314	0.50	10.06	0.0001	0.00	0.02	0.0012	0.01959279	0.0196	0.3919	0.0180	0.3605	4	69	1380	0.0005	0.01	0.14
Excavator	2	8	16	0																								
Material Processing Unit	2	8	16	10	0.1289	2.06	20.63	0.4698	7.52	75.16	1.0967	17.55	175.47	0.0015	0.02	0.25	0.0460	0.73621834	0.7362	7.3622	0.6773	6.7732	141	2259	22591	0.0116	0.19	1.86
Auger/Pole Setter	1	8	8	0																								
Manlift	1	8	8	0																								
Puller/Tensioner	1	8	8	0																								
Concrete pump	1	8	8	10	0.0621	0.50	4.96	0.2825	2.26	22.60	0.4121	3.30	32.97	0.0006	0.005	0.05	0.0267	0.21337198	0.2134	2.1337	0.1963	1.9630	50	397	3969	0.0056	0.04	0.45
Concrete breaker mounted on an excavator	2	8	16	0																								
Concrete crusher	1	8	8	0																								
Motor Grader	1	8	8	0																								
January Year 2015 Construction Equipment Total Emissions				**230**		**8.11**	**227.07**		**34.92**	**956.03**		**61.06**	**1,635.38**		**0.09**	**2.57**			**3.01**	**81.41**	**2.77**	**74.90**		**8,383**	**223,276**		**0.7316**	**20.4883**
February Year 2015 - Construction Equipments																												
Bob Cat	2	8	16	40	0.0352	0.56	22.51	0.2220	3.55	142.07	0.2198	3.52	140.69	0.0004	0.01	0.24	0.0128	0.20442907	0.2044	8.1772	0.1881	7.5230	30	484	19377	0.0032	0.05	2.03
Bull Dozer	2	8	16	0																								
Dump Truck	10	8	80	80	0.0093	0.75	59.77	0.0315	2.52	201.82	0.0591	4.73	378.03	0.0001	0.01	0.62	0.0025	0.20111629	0.2011	16.0893	0.1850	14.8022	8	610	48796	0.0008	0.07	5.39
Generator	2	8	16	40	0.0640	1.02	40.95	0.2913	4.66	186.41	0.4717	7.55	301.88	0.0007	0.01	0.45	0.0268	0.42842637	0.4284	17.1371	0.3942	15.7661	61	976	39035	0.0058	0.09	3.70
Water Truck	1	8	8	20	0.0768	0.61	12.29	0.3645	2.92	58.32	0.6392	5.11	102.26	0.0013	0.01	0.20	0.0264	0.21095882	0.2110	4.2192	0.1941	3.8816	123	981	19616	0.0069	0.06	1.11
Wheel Loader	3	8	24	60	0.1050	2.52	151.21	0.4615	11.07	664.50	0.7838	18.81	1128.70	0.0012	0.03	1.73	0.0416	0.99954758	0.9995	59.9729	0.9196	55.1750	109	2607	156401	0.0095	0.23	13.64
Compactor	2	8	16	20	0.0050	0.08	1.61	0.0263	0.42	8.43	0.0314	0.50	10.06	0.0001	0.00	0.02	0.0012	0.01959279	0.0196	0.3919	0.0180	0.3605	4	69	1380	0.0005	0.01	0.14
Excavator	2	8	16	0																								
Material Processing Unit	2	8	16	10	0.1289	2.06	20.63	0.4698	7.52	75.16	1.0967	17.55	175.47	0.0015	0.02	0.25	0.0460	0.73621834	0.7362	7.3622	0.6773	6.7732	141	2259	22591	0.0116	0.19	1.86
Auger/Pole Setter	1	8	8	0																								
Manlift	1	8	8	0																								
Puller/Tensioner	1	8	8	0																								
Concrete pump	1	8	8	20	0.0621	0.50	9.93	0.2825	2.26	45.20	0.4121	3.30	65.94	0.0006	0.00	0.09	0.0267	0.21337198	0.2134	4.2674	0.1963	3.9260	50	397	7937	0.0056	0.04	0.90
Concrete breaker mounted on an excavator	2	8	16	0																								
Concrete crusher	1	8	8	0																								
Motor Grader	1	8	8	0																								
February Year 2015 Construction Equipment Total Emissions				**290**		**8.11**	**318.90**		**34.92**	**1,381.92**		**61.06**	**2,303.04**		**0.09**	**3.60**			**3.01**	**117.62**	**2.77**	**108.21**		**8,383**	**315,133**		**0.7316**	**28.7735**
March Year 2015 - Construction Equipments																												
Bob Cat	2	8	16	20	0.0352	0.56	11.25	0.2220	3.55	71.03	0.2198	3.52	70.35	0.0004	0.01	0.12	0.0128	0.20442907	0.2044	4.0886	0.1881	3.7615	30	484	9688	0.0032	0.05	1.02
Bull Dozer	2	8	16	0																								
Dump Truck	10	8	80	80	0.0093	0.75	59.77	0.0315	2.52	201.82	0.0591	4.73	378.03	0.0001	0.01	0.62	0.0025	0.20111629	0.2011	16.0893	0.1850	14.8022	8	610	48796	0.0008	0.07	5.39
Generator	2	8	16	40	0.0640	1.02	40.95	0.2913	4.66	186.41	0.4717	7.55	301.88	0.0007	0.01	0.45	0.0268	0.42842637	0.4284	17.1371	0.3942	15.7661	61	976	39035	0.0058	0.09	3.70
Water Truck	1	8	8	20	0.0768	0.61	12.29	0.3645	2.92	58.32	0.6392	5.11	102.26	0.0013	0.01	0.20	0.0264	0.21095882	0.2110	4.2192	0.1941	3.8816	123	981	19616	0.0069	0.06	1.11
Wheel Loader	3	8	24	30	0.1050	2.52	75.61	0.4615	11.07	332.25	0.7838	18.81	564.35	0.0012	0.03	0.86	0.0416	0.99954758	0.9995	29.9864	0.9196	27.5875	109	2607	78200	0.0095	0.23	6.82
Compactor	2	8	16	20	0.0050	0.08	1.61	0.0263	0.42	8.43	0.0314	0.50	10.06	0.0001	0.00	0.02	0.0012	0.01959279	0.0196	0.3919	0.0180	0.3605	4	69	1380	0.0005	0.01	0.14
Excavator	2	8	16	0																								
Material Processing Unit	2	8	16	10	0.1289	2.06	20.63	0.4698	7.52	75.16	1.0967	17.55	175.47	0.0015	0.02	0.25	0.0460	0.73621834	0.7362	7.3622	0.6773	6.7732	141	2259	22591	0.0116	0.19	1.86
Auger/Pole Setter	1	8	8	0																								
Manlift	1	8	8	0																								
Puller/Tensioner	1	8	8	0																								
Concrete pump	1	8	8	0																								
Concrete breaker mounted on an excavator	2	8	16	0																								
Concrete crusher	1	8	8	0																								
Motor Grader	1	8	8	0																								
March Year 2015 Construction Equipment Total Emissions				**220**		**7.61**	**222.11**		**32.66**	**933.43**		**57.77**	**1602.41**		**0.09**	**2.52**			**2.80**	**79.27**	**2.58**	**72.93**		**7,985.85**	**219,307.43**		**0.69**	**20.04**

April Year 2015 - Construction Equipments																												
Bob Cat	2	8	16	20	0.0352	0.56	11.25	0.2220	3.55	71.03	0.2198	3.52	70.35	0.0004	0.01	0.12	0.0128	0.20442907	0.2044	4.0886	0.1881	3.7615	30	484	9688	0.0032	0.05	1.02
Bull Dozer	2	8	16	0																								
Dump Truck	10	8	80	80	0.0093	0.75	59.77	0.0315	2.52	201.82	0.0591	4.73	378.03	0.0001	0.01	0.62	0.0025	0.20111629	0.2011	16.0893	0.1850	14.8022	8	610	48796	0.0008	0.07	5.39
Generator	2	8	16	40	0.0640	1.02	40.95	0.2913	4.66	186.41	0.4717	7.55	301.88	0.0007	0.01	0.45	0.0268	0.42842637	0.4284	17.1371	0.3942	15.7661	61	976	39035	0.0058	0.09	3.70
Water Truck	1	8	8	20	0.0768	0.61	12.29	0.3645	2.92	58.32	0.6392	5.11	102.26	0.0013	0.01	0.20	0.0264	0.21095882	0.2110	4.2192	0.1941	3.8816	123	981	19616	0.0069	0.06	1.11
Wheel Loader	3	8	24	30	0.1050	2.52	75.61	0.4615	11.07	332.25	0.7838	18.81	564.35	0.0012	0.03	0.86	0.0416	0.99954758	0.9995	29.9864	0.9196	27.5875	109	2607	78200	0.0095	0.23	6.82
Compactor	2	8	16	20	0.0050	0.08	1.61	0.0263	0.42	8.43	0.0314	0.50	10.06	0.0001	0.00	0.02	0.0012	0.01959279	0.0196	0.3919	0.0180	0.3605	4	69	1380	0.0005	0.01	0.14
Excavator	2	8	16	0																								
Material Processing Unit	2	8	16	10	0.1289	2.06	20.63	0.4698	7.52	75.16	1.0967	17.55	175.47	0.0015	0.02	0.25	0.0460	0.73621834	0.7362	7.3622	0.6773	6.7732	141	2259	22591	0.0116	0.19	1.86
Auger/Pole Setter	1	8	8	0																								
Manlift	1	8	8	0																								
Puller/Tensioner	1	8	8	0																								
Concrete pump	1	8	8	0																								
Concrete breaker mounted on an excavator	2	8	16	0																								
Concrete crusher	1	8	8	0																								
Motor Grader	1	8	8	0																								
April Year 2015 Construction Equipment Total Emissions				**220**		**7.61**	**222.11**		**32.66**	**933.43**		**57.77**	**1602.41**		**0.09**	**2.52**		**2.80**	**2.80**	**79.27**	**2.58**	**72.93**		**7985.85**	**219307.43**		**0.69**	**20.04**
May Year 2015 - Construction Equipments																												
Bob Cat	2	8	16	40	0.0352	0.56	22.51	0.2220	3.55	142.07	0.2198	3.52	140.69	0.0004	0.01	0.24	0.0128	0.20442907	0.2044	8.1772	0.1881	7.5230	30	484	19377	0.0032	0.05	2.03
Bull Dozer	2	8	16	0																								
Dump Truck	10	8	80	120	0.0093	0.75	89.65	0.0315	2.52	302.73	0.0591	4.73	567.05	0.0001	0.01	0.93	0.0025	0.20111629	0.2011	24.1340	0.1850	22.2032	8	610	73194	0.0008	0.07	8.09
Generator	2	8	16	40	0.0640	1.02	40.95	0.2913	4.66	186.41	0.4717	7.55	301.88	0.0007	0.01	0.45	0.0268	0.42842637	0.4284	17.1371	0.3942	15.7661	61	976	39035	0.0058	0.09	3.70
Water Truck	1	8	8	20	0.0768	0.61	12.29	0.3645	2.92	58.32	0.6392	5.11	102.26	0.0013	0.01	0.20	0.0264	0.21095882	0.2110	4.2192	0.1941	3.8816	123	981	19616	0.0069	0.06	1.11
Wheel Loader	3	8	24	60	0.1050	2.52	151.21	0.4615	11.07	664.50	0.7838	18.81	1128.70	0.0012	0.03	1.73	0.0416	0.99954758	0.9995	59.9729	0.9196	55.1750	109	2607	156401	0.0095	0.23	13.64
Compactor	2	8	16	20	0.0050	0.08	1.61	0.0263	0.42	8.43	0.0314	0.50	10.06	0.0001	0.00	0.02	0.0012	0.01959279	0.0196	0.3919	0.0180	0.3605	4	69	1380	0.0005	0.01	0.14
Excavator	2	8	16	0																	0.0000							
Material Processing Unit	2	8	16	10	0.1289	2.06	20.63	0.4698	7.52	75.16	1.0967	17.55	175.47	0.0015	0.02	0.25	0.0460	0.73621834	0.7362	7.3622	0.6773	6.7732	141	2259	22591	0.0116	0.19	1.86
Auger/Pole Setter	1	8	8	0																								
Manlift	1	8	8	0																								
Puller/Tensioner	1	8	8	0																								
Concrete pump	1	8	8	0																								
Concrete breaker mounted on an excavator	2	8	16	0																								
Concrete crusher	1	8	8	0																								
Motor Grader	1	8	8	20	0.1277	1.02	20.44	0.5931	4.74	94.89	0.9795	7.84	156.72	0.0015	0.01	0.24	0.0489	0.39102165	0.3910	7.8204	0.3597	7.1948	133	1062	21239	0.0115	0.09	1.84
May Year 2015 Construction Equipment Total Emissions				**330**		**8.63**	**359.29**		**37.41**	**1532.52**		**65.60**	**2582.84**		**0.10**	**4.05**		**3.19**	**3.19**	**129.21**	**2.94**	**118.88**		**9047.79**	**352833.24**		**0.78**	**32.42**
June Year 2015 - Construction Equipments																												
Bob Cat	2	8	16	20	0.0352	0.56	11.25	0.2220	3.55	71.03	0.2198	3.52	70.35	0.0004	0.01	0.12	0.0128	0.20442907	0.2044	4.0886	0.1881	3.7615	30	484	9688	0.0032	0.05	1.02
Bull Dozer	2	8	16	0																								
Dump Truck	10	8	80	80	0.0093	0.75	59.77	0.0315	2.52	201.82	0.0591	4.73	378.03	0.0001	0.01	0.62	0.0025	0.20111629	0.2011	16.0893	0.1850		8	610	48796	0.0008	0.07	5.39
Generator	2	8	16	40	0.0640	1.02	40.95	0.2913	4.66	186.41	0.4717	7.55	301.88	0.0007	0.01	0.45	0.0268	0.42842637	0.4284	17.1371	0.3942		61	976	39035	0.0058	0.09	3.70
Water Truck	1	8	8	20	0.0768	0.61	12.29	0.3645	2.92	58.32	0.6392	5.11	102.26	0.0013	0.01	0.20	0.0264	0.21095882	0.2110	4.2192	0.1941		123	981	19616	0.0069	0.06	1.11
Wheel Loader	3	8	24	30	0.1050	2.52	75.61	0.4615	11.07	332.25	0.7838	18.81	564.35	0.0012	0.03	0.86	0.0416	0.99954758	0.9995	29.9864	0.9196		109	2607	78200	0.0095	0.23	6.82
Compactor	2	8	16	20	0.0050	0.08	1.61	0.0263	0.42	8.43	0.0314	0.50	10.06	0.0001	0.00	0.02	0.0012	0.01959279	0.0196	0.3919	0.0180		4	69	1380	0.0005	0.01	0.14
Excavator	2	8	16	0																								
Material Processing Unit	2	8	16	10	0.1289	2.06	20.63	0.4698	7.52	75.16	1.0967	17.55	175.47	0.0015	0.02	0.25	0.0460	0.73621834	0.7362	7.3622	0.6773		141	2259	22591	0.0116	0.19	1.86
Auger/Pole Setter	1	8	8	0																								
Manlift	1	8	8	0																								
Puller/Tensioner	1	8	8	0																								
Concrete pump	1	8	8	0																								
Concrete breaker mounted on an excavator	2	8	16	0																								
Concrete crusher	1	8	8	0																								
Motor Grader	1	8	8	20	0.1277	1.02	20.44	0.5931	4.74	94.89	0.9795	7.84	156.72	0.0015	0.01	0.24	0.0489	0.39102165	0.3910	7.8204	0.3597		133	1062	21239	0.0115	0.09	1.84
June Year 2015 Construction Equipment Total Emissions				**240**		**8.63**	**242.54**		**37.41**	**1028.32**		**65.60**	**1759.13**		**0.10**	**2.76**		**3.19**	**3.19**	**87.10**	**2.94**	**3.76**		**9047.79**	**240546.32**		**0.78**	**21.88**

July Year 2015 - Construction Equipments																												
Bob Cat	2	8	16	20	0.0352	0.56	11.25	0.2220	3.55	71.03	0.2198	3.52	70.35	0.0004	0.01	0.12	0.0128	0.20442907	0.2044	4.0886	0.1881	3.7615	30	484	9688	0.0032	0.05	1.02
Bull Dozer	2	8	16	0																								
Dump Truck	10	8	80	80	0.0093	0.75	59.77	0.0315	2.52	201.82	0.0591	4.73	378.03	0.0001	0.01	0.62	0.0025	0.20111629	0.2011	16.0893	0.1850	14.8022	8	610	48796	0.0008	0.07	5.39
Generator	2	8	16	40	0.0640	1.02	40.95	0.2913	4.66	186.41	0.4717	7.55	301.88	0.0007	0.01	0.45	0.0268	0.42842637	0.4284	17.1371	0.3942	15.7661	61	976	39035	0.0058	0.09	3.70
Water Truck	1	8	8	20	0.0768	0.61	12.29	0.3645	2.92	58.32	0.6392	5.11	102.26	0.0013	0.01	0.20	0.0264	0.21095882	0.2110	4.2192	0.1941	3.8816	123	981	19616	0.0069	0.06	1.11
Wheel Loader	3	8	24	30	0.1050	2.52	75.61	0.4615	11.07	332.25	0.7838	18.81	564.35	0.0012	0.03	0.86	0.0416	0.99954758	0.9995	29.9864	0.9196	27.5875	109	2607	78200	0.0095	0.23	6.82
Compactor	2	8	16	20	0.0050	0.08	1.61	0.0263	0.42	8.43	0.0314	0.50	10.06	0.0001	0.00	0.02	0.0012	0.01959279	0.0196	0.3919	0.0180	0.3605	4	69	1380	0.0005	0.01	0.14
Excavator	2	8	16	0																								
Material Processing Unit	2	8	16	10	0.1289	2.06	20.63	0.4698	7.52	75.16	1.0967	17.55	175.47	0.0015	0.02	0.25	0.0460	0.73621834	0.7362	7.3622	0.6773	6.7732	141	2259	22591	0.0116	0.19	1.86
Auger/Pole Setter	1	8	8	0																								
Manlift	1	8	8	0																								
Puller/Tensioner	1	8	8	0																								
Concrete pump	1	8	8	0																								
Concrete breaker mounted on an excavator	2	8	16	0																								
Concrete crusher	1	8	8	0																								
Motor Grader	1	8	8	20	0.1277	1.02	20.44	0.5931	4.74	94.89	0.9795	7.84	156.72	0.0015	0.01	0.24	0.0489	0.39102165	0.3910	7.8204	0.3597	7.1948	133	1062	21239	0.0115	0.09	1.84
July Year 2015 Construction Equipment Total Emissions				**240**		**8.63**	**242.54**		**37.41**	**1,028.32**		**65.60**	**1,759.13**		**0.10**	**2.76**			**3.19**	**87.10**	**2.94**	**80.13**		**9,048**	**240,546**		**0.7790**	**21.8844**
August Year 2015 - Construction Equipments																												
Bob Cat	2	8	16	20	0.0352	0.56	11.25	0.2220	3.55	71.03	0.2198	3.52	70.35	0.0004	0.01	0.12	0.0128	0.20442907	0.2044	4.0886	0.1881	3.7615	30	484	9688	0.0032	0.05	1.02
Bull Dozer	2	8	16	0																								
Dump Truck	10	8	80	80	0.0093	0.75	59.77	0.0315	2.52	201.82	0.0591	4.73	378.03	0.0001	0.01	0.62	0.0025	0.20111629	0.2011	16.0893	0.1850	14.8022	8	610	48796	0.0008	0.07	5.39
Generator	2	8	16	40	0.0640	1.02	40.95	0.2913	4.66	186.41	0.4717	7.55	301.88	0.0007	0.01	0.45	0.0268	0.42842637	0.4284	17.1371	0.3942	15.7661	61	976	39035	0.0058	0.09	3.70
Water Truck	1	8	8	20	0.0768	0.61	12.29	0.3645	2.92	58.32	0.6392	5.11	102.26	0.0013	0.01	0.20	0.0264	0.21095882	0.2110	4.2192	0.1941	3.8816	123	981	19616	0.0069	0.06	1.11
Wheel Loader	3	8	24	30	0.1050	2.52	75.61	0.4615	11.07	332.25	0.7838	18.81	564.35	0.0012	0.03	0.86	0.0416	0.99954758	0.9995	29.9864	0.9196	27.5875	109	2607	78200	0.0095	0.23	6.82
Compactor	2	8	16	20	0.0050	0.08	1.61	0.0263	0.42	8.43	0.0314	0.50	10.06	0.0001	0.00	0.02	0.0012	0.01959279	0.0196	0.3919	0.0180	0.3605	4	69	1380	0.0005	0.01	0.14
Excavator	2	8	16	0																								
Material Processing Unit	2	8	16	10	0.1289	2.06	20.63	0.4698	7.52	75.16	1.0967	17.55	175.47	0.0015	0.02	0.25	0.0460	0.73621834	0.7362	7.3622	0.6773	6.7732	141	2259	22591	0.0116	0.19	1.86
Auger/Pole Setter	1	8	8	0																								
Manlift	1	8	8	0																								
Puller/Tensioner	1	8	8	0																								
Concrete pump	1	8	8	0																								
Concrete breaker mounted on an excavator	2	8	16	0																								
Concrete crusher	1	8	8	0																								
Motor Grader	1	8	8	20	0.1277			0.5931			0.9795			0.0015			0.0489						133			0.0115		
August Year 2015 Construction Equipment Total Emissions				**240**		**7.61**	**222.11**		**32.66**	**933.43**		**57.77**	**1,602.41**		**0.09**	**2.52**			**2.80**	**79.27**	**2.58**	**72.93**		**7,986**	**219,307**		**0.6868**	**20.0404**

EMFAC2007 RATES (grams per mile)							
Vehicle Type	**ROG**	**CO**	**NOX**	**SOX**	**PM10**	**PM2.5**	**CO2**
Year 2012							
Haul Truck @ 30 MPH	0.749	4.822	9.671	0.016	0.074	0.068	1673.5
Water Truck @ 5 MPH	0.753	8.048	0.976	0.110	0.132	0.121	1712.09
Worker Vehicle @30 MPH	0.051	1.878	0.163	0.01	0.031	0.029	338.872
Light-Duty Trucks @ 30MPH	0.082	2.795	0.317	0.021	0.042	0.039	424.112
Year 2013							
Haul Truck @ 30 MPH	0.684	4.354	8.656	0.016	0.371	0.341	1679.329
Water Truck @ 5 MPH	0.692	7.426	0.907	0.017	0.135	0.124	1711.512
Worker Vehicle @30 MPH	0.044	1.714	0.147	0.003	0.031	0.029	338.098
Light-Duty Trucks @ 30MPH	0.073	2.613	0.292	0.004	0.043	0.040	424.122
Year 2014							
Haul Truck @ 30 MPH	0.621	3.887	7.681	0.016	0.335	0.308	1684.683
Water Truck @ 5 MPH	0.637	6.864	0.845	0.017	0.137	0.126	1711.855
Worker Vehicle @30 MPH	0.038	1.572	0.133	0.003	0.031	0.029	337.447
Light-Duty Trucks @ 30MPH	0.065	2.448	0.27	0.004	0.043	0.040	424.119
Year 2015							
Haul Truck @ 30 MPH	0.56	3.452	6.774	0.016	0.3	0.276	1689.793
Water Truck @ 5 MPH	0.583	6.333	0.784	0.017	0.14	0.129	1712.124
Worker Vehicle @30 MPH	0.033	1.444	0.12	0.003	0.031	0.029	336.719
Light-Duty Trucks @ 30MPH	0.057	2.291	0.249	0.004	0.044	0.040	424.073
Assumptions:							
Construction Year	2012-2015						
Season	Annual						
Temperature	65°F						

LADWP Van Norman Complex Water Quality Improvement - Mobile Emissions

WORKER VEHICLES				Worker Vehicle Emissions (ppd)						
		# of Workers	Total VMT/Day	ROG	CO	NOX	SOX	PM10	PM2.5	CO2
August Year 2012-Worker Vehicles Emissions		**9**	**239.40**	**0.04**	**1.26**	**0.13**	**0.01**	**0.02**	**0.02**	**203.66**
	Cars	*4.0*	106.40	0.01	0.44	0.04	0.002	0.007	0.007	79.418
	Trucks	*5.0*	133.00	*0.02*	0.82	*0.09*	*0.006*	*0.01*	0.011	*124.24*
Total August Year 2012 Worker Vehicles Emissions (tons per year)				*0.002*	*0.06*	*0.01*	*0.0004*	*0.0010*	*0.0009*	*10.18*
September Year 2012-Worker Vehicles Emissions		**19**	**505.40**	**0.07**	**2.63**	**0.27**	**0.02**	**0.04**	**0.04**	**427.18**
	Cars	*9.0*	239.40	0.03	0.99	0.0860	0.0053	0.0163	0.0150	178.6915
	Trucks	*10.0*	266.00	*0.05*	1.64	*0.19*	*0.012*	*0.02*	0.023	*248.49*
Total September Year 2012 Worker Vehicles Emissions (tons per year)				*0.01*	*0.32*	*0.03*	*0.002*	*0.005*	*0.005*	*51.26*
October Year 2012-Worker Vehicles Emissions		**31**	**824.60**	**0.12**	**4.27**	**1.09**	**0.03**	**0.16**	**0.15**	**1,901.75**
	Cars	*15.0*	399.00	0.04	1.65	0.7971	0.0149	0.1186	0.1092	1504.1702
	Trucks	*16.0*	425.60	*0.08*	2.62	*0.30*	*0.020*	*0.04*	0.036	*397.58*
Total October Year 2012 Worker Vehicles Emissions (tons per year)				*0.01*	*0.51*	*0.13*	*0.004*	*0.02*	*0.02*	*228.21*
November Year 2012-Worker Vehicles Emissions		**31**	**824.60**	**0.12**	**4.27**	**7.05**	**0.034**	**0.334**	**0.307**	**1,878.173**
	Cars	*15.0*	*399.00*	0.04	1.65	6.7505	0.0141	0.2944	0.2709	1480.5914
	Trucks	*16.0*	*425.60*	*0.08*	2.62	*0.30*	*0.020*	*0.04*	0.036	*397.58*
Total November Year 2012 Worker Vehicles Emissions (tons per year)				*0.01*	*0.38*	*0.63*	*0.003*	*0.03*	*0.03*	*169.04*
December Year 2012-Worker Vehicles Emissions		**31**	**824.60**	**0.12**	**4.27**	**0.30**	**0.02**	**0.04**	**0.04**	**397.58**
	Cars	*15.0*	399.00	0.04	1.65	0.0000	0.0000	0.0000	0.0000	0.0000
	Trucks	*16.0*	425.60	*0.08*	2.62	*0.30*	*0.020*	*0.04*	0.036	*397.58*
Total December Year 2012 Worker Vehicles Emissions (tons per year)				*0.01*	*0.51*	*0.04*	*0.002*	*0.005*	*0.00*	*47.71*

OFF-SITE TRUCK T	Heavy-duty Truck Emissions									
	Trips per Day	Round Trip Length /a/	VMT/day	ROG	CO	NOX	SOX	PM10	PM2.5	CO2
August Year 2012- Haul Truck Trips (pounds per	3	4	12	0.02	0.13	0.26	0.0004	0.002	0.002	44.23
Year 2012- Haul Truck Trips (tons per year)				*0.001*	*0.006*	*0.013*	*0.000*	*0.000*	*0.000*	*2.212*
September Year 2012- Haul Truck Trips (pounds	1	4	4	0.01	0.04	0.09	0.0001	0.001	0.001	14.74
Year 2012- Haul Truck Trips (tons per year)				*0.001*	*0.005*	*0.010*	*0.000*	*0.000*	*0.000*	*1.769*
October Year 2012- Haul Truck Trips (pounds	1	4	4	0.01	0.04	0.09	0.0001	0.001	0.001	14.74
Year 2012- Haul Truck Trips (tons per year)				*0.001*	*0.005*	*0.010*	*0.000*	*0.000*	*0.000*	*1.769*
November Year 2012- Haul Truck Trips (pounds	1	4	4	0.01	0.04	0.09	0.0001	0.001	0.001	14.74
Year 2012- Haul Truck Trips (tons per year)				*0.001*	*0.004*	*0.008*	*0.000*	*0.000*	*0.000*	*1.327*
December Year 2012- Haul Truck Trips (pounds	1	4	4	0.01	0.04	0.09	0.0001	0.001	0.001	14.74
Year 2012- Haul Truck Trips (tons per year)				*0.000*	*0.002*	*0.004*	*0.000*	*0.000*	*0.000*	*0.737*

/a/ It takes approximately two miles one-way to travel to the Sunshine Canyon Landfill.

LADWP Van Norman Complex Water Quality Improvement - Mobile Emissions

WORKER VEHICLES			Worker Vehicle Emissions (ppd)						
	# of Workers	Total VMT/Day	ROG	CO	NOX	SOX	PM10	PM2.5	CO2
January Year 2013-Worker Vehicles Emissions	**31**	**824.60**	**0.11**	**3.96**	**0.40**	**0.01**	**0.07**	**0.06**	**694.73**
Cars	*15.0*	399.00	0.04	1.51	0.13	0.0026	0.03	0.03	297.14
Trucks	*16.0*	425.60	*0.07*	*2.45*	*0.27*	*0.004*	*0.04*	*0.04*	*397.59*
Total January Year 2013 Worker Vehicles Emissions (tons per year)			*0.005*	*0.20*	*0.02*	*0.0003*	*0.0034*	*0.0031*	*34.74*
February Year 2013-Worker Vehicles Emissions	**31**	**824.60**	**0.11**	**3.96**	**0.40**	**0.01**	**0.07**	**0.06**	**694.73**
Cars	*15.0*	399.00	0.04	1.51	0.13	0.0026	0.03	0.03	297.14
Trucks	*16.0*	425.60	*0.07*	*2.45*	*0.27*	*0.004*	*0.04*	*0.04*	*397.59*
Total February Year 2013 Worker Vehicles Emissions (tons per year)			*0.005*	*0.20*	*0.02*	*0.0003*	*0.0034*	*0.0031*	*34.74*
March Year 2013-Worker Vehicles Emissions	**31**	**824.60**	**0.11**	**3.96**	**0.40**	**0.01**	**0.07**	**0.06**	**694.73**
Cars	*15.0*	399.00	0.04	1.51	0.13	0.0026	0.03	0.03	297.14
Trucks	*16.0*	425.60	*0.07*	*2.45*	*0.27*	*0.004*	*0.04*	*0.04*	*397.59*
Total March Year 2013 Worker Vehicles Emissions (tons per year)			*0.01*	*0.47*	*0.05*	*0.001*	*0.008*	*0.007*	*83.37*
April Year 2013-Worker Vehicles Emissions	**31**	**824.60**	**0.11**	**3.96**	**0.40**	**0.01**	**0.07**	**0.06**	**694.73**
Cars	*15.0*	399.00	0.04	1.51	0.13	0.0026	0.03	0.03	297.14
Trucks	*16.0*	425.60	*0.07*	*2.45*	*0.27*	*0.004*	*0.04*	*0.04*	*397.59*
Total April Year 2013 Worker Vehicles Emissions (tons per year)			*0.01*	*0.47*	*0.05*	*0.001*	*0.01*	*0.01*	*83.37*
May Year 2013-Worker Vehicles Emissions	**31**	**824.60**	**0.11**	**3.96**	**0.40**	**0.006**	**0.068**	**0.062**	**694.730**
Cars	*15.0*	*399.00*	0.04	1.51	0.13	0.0026	0.03	0.03	297.14
Trucks	*16.0*	*425.60*	*0.07*	*2.45*	*0.27*	*0.004*	*0.04*	*0.04*	*397.59*
Total May Year 2013 Worker Vehicles Emissions (tons per year)			*0.01*	*0.36*	*0.04*	*0.001*	*0.01*	*0.01*	*62.53*
June Year 2013-Worker Vehicles Emissions	**19**	**505.40**	**0.07**	**2.43**	**0.25**	**0.00**	**0.04**	**0.04**	**426.78**
Cars	*9.0*	239.40	0.02	0.90	0.08	0.0016	0.02	0.02	178.28
Trucks	*10.0*	266.00	*0.04*	*1.53*	*0.17*	*0.002*	*0.03*	*0.02*	*248.49*
Total June Year 2013 Worker Vehicles Emissions (tons per year)			*0.01*	*0.29*	*0.03*	*0.000*	*0.005*	*0.00*	*51.21*
July Year 2013-Worker Vehicles Emissions	**19**	**505.40**	**0.07**	**2.43**	**0.25**	**0.00**	**0.04**	**0.04**	**426.78**
Cars	*9.0*	239.40	0.02	0.90	0.08	0.0016	0.02	0.02	178.28
Trucks	*10.0*	266.00	*0.04*	*1.53*	*0.17*	*0.002*	*0.03*	*0.02*	*248.49*
Total July Year 2013 Worker Vehicles Emissions (tons per year)			*0.003*	*0.12*	*0.01*	*0.0002*	*0.0021*	*0.0019*	*21.34*
August Year 2013-Worker Vehicles Emissions	**19**	**505.40**	**0.07**	**2.43**	**0.25**	**0.00**	**0.04**	**0.04**	**426.78**
Cars	*9.0*	239.40	0.02	0.90	0.08	0.0016	0.02	0.02	178.28
Trucks	*10.0*	266.00	*0.04*	*1.53*	*0.17*	*0.002*	*0.03*	*0.02*	*248.49*
Total August Year 2013 Worker Vehicles Emissions (tons per year)			*0.003*	*0.12*	*0.01*	*0.0002*	*0.0021*	*0.0019*	*21.34*
September Year 2013-Worker Vehicles Emissions	**19**	**505.40**	**0.07**	**2.43**	**0.25**	**0.00**	**0.04**	**0.04**	**426.78**
Cars	*9.0*	239.40	0.02	0.90	0.08	0.0016	0.02	0.02	178.28
Trucks	*10.0*	266.00	*0.04*	*1.53*	*0.17*	*0.002*	*0.03*	*0.02*	*248.49*
Total September Year 2013 Worker Vehicles Emissions (tons per year)			*0.01*	*0.29*	*0.03*	*0.000*	*0.005*	*0.005*	*51.21*
October Year 2013-Worker Vehicles Emissions	**29**	**771.40**	**0.10**	**3.70**	**0.38**	**0.01**	**0.06**	**0.06**	**650.07**
Cars	*14.0*	372.40	0.04	1.41	0.12	0.0025	0.03	0.02	277.33
Trucks	*15.0*	399.00	*0.06*	*2.30*	*0.26*	*0.004*	*0.04*	*0.03*	*372.74*
Total October Year 2013 Worker Vehicles Emissions (tons per year)			*0.01*	*0.44*	*0.05*	*0.001*	*0.01*	*0.01*	*78.01*
November Year 2013-Worker Vehicles Emissions	**37**	**984.20**	**0.13**	**4.72**	**0.48**	**0.008**	**0.081**	**0.074**	**828.706**
Cars	*18.0*	*478.80*	0.05	1.81	0.16	0.0032	0.03	0.03	356.57
Trucks	*19.0*	*505.40*	*0.08*	*2.91*	*0.33*	*0.004*	*0.05*	*0.04*	*472.14*
Total November Year 2013 Worker Vehicles Emissions (tons per year)			*0.01*	*0.42*	*0.04*	*0.001*	*0.01*	*0.01*	*74.58*
December Year 2013-Worker Vehicles Emissions	**37**	**984.20**	**0.13**	**4.72**	**0.48**	**0.01**	**0.08**	**0.07**	**828.71**
Cars	*18.0*	478.80	0.05	1.81	0.16	0.0032	0.03	0.03	356.57
Trucks	*19.0*	505.40	*0.08*	*2.91*	*0.33*	*0.004*	*0.05*	*0.04*	*472.14*
Total December Year 2013 Worker Vehicles Emissions (tons per year)			*0.02*	*0.57*	*0.06*	*0.001*	*0.010*	*0.01*	*99.44*

OFF-SITE TRUCK T			Heavy-duty Truck Emissions							
	Trips per Day	Round Trip Length /a/	VMT/day	ROG	CO	NOX	SOX	PM10	PM2.5	CO2
January Year 2013- Haul Truck Trips (pounds per	1	4	4	0.01	0.04	0.08	0.0001	0.003	0.003	14.80
January Year 2013- Haul Truck Trips (tons per year)				*0.0003*	*0.0019*	*0.0038*	*0.0000*	*0.0002*	*0.0002*	*0.7398*
February Year 2013- Haul Truck Trips (pounds per	1	4	4	0.01	0.04	0.08	0.0001	0.003	0.003	14.80
February Year 2013- Haul Truck Trips (tons per year)				*0.001*	*0.005*	*0.009*	*0.000*	*0.000*	*0.000*	*1.776*
March Year 2013- Haul Truck Trips (pounds per	1	4	4	0.01	0.04	0.08	0.0001	0.003	0.003	14.80
March Year 2013- Haul Truck Trips (tons per year)				*0.0003*	*0.0019*	*0.0038*	*0.0000*	*0.0002*	*0.0002*	*0.7398*
April Year 2013- Haul Truck Trips (pounds per day)	1	4	4	0.01	0.04	0.08	0.0001	0.003	0.003	14.80
April Year 2013- Haul Truck Trips (tons per year)				*0.001*	*0.005*	*0.009*	*0.000*	*0.000*	*0.000*	*1.776*
May Year 2013- Haul Truck Trips (pounds per day)	1	4	4	0.01	0.04	0.08	0.0001	0.003	0.003	14.80
May Year 2013- Haul Truck Trips (tons per year)				*0.001*	*0.005*	*0.009*	*0.000*	*0.000*	*0.000*	*1.776*
June Year 2013- Haul Truck Trips (pounds per day)	2	4	8	0.01	0.08	0.15	0.0003	0.007	0.006	29.59
June Year 2013- Haul Truck Trips (tons per year)				*0.001*	*0.007*	*0.014*	*0.000*	*0.001*	*0.001*	*2.663*
July Year 2013- Haul Truck Trips (pounds per day)	2	4	8	0.01	0.08	0.15	0.0003	0.007	0.006	29.59
July Year 2013- Haul Truck Trips (tons per year)				*0.001*	*0.004*	*0.008*	*0.000*	*0.000*	*0.000*	*1.480*
August Year 2013- Haul Truck Trips (pounds per	2	4	8	0.01	0.08	0.15	0.0003	0.007	0.006	29.59
August Year 2013- Haul Truck Trips (tons per year)				*0.001*	*0.004*	*0.008*	*0.000*	*0.000*	*0.000*	*1.480*
September Year 2013- Haul Truck Trips (pounds per	2	4	8	0.01	0.08	0.15	0.0003	0.007	0.006	29.59
September Year 2013- Haul Truck Trips (tons per year)				*0.001*	*0.009*	*0.018*	*0.000*	*0.001*	*0.001*	*3.551*
October Year 2013- Haul Truck Trips (pounds per	1	4	4	0.01	0.04	0.08	0.0001	0.003	0.003	14.80
October Year 2013- Haul Truck Trips (tons per year)				*0.001*	*0.005*	*0.009*	*0.000*	*0.000*	*0.000*	*1.776*
November Year 2013- Haul Truck Trips (pounds per	1	4	4	0.01	0.04	0.08	0.0001	0.003	0.003	14.80
November Year 2013- Haul Truck Trips (tons per year)				*0.001*	*0.003*	*0.007*	*0.000*	*0.000*	*0.000*	*1.332*
December Year 2013- Haul Truck Trips (pounds per	24	4	96	0.14	0.92	1.83	0.0034	0.078	0.072	355.10
December Year 2013- Haul Truck Trips (tons per year)				*0.007*	*0.046*	*0.092*	*0.000*	*0.004*	*0.004*	*17.755*

/a/ It takes approximately two miles one-way to travel to the Sunshine Canyon Landfill.

LADWP Van Norman Complex Water Quality Improvement - Mobile Emissions

WORKER VEHICLES				Worker Vehicle Emissions (ppd)						
		# of Workers	Total VMT/Day	ROG	CO	NOX	SOX	PM10	PM2.5	CO2
January Year 2014-Worker Vehicles Emissions		**43**	**1,143.80**	**0.13**	**5.09**	**0.51**	**0.01**	**0.09**	**0.09**	**961.88**
	Cars	*21.0*	558.60	0.05	1.93	0.16	0.004	0.04	0.04	415.19
	Trucks	*22.0*	585.20	*0.08*	*3.16*	*0.35*	*0.01*	*0.06*	*0.05*	*546.68*
Total January Year 2014 Worker Vehicles Emissions (tons per year)				*0.007*	*0.25*	*0.03*	*0.0004*	*0.0047*	*0.0043*	*48.09*
February Year 2014-Worker Vehicles Emissions		**28**	**744.80**	**0.08**	**3.30**	**0.33**	**0.01**	**0.06**	**0.06**	**624.69**
	Cars	*14.0*	372.40	0.03	1.29	0.11	0.002	0.03	0.02	276.80
	Trucks	*14.0*	372.40	*0.05*	*2.01*	*0.22*	*0.00*	*0.04*	*0.03*	*347.89*
Total February Year 2014 Worker Vehicles Emissions (tons per year)				*0.004*	*0.16*	*0.02*	*0.0003*	*0.0030*	*0.0028*	*31.23*
March Year 2014-Worker Vehicles Emissions		**23**	**611.80**	**0.07**	**2.73**	**0.28**	**0.00**	**0.05**	**0.05**	**515.67**
	Cars	*11.0*	292.60	0.02	1.01	0.09	0.002	0.02	0.02	217.48
	Trucks	*12.0*	319.20	*0.05*	*1.72*	*0.19*	*0.00*	*0.03*	*0.03*	*298.19*
Total March Year 2014 Worker Vehicles Emissions (tons per year)				*0.01*	*0.33*	*0.03*	*0.001*	*0.006*	*0.006*	*61.88*
April Year 2014-Worker Vehicles Emissions		**25**	**665.00**	**0.08**	**2.97**	**0.30**	**0.01**	**0.05**	**0.05**	**560.29**
	Cars	*12.0*	319.20	0.03	1.11	0.09	0.002	0.02	0.02	237.25
	Trucks	*13.0*	345.80	*0.05*	*1.86*	*0.21*	*0.00*	*0.03*	*0.03*	*323.04*
Total April Year 2014 Worker Vehicles Emissions (tons per year)				*0.01*	*0.36*	*0.04*	*0.001*	*0.01*	*0.01*	*67.24*
May Year 2014-Worker Vehicles Emissions		**32**	**851.20**	**0.10**	**3.77**	**0.38**	**0.007**	**0.069**	**0.064**	**713.926**
	Cars	*16.0*	*425.60*	0.04	1.47	0.12	0.003	0.03	0.03	316.34
	Trucks	*16.0*	*425.60*	*0.06*	*2.29*	*0.25*	*0.00*	*0.04*	*0.04*	*397.59*
Total May Year 2014 Worker Vehicles Emissions (tons per year)				*0.01*	*0.34*	*0.03*	*0.001*	*0.01*	*0.01*	*64.25*
June Year 2014-Worker Vehicles Emissions		**31**	**824.60**	**0.09**	**3.68**	**0.37**	**0.01**	**0.07**	**0.06**	**694.16**
	Cars	*15.0*	399.00	0.03	1.38	0.12	0.003	0.03	0.03	296.57
	Trucks	*16.0*	425.60	*0.06*	*2.29*	*0.25*	*0.00*	*0.04*	*0.04*	*397.59*
Total June Year 2014 Worker Vehicles Emissions (tons per year)				*0.01*	*0.44*	*0.04*	*0.001*	*0.008*	*0.01*	*83.30*
July Year 2014-Worker Vehicles Emissions		**31**	**824.60**	**0.09**	**3.68**	**0.37**	**0.01**	**0.07**	**0.06**	**694.16**
	Cars	*15.0*	399.00	0.03	1.38	0.12	0.003	0.03	0.03	296.57
	Trucks	*16.0*	425.60	*0.06*	*2.29*	*0.25*	*0.00*	*0.04*	*0.04*	*397.59*
Total July Year 2014 Worker Vehicles Emissions (tons per year)				*0.005*	*0.18*	*0.02*	*0.0003*	*0.0034*	*0.0031*	*34.71*
August Year 2014-Worker Vehicles Emissions		**45**	**1,197.00**	**0.14**	**5.33**	**0.54**	**0.01**	**0.10**	**0.09**	**1,006.50**
	Cars	*22.0*	585.20	0.05	2.03	0.17	0.004	0.04	0.04	434.96
	Trucks	*23.0*	611.80	*0.09*	*3.30*	*0.36*	*0.01*	*0.06*	*0.05*	*571.53*
Total August Year 2014 Worker Vehicles Emissions (tons per year)				*0.007*	*0.27*	*0.03*	*0.0005*	*0.0049*	*0.0045*	*50.32*
September Year 2014-Worker Vehicles Emissions		**47**	**1,250.20**	**0.14**	**5.56**	**0.56**	**0.01**	**0.10**	**0.09**	**1,051.12**
	Cars	*23.0*	611.80	0.05	2.12	0.18	0.004	0.04	0.04	454.74
	Trucks	*24.0*	638.40	*0.09*	*3.44*	*0.38*	*0.01*	*0.06*	*0.06*	*596.38*
Total September Year 2014 Worker Vehicles Emissions (tons per year)				*0.02*	*0.67*	*0.07*	*0.001*	*0.012*	*0.011*	*126.13*
October Year 2014-Worker Vehicles Emissions		**27**	**718.20**	**0.08**	**3.21**	**0.32**	**0.01**	**0.06**	**0.05**	**604.91**
	Cars	*13.0*	345.80	0.03	1.20	0.10	0.002	0.02	0.02	257.02
	Trucks	*14.0*	372.40	*0.05*	*2.01*	*0.22*	*0.00*	*0.04*	*0.03*	*347.89*
Total October Year 2014 Worker Vehicles Emissions (tons per year)				*0.01*	*0.38*	*0.04*	*0.001*	*0.01*	*0.01*	*72.59*
November Year 2014-Worker Vehicles Emissions		**37**	**984.20**	**0.11**	**4.38**	**0.44**	**0.008**	**0.081**	**0.074**	**828.016**
	Cars	*18.0*	*478.80*	0.04	1.66	0.14	0.003	0.03	0.03	355.88
	Trucks	*19.0*	*505.40*	*0.07*	*2.73*	*0.30*	*0.00*	*0.05*	*0.04*	*472.14*
Total November Year 2014 Worker Vehicles Emissions (tons per year)				*0.01*	*0.39*	*0.04*	*0.001*	*0.01*	*0.01*	*74.52*
December Year 2014-Worker Vehicles Emissions		**31**	**824.60**	**0.09**	**3.68**	**0.37**	**0.01**	**0.07**	**0.06**	**694.16**
	Cars	*15.0*	399.00	0.03	1.38	0.12	0.003	0.03	0.03	296.57
	Trucks	*16.0*	425.60	*0.06*	*2.29*	*0.25*	*0.00*	*0.04*	*0.04*	*397.59*
Total December Year 2014 Worker Vehicles Emissions (tons per year)				*0.01*	*0.44*	*0.04*	*0.001*	*0.008*	*0.01*	*83.30*

OFF-SITE TRUCK TF				Heavy-duty Truck Emissions						
	Trips per Day	Round Trip Length /a/	VMT/day	ROG	CO	NOX	SOX	PM10	PM2.5	CO2
January Year 2014- Haul Truck Trips (pounds per day)	24	4	96	0.13	0.82	1.62	0.003	0.07	0.07	356.23
January Year 2014- Haul Truck Trips (tons per year)				*0.0066*	*0.0411*	*0.0812*	*0.0002*	*0.0035*	*0.0033*	*17.8116*
February Year 2014- Haul Truck Trips (pounds per day)	7	4	28	0.04	0.24	0.47	0.001	0.02	0.02	103.90
February Year 2014- Haul Truck Trips (tons per year)				*0.005*	*0.029*	*0.057*	*0.000*	*0.002*	*0.002*	*12.468*
March Year 2014- Haul Truck Trips (pounds per day)	1	4	4	0.01	0.03	0.07	0.000	0.00	0.00	14.84
March Year 2014- Haul Truck Trips (tons per year)				*0.0003*	*0.0017*	*0.0034*	*0.0000*	*0.0001*	*0.0001*	*0.7422*
April Year 2014- Haul Truck Trips (pounds per day)	24	4	96	0.13	0.82	1.62	0.003	0.07	0.07	356.23
April Year 2014- Haul Truck Trips (tons per year)				*0.016*	*0.099*	*0.195*	*0.000*	*0.009*	*0.008*	*42.748*
May Year 2014- Haul Truck Trips (pounds per day)	19	4	76	0.10	0.65	1.29	0.003	0.06	0.05	282.02
May Year 2014- Haul Truck Trips (tons per year)				*0.012*	*0.078*	*0.154*	*0.000*	*0.007*	*0.006*	*33.842*
June Year 2014- Haul Truck Trips (pounds per day)	2	4	8	0.01	0.07	0.14	0.000	0.01	0.01	29.69
June Year 2014- Haul Truck Trips (tons per year)				*0.001*	*0.006*	*0.012*	*0.000*	*0.001*	*0.000*	*2.672*
July Year 2014- Haul Truck Trips (pounds per day)	2	4	8	0.01	0.07	0.14	0.000	0.01	0.01	29.69
July Year 2014- Haul Truck Trips (tons per year)				*0.001*	*0.003*	*0.007*	*0.000*	*0.000*	*0.000*	*1.484*
August Year 2014- Haul Truck Trips (pounds per day)	24	4	96	0.13	0.82	1.62	0.003	0.07	0.07	356.23
August Year 2014- Haul Truck Trips (tons per year)				*0.007*	*0.041*	*0.081*	*0.000*	*0.004*	*0.003*	*17.812*
September Year 2014- Haul Truck Trips (pounds per	20	4	80	0.11	0.68	1.35	0.003	0.06	0.05	296.86
September Year 2014- Haul Truck Trips (tons per year)				*0.013*	*0.082*	*0.162*	*0.000*	*0.007*	*0.007*	*35.623*
October Year 2014- Haul Truck Trips (pounds per day)	24	4	96	0.13	0.82	1.62	0.003	0.07	0.07	356.23
October Year 2014- Haul Truck Trips (tons per year)				*0.016*	*0.099*	*0.195*	*0.000*	*0.009*	*0.008*	*42.748*
November Year 2014- Haul Truck Trips (pounds per	5	4	20	0.03	0.17	0.34	0.001	0.01	0.01	74.22
November Year 2014- Haul Truck Trips (tons per year)				*0.002*	*0.015*	*0.030*	*0.000*	*0.001*	*0.001*	*6.679*
December Year 2014- Haul Truck Trips (pounds per	1	4	4	0.01	0.03	0.07	0.000	0.00	0.00	14.84
December Year 2014- Haul Truck Trips (tons per year)				*0.0003*	*0.0017*	*0.0034*	*0.0000*	*0.0001*	*0.0001*	*0.7422*

/a/ It takes approximately two miles one-way to travel to the Sunshine Canyon Landfill.

LADWP Van Norman Complex Water Quality Improvement - Mobile Emissions

WORKER VEHICLES				Worker Vehicle Emissions (ppd)						
		# of Workers	Total VMT/Day	ROG	CO	NOX	SOX	PM10	PM2.5	CO2
January Year 2015-Worker Vehicles Emissions		**17**	**452.20**	**0.05**	**1.88**	**0.19**	**0.004**	**0.04**	**0.03**	**381.45**
	Cars	*8.0*	212.80	0.02	0.68	0.06	0.001	0.01	0.01	157.83
	Trucks	*9.0*	239.40	*0.03*	*1.21*	*0.13*	*0.002*	*0.02*	*0.02*	*223.62*
Total January Year 2015 Worker Vehicles Emissions (tons per year)				*0.002*	*0.09*	*0.01*	*0.0002*	*0.0019*	*0.0017*	*19.07*
February Year 2015-Worker Vehicles Emissions		**25**	**665.00**	**0.07**	**2.76**	**0.27**	**0.01**	**0.06**	**0.05**	**559.75**
	Cars	*12.0*	319.20	0.02	1.02	0.08	0.002	0.02	0.02	236.74
	Trucks	*13.0*	345.80	*0.04*	*1.74*	*0.19*	*0.003*	*0.03*	*0.03*	*323.01*
Total February Year 2015 Worker Vehicles Emissions (tons per year)				*0.003*	*0.14*	*0.01*	*0.0003*	*0.0028*	*0.0025*	*27.99*
March Year 2015-Worker Vehicles Emissions		**18**	**478.80**	**0.05**	**1.97**	**0.19**	**0.00**	**0.04**	**0.04**	**401.18**
	Cars	*9.0*	239.40	0.02	0.76	0.06	0.002	0.02	0.02	177.56
	Trucks	*9.0*	239.40	*0.03*	*1.21*	*0.13*	*0.002*	*0.02*	*0.02*	*223.62*
Total March Year 2015 Worker Vehicles Emissions (tons per year)				*0.01*	*0.24*	*0.02*	*0.0004*	*0.005*	*0.004*	*48.14*
April Year 2015-Worker Vehicles Emissions		**18**	**478.80**	**0.05**	**1.97**	**0.19**	**0.0037**	**0.04**	**0.04**	**401.18**
	Cars	*9.0*	239.40	0.02	0.76	0.06	0.0016	0.02	0.02	177.56
	Trucks	*9.0*	239.40	*0.03*	*1.21*	*0.13*	*0.0021*	*0.02*	*0.02*	*223.62*
Total April Year 2015 Worker Vehicles Emissions (tons per year)				*0.01*	*0.24*	*0.02*	*0.0004*	*0.00*	*0.00*	*48.14*
May Year 2015-Worker Vehicles Emissions		**30**	**798.00**	**0.08**	**3.28**	**0.32**	**0.0062**	**0.066**	**0.061**	**668.626**
	Cars	*15.0*	*399.00*	0.03	1.27	0.11	0.0026	0.03	0.03	295.93
	Trucks	*15.0*	*399.00*	*0.05*	*2.01*	*0.22*	*0.0035*	*0.04*	*0.04*	*372.70*
Total May Year 2015 Worker Vehicles Emissions (tons per year)				*0.01*	*0.30*	*0.03*	*0.0006*	*0.01*	*0.01*	*60.18*
June Year 2015-Worker Vehicles Emissions		**17**	**452.20**	**0.05**	**1.88**	**0.19**	**0.0035**	**0.04**	**0.03**	**381.45**
	Cars	*8.0*	212.80	0.02	0.68	0.06	0.0014	0.01	0.01	157.83
	Trucks	*9.0*	239.40	*0.03*	*1.21*	*0.13*	*0.0021*	*0.02*	*0.02*	*223.62*
Total June Year 2015 Worker Vehicles Emissions (tons per year)				*0.01*	*0.23*	*0.02*	*0.0004*	*0.005*	*0.00*	*45.77*
July Year 2015-Worker Vehicles Emissions		**17**	**452.20**	**0.05**	**1.88**	**0.19**	**0.0035**	**0.04**	**0.03**	**381.45**
	Cars	*8.0*	212.80	0.02	0.68	0.06	0.0014	0.01	0.01	157.83
	Trucks	*9.0*	239.40	*0.03*	*1.21*	*0.13*	*0.0021*	*0.02*	*0.02*	*223.62*
Total July Year 2015 Worker Vehicles Emissions (tons per year)				*0.002*	*0.09*	*0.01*	*0.0002*	*0.0019*	*0.0017*	*19.07*
August Year 2015-Worker Vehicles Emissions		**17**	**452.20**	**0.05**	**1.88**	**0.19**	**0.0035**	**0.04**	**0.03**	**381.45**
	Cars	*8.0*	212.80	0.02	0.68	0.06	0.0014	0.01	0.01	157.83
	Trucks	*9.0*	239.40	*0.03*	*1.21*	*0.13*	*0.0021*	*0.02*	*0.02*	*223.62*
Total August Year 2015 Worker Vehicles Emissions (tons per year)				*0.002*	*0.09*	*0.01*	*0.0002*	*0.0019*	*0.0017*	*19.07*
September Year 2015-Worker Vehicles Emissions		**3**	**79.80**	**0.01**	**0.35**	**0.04**	**0.0006**	**0.01**	**0.01**	**69.42**
	Cars	*1.0*	26.60	0.002	0.08	0.01	0.0002	0.00	0.00	19.73
	Trucks	*2.0*	53.20	*0.01*	*0.27*	*0.03*	*0.0005*	*0.01*	*0.00*	*49.69*
Total September Year 2015 Worker Vehicles Emissions (tons per year)				*0.001*	*0.04*	*0.00*	*0.0001*	*0.001*	*0.001*	*8.33*

OFF-SITE TRUCK TF			Heavy-duty Truck Emissions							
	Trips per Day	Round Trip Length /a/	VMT/day	ROG	CO	NOX	SOX	PM10	PM2.5	CO2
January Year 2015- Haul Truck Trips (pounds per	4	4	16	0.02	0.12	0.24	0.00	0.01	0.01	59.55
January Year 2015- Haul Truck Trips (tons per year)				*0.0010*	*0.0061*	*0.0119*	*0.0000*	*0.0005*	*0.0005*	*2.9776*
February Year 2015- Haul Truck Trips (pounds per	24	4	96	0.12	0.73	1.43	0.00	0.06	0.06	357.31
February Year 2015- Haul Truck Trips (tons per year)				*0.014*	*0.088*	*0.172*	*0.000*	*0.008*	*0.007*	*42.878*
March Year 2015- Haul Truck Trips (pounds per day)	41	4	164	0.20	1.25	2.45	0.01	0.11	0.10	610.41
March Year 2015- Haul Truck Trips (tons per year)				*0.0101*	*0.0623*	*0.1223*	*0.0003*	*0.0054*	*0.0050*	*30.5205*
April Year 2015- Haul Truck Trips (pounds per day)	41	4	164	0.20	1.25	2.45	0.01	0.11	0.10	610.41
April Year 2015- Haul Truck Trips (tons per year)				*0.024*	*0.150*	*0.294*	*0.001*	*0.013*	*0.012*	*73.249*
May Year 2015- Haul Truck Trips (pounds per day)	18	4	72	0.09	0.55	1.07	0.00	0.05	0.04	267.98
May Year 2015- Haul Truck Trips (tons per year)				*0.011*	*0.066*	*0.129*	*0.000*	*0.006*	*0.005*	*32.158*
June Year 2015- Haul Truck Trips (pounds per day)	12	4	48	0.06	0.36	0.72	0.00	0.03	0.03	178.66
June Year 2015- Haul Truck Trips (tons per year)				*0.005*	*0.033*	*0.064*	*0.000*	*0.003*	*0.003*	*16.079*
July Year 2015- Haul Truck Trips (pounds per day)	12	4	48	0.06	0.36	0.72	0.00	0.03	0.03	178.66
July Year 2015- Haul Truck Trips (tons per year)				*0.003*	*0.018*	*0.036*	*0.000*	*0.002*	*0.001*	*8.933*
August Year 2015- Haul Truck Trips (pounds per day)	2	4	8	0.01	0.06	0.12	0.00	0.01	0.00	29.78
August Year 2015- Haul Truck Trips (tons per year)				*0.000*	*0.003*	*0.006*	*0.000*	*0.000*	*0.000*	*1.489*
September Year 2015- Haul Truck Trips (pounds per	2	4	8	0.01	0.06	0.12	0.00	0.01	0.00	29.78
September Year 2015- Haul Truck Trips (tons per year)				*0.001*	*0.007*	*0.014*	*0.000*	*0.001*	*0.001*	*3.573*

/a/ It takes approximately two miles one-way to travel to the Sunshine Canyon Landfill.

Van Norman Complex Water Quality Improvement Project - Demolition (Year 2014)

DEMOLITION - Channel Between 20+35 to 45+88 on October Year 2014

Demolition Schedule - **20** **days**

Fugitive Dust Material Handling

Aerodynamic Particle Size I	Mean Wind Speed[b]	Moisture Content[c]	Debris Handled[d]
	mph		ton/day
0.35	5.3	2.0	30

Incremental Increase in Onsite Fugitive Dust Emissions from Construction Equipment

Material Handling[e]: (0.0032 x Aerodynamic Particle Size Multiplier x (wind speed (mph)/5) $^{1.3}$/(moisture content/2)$^{1.4}$ x debris handled (ton/day)) x (1 - control efficiency) = PM10 Emissions (lb/day)

Description	Control Efficiency	PM10 Mitigated[g]	PM2.5 Mitigated
	%	lb/day	lb/day
Material Handling (Demolition)[f]	61	0.01	0.00
Material Handling (Debris)	61	0.01	0.00
Total		**0.02**	**0.00**

Notes:

a) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggretate Handling and Storage Piles, p 13.2.4-3 Aerodynamic particle size multiplier for < 10 µm
b) Mean wind speed - maximum of daily average wind speeds reported in 1981 meteorological data.
c) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, equation 2-13, p 2-28
d) Debris handled obtained from client. It is assumed that one cubic yard is equivalent to 4050 pounds of concrete.

e) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, equation 2-13, p 2-28. EPA suggusts using the material handling equation for demolition emission estimates.
f) EPA suggusts using the material handling equation for demolition emission estimates.
g) Includes watering at least three times a day per Rule 403 (61% control efficiency)

DEMOLITION - Diversion Channel on October Year 2014

Demolition Schedule - **20** **days**

Fugitive Dust Material Handling

Aerodynamic Particle Size I	Mean Wind Speed[b]	Moisture Content[c]	Debris Handled[d]
	mph		ton/day
0.35	5.3	2.0	43

Incremental Increase in Onsite Fugitive Dust Emissions from Construction Equipment

Material Handling[e]: (0.0032 x Aerodynamic Particle Size Multiplier x (wind speed (mph)/5) $^{1.3}$/(moisture content/2)$^{1.4}$ x debris handled (ton/day)) x (1 - control efficiency) = PM10 Emissions (lb/day)

Description	Control Efficiency	PM10 Mitigated[g]	PM2.5 Mitigated
	%	lb/day	lb/day
Material Handling (Demolition)[f]	61	0.02	0.00
Material Handling (Debris)	61	0.02	0.00
Total		**0.04**	**0.01**

Notes:
a) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggretate Handling and Storage Piles, p 13.2.4-3 Aerodynamic particle size multiplier for < 10 µm
b) Mean wind speed - maximum of daily average wind speeds reported in 1981 meteorological data.
c) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, equation 2-13, p 2-28
d) Debris handled obtained from client. It is assumed that one cubic yard is equivalent to 4050 pounds of concrete.
e) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, equation 2-13, p 2-28. EPA suggusts using the material handling equation for demolition emission estimates.
f) EPA suggusts using the material handling equation for demolition emission estimates.
g) Includes watering at least three times a day per Rule 403 (61% control efficiency)

DEMOLITION - Channel Between 0+00 to 20+35 on May Year 2014

Demolition Schedule - **20** **days**

Fugitive Dust Material Handling

Aerodynamic Particle Size I	Mean Wind Speed[b]	Moisture Content[c]	Debris Handled[d]
	mph		ton/day
0.35	5.3	2.0	304

Incremental Increase in Onsite Fugitive Dust Emissions from Construction Equipment

Material Handling[e]: (0.0032 x Aerodynamic Particle Size Multiplier x (wind speed (mph)/5) $^{1.3}$/(moisture content/2)$^{1.4}$ x debris handled (ton/day)) x (1 - control efficiency) = PM10 Emissions (lb/day)

Description	Control Efficiency	PM10 Mitigated[g]	PM2.5 Mitigated
	%	lb/day	lb/day
Material Handling (Demolition)[f]	61	0.14	0.03
Material Handling (Debris)	61	0.14	0.03
Total		**0.28**	**0.06**

DEMOLITION - Channel Between 0+00 to 20+35 on June Year 2014

Demolition Schedule - **20** **days**

Fugitive Dust Material Handling

Aerodynamic Particle Size I	Mean Wind Speed[b]	Moisture Content[c]	Debris Handled[d]
	mph		ton/day
0.35	5.3	2.0	304

Incremental Increase in Onsite Fugitive Dust Emissions from Construction Equipment

Material Handling[e]: (0.0032 x Aerodynamic Particle Size Multiplier x (wind speed (mph)/5) $^{1.3}$/(moisture content/2)$^{1.4}$ x debris handled (ton/day)) x (1 - control efficiency) = PM10 Emissions (lb/day)

Description	Control Efficiency	PM10 Mitigated[g]	PM2.5 Mitigated
	%	lb/day	lb/day
Material Handling (Demolition)[f]	61	0.14	0.03
Material Handling (Debris)	61	0.14	0.03
Total		**0.28**	**0.06**

Notes:
a) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggregate Handling and Storage Piles, p 13.2.4-3 Aerodynamic particle size multiplier for < 10 μm
b) Mean wind speed - maximum of daily average wind speeds reported in 1981 meteorological data.
c) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, equation 2-13, p 2-28
d) Debris handled obtained from client. It is assumed that one cubic yard is equivalent to 4050 pounds of concrete.
e) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, equation 2-13, p 2-28. EPA suggusts using the material handling equation for demolition emission estimates.
f) EPA suggusts using the material handling equation for demolition emission estimates.
g) Includes watering at least three times a day per Rule 403 (61% control efficiency)

DEMOLITION - Lower San Fernando Spillway on September Year 2014

Demolition Schedule - **20** **days**

Fugitive Dust Material Handling

Aerodynamic Particle Size I	Mean Wind Speed[b]	Moisture Content[c]	Debris Handled[d]
	mph		ton/day
0.35	5.3	2.0	101

Incremental Increase in Onsite Fugitive Dust Emissions from Construction Equipment

Material Handling[e]: (0.0032 x Aerodynamic Particle Size Multiplier x (wind speed (mph)/5) $^{1.3}$/(moisture content/2)$^{1.4}$ x debris handled (ton/day)) x (1 - control efficiency) = PM10 Emissions (lb/day)

Description	Control Efficiency	PM10 Mitigated[g]	PM2.5 Mitigated
	%	lb/day	lb/day
Material Handling (Demolition)[f]	61	0.05	0.01
Material Handling (Debris)	61	0.05	0.01
Total		**0.10**	**0.02**

Notes:
a) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggregate Handling and Storage Piles, p 13.2.4-3 Aerodynamic particle size multiplier for < 10 μm
b) Mean wind speed - maximum of daily average wind speeds reported in 1981 meteorological data.
c) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, equation 2-13, p 2-28
d) Debris handled obtained from client. It is assumed that one cubic yard is equivalent to 4050 pounds of concrete.
e) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, equation 2-13, p 2-28. EPA suggusts using the material handling equation for demolition emission estimates.
f) EPA suggusts using the material handling equation for demolition emission estimates.
g) Includes watering at least three times a day per Rule 403 (61% control efficiency)

Van Norman Complex Water Quality Improvement Project -
Fugitive Dust Emissions from Stone Crushing Process Year 2014

From US EPA AP-42 Chapter 11.19: Crushed Stone Processing and Pulverized Mineral Processing

Screening PM10:

Uncontrolled= 0.009 lbs/ton

Tertiary Crushing PM10:

Uncontrolled= 0.002 lbs/ton

Fines Crushing PM10:

Uncontrolled= 0.015 lbs/ton

Conveyor Transfer Points PM10:

Uncontrolled= 0.001 lbs/ton

Crushing at Diversion Channel

Construction Schedule	Number of	Amount of	Emissions from Crushing Process (ppd)	
			PM10	PM2.5
May Year 2014 - Construct channel	20	1,775	4.88	1.02
June Year 2014 - Construct road bridges	20	50	0.14	0.03
July Year 2014 - Construct road bridges	20	50	0.14	0.03
September Year 2014 - Construct road bridges	20	50	0.14	0.03
October Year 2014 - Demolish concrete at confluence and construct confluence	20	420	1.16	0.24

Crushing at Channel Between 0+00 to 20+35

Construction Schedule	Number of	Amount of	Emissions from Crushing Process (ppd)	
			PM10	PM2.5
May Year 2014 - Demolish existing concrete channel	20	1,500	4.1	0.9
June Year 2014- Demolish existing concrete channel	20	1,500	4.1	0.9
September Year 2014 - Construct new channel	20	1,800	5.0	1.0

Crushing at Lower San Fernando Spillway

Construction Schedule	Number of	Amount of	Emissions from Crushing Process (ppd)	
			PM10	PM2.5
September Year 2014 - Demolition	20	1,000	2.8	0.6
October Year 2014 - Upper San Fernando Basin low flow outlet	20	30	0.1	0.0
October Year 2014 - Construct new spillway	20	767	2.1	0.4

Crushing at Channel Between 20+35 to 45+88

Construction Schedule	Number of	Amount of	Emissions from Crushing Process (ppd)	
			PM10	PM2.5
October Year 2014 - Demolish concrete at confluence and construct confluence	20	300	0.8	0.2

Van Norman Complex Water Quality Improvement Project - Fugitive Dust Emissions from Excavation (Year 2013 and 2014)

Excavation - Channel Between 20+35 to 45+88		**Construction Activity**	
Excavation Schedule (October Year 2013) -	**20**	**days[a]**	

Fugitive Dust Stockpiling Parameters

Silt Content[c]	**Precipitation Days[d]**	**ean Wind Speed Percer**	**TSP Fraction**	**Area[f] (acres)**
6.9	10	0.90	0.5	0.21

Fugitive Dust Material Handling

Aerodynamic Particle Size Multiplier[g]	**Mean Wind Speed (mph)[h]**	**Moisture Content[i]**	**Dirt Handled (cy)[a]**	**Dirt Handled (lbs./day)[j]**
0.35	5.3	7.9	16,850	2,106,250

Dragline Parameters

Drop Height (feet)	**Moisture Content[i]**	**PM_{10} Scaling Factor**	**$PM_{2.5}$ Scaling Factor**
3	7.9%	0.75	0.017

Incremental Increase in Fugitive Dust Emissions from Construction Operations

Equations:

Grading[k]: PM10 Emissions (lb/day) = 0.60 x 0.051 x mean vehicle speed$^{2.0}$ x VMT x (1 - control efficiency)

Storage Piles[l]: PM10 Emissions (lb/day) = 1.7 x (silt content/1.5) x ((365-precipitation days)/235) x wind speed percent/15 x TSP fraction x Area) x (1 - control efficiency)

Material Handling[m]: PM10 Emissions (lb/day) = (0.0032 x aerodynamic particle size multiplier x (wind speed (mph)/5) $^{1.3}$/(moisture content/2)$^{1.4}$ x dirt handled (lb/day)/2,000 (lb/tor
(1 - control efficiency)

Dragline Equation for PM_{10} Emissions[o] (lbs/day) = [((0.0021) x (drop height) $^{0.7}$) / (moisture content)$^{0.3}$] x 0.75 x Dirt Handled x Control Efficiency

Dragline Equation for $PM_{2.5}$ Emissions[o] (lbs/day) = [((0.0021) x (drop height) $^{1.1}$) / (moisture content)$^{0.3}$] x 0.017 x Dirt Handled x Control Efficiency

Description	**Control Efficiency** %	**Unmitigated PM10[n]** lb/day	**Unmitigated PM2.5** lb/day
Storage Piles	61	0.030	0.006
Material Handling	61	0.070	0.015
Dragline	61	1.196	0.027
Total		**1.30**	**0.05**

Excavation Schedule (November Year 2013) -	**20**	**days[a]**

Fugitive Dust Stockpiling Parameters

Silt Content[c]	**Precipitation Days[d]**	**ean Wind Speed Percer**	**TSP Fraction**	**Area[f] (acres)**
6.9	10	0.90	0.5	0.21

Fugitive Dust Material Handling

Aerodynamic Particle Size Multiplier[g]	**Mean Wind Speed (mph)[h]**	**Moisture Content[i]**	**Dirt Handled (cy)[a]**	**Dirt Handled (lbs./day)[j]**
0.35	5.3	7.9	16,850	2,106,250

Dragline Parameters

Drop Height (feet)	**Moisture Content[i]**	**PM_{10} Scaling Factor**	**$PM_{2.5}$ Scaling Factor**
3	7.9%	0.75	0.017

Incremental Increase in Fugitive Dust Emissions from Construction Operations

Equations:

Grading[k]: PM10 Emissions (lb/day) = 0.60 x 0.051 x mean vehicle speed$^{2.0}$ x VMT x (1 - control efficiency)

Storage Piles[l]: PM10 Emissions (lb/day) = 1.7 x (silt content/1.5) x ((365-precipitation days)/235) x wind speed percent/15 x TSP fraction x Area) x (1 - control efficiency)

Material Handling[m]: PM10 Emissions (lb/day) = (0.0032 x aerodynamic particle size multiplier x (wind speed (mph)/5) $^{1.3}$/(moisture content/2)$^{1.4}$ x dirt handled (lb/day)/2,000 (lb/tor
(1 - control efficiency)

Dragline Equation for PM_{10} Emissions[o] (lbs/day) = [((0.0021) x (drop height) $^{0.7}$) / (moisture content)$^{0.3}$] x 0.75 x Dirt Handled x Control Efficiency

Dragline Equation for $PM_{2.5}$ Emissions[o] (lbs/day) = [((0.0021) x (drop height) $^{1.1}$) / (moisture content)$^{0.3}$] x 0.017 x Dirt Handled x Control Efficiency

Description	**Control Efficiency** %	**Unmitigated PM10[n]** lb/day	**Unmitigated PM2.5** lb/day
Storage Piles	61	0.030	0.006
Material Handling	61	0.070	0.015
Dragline	61	1.196	0.027
Total		**1.30**	**0.05**

Notes:
a) Obtained from client.
b) Caterpillar Performance Handbook, Edition 33, October 2003 Operating Speeds, p 2-3.
c) USEPA, AP-42, July 1998, Table 11.9-3 Typical Values for Corection Factors Applicable to the Predictive Emission Factor Equations
d) Table A9-9-E2, SCAQMD CEQA Air Quality Handbook, 1993
e) Mean wind speed percent - percent of time mean wind speed exceeds 12 mph.
f) Assumed storage piles are 0.06 acres in size
g) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggretate Handling and Storage Piles, p 13.2.4-3 Aerodynamic particle size multiplier for < 10 μm
h) Mean wind speed at the Burbank Wind Monitoring Station.
i) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, equation 2-13, p 2-28.
j) Assuming 16850 cubic yards of dirt handled [(16850 cyd x 2,500 lb/cyd)/20 days = 2,106,250 lb/day]
k) USEPA, AP-42, July 1998, Table 11.9-1, Equation for Site Grading ≤ 10 μm
l) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggretate Handling and Storage Piles, Equation 1
m) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, Sept 1992, EPA-450/2-92-004, Equation 2-12.
n) Includes watering at least three times a day per Rule 403 (61% control efficiency).
o) Source: USEPA, AP-42, Emission Factor Equations for Uncontrolled Dust Sources at Western Surface Coal Mines, Table 11.9-1, Dragline calculations for PM_{10} and $PM_{2.5}$.

Excavation - Diversion Channel		**Construction Activity**	
Excavation Schedule (January Year 2014) -	**20**	**days[a]**	

Fugitive Dust Stockpiling Parameters

Silt Content[c]	**Precipitation Days[d]**	**ean Wind Speed Percer**	**TSP Fraction**	**Area[f] (acres)**
6.9	10	0.90	0.5	0.06

Fugitive Dust Material Handling				
Aerodynamic Particle Size Multiplier[g]	Mean Wind Speed (mph)[h]	Moisture Content[i]	Dirt Handled (cy)[a]	Dirt Handled (lbs./day)[j]
0.35	5.3	7.9	15,000	1,875,000

Dragline Parameters			
Drop Height (feet)	Moisture Content[i]	PM_{10} Scaling Factor	$PM_{2.5}$ Scaling Factor
3	7.9%	0.75	0.017

Incremental Increase in Fugitive Dust Emissions from Construction Operations

Equations:

Grading[k]: PM10 Emissions (lb/day) = 0.60 x 0.051 x mean vehicle speed $^{2.0}$ x VMT x (1 - control efficiency)

Storage Piles[l]: PM10 Emissions (lb/day) = 1.7 x (silt content/1.5) x ((365-precipitation days)/235) x wind speed percent/15 x TSP fraction x Area) x (1 - control efficiency)

Material Handling[m]: PM10 Emissions (lb/day) = (0.0032 x aerodynamic particle size multiplier x (wind speed (mph)/5) $^{1.3}$/(moisture content/2) $^{1.4}$ x dirt handled (lb/day)/2,000 (lb/tor
(1 - control efficiency)

Dragline Equation for PM_{10} Emissions[o] (lbs/day) = [((0.0021) x (drop height) $^{0.7}$) / (moisture content) $^{0.3}$] x 0.75 x Dirt Handled x Control Efficiency

Dragline Equation for $PM_{2.5}$ Emissions[o] (lbs/day) = [((0.0021) x (drop height) $^{1.1}$) / (moisture content) $^{0.3}$] x 0.017 x Dirt Handled x Control Efficiency

Description	Control Efficiency %	Unmitigated PM10[n] lb/day	Unmitigated PM2.5 lb/day
Storage Piles	61	0.010	0.002
Material Handling	61	0.060	0.012
Dragline	61	0.797	0.018
Total		**0.87**	**0.03**

Excavation - Diversion Channel		Construction Activity
Excavation Schedule (February Year 2014) -	**20**	**days[a]**

Fugitive Dust Stockpiling Parameters				
Silt Content[c]	Precipitation Days[d]	ean Wind Speed Percer	TSP Fraction	Area[f] (acres)
6.9	10	0.90	0.5	0.06

Fugitive Dust Material Handling				
Aerodynamic Particle Size Multiplier[g]	Mean Wind Speed (mph)[h]	Moisture Content[i]	Dirt Handled (cy)[a]	Dirt Handled (lbs./day)[j]
0.35	5.3	7.9	15,000	1,875,000

Dragline Parameters			
Drop Height (feet)	Moisture Content[i]	PM_{10} Scaling Factor	$PM_{2.5}$ Scaling Factor
3	7.9%	0.75	0.017

Incremental Increase in Fugitive Dust Emissions from Construction Operations

Equations:

Grading[k]: PM10 Emissions (lb/day) = 0.60 x 0.051 x mean vehicle speed $^{2.0}$ x VMT x (1 - control efficiency)

Storage Piles[l]: PM10 Emissions (lb/day) = 1.7 x (silt content/1.5) x ((365-precipitation days)/235) x wind speed percent/15 x TSP fraction x Area) x (1 - control efficiency)

Material Handling[m]: PM10 Emissions (lb/day) = (0.0032 x aerodynamic particle size multiplier x (wind speed (mph)/5) $^{1.3}$/(moisture content/2) $^{1.4}$ x dirt handled (lb/day)/2,000 (lb/tor
(1 - control efficiency)

Dragline Equation for PM_{10} Emissions[o] (lbs/day) = [((0.0021) x (drop height) $^{0.7}$) / (moisture content) $^{0.3}$] x 0.75 x Dirt Handled x Control Efficiency

Dragline Equation for $PM_{2.5}$ Emissions[o] (lbs/day) = [((0.0021) x (drop height) $^{1.1}$) / (moisture content) $^{0.3}$] x 0.017 x Dirt Handled x Control Efficiency

Description	Control Efficiency %	Unmitigated PM10[n] lb/day	Unmitigated PM2.5 lb/day
Storage Piles	61	0.010	0.002
Material Handling	61	0.060	0.012
Dragline	61	0.797	0.018
Total		**0.87**	**0.03**

Excavation Schedule (March Year 2014) -	**20**	**days[a]**

Fugitive Dust Stockpiling Parameters				
Silt Content[c]	Precipitation Days[d]	ean Wind Speed Percer	TSP Fraction	Area[f] (acres)
6.9	10	0.90	0.5	0.06

Fugitive Dust Material Handling				
Aerodynamic Particle Size Multiplier[g]	Mean Wind Speed (mph)[h]	Moisture Content[i]	Dirt Handled (cy)[a]	Dirt Handled (lbs./day)[j]
0.35	5.3	7.9	15,000	1,875,000

Dragline Parameters			
Drop Height (feet)	Moisture Content[i]	PM_{10} Scaling Factor	$PM_{2.5}$ Scaling Factor
3	7.9%	0.75	0.017

Incremental Increase in Fugitive Dust Emissions from Construction Operations

Equations:

Grading[k]: PM10 Emissions (lb/day) = 0.60 x 0.051 x mean vehicle speed $^{2.0}$ x VMT x (1 - control efficiency)

Storage Piles[l]: PM10 Emissions (lb/day) = 1.7 x (silt content/1.5) x ((365-precipitation days)/235) x wind speed percent/15 x TSP fraction x Area) x (1 - control efficiency)

Material Handling[m]: PM10 Emissions (lb/day) = (0.0032 x aerodynamic particle size multiplier x (wind speed (mph)/5) $^{1.3}$/(moisture content/2) $^{1.4}$ x dirt handled (lb/day)/2,000 (lb/tor
(1 - control efficiency)

Dragline Equation for PM_{10} Emissions[o] (lbs/day) = [((0.0021) x (drop height) $^{0.7}$) / (moisture content) $^{0.3}$] x 0.75 x Dirt Handled x Control Efficiency

Dragline Equation for $PM_{2.5}$ Emissions[o] (lbs/day) = [((0.0021) x (drop height) $^{1.1}$) / (moisture content) $^{0.3}$] x 0.017 x Dirt Handled x Control Efficiency

Description	Control Efficiency %	Unmitigated PM10[n] lb/day	Unmitigated PM2.5 lb/day
Storage Piles	61	0.010	0.002
Material Handling	61	0.060	0.012
Dragline	61	0.797	0.018
Total		**0.87**	**0.03**

Notes:
a) Assumed 30 haul truck trips a day at 20 cubic yards a load. Maximum of 750 cubic yards would be exported in one day.
b) Caterpillar Performance Handbook, Edition 33, October 2003 Operating Speeds, p 2-3.
c) USEPA, AP-42, July 1998, Table 11.9-3 Typical Values for Corection Factors Applicable to the Predictive Emission Factor Equations
d) Table A9-9-E2, SCAQMD CEQA Air Quality Handbook, 1993
e) Mean wind speed percent - percent of time mean wind speed exceeds 12 mph.
f) Assumed storage piles are 0.06 acres in size
g) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggretate Handling and Storage Piles, p 13.2.4-3 Aerodynamic particle size multiplier for < 10 μm
h) Mean wind speed at the Burbank Wind Monitoring Station.
i) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, equation 2-13, p 2-28.
j) Assuming 15000 cubic yards of dirt handled [(15000 cyd x 2,500 lb/cyd)/20 days = 1,875,000 lb/day]
k) USEPA, AP-42, July 1998, Table 11.9-1, Equation for Site Grading ≤ 10 μm
l) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggretate Handling and Storage Piles, Equation 1
m) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, Sept 1992, EPA-450/2-92-004, Equation 2-12.
n) Includes watering at least three times a day per Rule 403 (61% control efficiency).
o) Source: USEPA, AP-42, Emission Factor Equations for Uncontrolled Dust Sources at Western Surface Coal Mines, Table 11.9-1, Dragline calculations for PM_{10} and $PM_{2.5}$.

Excavation - Dike B		**Construction Activity**
Excavation Schedule (October Year 2014) -	**20**	**days**[a]

Fugitive Dust Parameters

Vehicle Speed (mph)[b]	**Vehicle Miles Traveled**
3	0.00

Fugitive Dust Stockpiling Parameters

Silt Content[c]	**Precipitation Days**[d]	**ean Wind Speed Percer**	**TSP Fraction**	**Area**[f] **(acres)**
6.9	10	0.90	0.5	0.06

Fugitive Dust Material Handling

Aerodynamic Particle Size Multiplier[g]	**Mean Wind Speed (mph)**[h]	**Moisture Content**[i]	**Dirt Handled (cy)**[a]	**Dirt Handled (lbs./day)**[j]
0.35	5.3	7.9	6,600	825,000

Dragline Parameters

Drop Height (feet)	**Moisture Content**[i]	**PM_{10} Scaling Factor**	**$PM_{2.5}$ Scaling Factor**
3	7.9%	0.75	0.017

Incremental Increase in Fugitive Dust Emissions from Construction Operations

Equations:

Grading[k]: PM10 Emissions (lb/day) = 0.60 x 0.051 x mean vehicle speed $^{2.0}$ x VMT x (1 - control efficiency)

Storage Piles[l]: PM10 Emissions (lb/day) = 1.7 x (silt content/1.5) x ((365-precipitation days)/235) x wind speed percent/15 x TSP fraction x Area) x (1 - control efficiency)

Material Handling[m]: PM10 Emissions (lb/day) = (0.0032 x aerodynamic particle size multiplier x (wind speed (mph)/5) $^{1.3}$/(moisture content/2) $^{1.4}$ x dirt handled (lb/day)/2,000 (lb/to
(1 - control efficiency)

Dragline Equation for PM_{10} Emissions[o] (lbs/day) = [((0.0021) x (drop height) $^{0.7}$) / (moisture content) $^{0.3}$] x 0.75 x Dirt Handled x Control Efficiency

Dragline Equation for $PM_{2.5}$ Emissions[o] (lbs/day) = [((0.0021) x (drop height) $^{1.1}$) / (moisture content) $^{0.3}$] x 0.017 x Dirt Handled x Control Efficiency

Description	**Control Efficiency** %	**Unmitigated PM10**[n] lb/day	**Unmitigated PM2.5** lb/day
Storage Piles	61	0.010	0.002
Material Handling	61	0.030	0.006
Dragline	61	2.391	0.054
Total		**2.43**	**0.06**

Notes:
a) Obtained from client.
b) Caterpillar Performance Handbook, Edition 33, October 2003 Operating Speeds, p 2-3.
c) USEPA, AP-42, July 1998, Table 11.9-3 Typical Values for Corection Factors Applicable to the Predictive Emission Factor Equations
d) Table A9-9-E2, SCAQMD CEQA Air Quality Handbook, 1993
e) Mean wind speed percent - percent of time mean wind speed exceeds 12 mph.
f) Assumed storage piles are 0.06 acres in size
g) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggretate Handling and Storage Piles, p 13.2.4-3 Aerodynamic particle size multiplier for < 10 μm
h) Mean wind speed at the Burbank Wind Monitoring Station.
i) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, equation 2-13, p 2-28.
j) Assuming 6600 cubic yards of dirt handled [(6600 cyd x 2,500 lb/cyd)/20 days = 825,000 lb/day]
k) USEPA, AP-42, July 1998, Table 11.9-1, Equation for Site Grading ≤ 10 μm
l) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggretate Handling and Storage Piles, Equation 1
m) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, Sept 1992, EPA-450/2-92-004, Equation 2-12.
n) Includes watering at least three times a day per Rule 403 (61% control efficiency).
o) Source: USEPA, AP-42, Emission Factor Equations for Uncontrolled Dust Sources at Western Surface Coal Mines, Table 11.9-1, Dragline calculations for PM_{10} and $PM_{2.5}$.

Van Norman Complex Water Quality Improvement Project -
Fugitive Dust Emissions from Heavy Equipment for Earth Moving Year 2012 through 2014

From US EPA AP-42, Table 11.9-1: Emission Factor Equations For Uncontrolled Open Dust Sources

Operation	Emission Factor Equation			Scaling Factors	
	TSP≤30 µm	TSP≤15 µm		≤10 µm	≤2.5 µm
Bulldozing	$5.7\ (s)^{1.2}/(M)^{1.3}$	$1.0\ (s)^{1.5}/(M)^{1.4}$		0.75	0.105
	M = material moisture content (%)		7.9		
	s = material silt content (%)		6.9		

Earth Moving at Hillside Grading

Construction Schedule	Hours of Operating	Number of Operating Days	Emissions from Crushing Process /a/ (ppd)	
			PM10	PM2.5
Hillside Grading				
October Year 2012	640	20	15	7
November Year 2012	640	20	15	7
December Year 2012	640	20	15	7
January Year 2013	640	20	15	7
February Year 2013	640	20	15	7
March Year 2013	640	20	15	7
April Year 2013	640	20	15	7
May Year 2013	640	20	15	7

/a/ Includes watering at least three times a day per Rule 403 (61% control efficiency)

Earth Moving at Channel Between 20+35 to 45+88

Construction Schedule	Hours of Operating	Number of Operating Days	Emissions from Crushing Process /a/ (ppd)	
			PM10	PM2.5
Excavate channel (from compacted fill in Lower Debris Basin)				
October Year 2013	480	20	11	5
November Year 2013	480	20	11	5
Hillside grading (remaining portion after power pole relocation)				
October Year 2013	480	20	11	5
November Year 2013	480	20	11	5
December Year 2013	320	20	7	3

/a/ Includes watering at least three times a day per Rule 403 (61% control efficiency)

Earth Moving at Diversion Channel

Construction Schedule	Hours of Operating	Number of Operating Days	Emissions from Crushing Process /a/ (ppd)	
			PM10	PM2.5
Excavate				
January Year 2014	320	20	7	3
February Year 2014	320	20	7	3
March Year 2014	160	10	7	2

/a/ Includes watering at least three times a day per Rule 403 (61% control efficiency)

Earth Moving at Dike B

Construction Schedule	Hours of Operating	Number of Operating Days	Emissions from Crushing Process /a/ (ppd)	
			PM10	PM2.5
Excavate				
October Year 2014	160	10	7	2

/a/ Includes watering at least three times a day per Rule 403 (61% control efficiency)

Van Norman Complex Water Quality Improvement Project - Fugitive Dust Emissions from Grading (Year 2012 and 2013)

Grading - Hillside Grading		**Construction Activity**
Grading Schedule (October Year 2012) -	**20**	**days[a]**

Fugitive Dust Stockpiling Parameters

Silt Content[c]	**Precipitation Days[d]**	**Mean Wind Speed Percent[e]**	**TSP Fraction**	**Area[f] (acres)**
6.9	10	0.90	0.5	0.21

Fugitive Dust Material Handling

Aerodynamic Particle Size Multiplier[g]	**Mean Wind Speed (mph)[h]**	**Moisture Content[i]**	**Dirt Handled (cy)[a]**	**Dirt Handled (lbs./day)[j]**
0.35	5.3	7.9	20,000	2,500,000

Incremental Increase in Fugitive Dust Emissions from Construction Operations

Equations:

Grading[k]: PM10 Emissions (lb/day) = 0.60 x 0.051 x mean vehicle speed$^{2.0}$ x VMT x (1 - control efficiency)

Storage Piles[l]: PM10 Emissions (lb/day) = 1.7 x (silt content/1.5) x ((365-precipitation days)/235) x wind speed percent/15 x TSP fraction x Area) x (1 - control efficiency)

Material Handling[m]: PM10 Emissions (lb/day) = (0.0032 x aerodynamic particle size multiplier x (wind speed (mph)/5)$^{1.3}$/(moisture content/2)$^{1.4}$ x dirt handled (lb/day)/2,000 (lb/ton)
(1 - control efficiency)

Description	**Control Efficiency** %	**Unmitigated PM10[n]** lb/day	**Unmitigated PM2.5** lb/day
Storage Piles	61	0.03	0.01
Material Handling	61	0.09	0.02
Total		**0.12**	**0.02**

Grading - Hillside Grading		**Construction Activity**
Grading Schedule November Year 2012) -	**20**	**days[a]**

Fugitive Dust Stockpiling Parameters

Silt Content[c]	**Precipitation Days[d]**	**Mean Wind Speed Percent[e]**	**TSP Fraction**	**Area[f] (acres)**
6.9	10	0.90	0.5	0.21

Fugitive Dust Material Handling

Aerodynamic Particle Size Multiplier[g]	**Mean Wind Speed (mph)[h]**	**Moisture Content[i]**	**Dirt Handled (cy)[a]**	**Dirt Handled (lbs./day)[j]**
0.35	5.3	7.9	20,000	2,500,000

Incremental Increase in Fugitive Dust Emissions from Construction Operations

Equations:

Grading[k]: PM10 Emissions (lb/day) = 0.60 x 0.051 x mean vehicle speed$^{2.0}$ x VMT x (1 - control efficiency)

Storage Piles[l]: PM10 Emissions (lb/day) = 1.7 x (silt content/1.5) x ((365-precipitation days)/235) x wind speed percent/15 x TSP fraction x Area) x (1 - control efficiency)

Material Handling[m]: PM10 Emissions (lb/day) = (0.0032 x aerodynamic particle size multiplier x (wind speed (mph)/5)$^{1.3}$/(moisture content/2)$^{1.4}$ x dirt handled (lb/day)/2,000 (lb/ton)
(1 - control efficiency)

Description	**Control Efficiency** %	**Unmitigated PM10[n]** lb/day	**Unmitigated PM2.5** lb/day
Storage Piles	61	0.03	0.01
Material Handling	61	0.09	0.02
Total		**0.12**	**0.02**

Grading - Hillside Grading		**Construction Activity**
Grading Schedule December Year 2012) -	**20**	**days[a]**

Fugitive Dust Stockpiling Parameters

Silt Content[c]	**Precipitation Days[d]**	**Mean Wind Speed Percent[e]**	**TSP Fraction**	**Area[f] (acres)**
6.9	10	0.90	0.5	0.21

Fugitive Dust Material Handling

Aerodynamic Particle Size Multiplier[g]	**Mean Wind Speed (mph)[h]**	**Moisture Content[i]**	**Dirt Handled (cy)[a]**	**Dirt Handled (lbs./day)[j]**
0.35	5.3	7.9	20,000	2,500,000

Incremental Increase in Fugitive Dust Emissions from Construction Operations

Equations:

Grading[k]: PM10 Emissions (lb/day) = 0.60 x 0.051 x mean vehicle speed$^{2.0}$ x VMT x (1 - control efficiency)

Storage Piles[l]: PM10 Emissions (lb/day) = 1.7 x (silt content/1.5) x ((365-precipitation days)/235) x wind speed percent/15 x TSP fraction x Area) x (1 - control efficiency)

Material Handling[m]: PM10 Emissions (lb/day) = (0.0032 x aerodynamic particle size multiplier x (wind speed (mph)/5)$^{1.3}$/(moisture content/2)$^{1.4}$ x dirt handled (lb/day)/2,000 (lb/ton) (1 - control efficiency)

Description	Control Efficiency %	Unmitigated PM10[n] lb/day	Unmitigated PM2.5 lb/day
Storage Piles	61	0.03	0.01
Material Handling	61	0.09	0.02
Total		**0.12**	**0.02**

Notes:

a) Grading activity only. No export of materials

b) Caterpillar Performance Handbook, Edition 33, October 2003 Operating Speeds, p 2-3.

c) USEPA, AP-42, July 1998, Table 11.9-3 Typical Values for Corection Factors Applicable to the Predictive Emission Factor Equations

d) Table A9-9-E2, SCAQMD CEQA Air Quality Handbook, 1993

e) Mean wind speed percent - percent of time mean wind speed exceeds 12 mph.

f) Assumed storage piles are 0.06 acres in size

g) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggretate Handling and Storage Piles, p 13.2.4-3 Aerodynamic particle size multiplier for < 10 μm

h) Mean wind speed at the Burbank Wind Monitoring Station.

i) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, equation 2-13, p 2-28.

j) Assuming 20000 cubic yards of dirt handled [(20000 cyd x 2,500 lb/cyd)/20 days = 2,500,000 lb/day]

k) USEPA, AP-42, July 1998, Table 11.9-1, Equation for Site Grading ≤ 10 μm

l) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggretate Handling and Storage Piles, Equation 1

m) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, Sept 1992, EPA-450/2-92-004, Equation 2-12.

n) Includes watering at least three times a day per Rule 403 (61% control efficiency).

Grading - Hillside Grading **Construction Activity**

Grading Schedule (January Year 2013) - 20 days[a]

Fugitive Dust Stockpiling Parameters

Silt Content[c]	Precipitation Days[d]	Mean Wind Speed Percent[e]	TSP Fraction	Area[f] (acres)
6.9	10	0.90	0.5	0.21

Fugitive Dust Material Handling

Aerodynamic Particle Size Multiplier[g]	Mean Wind Speed (mph)[h]	Moisture Content[i]	Dirt Handled (cy)[a]	Dirt Handled (lbs./day)[j]
0.35	5.3	7.9	20,000	2,500,000

Incremental Increase in Fugitive Dust Emissions from Construction Operations

Equations:

Grading[k]: PM10 Emissions (lb/day) = 0.60 x 0.051 x mean vehicle speed$^{2.0}$ x VMT x (1 - control efficiency)

Storage Piles[l]: PM10 Emissions (lb/day) = 1.7 x (silt content/1.5) x ((365-precipitation days)/235) x wind speed percent/15 x TSP fraction x Area) x (1 - control efficiency)

Material Handling[m]: PM10 Emissions (lb/day) = (0.0032 x aerodynamic particle size multiplier x (wind speed (mph)/5)$^{1.3}$/(moisture content/2)$^{1.4}$ x dirt handled (lb/day)/2,000 (lb/ton) (1 - control efficiency)

Description	Control Efficiency %	Unmitigated PM10[n] lb/day	Unmitigated PM2.5 lb/day
Storage Piles	61	0.03	0.01
Material Handling	61	0.09	0.02
Total		**0.12**	**0.02**

Grading - Hillside Grading **Construction Activity**

Grading Schedule (January Year 2013) - 20 days[a]

Fugitive Dust Stockpiling Parameters

Silt Content[c]	Precipitation Days[d]	Mean Wind Speed Percent[e]	TSP Fraction	Area[f] (acres)
6.9	10	0.90	0.5	0.21

Fugitive Dust Material Handling

Aerodynamic Particle Size Multiplier[g]	Mean Wind Speed (mph)[h]	Moisture Content[i]	Dirt Handled (cy)[a]	Dirt Handled (lbs./day)[j]
0.35	5.3	7.9	20,000	2,500,000

Incremental Increase in Fugitive Dust Emissions from Construction Operations

Equations:

Grading[k]: PM10 Emissions (lb/day) = 0.60 x 0.051 x mean vehicle speed$^{2.0}$ x VMT x (1 - control efficiency)

Storage Piles[l]: PM10 Emissions (lb/day) = 1.7 x (silt content/1.5) x ((365-precipitation days)/235) x wind speed percent/15 x TSP fraction x Area) x (1 - control efficiency)

Material Handling[m]: PM10 Emissions (lb/day) = (0.0032 x aerodynamic particle size multiplier x (wind speed (mph)/5)$^{1.3}$/(moisture content/2)$^{1.4}$ x dirt handled (lb/day)/2,000 (lb/ton) (1 - control efficiency)

Description	Control Efficiency %	Unmitigated PM10[n] lb/day	Unmitigated PM2.5 lb/day
Storage Piles	61	0.03	0.01
Material Handling	61	0.09	0.02
Total		**0.12**	**0.02**

Grading - Hillside Grading **Construction Activity**

Grading Schedule (February Year 2013) - 20 days[a]

Fugitive Dust Stockpiling Parameters				
Silt Content[c]	Precipitation Days[d]	Mean Wind Speed Percent[e]	TSP Fraction	Area[f] (acres)
6.9	10	0.90	0.5	0.21

Fugitive Dust Material Handling				
Aerodynamic Particle Size Multiplier[g]	Mean Wind Speed (mph)[h]	Moisture Content[i]	Dirt Handled (cy)[a]	Dirt Handled (lbs./day)[j]
0.35	5.3	7.9	20,000	2,500,000

Incremental Increase in Fugitive Dust Emissions from Construction Operations

Equations:

Grading[k]: PM10 Emissions (lb/day) = 0.60 x 0.051 x mean vehicle speed$^{2.0}$ x VMT x (1 - control efficiency)

Storage Piles[l]: PM10 Emissions (lb/day) = 1.7 x (silt content/1.5) x ((365-precipitation days)/235) x wind speed percent/15 x TSP fraction x Area) x (1 - control efficiency)

Material Handling[m]: PM10 Emissions (lb/day) = (0.0032 x aerodynamic particle size multiplier x (wind speed (mph)/5)$^{1.3}$/(moisture content/2)$^{1.4}$ x dirt handled (lb/day)/2,000 (lb/ton) (1 - control efficiency)

Description	Control Efficiency %	Unmitigated PM10[n] lb/day	Unmitigated PM2.5 lb/day
Storage Piles	61	0.03	0.01
Material Handling	61	0.09	0.02
Total		**0.12**	**0.02**

Grading - Hillside Grading **Construction Activity**

Grading Schedule (March Year 2013) - **20 days[a]**

Fugitive Dust Stockpiling Parameters				
Silt Content[c]	Precipitation Days[d]	Mean Wind Speed Percent[e]	TSP Fraction	Area[f] (acres)
6.9	10	0.90	0.5	0.21

Fugitive Dust Material Handling				
Aerodynamic Particle Size Multiplier[g]	Mean Wind Speed (mph)[h]	Moisture Content[i]	Dirt Handled (cy)[a]	Dirt Handled (lbs./day)[j]
0.35	5.3	7.9	20,000	2,500,000

Incremental Increase in Fugitive Dust Emissions from Construction Operations

Equations:

Grading[k]: PM10 Emissions (lb/day) = 0.60 x 0.051 x mean vehicle speed$^{2.0}$ x VMT x (1 - control efficiency)

Storage Piles[l]: PM10 Emissions (lb/day) = 1.7 x (silt content/1.5) x ((365-precipitation days)/235) x wind speed percent/15 x TSP fraction x Area) x (1 - control efficiency)

Material Handling[m]: PM10 Emissions (lb/day) = (0.0032 x aerodynamic particle size multiplier x (wind speed (mph)/5)$^{1.3}$/(moisture content/2)$^{1.4}$ x dirt handled (lb/day)/2,000 (lb/ton) (1 - control efficiency)

Description	Control Efficiency %	Unmitigated PM10[n] lb/day	Unmitigated PM2.5 lb/day
Storage Piles	61	0.03	0.01
Material Handling	61	0.09	0.02
Total		**0.12**	**0.02**

Grading - Hillside Grading **Construction Activity**

Grading Schedule (April Year 2013) - **20 days[a]**

Fugitive Dust Stockpiling Parameters				
Silt Content[c]	Precipitation Days[d]	Mean Wind Speed Percent[e]	TSP Fraction	Area[f] (acres)
6.9	10	0.90	0.5	0.21

Fugitive Dust Material Handling				
Aerodynamic Particle Size Multiplier[g]	Mean Wind Speed (mph)[h]	Moisture Content[i]	Dirt Handled (cy)[a]	Dirt Handled (lbs./day)[j]
0.35	5.3	7.9	20,000	2,500,000

Incremental Increase in Fugitive Dust Emissions from Construction Operations

Equations:

Grading[k]: PM10 Emissions (lb/day) = 0.60 x 0.051 x mean vehicle speed$^{2.0}$ x VMT x (1 - control efficiency)

Storage Piles[l]: PM10 Emissions (lb/day) = 1.7 x (silt content/1.5) x ((365-precipitation days)/235) x wind speed percent/15 x TSP fraction x Area) x (1 - control efficiency)

Material Handling[m]: PM10 Emissions (lb/day) = (0.0032 x aerodynamic particle size multiplier x (wind speed (mph)/5)$^{1.3}$/(moisture content/2)$^{1.4}$ x dirt handled (lb/day)/2,000 (lb/ton) (1 - control efficiency)

Description	Control Efficiency %	Unmitigated PM10[n] lb/day	Unmitigated PM2.5 lb/day
Storage Piles	61	0.03	0.01
Material Handling	61	0.09	0.02
Total		**0.12**	**0.02**

Grading - Hillside Grading		**Construction Activity**			
Grading Schedule (May Year 2013) -	**20**	**days[a]**			

Fugitive Dust Stockpiling Parameters				
Silt Content[c]	**Precipitation Days[d]**	**Mean Wind Speed Percent[e]**	**TSP Fraction**	**Area[f] (acres)**
6.9	10	0.90	0.5	0.21

Fugitive Dust Material Handling				
Aerodynamic Particle Size Multiplier[g]	**Mean Wind Speed (mph)[h]**	**Moisture Content[i]**	**Dirt Handled (cy)[a]**	**Dirt Handled (lbs./day)[j]**
0.35	5.3	7.9	20,000	2,500,000

Incremental Increase in Fugitive Dust Emissions from Construction Operations

Equations:

Grading[k]: PM10 Emissions (lb/day) = 0.60 x 0.051 x mean vehicle speed$^{2.0}$ x VMT x (1 - control efficiency)

Storage Piles[l]: PM10 Emissions (lb/day) = 1.7 x (silt content/1.5) x ((365-precipitation days)/235) x wind speed percent/15 x TSP fraction x Area) x (1 - control efficiency)

Material Handling[m]: PM10 Emissions (lb/day) = (0.0032 x aerodynamic particle size multiplier x (wind speed (mph)/5)$^{1.3}$/(moisture content/2)$^{1.4}$ x dirt handled (lb/day)/2,000 (lb/ton)
(1 - control efficiency)

Description	Control Efficiency %	Unmitigated PM10[n] lb/day	Unmitigated PM2.5 lb/day
Storage Piles	61	0.03	0.01
Material Handling	61	0.09	0.02
Total		**0.12**	**0.02**

Notes:
a) Grading activity only. No export of materials.
b) Caterpillar Performance Handbook, Edition 33, October 2003 Operating Speeds, p 2-3.
c) USEPA, AP-42, July 1998, Table 11.9-3 Typical Values for Corection Factors Applicable to the Predictive Emission Factor Equations
d) Table A9-9-E2, SCAQMD CEQA Air Quality Handbook, 1993
e) Mean wind speed percent - percent of time mean wind speed exceeds 12 mph.
f) Assumed storage piles are 0.06 acres in size
g) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggretate Handling and Storage Piles, p 13.2.4-3 Aerodynamic particle size multiplier for < 10 μm
h) Mean wind speed at the Burbank Los Angeles Wind Monitoring Station.
i) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, equation 2-13, p 2-28.
j) Assuming 20000 cubic yards of dirt handled [(20000 cyd x 2,500 lb/cyd)/20 days = 2,500,000 lb/day]
k) USEPA, AP-42, July 1998, Table 11.9-1, Equation for Site Grading ≤ 10 μm
l) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggretate Handling and Storage Piles, Equation 1
m) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, Sept 1992, EPA-450/2-92-004, Equation 2-12.
n) Includes watering at least three times a day per Rule 403 (61% control efficiency).

Grading - Channel Between 20+35 to 45+88		**Construction Activity**			
Grading Schedule (October Year 2013) -	**20**	**days[a]**			

Fugitive Dust Stockpiling Parameters				
Silt Content[c]	**Precipitation Days[d]**	**Mean Wind Speed Percent[e]**	**TSP Fraction**	**Area[f] (acres)**
6.9	10	0.90	0.5	0.21

Fugitive Dust Material Handling				
Aerodynamic Particle Size Multiplier[g]	**Mean Wind Speed (mph)[h]**	**Moisture Content[i]**	**Dirt Handled (cy)[a]**	**Dirt Handled (lbs./day)[j]**
0.35	5.3	7.9	16,667	2,083,333

Incremental Increase in Fugitive Dust Emissions from Construction Operations

Equations:

Grading[k]: PM10 Emissions (lb/day) = 0.60 x 0.051 x mean vehicle speed$^{2.0}$ x VMT x (1 - control efficiency)

Storage Piles[l]: PM10 Emissions (lb/day) = 1.7 x (silt content/1.5) x ((365-precipitation days)/235) x wind speed percent/15 x TSP fraction x Area) x (1 - control efficiency)

Material Handling[m]: PM10 Emissions (lb/day) = (0.0032 x aerodynamic particle size multiplier x (wind speed (mph)/5)$^{1.3}$/(moisture content/2)$^{1.4}$ x dirt handled (lb/day)/2,000 (lb/ton)
(1 - control efficiency)

Description	Control Efficiency %	Unmitigated PM10[n] lb/day	Unmitigated PM2.5 lb/day
Storage Piles	61	0.03	0.01
Material Handling	61	0.07	0.01
Total		**0.10**	**0.02**

Grading - Channel Between 20+35 to 45+88	Construction Activity
Grading Schedule (November Year 2013) - 20	days[a]

Fugitive Dust Stockpiling Parameters

Silt Content[c]	Precipitation Days[d]	Mean Wind Speed Percent[e]	TSP Fraction	Area[f] (acres)
6.9	10	0.90	0.5	0.21

Fugitive Dust Material Handling

Aerodynamic Particle Size Multiplier[g]	Mean Wind Speed (mph)[h]	Moisture Content[i]	Dirt Handled (cy)[a]	Dirt Handled (lbs./day)[j]
0.35	5.3	7.9	16,667	2,083,333

Incremental Increase in Fugitive Dust Emissions from Construction Operations

Equations:

Grading[k]: PM10 Emissions (lb/day) = 0.60 x 0.051 x mean vehicle speed$^{2.0}$ x VMT x (1 - control efficiency)

Storage Piles[l]: PM10 Emissions (lb/day) = 1.7 x (silt content/1.5) x ((365-precipitation days)/235) x wind speed percent/15 x TSP fraction x Area) x (1 - control efficiency)

Material Handling[m]: PM10 Emissions (lb/day) = (0.0032 x aerodynamic particle size multiplier x (wind speed (mph)/5)$^{1.3}$/(moisture content/2)$^{1.4}$ x dirt handled (lb/day)/2,000 (lb/ton) (1 - control efficiency)

Description	Control Efficiency %	Unmitigated PM10[n] lb/day	Unmitigated PM2.5 lb/day
Storage Piles	61	0.03	0.01
Material Handling	61	0.07	0.01
Total		**0.10**	**0.02**

Grading - Channel Between 20+35 to 45+88	Construction Activity
Grading Schedule (December Year 2013) - 20	days[a]

Fugitive Dust Stockpiling Parameters

Silt Content[c]	Precipitation Days[d]	Mean Wind Speed Percent[e]	TSP Fraction	Area[f] (acres)
6.9	10	0.90	0.5	0.21

Fugitive Dust Material Handling

Aerodynamic Particle Size Multiplier[g]	Mean Wind Speed (mph)[h]	Moisture Content[i]	Dirt Handled (cy)[a]	Dirt Handled (lbs./day)[j]
0.35	5.3	7.9	16,667	2,083,333

Incremental Increase in Fugitive Dust Emissions from Construction Operations

Equations:

Grading[k]: PM10 Emissions (lb/day) = 0.60 x 0.051 x mean vehicle speed$^{2.0}$ x VMT x (1 - control efficiency)

Storage Piles[l]: PM10 Emissions (lb/day) = 1.7 x (silt content/1.5) x ((365-precipitation days)/235) x wind speed percent/15 x TSP fraction x Area) x (1 - control efficiency)

Material Handling[m]: PM10 Emissions (lb/day) = (0.0032 x aerodynamic particle size multiplier x (wind speed (mph)/5)$^{1.3}$/(moisture content/2)$^{1.4}$ x dirt handled (lb/day)/2,000 (lb/ton) (1 - control efficiency)

Description	Control Efficiency %	Unmitigated PM10[n] lb/day	Unmitigated PM2.5 lb/day
Storage Piles	61	0.03	0.01
Material Handling	61	0.07	0.01
Total		**0.10**	**0.02**

Notes:
a) Grading activity only. No export of materials.
b) Caterpillar Performance Handbook, Edition 33, October 2003 Operating Speeds, p 2-3.
c) USEPA, AP-42, July 1998, Table 11.9-3 Typical Values for Corection Factors Applicable to the Predictive Emission Factor Equations
d) Table A9-9-E2, SCAQMD CEQA Air Quality Handbook, 1993
e) Mean wind speed percent - percent of time mean wind speed exceeds 12 mph.
f) Assumed storage piles are 0.06 acres in size
g) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggretate Handling and Storage Piles, p 13.2.4-3 Aerodynamic particle size multiplier for < 10 μm
h) Mean wind speed at the Burbank Los Angeles Wind Monitoring Station.
i) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, equation 2-13, p 2-28.
j) Assuming 16667 cubic yards of dirt handled [(16667 cyd x 2,500 lb/cyd)/20 days = 2,083,333 lb/day]
k) USEPA, AP-42, July 1998, Table 11.9-1, Equation for Site Grading ≤ 10 μm
l) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggretate Handling and Storage Piles, Equation 1
m) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, Sept 1992, EPA-450/2-92-004, Equation 2-12.
n) Includes watering at least three times a day per Rule 403 (61% control efficiency).

LADWP Van Norman Complex Water Quality Improvement - Summary of Construction Emissions

TOTAL EMISSIONS	Emissions (ppd)					
	ROG	CO	NOX	SOX	PM10	PM2.5
Year 2012						
August	**12**	**47**	**93**	**0.1**	**5**	**4**
Construction Equipments	12	46	92	0.1	4.6	4.2
Worker Vehicle	0.04	1.26	0.13	0.01	0.02	0.02
Off-Site Trucks	0.02	0.13	0.26	0.0004	0.00	0.00
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
September	**12**	**49**	**93**	**0.1**	**5**	**4**
Construction Equipments	12	46	92	0.1	5	4
Worker Vehicle	0.07	2.63	0.27	0.02	0.04	0.04
Off-Site Trucks	0.01	0.04	0.09	0.0001	0.00	0.00
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
October	**17**	**68**	**132**	**0.2**	**21**	**13**
Construction Equipments	16	63	131	0.15	6.5	5.9
Worker Vehicle	0.12	4.27	1.09	0.03	0.16	0.15
Off-Site Trucks	0.01	0.04	0.09	0.0001	0.00	0.00
Demoltion						
Crushing						
Earth Moving					14.69	6.57
Grading					0.12	0.02
Excavation						
November	**17**	**68**	**138**	**0.2**	**22**	**13**
Construction Equipments	16	63	131	0.1	6.5	5.9
Worker Vehicle	0.12	4.27	7.05	0.03	0.33	0.31
Off-Site Trucks	0.01	0.04	0.09	0.0001	0.00	0.00
Demoltion						
Crushing						
Earth Moving					14.69	6.57
Grading					0.12	0.02
Excavation						
December	**17**	**68**	**132**	**0.2**	**21**	**13**
Construction Equipments	16	63	131	0.1	6.5	5.9
Worker Vehicle	0.12	4.27	0.30	0.02	0.04	0.04
Off-Site Trucks	0.01	0.04	0.09	0.0001	0.00	0.00
Demoltion						
Crushing						
Earth Moving					14.69	6.57
Grading					0.12	0.02
Excavation						
Year 2013						
January	**16**	**65**	**124**	**0.2**	**21**	**12**
Construction Equipments	15	61	123	0.1	5.9	5.4
Worker Vehicle	0.11	3.96	0.40	0.01	0.07	0.06
Off-Site Trucks	0.01	0.04	0.08	0.0001	0.00	0.00
Demoltion						
Crushing						
Earth Moving					14.69	6.57
Grading					0.12	0.02

Excavation						
February	**16**	**65**	**124**	**0.2**	**21**	**12**
Construction Equipments	15	61	123	0.1	6	5
Worker Vehicle	0.11	3.96	0.40	0.01	0.07	0.06
Off-Site Trucks	0.01	0.04	0.08	0.0001	0.00	0.00
Demoltion						
Crushing						
Earth Moving					14.69	6.57
Grading					0.12	0.02
Excavation						
March	**16**	**65**	**124**	**0.2**	**21**	**12**
Construction Equipments	15	61	123	0.1	5.9	5.4
Worker Vehicle	0.11	3.96	0.40	0.01	0.07	0.06
Off-Site Trucks	0.01	0.04	0.08	0.0001	0.00	0.00
Demoltion						
Crushing						
Earth Moving					14.69	6.57
Grading					0.12	0.02
Excavation						
April	**16**	**65**	**124**	**0.2**	**21**	**12**
Construction Equipments	15	61	123	0.1	5.9	5.4
Worker Vehicle	0.11	3.96	0.40	0.01	0.07	0.06
Off-Site Trucks	0.01	0.04	0.08	0.0001	0.00	0.00
Demoltion						
Crushing						
Earth Moving					14.69	6.57
Grading					0.12	0.02
Excavation						
May	**16**	**65**	**124**	**0.2**	**21**	**12**
Construction Equipments	15	61	123	0.1	5.9	5.4
Worker Vehicle	0.11	3.96	0.40	0.01	0.07	0.06
Off-Site Trucks	0.01	0.04	0.08	0.0001	0.00	0.00
Demoltion						
Crushing						
Earth Moving					14.69	6.57
Grading					0.12	0.02
Excavation						
June	**4**	**18**	**26**	**0.04**	**2**	**1**
Construction Equipments	4	15	25	0.04	1.5	1.4
Worker Vehicle	0.07	2.43	0.25	0.004	0.04	0.04
Off-Site Trucks	0.01	0.08	0.15	0.0003	0.01	0.01
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
July	**4**	**20**	**28**	**0.04**	**2**	**2**
Construction Equipments	4	17	28	0.04	2	2
Worker Vehicle	0.07	2.43	0.25	0.004	0.04	0.04
Off-Site Trucks	0.01	0.08	0.15	0.0003	0.01	0.01
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
August	**4**	**20**	**44**	**0.1**	**2**	**2**
Construction Equipments	4	17	44	0.1	2.1	1.9
Worker Vehicle	0.07	2.43	0.25	0.004	0.04	0.04
Off-Site Trucks	0.01	0.08	0.15	0.0003	0.01	0.01
Demoltion						

Crushing						
Earth Moving						
Grading						
Excavation						
September	**3**	**17**	**26**	**0.04**	**1**	**1**
Construction Equipments	3	15	25	0.04	1.3	1.2
Worker Vehicle	0.07	2.43	0.25	0.004	0.04	0.04
Off-Site Trucks	0.01	0.08	0.15	0.0003	0.01	0.01
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
October	**16**	**65**	**124**	**0.2**	**29**	**15**
Construction Equipments	15	61	123	0.1	5.9	5.4
Worker Vehicle	0.10	3.70	0.38	0.01	0.06	0.06
Off-Site Trucks	0.01	0.04	0.08	0.0001	0.00	0.00
Demoltion						
Crushing						
Earth Moving					22.04	9.85
Grading					0.10	0.02
Excavation					1.30	0.05
November	**16**	**66**	**124**	**0.2**	**29**	**15**
Construction Equipments	15	61	123	0.1	5.9	5.4
Worker Vehicle	0.13	4.72	0.48	0.01	0.08	0.07
Off-Site Trucks	0.01	0.04	0.08	0.0001	0.00	0.00
Demoltion						
Crushing						
Earth Moving					22.04	9.85
Grading					0.10	0.02
Excavation					1.30	0.05
December	**16**	**69**	**129**	**0.2**	**14**	**9**
Construction Equipments	16	64	127	0.2	6.2	5.7
Worker Vehicle	0.13	4.72	0.48	0.01	0.08	0.07
Off-Site Trucks	0.14	0.92	1.83	0.003	0.08	0.07
Demoltion						
Crushing						
Earth Moving					7.35	3.28
Grading					0.10	0.02
Excavation						
Year 2014						
January	**11**	**50**	**82**	**0.1**	**12**	**7**
Construction Equipments	11	44	80	0.1	4.0	3.7
Worker Vehicle	0.13	5.09	0.51	0.01	0.09	0.09
Off-Site Trucks	0.13	0.82	1.62	0.003	0.07	0.07
Demoltion						
Crushing						
Earth Moving					7.35	3.28
Grading						
Excavation					0.87	0.03
February	**11**	**48**	**81**	**0.1**	**12**	**7**
Construction Equipments	11	44	80	0	4	4
Worker Vehicle	0.08	3.30	0.33	0.01	0.06	0.06
Off-Site Trucks	0.04	0.24	0.47	0.001	0.02	0.02
Demoltion						
Crushing						
Earth Moving					7.35	3.28
Grading						
Excavation					0.87	0.03
March	**10**	**44**	**77**	**0.1**	**12**	**5**

Construction Equipments	10	42	76	0.1	3.8	3.5
Worker Vehicle	0.07	2.73	0.28	0.005	0.05	0.05
Off-Site Trucks	0.01	0.03	0.07	0.0001	0.00	0.00
Demoltion						
Crushing						
Earth Moving					7.35	1.64
Grading						
Excavation					0.87	0.03
April	**11**	**48**	**82**	**0.1**	**4**	**4**
Construction Equipments	11	44	80	0.1	4.0	3.7
Worker Vehicle	0.08	2.97	0.30	0.01	0.05	0.05
Off-Site Trucks	0.13	0.82	1.62	0.003	0.07	0.07
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
May	**12**	**54**	**90**	**0.1**	**14**	**6**
Construction Equipments	12	49	88	0.1	4.6	4.2
Worker Vehicle	0.10	3.77	0.38	0.01	0.07	0.06
Off-Site Trucks	0.10	0.65	1.29	0.003	0.06	0.05
Demoltion					0.28	0.06
Crushing					9.01	1.87
Earth Moving						
Grading						
Excavation						
June	**11**	**51**	**85**	**0.1**	**9**	**5**
Construction Equipments	11	47	85	0.1	4.3	4.0
Worker Vehicle	0.09	3.68	0.37	0.01	0.07	0.06
Off-Site Trucks	0.01	0.07	0.14	0.0003	0.01	0.01
Demoltion					0.28	0.06
Crushing					4.27	0.89
Earth Moving						
Grading						
Excavation						
July	**11**	**51**	**85**	**0.1**	**5**	**4**
Construction Equipments	11	47	85	0.1	4	4
Worker Vehicle	0.09	3.68	0.37	0.01	0.07	0.06
Off-Site Trucks	0.01	0.07	0.14	0.0003	0.01	0.01
Demoltion						
Crushing					0.14	0.03
Earth Moving						
Grading						
Excavation						
August	**9**	**42**	**69**	**0.1**	**4**	**3**
Construction Equipments	9	36	66	0.1	3.3	3.1
Worker Vehicle	0.14	5.33	0.54	0.01	0.10	0.09
Off-Site Trucks	0.13	0.82	1.62	0.003	0.07	0.07
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
September	**12**	**56**	**90**	**0.1**	**13**	**6**
Construction Equipments	12	49	88	0.1	4.6	4.2
Worker Vehicle	0.14	5.56	0.56	0.01	0.10	0.09
Off-Site Trucks	0.11	0.68	1.35	0.003	0.06	0.05
Demoltion					0.10	0.02
Crushing					7.84	1.63
Earth Moving						

Grading						
Excavation						
October	**14**	**62**	**104**	**0.2**	**19**	**8**
Construction Equipments	14	58	102	0.1	5.3	4.8
Worker Vehicle	0.08	3.21	0.32	0.01	0.06	0.05
Off-Site Trucks	0.13	0.82	1.62	0.003	0.07	0.07
Demoltion						
Crushing					4.17	0.87
Earth Moving					7.35	1.64
Grading						
Excavation					2.43	0.06
November	**11**	**49**	**81**	**0.1**	**4**	**4**
Construction Equipments	11	44	80	0.1	4.0	3.7
Worker Vehicle	0.11	4.38	0.44	0.01	0.08	0.07
Off-Site Trucks	0.03	0.17	0.34	0.001	0.01	0.01
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
December	**11**	**48**	**80**	**0.1**	**4**	**4**
Construction Equipments	11	44	80	0.1	4.0	3.7
Worker Vehicle	0.09	3.68	0.37	0.01	0.07	0.06
Off-Site Trucks	0.01	0.03	0.07	0.0001	0.00	0.00
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
Year 2015						
January	**8**	**37**	**61**	**0.1**	**3**	**3**
Construction Equipments	8	35	61	0.1	3.0	2.8
Worker Vehicle	0.05	1.88	0.19	0.004	0.04	0.03
Off-Site Trucks	0.02	0.12	0.24	0.001	0.01	0.01
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						

February	**8**	**38**	**63**	**0.1**	**3**	**3**
Construction Equipments	8	35	61	0.1	3	3
Worker Vehicle	0.07	2.76	0.27	0.01	0.06	0.05
Off-Site Trucks	0.12	0.73	1.43	0.003	0.06	0.06
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
March	**8**	**36**	**60**	**0.1**	**3**	**3**
Construction Equipments	8	33	58	0.1	2.8	2.6
Worker Vehicle	0.05	1.97	0.19	0.004	0.04	0.04
Off-Site Trucks	0.20	1.25	2.45	0.01	0.11	0.10
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
April	**8**	**36**	**60**	**0.1**	**3**	**3**
Construction Equipments	8	33	58	0.1	2.8	2.6
Worker Vehicle	0.05	1.97	0.19	0.004	0.04	0.04
Off-Site Trucks	0.20	1.25	2.45	0.01	0.11	0.10
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
May	**9**	**41**	**67**	**0.1**	**3**	**3**
Construction Equipments	9	37	66	0.1	3.2	2.9
Worker Vehicle	0.08	3.28	0.32	0.01	0.07	0.06
Off-Site Trucks	0.09	0.55	1.07	0.003	0.05	0.04
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
June	**9**	**40**	**67**	**0.1**	**3**	**3**
Construction Equipments	9	37	66	0.1	3.2	2.9
Worker Vehicle	0.05	1.88	0.19	0.004	0.04	0.03
Off-Site Trucks	0.06	0.36	0.72	0.002	0.03	0.03
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
July	**9**	**40**	**67**	**0.1**	**3**	**3**
Construction Equipments	9	37	66	0.1	3	3
Worker Vehicle	0.05	1.88	0.19	0.004	0.04	0.03
Off-Site Trucks	0.06	0.36	0.72	0.002	0.03	0.03
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
August	**8**	**35**	**58**	**0.1**	**3**	**3**
Construction Equipments	8	33	58	0.1	2.8	2.6
Worker Vehicle	0.05	1.88	0.19	0.004	0.04	0.03
Off-Site Trucks	0.01	0.06	0.12	0.0003	0.01	0.00
Demoltion						
Crushing						

Earth Moving						
Grading						
Excavation						
September	**0.02**	**0.4**	**0.2**	**0.001**	**0.01**	**0.01**
Construction Equipments						
Worker Vehicle	0.01	0.35	0.04	0.001	0.01	0.01
Off-Site Trucks	0.01	0.06	0.12	0.0003	0.01	0.005
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
Regional Daily Maximum	**17**	**69**	**138**	**0.2**	**29**	**15**
THRESHOLD	**75**	**550**	**100**	**150**	**150**	**55**
IMPACT?	NO	NO	YES	NO	NO	NO
On-Site Daily Maximum /a/	**17**	**68**	**138**	**0.2**	**29**	**15**
THRESHOLD /b/	**n/a**	**2,438**	**212**	**n/a**	**35**	**8**
IMPACT?	n/a	NO	NO	n/a	NO	YES

/a/October and November 2012 has equivalent daily maximum regional VOC emissions.
/b/ December 2013 has the daily maximum regional CO emissions.
/c/ November 2012 has the daily maximum regional NOx emissions.
/d/ October and November 2013 has the daily maximum regional emissions for both PM10 and PM2.5.
/b/ The proposed project is assumed to be five acres. The closest residential receptor is approximately 50 meter from the project site.

Van Norman Complex Water Quality Improvement Project - Construction Equipment Emissions

Estimated Equipment Construction Emissions

Equipment Type	Qty	Operating Hrs/WD/ each	Operating Hours per Day	Number of Operating Days	Rog Rate (lbs/hr)	Rog (lbs/day)	Rog (lbs)	CO rate (lbs/hr)	CO (lbs/day)	CO (lbs)	NOX rate (lbs/hr)	NOX (lbs/day)	SOX rate (lbs/hr)	SOX (lbs/day)	PM rate (lbs/hr)	PM (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)	CO2 Rate (lbs/hr)	CO2 (lbs/day)	CO2 (lbs)	CH4 rate (lbs/hr)	CH4 (lbs/day)	CH4 (lbs)
August Year 2012 - Construction Equipments																								
Bob Cat	2	8	16	10	0.0534	0.85	8.54	0.2360	3.78	37.76	0.2686	4.30	0.0004	0.01	0.0207	0.33078	0.3308	0.3043	30	484	4845	0.0048	0.08	0.77
Bull Dozer	2	8	16	20	0.3114	4.98	99.64	1.2491	19.99	399.71	2.6866	42.99	0.0025	0.04	0.1137	1.81898	1.8190	1.6735	239	0	9	0.0281	0.45	8.99
Dump Truck	10	8	80	50	0.0100	0.80	39.85	0.0324	2.59	129.68	0.0614	4.91	0.0001	0.01	0.0031	0.25006	0.2501	0.2301	8	0	4	0.0009	0.07	3.60
Generator	2	8	16	10	0.0832	1.33	13.32	0.3121	4.99	49.94	0.5779	9.25	0.0007	0.01	0.0351	0.56206	0.5621	0.5171	61	0	1	0.0075	0.12	1.20
Water Truck	1	8	8	10	0.0925	0.74	7.40	0.3847	3.08	30.78	0.8599	6.88	0.0013	0.01	0.0366	0.29283	0.2928	0.2694	123	0	1	0.0083	0.07	0.67
Wheel Loader	3	8	24	15	0.1272	3.05	45.78	0.4855	11.65	174.78	1.0034	24.08	0.0012	0.03	0.0558	1.33877	1.3388	1.2317	109	0	4	0.0115	0.28	4.13
Compactor	2	8	16	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Excavator	2	8	16	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Material Processing Unit	2	8	16	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Auger/Pole Setter	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Manlift	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Puller/Tensioner	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete pump	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete breaker mounted on an excavator	2	8	16	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete crusher	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Motor Grader	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
August Year 2012 Construction Equipment Total Emissions				**115**		**11.76**	**214.53**		**46.08**	**822.65**		**92.40**		**0.10**			**4.59**	**4.23**		**485**	**4,863**		**1.0608**	**19.3564**
September Year 2012 - Construction Equipments																								
Bob Cat	2	8	16	20	0.0534	0.85	17.09	0.2360	3.78	75.52	0.2686	4.30	0.0004	0.01	0.0207	0.33078	0.3308	0.3043	30	484	9689	0.0048	0.08	1.54
Bull Dozer	2	8	16	40	0.3114	4.98	199.27	1.2491	19.99	799.43	2.6866	42.99	0.0025	0.04	0.1137	1.81898	1.8190	1.6735	239	3826	153022	0.0281	0.45	17.98
Dump Truck	10	8	80	150	0.0100	0.80	119.55	0.0324	2.59	389.03	0.0614	4.91	0.0001	0.01	0.0031	0.25006	0.2501	0.2301	8	610	91493	0.0009	0.07	10.79
Generator	2	8	16	20	0.0832	1.33	26.64	0.3121	4.99	99.88	0.5779	9.25	0.0007	0.01	0.0351	0.56206	0.5621	0.5171	61	976	19518	0.0075	0.12	2.40
Water Truck	1	8	8	20	0.0925	0.74	14.80	0.3847	3.08	61.55	0.8599	6.88	0.0013	0.01	0.0366	0.29283	0.2928	0.2694	123	982	19631	0.0083	0.07	1.34
Wheel Loader	3	8	24	30	0.1272	3.05	91.56	0.4855	11.65	349.56	1.0034	24.08	0.0012	0.03	0.0558	1.33877	1.3388	1.2317	109	2607	78201	0.0115	0.28	8.26
Compactor	2	8	16	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Excavator	2	8	16	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Material Processing Unit	2	8	16	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Auger/Pole Setter	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Manlift	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Puller/Tensioner	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete pump	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete breaker mounted on an excavator	2	8	16	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete crusher	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Motor Grader	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0			0.00	0.00
September Year 2012 Construction Equipment Total Emissions				**280**		**11.76**	**468.90**		**46.08**	**1774.97**		**92.40**		**0.10**			**4.59**	**4.23**		**#####**	**#######**		**1.06**	**42.31**
October Year 2012 - Construction Equipments																								
Bob Cat	2	8	16	40	0.0534	0.85	34.18	0.2360	3.78	151.04	0.2686	4.08	0.0004	0.01	0.0207	0.33078	0.3308	0.3043	30	484	19378	0.0048	0.08	3.08
Bull Dozer	2	8	16	40	0.3114	4.98	199.27	1.2491	19.99	799.43	2.6866	23.64	0.0025	0.04	0.1137	1.81898	1.8190	1.6735	239	0	18	0.0281	0.45	17.98
Dump Truck	10	8	80	200	0.0100	0.80	159.39	0.0324	2.59	518.70	0.0614	4.67	0.0001	0.01	0.0031	0.25006	0.2501	0.2301	8	0	14	0.0009	0.07	14.38
Generator	2	8	16	40	0.0832	1.33	53.28	0.3121	4.99	199.76	0.5779	8.78	0.0007	0.01	0.0351	0.56206	0.5621	0.5171	61	0	5	0.0075	0.12	4.81
Water Truck	1	8	8	20	0.0925	0.74	14.80	0.3847	3.08	61.55	0.8599	6.54	0.0013	0.01	0.0366	0.29283	0.2928	0.2694	123	0	1	0.0083	0.07	1.34
Wheel Loader	3	8	24	60	0.1272	3.05	183.11	0.4855	11.65	699.13	1.0034	13.24	0.0012	0.03	0.0558	1.33877	1.3388	1.2317	109	0	17	0.0115	0.28	16.52
Compactor	2	8	16	40	0.0050	0.08	3.21	0.0263	0.42	16.86	0.0314	0.28	0.0001	0.00	0.0013	0.02009	0.0201	0.0185	4	0	0	0.0005	0.01	0.29
Excavator	2	8	16	40	0.1300	2.08	83.17	0.5401	8.64	345.66	0.9817	8.64	0.0013	0.02	0.0536	0.85683	0.8568	0.7883	120	0	8	0.0117	0.19	7.50
Material Processing Unit	2	8	16	40	0.1566	2.51	100.22	0.5108	8.17	326.92	1.4125	12.43	0.0015	0.02	0.0613	0.98017	0.9802	0.9018	141	0	9	0.0141	0.23	9.04
Auger/Pole Setter	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Manlift	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Puller/Tensioner	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete pump	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete breaker mounted on an excavator	2	8	16	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete crusher	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Motor Grader	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
October Year 2012 Construction Equipment Total Emissions				**520**		**16.42**	**830.64**		**63.31**	**3119.04**		**82.30**		**0.15**		**6.45**	**6.45**	**5.93**		**485.86**	**19449.95**		**1.48**	**74.95**

November Year 2012 - Construction Equipments																								
Bob Cat	2	8	16	40	0.0534	0.85	34.18	0.2360	3.78	151.04	0.2686	4.08	0.0004	0.01	0.0207	0.33078	0.3308	0.3043	30	484	19378	0.0048	0.08	3.08
Bull Dozer	2	8	16	40	0.3114	4.98	199.27	1.2491	19.99	799.43	2.6866	23.64	0.0025	0.04	0.1137	1.81898	1.8190	1.6735	239	0	18	0.0281	0.45	17.98
Dump Truck	10	8	80	200	0.0100	0.80	159.39	0.0324	2.59	518.70	0.0614	4.67	0.0001	0.01	0.0031	0.25006	0.2501	0.2301	8	0	14	0.0009	0.07	14.38
Generator	2	8	16	40	0.0832	1.33	53.28	0.3121	4.99	199.76	0.5779	8.78	0.0007	0.01	0.0351	0.56206	0.5621	0.5171	61	0	5	0.0075	0.12	4.81
Water Truck	1	8	8	20	0.0925	0.74	14.80	0.3847	3.08	61.55	0.8599	6.54	0.0013	0.01	0.0366	0.29283	0.2928	0.2694	123	0	1	0.0083	0.07	1.34
Wheel Loader	3	8	24	60	0.1272	3.05	183.11	0.4855	11.65	699.13	1.0034	13.24	0.0012	0.03	0.0558	1.33877	1.3388	1.2317	109	0	17	0.0115	0.28	16.52
Compactor	2	8	16	40	0.0050	0.08	3.21	0.0263	0.42	16.86	0.0314	0.28	0.0001	0.00	0.0013	0.02009	0.0201	0.0185	4	0	0	0.0005	0.01	0.29
Excavator	2	8	16	40	0.1300	2.08	83.17	0.5401	8.64	345.66	0.9817	8.64	0.0013	0.02	0.0536	0.85683	0.8568	0.7883	120	0	8	0.0117	0.19	7.50
Material Processing Unit	2	8	16	40	0.1566	2.51	100.22	0.5108	8.17	326.92	1.4125	12.43	0.0015	0.02	0.0613	0.98017	0.9802	0.9018	141	0	9	0.0141	0.23	9.04
Auger/Pole Setter	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Manlift	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Puller/Tensioner	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete pump	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete breaker mounted on an excavator	2	8	16	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete crusher	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Motor Grader	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
November Year 2012 Construction Equipment Total Emissions				**520**		**16.42**	**830.64**		**63.31**	**3119.04**		**82.30**		**0.15**		**6.45**	**6.45**	**5.93**		**485.86**	**19449.95**		**1.48**	**74.95**
December Year 2012 - Construction Equipments																								
Bob Cat	2	8	16	40	0.0534	0.85	34.18	0.2360	3.78	151.04	0.2686	4.08	0.0004	0.01	0.0207	0.33078	0.3308	0.3043	30	484	19378	0.0048	0.08	3.08
Bull Dozer	2	8	16	40	0.3114	4.98	199.27	1.2491	19.99	799.43	2.6866	23.64	0.0025	0.04	0.1137	1.81898	1.8190	1.6735	239	0	18	0.0281	0.45	17.98
Dump Truck	10	8	80	200	0.0100	0.80	159.39	0.0324	2.59	518.70	0.0614	4.67	0.0001	0.01	0.0031	0.25006	0.2501	0.2301	8	0	14	0.0009	0.07	14.38
Generator	2	8	16	40	0.0832	1.33	53.28	0.3121	4.99	199.76	0.5779	8.78	0.0007	0.01	0.0351	0.56206	0.5621	0.5171	61	0	5	0.0075	0.12	4.81
Water Truck	1	8	8	20	0.0925	0.74	14.80	0.3847	3.08	61.55	0.8599	6.54	0.0013	0.01	0.0366	0.29283	0.2928	0.2694	123	0	1	0.0083	0.07	1.34
Wheel Loader	3	8	24	60	0.1272	3.05	183.11	0.4855	11.65	699.13	1.0034	13.24	0.0012	0.03	0.0558	1.33877	1.3388	1.2317	109	0	17	0.0115	0.28	16.52
Compactor	2	8	16	40	0.0050	0.08	3.21	0.0263	0.42	16.86	0.0314	0.28	0.0001	0.00	0.0013	0.02009	0.0201	0.0185	4	0	0	0.0005	0.01	0.29
Excavator	2	8	16	40	0.1300	2.08	83.17	0.5401	8.64	345.66	0.9817	8.64	0.0013	0.02	0.0536	0.85683	0.8568	0.7883	120	0	8	0.0117	0.19	7.50
Material Processing Unit	2	8	16	40	0.1566	2.51	100.22	0.5108	8.17	326.92	1.4125	12.43	0.0015	0.02	0.0613	0.98017	0.9802	0.9018	141	0	9	0.0141	0.23	9.04
Auger/Pole Setter	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Manlift	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Puller/Tensioner	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete pump	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete breaker mounted on an excavator	2	8	16	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete crusher	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Motor Grader	1	8	8	0		0.00	0.00		0.00	0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
December Year 2012 Construction Equipment Total Emissions				**520**		**16.42**	**830.64**		**63.31**	**3119.04**		**82.30**		**0.15**		**6.45**	**6.45**	**5.93**		**485.86**	**19449.95**		**1.48**	**74.95**

Van Norman Complex Water Quality Improvement Project - Construction Equipment Emissions

Estimated Equipment Construction Emissions

Equipment Type	Qty	Operating Hrs/WD/ each	Operating Hours per Day	Number of Operating Days	Rog Rate (lbs/hr)	Rog (lbs/day)	CO rate (lbs/hr)	CO (lbs/day)	NOX rate (lbs/hr)	NOX (lbs/day)	NOX (lbs)	SOX rate (lbs/hr)	SOX (lbs/day)	PM rate (lbs/hr)	PM (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)	CO2 Rate (lbs/hr)	CO2 (lbs/day)	CO2 (lbs)	CH4 rate (lbs/hr)	CH4 (lbs/day)	CH4 (lbs)
January Year 2013 - Construction Equipments																							
Bob Cat	2	8	16	40	0.0468	0.75	0.2309	3.69	0.2522	3.83	153.35	0.0004	0.01	0.0179	0.28611	0.2861	0.2632	30	484	19377	0.0042	0.07	2.70
Bull Dozer	2	8	16	40	0.2986	4.78	1.1749	18.80	2.5452	22.40	895.92	0.0025	0.04	0.1064	1.70247	1.7025	1.5663	239	3826	153021	0.0269	0.43	17.25
Dump Truck	10	8	80	200	0.0097	0.77	0.0320	2.56	0.0601	4.57	913.15	0.0001	0.01	0.0029	0.23185	0.2319	0.2133	8	610	121990	0.0009	0.07	13.94
Generator	2	8	16	40	0.0767	1.23	0.3045	4.87	0.5430	8.25	330.17	0.0007	0.01	0.0324	0.51794	0.5179	0.4765	61	976	39035	0.0069	0.11	4.43
Water Truck	1	8	8	20	0.0872	0.70	0.3765	3.01	0.7938	6.03	120.65	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	981	19626	0.0079	0.06	1.26
Wheel Loader	3	8	24	60	0.1195	2.87	0.4763	11.43	0.9346	12.34	740.23	0.0012	0.03	0.0508	1.21926	1.2193	1.1217	109	2607	156401	0.0108	0.26	15.53
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.28	11.07	0.0001	0.00	0.0012	0.01971	0.0197	0.0181	4	69	2761	0.0005	0.01	0.29
Excavator	2	8	16	40	0.1220	1.95	0.5338	8.54	0.9071	7.98	319.30	0.0013	0.02	0.0481	0.76896	0.7690	0.7074	120	1913	76532	0.0110	0.18	7.04
Material Processing Unit	2	8	16	40	0.1473	2.36	0.4951	7.92	1.3132	11.56	462.23	0.0015	0.02	0.0562	0.89844	0.8984	0.8266	141	2259	90364	0.0133	0.21	8.51
Auger/Pole Setter	1	8	8	0																			
Manlift	1	8	8	0																			
Puller/Tensioner	1	8	8	0																			
Concrete pump	1	8	8	0																			
Concrete breaker mounted on an excavator	2	8	16	0																			
Concrete crusher	1	8	8	0																			
Motor Grader	1	8	8	0																			
January Year 2013 Construction Equipment Total Emissions				**520**		**15.48**		**61.25**		**77.24**	**3,946.07**		**0.15**			**5.91**	**5.44**		**13,725**	**679,108**		**1.3969**	**70.9436**
February Year 2013 - Construction Equipments																							
Bob Cat	2	8	16	40	0.0468	0.75	0.2309	3.69	0.2522	3.83	153.35	0.0004	0.01	0.0179	0.28611	0.2861	0.2632	30	484	19377	0.0042	0.07	2.70
Bull Dozer	2	8	16	40	0.2986	4.78	1.1749	18.80	2.5452	22.40	895.92	0.0025	0.04	0.1064	1.70247	1.7025	1.5663	239	3826	153021	0.0269	0.43	17.25
Dump Truck	10	8	80	200	0.0097	0.77	0.0320	2.56	0.0601	4.57	913.15	0.0001	0.01	0.0029	0.23185	0.2319	0.2133	8	610	121990	0.0009	0.07	13.94
Generator	2	8	16	40	0.0767	1.23	0.3045	4.87	0.5430	8.25	330.17	0.0007	0.01	0.0324	0.51794	0.5179	0.4765	61	976	39035	0.0069	0.11	4.43
Water Truck	1	8	8	20	0.0872	0.70	0.3765	3.01	0.7938	6.03	120.65	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	981	19626	0.0079	0.06	1.26
Wheel Loader	3	8	24	60	0.1195	2.87	0.4763	11.43	0.9346	12.34	740.23	0.0012	0.03	0.0508	1.21926	1.2193	1.1217	109	2607	156401	0.0108	0.26	15.53
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.28	11.07	0.0001	0.00	0.0012	0.01971	0.0197	0.0181	4	69	2761	0.0005	0.01	0.29
Excavator	2	8	16	40	0.1220	1.95	0.5338	8.54	0.9071	7.98	319.30	0.0013	0.02	0.0481	0.76896	0.7690	0.7074	120	1913	76532	0.0110	0.18	7.04
Material Processing Unit	2	8	16	40	0.1473	2.36	0.4951	7.92	1.3132	11.56	462.23	0.0015	0.02	0.0562	0.89844	0.8984	0.8266	141	2259	90364	0.0133	0.21	8.51
Auger/Pole Setter	1	8	8	0																			
Manlift	1	8	8	0																			
Puller/Tensioner	1	8	8	0																			
Concrete pump	1	8	8	0																			
Concrete breaker mounted on an excavator	2	8	16	0																			
Concrete crusher	1	8	8	0																			
Motor Grader	1	8	8	0																			
February Year 2013 Construction Equipment Total Emissions				**520**		**15.48**		**61.25**		**77.24**	**3,946.07**		**0.15**			**5.91**	**5.44**		**13,725**	**679,108**		**1.3969**	**70.9436**

March Year 2013 - Construction Equipments																							
Bob Cat	2	8	16	40	0.0468	0.75	0.2309	3.69	0.2522	3.83	153.35	0.0004	0.01	0.0179	0.28611	0.2861	0.2632	30	484	19377	0.0042	0.07	2.70
Bull Dozer	2	8	16	40	0.2986	4.78	1.1749	18.80	2.5452	22.40	895.92	0.0025	0.04	0.1064	1.70247	1.7025	1.5663	239	3826	153021	0.0269	0.43	17.25
Dump Truck	10	8	80	200	0.0097	0.77	0.0320	2.56	0.0601	4.57	913.15	0.0001	0.01	0.0029	0.23185	0.2319	0.2133	8	610	121990	0.0009	0.07	13.94
Generator	2	8	16	40	0.0767	1.23	0.3045	4.87	0.5430	8.25	330.17	0.0007	0.01	0.0324	0.51794	0.5179	0.4765	61	976	39035	0.0069	0.11	4.43
Water Truck	1	8	8	20	0.0872	0.70	0.3765	3.01	0.7938	6.03	120.65	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	981	19626	0.0079	0.06	1.26
Wheel Loader	3	8	24	60	0.1195	2.87	0.4763	11.43	0.9346	12.34	740.23	0.0012	0.03	0.0508	1.21926	1.2193	1.1217	109	2607	156401	0.0108	0.26	15.53
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.28	11.07	0.0001	0.00	0.0012	0.01971	0.0197	0.0181	4	69	2761	0.0005	0.01	0.29
Excavator	2	8	16	40	0.1220	1.95	0.5338	8.54	0.9071	7.98	319.30	0.0013	0.02	0.0481	0.76896	0.7690	0.7074	120	1913	76532	0.0110	0.18	7.04
Material Processing Unit	2	8	16	40	0.1473	2.36	0.4951	7.92	1.3132	11.56	462.23	0.0015	0.02	0.0562	0.89844	0.8984	0.8266	141	2259	90364	0.0133	0.21	8.51
Auger/Pole Setter	1	8	8	0																			
Manlift	1	8	8	0																			
Puller/Tensioner	1	8	8	0																			
Concrete pump	1	8	8	0																			
Concrete breaker mounted on an excavator	2	8	16	0																			
Concrete crusher	1	8	8	0																			
Motor Grader	1	8	8	0																			
March Year 2013 Construction Equipment Total Emissions				**520**		**15.48**		**61.25**		**77.24**	**3946.07**		**0.15**			**5.91**	**5.44**		**13,725.20**	**679,107.96**		**1.40**	**70.94**
April Year 2013 - Construction Equipments																							
Bob Cat	2	8	16	40	0.0468	0.75	0.2309	3.69	0.2522	3.83	153.35	0.0004	0.01	0.0179	0.28611	0.2861	0.2632	30	484	19377	0.0042	0.07	2.70
Bull Dozer	2	8	16	40	0.2986	4.78	1.1749	18.80	2.5452	22.40	895.92	0.0025	0.04	0.1064	1.70247	1.7025	1.5663	239	3826	153021	0.0269	0.43	17.25
Dump Truck	10	8	80	200	0.0097	0.77	0.0320	2.56	0.0601	4.57	913.15	0.0001	0.01	0.0029	0.23185	0.2319	0.2133	8	610	121990	0.0009	0.07	13.94
Generator	2	8	16	40	0.0767	1.23	0.3045	4.87	0.5430	8.25	330.17	0.0007	0.01	0.0324	0.51794	0.5179	0.4765	61	976	39035	0.0069	0.11	4.43
Water Truck	1	8	8	20	0.0872	0.70	0.3765	3.01	0.7938	6.03	120.65	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	981	19626	0.0079	0.06	1.26
Wheel Loader	3	8	24	60	0.1195	2.87	0.4763	11.43	0.9346	12.34	740.23	0.0012	0.03	0.0508	1.21926	1.2193	1.1217	109	2607	156401	0.0108	0.26	15.53
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.28	11.07	0.0001	0.00	0.0012	0.01971	0.0197	0.0181	4	69	2761	0.0005	0.01	0.29
Excavator	2	8	16	40	0.1220	1.95	0.5338	8.54	0.9071	7.98	319.30	0.0013	0.02	0.0481	0.76896	0.7690	0.7074	120	1913	76532	0.0110	0.18	7.04
Material Processing Unit	2	8	16	40	0.1473	2.36	0.4951	7.92	1.3132	11.56	462.23	0.0015	0.02	0.0562	0.89844	0.8984	0.8266	141	2259	90364	0.0133	0.21	8.51
Auger/Pole Setter	1	8	8	0																			
Manlift	1	8	8	0																			
Puller/Tensioner	1	8	8	0																			
Concrete pump	1	8	8	0																			
Concrete breaker mounted on an excavator	2	8	16	0																			
Concrete crusher	1	8	8	0																			
Motor Grader	1	8	8	0																			
April Year 2013 Construction Equipment Total Emissions				**520**		**15.48**		**61.25**		**77.24**	**3946.07**		**0.15**		**5.91**	**5.91**	**5.44**		**13725.20**	**679107.96**		**1.40**	**70.94**
May Year 2013 - Construction Equipments																							
Bob Cat	2	8	16	40	0.0468	0.75	0.2309	3.69	0.2522	3.83	153.35	0.0004	0.01	0.0179	0.28611	0.2861	0.2632	30	484	19377	0.0042	0.07	2.70
Bull Dozer	2	8	16	40	0.2986	4.78	1.1749	18.80	2.5452	22.40	895.92	0.0025	0.04	0.1064	1.70247	1.7025	1.5663	239	3826	153021	0.0269	0.43	17.25
Dump Truck	10	8	80	200	0.0097	0.77	0.0320	2.56	0.0601	4.57	913.15	0.0001	0.01	0.0029	0.23185	0.2319	0.2133	8	610	121990	0.0009	0.07	13.94
Generator	2	8	16	40	0.0767	1.23	0.3045	4.87	0.5430	8.25	330.17	0.0007	0.01	0.0324	0.51794	0.5179	0.4765	61	976	39035	0.0069	0.11	4.43
Water Truck	1	8	8	20	0.0872	0.70	0.3765	3.01	0.7938	6.03	120.65	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	981	19626	0.0079	0.06	1.26
Wheel Loader	3	8	24	60	0.1195	2.87	0.4763	11.43	0.9346	12.34	740.23	0.0012	0.03	0.0508	1.21926	1.2193	1.1217	109	2607	156401	0.0108	0.26	15.53
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.28	11.07	0.0001	0.00	0.0012	0.01971	0.0197	0.0181	4	69	2761	0.0005	0.01	0.29
Excavator	2	8	16	40	0.1220	1.95	0.5338	8.54	0.9071	7.98	319.30	0.0013	0.02	0.0481	0.76896	0.7690	0.7074	120	1913	76532	0.0110	0.18	7.04
Material Processing Unit	2	8	16	40	0.1473	2.36	0.4951	7.92	1.3132	11.56	462.23	0.0015	0.02	0.0562	0.89844	0.8984	0.8266	141	2259	90364	0.0133	0.21	8.51
Auger/Pole Setter	1	8	8	0																			
Manlift	1	8	8	0																			
Puller/Tensioner	1	8	8	0																			
Concrete pump	1	8	8	0																			
Concrete breaker mounted on an excavator	2	8	16	0																			
Concrete crusher	1	8	8	0																			
Motor Grader	1	8	8	0																			
May Year 2013 Construction Equipment Total Emissions				**520**		**15.48**		**61.25**		**77.24**	**3946.07**		**0.15**		**5.91**	**5.91**	**5.44**		**13725.20**	**679107.96**		**1.40**	**70.94**

June Year 2013 - Construction Equipments																							
Bob Cat	2	8	16	10	0.0468	0.75	0.2309	3.69	0.2522	4.04	40.35	0.0004	0.01	0.0179	0.28611	0.2861	0.2632	30	484	4844	0.0042	0.07	0.68
Bull Dozer	2	8	16	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Dump Truck	10	8	80	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Generator	2	8	16	20	0.0767	1.23	0.3045	4.87	0.5430	8.69	173.77	0.0007	0.01	0.0324	0.51794	0.5179	0.4765	61	976	19518	0.0069	0.11	2.21
Water Truck	1	8	8	10	0.0872	0.70	0.3765	3.01	0.7938	6.35	63.50	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	981	9813	0.0079	0.06	0.63
Wheel Loader	3	8	24	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Compactor	2	8	16	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Excavator	2	8	16	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Material Processing Unit	2	8	16	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Auger/Pole Setter	1	8	8	10	0.0786	0.63	0.1925	1.54	0.3059	2.45	24.47	0.0004	0.00	0.0202	0.16146	0.1615	0.1485	35	278	2778	0.0048	0.04	0.38
Manlift	1	8	8	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Puller/Tensioner	1	8	8	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete pump	1	8	8	5	0.0748	0.60	0.2926	2.34	0.4705	3.76	18.82	0.0006	0.00	0.0323	0.25863	0.2586	0.2379	50	397	1984	0.0067	0.05	0.27
Concrete breaker mounted on an excavator	2	8	16	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete crusher	1	8	8	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Motor Grader	1	8	8	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
June Year 2013 Construction Equipment Total Emissions				**55**		**3.90**		**15.46**		**25.29**	**320.92**		**0.04**		**1.49**	**1.49**	**1.37**		**3116.24**	**38936.98**		**0.33**	**4.17**
July Year 2013 - Construction Equipments																							
Bob Cat	2	8	16	10	0.0468	0.75	0.2309	3.69	0.2522	4.04	40.35	0.0004	0.01	0.0179	0.28611	0.2861	0.2632	30	484	4844	0.0042	0.07	0.68
Bull Dozer	2	8	16	0																			
Dump Truck	10	8	80	0																			
Generator	2	8	16	20	0.0767	1.23	0.3045	4.87	0.5430	8.69	173.77	0.0007	0.01	0.0324	0.51794	0.5179	0.4765	61	976	19518	0.0069	0.11	2.21
Water Truck	1	8	8	10	0.0872	0.70	0.3765	3.01	0.7938	6.35	63.50	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	981	9813	0.0079	0.06	0.63
Wheel Loader	3	8	24	0																			
Compactor	2	8	16	0																			
Excavator	2	8	16	0																			
Material Processing Unit	2	8	16	0																			
Auger/Pole Setter	1	8	8	10	0.0786	0.63	0.1925	1.54	0.3059	2.45	24.47	0.0004	0.00	0.0202	0.16146	0.1615	0.1485	35	278	2778	0.0048	0.04	0.38
Manlift	1	8	8	10	0.0529	0.42	0.1925	1.54	0.3059	2.45	24.47	0.0004	0.00	0.0202	0.16146	0.1615	0.1485	35	278	2778	0.0048	0.04	0.38
Puller/Tensioner	1	8	8	0																			
Concrete pump	1	8	8	5	0.0748	0.60	0.2926	2.34	0.4705	3.76	18.82	0.0006	0.00	0.0323	0.25863	0.2586	0.2379	50	397	1984	0.0067	0.05	0.27
Concrete breaker mounted on an excavator	2	8	16	0																			
Concrete crusher	1	8	8	0																			
Motor Grader	1	8	8	0																			
July Year 2013 Construction Equipment Total Emissions				**65**		**4.32**		**17.00**		**27.73**	**345.39**		**0.04**			**1.65**	**1.52**		**3,394**	**41,715**		**0.3716**	**4.5537**
August Year 2013 - Construction Equipments																							
Bob Cat	2	8	16	10	0.0468	0.75	0.2309	3.69	0.2522	4.04	40.35	0.0004	0.01	0.0179	0.28611	0.2861	0.2632	30	484	4844	0.0042	0.07	0.68
Bull Dozer	2	8	16	0																			
Dump Truck	10	8	80	0																			
Generator	2	8	16	20	0.0767	1.23	0.3045	4.87	0.5430	8.69	173.77	0.0007	0.01	0.0324	0.51794	0.5179	0.4765	61	976	19518	0.0069	0.11	2.21
Water Truck	1	8	8	10	0.0872	0.70	0.3765	3.01	0.7938	6.35	63.50	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	981	9813	0.0079	0.06	0.63
Wheel Loader	3	8	24	0																			
Compactor	2	8	16	0																			
Excavator	2	8	16	0																			
Material Processing Unit	2	8	16	0																			
Auger/Pole Setter	1	8	8	10	0.0786	0.63	0.1925	1.54	0.3059	2.45	24.47	0.0004	0.00	0.0202	0.16146	0.1615	0.1485	35	278	2778	0.0048	0.04	0.38
Manlift	1	8	8	10	0.0529	0.42	0.1925	1.54	2.3376	18.70	187.01	0.0062	0.05	0.0715	0.57182	0.5718	0.5261	615	4921	49207	0.0231	0.19	1.85
Puller/Tensioner	1	8	8	0		0.00														0		0.00	0.00
Concrete pump	1	8	8	5	0.0748	0.60	0.2926	2.34	0.4705	3.76	18.82	0.0006	0.00	0.0323	0.25863	0.2586	0.2379	50	397	1984	0.0067	0.05	0.27
Concrete breaker mounted on an excavator	2	8	16	0																			
Concrete crusher	1	8	8	0																			
Motor Grader	1	8	8	0																			
August Year 2013 Construction Equipment Total Emissions				**65**		**4.32**		**17.00**		**43.99**	**507.93**		**0.08**			**2.06**	**1.90**		**8,037**	**88,144**		**0.5185**	**6.0230**

September Year 2013 - Construction Equipments																							
Bob Cat	2	8	16	10	0.0468	0.75	0.2309	3.69	0.2522	4.04	40.35	0.0004	0.01	0.0179	0.28611	0.2861	0.2632	30	484	4844	0.0042	0.07	0.68
Bull Dozer	2	8	16	0																			
Dump Truck	10	8	80	0																			
Generator	2	8	16	20	0.0767	1.23	0.3045	4.87	0.5430	8.69	173.77	0.0007	0.01	0.0324	0.51794	0.5179	0.4765	61	976	19518	0.0069	0.11	2.21
Water Truck	1	8	8	10	0.0872	0.70	0.3765	3.01	0.7938	6.35	63.50	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	981	9813	0.0079	0.06	0.63
Wheel Loader	3	8	24	0																			
Compactor	2	8	16	0																			
Excavator	2	8	16	0																			
Material Processing Unit	2	8	16	0																			
Auger/Pole Setter	1	8	8	0																			
Manlift	1	8	8	0																			
Puller/Tensioner	1	8	8	10	0.0872	0.70	0.3765	3.01	0.7938	6.35	63.50	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	981	9813	0.0079	0.06	0.63
Concrete pump	1	8	8	0																			
Concrete breaker mounted on an excavator	2	8	16	0																			
Concrete crusher	1	8	8	0																			
Motor Grader	1	8	8	0																			
September Year 2013 Construction Equipment Total Emissions				**50**		**3.37**		**14.59**		**25.42**	**341.13**		**0.04**			**1.33**	**1.23**		**3,423**	**43,988**		**0.3042**	**4.1493**
October Year 2013 - Construction Equipments																							
Bob Cat	2	8	16	40	0.0468	0.75	0.2309	3.69	0.2522	4.04	161.42	0.0004	0.01	0.0179	0.28611	0.2861	0.2632	30	484	19377	0.0042	0.07	2.70
Bull Dozer	2	8	16	20	0.2986	4.78	1.1749	18.80	2.5452	10.18	203.62	0.0025	0.04	0.1064	1.70247	1.7025	1.5663	239	3826	76511	0.0269	0.43	8.62
Dump Truck	10	8	80	160	0.0097	0.77	0.0320	2.56	0.0601	4.81	768.97	0.0001	0.01	0.0029	0.23185	0.2319	0.2133	8	610	97592	0.0009	0.07	11.15
Generator	2	8	16	40	0.0767	1.23	0.3045	4.87	0.5430	8.69	347.55	0.0007	0.01	0.0324	0.51794	0.5179	0.4765	61	976	39035	0.0069	0.11	4.43
Water Truck	1	8	8	20	0.0872	0.70	0.3765	3.01	0.7938	6.35	127.00	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	981	19626	0.0079	0.06	1.26
Wheel Loader	3	8	24	60	0.1195	2.87	0.4763	11.43	0.9346	22.43	1345.88	0.0012	0.03	0.0508	1.21926	1.2193	1.1217	109	2607	156401	0.0108	0.26	15.53
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.50	20.13	0.0001	0.00	0.0012	0.01971	0.0197	0.0181	4	69	2761	0.0005	0.01	0.29
Excavator	2	8	16	40	0.1220	1.95	0.5338	8.54	0.9071	3.63	145.14	0.0013	0.02	0.0481	0.76896	0.7690	0.7074	120	1913	76532	0.0110	0.18	7.04
Material Processing Unit	2	8	16	20	0.1473	2.36	0.4951	7.92	1.3132	21.01	420.21	0.0015	0.02	0.0562	0.89844	0.8984	0.8266	141	2259	45182	0.0133	0.21	4.25
Auger/Pole Setter	1	8	8	0																			
Manlift	1	8	8	0																			
Puller/Tensioner	1	8	8	0																			
Concrete pump	1	8	8	0																			
Concrete breaker mounted on an excavator	2	8	16	0																			
Concrete crusher	1	8	8	0																			
Motor Grader	1	8	8	0																			
October Year 2013 Construction Equipment Total Emissions				**440**		**15.48**		**61.25**		**81.63**	**3,539.91**		**0.15**			**5.91**	**5.44**		**13,725**	**533,017**		**1.3969**	**55.2790**

November Year 2013 - Construction Equipments																							
Bob Cat	2	8	16	40	0.0468	0.75	0.2309	3.69	0.2522	3.83	153.35	0.0004	0.01	0.0179	0.28611	0.2861	0.2632	30	484	19377	0.0042	0.07	2.70
Bull Dozer	2	8	16	20	0.2986	4.78	1.1749	18.80	2.5452	22.40	447.96	0.0025	0.04	0.1064	1.70247	1.7025	1.5663	239	0	9	0.0269	0.43	8.62
Dump Truck	10	8	80	160	0.0097	0.77	0.0320	2.56	0.0601	4.57	730.52	0.0001	0.01	0.0029	0.23185	0.2319	0.2133	8	0	11	0.0009	0.07	11.15
Generator	2	8	16	40	0.0767	1.23	0.3045	4.87	0.5430	8.25	330.17	0.0007	0.01	0.0324	0.51794	0.5179	0.4765	61	0	4	0.0069	0.11	4.43
Water Truck	1	8	8	20	0.0872	0.70	0.3765	3.01	0.7938	6.03	120.65	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	0	1	0.0079	0.06	1.26
Wheel Loader	3	8	24	60	0.1195	2.87	0.4763	11.43	0.9346	12.34	740.23	0.0012	0.03	0.0508	1.21926	1.2193	1.1217	109	0	16	0.0108	0.26	15.53
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.28	11.07	0.0001	0.00	0.0012	0.01971	0.0197	0.0181	4	0	0	0.0005	0.01	0.29
Excavator	2	8	16	40	0.1220	1.95	0.5338	8.54	0.9071	7.98	319.30	0.0013	0.02	0.0481	0.76896	0.7690	0.7074	120	0	7	0.0110	0.18	7.04
Material Processing Unit	2	8	16	20	0.1473	2.36	0.4951	7.92	1.3132	11.56	231.12	0.0015	0.02	0.0562	0.89844	0.8984	0.8266	141	0	4	0.0133	0.21	4.25
Auger/Pole Setter	1	8	8	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Manlift	1	8	8	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Puller/Tensioner	1	8	8	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete pump	1	8	8	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete breaker mounted on an excavator	2	8	16	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete crusher	1	8	8	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Motor Grader	1	8	8	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
November Year 2013 Construction Equipment Total Emissions				**440**		**15.48**		**61.25**		**77.24**	**3,084.37**		**0.15**			**5.91**	**5.44**		**486**	**19,429**		**1.3969**	**55.2790**
December Year 2013 - Construction Equipments																							
Bob Cat	2	8	16	40	0.0468	0.75	0.2309	3.69	0.2522	3.83	153.35	0.0004	0.01	0.0179	0.28611	0.2861	0.2632	30	484	19377	0.0042	0.07	2.70
Bull Dozer	2	8	16	20	0.2986	4.78	1.1749	18.80	2.5452	22.40	447.96	0.0025	0.04	0.1064	1.70247	1.7025	1.5663	239	0	9	0.0269	0.43	8.62
Dump Truck	10	8	80	160	0.0097	0.77	0.0320	2.56	0.0601	4.57	730.52	0.0001	0.01	0.0029	0.23185	0.2319	0.2133	8	0	11	0.0009	0.07	11.15
Generator	2	8	16	40	0.0767	1.23	0.3045	4.87	0.5430	8.25	330.17	0.0007	0.01	0.0324	0.51794	0.5179	0.4765	61	0	4	0.0069	0.11	4.43
Water Truck	1	8	8	20	0.0872	0.70	0.3765	3.01	0.7938	6.03	120.65	0.0013	0.01	0.0330	0.26394	0.2639	0.2428	123	0	1	0.0079	0.06	1.26
Wheel Loader	3	8	24	60	0.1195	2.87	0.4763	11.43	0.9346	21.31	1278.59	0.0012	0.03	0.0508	1.21926	1.2193	1.1217	109	0	16	0.0108	0.26	15.53
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.48	19.12	0.0001	0.00	0.0012	0.01971	0.0197	0.0181	4	0	0	0.0005	0.01	0.29
Excavator	2	8	16	20	0.1220	1.95	0.5338	8.54	0.9071	7.98	159.65	0.0013	0.02	0.0481	0.76896	0.7690	0.7074	120	0	4	0.0110	0.18	3.52
Material Processing Unit	2	8	16	20	0.1473	2.36	0.4951	7.92	1.3132	19.96	399.20	0.0015	0.02	0.0562	0.89844	0.8984	0.8266	141	0	4	0.0133	0.21	4.25
Auger/Pole Setter	1	8	8	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Manlift	1	8	8	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Puller/Tensioner	1	8	8	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete pump	1	8	8	20	0.0748	0.60	0.2926	2.34	0.4705	3.58	71.52	0.0006	0.00	0.0323	0.25863	0.2586	0.2379	50	0	1	0.0067	0.05	1.08
Concrete breaker mounted on an excavator	2	8	16	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Concrete crusher	1	8	8	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Motor Grader	1	8	8	0		0.00		0.00		0.00	0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
December Year 2013 Construction Equipment Total Emissions				**440**		**16.08**		**63.60**		**98.39**	**3,710.73**		**0.15**			**6.17**	**5.67**		**486**	**19,427**		**1.4509**	**52.8371**

Van Norman Complex Water Quality Improvement Project - Construction Equipment Emissions

Estimated Equipment Construction Emissions

Equipment Type	Qty	Operating Hrs/WD/ each	Operating Hours per Day	Number of Operating Days	Rog Rate (lbs/hr)	Rog (lbs/day)	CO rate (lbs/hr)	CO (lbs/day)	NOX rate (lbs/hr)	NOX (lbs/day)	SOX rate (lbs/hr)	SOX (lbs/day)	PM rate (lbs/hr)	PM (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)	CO2 Rate (lbs/hr)	CO2 (lbs/day)	CO2 (lbs)	CH4 rate (lbs/hr)	CH4 (lbs/day)	CH4 (lbs)
January Year 2014 - Construction Equipments																						
Bob Cat	2	8	16	40	0.0406	0.65	0.2262	3.62	0.2369	3.79	0.0004	0.01	0.0152	0.243457	0.2435	0.2240	30	484	19377	0.0037	0.06	2.35
Bull Dozer	2	8	16	0		0.00		0.00		0.00		0.00		0	0.0000	0.0000		0	0		0.00	0.00
Dump Truck	10	8	80	160	0.0095	0.76	0.0317	2.54	0.0595	4.76	0.0001	0.01	0.0027	0.215553	0.2156	0.1983	8	610	97592	0.0009	0.07	10.93
Generator	2	8	16	40	0.0702	1.12	0.2974	4.76	0.5083	8.13	0.0007	0.01	0.0296	0.473026	0.4730	0.4352	61	976	39035	0.0063	0.10	4.06
Water Truck	1	8	8	20	0.0820	0.66	0.3697	2.96	0.7168	5.73	0.0013	0.01	0.0296	0.236597	0.2366	0.2177	123	981	19621	0.0074	0.06	1.18
Wheel Loader	3	8	24	60	0.1122	2.69	0.4683	11.24	0.8620	20.69	0.0012	0.03	0.0461	1.106058	1.1061	1.0176	109	2607	156401	0.0101	0.24	14.58
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.50	0.0001	0.00	0.0012	0.019609	0.0196	0.0180	4	69	2761	0.0005	0.01	0.29
Excavator	2	8	16	40	0.1143	1.83	0.5289	8.46	0.8299	13.28	0.0013	0.02	0.0428	0.685559	0.6856	0.6307	120	1913	76532	0.0103	0.16	6.60
Material Processing Unit	2	8	16	20	0.1381	2.21	0.4814	7.70	1.2068	19.31	0.0015	0.02	0.0511	0.817183	0.8172	0.7518	141	2259	45182	0.0125	0.20	3.99
Auger/Pole Setter	1	8	8	0																		
Manlift	1	8	8	0																		
Puller/Tensioner	1	8	8	0																		
Concrete pump	1	8	8	20	0.0683	0.55	0.2873	2.30	0.4427	3.54	0.0006	0.005	0.0295	0.23596	0.2360	0.2171	50	397	7937	0.0062	0.05	0.99
Concrete breaker mounted on an excavator	2	8	16	0																		
Concrete crusher	1	8	8	0																		
Motor Grader	1	8	8	0																		
January Year 2014 Construction Equipment Total Emissions				**440**		**10.54**		**44.00**		**79.74**		**0.12**			**4.03**	**3.71**		**10,296**	**464,438**		**0.9514**	**#####**
February Year 2014 - Construction Equipments																						
Bob Cat	2	8	16	40	0.0406	0.65	0.2262	3.62	0.2369	3.79	0.0004	0.01	0.0152	0.243457	0.2435	0.2240	30	484	19377	0.0037	0.06	2.35
Bull Dozer	2	8	16	0																		
Dump Truck	10	8	80	160	0.0095	0.76	0.0317	2.54	0.0595	4.76	0.0001	0.01	0.0027	0.215553	0.2156	0.1983	8	610	97592	0.0009	0.07	10.93
Generator	2	8	16	40	0.0702	1.12	0.2974	4.76	0.5083	8.13	0.0007	0.01	0.0296	0.473026	0.4730	0.4352	61	976	39035	0.0063	0.10	4.06
Water Truck	1	8	8	20	0.0820	0.66	0.3697	2.96	0.7168	5.73	0.0013	0.01	0.0296	0.236597	0.2366	0.2177	123	981	19621	0.0074	0.06	1.18
Wheel Loader	3	8	24	60	0.1122	2.69	0.4683	11.24	0.8620	20.69	0.0012	0.03	0.0461	1.106058	1.1061	1.0176	109	2607	156401	0.0101	0.24	14.58
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.50	0.0001	0.00	0.0012	0.019609	0.0196	0.0180	4	69	2761	0.0005	0.01	0.29
Excavator	2	8	16	40	0.1143	1.83	0.5289	8.46	0.8299	13.28	0.0013	0.02	0.0428	0.685559	0.6856	0.6307	120	1913	76532	0.0103	0.16	6.60
Material Processing Unit	2	8	16	20	0.1381	2.21	0.4814	7.70	1.2068	19.31	0.0015	0.02	0.0511	0.817183	0.8172	0.7518	141	2259	45182	0.0125	0.20	3.99
Auger/Pole Setter	1	8	8	0																		
Manlift	1	8	8	0																		
Puller/Tensioner	1	8	8	0																		
Concrete pump	1	8	8	20	0.0683	0.55	0.2873	2.30	0.4427	3.54	0.0006	0.00	0.0295	0.23596	0.2360	0.2171	50	397	7937	0.0062	0.05	0.99
Concrete breaker mounted on an excavator	2	8	16	0																		
Concrete crusher	1	8	8	0																		
Motor Grader	1	8	8	0																		
February Year 2014 Construction Equipment Total Emissions				**440**		**10.54**		**44.00**		**79.74**		**0.12**			**4.03**	**3.71**		**10,296**	**464,438**		**0.9514**	**#####**
March Year 2014 - Construction Equipments																						
Bob Cat	2	8	16	40	0.0406	0.65	0.2262	3.62	0.2369	3.79	0.0004	0.01	0.0152	0.243457	0.2435	0.2240	30	484	19377	0.0037	0.06	2.35
Bull Dozer	2	8	16	0																		
Dump Truck	10	8	80	160	0.0095	0.76	0.0317	2.54	0.0595	4.76	0.0001	0.01	0.0027	0.215553	0.2156	0.1983	8	610	97592	0.0009	0.07	10.93
Generator	2	8	16	40	0.0702	1.12	0.2974	4.76	0.5083	8.13	0.0007	0.01	0.0296	0.473026	0.4730	0.4352	61	976	39035	0.0063	0.10	4.06
Water Truck	1	8	8	20	0.0820	0.66	0.3697	2.96	0.7168	5.73	0.0013	0.01	0.0296	0.236597	0.2366	0.2177	123	981	19621	0.0074	0.06	1.18
Wheel Loader	3	8	24	60	0.1122	2.69	0.4683	11.24	0.8620	20.69	0.0012	0.03	0.0461	1.106058	1.1061	1.0176	109	2607	156401	0.0101	0.24	14.58
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.50	0.0001	0.00	0.0012	0.019609	0.0196	0.0180	4	69	2761	0.0005	0.01	0.29
Excavator	2	8	16	20	0.1143	1.83	0.5289	8.46	0.8299	13.28	0.0013	0.02	0.0428	0.685559	0.6856	0.6307	120	1913	38266	0.0103	0.16	3.30
Material Processing Unit	2	8	16	20	0.1381	2.21	0.4814	7.70	1.2068	19.31	0.0015	0.02	0.0511	0.817183	0.8172	0.7518	141	2259	45182	0.0125	0.20	3.99
Auger/Pole Setter	1	8	8	0																		
Manlift	1	8	8	0																		
Puller/Tensioner	1	8	8	0																		
Concrete pump	1	8	8	0																		
Concrete breaker mounted on an excavator	2	8	16	0																		
Concrete crusher	1	8	8	0																		
Motor Grader	1	8	8	0																		
March Year 2014 Construction Equipment Total Emissions				**400**		**10.00**		**41.70**		**76.20**		**0.11**			**3.80**	**3.49**		**######**	**#####**		**0.90**	**40.67**

April Year 2014 - Construction Equipments																						
Bob Cat	2	8	16	40	0.0406	0.65	0.2262	3.62	0.2369	3.79	0.0004	0.01	0.0152	0.243457	0.2435	0.2240	30	484	19377	0.0037	0.06	2.35
Bull Dozer	2	8	16	0																		
Dump Truck	10	8	80	80	0.0095	0.76	0.0317	2.54	0.0595	4.76	0.0001	0.01	0.0027	0.215553	0.2156	0.1983	8	610	48796	0.0009	0.07	5.46
Generator	2	8	16	40	0.0702	1.12	0.2974	4.76	0.5083	8.13	0.0007	0.01	0.0296	0.473026	0.4730	0.4352	61	976	39035	0.0063	0.10	4.06
Water Truck	1	8	8	20	0.0820	0.66	0.3697	2.96	0.7168	5.73	0.0013	0.01	0.0296	0.236597	0.2366	0.2177	123	981	19621	0.0074	0.06	1.18
Wheel Loader	3	8	24	60	0.1122	2.69	0.4683	11.24	0.8620	20.69	0.0012	0.03	0.0461	1.106058	1.1061	1.0176	109	2607	156401	0.0101	0.24	14.58
Compactor	2	8	16	20	0.0050	0.08	0.0263	0.42	0.0314	0.50	0.0001	0.00	0.0012	0.019609	0.0196	0.0180	4	69	1380	0.0005	0.01	0.14
Excavator	2	8	16	0	0.1143	1.83	0.5289	8.46	0.8299	13.28	0.0013	0.02	0.0428	0.685559	0.6856	0.6307	120	1913	0	0.0103	0.16	0.00
Material Processing Unit	2	8	16	10	0.1381	2.21	0.4814	7.70	1.2068	19.31	0.0015	0.02	0.0511	0.817183	0.8172	0.7518	141	2259	22591	0.0125	0.20	1.99
Auger/Pole Setter	1	8	8	0																		
Manlift	1	8	8	0																		
Puller/Tensioner	1	8	8	0																		
Concrete pump	1	8	8	20	0.0683	0.55	0.2873	2.30	0.4427	3.54	0.0006	0.00	0.0295	0.23596	0.2360	0.2171	50	397	7937	0.0062	0.05	0.99
Concrete breaker mounted on an excavator	2	8	16	0																		
Concrete crusher	1	8	8	0																		
Motor Grader	1	8	8	0																		
April Year 2014 Construction Equipment Total Emissions				**290**		**10.54**		**44.00**		**79.74**		**0.12**		**4.03**	**4.03**	**3.71**		**10296.26**	**######**		**0.95**	**30.75**

May Year 2014 - Construction Equipments																						
Bob Cat	2	8	16	40	0.0406	0.65	0.2262	3.62	0.2369	3.79	0.0004	0.01	0.0152	0.243457	0.2435	0.2240	30	484	19377	0.0037	0.06	2.35
Bull Dozer	2	8	16	0																		
Dump Truck	10	8	80	80	0.0095	0.76	0.0317	2.54	0.0595	4.76	0.0001	0.01	0.0027	0.215553	0.2156	0.1983	8	610	48796	0.0009	0.07	5.46
Generator	2	8	16	40	0.0702	1.12	0.2974	4.76	0.5083	8.13	0.0007	0.01	0.0296	0.473026	0.4730	0.4352	61	976	39035	0.0063	0.10	4.06
Water Truck	1	8	8	20	0.0820	0.66	0.3697	2.96	0.7168	5.73	0.0013	0.01	0.0296	0.236597	0.2366	0.2177	123	981	19621	0.0074	0.06	1.18
Wheel Loader	3	8	24	60	0.1122	2.69	0.4683	11.24	0.8620	20.69	0.0012	0.03	0.0461	1.106058	1.1061	1.0176	109	2607	156401	0.0101	0.24	14.58
Compactor	2	8	16	20	0.0050	0.08	0.0263	0.42	0.0314	0.50	0.0001	0.00	0.0012	0.019609	0.0196	0.0180	4	69	1380	0.0005	0.01	0.14
Excavator	2	8	16	0																		
Material Processing Unit	2	8	16	10	0.1381	2.21	0.4814	7.70	1.2068	19.31	0.0015	0.02	0.0511	0.817183	0.8172	0.7518	141	2259	22591	0.0125	0.20	1.99
Auger/Pole Setter	1	8	8	0																		
Manlift	1	8	8	0																		
Puller/Tensioner	1	8	8	0																		
Concrete pump	1	8	8	20	0.0683	0.55	0.2873	2.30	0.4427	3.54	0.0006	0.00	0.0295	0.23596	0.2360	0.2171	50	397	7937	0.0062	0.05	0.99
Concrete breaker mounted on an excavator	2	8	16	40	0.1143	1.83	0.5289	8.46	0.8299	13.28	0.0013	0.02	0.0428	0.685559	0.6856	0.6307	120	1913	76532	0.0103	0.16	6.60
Concrete crusher	1	8	8	20	0.1597	1.28	0.6651	5.32	1.0867	8.69	0.0015	0.01	0.0677	0.541599	0.5416	0.4983	132	1058	21169	0.0144	0.12	2.31
Motor Grader	1	8	8	0																		
May Year 2014 Construction Equipment Total Emissions				**350**		**11.82**		**49.32**		**88.43**		**0.13**		**4.57**	**4.57**	**4.21**		**11354.73**	**######**		**1.07**	**39.66**
June Year 2014 - Construction Equipments																						
Bob Cat	2	8	16	40	0.0406	0.65	0.2262	3.62	0.2369	3.79	0.0004	0.01	0.0152	0.243457	0.2435	0.2240	30	484	19377	0.0037	0.06	2.35
Bull Dozer	2	8	16	0																		
Dump Truck	10	8	80	80	0.0095	0.76	0.0317	2.54	0.0595	4.76	0.0001	0.01	0.0027	0.215553	0.2156	0.1983	8	610	48796	0.0009	0.07	5.46
Generator	2	8	16	40	0.0702	1.12	0.2974	4.76	0.5083	8.13	0.0007	0.01	0.0296	0.473026	0.4730	0.4352	61	976	39035	0.0063	0.10	4.06
Water Truck	1	8	8	20	0.0820	0.66	0.3697	2.96	0.7168	5.73	0.0013	0.01	0.0296	0.236597	0.2366	0.2177	123	981	19621	0.0074	0.06	1.18
Wheel Loader	3	8	24	60	0.1122	2.69	0.4683	11.24	0.8620	20.69	0.0012	0.03	0.0461	1.106058	1.1061	1.0176	109	2607	156401	0.0101	0.24	14.58
Compactor	2	8	16	20	0.0050	0.08	0.0263	0.42	0.0314	0.50	0.0001	0.00	0.0012	0.019609	0.0196	0.0180	4	69	1380	0.0005	0.01	0.14
Excavator	2	8	16	0																		
Material Processing Unit	2	8	16	10	0.1381	2.21	0.4814	7.70	1.2068	19.31	0.0015	0.02	0.0511	0.817183	0.8172	0.7518	141	2259	22591	0.0125	0.20	1.99
Auger/Pole Setter	1	8	8	0																		
Manlift	1	8	8	0																		
Puller/Tensioner	1	8	8	0																		
Concrete pump	1	8	8	0																		
Concrete breaker mounted on an excavator	2	8	16	20	0.1143	1.83	0.5289	8.46	0.8299	13.28	0.0013	0.02	0.0428	0.685559	0.6856	0.6307	120	1913	38266	0.0103	0.16	3.30
Concrete crusher	1	8	8	20	0.1597	1.28	0.6651	5.32	1.0867	8.69	0.0015	0.01	0.0677	0.541599	0.5416	0.4983	132	1058	21169	0.0144	0.12	2.31
Motor Grader	1	8	8	0																		
June Year 2014 Construction Equipment Total Emissions				**310**		**11.28**		**47.02**		**84.89**		**0.12**		**4.34**	**4.34**	**3.99**		**10957.88**	**######**		**1.02**	**35.37**
July Year 2014 - Construction Equipments																						
Bob Cat	2	8	16	20	0.0406	0.65	0.2262	3.62	0.2369	3.79	0.0004	0.01	0.0152	0.243457	0.2435	0.2240	30	484	9688	0.0037	0.06	1.17
Bull Dozer	2	8	16	0																		
Dump Truck	10	8	80	80	0.0095	0.76	0.0317	2.54	0.0595	4.76	0.0001	0.01	0.0027	0.215553	0.2156	0.1983	8	610	48796	0.0009	0.07	5.46
Generator	2	8	16	40	0.0702	1.12	0.2974	4.76	0.5083	8.13	0.0007	0.01	0.0296	0.473026	0.4730	0.4352	61	976	39035	0.0063	0.10	4.06
Water Truck	1	8	8	20	0.0820	0.66	0.3697	2.96	0.7168	5.73	0.0013	0.01	0.0296	0.236597	0.2366	0.2177	123	981	19621	0.0074	0.06	1.18
Wheel Loader	3	8	24	30	0.1122	2.69	0.4683	11.24	0.8620	20.69	0.0012	0.03	0.0461	1.106058	1.1061	1.0176	109	2607	78201	0.0101	0.24	7.29
Compactor	2	8	16	20	0.0050	0.08	0.0263	0.42	0.0314	0.50	0.0001	0.00	0.0012	0.019609	0.0196	0.0180	4	69	1380	0.0005	0.01	0.14
Excavator	2	8	16	20	0.1143	1.83	0.5289	8.46	0.8299	13.28	0.0013	0.02	0.0428	0.685559	0.6856	0.6307	120	1913	38266	0.0103	0.16	3.30
Material Processing Unit	2	8	16	10	0.1381	2.21	0.4814	7.70	1.2068	19.31	0.0015	0.02	0.0511	0.817183	0.8172	0.7518	141	2259	22591	0.0125	0.20	1.99
Auger/Pole Setter	1	8	8	0																		
Manlift	1	8	8	0																		
Puller/Tensioner	1	8	8	0																		
Concrete pump	1	8	8	0																		
Concrete breaker mounted on an excavator	2	8	16	0																		
Concrete crusher	1	8	8	20	0.1597	1.28	0.6651	5.32	1.0867	8.69	0.0015	0.01	0.0677	0.541599	0.5416	0.4983	132	1058	21169	0.0144	0.12	2.31
Motor Grader	1	8	8	0																		
July Year 2014 Construction Equipment Total Emissions				**260**		**11.28**		**47.02**		**84.89**		**0.12**			**4.34**	**3.99**		**10,958**	**278,748**		**1.0174**	**#####**

August Year 2014 - Construction Equipments																						
Bob Cat	2	8	16	40	0.0406	0.65	0.2262	3.62	0.2369	3.79	0.0004	0.01	0.0152	0.243457	0.2435	0.2240	30	484	19377	0.0037	0.06	2.35
Bull Dozer	2	8	16	0																		
Dump Truck	10	8	80	80	0.0095	0.76	0.0317	2.54	0.0595	4.76	0.0001	0.01	0.0027	0.215553	0.2156	0.1983	8	610	48796	0.0009	0.07	5.46
Generator	2	8	16	40	0.0702	1.12	0.2974	4.76	0.5083	8.13	0.0007	0.01	0.0296	0.473026	0.4730	0.4352	61	976	39035	0.0063	0.10	4.06
Water Truck	1	8	8	20	0.0820	0.66	0.3697	2.96	0.7168	5.73	0.0013	0.01	0.0296	0.236597	0.2366	0.2177	123	981	19621	0.0074	0.06	1.18
Wheel Loader	3	8	24	60	0.1122	2.69	0.4683	11.24	0.8620	20.69	0.0012	0.03	0.0461	1.106058	1.1061	1.0176	109	2607	156401	0.0101	0.24	14.58
Compactor	2	8	16	20	0.0050	0.08	0.0263	0.42	0.0314	0.50	0.0001	0.00	0.0012	0.019609	0.0196	0.0180	4	69	1380	0.0005	0.01	0.14
Excavator	2	8	16	0																		
Material Processing Unit	2	8	16	10	0.1381	2.21	0.4814	7.70	1.2068	19.31	0.0015	0.02	0.0511	0.817183	0.8172	0.7518	141	2259	22591	0.0125	0.20	1.99
Auger/Pole Setter	1	8	8	0																		
Manlift	1	8	8	0																		
Puller/Tensioner	1	8	8	0																		
Concrete pump	1	8	8	20	0.0683	0.55	0.2873	2.30	0.4427	3.54	0.0006	0.00	0.0295	0.23596	0.2360	0.2171	50	397	7937	0.0062	0.05	0.99
Concrete breaker mounted on an excavator	2	8	16	0																		
Concrete crusher	1	8	8	0																		
Motor Grader	1	8	8	0																		
August Year 2014 Construction Equipment Total Emissions				**290**		**8.72**		**35.53**		**66.46**		**0.09**			**3.35**	**3.08**		**8,383**	**315,139**		**0.7865**	**#####**
September Year 2014 - Construction Equipments																						
Bob Cat	2	8	16	40	0.0406	0.65	0.2262	3.62	0.2369	3.79	0.0004	0.01	0.0152	0.243457	0.2435	0.2240	30	484	19377	0.0037	0.06	2.35
Bull Dozer	2	8	16	0																		
Dump Truck	10	8	80	80	0.0095	0.76	0.0317	2.54	0.0595	4.76	0.0001	0.01	0.0027	0.215553	0.2156	0.1983	8	610	48796	0.0009	0.07	5.46
Generator	2	8	16	40	0.0702	1.12	0.2974	4.76	0.5083	8.13	0.0007	0.01	0.0296	0.473026	0.4730	0.4352	61	976	39035	0.0063	0.10	4.06
Water Truck	1	8	8	20	0.0820	0.66	0.3697	2.96	0.7168	5.73	0.0013	0.01	0.0296	0.236597	0.2366	0.2177	123	981	19621	0.0074	0.06	1.18
Wheel Loader	3	8	24	60	0.1122	2.69	0.4683	11.24	0.8620	20.69	0.0012	0.03	0.0461	1.106058	1.1061	1.0176	109	2607	156401	0.0101	0.24	14.58
Compactor	2	8	16	20	0.0050	0.08	0.0263	0.42	0.0314	0.50	0.0001	0.00	0.0012	0.019609	0.0196	0.0180	4	69	1380	0.0005	0.01	0.14
Excavator	2	8	16	0																		
Material Processing Unit	2	8	16	10	0.1381	2.21	0.4814	7.70	1.2068	19.31	0.0015	0.02	0.0511	0.817183	0.8172	0.7518	141	2259	22591	0.0125	0.20	1.99
Auger/Pole Setter	1	8	8	0																		
Manlift	1	8	8	0																		
Puller/Tensioner	1	8	8	0																		
Concrete pump	1	8	8	20	0.0683	0.55	0.2873	2.30	0.4427	3.54	0.0006	0.00	0.0295	0.23596	0.2360	0.2171	50	397	7937	0.0062	0.05	0.99
Concrete breaker mounted on an excavator	2	8	16	10	0.1143	1.83	0.5289	8.46	0.8299	13.28	0.0013	0.02	0.0428	0.685559	0.6856	0.6307	120	1913	19133	0.0103	0.16	1.65
Concrete crusher	1	8	8	20	0.1597	1.28	0.6651	5.32	1.0867	8.69	0.0015	0.01	0.0677	0.541599	0.5416	0.4983	132	1058	21169	0.0144	0.12	2.31
Motor Grader	1	8	8	0																		
September Year 2014 Construction Equipment Total Emissions				**320**		**11.82**		**49.32**		**88.43**		**0.13**			**4.57**	**4.21**		**11,355**	**355,441**		**1.0667**	**#####**

October Year 2014 - Construction Equipments																						
Bob Cat	2	8	16	40	0.0406	0.65	0.2262	3.62	0.2369	3.79	0.0004	0.01	0.0152	0.243457	0.2435	0.2240	30	484	19377	0.0037	0.06	2.35
Bull Dozer	2	8	16	0																		
Dump Truck	10	8	80	160	0.0095	0.76	0.0317	2.54	0.0595	4.76	0.0001	0.01	0.0027	0.215553	0.2156	0.1983	8	610	97592	0.0009	0.07	10.93
Generator	2	8	16	40	0.0702	1.12	0.2974	4.76	0.5083	8.13	0.0007	0.01	0.0296	0.473026	0.4730	0.4352	61	976	39035	0.0063	0.10	4.06
Water Truck	1	8	8	20	0.0820	0.66	0.3697	2.96	0.7168	5.73	0.0013	0.01	0.0296	0.236597	0.2366	0.2177	123	981	19621	0.0074	0.06	1.18
Wheel Loader	3	8	24	60	0.1122	2.69	0.4683	11.24	0.8620	11.38	0.0012	0.03	0.0461	1.106058	1.1061	1.0176	109	2607	156401	0.0101	0.24	14.58
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.28	0.0001	0.00	0.0012	0.019609	0.0196	0.0180	4	69	2761	0.0005	0.01	0.29
Excavator	2	8	16	20	0.1143	1.83	0.5289	8.46	0.8299	7.30	0.0013	0.02	0.0428	0.685559	0.6856	0.6307	120	1913	38266	0.0103	0.16	3.30
Material Processing Unit	2	8	16	20	0.1381	2.21	0.4814	7.70	1.2068	10.62	0.0015	0.02	0.0511	0.817183	0.8172	0.7518	141	2259	45182	0.0125	0.20	3.99
Auger/Pole Setter	1	8	8	0																		
Manlift	1	8	8	0																		
Puller/Tensioner	1	8	8	0																		
Concrete pump	1	8	8	20	0.0683	0.55	0.2873	2.30	0.4427	3.54	0.0006	0.00	0.0295	0.23596	0.2360	0.2171	50	397	7937	0.0062	0.05	0.99
Concrete breaker mounted on an excavator	2	8	16	10	0.1143	1.83	0.5289	8.46	0.8299	13.28	0.0013	0.02	0.0428	0.685559	0.6856	0.6307	120	1913	19133	0.0103	0.16	1.65
Concrete crusher	1	8	8	20	0.1597	1.28	0.6651	5.32	1.0867	8.69	0.0015	0.01	0.0677	0.541599	0.5416	0.4983	132	1058	21169	0.0144	0.12	2.31
Motor Grader	1	8	8	0																		
Construction Equipment Total Emissions				**450**		**13.65**		**57.78**		**77.51**		**0.15**			**5.26**	**4.84**		**13,268**	**466,475**		**1.2317**	**#####**
November Year 2014 - Construction Equipments																						
Bob Cat	2	8	16	40	0.0406	0.65	0.2262	3.62	0.2369	3.79	0.0004	0.01	0.0152	0.243457	0.2435	0.2240	30	484	19377	0.0037	0.06	2.35
Bull Dozer	2	8	16	0																		
Dump Truck	10	8	80	160	0.0095	0.76	0.0317	2.54	0.0595	4.76	0.0001	0.01	0.0027	0.215553	0.2156	0.1983	8	610	97592	0.0009	0.07	10.93
Generator	2	8	16	40	0.0702	1.12	0.2974	4.76	0.5083	8.13	0.0007	0.01	0.0296	0.473026	0.4730	0.4352	61	976	39035	0.0063	0.10	4.06
Water Truck	1	8	8	20	0.0820	0.66	0.3697	2.96	0.7168	5.73	0.0013	0.01	0.0296	0.236597	0.2366	0.2177	123	981	19621	0.0074	0.06	1.18
Wheel Loader	3	8	24	60	0.1122	2.69	0.4683	11.24	0.8620	20.69	0.0012	0.03	0.0461	1.106058	1.1061	1.0176	109	2607	156401	0.0101	0.24	14.58
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.50	0.0001	0.00	0.0012	0.019609	0.0196	0.0180	4	69	2761	0.0005	0.01	0.29
Excavator	2	8	16	20	0.1143	1.83	0.5289	8.46	0.8299	13.28	0.0013	0.02	0.0428	0.685559	0.6856	0.6307	120	1913	38266	0.0103	0.16	3.30
Material Processing Unit	2	8	16	20	0.1381	2.21	0.4814	7.70	1.2068	19.31	0.0015	0.02	0.0511	0.817183	0.8172	0.7518	141	2259	45182	0.0125	0.20	3.99
Auger/Pole Setter	1	8	8	0														0	0			
Manlift	1	8	8	0														0	0			
Puller/Tensioner	1	8	8	0														0	0			
Concrete pump	1	8	8	20	0.0683	0.55	0.2873	2.30	0.4427	3.54	0.0006	0.005	0.0295	0.23596	0.2360	0.2171	50	397	7937	0.0062	0.05	0.99
Concrete breaker mounted on an excavator	2	8	16	0																		
Concrete crusher	1	8	8	0																		
Motor Grader	1	8	8	0																		
November Year 2014 Construction Equipment Total Emissions				**420**		**10.54**		**44.00**		**79.74**		**0.12**			**4.03**	**3.71**		**10,296**	**426,172**		**0.9514**	**#####**
December Year 2014 - Construction Equipments																						
Bob Cat	2	8	16	40	0.0406	0.65	0.2262	3.62	0.2369	3.79	0.0004	0.01	0.0152	0.243457	0.2435	0.2240	30	484	19377	0.0037	0.06	2.35
Bull Dozer	2	8	16	0														0	0			
Dump Truck	10	8	80	160	0.0095	0.76	0.0317	2.54	0.0595	4.76	0.0001	0.01	0.0027	0.215553	0.2156	0.1983	8	610	97592	0.0009	0.07	10.93
Generator	2	8	16	40	0.0702	1.12	0.2974	4.76	0.5083	8.13	0.0007	0.01	0.0296	0.473026	0.4730	0.4352	61	976	39035	0.0063	0.10	4.06
Water Truck	1	8	8	20	0.0820	0.66	0.3697	2.96	0.7168	5.73	0.0013	0.01	0.0296	0.236597	0.2366	0.2177	123	981	19621	0.0074	0.06	1.18
Wheel Loader	3	8	24	60	0.1122	2.69	0.4683	11.24	0.8620	20.69	0.0012	0.03	0.0461	1.106058	1.1061	1.0176	109	2607	156401	0.0101	0.24	14.58
Compactor	2	8	16	40	0.0050	0.08	0.0263	0.42	0.0314	0.50	0.0001	0.00	0.0012	0.019609	0.0196	0.0180	4	69	2761	0.0005	0.01	0.29
Excavator	2	8	16	20	0.1143	1.83	0.5289	8.46	0.8299	13.28	0.0013	0.02	0.0428	0.685559	0.6856	0.6307	120	1913	38266	0.0103	0.16	3.30
Material Processing Unit	2	8	16	20	0.1381	2.21	0.4814	7.70	1.2068	19.31	0.0015	0.02	0.0511	0.817183	0.8172	0.7518	141	2259	45182	0.0125	0.20	3.99
Auger/Pole Setter	1	8	8	0																		
Manlift	1	8	8	0																		
Puller/Tensioner	1	8	8	0																		
Concrete pump	1	8	8	20	0.0683	0.55	0.2873	2.30	0.4427	3.54	0.0006	0.00	0.0295	0.23596	0.2360	0.2171	50	397	7937	0.0062	0.05	0.99
Concrete breaker mounted on an excavator	2	8	16	0																		
Concrete crusher	1	8	8	0																		
Motor Grader	1	8	8	0																		
December Year 2014 Construction Equipment Total Emissions				**420**		**10.54**		**44.00**		**79.74**		**0.12**			**4.03**	**3.71**		**10,296**	**426,172**		**0.9514**	**#####**

LADWP Van Norman Complex Water Quality Improvement - Summary of Construction Emissions
Mitigation Measure for November 2012 NOx Emissions

TOTAL EMISSIONS	Emissions (ppd)					
	ROG	CO	NOX	SOX	PM10	PM2.5
Year 2012						
August	**12**	**47**	**93**	**0.1**	**5**	**4**
Construction Equipments	12	46	92	0.1	4.6	4.2
Worker Vehicle	0.04	1.26	0.13	0.01	0.02	0.02
Off-Site Trucks	0.02	0.13	0.26	0.0004	0.00	0.00
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
September	**12**	**49**	**93**	**0.1**	**5**	**4**
Construction Equipments	12	46	92	0.1	5	4
Worker Vehicle	0.07	2.63	0.27	0.02	0.04	0.04
Off-Site Trucks	0.01	0.04	0.09	0.0001	0.00	0.00
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
October	**17**	**68**	**83**	**0.2**	**21**	**13**
Construction Equipments	16	63	82	0.15	6.5	5.9
Worker Vehicle	0.12	4.27	1.09	0.03	0.16	0.15
Off-Site Trucks	0.01	0.04	0.09	0.0001	0.00	0.00
Demoltion						
Crushing						
Earth Moving					14.69	6.57
Grading					0.12	0.02
Excavation						
November	**17**	**68**	**89**	**0.2**	**22**	**13**
Construction Equipments	16	63	82	0.1	6.5	5.9
Worker Vehicle	0.12	4.27	7.05	0.03	0.33	0.31
Off-Site Trucks	0.01	0.04	0.09	0.0001	0.00	0.00
Demoltion						
Crushing						
Earth Moving					14.69	6.57
Grading					0.12	0.02
Excavation						
December	**17**	**68**	**83**	**0.2**	**21**	**13**
Construction Equipments	16	63	82	0.1	6.5	5.9
Worker Vehicle	0.12	4.27	0.30	0.02	0.04	0.04
Off-Site Trucks	0.01	0.04	0.09	0.0001	0.00	0.00
Demoltion						
Crushing						
Earth Moving					14.69	6.57
Grading					0.12	0.02
Excavation						
Year 2013						
January	**16**	**65**	**78**	**0.2**	**21**	**12**
Construction Equipments	15	61	77	0.1	5.9	5.4
Worker Vehicle	0.11	3.96	0.40	0.01	0.07	0.06
Off-Site Trucks	0.01	0.04	0.08	0.0001	0.00	0.00
Demoltion						
Crushing						
Earth Moving					14.69	6.57
Grading					0.12	0.02
Excavation						
February	**16**	**65**	**78**	**0.2**	**21**	**12**
Construction Equipments	15	61	77	0.1	6	5
Worker Vehicle	0.11	3.96	0.40	0.01	0.07	0.06
Off-Site Trucks	0.01	0.04	0.08	0.0001	0.00	0.00
Demoltion						
Crushing						
Earth Moving					14.69	6.57
Grading					0.12	0.02
Excavation						
March	**16**	**65**	**78**	**0.2**	**21**	**12**
Construction Equipments	15	61	77	0.1	5.9	5.4
Worker Vehicle	0.11	3.96	0.40	0.01	0.07	0.06
Off-Site Trucks	0.01	0.04	0.08	0.0001	0.00	0.00
Demoltion						
Crushing						
Earth Moving					14.69	6.57
Grading					0.12	0.02
Excavation						
April	**16**	**65**	**78**	**0.2**	**21**	**12**
Construction Equipments	15	61	77	0.1	5.9	5.4
Worker Vehicle	0.11	3.96	0.40	0.01	0.07	0.06
Off-Site Trucks	0.01	0.04	0.08	0.0001	0.00	0.00

	Demoltion						
	Crushing						
	Earth Moving					14.69	6.57
	Grading					0.12	0.02
	Excavation						
May		**16**	**65**	**78**	**0.2**	**21**	**12**
	Construction Equipments	15	61	77	0.1	5.9	5.4
	Worker Vehicle	0.11	3.96	0.40	0.01	0.07	0.06
	Off-Site Trucks	0.01	0.04	0.08	0.0001	0.00	0.00
	Demoltion						
	Crushing						
	Earth Moving					14.69	6.57
	Grading					0.12	0.02
	Excavation						
June		**4**	**18**	**26**	**0.04**	**2**	**1**
	Construction Equipments	4	15	25	0.04	1.5	1.4
	Worker Vehicle	0.07	2.43	0.25	0.004	0.04	0.04
	Off-Site Trucks	0.01	0.08	0.15	0.0003	0.01	0.01
	Demoltion						
	Crushing						
	Earth Moving						
	Grading						
	Excavation						
July		**4**	**20**	**28**	**0.04**	**2**	**2**
	Construction Equipments	4	17	28	0.04	2	2
	Worker Vehicle	0.07	2.43	0.25	0.004	0.04	0.04
	Off-Site Trucks	0.01	0.08	0.15	0.0003	0.01	0.01
	Demoltion						
	Crushing						
	Earth Moving						
	Grading						
	Excavation						
August		**4**	**20**	**44**	**0.1**	**2**	**2**
	Construction Equipments	4	17	44	0.1	2.1	1.9
	Worker Vehicle	0.07	2.43	0.25	0.004	0.04	0.04
	Off-Site Trucks	0.01	0.08	0.15	0.0003	0.01	0.01
	Demoltion						
	Crushing						
	Earth Moving						
	Grading						
	Excavation						

September	**3**	**17**	**26**	**0.04**	**1**	**1**
Construction Equipments	3	15	25	0.04	1.3	1.2
Worker Vehicle	0.07	2.43	0.25	0.004	0.04	0.04
Off-Site Trucks	0.01	0.08	0.15	0.0003	0.01	0.01
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
October	**16**	**65**	**82**	**0.2**	**29**	**15**
Construction Equipments	15	61	82	0.1	5.9	5.4
Worker Vehicle	0.10	3.70	0.38	0.01	0.06	0.06
Off-Site Trucks	0.01	0.04	0.08	0.0001	0.00	0.00
Demoltion						
Crushing						
Earth Moving					22.04	9.85
Grading					0.10	0.02
Excavation					1.30	0.05
November	**16**	**66**	**78**	**0.2**	**29**	**15**
Construction Equipments	15	61	77	0.1	5.9	5.4
Worker Vehicle	0.13	4.72	0.48	0.01	0.08	0.07
Off-Site Trucks	0.01	0.04	0.08	0.0001	0.00	0.00
Demoltion						
Crushing						
Earth Moving					22.04	9.85
Grading					0.10	0.02
Excavation					1.30	0.05
December	**16**	**69**	**101**	**0.2**	**14**	**9**
Construction Equipments	16	64	98	0.2	6.2	5.7
Worker Vehicle	0.13	4.72	0.48	0.01	0.08	0.07
Off-Site Trucks	0.14	0.92	1.83	0.003	0.08	0.07
Demoltion						
Crushing						
Earth Moving					7.35	3.28
Grading					0.10	0.02
Excavation						
Year 2014						
January	**11**	**50**	**82**	**0.1**	**12**	**7**
Construction Equipments	11	44	80	0.1	4.0	3.7
Worker Vehicle	0.13	5.09	0.51	0.01	0.09	0.09
Off-Site Trucks	0.13	0.82	1.62	0.003	0.07	0.07
Demoltion						
Crushing						
Earth Moving					7.35	3.28
Grading						
Excavation					0.87	0.03
February	**11**	**48**	**81**	**0.1**	**12**	**7**
Construction Equipments	11	44	80	0	4	4
Worker Vehicle	0.08	3.30	0.33	0.01	0.06	0.06
Off-Site Trucks	0.04	0.24	0.47	0.001	0.02	0.02
Demoltion						
Crushing						
Earth Moving					7.35	3.28
Grading						
Excavation					0.87	0.03
March	**10**	**44**	**77**	**0.1**	**12**	**5**
Construction Equipments	10	42	76	0.1	3.8	3.5
Worker Vehicle	0.07	2.73	0.28	0.005	0.05	0.05
Off-Site Trucks	0.01	0.03	0.07	0.0001	0.00	0.00
Demoltion						
Crushing						
Earth Moving					7.35	1.64
Grading						
Excavation					0.87	0.03
April	**11**	**48**	**82**	**0.1**	**4**	**4**
Construction Equipments	11	44	80	0.1	4.0	3.7
Worker Vehicle	0.08	2.97	0.30	0.01	0.05	0.05
Off-Site Trucks	0.13	0.82	1.62	0.003	0.07	0.07
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
May	**12**	**54**	**90**	**0.1**	**14**	**6**
Construction Equipments	12	49	88	0.1	4.6	4.2
Worker Vehicle	0.10	3.77	0.38	0.01	0.07	0.06
Off-Site Trucks	0.10	0.65	1.29	0.003	0.06	0.05
Demoltion					0.28	0.06
Crushing					9.01	1.87
Earth Moving						
Grading						
Excavation						
June	**11**	**51**	**85**	**0.1**	**9**	**5**
Construction Equipments	11	47	85	0.1	4.3	4.0

Worker Vehicle	0.09	3.68	0.37	0.01	0.07	0.06
Off-Site Trucks	0.01	0.07	0.14	0.0003	0.01	0.01
Demoltion					0.28	0.06
Crushing					4.27	0.89
Earth Moving						
Grading						
Excavation						
July	**11**	**51**	**85**	**0.1**	**5**	**4**
Construction Equipments	11	47	85	0.1	4	4
Worker Vehicle	0.09	3.68	0.37	0.01	0.07	0.06
Off-Site Trucks	0.01	0.07	0.14	0.0003	0.01	0.01
Demoltion						
Crushing					0.14	0.03
Earth Moving						
Grading						
Excavation						
August	**9**	**42**	**69**	**0.1**	**4**	**3**
Construction Equipments	9	36	66	0.1	3.3	3.1
Worker Vehicle	0.14	5.33	0.54	0.01	0.10	0.09
Off-Site Trucks	0.13	0.82	1.62	0.003	0.07	0.07
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
September	**12**	**56**	**90**	**0.1**	**13**	**6**
Construction Equipments	12	49	88	0.1	4.6	4.2
Worker Vehicle	0.14	5.56	0.56	0.01	0.10	0.09
Off-Site Trucks	0.11	0.68	1.35	0.003	0.06	0.05
Demoltion					0.10	0.02
Crushing					7.84	1.63
Earth Moving						
Grading						
Excavation						
October	**14**	**62**	**79**	**0.2**	**19**	**8**
Construction Equipments	14	58	78	0.1	5.3	4.8
Worker Vehicle	0.08	3.21	0.32	0.01	0.06	0.05
Off-Site Trucks	0.13	0.82	1.62	0.003	0.07	0.07
Demoltion						
Crushing					4.17	0.87
Earth Moving					7.35	1.64
Grading						
Excavation					2.43	0.06

November	**11**	**49**	**81**	**0.1**	**4**	**4**
Construction Equipments	11	44	80	0.1	4.0	3.7
Worker Vehicle	0.11	4.38	0.44	0.01	0.08	0.07
Off-Site Trucks	0.03	0.17	0.34	0.001	0.01	0.01
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
December	**11**	**48**	**80**	**0.1**	**4**	**4**
Construction Equipments	11	44	80	0.1	4.0	3.7
Worker Vehicle	0.09	3.68	0.37	0.01	0.07	0.06
Off-Site Trucks	0.01	0.03	0.07	0.0001	0.00	0.00
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
Year 2015						
January	**8**	**37**	**61**	**0.1**	**3**	**3**
Construction Equipments	8	35	61	0.1	3.0	2.8
Worker Vehicle	0.05	1.88	0.19	0.004	0.04	0.03
Off-Site Trucks	0.02	0.12	0.24	0.001	0.01	0.01
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
February	**8**	**38**	**63**	**0.1**	**3**	**3**
Construction Equipments	8	35	61	0.1	3	3
Worker Vehicle	0.07	2.76	0.27	0.01	0.06	0.05
Off-Site Trucks	0.12	0.73	1.43	0.003	0.06	0.06
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
March	**8**	**36**	**60**	**0.1**	**3**	**3**
Construction Equipments	8	33	58	0.1	2.8	2.6
Worker Vehicle	0.05	1.97	0.19	0.004	0.04	0.04
Off-Site Trucks	0.20	1.25	2.45	0.01	0.11	0.10
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
April	**8**	**36**	**60**	**0.1**	**3**	**3**
Construction Equipments	8	33	58	0.1	2.8	2.6
Worker Vehicle	0.05	1.97	0.19	0.004	0.04	0.04
Off-Site Trucks	0.20	1.25	2.45	0.01	0.11	0.10
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
May	**9**	**41**	**67**	**0.1**	**3**	**3**
Construction Equipments	9	37	66	0.1	3.2	2.9
Worker Vehicle	0.08	3.28	0.32	0.01	0.07	0.06
Off-Site Trucks	0.09	0.55	1.07	0.003	0.05	0.04
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
June	**9**	**40**	**67**	**0.1**	**3**	**3**
Construction Equipments	9	37	66	0.1	3.2	2.9
Worker Vehicle	0.05	1.88	0.19	0.004	0.04	0.03
Off-Site Trucks	0.06	0.36	0.72	0.002	0.03	0.03
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
July	**9**	**40**	**67**	**0.1**	**3**	**3**
Construction Equipments	9	37	66	0.1	3	3
Worker Vehicle	0.05	1.88	0.19	0.004	0.04	0.03
Off-Site Trucks	0.06	0.36	0.72	0.002	0.03	0.03
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						

August	**8**	**35**	**58**	**0.1**	**3**	**3**
Construction Equipments	8	33	58	0.1	2.8	2.6
Worker Vehicle	0.05	1.88	0.19	0.004	0.04	0.03
Off-Site Trucks	0.01	0.06	0.12	0.0003	0.01	0.00
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
September	**0.02**	**0.4**	**0.2**	**0.001**	**0.01**	**0.01**
Construction Equipments						
Worker Vehicle	0.01	0.35	0.04	0.001	0.01	0.01
Off-Site Trucks	0.01	0.06	0.12	0.0003	0.01	0.005
Demoltion						
Crushing						
Earth Moving						
Grading						
Excavation						
Regional Daily Maximum	**17**	**69**	**89**	**0.2**	**29**	**15**
THRESHOLD	**75**	**550**	**100**	**150**	**150**	**55**
IMPACT?	NO	NO	NO	NO	NO	NO
On-Site Daily Maximum /a/	**17**	**68**	**89**	**0.2**	**29**	**15**
THRESHOLD /b/	**n/a**	**2,438**	**212**	**n/a**	**35**	**8**
IMPACT?	n/a	NO	NO	n/a	NO	YES

/a/October and November 2012 has equivalent daily maximum regional VOC emissions.
December 2013 has the daily maximum regional CO emissions.
With mitigation measure November 2012 regional NOx emissions has reduced below the significance thresholds.
October and November 2013 has the daily maximum regional emissions for both PM10 and PM2.5.
/b/ The proposed project is assumed to be five acres. The closest residential receptor is approximately 50 meter from the project site.

Appendix D

Localized Construction Modeling

```
**
****************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 7.5.0
** Lakes Environmental Software Inc.
** Date: 3/1/2012
** File: J:\Projects\LADWP Van Norman Water Quality 2010-093\Air Quality\AERMOD\Van Norman PM2\Van Norman PM2.ADI
**
****************************************
**
**
****************************************
** AERMOD Control Pathway
****************************************
**
**
CO STARTING
   TITLEONE Van Norman Complex Water Improvement Project
   TITLETWO Localized Construction Emissions for PM2.5
   MODELOPT DFAULT CONC
   AVERTIME 24
   URBANOPT 9862049
   POLLUTID PM_2.5
   RUNORNOT RUN
   ERRORFIL "Van Norman PM2.err"
CO FINISHED
**
****************************************
** AERMOD Source Pathway
****************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION PAREA1       AREAPOLY   362529.604  3796289.794      391.000
** DESCRSRC Construction Equipments
   LOCATION PAREA2       AREAPOLY   362529.600  3796289.790      391.000
** DESCRSRC Fugitive Dust
** Source Parameters **
   SRCPARAM PAREA1       1.6356E-07     5.000         4
   AREAVERT PAREA1       362529.604 3796289.794 363502.229 3794972.544
   AREAVERT PAREA1       363833.086 3795188.519 362818.212 3796446.779
   SRCPARAM PAREA2       1.9756E-07     0.000         4     0.000
   AREAVERT PAREA2       362529.600 3796289.790 363502.229 3794963.378
   AREAVERT PAREA2       363833.086 3795188.519 362818.212 3796446.779
   URBANSRC PAREA1
   URBANSRC PAREA2
   SRCGROUP PM2.5    PAREA1 PAREA2
   SRCGROUP ALL
SO FINISHED
**
****************************************
** AERMOD Receptor Pathway
****************************************
**
**
RE STARTING
   INCLUDED "Van Norman PM2.rou"
RE FINISHED
**
****************************************
** AERMOD Meteorology Pathway
****************************************
**
**
ME STARTING
   SURFFILE "L:\Library & Reference\Wind Data\South Coast Air Basin\AERMOD Met Data\OLD Met Data\burk.SFC"
   PROFFILE "L:\Library & Reference\Wind Data\South Coast Air Basin\AERMOD Met Data\BURK2.PFL"
   SURFDATA 0 2005
   UAIRDATA 3190 2005
   PROFBASE 10.0 METERS
ME FINISHED
**
****************************************
** AERMOD Output Pathway
****************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 24 1ST
** Auto-Generated Plotfiles
   PLOTFILE 24 ALL 1ST "Van Norman PM2.AD\24H1GALL.PLT"
   PLOTFILE 24 PM2.5 1ST "Van Norman PM2.AD\24H1G001.PLT"
   SUMMFILE "Van Norman PM2.sum"
OU FINISHED

  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            1 Warning Message(s)
 A Total of            0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W396      74 MEOPEN:Met data from outdated version of AERMET, version:        06341

 ************************************
 *** SETUP Finishes Successfully ***
 ************************************

 *** AERMOD - VERSION  11353 ***   *** Van Norman Complex Water Improvement Project                          ***        03/01/12
                                   *** Localized Construction Emissions for PM2.5                            ***        10:20:27
                                                                                                                        PAGE   1
 **MODELOPTs:  RegDFAULT CONC                                              ELEV


                                          ***     MODEL SETUP OPTIONS SUMMARY       ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses URBAN Dispersion Algorithm for the SBL for     2 Source(s),
   for Total of    1 Urban Area(s):
   Urban Population =   9862049.0 ;  Urban Roughness Length =  1.000 m

 **Model Uses Regulatory DEFAULT Options:
         1. Stack-tip Downwash.
         2. Model Accounts for ELEVated Terrain Effects.
         3. Use Calms Processing Routine.
         4. Use Missing Data Processing Routine.
         5. No Exponential Decay for URBAN/Non-SO2.
         6. Urban Roughness Length of 1.0 Meter Assumed.

 **Model Assumes No FLAGPOLE Receptor Heights.

 **Model Calculates  1 Short Term Average(s) of:  24-HR
```

```
**This Run Includes:      2 Source(s);       2 Source Group(s); and      12 Receptor(s)

**The Model Assumes A Pollutant Type of:  PM_2.5

**Model Set To Continue RUNning After the Setup Testing.

**Output Options Selected:
        Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
        Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
        Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =    10.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.5 MB of RAM.

**Detailed Error/Message File:   Van Norman PM2.err
**File for Summary of Results:   Van Norman PM2.sum
*** AERMOD - VERSION  11353 ***   *** Van Norman Complex Water Improvement Project                         ***        03/01/12
                                  *** Localized Construction Emissions for PM2.5                           ***        10:20:27
                                                                                                                      PAGE   2
**MODELOPTs:  RegDFAULT CONC                                                     ELEV


                                              *** AREAPOLY SOURCE DATA ***

              NUMBER EMISSION RATE   LOCATION OF AREA  BASE     RELEASE  NUMBER     INIT.   URBAN  EMISSION RATE
  SOURCE       PART.  (GRAMS/SEC       X         Y      ELEV.    HEIGHT  OF VERTS.    SZ    SOURCE  SCALAR VARY
    ID         CATS.   /METER**2)   (METERS) (METERS) (METERS) (METERS)           (METERS)            BY
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

PAREA1           0   0.16356E-06  362529.6 3796289.8   391.0     5.00       4         0.00     YES
PAREA2           0   0.19756E-06  362529.6 3796289.8   391.0     0.00       4         0.00     YES
*** AERMOD - VERSION  11353 ***   *** Van Norman Complex Water Improvement Project                         ***        03/01/12
                                  *** Localized Construction Emissions for PM2.5                           ***        10:20:27
                                                                                                                      PAGE   3
**MODELOPTs:  RegDFAULT CONC                                                     ELEV


                                         *** SOURCE IDs DEFINING SOURCE GROUPS ***

GROUP ID                                              SOURCE IDs


 PM2.5     PAREA1      , PAREA2      ,


 ALL       PAREA1      , PAREA2      ,
*** AERMOD - VERSION  11353 ***   *** Van Norman Complex Water Improvement Project                         ***        03/01/12
                                  *** Localized Construction Emissions for PM2.5                           ***        10:20:27
                                                                                                                      PAGE   4
**MODELOPTs:  RegDFAULT CONC                                                     ELEV

                                              *** DISCRETE CARTESIAN RECEPTORS ***
                                            (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                            (METERS)

    ( 362445.8, 3796061.7,     379.2,     914.0,       0.0);        ( 362527.0, 3795961.4,     369.5,     914.0,       0.0);
    ( 362641.5, 3795827.8,     365.1,     792.0,       0.0);        ( 362746.6, 3795622.5,     365.0,     792.0,       0.0);
    ( 362899.3, 3795398.1,     365.0,     365.0,       0.0);        ( 363061.7, 3795226.2,     365.0,     365.0,       0.0);
    ( 363362.5, 3794863.4,     365.0,     365.0,       0.0);        ( 362309.4, 3796394.8,     420.5,     792.0,       0.0);
    ( 362264.9, 3796560.0,     417.8,     914.0,       0.0);        ( 362455.6, 3796291.1,     391.9,     914.0,       0.0);
    ( 362379.3, 3796369.3,     406.0,     914.0,       0.0);        ( 362398.1, 3796181.0,     390.1,     792.0,       0.0);
*** AERMOD - VERSION  11353 ***   *** Van Norman Complex Water Improvement Project                         ***        03/01/12
                                  *** Localized Construction Emissions for PM2.5                           ***        10:20:27
                                                                                                                      PAGE   5
**MODELOPTs:  RegDFAULT CONC                                                     ELEV


                                          *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                                           (1=YES; 0=NO)

          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1

              NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.


                                   *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                                         (METERS/SEC)

                                               1.54,   3.09,   5.14,   8.23,  10.80,
*** AERMOD - VERSION  11353 ***   *** Van Norman Complex Water Improvement Project                         ***        03/01/12
                                  *** Localized Construction Emissions for PM2.5                           ***        10:20:27
                                                                                                                      PAGE   6
**MODELOPTs:  RegDFAULT CONC                                                     ELEV

                                     *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

  Surface file:   L:\Library & Reference\Wind Data\South Coast Air Basin\AERMOD Met Data\OLD Met D   Met Version:  06341
  Profile file:   L:\Library & Reference\Wind Data\South Coast Air Basin\AERMOD Met Data\BURK2.PFL
  Surface format: FREE
  Profile format: FREE
  Surface station no.:        0                 Upper air station no.:     3190
                Name: UNKNOWN                                   Name: UNKNOWN
                Year:   2005                                    Year:   2005

First 24 hours of scalar data
YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
05 01 01   1 01   -1.5  0.047 -9.000 -9.000 -999.   24.      6.3  0.63   1.00   1.00    0.70  285.   12.2  279.9    8.5
05 01 01   1 02   -1.7  0.054 -9.000 -9.000 -999.   29.      8.3  0.63   1.00   1.00    0.80  278.   12.2  279.9    8.5
05 01 01   1 03   -2.1  0.054 -9.000 -9.000 -999.   29.      6.9  0.63   1.00   1.00    0.80  335.   12.2  279.2    8.5
05 01 01   1 04   -2.1  0.054 -9.000 -9.000 -999.   29.      6.9  0.63   1.00   1.00    0.80  291.   12.2  278.8    8.5
05 01 01   1 05   -2.2  0.061 -9.000 -9.000 -999.   34.      9.4  0.63   1.00   1.00    0.90  334.   12.2  278.1    8.5
05 01 01   1 06   -1.0  0.040 -9.000 -9.000 -999.   19.      6.2  0.63   1.00   1.00    0.60  309.   12.2  278.8    8.5
05 01 01   1 07   -1.3  0.047 -9.000 -9.000 -999.   24.      7.3  0.63   1.00   1.00    0.70  312.   12.2  278.8    8.5
05 01 01   1 08   -0.8  0.040 -9.000 -9.000 -999.   19.      7.3  0.63   1.00   0.56    0.60  256.   12.2  279.2    8.5
05 01 01   1 09   20.5  0.176  0.300  0.005   47.  170.    -24.2  0.63   1.00   0.33    1.00  298.   12.2  282.5    8.5
05 01 01   1 10   52.6  0.183  0.997  0.005  681.  180.    -10.6  0.63   1.00   0.25    0.90  103.   12.2  286.4    8.5
05 01 01   1 11  109.2  0.375  1.401  0.006  912.  528.    -43.6  0.63   1.00   0.22    2.30  136.   12.2  287.0    8.5
05 01 01   1 12   27.8  0.303  0.907  0.007  971.  385.    -90.0  0.63   1.00   0.21    2.00  152.   12.2  287.0    8.5
05 01 01   1 13   27.2  0.254  0.918  0.007 1027.  296.    -54.7  0.63   1.00   0.21    1.60  187.   12.2  285.9    8.5
05 01 01   1 14   22.9  0.227  0.887  0.008 1100.  249.    -45.9  0.63   1.00   0.22    1.40  156.   12.2  287.0    8.5
05 01 01   1 15   13.9  0.218  0.764  0.009 1155.  234.    -67.1  0.63   1.00   0.26    1.40  192.   12.2  286.4    8.5
05 01 01   1 16    1.5  0.234  0.368  0.009 1159.  260.   -743.8  0.63   1.00   0.34    1.70  188.   12.2  285.9    8.5
05 01 01   1 17   -3.7  0.088 -9.000 -9.000 -999.   77.     16.6  0.63   1.00   0.61    1.30  200.   12.2  285.4    8.5
05 01 01   1 18   -1.8  0.061 -9.000 -9.000 -999.   34.     11.0  0.63   1.00   1.00    0.90  162.   12.2  284.9    8.5
05 01 01   1 19   -1.1  0.047 -9.000 -9.000 -999.   24.      8.6  0.63   1.00   1.00    0.70  176.   12.2  284.9    8.5
05 01 01   1 20   -0.8  0.040 -9.000 -9.000 -999.   19.      7.3  0.63   1.00   1.00    0.60  210.   12.2  284.2    8.5
05 01 01   1 21   -0.8  0.040 -9.000 -9.000 -999.   19.      7.3  0.63   1.00   1.00    0.60  236.   12.2  284.2    8.5
05 01 01   1 22   -0.9  0.040 -9.000 -9.000 -999.   19.      6.3  0.63   1.00   1.00    0.60  272.   12.2  283.8    8.5
05 01 01   1 23   -0.9  0.040 -9.000 -9.000 -999.   19.      6.3  0.63   1.00   1.00    0.60  251.   12.2  283.1    8.5
05 01 01   1 24   -0.8  0.040 -9.000 -9.000 -999.   19.      7.3  0.63   1.00   1.00    0.60  301.   12.2  282.5    8.5
```

```
 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 05 01 01 01    8.5 0 -999.  -99.00   279.9   99.0  -99.00  -99.00
 05 01 01 01   12.2 1  285.    0.70  -999.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
 *** AERMOD - VERSION  11353 ***   *** Van Norman Complex Water Improvement Project                        ***        03/01/12
                                   *** Localized Construction Emissions for PM2.5                          ***        10:20:27
                                                                                                                     PAGE   7
 **MODELOPTs:  RegDFAULT CONC                                               ELEV


                             *** THE   1ST HIGHEST 24-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP:  PM2.5    ***
                                 INCLUDING SOURCE(S):     PAREA1      , PAREA2      ,

                                            *** DISCRETE CARTESIAN RECEPTOR POINTS ***

                                       ** CONC OF PM_2.5   IN MICROGRAMS/M**3                          **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)             X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
        362445.81   3796061.69        4.01247  (07111824)               362526.97   3795961.43        3.69766  (07111824)
        362641.55   3795827.75        3.49048  (07111824)               362746.58   3795622.46        2.59789  (07111824)
        362899.35   3795398.08        1.92703  (07111724)               363061.67   3795226.21        1.40305  (06020224)
        363362.45   3794863.37        1.55862  (07111324)               362309.41   3796394.77        3.98842  (07111824)
        362264.93   3796559.98        2.40038  (07111824)               362455.56   3796291.10        6.43832  (07111824)
        362379.31   3796369.35        5.05418  (07111824)               362398.07   3796181.04        4.57844  (07111824)
 *** AERMOD - VERSION  11353 ***   *** Van Norman Complex Water Improvement Project                        ***        03/01/12
                                   *** Localized Construction Emissions for PM2.5                          ***        10:20:27
                                                                                                                     PAGE   8
 **MODELOPTs:  RegDFAULT CONC                                               ELEV


                             *** THE   1ST HIGHEST 24-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     PAREA1      , PAREA2      ,

                                            *** DISCRETE CARTESIAN RECEPTOR POINTS ***

                                       ** CONC OF PM_2.5   IN MICROGRAMS/M**3                          **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)             X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
        362445.81   3796061.69        4.01247  (07111824)               362526.97   3795961.43        3.69766  (07111824)
        362641.55   3795827.75        3.49048  (07111824)               362746.58   3795622.46        2.59789  (07111824)
        362899.35   3795398.08        1.92703  (07111724)               363061.67   3795226.21        1.40305  (06020224)
        363362.45   3794863.37        1.55862  (07111324)               362309.41   3796394.77        3.98842  (07111824)
        362264.93   3796559.98        2.40038  (07111824)               362455.56   3796291.10        6.43832  (07111824)
        362379.31   3796369.35        5.05418  (07111824)               362398.07   3796181.04        4.57844  (07111824)
 *** AERMOD - VERSION  11353 ***   *** Van Norman Complex Water Improvement Project                        ***        03/01/12
                                   *** Localized Construction Emissions for PM2.5                          ***        10:20:27
                                                                                                                     PAGE   9
 **MODELOPTs:  RegDFAULT CONC                                               ELEV


                                               *** THE SUMMARY OF HIGHEST 24-HR RESULTS ***


                                   ** CONC OF PM_2.5   IN MICROGRAMS/M**3                          **

                                                         DATE                                                            NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)             RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)   OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

PM2.5    HIGH   1ST HIGH VALUE IS       6.43832  ON 07111824: AT (  362455.56,  3796291.10,    391.88,    914.00,     0.00)  DC

ALL      HIGH   1ST HIGH VALUE IS       6.43832  ON 07111824: AT (  362455.56,  3796291.10,    391.88,    914.00,     0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
 *** AERMOD - VERSION  11353 ***   *** Van Norman Complex Water Improvement Project                        ***        03/01/12
                                   *** Localized Construction Emissions for PM2.5                          ***        10:20:27
                                                                                                                     PAGE  10
 **MODELOPTs:  RegDFAULT CONC                                               ELEV


 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            1 Warning Message(s)
 A Total of          154 Informational Message(s)

 A Total of        26280 Hours Were Processed

 A Total of            0 Calm Hours Identified

 A Total of          154 Missing Hours Identified (  0.59 Percent)


   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
 ME W396      74 MEOPEN:Met data from outdated version of AERMET, version:       06341

   ************************************
   *** AERMOD Finishes Successfully ***
   ************************************
```

Appendix E

Greenhouse Gas Emissions

LADWP Van Norman Complex Water Quality Improvement -GHG Emissions

TOTAL EMISSIONS		Emissions (tonnes per year)	
		CO_2	CH_4
Year 2012			
August		**15**	**0**
	Construction Equipments	2	0.010
	Worker Vehicle	10.18	0.00
	Off-Site Trucks	2.21	0.00
Tonnes per year CO2e		14.83	0.20
Total tonnes/year			**15.03**
September		**239**	**0**
	Construction Equipments	186	0.02
	Worker Vehicle	51.26	0.00
	Off-Site Trucks	1.77	0.00
Total Emissions (tons)		238.81	0.44
Total tonnes/year			**239.25**
October		**240**	**0**
	Construction Equipments	9.72	0.04
	Worker Vehicle	228.21	0.00
	Off-Site Trucks	1.77	0.00
Total Emissions (tons)		239.70	0.79
Total tonnes/year			**240.49**
November		**180**	**0**
	Construction Equipments	9.72	0.04
	Worker Vehicle	169.04	0.00
	Off-Site Trucks	1.33	0.00
Total Emissions (tons)		180.09	0.79
Total tonnes/year			**180.87**
December		**58**	**0**
	Construction Equipments	9.72	0.04
	Worker Vehicle	47.71	0.00
	Off-Site Trucks	0.74	0.00
Total Emissions (tons)		58.17	0.79
Total tonnes/year			**58.96**
Year 2012 CO2e (tonnes per year)			**734.61**
Year 2013			
January		**375**	**0**
	Construction Equipments	340	0.035471787
	Worker Vehicle	34.74	0.00
	Off-Site Trucks	0.74	0.00
Total Emissions (tons)		375.03	0.74
Total tonnes/year			**375.78**
February		**376**	**0**
	Construction Equipments	340	0
	Worker Vehicle	34.74	0.00
	Off-Site Trucks	1.78	0.00
Total Emissions (tons)		376.07	0.74
Total tonnes/year			**376.81**
March		**424**	**0**
	Construction Equipments	339.55	0.04
	Worker Vehicle	83.37	0.00
	Off-Site Trucks	0.74	0.00
Total Emissions (tons)		423.66	0.74
Total tonnes/year			**424.41**
April		**425**	**0**
	Construction Equipments	339.55	0.04

	Worker Vehicle	83.37	0.00
	Off-Site Trucks	1.78	0.00
Total Emissions (tons)		424.70	0.74
Total tonnes/year			**425.44**
May		**404**	**0**
	Construction Equipments	339.55	0.04
	Worker Vehicle	62.53	0.00
	Off-Site Trucks	1.78	0.00
Total Emissions (tons)		403.86	0.74
Total tonnes/year			**404.60**
June		**73**	**0**
	Construction Equipments	19	0.00
	Worker Vehicle	51.21	0.00
	Off-Site Trucks	2.66	0.00
Total Emissions (tons)		73.35	0.04
Total tonnes/year			**73.39**
July		**44**	**0**
	Construction Equipments	21	0
	Worker Vehicle	21.34	0.00
	Off-Site Trucks	1.48	0.00
Total Emissions (tons)		43.68	7.80
Total tonnes/year			**51.48**
August		**67**	**0**
	Construction Equipments	44.07	0.00
	Worker Vehicle	21.34	0.00
	Off-Site Trucks	1.48	0.00
Total Emissions (tons)		66.89	0.06
Total tonnes/year			**66.95**
September		**77**	**0**
	Construction Equipments	21.99	0.00
	Worker Vehicle	51.21	0.00
	Off-Site Trucks	3.55	0.00
Total Emissions (tons)		76.76	0.04
Total tonnes/year			**76.80**
October		**346**	**0**
	Construction Equipments	266.51	0.03
	Worker Vehicle	78.01	0.00
	Off-Site Trucks	1.78	0.00
Total Emissions (tons)		346.29	0.58
Total tonnes/year			**346.87**
November		**86**	**0**
	Construction Equipments	9.71	0.03
	Worker Vehicle	74.58	0.00
	Off-Site Trucks	1.33	0.00
Total Emissions (tons)		85.63	0.58
Total tonnes/year			**86.21**
December		**127**	**0**
	Construction Equipments	9.71	0.03
	Worker Vehicle	99.44	0.00
	Off-Site Trucks	17.76	0.00
Total Emissions (tons)		126.91	0.55
Total tonnes/year			**127.47**
Year 2013 CO2e (tonnes per year)			**2,836.21**
Year 2014			
January		**298**	**0**
	Construction Equipments	232	0.022477084
	Worker Vehicle	48.09	0.00
	Off-Site Trucks	17.81	0.00
Total Emissions (tons)		298.12	0.47

Total tonnes/year			298.60
February		**276**	**0**
	Construction Equipments	232	0
	Worker Vehicle	31.23	0.00
	Off-Site Trucks	12.47	0.00
Total Emissions (tons)		275.92	0.47
Total tonnes/year			**276.39**
March		**272**	**0**
	Construction Equipments	209.12	0.02
	Worker Vehicle	61.88	0.00
	Off-Site Trucks	0.74	0.00
Total Emissions (tons)		271.74	0.43
Total tonnes/year			**272.17**
April		**268**	**0**
	Construction Equipments	157.57	0.02
	Worker Vehicle	67.24	0.00
	Off-Site Trucks	42.75	0.00
Total Emissions (tons)		267.55	0.32
Total tonnes/year			**267.88**

May		**305**	**0**
	Construction Equipments	206.42	0.02
	Worker Vehicle	64.25	0.00
	Off-Site Trucks	33.84	0.00
Total Emissions (tons)		304.52	0.42
Total tonnes/year			**304.93**
June		**269**	**0**
	Construction Equipments	183	0.02
	Worker Vehicle	83.30	0.00
	Off-Site Trucks	2.67	0.00
Total Emissions (tons)		269.29	0.37
Total tonnes/year			**269.66**
July		**174**	**0**
	Construction Equipments	139	0
	Worker Vehicle	34.71	0.00
	Off-Site Trucks	1.48	0.00
Total Emissions (tons)		174.08	0.28
Total tonnes/year			**174.36**
August		**226**	**0**
	Construction Equipments	157.57	0.02
	Worker Vehicle	50.32	0.00
	Off-Site Trucks	17.81	0.00
Total Emissions (tons)		225.71	0.32
Total tonnes/year			**226.03**
September		**339**	**0**
	Construction Equipments	177.72	0.02
	Worker Vehicle	126.13	0.00
	Off-Site Trucks	35.62	0.00
Total Emissions (tons)		339.48	0.36
Total tonnes/year			**339.84**
October		**349**	**0**
	Construction Equipments	233.24	0.02
	Worker Vehicle	72.59	0.00
	Off-Site Trucks	42.75	0.00
Total Emissions (tons)		348.57	0.48
Total tonnes/year			**349.05**
November		**294**	**0**
	Construction Equipments	213.09	0.02
	Worker Vehicle	74.52	0.00
	Off-Site Trucks	6.68	0.00
Total Emissions (tons)		294.29	0.44
Total tonnes/year			**294.72**
December		**297**	**0**
	Construction Equipments	213.09	0.02
	Worker Vehicle	83.30	0.00
	Off-Site Trucks	0.74	0.00
Total Emissions (tons)		297.13	0.44
Total tonnes/year			**297.56**
Year 2014 CO2e (tonnes per year)			**3,371.20**

Year 2015			
January		**134**	**0**
	Construction Equipments	112	0.010244145
	Worker Vehicle	19.07	0.00
	Off-Site Trucks	2.98	0.00
Total Emissions (tons)		133.69	0.22
Total tonnes/year			**133.90**
February		**228**	**0**
	Construction Equipments	158	0
	Worker Vehicle	27.99	0.00
	Off-Site Trucks	42.88	0.00
Total Emissions (tons)		228.43	0.30
Total tonnes/year			**228.73**
March		**188**	**0**
	Construction Equipments	109.65	0.01
	Worker Vehicle	48.14	0.00
	Off-Site Trucks	30.52	0.00
Total Emissions (tons)		188.32	0.21
Total tonnes/year			**188.53**
April		**231**	**0**
	Construction Equipments	109.65	0.01
	Worker Vehicle	48.14	0.00
	Off-Site Trucks	73.25	0.00
Total Emissions (tons)		231.04	0.21
Total tonnes/year			**231.25**
May		**269**	**0**
	Construction Equipments	176.42	0.02
	Worker Vehicle	60.18	0.00
	Off-Site Trucks	32.16	0.00
Total Emissions (tons)		268.75	0.34
Total tonnes/year			**269.09**
June		**182**	**0**
	Construction Equipments	120	0.01
	Worker Vehicle	45.77	0.00
	Off-Site Trucks	16.08	0.00
Total Emissions (tons)		182.13	0.23
Total tonnes/year			**182.36**
July		**148**	**0**
	Construction Equipments	120	0
	Worker Vehicle	19.07	0.00
	Off-Site Trucks	8.93	0.00
Total Emissions (tons)		148.28	0.23
Total tonnes/year			**148.51**
August		**130**	**0**
	Construction Equipments	109.65	0.01
	Worker Vehicle	19.07	0.00
	Off-Site Trucks	1.49	0.00
Total Emissions (tons)		130.21	0.21
Total tonnes/year			**130.43**
September		**12**	**0.00**
	Construction Equipments	0.00	0.00
	Worker Vehicle	8.33	0.00
	Off-Site Trucks	3.57	0.00
Total Emissions (tons)		11.90	0.00
Total tonnes/year			**11.90**
Year 2015 CO2e (tonnes per year)			**1,394.28**

Appendix F

SCAQMD Rule 403

(Adopted May 7, 1976) (Amended November 6, 1992)
(Amended July 9, 1993) (Amended February 14, 1997)
(Amended December 11, 1998)(Amended April 2, 2004)
(Amended June 3, 2005)

RULE 403. FUGITIVE DUST

(a) Purpose

The purpose of this Rule is to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (man-made) fugitive dust sources by requiring actions to prevent, reduce or mitigate fugitive dust emissions.

(b) Applicability

The provisions of this Rule shall apply to any activity or man-made condition capable of generating fugitive dust.

(c) Definitions

(1) ACTIVE OPERATIONS means any source capable of generating fugitive dust, including, but not limited to, earth-moving activities, construction/demolition activities, disturbed surface area, or heavy- and light-duty vehicular movement.

(2) AGGREGATE-RELATED PLANTS are defined as facilities that produce and / or mix sand and gravel and crushed stone.

(3) AGRICULTURAL HANDBOOK means the region-specific guidance document that has been approved by the Governing Board or hereafter approved by the Executive Officer and the U.S. EPA. For the South Coast Air Basin, the Board-approved region-specific guidance document is the Rule 403 Agricultural Handbook dated December 1998. For the Coachella Valley, the Board-approved region-specific guidance document is the Rule 403 Coachella Valley Agricultural Handbook dated April 2, 2004.

(4) ANEMOMETERS are devices used to measure wind speed and direction in accordance with the performance standards, and maintenance and calibration criteria as contained in the most recent Rule 403 Implementation Handbook.

(5) BEST AVAILABLE CONTROL MEASURES means fugitive dust control actions that are set forth in Table 1 of this Rule.

(6) BULK MATERIAL is sand, gravel, soil, aggregate material less than two inches in length or diameter, and other organic or inorganic particulate matter.

(7) CEMENT MANUFACTURING FACILITY is any facility that has a cement kiln at the facility.

(8) CHEMICAL STABILIZERS are any non-toxic chemical dust suppressant which must not be used if prohibited for use by the Regional Water Quality Control Boards, the California Air Resources Board, the U.S. Environmental Protection Agency (U.S. EPA), or any applicable law, rule or regulation. The chemical stabilizers shall meet any specifications, criteria, or tests required by any federal, state, or local water agency. Unless otherwise indicated, the use of a non-toxic chemical stabilizer shall be of sufficient concentration and application frequency to maintain a stabilized surface.

(9) COMMERCIAL POULTRY RANCH means any building, structure, enclosure, or premises where more than 100 fowl are kept or maintained for the primary purpose of producing eggs or meat for sale or other distribution.

(10) CONFINED ANIMAL FACILITY means a source or group of sources of air pollution at an agricultural source for the raising of 3,360 or more fowl or 50 or more animals, including but not limited to, any structure, building, installation, farm, corral, coop, feed storage area, milking parlor, or system for the collection, storage, or distribution of solid and liquid manure; if domesticated animals, including horses, sheep, goats, swine, beef cattle, rabbits, chickens, turkeys, or ducks are corralled, penned, or otherwise caused to remain in restricted areas for commercial agricultural purposes and feeding is by means other than grazing.

(11) CONSTRUCTION/DEMOLITION ACTIVITIES means any on-site mechanical activities conducted in preparation of, or related to, the building, alteration, rehabilitation, demolition or improvement of property, including, but not limited to the following activities: grading, excavation, loading, crushing, cutting, planing, shaping or ground breaking.

(12) CONTRACTOR means any person who has a contractual arrangement to conduct an active operation for another person.

(13) DAIRY FARM is an operation on a property, or set of properties that are contiguous or separated only by a public right-of-way, that raises cows or

produces milk from cows for the purpose of making a profit or for a livelihood. Heifer and calf farms are dairy farms.

(14) DISTURBED SURFACE AREA means a portion of the earth's surface which has been physically moved, uncovered, destabilized, or otherwise modified from its undisturbed natural soil condition, thereby increasing the potential for emission of fugitive dust. This definition excludes those areas which have:

(A) been restored to a natural state, such that the vegetative ground cover and soil characteristics are similar to adjacent or nearby natural conditions;

(B) been paved or otherwise covered by a permanent structure; or

(C) sustained a vegetative ground cover of at least 70 percent of the native cover for a particular area for at least 30 days.

(15) DUST SUPPRESSANTS are water, hygroscopic materials, or non-toxic chemical stabilizers used as a treatment material to reduce fugitive dust emissions.

(16) EARTH-MOVING ACTIVITIES means the use of any equipment for any activity where soil is being moved or uncovered, and shall include, but not be limited to the following: grading, earth cutting and filling operations, loading or unloading of dirt or bulk materials, adding to or removing from open storage piles of bulk materials, landfill operations, weed abatement through disking, and soil mulching.

(17) DUST CONTROL SUPERVISOR means a person with the authority to expeditiously employ sufficient dust mitigation measures to ensure compliance with all Rule 403 requirements at an active operation.

(18) FUGITIVE DUST means any solid particulate matter that becomes airborne, other than that emitted from an exhaust stack, directly or indirectly as a result of the activities of any person.

(19) HIGH WIND CONDITIONS means that instantaneous wind speeds exceed 25 miles per hour.

(20) INACTIVE DISTURBED SURFACE AREA means any disturbed surface area upon which active operations have not occurred or are not expected to occur for a period of 20 consecutive days.

(21) LARGE OPERATIONS means any active operations on property which contains 50 or more acres of disturbed surface area; or any earth-moving operation with a daily earth-moving or throughput volume of 3,850 cubic

meters (5,000 cubic yards) or more three times during the most recent 365-day period.

(22) OPEN STORAGE PILE is any accumulation of bulk material, which is not fully enclosed, covered or chemically stabilized, and which attains a height of three feet or more and a total surface area of 150 or more square feet.

(23) PARTICULATE MATTER means any material, except uncombined water, which exists in a finely divided form as a liquid or solid at standard conditions.

(24) PAVED ROAD means a public or private improved street, highway, alley, public way, or easement that is covered by typical roadway materials, but excluding access roadways that connect a facility with a public paved roadway and are not open to through traffic. Public paved roads are those open to public access and that are owned by any federal, state, county, municipal or any other governmental or quasi-governmental agencies. Private paved roads are any paved roads not defined as public.

(25) PM_{10} means particulate matter with an aerodynamic diameter smaller than or equal to 10 microns as measured by the applicable State and Federal reference test methods.

(26) PROPERTY LINE means the boundaries of an area in which either a person causing the emission or a person allowing the emission has the legal use or possession of the property. Where such property is divided into one or more sub-tenancies, the property line(s) shall refer to the boundaries dividing the areas of all sub-tenancies.

(27) RULE 403 IMPLEMENTATION HANDBOOK means a guidance document that has been approved by the Governing Board on April 2, 2004 or hereafter approved by the Executive Officer and the U.S. EPA.

(28) SERVICE ROADS are paved or unpaved roads that are used by one or more public agencies for inspection or maintenance of infrastructure and which are not typically used for construction-related activity.

(29) SIMULTANEOUS SAMPLING means the operation of two PM_{10} samplers in such a manner that one sampler is started within five minutes of the other, and each sampler is operated for a consecutive period which must be not less than 290 minutes and not more than 310 minutes.

(30) SOUTH COAST AIR BASIN means the non-desert portions of Los Angeles, Riverside, and San Bernardino counties and all of Orange

County as defined in California Code of Regulations, Title 17, Section 60104. The area is bounded on the west by the Pacific Ocean, on the north and east by the San Gabriel, San Bernardino, and San Jacinto Mountains, and on the south by the San Diego county line.

(31) STABILIZED SURFACE means any previously disturbed surface area or open storage pile which, through the application of dust suppressants, shows visual or other evidence of surface crusting and is resistant to wind-driven fugitive dust and is demonstrated to be stabilized. Stabilization can be demonstrated by one or more of the applicable test methods contained in the Rule 403 Implementation Handbook.

(32) TRACK-OUT means any bulk material that adheres to and agglomerates on the exterior surface of motor vehicles, haul trucks, and equipment (including tires) that have been released onto a paved road and can be removed by a vacuum sweeper or a broom sweeper under normal operating conditions.

(33) TYPICAL ROADWAY MATERIALS means concrete, asphaltic concrete, recycled asphalt, asphalt, or any other material of equivalent performance as determined by the Executive Officer, and the U.S. EPA.

(34) UNPAVED ROADS means any unsealed or unpaved roads, equipment paths, or travel ways that are not covered by typical roadway materials. Public unpaved roads are any unpaved roadway owned by federal, state, county, municipal or other governmental or quasi-governmental agencies. Private unpaved roads are all other unpaved roadways not defined as public.

(35) VISIBLE ROADWAY DUST means any sand, soil, dirt, or other solid particulate matter which is visible upon paved road surfaces and which can be removed by a vacuum sweeper or a broom sweeper under normal operating conditions.

(36) WIND-DRIVEN FUGITIVE DUST means visible emissions from any disturbed surface area which is generated by wind action alone.

(37) WIND GUST is the maximum instantaneous wind speed as measured by an anemometer.

(d) Requirements

(1) No person shall cause or allow the emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area such that:

(A) the dust remains visible in the atmosphere beyond the property line of the emission source; or

(B) the dust emission exceeds 20 percent opacity (as determined by the appropriate test method included in the Rule 403 Implementation Handbook), if the dust emission is the result of movement of a motorized vehicle.

(2) No person shall conduct active operations without utilizing the applicable best available control measures included in Table 1 of this Rule to minimize fugitive dust emissions from each fugitive dust source type within the active operation.

(3) No person shall cause or allow PM_{10} levels to exceed 50 micrograms per cubic meter when determined, by simultaneous sampling, as the difference between upwind and downwind samples collected on high-volume particulate matter samplers or other U.S. EPA-approved equivalent method for PM_{10} monitoring. If sampling is conducted, samplers shall be:

(A) Operated, maintained, and calibrated in accordance with 40 Code of Federal Regulations (CFR), Part 50, Appendix J, or appropriate U.S. EPA-published documents for U.S. EPA-approved equivalent method(s) for PM_{10}.

(B) Reasonably placed upwind and downwind of key activity areas and as close to the property line as feasible, such that other sources of fugitive dust between the sampler and the property line are minimized.

(4) No person shall allow track-out to extend 25 feet or more in cumulative length from the point of origin from an active operation. Notwithstanding the preceding, all track-out from an active operation shall be removed at the conclusion of each workday or evening shift.

(5) No person shall conduct an active operation with a disturbed surface area of five or more acres, or with a daily import or export of 100 cubic yards or more of bulk material without utilizing at least one of the measures listed in subparagraphs (d)(5)(A) through (d)(5)(E) at each vehicle egress from the site to a paved public road.

(A) Install a pad consisting of washed gravel (minimum-size: one inch) maintained in a clean condition to a depth of at least six inches and extending at least 30 feet wide and at least 50 feet long.

(B) Pave the surface extending at least 100 feet and at least 20 feet wide.

(C) Utilize a wheel shaker/wheel spreading device consisting of raised dividers (rails, pipe, or grates) at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle undercarriages before vehicles exit the site.

(D) Install and utilize a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the site.

(E) Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the actions specified in subparagraphs (d)(5)(A) through (d)(5)(D).

(6) Beginning January 1, 2006, any person who operates or authorizes the operation of a confined animal facility subject to this Rule shall implement the applicable conservation management practices specified in Table 4 of this Rule.

(e) Additional Requirements for Large Operations

(1) Any person who conducts or authorizes the conducting of a large operation subject to this Rule shall implement the applicable actions specified in Table 2 of this Rule at all times and shall implement the applicable actions specified in Table 3 of this Rule when the applicable performance standards can not be met through use of Table 2 actions; and shall:

(A) submit a fully executed Large Operation Notification (Form 403 N) to the Executive Officer within 7 days of qualifying as a large operation;

(B) include, as part of the notification, the name(s), address(es), and phone number(s) of the person(s) responsible for the submittal, and a description of the operation(s), including a map depicting the location of the site;

(C) maintain daily records to document the specific dust control actions taken, maintain such records for a period of not less than three years; and make such records available to the Executive Officer upon request;

(D) install and maintain project signage with project contact signage that meets the minimum standards of the Rule 403 Implementation Handbook, prior to initiating any earthmoving activities;

(E) identify a dust control supervisor that:

(i) is employed by or contracted with the property owner or developer;

(ii) is on the site or available on-site within 30 minutes during working hours;

(iii) has the authority to expeditiously employ sufficient dust mitigation measures to ensure compliance with all Rule requirements;

(iv) has completed the AQMD Fugitive Dust Control Class and has been issued a valid Certificate of Completion for the class; and

(F) notify the Executive Officer in writing within 30 days after the site no longer qualifies as a large operation as defined by paragraph (c)(18).

(2) Any Large Operation Notification submitted to the Executive Officer or AQMD-approved dust control plan shall be valid for a period of one year from the date of written acceptance by the Executive Officer. Any Large Operation Notification accepted pursuant to paragraph (e)(1), excluding those submitted by aggregate-related plants and cement manufacturing facilities must be resubmitted annually by the person who conducts or authorizes the conducting of a large operation, at least 30 days prior to the expiration date, or the submittal shall no longer be valid as of the expiration date. If all fugitive dust sources and corresponding control measures or special circumstances remain identical to those identified in the previously accepted submittal or in an AQMD-approved dust control plan, the resubmittal may be a simple statement of no-change (Form 403NC).

(f) Compliance Schedule

The newly amended provisions of this Rule shall become effective upon adoption. Pursuant to subdivision (e), any existing site that qualifies as a large operation will have 60 days from the date of Rule adoption to comply with the notification and recordkeeping requirements for large operations. Any Large Operation

Notification or AQMD-approved dust control plan which has been accepted prior to the date of adoption of these amendments shall remain in effect and the Large Operation Notification or AQMD-approved dust control plan annual resubmittal date shall be one year from adoption of this Rule amendment.

(g) Exemptions

(1) The provisions of this Rule shall not apply to:

(A) Dairy farms.

(B) Confined animal facilities provided that the combined disturbed surface area within one continuous property line is one acre or less.

(C) Agricultural vegetative crop operations provided that the combined disturbed surface area within one continuous property line and not separated by a paved public road is 10 acres or less.

(D) Agricultural vegetative crop operations within the South Coast Air Basin, whose combined disturbed surface area includes more than 10 acres provided that the person responsible for such operations:

(i) voluntarily implements the conservation management practices contained in the Rule 403 Agricultural Handbook;

(ii) completes and maintains the self-monitoring form documenting sufficient conservation management practices, as described in the Rule 403 Agricultural Handbook; and

(iii) makes the completed self-monitoring form available to the Executive Officer upon request.

(E) Agricultural vegetative crop operations outside the South Coast Air Basin whose combined disturbed surface area includes more than 10 acres provided that the person responsible for such operations:

(i) voluntarily implements the conservation management practices contained in the Rule 403 Coachella Valley Agricultural Handbook; and

(ii) completes and maintains the self-monitoring form documenting sufficient conservation management practices, as described in the Rule 403 Coachella Valley Agricultural Handbook; and

(iii) makes the completed self-monitoring form available to the Executive Officer upon request.

(F) Active operations conducted during emergency life-threatening situations, or in conjunction with any officially declared disaster or state of emergency.

(G) Active operations conducted by essential service utilities to provide electricity, natural gas, telephone, water and sewer during periods of service outages and emergency disruptions.

(H) Any contractor subsequent to the time the contract ends, provided that such contractor implemented the required control measures during the contractual period.

(I) Any grading contractor, for a phase of active operations, subsequent to the contractual completion of that phase of earth-moving activities, provided that the required control measures have been implemented during the entire phase of earth-moving activities, through and including five days after the final grading inspection.

(J) Weed abatement operations ordered by a county agricultural commissioner or any state, county, or municipal fire department, provided that:

(i) mowing, cutting or other similar process is used which maintains weed stubble at least three inches above the soil; and

(ii) any discing or similar operation which cuts into and disturbs the soil, where watering is used prior to initiation of these activities, and a determination is made by the agency issuing the weed abatement order that, due to fire hazard conditions, rocks, or other physical obstructions, it is not practical to meet the conditions specified in clause (g)(1)(H)(i). The provisions this clause shall not exempt the owner of any property from stabilizing, in accordance with paragraph (d)(2), disturbed surface areas which have been created as a result of the weed abatement actions.

(K) sandblasting operations.

(2) The provisions of paragraphs (d)(1) and (d)(3) shall not apply:

(A) When wind gusts exceed 25 miles per hour, provided that:

(i) The required Table 3 contingency measures in this Rule are implemented for each applicable fugitive dust source type, and;

(ii) records are maintained in accordance with subparagraph (e)(1)(C).

(B) To unpaved roads, provided such roads:

(i) are used solely for the maintenance of wind-generating equipment; or

(ii) are unpaved public alleys as defined in Rule 1186; or

(iii) are service roads that meet all of the following criteria:

(a) are less than 50 feet in width at all points along the road;

(b) are within 25 feet of the property line; and

(c) have a traffic volume less than 20 vehicle-trips per day.

(C) To any active operation, open storage pile, or disturbed surface area for which necessary fugitive dust preventive or mitigative actions are in conflict with the federal Endangered Species Act, as determined in writing by the State or federal agency responsible for making such determinations.

(3) The provisions of (d)(2) shall not apply to any aggregate-related plant or cement manufacturing facility that implements the applicable actions specified in Table 2 of this Rule at all times and shall implement the applicable actions specified in Table 3 of this Rule when the applicable performance standards of paragraphs (d)(1) and (d)(3) can not be met through use of Table 2 actions.

(4) The provisions of paragraphs (d)(1), (d)(2), and (d)(3) shall not apply to:

(A) Blasting operations which have been permitted by the California Division of Industrial Safety; and

(B) Motion picture, television, and video production activities when dust emissions are required for visual effects. In order to obtain this exemption, the Executive Officer must receive notification in writing at least 72 hours in advance of any such activity and no nuisance results from such activity.

(5) The provisions of paragraph (d)(3) shall not apply if the dust control actions, as specified in Table 2, are implemented on a routine basis for

each applicable fugitive dust source type. To qualify for this exemption, a person must maintain records in accordance with subparagraph (e)(1)(C).

(6) The provisions of paragraph (d)(4) shall not apply to earth coverings of public paved roadways where such coverings are approved by a local government agency for the protection of the roadway, and where such coverings are used as roadway crossings for haul vehicles provided that such roadway is closed to through traffic and visible roadway dust is removed within one day following the cessation of activities.

(7) The provisions of subdivision (e) shall not apply to:

(A) officially-designated public parks and recreational areas, including national parks, national monuments, national forests, state parks, state recreational areas, and county regional parks.

(B) any large operation which is required to submit a dust control plan to any city or county government which has adopted a District-approved dust control ordinance.

(C) any large operation subject to Rule 1158, which has an approved dust control plan pursuant to Rule 1158, provided that all sources of fugitive dust are included in the Rule 1158 plan.

(8) The provisions of subparagraph (e)(1)(A) through (e)(1)(C) shall not apply to any large operation with an AQMD-approved fugitive dust control plan provided that there is no change to the sources and controls as identified in the AQMD-approved fugitive dust control plan.

(h) Fees

Any person conducting active operations for which the Executive Officer conducts upwind/downwind monitoring for PM_{10} pursuant to paragraph (d)(3) shall be assessed applicable Ambient Air Analysis Fees pursuant to Rule 304.1. Applicable fees shall be waived for any facility which is exempted from paragraph (d)(3) or meets the requirements of paragraph (d)(3).

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Backfilling	01-1 Stabilize backfill material when not actively handling; and 01-2 Stabilize backfill material during handling; and 01-3 Stabilize soil at completion of activity.	✓ Mix backfill soil with water prior to moving ✓ Dedicate water truck or high capacity hose to backfilling equipment ✓ Empty loader bucket slowly so that no dust plumes are generated ✓ Minimize drop height from loader bucket
Clearing and grubbing	02-1 Maintain stability of soil through pre-watering of site prior to clearing and grubbing; and 02-2 Stabilize soil during clearing and grubbing activities; and 02-3 Stabilize soil immediately after clearing and grubbing activities.	✓ Maintain live perennial vegetation where possible ✓ Apply water in sufficient quantity to prevent generation of dust plumes
Clearing forms	03-1 Use water spray to clear forms; or 03-2 Use sweeping and water spray to clear forms; or 03-3 Use vacuum system to clear forms.	✓ Use of high pressure air to clear forms may cause exceedance of Rule requirements
Crushing	04-1 Stabilize surface soils prior to operation of support equipment; and 04-2 Stabilize material after crushing.	✓ Follow permit conditions for crushing equipment ✓ Pre-water material prior to loading into crusher ✓ Monitor crusher emissions opacity ✓ Apply water to crushed material to prevent dust plumes

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Cut and fill	05-1 Pre-water soils prior to cut and fill activities; and 05-2 Stabilize soil during and after cut and fill activities.	✓ For large sites, pre-water with sprinklers or water trucks and allow time for penetration ✓ Use water trucks/pulls to water soils to depth of cut prior to subsequent cuts
Demolition – mechanical/manual	06-1 Stabilize wind erodible surfaces to reduce dust; and 06-2 Stabilize surface soil where support equipment and vehicles will operate; and 06-3 Stabilize loose soil and demolition debris; and 06-4 Comply with AQMD Rule 1403.	✓ Apply water in sufficient quantities to prevent the generation of visible dust plumes
Disturbed soil	07-1 Stabilize disturbed soil throughout the construction site; and 07-2 Stabilize disturbed soil between structures	✓ Limit vehicular traffic and disturbances on soils where possible ✓ If interior block walls are planned, install as early as possible ✓ Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes
Earth-moving activities	08-1 Pre-apply water to depth of proposed cuts; and 08-2 Re-apply water as necessary to maintain soils in a damp condition and to ensure that visible emissions do not exceed 100 feet in any direction; and 08-3 Stabilize soils once earth-moving activities are complete.	✓ Grade each project phase separately, timed to coincide with construction phase ✓ Upwind fencing can prevent material movement on site ✓ Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Importing/exporting of bulk materials	09-1 Stabilize material while loading to reduce fugitive dust emissions; and 09-2 Maintain at least six inches of freeboard on haul vehicles; and 09-3 Stabilize material while transporting to reduce fugitive dust emissions; and 09-4 Stabilize material while unloading to reduce fugitive dust emissions; and 09-5 Comply with Vehicle Code Section 23114.	✓ Use tarps or other suitable enclosures on haul trucks ✓ Check belly-dump truck seals regularly and remove any trapped rocks to prevent spillage ✓ Comply with track-out prevention/mitigation requirements ✓ Provide water while loading and unloading to reduce visible dust plumes
Landscaping	10-1 Stabilize soils, materials, slopes	✓ Apply water to materials to stabilize ✓ Maintain materials in a crusted condition ✓ Maintain effective cover over materials ✓ Stabilize sloping surfaces using soil binders until vegetation or ground cover can effectively stabilize the slopes ✓ Hydroseed prior to rain season
Road shoulder maintenance	11-1 Apply water to unpaved shoulders prior to clearing; and 11-2 Apply chemical dust suppressants and/or washed gravel to maintain a stabilized surface after completing road shoulder maintenance.	✓ Installation of curbing and/or paving of road shoulders can reduce recurring maintenance costs ✓ Use of chemical dust suppressants can inhibit vegetation growth and reduce future road shoulder maintenance costs

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	**Control Measure**	**Guidance**
Screening	12-1 Pre-water material prior to screening; and 12-2 Limit fugitive dust emissions to opacity and plume length standards; and 12-3 Stabilize material immediately after screening.	✓ Dedicate water truck or high capacity hose to screening operation ✓ Drop material through the screen slowly and minimize drop height ✓ Install wind barrier with a porosity of no more than 50% upwind of screen to the height of the drop point
Staging areas	13-1 Stabilize staging areas during use; and 13-2 Stabilize staging area soils at project completion.	✓ Limit size of staging area ✓ Limit vehicle speeds to 15 miles per hour ✓ Limit number and size of staging area entrances/exists
Stockpiles/ Bulk Material Handling	14-1 Stabilize stockpiled materials. 14-2 Stockpiles within 100 yards of off-site occupied buildings must not be greater than eight feet in height; or must have a road bladed to the top to allow water truck access or must have an operational water irrigation system that is capable of complete stockpile coverage.	✓ Add or remove material from the downwind portion of the storage pile ✓ Maintain storage piles to avoid steep sides or faces

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Traffic areas for construction activities	15-1 Stabilize all off-road traffic and parking areas; and 15-2 Stabilize all haul routes; and 15-3 Direct construction traffic over established haul routes.	✓ Apply gravel/paving to all haul routes as soon as possible to all future roadway areas ✓ Barriers can be used to ensure vehicles are only used on established parking areas/haul routes
Trenching	16-1 Stabilize surface soils where trencher or excavator and support equipment will operate; and 16-2 Stabilize soils at the completion of trenching activities.	✓ Pre-watering of soils prior to trenching is an effective preventive measure. For deep trenching activities, pre-trench to 18 inches soak soils via the pre-trench and resuming trenching ✓ Washing mud and soils from equipment at the conclusion of trenching activities can prevent crusting and drying of soil on equipment
Truck loading	17-1 Pre-water material prior to loading; and 17-2 Ensure that freeboard exceeds six inches (CVC 23114)	✓ Empty loader bucket such that no visible dust plumes are created ✓ Ensure that the loader bucket is close to the truck to minimize drop height while loading
Turf Overseeding	18-1 Apply sufficient water immediately prior to conducting turf vacuuming activities to meet opacity and plume length standards; and 18-2 Cover haul vehicles prior to exiting the site.	✓ Haul waste material immediately off-site

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Unpaved roads/parking lots	19-1 Stabilize soils to meet the applicable performance standards; and 19-2 Limit vehicular travel to established unpaved roads (haul routes) and unpaved parking lots.	✓ Restricting vehicular access to established unpaved travel paths and parking lots can reduce stabilization requirements
Vacant land	20-1 In instances where vacant lots are 0.10 acre or larger and have a cumulative area of 500 square feet or more that are driven over and/or used by motor vehicles and/or off-road vehicles, prevent motor vehicle and/or off-road vehicle trespassing, parking and/or access by installing barriers, curbs, fences, gates, posts, signs, shrubs, trees or other effective control measures.	

Table 2
DUST CONTROL MEASURES FOR LARGE OPERATIONS

FUGITIVE DUST SOURCE CATEGORY		CONTROL ACTIONS
Earth-moving (except construction cutting and filling areas, and mining operations)	(1a)	Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the Executive Officer, the California Air Resources Board, and the U.S. EPA. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations each subsequent four-hour period of active operations; OR
	(1a-1)	For any earth-moving which is more than 100 feet from all property lines, conduct watering as necessary to prevent visible dust emissions from exceeding 100 feet in length in any direction.
Earth-moving: Construction fill areas:	(1b)	Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the Executive Officer, the California Air Resources Board, and the U.S. EPA. For areas which have an optimum moisture content for compaction of less than 12 percent, as determined by ASTM Method 1557 or other equivalent method approved by the Executive Officer and the California Air Resources Board and the U.S. EPA, complete the compaction process as expeditiously as possible after achieving at least 70 percent of the optimum soil moisture content. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations during each subsequent four-hour period of active operations.

Table 2 (Continued)

FUGITIVE DUST SOURCE CATEGORY		**CONTROL ACTIONS**
Earth-moving: Construction cut areas and mining operations:	(1c)	Conduct watering as necessary to prevent visible emissions from extending more than 100 feet beyond the active cut or mining area unless the area is inaccessible to watering vehicles due to slope conditions or other safety factors.
Disturbed surface areas (except completed grading areas)	(2a/b)	Apply dust suppression in sufficient quantity and frequency to maintain a stabilized surface. Any areas which cannot be stabilized, as evidenced by wind driven fugitive dust must have an application of water at least twice per day to at least 80 percent of the unstabilized area.
Disturbed surface areas: Completed grading areas	(2c)	Apply chemical stabilizers within five working days of grading completion; OR
	(2d)	Take actions (3a) or (3c) specified for inactive disturbed surface areas.
Inactive disturbed surface areas	(3a)	Apply water to at least 80 percent of all inactive disturbed surface areas on a daily basis when there is evidence of wind driven fugitive dust, excluding any areas which are inaccessible to watering vehicles due to excessive slope or other safety conditions; OR
	(3b)	Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface; OR
	(3c)	Establish a vegetative ground cover within 21 days after active operations have ceased. Ground cover must be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting, and at all times thereafter; OR
	(3d)	Utilize any combination of control actions (3a), (3b), and (3c) such that, in total, these actions apply to all inactive disturbed surface areas.

Table 2 (Continued)

FUGITIVE DUST SOURCE CATEGORY		**CONTROL ACTIONS**
Unpaved Roads	(4a)	Water all roads used for any vehicular traffic at least once per every two hours of active operations [3 times per normal 8 hour work day]; OR
	(4b)	Water all roads used for any vehicular traffic once daily and restrict vehicle speeds to 15 miles per hour; OR
	(4c)	Apply a chemical stabilizer to all unpaved road surfaces in sufficient quantity and frequency to maintain a stabilized surface.
Open storage piles	(5a)	Apply chemical stabilizers; OR
	(5b)	Apply water to at least 80 percent of the surface area of all open storage piles on a daily basis when there is evidence of wind driven fugitive dust; OR
	(5c)	Install temporary coverings; OR
	(5d)	Install a three-sided enclosure with walls with no more than 50 percent porosity which extend, at a minimum, to the top of the pile. This option may only be used at aggregate-related plants or at cement manufacturing facilities.
All Categories	(6a)	Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified in Table 2 may be used.

TABLE 3
CONTINGENCY CONTROL MEASURES FOR LARGE OPERATIONS

FUGITIVE DUST SOURCE CATEGORY		CONTROL MEASURES
Earth-moving	(1A)	Cease all active operations; OR
	(2A)	Apply water to soil not more than 15 minutes prior to moving such soil.
Disturbed surface areas	(0B)	On the last day of active operations prior to a weekend, holiday, or any other period when active operations will not occur for not more than four consecutive days: apply water with a mixture of chemical stabilizer diluted to not less than 1/20 of the concentration required to maintain a stabilized surface for a period of six months; OR
	(1B)	Apply chemical stabilizers prior to wind event; OR
	(2B)	Apply water to all unstabilized disturbed areas 3 times per day. If there is any evidence of wind driven fugitive dust, watering frequency is increased to a minimum of four times per day; OR
	(3B)	Take the actions specified in Table 2, Item (3c); OR
	(4B)	Utilize any combination of control actions (1B), (2B), and (3B) such that, in total, these actions apply to all disturbed surface areas.
Unpaved roads	(1C)	Apply chemical stabilizers prior to wind event; OR
	(2C)	Apply water twice per hour during active operation; OR
	(3C)	Stop all vehicular traffic.
Open storage piles	(1D)	Apply water twice per hour; OR
	(2D)	Install temporary coverings.
Paved road track-out	(1E)	Cover all haul vehicles; OR
	(2E)	Comply with the vehicle freeboard requirements of Section 23114 of the California Vehicle Code for both public and private roads.
All Categories	(1F)	Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified in Table 3 may be used.

Table 4
(Conservation Management Practices for Confined Animal Facilities)

SOURCE CATEGORY	CONSERVATION MANAGEMENT PRACTICES
Manure Handling **(Only applicable to Commercial Poultry Ranches)**	(1a) Cover manure prior to removing material off-site; AND (1b) Spread the manure before 11:00 AM and when wind conditions are less than 25 miles per hour; AND (1c) Utilize coning and drying manure management by removing manure at laying hen houses at least twice per year and maintain a base of no less than 6 inches of dry manure after clean out; or in lieu of complying with conservation management practice (1c), comply with conservation management practice (1d). (1d) Utilize frequent manure removal by removing the manure from laying hen houses at least every seven days and immediately thin bed dry the material.
Feedstock Handling	(2a) Utilize a sock or boot on the feed truck auger when filling feed storage bins.
Disturbed Surfaces	(3a) Maintain at least 70 percent vegetative cover on vacant portions of the facility; OR (3b) Utilize conservation tillage practices to manage the amount, orientation and distribution of crop and other plant residues on the soil surface year-round, while growing crops (if applicable) in narrow slots or tilled strips; OR (3c) Apply dust suppressants in sufficient concentrations and frequencies to maintain a stabilized surface.
Unpaved Roads	(4a) Restrict access to private unpaved roads either through signage or physical access restrictions and control vehicular speeds to no more than 15 miles per hour through worker notifications, signage, or any other necessary means; OR (4b) Cover frequently traveled unpaved roads with low silt content material (i.e., asphalt, concrete, recycled road base, or gravel to a minimum depth of four inches); OR (4c) Treat unpaved roads with water, mulch, chemical dust suppressants or other cover to maintain a stabilized surface.
Equipment Parking Areas	(5a) Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface; OR (5b) Apply material with low silt content (i.e., asphalt, concrete, recycled road base, or gravel to a depth of four inches).

APPENDIX C

BIOLOGICAL RECONNAISSANCE SURVEY REPORT

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Memorandum

Date:	March 13, 2012
To:	Ms. Nancy Chung – LADWP Project Manager
From:	Ms. Donna Germann – AECOM, Biologist
	Ms. Jeanette Duffels – AECOM, Biologist
Subject:	Biological Reconnaissance Survey Report
	Los Angeles Reservoir Water Quality Improvement Project

Distribution:	Ms. Melissa Hatcher – AECOM, Senior Project Manager

INTRODUCTION

The Los Angeles Department of Water and Power (LADWP) proposes to make improvements to Bull Creek Extension Channel (BCEC), a concrete-lined storm water conveyance and flood control facility located within the Van Norman Complex (VNC) in the Sylmar area of Los Angeles. This project is being undertaken to comply with updated drinking water quality regulations promulgated by the United States Environmental Protection Agency (EPA) and updated requirements related to maintaining the integrity of several VNC water impoundment dams that fall under the jurisdiction of the State of California Division of Safety of Dams (DSOD).

In 2006, the EPA promulgated the final Long-Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) intended to reduce the incidence of disease associated with certain pathogenic microorganisms that have the potential to exist in drinking water. This rule limits the presence of certain protozoan pathogens, especially Cryptosporidium, which cause gastrointestinal illness that can be severe or fatal for sensitive groups such as the elderly, infants, or those with compromised immune systems. The water treatment system currently used at the Los Angeles Aqueduct Filtration Plant at the VNC adequately destroys and/or removes Cryptosporidium protozoa during treatment. However, regardless of this primary treatment, the LT2ESWTR also includes provisions to ensure that uncovered treated water storage facilities, such as Los Angeles Reservoir, are managed to maintain the microbial protection of the treated water they receive before the water is discharged from the storage facilities and enters the distribution system. An important aim of the LT2ESWTR is to limit contamination of drinking water supplies by pathogenic microorganisms potentially contained in surface storm water runoff.

To avoid such contamination in accordance with the LT2ESWTR, the proposed BCEC improvements would remove the Lower Debris Basin as a receptacle for overflow from the channel, thereby eliminating the potential for contaminated storm water to enter Los Angeles Reservoir from the basin via the interconnecting spillway. Instead of entering the Lower Debris Basin, excess storm water flows from BCEC would be rerouted downstream to a new diversion structure that would direct the water into the Lower San Fernando Storm Water Detention Basin, which has a substantially larger storage capacity than the Lower Debris Basin. Typical storm flows not exceeding the capacity of BCEC would continue to be discharged through the channel past the proposed diversion structure and off site, similar to the existing storm drainage flows.

This report is intended to describe the existing biological resources of the project site, particularly in the areas of disturbance, and provide recommendations for further action. This report supplements the Biological Resources Assessment (dated October 8, 2009, Revised February 18, 2010) prepared by Michael Brandman Associates (MBA) in support of the Van Norman Complex Water Quality Improvement Project. The Biological Resources Assessment describes conditions present in spring of 2009 and covers a project area larger than the revised project area. AECOM biologists (Donna Germann, Jeanette Duffels) revisited the site on April 28, 2011 and conducted a reconnaissance survey to analyze habitat conditions on site and assure that the 2009 mapping was still valid, and that no major landscape alterations had occurred in the interim. A second survey was conducted on October 7, 2011. This report provides recommendations for mitigation.

PROJECT LOCATION

The VNC is located in Los Angeles County, within the San Fernando Mountain California 7.5-minute United States Geological Survey (USGS) topographic quadrangle. Specifically, VNC is located at 13101 Sepulveda Boulevard in Granada Hills – Knollwood Community of the City of Los Angeles. The VNC consists of approximately 1,340 acres along the west side of Interstate Highway 5 (Golden State Freeway, I-5) and Interstate Highway 405 (San Diego Freeway, I-405). The LADWP-owned property that has been largely cleared and is currently occupied by facilities devoted primarily to the production, storage, and/or transmission of drinking water and electricity or to regional flood control functions. These functions impart a generally industrial character to the property. Other facilities located within the VNC include a Los Angeles Police Department training facility (which includes a driver training track and an indoor shooting range), a Los Angeles Fire Department structure fire training facility, a large green waste recycling facility, and various vehicle storage and construction materials supply yards. Other than an approximately 12-acre area in the southwestern corner of the VNC (along Rinaldi Street) occupied by public gardens and youth baseball fields, the property is inaccessible by the public. The perimeter of the complex is fenced or walled, and 24-hour manned security is provided.

GENERAL SITE DESCRIPTION

The VNC is surrounded by single- and multi-family residential uses along Rinaldi Street to the south, single-family residential uses along Woodley Avenue to the west, the Metropolitan Water District Jensen Water Filtration Plant to the northwest, and the Golden State and San Diego Freeways to the east. Various residential, commercial, and institutional uses lie to the east of the freeways.

Primary flood control facilities at the VNC include the Lower San Fernando Storm Water Detention Basin, which occupies a large portion of the VNC south of the Los Angeles Reservoir. It is confined by the Lower San Fernando Dam, which was the original impoundment dam for the Lower Van Norman Reservoir. A large drain outlet that conveys collected storm water beneath the Lower San Fernando Dam and into the local storm drainage system is located at the southern end of the detention basin. The basin serves as a regional flood control facility capable of accommodating flows from a probable maximum precipitation event in the surrounding area. Several smaller debris basins are located within the VNC, including the Upper and Middle Debris Basins, located along the northwestern perimeter of the property; the Yarnell Debris Basin, located north of the Los Angeles Reservoir; and the Lower Debris Basin, located adjacent to Los Angeles Reservoir to the west. Two large concrete storm water channels located within the VNC convey water through the property and to and from the various on-site debris and detention basins. The East Storm Channel conveys storm water from the area south of the filtration plant along the eastern edge of the Los Angeles Reservoir and discharges into the Lower San Fernando Storm Water Detention Basin. BCEC conveys storm water along the western side of the VNC from the Middle Debris Basin, through the Lower Debris Basin, and eventually off site at the southwest corner of the property.

AECOM

LITERATURE REVIEW

Soils

As discussed in the Biological Resources Assessment, the site contains 12 soil mapping units belonging to the Soper, Saugus, Balcom, Gazos, Capistrano, Chualar, Cropley, and Xerorthents soil series, as well as three mapping units associated with water, dam, and debris basin features (MBA 2010). As there have been no major landscape alterations since the previous literature review in 2009, no changes to the soils analysis are expected.

Sensitive Species

Sensitive plants include those listed as threatened or endangered, proposed for listing, or candidates for listing by the U.S. Fish and Wildlife Service (USFWS) and/or California Department of Fish and Game (CDFG) (2011a) or those listed by the California Native Plant Society (CNPS) (2011). Sensitive wildlife species are those listed as threatened or endangered, proposed for listing, or candidates for listing by the USFWS and/or CDFG (2011b), or considered special status by CDFG (2011c).

Literature reviews were conducted by MBA and AECOM to determine sensitive plant species, animal species, and vegetation communities with the potential to occur in the project site based upon its geographic proximity to reported occurrences. The California Natural Diversity DataBase (CNDDB) RareFind 3 program (CDFG 2011d) and the CNPS *Inventory of Rare and Endangered Plants* (2011) were reviewed for any information on known occurrences of sensitive species and communities within a 10-mile radius of the project site that included San Fernando, Oat Mountain, Simi Valley East, San Fernando, Mint Canyon, Agua Dulce, Newhall, Canoga Park, Calabasas, Sunland, Burbank, and Van Nuys USGS 7.5-minute topographic quadrangle maps. The CNDDB GIS database (2011) was also used together with ArcGIS software, to confirm the locations of CNDDB records (CDFG 2011e).

Sensitive Plants

A more recent query of the CNDDB (2011) identified 16 sensitive plant species as having the potential to occur in the vicinity (i.e., within 10 miles) of the project based on geographic proximity to known occurrences: Nevin's barberry (*Berberis nevinii*), slender mariposa-lily (*Calochortus clavatus* var. *gracilis*), southern tarplant (*Centromadia parryi* ssp. *australis*), San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*), Plummer's mariposa-lily (*Calochortus plummerae*), Santa Susana tarplant (*Deinandra minthornii*), slender-horned spineflower (*Dodecahema leptoceras*), many-stemmed dudleya (*Dudleya multicaulis*), Palmer's grapplinghook (*Harpagonella palmeri*), Coulter's goldfields (*Lastneia glabrata* ssp. coulteri), Davidson's bush-mallow (*Malacothamnus davidsonii*), Piute Maountains naverretia (*Navarretia setiloba*), short-joint beavertail (*Opuntia basilaris* var. *brachyclada),* California Orcutt grass (*Orcuttia californica*), and Greata's aster (*Symphyotrichum greatae*) (CDFG 2011d).

Sensitivity status and general habitat requirements for the species identified during the literature review are provided in Attachment A.

Of these 16 plant species, 9 have been determined to have some likelihood to occur in the project site based on habitat requirements: Nevin's barberry, slender mariposa-lily, San Fernando Valley spineflower, Santa Susana tarplant, slender-horned spineflower, many-stemmed dudleya, Palmer's grapplinghook, Davidson's bush-mallow. In 2009, four sensitive plant species, Nevin's barberry, San Fernando Valley spineflower, slender mariposa lily, and Davidson's bush mallow, were determined to have some likelihood to occur in potentially affected areas of the project site (MBA 2010). Focused surveys for these four species were conducted by MBA in spring of 2009 in suitable habitat areas during their known blooming periods. Based on the surveys, it was determined that these species did not occur within the area of potential impact. No special status species were detected during these surveys.

Sensitive Wildlife

A recent query of the CNDDB (2011) identified 28 sensitive wildlife as having the potential to occur in the vicinity (i.e., within 10 miles) of the project site based on its geographic proximity to known occurrences: monarch butterfly (*Danaus plexippus*), arroyo chub (*Gila orcuttii*), Santa Ana sucker (*Catostomus santaanae*), Santa Ana speckled dace (*Rhinichthys osculus*), unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*), Sierra Madre yellow-legged frog (*Rana muscosa*), coastal western whiptail (*Aspidoscelis tigris stejnegeri*), two-striped garter snake (*Thamnophis hammondii*), silvery legless lizard (*Anniella pulchra pulchra*), southwestern pond turtle (*Emys marmorata*), coast (San Diego) horned lizard [*Phrynosoma coronatum (blainvillii population)*], western spadefoot toad [*Spea (Scaphiopus) hammondii*], Cooper's hawk (*Accipiter cooperii*), tricolored blackbird (*Agelaius tricolor*), southern California rufous crowned sparrow (*Aimophila ruficeps canescens*), burrowing owl (*Athene cunicularia*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), coastal California gnatcatcher (*Polioptila californica californica*), least Bell's vireo (*Vireo bellii pusillus*), pallid bat (*Antrozous pallidus*), western mastiff bat (*Eumops perotis californicus*), California leaf-nose bat (*Macrotus californicus*), silver-haired bat (L*asionycteris noctivagans*), hoary bat (*Lasiurus cinereus*), San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), San Diego desert woodrat (*Neotoma lepida intermedia*), southern grasshopper mouse (*Onychomys torridus Ramona*), and Los Angeles pocket mouse (*Perognathus longimembris brevinasus*) (CDFG 2011d).

Sensitivity status, general habitat requirements, and probability of occurrence within the project site for the species identified during the literature review are provided in Attachment A.

In 2009, MBA determined two special status wildlife species, coastal California gnatcatcher and least Bell's vireo, to have some likelihood to occur in potentially affected areas of the project site. Results of a recent query of the CNDDB (2011) and current habitat conditions within the project site are consistent with this determination (CDFG 2011d). No other special status wildlife species are likely to occur on-site, and are therefore excluded from further discussion.

The coastal California gnatcatcher is listed as a federally threatened species and California State species of special concern. It is a species with restricted habitat requirements, being an obligate resident of coastal sage scrub habitats that are dominated by coastal sagebrush and generally occur below 750 feet in elevation in coastal regions and below 1,500 feet inland (Atwood and Boisinger, 1992). The coastal California gnatcatcher ranges from Ventura County south to San Diego County and northern Baja California. It is less common in coastal sage scrub with a high percentage of tall shrubs such as laurel sumac, preferring as habitat more low-growing vegetation. Coastal California gnatcatchers breed between mid-February and the end of August, with the peak of activity from mid-March to mid-May. Declines are attributed to loss of coastal sage scrub habitat through development, and there is some evidence of cowbird nest parasitism.

Suitable habitat for coastal California gnatcatcher occurs within the northern and western portion of the VNC. Protocol presence/absence surveys for coastal California gnatcatcher were conducted by MBA in April and May 2009 in coastal sage scrub habitat with potential to be affected by the project. The survey findings concluded that no coastal California gnatcatchers occurred within the project site and the species was presumed to be absent.

The least Bell's vireo is a State and Federally endangered, migratory bird that nests within low, dense riparian growth along water or along dry parts of intermittent streams. Nests are placed along margins or on projecting twigs of willow, mulefat, and mesquite trees and shrubs. Declines are attributed to loss of riparian habitat through development, and there is evidence of cowbird nest parasitism. The species was previously recorded as occurring within Bull Creek on the northern portion of the project site, most likely within the portion mapped as southern cottonwood-willow riparian forest.

Suitable habitat for least Bell's vireo occurs within the southern cottonwood-willow riparian forest and southern willow scrub portions of the project site. The riparian scrub plant community on the project site is too open and sparse to be considered suitable habitat for the species. The species was not observed during any of the surveys conducted by MBA; however, no focused surveys for the species were conducted as part of this survey effort (MBA 2010).

Sensitive Plant Communities

Sensitive habitats are those that are regulated by USFWS, U.S. Army Corps of Engineers, and/or those considered sensitive by the CDFG.

Nine sensitive plant communities were identified by the CNDDB as occurring in the vicinity of the project: California walnut woodland, Riversidian alluvial fan sage scrub, southern coast live oak riparian forest, southern cottonwood willow riparian forest, southern mixed riparian forest, southern riparian scrub, southern sycamore alder riparian woodland, southern willow scrub, and valley oak woodland (CDFG 2011d).

Three of the nine sensitive plant communities identified by the CNDDB occur on the project site: southern cottonwood-willow riparian forest, (southern) riparian scrub, and southern willow scrub. Descriptions of these plant communities are provided below along with the other plant communities and cover types identified on the project site.

The mapping conducted by MBA identified ten habitat types/plant communities within the project site (Figure 1): developed\actively disturbed, coastal sage scrub, water, ruderal, non-native grassland, southern-cottonwood willow riparian forest, riparian scrub, ornamental grove, southern willow scrub, and freshwater cattail marsh. AECOM observations were consistent with the habitats identified in the BRA (MBA 2010). The names and definitions of vegetation communities discussed below are based primarily on Holland's (1986) natural communities classification system, with influence from MBA's field interpretations. Below is a summary, adapted from the Biological Resources Assessment, of the each habitat type/plant community within the VNC that may be removed or temporarily disturbed due to the proposed project.

Developed/Actively Disturbed

The VNC property is developed for use as a water storage, treatment, and transport facility, and various buildings and structures occur throughout the project site to support these functions. These areas are classified as developed/actively disturbed. Open areas subject to significant disturbance, such as frequently used dirt roads or active grading areas, are also included in this designation because both developed and actively disturbed areas contain very little vegetation and provide little to no habitat value.

Coastal Sage Scrub

Coastal sage scrub habitat is defined by a sparse to dense arrangement of low-growing, drought-deciduous, and evergreen shrubs, typically occupying steep and gentle slopes below 3,000 feet in elevation, and ranging throughout southern California and south into Baja California. This community is typically located on sites with low moisture availability, such as steep, xeric slopes or clay-rich soils that release stored moisture slowly. It intergrades at higher elevations with more mesic sites with Chaparral communities and with Riversidean sage scrub in drier inland areas. This community is dominated by drought-deciduous, low-growing native shrubs averaging 2 to 3 feet in height, and is characterized by an herbaceous understory typically consisting of non-native grasses and forbs. Because of its function as valuable wildlife habitat for both common and special-status plant and animal species, and because of its declining quantity in the state, coastal sage scrub is generally considered to be of special status by CDFG.

The coastal sage scrub plant community occurs in moderately large stands throughout the project site. The majority of the stands are well established and exhibit dense shrub cover. These stands include those located due south of Los Angeles Reservoir, which are generally monotypic stands of brittlebush (*Encelia farinosa*), and the stands located along the western and the southern boundaries of the project site, which contain a high diversity of shrub species, including California buckwheat (*Eriogonum fasciculatum*), California sagebrush (*Artemisia californica*), black sage (*Salvia mellifera*), deerweed (*Lotus scoparius*), and Mexican elderberry (*Sambucus mexicana*). The smaller stands of coastal sage scrub located north and east of the reservoir are sparse and heavily disturbed. The vegetative cover in these stands consist of brittlebush, California buckwheat, caterpillar phacelia (*Phacelia cicutaria*), but a significant percentage is also comprised of ruderal plant species, such as tocalote (*Centaurea melitensis*), black mustard (*Brassica nigra*), and fennel (*Foeniculum vulgare*). The dense, diverse stands of coastal sage scrub along the western and the southern site boundaries provide good quality habitat for wildlife species common to this habitat. Such species include California towhee (*Pipilo crissalis*) and western whiptail (*Cnemidophorus tigris*). The stands comprised predominantly of brittlebush provide a lower quality habitat to many wildlife species as a result of the limited plant diversity present. The sparse stands of coastal sage scrub east and north of the active reservoir provide the lowest quality of habitat due to the frequency of disturbances and the dominant presence of ruderal plant species.

Water

Areas classified as water habitat contain no vegetation above the water line and typically are completely inundated with water year-round. Factors affecting the habitat value of such areas include water quality, accessible sediment, size of the water body, and vegetation adjacent to the water body. Several different bodies of water occur within the project site. The first and most prominent is the LAR located in the center of the project site. This water body is vastly large with good water quality, but is contained by steep, cement lining on the shores and does not support any adjacent vegetation. Additionally, the water in the LAR is used for drinking water so fish and aquatic plant species are excluded from occurring within it. The size of the LAR provides suitable layover habitat for migratory birds; however, no foraging or nesting habitat is available for these species or any other aquatic species. Several pools and channels have been artificially created northwest of the LAR. These artificial pools are frequently filled, drained, and graded as part of the functions of the VNC facilities. Due to these heavy disturbances, the pools or channels are not considered suitable habitat for most wildlife species, however, migrating waterfowl species may attempt to utilize the pools as lay over areas during periods of no disturbance.

Ruderal

Ruderal habitat includes areas predominantly comprised of weedy plant species. Such species are hardy, opportunistic plant species that typically are the first plants to sprout in a recently disturbed area that was cleared of all vegetation or where the soil compaction significantly limits the native species that may grow otherwise. Many ruderal plant species populations are also known for displacing native plant communities due to their aggressive growth habits.

Ruderal habitat occurs across the project site. However, all of the disturbances to ruderal habitat will occur in the eastern and southern portions of the project site during the first phase, totaling approximately 83 acres. Vegetation composition among the different stands is variable, as some areas mapped are sparsely vegetated with compact soils, while others are monotypic stands of invasive plant species. Many of the same plant species, however, occur in most of these areas. The species observed include prickly lettuce (*Lactuca serriola*), black mustard, fennel, horehound (*Marrubium vulgare*), rattlesnake weed (*Chamaesyce albomarginata*), wild radish (*Raphanus sativus*), Asian mustard (*Brassica tournefortii*), milk thistle (*Silybum marianum*), Russian thistle (*Salsola tragus*), tocalote, island false bindweed (*Calystegia macrostegia*), sweet yellow clover (*Melilotus officinalis*), castor bean (*Ricinus communis*), tree of heaven (*Ailanthus altissima*), giant reed (*Arundo donax*), and tree tobacco (*Nicotiana glauca*). Some native species were also observed in these areas. These include clustered tarweed (*Hemizonia fasciculata*), Great Valley gumplant (*Grindelia camporum*), telegraphweed (*Heterotheca grandiflora*), horseweed (*Conyza canadensis*), and California figwort (*Scrophularia californica*).

Habitat quality within the onsite ruderal habitat is considered poor based on the lack of overall vegetative cover and overall disturbance. Some of the stands may provide suitable habitat for common small mammals and reptiles, such as North American deermouse (*Peromyscus maniculatus*) and western fence lizard (*Sceloporus occidentalis*). Disturbance factors and lack of suitable habitat strongly reduce the potential for many wildlife species to use these areas.

Non-native Grassland

Non-native grassland is described as a dense to sparse cover of non-native annual grasses often associated with numerous weedy species and native annual forbs (wildflowers), especially in years with plentiful rain. Seed germination occurs with the onset of winter rains. Some plant growth occurs in winter, but most growth and flowering occurs in the spring. Plants then die in the summer, and persist as seeds in the uppermost layers of soil until the next rainy season. Dominant plant genera typically found within non-native grasslands include brome (*Bromus* sp.), wild oats (*Avena* sp.), fescue (*Vulpia* sp.), and barley (*Hordeum* sp.). Non-native grassland occupies the majority of the project site. Some of the dominant species observed across the site consist of compact brome (*Bromus madritensis*) and slender oats (*Avena barbata*). Non-native forbs, including tocalote, black mustard, and red-stemmed stork's bill (*Erodium cicutarium*), were also prevalent species that occurred across the community. Despite being comprised of non-native plant species, the non-native grassland plant community has been established within the United States for many generations and is considered by many to be a naturalized plant community. As such, it provides moderately suitable habitat for common, native bird species, such as horned lark (*Eremophila alpestris*), and reptile species, such as western rattlesnake (*Crotalus helleri*).

Southern-Cottonwood Willow Riparian Forest

Southern cottonwood-willow riparian forest is characterized by a tall, open, broad-leafed winter-deciduous riparian forest typically dominated by mature Fremont cottonwood (*Populus fremontii*), black cottonwood (*Populus trichocarpa*), Goodding's willow (*Salix gooddingii*), and other developed emergent willow species. The understory of this community is typically dominated by less mature willows and mulefat (*Baccharis salicifolia*) shrubs, in addition to herbaceous species that include giant creek nettle (*Urtica dioica*), mugwort (*Artemisia douglasiana*), phacelia (Phacelia spp.), curly dock (*Rumex crispus*), and wild grape (*Vitus californica*) among others. These communities are associated with sub-irrigated and frequently overflowed lands along rivers and streams. Dominant species require moist, bare mineral soil for germination and establishment, which is provided after flood waters recede, leading to uniform-aged stands. The distribution of this community includes perennially wet stream reaches of the Transverse and Peninsular ranges, from Santa Barbara County, south to Baja California, and east into the desert regions.

Three stands of southern cottonwood-willow riparian forest occur on the project site. The first is located along the northwestern boundary and is associated with Bull Creek. The second stand is located in an isolated basin just north of Los Angeles Reservoir. The third area comprises the expansive riparian area south of Los Angeles Reservoir in the Lower San Fernando Storm Water Detention Basin. The dominant plant species that occur within these stands include Fremont cottonwood, Goodding's willow, and narrowleaf willow (*Salix exigua*). Other species observed include tall flatsedge (Cyperus eragrostis), cocklebur (*Xanthium strumarium*), mugwort, western ragweed

(*Ambrosia psilostachya*), curly dock, and small-flowered tamarisk (Tamarix parviflora). Habitat quality of the southern cottonwood-willow riparian forest onsite is considered moderate. All three stands receive and store significant amounts of water above and below ground; however, they are all subject to heavy noise disturbances from ongoing activities at the VNC, which may reduce nesting habitat for avian species. The stand along Bull Creek is bordered on both sides by dirt access roads, the stand north of the active reservoir is adjacent to I-5, and the larger stand south of the active reservoir is directly adjacent to the helipad and LAPD training facilities. The stand south of Los Angeles Reservoir would especially be considered good quality habitat if the noise disturbances associated with helicopters and firearms were not present. Regardless, the southern cottonwood-willow riparian forest stands provide suitable habitat for common riparian species, such as common yellowthroat (*Geothlypis trichas*) and northern raccoon (*Procyon lotor*).

Riparian Scrub

Riparian scrub habitat is characterized as disturbed areas with scattered or emergent, native riparian shrubs. The habitat is an upland-riparian transitional area that is generally associated with an adjacent water feature. The riparian scrub community on the project site is associated with heavy soil disturbance or soil compaction. The community within the VNC is located adjacent to the riparian areas within the Lower San Fernando Dam Storm Water Detention Basin, and within and adjacent to Bull Creek in the north. A small stand of riparian scrub also occurs within the upland non-native grassland area along the western boundary of the project site; however, this is not associated with any drainage or water feature. All the stands contain sparse vegetation but the dominant plant species present is mulefat. Several other, disturbance-tolerant plant species also commonly occur with the community, including common sunflower (*Helianthus grandiflora*), brittlebush, tree tobacco, giant reed, and Russian thistle. Sparse occurrences of willow (*Salix* sp.) saplings were also observed within the stand along Bull Creek. The stand at Bull Creek is subject to soil disturbance associated with high water flows that may seasonally occur within the creek. The stand adjacent to the larger riparian area is subject to soil disturbance associated with grading and heavy equipment use in the vicinity. The stand along the western boundary of the site is subject to disturbance associated with fuel reduction activities, such as mechanical mowing. The habitat quality of riparian scrub areas is low due to the sparse, disturbed nature of the community. The sparse vegetation generally does not provide sufficient cover for wildlife species to nest or to forage safely.

Ornamental Grove

Ornamental grove habitat includes areas occupied by a variety of non-native and native, mature trees species artificially planted and maintained. Such habitats are generally limited in size and are subject to regular landscaping activities. Areas characterized as ornamental grove habitat typically include landscaped parks, residential developments, and road rights-of-way, or areas planted for screening or as windrows. Ornamental grove areas are scattered across the project site but are generally associated with nearby development, such as the power substations on the northern and southern portions of the site. The tree species observed include pine (*Pinus* sp.), Peruvian pepper (*Schinus molle*), and cork oak (*Quercus suber*). The understory is generally comprised ornamental shrub species, such as rosemary (*Rosmarinus officinalis*) and oleander (*Nerium oleander*). The tree species commonly planted in ornamental grove habitats are generally much taller than common native tree species in the area. Therefore, this community provides suitable perching opportunities for common raptor species, such as red-tailed hawk (*Buteo jamaicensis*), and nesting opportunities for common bird species, such as European starlings (*Sturnus vulgaris*). This habitat may also provide roosting habitat for bat species.

Southern Willow Scrub

Southern willow scrub communities are characterized by dense, broad-leafed, winter-deciduous riparian thickets of vegetation, and are dominated by several species of willow tree. Scattered arrow weed (*Pluchea sericea*), Fremont cottonwood and isolated western sycamore (*Platanus racemosa*) are also associated with this community. Most stands are too dense to allow much understory development. Southern willow scrub is typically found on loose, sandy, or fine gravelly alluvium deposits near stream channels during flood flows. This early seral-type vegetation requires repeated flooding to prevent succession to southern cottonwood-sycamore riparian forest. Formerly extensive along the major rivers of coastal southern California, this community is now much reduced by urban expansion, flood control, and channel improvements.

Stands of southern willow scrub are scattered throughout the northern portion of the project site. The most continuous stand is associated with Bull Creek and is located along the northwestern boundary of the project site. This stand is bordered by the riparian scrub plant community to the north and the coastal sage scrub plant community to the south. The scattered remaining stands are associated with small, ephemeral drainages that run through the heavily-disturbed areas frequently used by heavy equipment. These stands are mostly narrow and intermittent, and comprise very poor quality habitat. The dominant species observed in the collective southern willow scrub stands include Goodding's willow, arroyo willow (*Salix lasiolepis*), and mulefat. Other species commonly observed include castor bean (*Ricinus communis*), cocklebur, giant reed, and tree tobacco.

The habitat quality of the most continuous stand of southern willow scrub is moderate, despite its limited size. This is a result of minimal disturbance to this area and the connectivity to even higher quality stands of riparian habitat upstream located outside of the VNC. This stand can provide suitable nesting and foraging habitat for riparian bird species, such as common yellowthroat. The other, scattered stands of southern willow scrub comprise very poor quality habitat as a result of their small size and the proximity of regular disturbances.

Freshwater Cattail Marsh

Freshwater cattail marsh commonly occurs in shallow, perennially wet areas with emergent vegetation dominated by cattail (*Typha* spp.). Cattails are a hardy, tall growing grass that can reach between 5 and 10 feet in height. For that reason, cattails generally outcompete other wetland plant species and dominate the open water space. Freshwater cattail marsh is located on two portions of the project site. The first is at a water outflow point in a low elevation portion west of the active reservoir. This area is small and is surrounded by a non-native grassland plant community.

The second location is within the expansive riparian area south of Los Angeles Reservoir, where the open water is shallow enough to support cattails. The vegetation in both locations is predominantly comprised of narrowleaf cattail (*Typha angustifolia*). Other species observed include curly dock, tall flatsedge (*Cyperius eragrostis*), and water smartweed (*Polygonum amphibium* var. *stipulaceum*). Freshwater cattail marsh provides habitat suitable to wildlife species common in wetland areas, such as red-winged blackbird (*Agelaius phoeniceus*).

RECOMMENDATIONS

Sensitive Plants

The project site contains several natural habitats suitable for some sensitive plant species. Directed survey results for sensitive plant species were negative in 2009 (MBA 2010). Therefore, the potential to impact sensitive plant species is considered low.

Sensitive Wildlife

Focused protocol-level surveys for coastal California gnatcatcher were conducted in 2009 (MBA 2010). No coastal California gnatcatcher was observed or detected during any of the surveys. Least Bell's vireo was not observed during 2009 surveys or 2011 surveys. Therefore, the potential to impact sensitive wildlife species is considered low.

Sensitive Plant Communities

Because of its high biological value and declining nature in California, impacts to coastal sage scrub may require permitting from CDFG and mitigation. In addition, impacts to southern cottonwood-willow riparian forest, (southern) riparian scrub, and/or southern willow scrub would require mitigation. Appropriate mitigation would be determined in cooperation with CDFG and may include avoidance, creation or preservation of habitat elsewhere in the project site, or other measures.

Migratory Birds

Congress passed the Migratory Bird Treaty Act (MBTA) in 1918 to prohibit the kill or transport of native migratory birds, or any part, nest, or egg of any such bird unless allowed by another regulation adopted in accordance with the MBTA. The prohibition applies to birds included in the respective international conventions between the United States and Great Britain, the United States and Mexico, the United States and Japan, and the United States and Russia. Although no permit is issued under the MBTA, if construction or vegetation removal within the project area occurs during the breeding season for raptors and migratory birds (February 15 through September 15), USFWS requires that surveys be conducted to locate active nests within the construction area. The project must comply with the MBTA.

The project site contains suitable habitat for various species of migratory birds. Examples of suitable habitat include, but are not limited to, shrubs, trees, bridges, and electric towers. Should removal of vegetation, bridges, or electric towers occur during the breeding season for migratory non-game native bird species (February 15 through September 15), weekly bird surveys should be performed to detect any protected native birds in vegetation to be removed or other suitable nesting habitat. The surveys would commence 30 days prior to the disturbance of suitable nesting habitat by a qualified biologist with experience in conducting nesting bird surveys. The surveys would continue on a weekly basis with the last survey being conducted no more than 3 days prior to the initiation of clearance/construction work. If an active nest is discovered, disturbance within a buffer area surrounding the nest site shall be prohibited until nesting is complete; the buffer distance shall be determined by the biological monitor in consideration of species sensitivity and existing nest site conditions. Construction clearance/disturbance shall be halted in the vicinity of the active nest until the nest is vacated and juveniles have fledged and when there is no evidence of a second attempt at nesting. Limits of construction to avoid a nest should be established in the field with flagging and stakes or construction fencing. Construction personnel should be instructed on the sensitivity of the area.

Electric towers associated with transmission lines also provide suitable nesting habitat for raptor species within the project site. Nests within lattice towers are easily observable due to the large size of raptor nests and the transparency of lattice tower design. Therefore, if construction activities must occur on or adjacent to a lattice tower during the avian nesting season, and a nest is observed by any construction personnel, all construction activities in the vicinity must be halted until a qualified biologist verifies the status of the nest. If the nest is determined to be active, then all activities on or adjacent to the tower shall only proceed at the discretion of the biologist. If the nest is determined to be inactive by the biologist, then no further measures are required.

Wetlands

The Clean Water Act governs pollution control and water quality of waterways throughout the U.S. Its intent, in part, is to restore and maintain the biological integrity of the nation's waters. The goals and standards of the Clean Water Act are enforced through permit provisions. Sections 401 and 404 of the Clean Water Act pertain directly to the proposed project. Section 401 requires certification from the Regional Water Quality Control Board that the proposed project is in compliance with established water quality standards. Section 404 of the Clean Water Act requires an individual or general permit from the U.S. Army Corps of Engineers for discharge into "waters of the U.S."

California Fish and Game Codes regulate the taking or possession of birds, mammals, fish, amphibians, and reptiles, as well as natural resources such as wetlands and waters of the state. It includes the California Endangered Species Act (Sections 2050-2115) and Streambed Alteration Agreement regulations (Sections 1600-1616), as well as provisions for legal hunting and fishing, and tribal agreements for activities involving take of native wildlife. Any proposed impact to state-listed species or state jurisdictional waters within or adjacent to the proposed project site would require a permit under the California Endangered Species Act and a Streambed Alteration Agreement from CDFG, respectively.

Under Sections 1600-1617 of the California Department of Fish and Game Code, CDFG regulates activities that would alter the flow, bed, channel, or bank of streams and lakes. The limits of CDFG jurisdiction are defined in the code as the "bed, channel or bank of any river, stream or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit." The California Code of Regulations (14 CCR 1.72) defines a stream as:

> "[A] stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation."

In practice, CDFG usually extends its jurisdictional limit to the top of a stream or lake bank, or outer edge of the riparian vegetation, whichever is wider. Riparian habitats do not always have identifiable hydric soils, or clear evidence of wetland hydrology as defined by the U.S. Army Corps of Engineers. Therefore, CDFG wetland boundaries often extend beyond U.S. Army Corps of Engineers wetland boundaries, which sometimes include only portions of the riparian habitat adjacent to a river, stream, or lake. Jurisdictional boundaries under Sections 1600-1607 may encompass an area that is greater than that under the jurisdiction of Section 404 (Cylinder et al. 1995).

A jurisdictional delineation of the project area was not conducted as part of surveys conducted by MBA and AECOM. The proposed project would require installation of a couple of stream crossings of the BCEC. Therefore, the proposed project would be required to obtain appropriate permitting from the appropriate regulatory agencies. This may include a Nationwide Permit from USACE, a Water Quality Certification from RWQCB, and a Streambed Alteration Agreement from CDFG. These permits will include special conditions to further minimize and mitigate project impacts. In addition, portions of the Lower San Fernando Storm Water Detention Basin may contain hydric soils consistent with the definition of a wetland. No direct disturbance of this area is anticipated during construction. However, indirect impacts may occur. Therefore, Best Management Practices should be employed during construction to assure that no discharge of debris, soil, sand, construction waste, cement or concrete washings, asphalt, paint, oil, or other harmful substances occurs in any potential nearby drainages. None of these materials should be placed where they may runoff into potential jurisdictional areas. Clean-up of all spills should begin immediately. Stationary heavy equipment such as motors, generators, and welders should not be placed in potential jurisdictional areas and should have suitable containment to handle a catastrophic spill or leak.

Wildlife Corridors

In an urban context, a wildlife migration corridor can be defined as a linear landscape feature of sufficient width and buffer to allow animal movement between two comparatively undisturbed habitat fragments, or between a habitat fragment and some vital resources thereby encouraging population growth and diversity. Habitat fragments are isolated patches of habitat separated by otherwise foreign or inhospitable areas, such as urban/suburban tracts, agricultural lands, or highways. Habitat fragments can isolate species populations by limiting migration, foraging, and breeding opportunities.

Isolation of populations can have many harmful effects and may contribute significantly to local species extinction.

Two types of wildlife migration corridors seen in urban settings are regional corridors, defined as those linking two or more large areas of natural open space, and local corridors, defined as those allowing resident animals to access critical resources (food, cover, and water) in a smaller area that might otherwise be isolated by urban development. Wildlife migration corridors are essential in geographically diverse settings, and especially in urban settings, for the sustenance of healthy and genetically diverse animal communities. At a minimum, they promote colonization of habitat and genetic variability by connecting fragments of like habitat and help sustain individual species distributed in and among habitat fragments. They are also important features for dispersal, seasonal migration, foraging, and breeding.

A viable wildlife migration corridor consists of more than a path between fragmented habitats. A wildlife migration corridor must also include adequate vegetative cover and food sources for transient species as well as resident populations of less mobile animals to survive. They must be extensive enough to allow for large animals to pass relatively undetected, be free of obstacles, and lack any other distraction that may hinder wildlife passage such as lights or noise.

The project site is bordered to the west, east, and south by expansive, continuous tracts of development. Areas within the project site, however, may contain large areas of habitat for wildlife species. Specifically, the project site provides suitable nesting habitat for migratory and resident bird populations, but does not act as part of a major contiguous linkage between two or more large areas of open space. Due to significant levels of disturbances from existing land uses and complete perimeter fencing, the likelihood of the project site to be used as a wildlife corridor is low. Therefore, any impacts that would occur to potential wildlife corridors would be less than significant and no mitigation is recommended.

Protected Trees

The VNC contains trees under the protection of the City of Los Angeles, such coast live oak. Additional tree surveys in support of permits or an exemption from the Los Angeles Board of Public Works for relocation or removal of any protected trees are required. Section 17.02 of the Los Angeles Municipal Code protects the following southern California native tree species, which measures four inches or more in cumulative diameter, four and one-half feet above the ground level at the base of the tree:

(a) Oak trees including Valley Oak (*Quercus lobata*) and California Live Oak (*Quercus agrifolia*), or any other tree of the oak genus indigenous to California but excluding the Scrub Oak (*Quercus dumosa*).
(b) Southern California Black Walnut (*Juglans californica* var. *californica*)
(c) Western Sycamore (*Platanus racemosa*)
(d) California Bay (*Umbellularia californica*)

Relocation or removal of any protected trees is prohibited without a permit or exemption from the Los Angeles Board of Public Works or its designated officer or employee.

As currently planned, the proposed project is not anticipated to remove protected tree species. Should it be necessary during project construction to remove protected trees, a tree assessment shall be conducted by a certified arborist to determine the number, size, health, and other characteristics obligatory for the obtainment of permitting and mitigation for their removal. A report of these characteristics must be approved before a permit to remove protected trees is granted. The arborist shall identify any tree protected by City Ordinance(s) and shall provide further recommendations. If no trees are anticipated for removal or none of the proposed trees are identified as protected, then no further action is necessary.

Habitat Conservation Plans

The proposed project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. There are no adopted habitat conservation plans applicable to the VNC property due to its highly industrialized nature, nor is it located near a Natural Communities Conservation Plan area or Significant Ecological Area. The project site does not contain any Significant Ecological Areas or designated Critical Habitat. No action is necessary, therefore, with regard to Habitat Conservation Plans.

Habitat Restoration, Mitigation and Monitoring Plan

Because project construction would require the removal of sensitive vegetation communities, it is recommended that a Habitat Restoration, Mitigation, and Monitoring Plan (Mitigation Plan) be prepared as part of the proposed project. The Mitigation Plan shall incorporate all the terms and conditions set forth in the various permits, certifications, and agreements issued by the appropriate jurisdictional agencies and should be prepared by a qualified habitat restoration biologist. The Mitigation Plan would include, at minimum, a planting palette, planting plans, monitoring requirements, and success criteria.

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Source: Eagle Aerial, 2009. MBA Field Survey and GIS Data, 2009.

N

0 550 1,100 1,650 2,200 Feet

Figure 1
Van Norman Complex Vegetation and Cover Types

Back of Figure 1

ATTACHMENT A. SENSITIVE PLANTS AND ANIMALS KNOWN TO OCCUR IN THE VICINITY OF THE PROJECT

Common Name ***Scientific Name***	**Sensitivity Status**[1]	**General Habitat Requirements**	**Probability of Occurrence**
Plants			
Nevin's barberry *Berberis nevinii*	USFWS: Endangered CDFG: Endangered CNPS: 1B.1	Associated with chaparral, cismontane woodland, coastal scrub, riparian scrub. Occurs on steep, north-facing slopes or low grade sandy washes. Elevation 290-1,575 m (950-5,200 ft.). Blooms March-June.	**Low.** The site contains scrub vegetation on steep well-drained soils; however, 2009 surveys did not detect this perennial plant on site. The species is recorded 4 miles east of the site
slender mariposa-lily *Calochortus clavatus* var. *gracilis*	USFWS: None CDFG: None CNPS: 1B.2	Associated with chaparral, coastal scrub. Known to occur in shaded foothill canyons, often on grassy slopes within other habitat. Elevation 420-760 m (1,380-2,500 ft.). Blooms March-June.	**Low**. The site contains open shrubby habitat, however, 2009 surveys did not detect this species on site. The species was recorded 2 miles north of the site.
Plummer's mariposa-lily *Calochortus plummerae*	USFWS: None CDFG: None CNPS: 1B.2	Associated with coastal scrub, chaparral, valley and foothill grassland, cismontane woodland, lower montane coniferous forest. Occurs on rocky and sandy sites, usually of granitic or alluvial material, and can be very common after a fire. Elevation 90-1,610 m (295-5,280 ft.). Blooms May-July.	**Low.** The site contains coastal scrub vegetation; however, 2009 surveys did not detect this species on site. This species was recorded 1, 2.5, and 6.5 miles northeast of the site. Several locations are also known from 6 miles north of the site as well as 4 miles east and 8 miles southeast of the site.

Common Name ***Scientific Name***	**Sensitivity Status**[1]	**General Habitat Requirements**	**Probability of Occurrence**
southern tarplant *Centromadia parryi* ssp. *australis*	USFWS: None CDFG: None CNPS: 1B.1	Associated with marshes and swamps (margins), valley and foothill grassland. Occurs often in disturbed sites near the coast at marsh edges; also in alkaline soils sometimes with saltgrass. Elevation 0-427 m (0-1,400 ft.). Blooms May-November.	**Not expected.** The site does not contain suitable habitat for this species. This species was recorded approximately 10 miles east of the site.
San Fernando Valley spineflower *Chorizanthe parryi* var. *fernandina*	USFWS: Candidate CDFG: Endangered CNPS: 1B.1	Associated with coastal scrub. Occurs in sandy soils. Elevation 3-1,035 m (9-3,375 ft.). Blooms April-July.	**Low.** The site contains some openings in the shrubby vegetation. The species was recorded on the project site in the early 1900s, and the site has been significantly developed and has changed dramatically. No other local occurrences have been recorded. 2009 surveys did not detect this species on site.
Santa Susana tarplant *Deinandra minthornii*	USFWS: None CDFG: Rare CNPS: 1B.2	Associated with chaparral, coastal scrub. Known to occur on sandstone outcrops and crevices in shrubland. Elevation 280-760 m (924-2,500 ft.). Blooms July-November.	**Low.** The site contains moderately suitable habitat, however 2009 surveys did not detect this species on site Over 10 occurrences of this species were recorded 7 miles southwest of the site.
slender-horned spineflower *Dodecahema leptoceras*	USFWS: Endangered CDFG: Endangered CNPS: 1B.2	Associated with chaparral, coastal scrub, alluvial fan sage scrub. Occurs in flood deposited terraces and washes; associations include *Encelia*, *Dalea*, *Lepidospartum*, etc. Elevation 200-760 m (660-2,500 ft.). Blooms April-June.	**Moderate**. The site contains coastal sage scrub and *Encelia*; however,, 2009 surveys, did not detect this species on site. This species was recorded 5 miles east, 9 miles southeast, and 6 miles northeast of the site.

Common Name *Scientific Name*	Sensitivity Status[1]	General Habitat Requirements	Probability of Occurrence
many-stemmed dudleya *Dudleya multicaulis*	USFWS: None CDFG: None CNPS: 1B.2	Associated with chaparral, coastal scrub, valley and foothill grassland. Occurs in heavy, often clayey soils or grassy slopes. Elevation 0-790 m (0-2,610 ft.). Blooms April-July.	**Low.** The site contains moderately suitable habitat; however, 2009 surveys did not detect this species on site. This species was recorded 10 miles southwest of the site.
Palmer's grapplinghoook *Harpagonella palmeri*	USFWS: None CDFG: None CNPS: 4.2	Associated with clay soils and open grassy areas with shrubland. Known to occur in chaparral, coastal scrub, and valley and foothill grasslands. Elevation 15-830 m (50-2,725 ft.) Blooms March-May.	**Low.** The site contains moderately suitable habitat; however, 2009 surveys did not detect this species on site. This species was recorded 6 miles northwest of the site.
Coulter's goldfields *Lasthenia glabrata ssp. coulteri*	USFWS: None CDFG: None CNPS: 1B.2	Associated with alkaline soils in playas, sinks and grasslands. Known to occur in coastal salt marshes, playas, valley and foothill grasslands and vernal pools. Elevation 1-1400 m (3-4,600 ft.) Blooms February-June.	**Not expected.** The site does not contain suitable habitat for this species. This species was recorded 8 miles southwest of the site.
Davidson's bush-mallow *Malacothamnus davidsonii*	USFWS: None CDFG: None CNPS: 1B.2	Associated with coastal scrub, riparian woodland, chaparral. Occurs in sandy washes. Elevation 180-855 m (590-2,825 ft.). Blooms June-January.	**Low.** The area of disturbance does not contain any sandy washes, but marginally suitable habitat occurs in the shrubby habitat on well-drained soils in other parts of the VNC. Further, 2009 surveys did not detect this perennial plant on site. Eleven occurrences of this species have been recorded within 10 miles of the site. The closest occur 1 and 2 miles northeast and east of the site, respectively.

Common Name ***Scientific Name***	**Sensitivity Status**[1]	**General Habitat Requirements**	**Probability of Occurrence**
Piute Mountains navarretia *Navarretia setiloba*	USFWS: None CDFG: None CNPS: List 1B.1	Cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland in clay or gravelly loam. Occurs from 305–2,100 me (1000-6,889 ft.). Blooms April-July.	**Not Expected.** The site does not contain suitable habitat for this species. This species was recorded 10 miles northeast of the site.
short-joint beavertail *Opuntia basilaris* var*. brachyclada*	USFS: Sensitive CDFG: None CNPS: List 1B.2	Sandy soils or granitic loam in chaparral, joshua tree "woodland" mojavean desert scrub, pinyon and juniper woodland. Blooms April to June.	**Not Expected.** The site does not contain suitable habitat for this species. This species was recorded 5 miles north of the site.
California Orcutt grass *Orcuttia californica*	USFWS: None CDFG: None CNPS: 1B.1	Associated with vernal pools at elevations of 15 – 660 m (50-2,165 ft.) Blooms April-August.	**Not expected.** The site does not contain suitable habitat for this species. This species was recorded 6 miles northwest of the site.
Greata's aster *Symphyotrichum greatae*	USFWS: None CDFG: None CNPS: 1B.3	Associated with chaparral and cismontane woodland; known from mesic canyons. Elevation 800-1,500 m (2,600-4,900 ft.). Blooms June-October.	**Not Expected.** The site does not contain suitable habitat for this species. This species was recorded 5 miles northeast of the site.
Invertebrates			
monarch butterfly *Danaus plexippus*	USFWS: None CDFG: None –	Roosts located in wind-protected tree groves such as Eucalyptus, Monterey pine, and cypress, with nearby nectar and water resources. Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico.	**Not Expected.** Wind-protected tree groves do not occur within the project site. The species was recorded 2 miles west of the site.

Common Name *Scientific Name*	Sensitivity Status[1]	General Habitat Requirements	Probability of Occurrence
Fish			
Santa Ana sucker *Catostomus santaanae*	USFWS: Threatened CDFG: None	Endemic to south coastal streams in the Los Angeles basin, this species is a habitat generalist, but prefers sand-rubble-boulder bottoms with cool, clear water and algae.	**Not Expected**. Stream habitat required by this species does not occur within the project site. This species was recorded 7 miles east of the site.
arroyo chub *Gila orcuttii*	USFWS: None CDFG: Species of Special Concern	Native to streams from maluvu Creek to San Luis rey river basin, and has been introduced to streams in Santa Clara, Ventura and Santa Ynez. Found in slow water stream sections with mud or sand bottoms. Feeds heavily on aquatic vegetation and associated invertebrates.	**Not Expected.** Stream habitat required by this species does not occur within the project site. This species was recorded from the Santa Clara River, 7 miles north of the site.
Santa Ana speckled dace *Rhinichthys osculus*	USFWS: None CDFG: Species of Special Concern	Known from headwaters of the Sana Ana and San Gabriel River. It may be extirpated from the Los Angeles River system. This species requires permanent flowing streams with summer water temps of 17-20 C. Usually inhabits shallow covvle and gravel riffle.	**Not Expected.** Stream habitat required by this species does not occur within the project site. This species was recorded 7 miles east of the site.
unarmored threespine stickleback *Gasterosteus aculeatus williamsoni*	USFWS: Endangered CDFG: Endangered	Slow-moving sections of freshwater or brackish water stream habitat with protective cover. Optimal cover may include vegetation and filamentous algae, but any natural shelter (rocks, logs, stream banks) is sufficient.	**Not Expected.** Stream habitat required by this species does not occur within the project site. This species was recorded from the Santa Clara River, 7 miles north of the site.
Amphibians			
Sierra Madre yellow-legged frog *Rana muscosa*	USFWS: Endangered CDFG: Species of Special Concern	Federal listing refers to populations in the San Gabriel, San Jacinto, and San Bernardino mountains only. This species is always encountered within a few feet of water. Tadpoles may require 2-4 years to complete their aquatic development.	**Not Expected.** Aquatic habitat required by this species does not occur on site. This species was recorded approximately 9 miles east of the site.

Common Name ***Scientific Name***	**Sensitivity Status**[1]	**General Habitat Requirements**	**Probability of Occurrence**
Reptiles			
coastal western whiptail *Aspidoscelis tigris stejnegeri*	USFWS: None CDFG:CNDDB	Found in deserts and semiarid areas with sparse vegetation and open areas; also found in woodland and riparian areas; ground may be firm soil, sandy or rocky.	**Low.** Non-native grassland habitat within the project site contains suitable habitat. The species was recorded as occurring 7 miles north of the site and 4 miles northeast of the site before urban development occurred.
silvery legless lizard *Anniella pulchra pulchra*	USFWS: None CDFG: Species of Special Concern	Inhabits sandy or loose loamy soils under sparse vegetation. Soil moisture is essential, and they prefer soils with high moisture content.	**Not Expected.** Suitable habitat containing sandy soil with high moisture content, as preferred by this species, does not occur within the project site. The species was recorded 7 miles east of the site.
southwestern pond turtle *Emys marmorata*	USFWS: None CDFG: Species of Special Concern	Inhabits permanent or nearly permanent bodies of water in many habitat types with aquatic vegetation; Below 6000 feet elevation; Require basking sites such as partially submerged logs, vegetation Mats, or open mud banks; need suitable nesting sites.	**Not Expected.** Aquatic habitat required by this species does not occur on site. This species was recorded approximately 8 miles southeast of the site.
coast (San Diego) horned lizard *Phrynosoma coronatum (blainvillii population)*	USFWS: None CDFG: Species of Special Concern	Inhabits coastal sage scrub and chaparral in arid and semi-arid climate conditions; prefers friable, rocky or shallow sandy soils.	**Low.** The sage shrub habitat within the project site contains suitable habitat for the species. The species was recorded as occurring 5 miles south of the site.

Common Name *Scientific Name*	Sensitivity Status[1]	General Habitat Requirements	Probability of Occurrence
western spadefoot toad *Spea (Scaphiopus) hammondii*	USFWS: None CDFG: Species of Special Concern	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	**Not Expected.** Vernal or seasonal pools do not occur within the project site. The settling ponds and water storage reservoir located onsite are heavily disturbed and developed, and are not suitable habitat. The species was recorded as occurring 3 miles west of the project site in the Santa Susana Mountains.
two-striped garter snake *Thamnophis hammondii*	USFWS: None CDFG: Species of Special Concern	Found in coastal California from vicinity of Salinas to northwest Baja California. A highly aquatic species, it is found in or near permanent fresh water, often along streams with rocky beds and riparian growth.	**Not Expected.** Aquatic habitat required by this species does not occur on site. This species was recorded 6 miles west of the site.
Birds			
Cooper's hawk *Accipiter cooperii*	USFWS: None CDFG:CNDDB	Associated with open, interrupted or marginal woodland habitat. Known to next in oak trees, but primarily nests in riparian growths of deciduous trees, such as in canyon bottoms on river flood-plains.	**Low.** Southern cottonwood-willow riparian habitat onsite is moderate to good quality. Disturbances in the vicinity of this habitat at the southern end of the project site limit the likelihood as a nesting site. This species was recorded as occurring and successfully nesting 9 miles north of the project site.

Common Name ***Scientific Name***	**Sensitivity Status[1]**	**General Habitat Requirements**	**Probability of Occurrence**
tricolored blackbird *Agelaius tricolor*	USFWS: None CDFG: Species of Special Concern	Highly colonial species, most numerous in Central Valley and vicinity. Largely endemic to California; Requires open water, protected nesting substrate and foraging area with insect prey within a few km of the colony.	**Low.** Los Angeles Reservoir is covered with shade balls. Potential nesting habitat occurs within the freshwater cattail marsh on the southern end of the project site. This habitat is minimal in size. This species was recorded as occurring at Chatsworth Reservoir, 10 miles southwest of the project site.
southern California rufous crowned sparrow *Aimophila ruficeps canescens*	USFWS: None CDFG:CNDDB	Southern California resident within sage scrub and sparse mixed chaparral habitat. Frequents relatively steep, often rocky hillsides with grass and forb patches.	**Not Expected.** Sage scrub and chaparral mixed habitat does not occur within the project site. Steep rocky hillsides are also not present. This species was recorded as occurring 6 and 9 miles north of the project site and 10 miles west of the project site.
burrowing owl *Athene cunicularia*	USFWS: None CDFG: Species of Special Concern	Open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation; subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	**Not Expected.** Flat grasslands with low-growing vegetation do not occur within the project site. This species was recorded as occurring 7 miles north of the site.

Common Name *Scientific Name*	Sensitivity Status[1]	General Habitat Requirements	Probability of Occurrence
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	USFWS: Candidate CDFG: Endangered	This species is a riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Specifically, this species nests in riparian jungles of willow, often mixed with cottonwoods with lower vegetative layers of blackberry, nettles or wild grape.	**Low.** The dense, expansive riparian vegetation in the southern portion of the project site is suitable habitat for the species. The species was recorded as occurring 3 miles east of the site. However, the record was from 1893 and no other occurrences have since been recorded. No suitable habitat occurs within the potential disturbance area.
coastal California gnatcatcher *Polioptila californica californica*	USFWS: Threatened CDFG: Species of Special Concern	Obligate, permanent resident of coastal sage scrub below 2500 feet in southern California; low, coastal sage scrub in arid washes, on mesas and slopes; not all areas classified as CSS are occupied.	**High.** The coastal sage scrub habitat located within the project site is suitable habitat for the species. The species was recorded as occurring in the southern portion of the project site, east of the potential disturbance area. Critical habitat occurs approximately 4,000 feet west and north of the site.
least Bell's vireo *Vireo bellii pusillus*	USFWS: Endangered CDFG: Endangered	Summer resident of southern California in low riparian in vicinity of water or in dry river bottoms below 2000 ft; nests placed along margins of bushes or on twigs projecting into pathways; usually willow, baccharis, mesquite.	**High.** The dense, riparian vegetation within the project site is suitable habitat for the species. The species was recorded in the project site, north of the potential disturbance area.

Common Name *Scientific Name*	Sensitivity Status[1]	General Habitat Requirements	Probability of Occurrence
Mammals			
pallid bat *Antrozous pallidus*	USFWS: None CDFG: Species of Special Concern IUCN: LC WBWG: H	Deserts, grasslands, shrublands, woodlands and forests; most common in open, dry habitats with rocky areas for roosting; roosts must protect bats from high temperatures; very sensitive to disturbance of roosting sites.	**Not Expected**. Rocky roosting habitat does not occur within the project area. This species was recorded nearly 10 miles south of the site.
western mastiff bat *Eumops perotis californicus*	USFWS: None CDFG: Species of Special Concern IUCN: LC WBWG: H	Many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral etc; roosts in crevices in cliff faces, high buildings, trees and tunnels.	**Low.** Several large, mature trees occur on the project site, outside of the potential disturbance area. The species was recorded 5 miles north and west of the site.
California leaf-nose bat *Macrotus californicus*	USFWS: None CDFG: None IUCN: LC WBWG: M	This species needs rocky, rugged terrain with mines or caves for roosting, and is found in a variety of habitats including desert riparian, desert wash, desert scrub, desert succulent scrub, alkali scrub and palm oasis.	**Not Expected.** Required rocky habitat does not occur within the project area. This species was recorded approximately 6 miles west of the site.
silver-haired bat *Lasionycteris noctivagans*	USFWS: None CDFG: None IUCN: LC WBWG: M	Primarily a coastal and montane forest dweller feeding over streams, ponds and open brushy areas; roosts in hollow trees, beneath exfoliating bark, abandoned woodpecker holes and rarely under rocks; needs drinking water	**Low.** The tree structure on-site is not suitable for this species, although some abandoned woodpecker holes could be present. The species is recorded 3 miles east of the site.
hoary bat *Lasiurus cinereus*	USFWS: None CDFG: None IUCN: LC WBWG: M	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding; roosts in dense foliage of medium to large trees; feeds primarily on moths and requires water.	**Low.** The site has marginally suitable habitat due to limited numbers of trees with dense foliage scattered across the project site. None of these trees occur within the proposed project area. The species is recorded 3 miles east of the site.

Common Name ***Scientific Name***	**Sensitivity Status**[1]	**General Habitat Requirements**	**Probability of Occurrence**
San Diego black-tailed jackrabbit *Lepus californicus bennettii*	USFWS: None CDFG: Species of Special Concern	Found within coastal sage scrub habitats in southern California.	**Low.** The site has suitable coastal sage scrub habitat. The species is recorded 7 miles east of the site.
San Diego desert woodrat *Neotoma lepida intermedia*	USFWS: None CDFG: Species of Special Concern	Coastal scrub of southern California from San Diego county to San Luis Obispo county; moderate to dense canopies preferred. They are particularly abundant in rock outcrops and rocky cliffs and slopes.	**Not Expected.** No rocky outcrops or rocky cliffs occur within the project site. The species was recorded as occurring 3 miles northwest of the site.
southern grasshopper mouse *Onychomys torridus ramona*	USFWS: None CDFG: Species of Special Concern	Desert areas, especially scrub habitats with friable soils for digging. Prefers low to moderate shrub cover; feeds almost exclusively on arthropods, especially scorpions and orthopteran insects.	**Not Expected.** The site has potentially suitable coastal sage scrub habitat. The species is recorded from approximately 7 miles southeast of the site, in the early 1900s.
Los Angeles pocket mouse *Perognathus longimembris brevinasus*	USFWS: None CDFG: Species of Special Concern	Lower elevation grasslands and coastal sage communities in and around the Los Angeles Basin; open ground with fine sandy soils; may not dig extensive burrows, instead may be found hiding under weeds and dead leaves.	**Not expected.** The site has potentially suitable grassland and coastal sage scrub habitat. The species is recorded from approximately 8 miles south of the site, in 1903.

[1]**Sensitivity Status Codes**

USFWS — U.S. Fish and Wildlife Service
CDFG — California Department of Fish and Game
CNDDB — California Natural Diversity Database list only: this species may be locally sensitive or occurrences are monitored to see if protection is needed.
CNPS — California Native Plant Society
1A: Presumed extinct in California
1B: Plants rare, threatened, or endangered in California and elsewhere
2: Plants rare, threatened, or endangered in California, but more common elsewhere
3: Plants more information is needed for
4: Plants of limited distribution – a watch list
Threat Ranks
0.1- Seriously threatened in California (high degree/immediacy of threat)
0.2- Fairly threatened in California (moderate degree/immediacy of threat)
0.3- Not very threatened in California (low degree/immediacy of threats or no current threats known)
WBWG — Western Bat Working Group
-H: High Priority
- M: Medium Priority
-MH: Medium-High Priority
IUCN — The World Conservation Union
-DD: Data Deficient
-LC: Least Concern
-NT: Near Threatened

Sources: California Department of Fish and Game. 2011a (July). State and Federally Listed Endangered, Threatened, and Rare Plants of California. State of California, The Resources Agency, Department of Fish and Game Resource Management and Planning Division Biogeographic Data Branch, California Natural Diversity Database. Available at http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/TEPlants.pdf

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APPENDIX D
CULTURAL RESOURCES ASSESSMENT

PHASE I CULTURAL RESOURCES ASSESSMENT FOR THE VAN NORMAN COMPLEX WATER QUALITY IMPROVEMENT PROJECT CITY OF LOS ANGELES, CALIFORNIA

Prepared for:

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April 2012

U.S.G.S. Quadrangles: San Fernando

Keywords: Van Norman Complex, Lower and Upper Van Norman Reservoir, Los Angeles Aqueduct, Los Angeles Reservoir, Bull Creek Channel

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EXECUTIVE SUMMARY

The Los Angeles Department of Water and Power (LADWP) is proposing to construct several facility improvements at its Van Norman Complex (VNC) as part of the Van Norman Complex Water Quality Improvement Project (Project). These improvements would include the realignment of the Bull Creek Extension Channel (BCEC) located west of the Los Angeles Reservoir (LAR). The project includes hillside grading, realigning the BCEC within the Lower Debris Basin, widening the BCEC north of the Lower Debris Basin, constructing a new diversion channel, modifying and enlarging the existing Lower San Fernando Dam spillway structure, and increasing the height of the dike along the east side of Bull Creek. The modifications to the system water storage facilities are required in order to comply with updated drinking water quality regulations promulgated by the United States Environmental Protection Agency (EPA) and updated requirements related to maintaining the integrity of several VNC dams that fall under the jurisdiction of the State of California Division of Safety of Dams (DSOD). The objective of the proposed Project is to improve water quality standards. This cultural resources survey and assessment was conducted in compliance with the California Environmental Quality Act.

Archival research for the Project study area was conducted on April 5, 2011, at the South Central Coastal Information Center housed at the California State University, Fullerton. The records search revealed that a total of eleven cultural resources have previously been identified within a 0.5-mile radius of the Project study area, including 10 prehistoric archaeological sites and one archaeological site which included both prehistoric and historic components. None of these resources occur within the area of disturbance for the proposed project improvement. While many surveys have been conducted in the vicinity, the present project study area was not included in any previous survey efforts.

A letter was prepared and mailed to the NAHC on April 12, 2011. The letter requested that a Sacred Lands File (SLF) check be conducted for the Project and that contact information be provided for Native American groups or individuals that may have concerns about cultural resources in the Project area. The NAHC responded to the request in a letter dated April 13, 2011. The letter indicated that the SLF search did not identify any Native American cultural resources within 0.5-mile radius of the proposed Project area. The letter also included an attached list of Native American contacts.

Letters were mailed on April 13, 2011, to each group or individual provided on the NAHC contact list. Maps depicting the Project area and response forms were attached to each letter. Follow-up phone calls were made to each party on May 10, 2011.

A cultural resources field survey of the Project area was conducted on April 28 and October 7, 2011. The Project area, for the purposes of this cultural resources assessment, consists of the BCEC located west of the LAR including the existing vehicle access road near the southern terminus of the BCEC to the east towards the Lower San Fernando Detention Basin. The survey focused on areas that would be potentially impacted by the proposed Project. The field survey included an archaeological investigation, survey and documentation of the built environment, primarily focusing on areas with exposed ground surface for any visible evidence of cultural resources associated with the Project area.

This study has resulted in the identification of one resource that is historic in age, the BCEC, which was originally constructed in the 1940s. The BCEC has been evaluated according to the criteria for listing on the California Register of Historic Resources (CRHR) and has been found not eligible. In addition, one archaeological site (CA-LAN-629) was relocated, and found to be within the boundaries of the reservoir. Pursuant to the Permanent (Q) Qualified Conditions of City Plan Case no. 90-0596, and because of the potential to encounter archaeological resources within the VNC property, monitoring of ground disturbing activities by qualified archaeological and Native American monitors is recommended for the project.

INTRODUCTION

This document reports on a Phase I cultural resources assessment conducted in support of the Van Norman Complex Water Quality Improvement Project (Project) which proposes to make improvements to the Bull Creek Extension Channel (BCEC) located west of the LAR within the Van Norman Complex (VNC), in order to comply with updated drinking water quality regulations promulgated by the United States Environmental Protection Agency (EPA) and updated requirements related to maintaining the integrity of several VNC dams that fall under the jurisdiction of the State of California Division of Safety of Dams (DSOD). The proposed project includes hillside grading, realigning the BCEC within the Lower Debris Basin, widening the BCEC north of the Lower Debris Basin, constructing a new diversion channel, modifying and enlarging the existing Lower San Fernando Dam spillway structure, and increasing the height of the dike along the east side of Bull Creek. In addition, several concrete bridges will be constructed to support VNC operations during the proposed project. This cultural resources survey and assessment was conducted in compliance with the California Environmental Quality Act (CEQA).

PROJECT PERSONNEL

AECOM personnel involved in the cultural resources assessment are as follows: Linda Kry, B.A., report author and archaeological surveyor; Sara Dietler, B.A., report author and archaeological surveyor; James Wallace, M.A., R.P.A., GIS specialist; Tim Harris, B.A., archival researcher, graphics specialist and archaeological surveyor. Heather Gibson, Ph.D., R.P.A. provided senior review of the report.

REPORT ORGANIZATION

This report is organized following the *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format* guidelines, Department of Parks and Recreation, Office of Historic Preservation, State of California, 1990. These guidelines provide a standardized format and suggested report content, scaled to the size of the Project. First, a Project description, including Project location and setting, and proposed work is provided. Next, the environmental and cultural settings are presented along with a detailed literature review which includes a prehistoric and historic overview of the Project area. Next, the research methods are described. The results of archival and field survey research are then presented. The final section provides recommendations for resource eligibility and further work.

PROJECT SETTING

PROJECT LOCATION AND SETTING

The Project area is located within the geologic province known as the Transverse Ranges, which include a series of east/west-trending mountain ranges atypical of the California pattern of north/south ranges more common throughout the state. The Los Angeles Reservoir (LAR) is located near the base of the San Fernando Pass, which is the boundary between the San Gabriel Mountains to the northeast and the Santa Susana Mountains to the north. The northern margin of the area is dominated by the San Gabriel Mountains extending eastward from the San Fernando Pass whose peaks reach a maximum of 10,064 feet (Mt. San Antonio). The neighboring Santa Susana Mountains reach a maximum elevation of only 3,747 feet (Oat Mountain). The Project area is depicted on the San Fernando, California 7.5 minute USGS map (1988), in Township 2 North, Range 16 West of an un-sectioned portion of the map (Figure 1).

Southern California is characterized generally by a semi-arid Mediterranean climate with warm, dry summers and mild winters with occasional storms. Annual rainfall in the Los Angeles area averages 15 inches and predominant vegetation comprises of grass and coastal sagebrush in valley bottoms and chaparral in higher elevations (McCawley 1996).

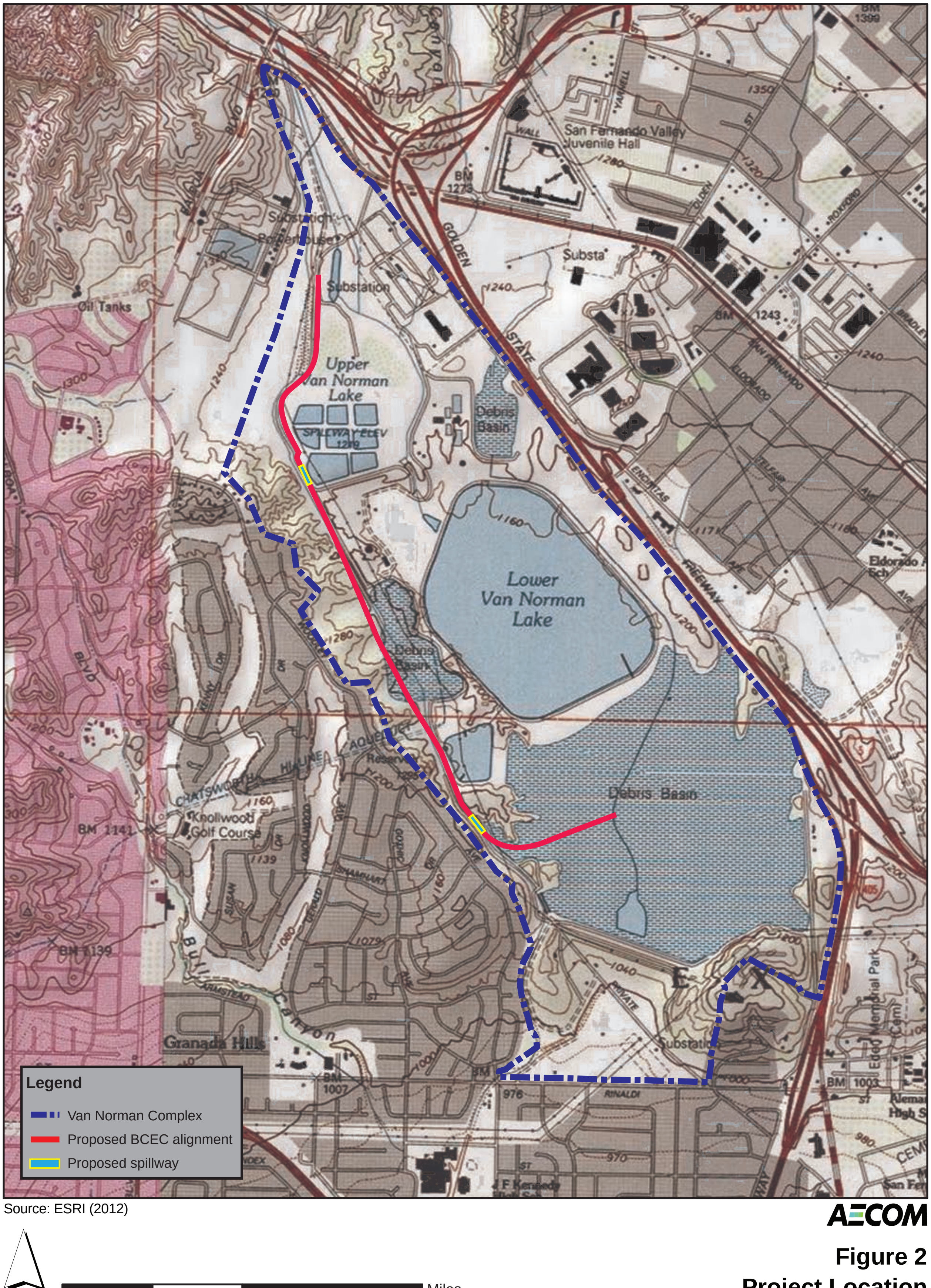
The Project area is located within the VNC at 13101 Sepulveda Boulevard located in the district of Sylmar in the City of Los Angeles, California, less than 0.5-miles west of Interstate-5 (Golden State Freeway) and Interstate-405 (San Diego Freeway) interchange (Figure 2). The VNC is surrounded by residential development along Rinaldi Street to the south and along Woodley Avenue to the west, and the Metropolitan Water District (MWD) Jensen Water Filtration Plant to the northwest. Various residential, commercial, and institutional developments lie to the east of the freeways. The VNC property is generally rolling terrain. It has been largely cleared and is occupied by facilities devoted primarily to water treatment and storage, flood control, and electrical power distribution. The VNC is owned and maintained by the LADWP.

Major facilities related to water treatment and storage include the LAR, an uncovered 3.3-billion gallon drinking water reservoir located in the central part of the VNC. The LAR is contained by the earthen Los Angeles Dam. The Los Angeles Aqueduct Filtration Plant (LAAFP) occupies an approximately 25-acre parcel north of LAR. The LAAFP is the primary water treatment facility for LAA water, which is delivered via an open inlet channel that extends from the northernmost corner of the VNC southward to the filtration plant. This channel may also deliver State Water Project (SWP) water to the LAAFP when it is required to help meet the City's drinking water demand. Treated water from the LAAFP is conveyed via underground pipelines directly to one of several trunk lines in the City of Los Angeles water distribution system, to LAR, or to the Van Norman Bypass Reservoir, an 80-MG hard-covered reservoir located west of the southwest corner of LAR.

Source: California Geospatial Information Library (2003-5)

AECOM

Figure 1
Regional Overview



Source: ESRI (2012)

AECOM

Figure 2
Project Location

A number of settling basins that process the backwash water from the LAAFP occupy the former Upper Van Norman Reservoir, which was removed from service in 1971, after the Sylmar Earthquake. A number of appurtenant facilities related to water treatment, including pump stations, clearwells, chlorination stations, and a chemical storage depot, are located in areas of the VNC generally surrounding LAR.

Primary flood control facilities at the VNC include the Lower San Fernando Storm Water Detention Basin, which occupies a large area of the VNC south of LAR. It is confined by the Lower San Fernando Dam, which was the original impoundment dam for the Lower Van Norman Reservoir. A large drain outlet, which conveys collected storm water beneath Lower San Fernando Dam and into the local storm drainage system, is located at the southern end of the detention basin. The Lower San Fernando Storm Water Detention Basin was originally part of the Lower Van Norman Reservoir, which was taken out of service after the 1971 Sylmar Earthquake and now serves as a flood control basin.

Several smaller debris basins are located within the VNC, including the Upper and Middle Debris Basins, located along the northwestern perimeter of the property; the Yarnell Debris Basin, located north of the northeast corner of LAR; and the Lower Debris Basin, located west of LAR. Two large concrete storm water channels located within the VNC convey water through the property and to and from the various on-site debris and detention basins. The Bull Creek Extension Channel conveys storm water along the western side of the VNC from the Middle Debris Basin, through the Lower Debris Basin, and eventually off site at the southwest corner of the property. The East Storm Channel (also known as the 850 cfs Storm Channel/Spillway Channel) conveys storm water from the area south of the LAAFP along the eastern edge of LAR and discharges into the Lower San Fernando Storm Water Detention Basin.

Several high-voltage electrical transmission lines, owned by both LADWP and Southern California Edison (SCE), cross the VNC along both the eastern and western sides of the property. The Sylmar Converter Station West occupies approximately 45 acres of land near the northern end of the property. While portions of the Sylmar Converter Station West have been decommissioned, it continues to operate as a primary switching station to distribute power to the LADWP service area. Facilities at the station are also being utilized for training classrooms by LADWP. The Rinaldi Receiving Station, where high-voltage power is converted for lower-voltage local distribution, occupies approximately 15 acres along the southern boundary of the VNC, outside the Lower San Fernando Dam impoundment area.

An approximately 10-acre storage yard for pipe sections and other construction materials is located southeast of LAR. LADWP also maintains a parking area for surplus department vehicles and equipment adjacent to the storage yard.

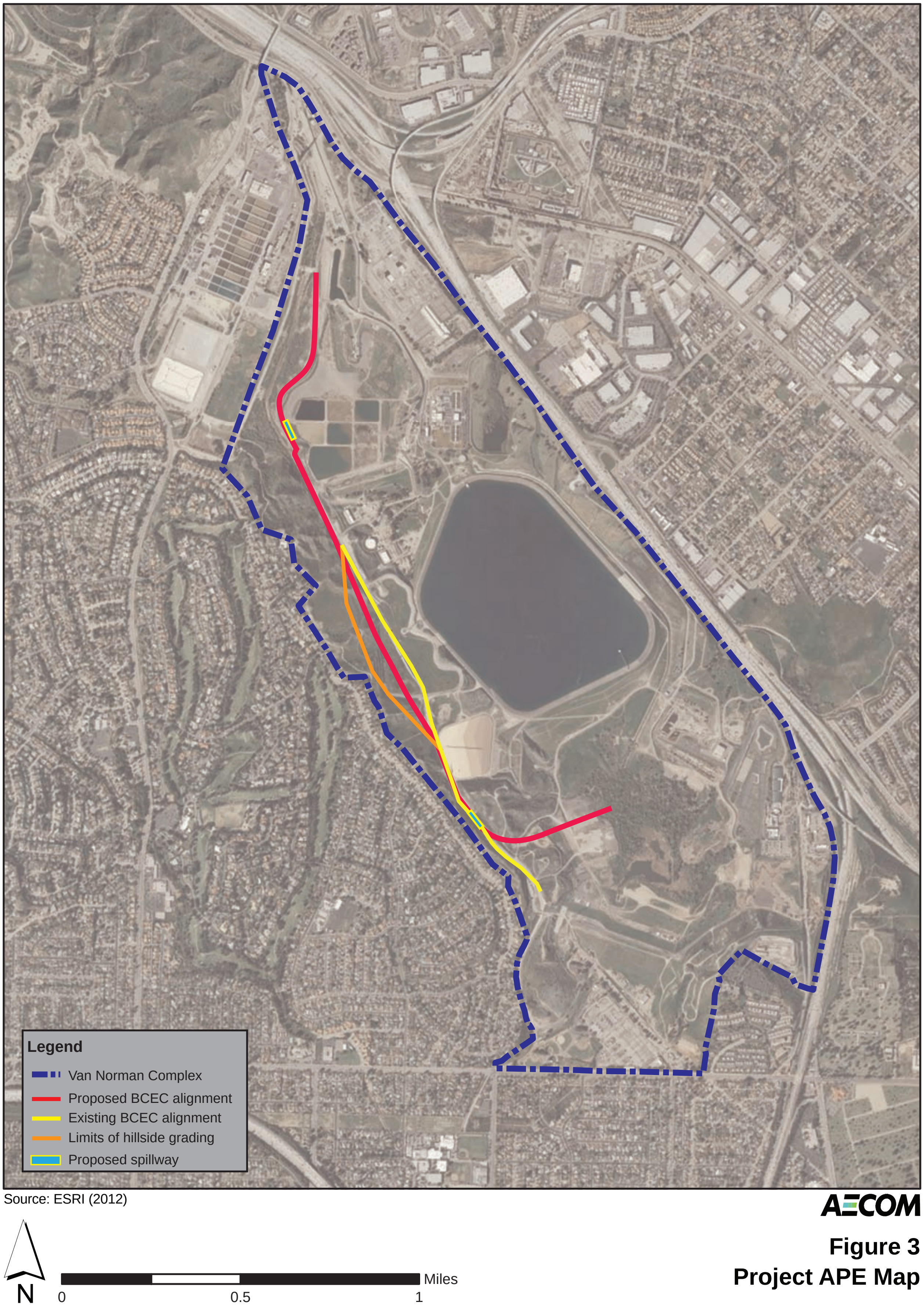
An approximately 50-acre site along the southeastern boundary of the VNC property has been largely developed as a major Los Angeles Police Department (LAPD) training facility that includes classrooms, a driver training course, and an indoor shooting range. LADWP maintains an approximately 2-acre helicopter base located northwest and adjacent to the LAPD training facility. The helicopter facility includes aircraft parking aprons, an administrative building, and a hangar. An approximately 5-acre site located south of the LAPD facility is dedicated to a green waste recycling operation, which grinds landscape cuttings from City maintenance activities into mulch. Much of the mulch from this operation has been spread throughout the VNC property. The Los Angeles Fire Department (LAFD) operates an approximately 1-acre fire fighting training facility in the southern part of the VNC, north of and adjacent to the Lower San Fernando Dam. The facility consists of several mock-up structures where fire suppression is practiced. An approximate 8-acre public park, consisting primarily of a number of baseball/softball fields is located in the far southwest corner of the VNC property, outside the Lower San Fernando Dam impoundment area.

PROPOSED PROJECT WORK

In order to comply with the EPA's final Long-Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR), in particular its provisions regarding uncovered treated water storage facilities and limiting contamination of drinking water supplies by pathogenic microorganisms potentially contained in surface storm water runoff, the LADWP proposes improvements to the BCEC. To avoid contamination in accordance with the LT2ESWTR, the proposed BCEC improvements would remove the Lower Debris Basin as a receptacle for overflow from the channel, thereby eliminating the potential for contaminated storm water to enter Los Angeles Reservoir from the basin via the interconnecting spillway. Instead of entering the Lower Debris Basin, excess storm water flows from BCEC would be rerouted downstream to a new diversion structure that would direct the water into the Lower San Fernando Storm Water Detention Basin, which has a substantially larger storage capacity than the Lower Debris Basin. Typical storm flows not exceeding the capacity of BCEC would continue to be discharged through the channel past the proposed diversion structure and off site, similar to the existing storm drainage flows.

The proposed project consists of improvements to the BCEC, a concrete-lined storm water conveyance and flood control facility located within the VNC. Construction of the proposed project would consist of six primary phases of work: hillside grading; the realignment of BCEC within the Lower Debris Basin; the construction of the new diversion channel; the widening of BCEC north of the Lower Debris Basin; modifying and enlarging the existing Lower San Fernando Dam spillway structure; and increasing the height of the dike along the east side of Bull Creek, north of the concrete-lined portion of the channel, - all within the boundaries of the existing 1,340-acre VNC property (Figure 3). In addition, several concrete bridges will be constructed to support VNC operations during the proposed project. The goal of the proposed Project is to help improve the quality, reliability and stability of the City of Los Angeles drinking water supply.

To accommodate the widened and realigned BCEC, portions of the existing hillside west of the channel must first be cut back. This would entail removing earth, processing the earth so it is suitable as structural fill material for channel construction, and placing it within the Lower Debris Basin to provide the support and flow elevations required for the realigned section of BCEC.



Source: ESRI (2012)

AECOM

Figure 3
Project APE Map

In order to bypass the Lower Debris Basin with storm flows, the section of BCEC located within the basin must be reconfigured to eliminate the diversion structures that currently direct high-water flows into the basin. Since BCEC must remain functional throughout most of the construction period, a new realigned channel would be constructed essentially parallel to and west of the existing channel. This new channel section would be connected at either end to the existing BCEC only once the other portions of the channel reconstruction, including the downstream diversion structure and upstream channel widening, were completed.

The new diversion structure, which would be located approximately 1,500 feet south of the southern end of the realigned portion of BCEC, would be a concrete box channel. It would include a stepped chute energy dissipation structure to reduce the energy of the storm water flow as it enters the Lower San Fernando Storm Water Detention Basin. The new diversion channel would be connected to the existing BCEC only once the other portions of the channel reconstruction, including the upstream channel realignment and channel widening, were completed.

In order to accommodate flows entering the concrete-lined portion of BCEC in accordance with updated DSOD guidelines required to adequately protect Upper San Fernando Dam and the north dam of Los Angeles Reservoir during maximum precipitation events, the segment of BCEC north of the Lower Debris Basin must be widened. However, there is not adequate space available to construct a new realigned channel parallel to the existing channel (as would be done within the Lower Debris Basin). Therefore, this segment of the existing channel must be demolished to accommodate the new widened channel. Because this phase of work would effectively remove BCEC from service, it must be accomplished during the dry season, generally from May to October. Once this phase of work is completed, the connections between the reconstructed portions of BCEC (including the diversion channel) and the existing BCEC would be made.

The existing BCEC within the Lower Debris Basin would be abandoned in place. Although the spillway between the Lower Debris Basin and Los Angeles Reservoir would remain physically in place, the potential for storm water to be released over the spillway would be eliminated since the BCEC overflow would be relocated downstream to the diversion channel that would direct flow to the Lower San Fernando Storm Water Detention Basin.

The Lower San Fernando Dam no longer functions as an impoundment for Lower Van Norman Reservoir, which, as discussed above, was removed from service after the 1971 Sylmar Earthquake. However, the dam continues to serve a flood control function by retaining water in the Lower San Fernando Storm Water Detention Basin. Based on updated DSOD criteria, the existing spillway of Lower San Fernando Dam may not provide adequate release of flood waters retained behind the dam during a probable maximum precipitation event to prevent overtopping of and severe damage to the dam. Therefore, as part of the proposed project, the existing spillway must be demolished and enlarged to accommodate the required increased release flows. This work would occur essentially after the completion of the BCEC realignment and widening work.

In order to contain flows during a maximum precipitation event within the unchannelized portion of Bull Creek located along the northwestern perimeter of the VNC and to prevent overtopping of an existing dike structure that protects the basin at the north end of the VNC that contains the water filtration plant backwash ponds, the dike structure must be raised. This would entail a combination of raising the earth embankments and constructing a parapet wall atop the embankment. The embankment would also be protected with riprap. This work would also occur essentially after the BCEC realignment and widening work was completed.

To implement the above work and maintain functionality at the VNC to support existing operations, several concrete bridges would also be constructed during the proposed project, including across BCEC and the new diversion channel.

Construction

Construction would occur within the existing 1,340-acre VNC property and it is estimated the project would take approximately three years to complete. The construction of the proposed BCEC realignment will be sequenced to ensure that the City of Los Angeles' water supply to consumers will not be disrupted. The LAR will remain in service during construction activities.

The proposed Project would require several major construction procedures and these include hillside grading west of the BCEC; the excavation for the BCEC and the demolition of the Lower Debris Basin; material stockpiling; large truck deliveries; and supplies and equipment storage. Vehicles for the Project construction include bulldozers, backhoes, dump trucks, scrapers, graders, and water trucks – all of which, would be driven or delivered to the VNC and remain on site for the duration of the construction of the Project.

The potential staging and parking areas for Project vehicles and materials, including construction worker private vehicles will be at (1) north of the Upper San Fernando Detention Basin, (2) along the eastern side of the LAR, and (3) adjacent to the north side of the Lower San Fernando Dam. Unused stockpiled areas within the VNC property which, is comprised of relatively flat terrain with vegetation coverage, may also be potential areas of on-site parking for construction worker private vehicles.

CULTURAL SETTING

As a framework for discussing the potential cultural resources expected during the cultural resources investigation for this Project, the following discussion summarizes our current understanding of major prehistoric and historic developments in and around Los Angeles and the San Fernando Valley. This is followed by a more focused discussion of the VNC, and the archaeology of the project area.

Prehistoric Overview

While people are known to have inhabited southern California beginning at least 13,000 years Before Present (B.P.) (Arnold et al. 2004), the first evidence of human occupation in the Los Angeles area dates to at least 9,000 years B.P. and is associated with a period known as the Millingstone Cultural Horizon (Wallace 1955; Warren 1968). Millingstone populations established permanent settlements that were located primarily on the coast and in the vicinity of estuaries, lagoons, lakes, streams, and marshes where a variety of resources, including seeds, fish, shellfish, small mammals, and birds, were exploited. Early Millingstone occupations are typically identified by the presence of handstones (manos) and millingstones (metates), while those Millingstone occupations dating later than 5000 B.P. contain a mortar and pestle complex as well, signifying the exploitation of acorns in the region.

Although many aspects of Millingstone culture persisted, by 3500 B.P., a number of socioeconomic changes occurred (Erlandson 1994; Wallace 1955; Warren 1968). These changes are associated with the period known as the Intermediate Horizon (Wallace 1955). Increasing population size necessitated the intensification of existing terrestrial and marine resources (Erlandson 1994). This was accomplished in part through use of new technological innovations such as the circular shell fishhook on the coast, and in inland areas, use of the mortar and pestle to process an important new vegetal food staple, acorns; and the dart and atlatl resulting in a more diverse hunting capability. Evidence for shifts in settlement patterns has been noted as well at a variety of locations at this time and is seen by many researchers as reflecting increasingly territorial and sedentary populations. The Intermediate Horizon marks a period in which specialization in labor emerged, trading networks became an increasingly important means by which both utilitarian and non-utilitarian materials were acquired, and travel routes were extended.

The Late Prehistoric period, spanning from approximately 1500 years B.P. to the Spanish mission era, is the period associated with the florescence of contemporary Native American groups. The northern San Fernando Valley was the northernmost extent of the territory occupied by people whom the Spanish referred to as the *Fernadeño*, whose name was derived from nearby Mission San Fernando. The *Fernadeño* spoke one of four regional Uto-Aztecan dialects of Gabrielino, a Cupan language in the Takic family, and were culturally identical to the Gabrielino. The Tataviam and Chumash, of the Hokan Chumashan language family, lived to the north and west of this territory, respectively, and it is likely that the territorial boundaries between these linguistically distinct groups fluctuated in prehistoric times (Bean and Smith 1978; Shipley 1978).

Occupying the southern Channel Islands and adjacent mainland areas of Los Angeles and Orange counties, the Gabrielino are reported to have been second only to their Chumash neighbors in terms of population size, regional influence, and degree of sedentism (Bean and Smith 1978). The Gabrielino are estimated to have numbered around 5,000 in the pre-contact period (Kroeber 1925). Maps produced by early explorers indicate the existence of at least forty Gabrielino villages, but as many as 100 may have existed prior to contact with Europeans (Bean and Smith 1978; McCawley 1996; Reid 1939[1852]).

Communities in the San Fernando Valley were more dispersed than the more densely populated San Gabriel Valley. During the missionary period in the late 18th century records indicate that Gabrielino villages in the San Fernando Valley had an average of 100 inhabitants, however, this number may be an under-estimation of typical village population due to forced emigration and disease during Spanish contact (McCawley 1996:25-26). At the time that Mission San Fernando was established in 1797, there were ten known Gabrielino communities in the valley these included Atavsanga, Achooykomenga, Kaweenga, Haahamonga, Muuhonga, Pakooynga, Pasheeknga, SiutCanga, Tohuunga, and Wiqanga. All of these communities were situated along the Los Angeles River and its laterals are adjacent to the foothills of the San Gabriel Mountains and Verdugo hills at the northeastern portion of the valley. The Mission was situated adjacent to Achooykomenga and Pasheeknga (McCawley 1996:35-36, 191), approximately 1-mile south of the VNC southern property boundary.

Prehistoric subsistence consisted of hunting, fishing, and gathering. Small terrestrial game was hunted with deadfalls, rabbit drives, and by burning undergrowth, while larger game such as deer were hunted using bows and arrows. Fish were taken by hook and line, nets, traps, spears, and poison (Bean and Smith 1978; Reid 1939[1852]). The primary plant resources were the acorn gathered in the fall and processed with mortars and pestles, and various seeds that were harvested in late spring and summer and ground with manos and metates. The seeds included chia and other sages, various grasses, and islay or holly leafed-cherry (Reid 1939[1852]).

Historic Overview

Spanish explorers made brief visits to Gabrielino territory in both 1542 and 1602, and on both occasions the two groups exchanged trade items (McCawley 1996). Sustained contact with Europeans did not commence until the onset of the Spanish Period, which began in 1769 when Gaspar de Portola and a small Spanish contingent began their exploratory journey along the California coast from San Diego to Monterey. Mission *San Fernadiño Rey de España*, the seventeenth of the twenty-one Franciscan missions in Alta California, was founded on September 8, 1797 and completed less than a year later. Its location was chosen as a stopping point between Mission San Gabriel and Mission San Buenaventura, and prospered by selling cattle hides and tallow and various fruit crops to the nearby Pueblo of Los Angeles (Wright 1992). Agriculture was made possible in the relatively dry area through the construction of a stone masonry dam in 1808, bringing water from the mountains to mission vineyards by way of a 1.3-mile long aqueduct, completed in 1811.

Gabrielino villages are reported by early explorers to have been most abundant along the dominant rivers of the Los Angeles Basin, including the Los Angeles, San Gabriel, and Santa Ana Rivers. Ten important villages were located within the San Fernando Valley, and the most populous of these was *Pasheeknga*, located near where the Mission was established. Other northern San Fernando Valley communities included *Tohuunga* and *Muuhonga*. *Tohuunga* was likely located near the mouth of Little Tujunga Canyon, while according to Gabrielino informant Jose Zalvidea, *Muuhonga* was located “about two and a half miles from San Fernando, farther up the canyon from San Fernando” (McCawley 1996:40).

A string of 21 Missions were established in the years that followed the Portola expedition. By the early 1800s, the majority of the surviving Gabrielino population had entered the mission system, under the jurisdiction of Mission San Gabriel or Mission San Fernando which, is located less than 1-mile south of the Project area. Mission life offered the Indians security in a time when their traditional trade and political alliances were failing and epidemics and subsistence instabilities were increasing (Jackson 1999). This lifestyle change also brought with it significant negative consequences for Gabrielino health and cultural integrity.

Alta California became a state, with its capital at Monterey, when Mexico won its independence from Spain in 1821. The authority of the California missions gradually declined, culminating with their secularization in 1834. Former mission lands were quickly divided and granted to private citizens for use as agricultural and pastoral land (Reid 1977 [1851]). As the possibility of a takeover of California by the United States loomed large in the 1840s, the Mexican government increased the number of land grants in an effort to keep the land in Mexican hands, and more than 600 ranchos were created between 1833 and 1846. In June 1846, Alta California Governor Pio Pico sold the San Fernando Valley to Eulogio de Celis for $14,000.

Three weeks later, U.S. naval forces took Monterey and American forces captured Los Angeles shortly thereafter. Los Angeles soon slipped from American control, and needed to be retaken in 1847. Approximately 600 U.S. sailors, marines, Army dragoons, and mountain men converged under the leadership of Colonel Stephen W. Kearney and Commodore Robert F. Stockton in early January of that year to challenge the California resistance, which was led by General Jose Maria Flores. The American party scored a decisive victory over the Californians, who formally surrendered a year later in Los Angeles, opening the door for increased American immigration (Takahashi 1980).

The discovery of gold in northern California led to an enormous influx of American citizens in the 1850s and 1860s, and these settlers rapidly displaced the old rancho families. In 1873, the U.S. government confirmed legal title to old Rancho ex-Mission San Fernando at 116,858.43 acres, the largest private land parcel in California. The Southern Pacific Railroad extended its line from San Francisco to Los Angeles in 1876, passing through the San Fernando Valley thanks to a new tunnel through Newhall Pass. Newcomers continued to pour into Los Angeles and the population nearly doubled between 1870 and 1880. The completion of the second transcontinental line, the Santa Fe, took place in 1886 causing a fare war which drove fares to an unprecedented low. More settlers continued to head west and the demand for real estate skyrocketed. The city's population rose from 11,000 in 1880 to 50,000 by 1890 (Meyer 1981:45).

In 1890, a group of Illinois businessmen bought 2,000 acres southeast of the intersection of San Fernando Road and Roxford Street and planted olives on over 1,100 acres. Calling themselves the Los Angeles Olive Growers Association, they built a packing plant and a town quickly sprung up among the groves. By 1893, the town and the olive packing label shared the name Sylmar, (from the latin, *sylva*, meaning forest and the Spanish, *mar*, meaning sea) or "sea of trees" due to the large numbers of olive groves in the area. Sylmar was annexed by the City of Los Angeles in 1915 (Gribin 1981).

The Los Angeles area continued to grow; however, its growth was stifled as a result of limited water supply. In 1905, William Mulholland (Plate 1), chief engineer of the city-owned Bureau of Water Works and Supply (now the Water System of Los Angeles Department of Water and Power), designed an aqueduct that would bring water from the Owens River to the north end of the Valley. The construction of the 238-mile-long Los Angeles Aqueduct began in 1908 and required the labor of 5,000 men for the duration of five years. The project was completed in 1913 and on November 5 of that year, 40,000 people assembled to watch the water pour down the aqueduct into the San Fernando Reservoir (Van Norman Reservoir) (Plate 2). The sudden availability of water found a rapid shift of land use to gardens, vineyards, and orchards (Gumprecht 1999). From 1900 to 1920, Los Angeles had grown from a town of 100,000 people to a booming city of nearly 600,000.

Plate 1. William Mulholland (LAPL, LADWP Photo Collection)

The demand for water provided the impetus to build the largest canal in the valley. At the time construction began in 1908, the Los Angeles Aqueduct was surpassed only by the New York City water system and the Panama Canal (Costello and Marvin 1992:9). It stretched the more than 200 miles from the Owens River at Aberdeen to the San Fernando Valley (JRP 1995:83).

The Los Angeles Aqueduct was planned by William Mulholland, engineer for the LADWP (Costello and Marvin 1992:9). Financed primarily by a bond issue approved by the Los Angeles voters, the resulting construction included the creation of roads, open ditches, aqueducts, tunnels, siphons, dams, reservoirs, and power plants. Much of the canal within the project area was lined in concrete, but portions were unlined due to the high water table in those areas.

Plate 2. Citizens Witness Owens River Water Reach Los Angeles November 5, 1913 (LAPL, LADWP Photo Collection)

Construction of the aqueduct employed thousands of men and animals and thus significantly contributed to local economies (Plate 3). It provided the impetus for the construction of the Southern Pacific Railway from the Mojave to its connection with the Carson and Colorado railways to aid in the transportation of people and supplies to the construction site. Temporary camps, some of them complete with hospitals, mess halls, barns, shops and bunk houses, were also a part of construction effort (Costello and Marvin 1992:10).

Built in Franklin Canyon to the north of the San Fernando Valley during the years of 1912 to 1915, the Lower San Fernando Dam, predecessor to the more recently utilized Los Angeles Dam, was the first dam to allow for the collection of water from Mulholland's aqueduct.

Plate 3. Steam Shoveling Along the Los Angeles Aqueduct N.D. (LAPL, LADWP Photo Collection)

The Los Angeles Aqueduct was completed in 1913 (Plate 4), but the growth of Los Angeles continued, and the need for water was ever increasing. This prompted a subsequent phase of construction in the 1920s and the Aqueduct was extended north (JRP 1995:83). The land was not purchased without a fight, however, which resulted in several incidents, including takeovers of portions of the Aqueduct and acts of sabotage. The work was completed, but concerns over the fragile ecosystem due to the removal of large amounts of water from the area have continued to exist. The Owens Valley Water Commission and the LADWP have been sensitive to these concerns and have worked together to ensure local water needs are met while maintaining water rights for Los Angeles.

In 1971, the near-failure of this dam during a magnitude 6.7 earthquake forced 80,000 people in the Valley below to evacuate their residences. The dam lost approximately 30 feet of concrete facing from the 2,100-foot-long crest, leaving only a narrow wall of dirt. Destruction would have been catastrophic had the reservoir been filled to maximum capacity. A new $33 million dam and reservoir complex (Los Angeles Dam and Reservoir), was built in 1975-76 approximately 3,000 feet up the valley from the old Lower San Fernando Dam. The old dam was reconstructed to provide a holding basin for storm water and as a back-up to the new dam. In 1994, the replacement dam survived an almost identical earthquake with little damage.

Plate 4. Opening the Gates of the Los Angeles Aqueduct February 13, 1913 (LAPL, LADWP Photo Collection)

Recent and Relevant Projects and Discoveries

Human habitation of the area encompassing what is now known as the community of Sylmar (located within a mile of the VNC on the east side of Interstate 5) dates back to prehistory. Prehistoric artifacts associated with Native American subsistence and settlements have been found throughout the Sylmar area, possibly due to the ample availability of fresh water in this area. In the 1950s Edwin Francis Walker (1952) reported on what he called the "Metate Site," a prehistoric archaeological deposit containing many ritually killed metates. Walker only provides relative geographic information and topographic descriptions of the site's surroundings. He indicates the site is located "about two and a half miles north of San Fernando Mission" and "On one side is an arroyo that comes from a mountain canon three miles away. On the other side…at a distance of about two city blocks, is San Fernando Road" (Walker 1952:18-19). This description possibly places the site within a mile or so of the eastern boundary of the VNC.

The use of the project vicinity (the mission lands) for ground water collection and conveyance dates back to as early as the Mission Period. During the Mission Period, the Project area fell within the formally delineated mission land holdings (*Mission de San Fernando* land grant) nearby areas in Sylmar were covered with swampland, called *cienegas* by the Spanish.

Reportedly, the location selected for the construction of the Mission San Fernando (Plate 5) was partly dependent upon the close proximity of the *cienegas* which were a primary source of water for the mission lands (Los Angeles Times 1967:SF9). With the establishment of the San Fernando Mission, this water resource was harnessed by a gravity system that supplied power to operate a mill and provided water for several fountains. The historic resource identified as HCM No. 50, the Mission Wells Settling Basin, was part of the system in which water was purified and transported south "in 4-inch handmade pipes" (Los Angeles Times 1967:SF9) a distance of approximately two miles, to the mission (Los Angeles Times 1967:SF9). The basin is documented as "the oldest existing remnant of water development in the City and is the precursor to the far-flung Los Angeles water system that has permitted the development of the entire area" (Los Angeles Times 1967:SF9).

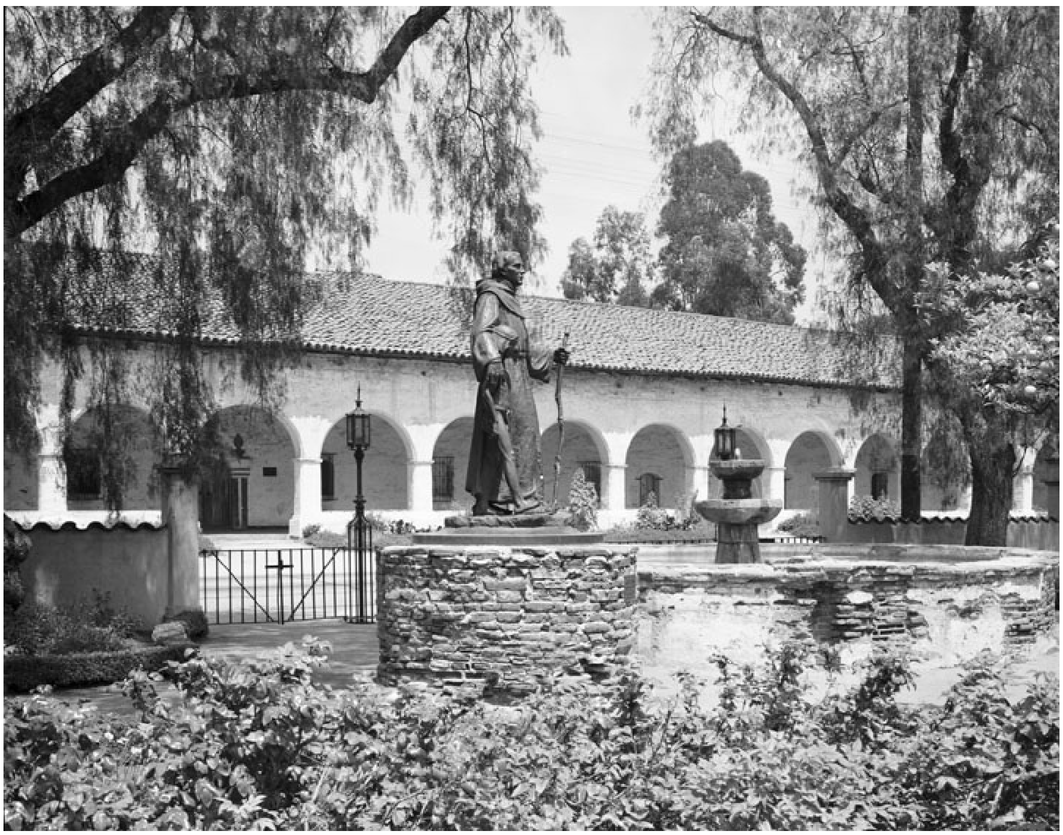


Plate 5. Mission San Fernando (LAPL, LADWP Photo Collection)

Denardo and Hawley (2004:11-12, 14) describe that a parcel of land "located less than 2,500 feet northwest of the mission San Fernando and was owned in 1872 by Maria de los Angeles Feliz de Burrows near the location of the Lower San Fernando Dam. (Denardo and Hawley 2004:11)" In 1872 three separate buildings existed on the parcel. Miss Burrows' house on the west side of the Arroyo Palomas, a house occupied by C.R. Rinaldi located 750 feet from the Burrows house, and on the northeastern portion of the parcel, an adobe built by Gerónimo Lopez which in the late

1850s was used as a rest stop for the Butterfield Stage line and used as a post office and store until 1874.

Eventually the Lopez adobe and other early buildings were covered by the reservoir but Dernardo and Hawley (2004:12) report that the Burrows house and Rinaldi house may have been present on the site after the completion of the lower San Fernando Dam and Lower Van Norman Reservoir in 1913 but demolished by 1940.

The VNC itself has a long history of archaeological investigation (Plate 6). After the Sylmar Earthquake of 1971 badly damaged the San Fernando Reservoir (in the location of the modern Los Angeles Reservoir), several prehistoric sites were recorded during surveys of the drained reservoir and several more were unearthed during excavation for the construction of the Los Angeles Reservoir.

Plate 6. Archaeological Excavation in Dry Van Norman Reservoir in March 1975 (LAPL).

METHODS

BACKGROUND RESEARCH

In order to assess the potential for cultural resources on the proposed project site, background research was conducted to compile a history of the project area. Research was conducted at the Los Angeles Public Library, Los Angeles County Assessors database, historicaerials.com, and information provided by the LADPW. Information reviewed included; Sanborn Fire Insurance Maps, historic topographic maps and aerials, and a sacred land files check, in addition to Native American consultation.

ARCHIVAL RESEARCH AND CONTACT PROGRAM

Records Search

Archival research for this Project was conducted on April 5, 2011 at the South Central Coastal Information Center housed at the California State University, Fullerton (SCCIC). The research focused on the identification of previously recorded cultural resources within a 0.5-mile radius of the Project area. The archival research involved review of archaeological site records, historic maps, and historic site and building inventories and included review of, the National Register of Historic Places (NRHP) database and listings for the California State Historic Resources Inventory (HRI), and the California Historical Landmarks (CHL) Register were examined to determine whether any sites in this radius were listed on or had been determined eligible for these registers.

Native American Contact Program

As part of this investigation, a sacred lands file (SLF) search was requested from the Native American Heritage Commission (NAHC) of the project area and vicinity. A letter was mailed to the NAHC on April 12, 2011 requesting that a sacred lands file search be conducted for the proposed project and that contact information be provided for Native American groups or individuals that may have concerns about cultural resources in the project site.

PALEONTOLOGICAL RECORDS SEARCH

A paleontological records search was requested from the Los Angeles Natural History Museum in June of 2009 in order to determine the level of paleontological sensitivity within the project area. The request was accompanied by a project description and a map of the project area.

SURVEY METHODOLOGY

Pedestrian Survey

A pedestrian archaeological and historic architectural resources survey of the Project area was conducted by AECOM on April 28, 2011 and October 7, 2011. Personnel included Linda Kry, B.A., Timothy Harris, B.A., and Sara Dietler, B.A. The pedestrian survey was conducted in 10-meter parallel transects within portions of the Project area. The surveyors used 7.5-minute USGS topographic maps and larger scale aerial photographs, as well as hand-held submeter Global Positioning System (GPS) units loaded with shape files of the Project boundary.

The survey focused on areas and historic structures that would be potentially impacted by the Project. The field survey included an archaeological investigation, survey and documentation of the built environment, primarily focusing on areas with exposed ground surface for any visible evidence of cultural resources associated with the Project area. Known sites in the vicinity of the project area were relocated and assessed for condition. Cultural resources identified and relocated during the surveys were documented on appropriate DPR 523 forms and are included in this report in Appendix A (Confidential).

RESULTS

ARCHIVAL RESEARCH AND CONTACT PROGRAM

Records Search

The records search revealed that a total of nine cultural resource investigations were previously conducted within a 0.5-mile radius of the Project area (Table 1). One of these previous investigations identified cultural resources within 0.5-mile of the Project area (LA-51) (Table 1).

Table 1. Previous Surveys Conducted within 0.5-Mile of the Project Area

Author	Report # (LA-)	Description	Date
Anonymous	2683	Draft Environmental Impact Report for the Police Bond Program Police Driver Training Facility	1992
Bonner, Wayne H.	9068	Cultural Survey Results for Cingular Wireless Facility Candidate Vy-351-01 (Woodley/Balboa), 13000 North Balboa Blvd., Granada Hills, Los Angeles County, California	2003
Duke, Curt	4403	Cultural Resource Assessment for the AT&T Wireless Services Facility Number R109.1, Located at the Interstate 5 and Interstate 405 Interchange, City of San Fernando, County of Los Angeles, California	1999
Duke, Curt	4582	Cultural Resource Assessment for Pacific Bell Mobile Services Facility La 823-03, County of Los Angeles, California	1999
Kelly, Roger E. and Gerald R. Gates	51	Cultural Resources of Los Angeles Reservoir, City of Los Angeles	1974
Raab, Mark L.	368	Report of Archaeological Reconnaissance Survey of the Proposed Metropolitan Water District of Southern California Joseph Jensen Filtration Plant Expansion	1988
Smith, Phil and Gary Iverson	10179	Highway Project Description – 1Y0201	2000
Thal, Erika	7165	CA-6392a/Chips Telecommunications 12000 Blucher Avenue, Granada Hills, Ca Los Angeles County	2005
Wlodarski, Robert J.	2517	A Phase I Archaeological Study for Eight Areas Proposed for the New Los Angeles Police Training Academy, and Driver Training Facility, City of Los Angeles County, California	1991

The records search also indicated that a total of 11 cultural resources have been previously recorded within a 0.5-mile of the Project area. Of the 11 resources, 10 are prehistoric sites and one has both prehistoric and historic components (Table 2). Recently, additional resources have been found during construction monitoring within the VNC (Wallace and Dietler 2011) and included three sites (Table 2). None of the aforementioned resources occur within the area of disturbance for the proposed project improvements.

Table 2. Previously Recorded Archaeological Sites within 0.5-Mile of the Project Area

Trinomial (CA-LAN-)	Temporary Number	Description	Date Recorded
475		Prehistoric tools including mission era materials	01/1974
490		Prehistoric tools and lithics	
491		Prehistoric tools and lithics	10/1972
492		Prehistoric tools and lithics	10/1972
493		Prehistoric tools and lithics with historic debris	10/1972
629		Prehistoric burial	11/1972
642		Prehistoric tools and lithics	01/1974
643		Prehistoric tools and lithics	01/1974
644		Prehistoric tools and lithics	01/1974
645		Prehistoric tools and lithics	01/1974
646		Possible historic grave and tools and lithics	01/1974
	VNCS 1	Prehistoric tools and lithics	09/2011
	VNCS 2	Prehistoric tools and lithics and historic artifacts	09/2011
	VNCS 2-1	Historic refuse deposit	09/2011

Archaeological Resources

The ten prehistoric resources and one multi-component site (CA-LAN-475, CA-LAN-490, CA-LAN-491, CA-LAN-492, CA-LAN-493, CA-LAN-629, CA-LAN-642, CA-LAN-643, CA-LAN-644, CA-LAN-645, and CA-LAN-646) are located less than 0.25-miles from of the BCEC, ten to the east and one (CA-LAN-646) to the southwest of the project site, and were discovered and tested during the early 1970's. After the Sylmar earthquake of 1971 badly damaged the San Fernando Reservoir (in the location of the modern Los Angeles Reservoir), the eleven sites were recorded during surveys of the drained reservoir and during excavation for the construction of the Los Angeles Reservoir. Many of the prehistoric archaeological sites recorded within the Van Norman Complex are characterized as temporary habitation sites. Flaked stone tools and debitage are common at these sites as well as shell and faunal remains (CA-LAN-475, CA-LAN-490, CA-LAN-491, CA-LAN-492, CA-LAN-493, CA-LAN-642, CA-LAN-643, CA-LAN-644, and CA-LAN-645). Archaeological testing of these sites conducted in the 1970's (Kelly and Gates 1974) demonstrated evidence of native occupation spanning back 5,000 to 6,000 years ago and continuing into the Mission Era.

Recently, additional resources have been found during construction monitoring within the VNC (Wallace and Dietler 2011) including three sites. One site (VNCS 1) consisted of isolated prehistoric artifacts recorded as a single prehistoric site, one prehistoric and historic archaeological site (VNCS 2) and a historic refuse deposit (VNCS 2-1). Site VNCS 1 lies within 0.25-miles to the east of the current project area and the remaining two sites are located within 0.5-miles to the southeast of the project area.

In addition, the Van Norman Reservoir Archeological District, also known as the Los Angeles Reservoir Archaeological District was added to the National Register of Historic Places in 1976 (#76002314).

Resources in the Vicinity of the BCEC

CA-LAN-629 was a single human burial feature that was exposed within a trench cut during construction activities. It was located within 200 meters directly east of the BCEC. The burial feature was excavated in a block and removed from the site in 1972 (Denardo and Hawley 2004:14; Foster and Wlodarski 1983:107-112; Gates 1973). The burial was of a young male between 20 to 25 years of age. The remains were associated with thousands of shell and steatite beads and several bone awls constructed from deer metapodials. Within this context, the burial was interpreted as being adorned and may represent an individual of high status. Radiocarbon dates suggested that the feature is 600 to 700 years old. Subsequent backhoe exploration in the vicinity of this site did not uncover additional materials (Denardo and Hawley 2004:14).

CA-LAN-646 is prehistoric site located southeast from the southern portion of the BCEC and the Project Area. This site is listed on the California Register of Historic Places. This site included prehistoric artifacts such as manos, metate fragments, lithic debitage, and cores. There was also a circular cobble lined feature that was also discovered. This feature was believed to be a possible historic burial (Denardo and Hawley 2004; Kelly and Gates 1974). Based on available information this site has been preserved in place.

OTHER ARCHIVAL RESEARCH

Historic Structures

According to LADWP archives, the BCEC was constructed in the 1940's with the intention of utilizing it to protect the Upper San Fernando and Lower San Fernando Reservoirs from silting, contamination and water discoloration caused by storm run-off from the surrounding drainage area (Personal Communications via email from Nancy Chung on May 19, 2011). The BCEC underwent improvements in the late 1960's with the addition of a diversion structure and flow-through channel at the Lower Debris Basin to provide better flood control and management for the Upper and Lower San Fernando Reservoir (Personal Communications via email from Nancy Chung on May 19, 2011, Los Angeles County Flood Control District 1970). None of the referenced documents indicate that the BCEC was previously assessed and/or recorded as a historic resource.

Sanborn Fire Insurance Maps

Sanborn fire insurance maps for 1918, 1923 and 1940 [1925] were consulted for the identification of historic structures within the Project area. Although the Sanborn Map coverage does include a portion of the VNC, the area encompassing the Project does not appear to have any visible developments. The maps depict the San Fernando Reservoir and the railroad lines to the east on the maps for all the available years. However, only the 1940 [1925] map depicts what appears to be a channelized BCEC.

Historic USGS Topographic Maps

Historic San Fernando USGS topographic maps were reviewed to gauge the amount and type of development which occurred historically in the Project area. The San Fernando 1900 15' and 30' Topographic Quadrangles predate the development of the VNC and shows the natural configuration of the San Fernando Reservoir which was simply labeled "Reservoir". Although there is no development depicted within the Project area, less than 1-mile to the east are the Southern Pacific, San Francisco and New Orleans railroad lines. In addition, there are agricultural tracts to the east and south and structures that are presumably residential, including the Mission San Fernando.

The 1940 USGS 15' San Fernando Topographic Quadrangle revealed a significant change in terms of development in the Project area and the immediate vicinity. The reservoir was officially named the San Fernando (now Lower Van Norman) Reservoir and the VNC is depicted in its early stages of development as a water supply system, including the Upper Van Norman Lake. In fact, this is the earliest documentation that provides images of the BCEC as a channelized component of the VNC. According to LADWP archival documents, the BCEC was constructed between 1940 and 1941 as part of major modifications made to the Upper San Fernando Reservoir as a means to bypass the storm water runoff along the reservoir. Also present within the VNC is the Upper Van Norman Reservoir, yet to be labeled as such. The immediate vicinity also underwent drastic changes. For instance, the presence of numerous tracts to the north, east and south of the VNC, were subdivided into smaller tracts and the residential structures appear to have tripled. The Mission San Fernando also grew in size. Moreover, the Southern Pacific, San Francisco and New Orleans railroad lines were collectively listed as the Southern Pacific.

Historic Aerials

The review of historic aerials provided by LADWP for the years of 1938, 1956 and 1968, was completed to assess the extent and type of development which occurred historically in the Project area. The 1938 aerial taken by Spence Air Photos, reveals that the VNC to the west, was comprised of agricultural fields with few associated residential structures to the south. The BCEC is present on the 1938 aerial and does not appear to be channelized.

An aerial photo taken by Fairchild Aerial Surveys, Inc. in 1956 provides images west of the VNC. The photo indicates that the vicinity immediately west of the VNC was undeveloped. However, there are images of agricultural fields and residential structures present that were not visible on the 1938 aerials further to the west. The BCEC appears to have undergone channelization by this time; in fact, it appears that the BCEC was also re-directed from its natural winding course to a more streamlined one.

By 1968, aerials indicate that the BCEC was completely channelized and the majority of the landscape west of the VNC is developed with residential structures.

NATIVE AMERICAN CONSULTATION

As part of this investigation, AECOM conducted a Native American contact program on behalf of the Los Angeles Department of Water and Power, to inform interested parties of the proposed Project and to address any concerns regarding Traditional Cultural Properties or other resources that might be affected by the Project. The program involved contacting Native American representatives provided by the Native American Heritage Commission (NAHC) to solicit comments and concerns regarding the Project.

A letter was prepared and mailed to the NAHC on April 12, 2011. The letter requested that a Sacred Lands File (SLF) check be conducted for the Project and that contact information be provided for Native American groups or individuals that may have concerns about cultural resources in the Project area. The NAHC responded to the request in a letter dated April 13, 2011. The letter indicated that the SLF search did not identify any Native American cultural resources within 0.5-mile radius of the proposed Project area. The letter also included an attached list of Native American contacts.

Letters were mailed or emailed on April 13, 2011, to each group or individual provided on the contact list. Maps depicting the Project area and response forms were attached to each letter. Follow-up phone calls were made to each party on May 10, 2011. Responses are summarized in Table 3.

Table 3. Native American Contact Follow Up

Name of Native American Contacted/Title	Native American Tribe/Affiliation	Date of Follow up	Response/Comments
Ron Andrade, Director	LA City/County Native American Indian Commission	May 10, 2011	No response.
Charles Cooke	Chumash, Fernandeno, Tatavium and Kitanemuk	May 10, 2011	No questions or concerns
Delia Dominguez, Chairperson	Kitanemuk & Yowlumne Tejon Indians	May 10, 2011	No response.
Randy Guzman-Folkes	Chumash, Fernandeno, Tatavium, Shoshone, Paiute and Yaqui	May 10, 2011	No response.
Ronnie Salas, Cultural Preservation Department	Fernandeno Tatavium Band of Mission Indians	May 10, 2011	No response.
Beverly Salazar Folkes	Chumash, Tatavium and Fernandeno	May 10, 2011	Have Native American monitor present during ground disturbance activities in undeveloped areas and tread cautiously.
John Tommy Rosas, Tribal Admin.	Tongva Ancestral Territorial Tribal Nation	May 10, 2011	No response

Name of Native American Contacted/Title	Native American Tribe/Affiliation	Date of Follow up	Response/Comments
John Valenzuela, Chairperson	San Fernando Band of Mission Indians	May 10, 2011	Group is out of area. Mr. Valenzuela recommends contacting the Fernandeno who work in the San Fernando Valley area. A second response was submitted on June 23, 2011 via a letter. In the letter, Mr. Valenzuela requested to be informed on the project because it lies within an area of historical significance.

PALEONTOLOGICAL RECORDS CHECK

A paleontological records check for this Project was previously conducted by Dr. Samuel McLeod, Vertebrate Paleontology Division of through the Natural History Museum of Los Angeles County, in July 2009. The paleontological records check indicated that the project area has exposures of the Plio-Pleistocene Saugus Formation and exposures of older Quaternary Alluvium, Marine Pliocene Towsley Formation and the marine late Miocene Monterey Formation near the southern end of the debris basin for the Van Norman Reservoir parcel. Lower lying terrain has surficial deposits of younger Quaternary Alluvium in the form of fan and fluvial deposits from various drainages. These later deposits do not contain significant vertebrate fossils in the uppermost layers but are usually underlain at variable depths by older Quaternary deposits which may contain significant vertebrate fossils. Two vertebrate fossil localities from these older Quaternary deposits were recorded within the VNC on the northwestern side of the current reservoir (LACM 3397) and on to the northeast of the southern debris basin (LACM 7152). Northeast of the VNC but within similar older Quaternary deposits, two addition localities have been recorded (LACM 5745 and LACM 1733) just east of the I-5 and south of the I-210 and just outside of the VNC southern boundary. There are also a great number of vertebrate fossil localities from the Monterey Formation directly south of the VNC on the northern side of the Santa Monica Mountains.

Grading or shallow excavations are unlikely to uncover significant vertebrate fossils. However deeper excavations in the older Quaternary deposits and exposures of the Saugus Formation, Towsley Formation, or the Monterey Formation, may encounter significant fossil vertebrate remains.

CULTURAL RESOURCES SURVEY

The following sections will provide descriptions of soil types, ground surface visibility, built environment and resources observed. The area to be disturbed by the Project is concentrated in the western portion of the VNC, in the vicinity of the BCEC.

The cultural resources survey focused on the identification of any surface evidence of archaeological materials and assessment of any structures of historic age within the Project area. The intent was to locate any known and unknown archaeological or historical resources within the vicinity of the Project area localities. For the purposes of this assessment, the only built resource identified was the BCEC itself. Although ancillary structures related to the VNC are located adjacent to the Project area, none of these occur within the Project area and accordingly are not evaluated as part of this assessment.

Archaeology

The footprint of the Project area follows the proposed BCEC re-alignment, and the hillside grading area to the west of the BCEC (Plate 7). The locality of the proposed BCEC realignment is comprised of moderate to dense vegetation as well as graded roads and has likely been disturbed recently and historically (Plate 8). Ground surface visibility of the BCEC realignment varied between approximately 10 to 75 percent. Therefore, surveyors focused on exposed ground surface areas of the proposed BCEC realignment and inspected the locality in 5 to 10-meter intervals when access was possible. The proposed BCEC realignment were diligently investigated in areas such as drainage banks, dirt road cuts and rodent burrows, if any, for evidence of buried deposits.

Plate 7. Overview of BCEC, View to the Southwest.

Plate 8. Overviews of Proposed Area of BCEC Re-alignment. Views to the Northwest.

The proposed realignment of the BCEC is anticipated to take place along the western extent of the VNC, less than 0.25-miles west of the existing BCEC and east of a residential area (see Figure 3). During the survey of the entire existing BCEC and the proposed re-alignment locations, the resource CA-LAN-629, the “Burial Site”, was relocated and assessed. Site CA-LAN-629 is located less that 0.25-miles east of the existing BCEC, within the western boundary of the current Lower Van Norman Lake (Plate 9 and 10). Field efforts to relocate the resource CA-LAN-629 indicated that it was within the Lower Van Norman Reservoir, possibly below the concrete-lined walls of the reservoir. According to referenced documents from 1972 (Kelly et al. 1974), the site consists of a single burial of a young adult male, between the ages of 20 and 25 in addition to faunal skeletal remains and stone tools. The remains were observed and subsequently removed from an eroding bank of a ditch located between the Lower and Upper Van Norman Reservoirs after a 1971 earthquake had damaged the Lower Van Norman Dam. Testing in the vicinity of the site in 1974 did not reveal further evidence of the burial or any possible related resources (Kelly et al. 1974). A DPR 523 updating the condition of site CA-LAN-629 is included in Appendix A.

Plate 9. Overview of Previously Recorded Site CA-LAN-629. View to East from Western Boundary of Site.

Plate 10. Overview of Previously Recorded Site CA-LAN-629. View to South from Western Boundary of Site.

Bull Creek Channel

The BCEC is a concrete-lined stormwater channel, with an unchannelized portion located at the northern boundary of the VNC (Plate 11). The south end of the BCEC within the VNC runs from Woodley Avenue and Rinaldi Street Sycamore Avenue (Plate 12) north to the intersection of Balboa Boulevard and San Fernando Road. The channel continues in both directions outside of the VNC; however these sections were not evaluated as part of this study. The entirety of the BCEC within the VNC was surveyed and periodically photographed as part of the survey. DPR 523 forms for the channel were completed for the channel and are included in Appendix A.

Plate 11. From Spillway at the Northern End of the BCEC, View to South of Un-channelized Portion

Plate 12. Southern Portion of BCEC near Intersection of Woodley Avenue and Rinaldi Street. View to Northeast.

EVALUATIONS AND RECOMMENDATIONS

REGULATORY SETTING

Cultural resources in California are protected by a number of federal, state, and local regulations, statues, and ordinances. The determination of California Register of Historical Resources (CRHR) significance of a resource is guided by specific legal context outlined in Sections 15064.5 (b), 21083.2, and 21084.1 of the Public Resources Code (PRC), and the CEQA Guidelines (California Code of Regulations Title 14, Section 15064.5). A cultural resource may be eligible for listing on the CRHR if it:

1. is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage:
2. is associated with the lives of persons important in our past;
3. embodies the distinctive characteristics of a type, period, region or method of construction or represents the work of an important creative individual or possesses high artistic values; or
4. has yielded, or may be likely to yield, information important in prehistory or history.

In addition to meeting one or more of the above criteria, historical resources eligible for listing in the CRHR must retain enough of their historic character or appearance to be able to convey the reasons for their significance. Such integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association.

SUMMARY

AECOM conducted cultural resources studies for compliance with CEQA as implemented by the City of Los Angeles Department of Water and Power. Pedestrian archaeological and historic architecture surveys were undertaken to identify cultural resources that are present in the Project area and to determine if the Project may pose impacts to these resources.

No archaeological studies had previously been conducted within the present Project area. The archaeological records search indicated that nine studies have previously been conducted within a 0.5-mile radius of the VNC. The records search also indicated that a total of 11 cultural resources have been previously recorded within a 0.5-mile radius of the VNC. Ten of these resources are prehistoric archaeological sites and one resource is an archaeological site that has both prehistoric and historic components. None of the aforementioned resources occur within the area of proposed disturbance for the proposed project improvements.

One site which had previously been recorded in the vicinity of the Project area (CA-LAN-629) was re-located and found to be currently located within the limits of the reservoir and underwater, by the present study. One new resource, the Bull Creek Extension Channel, was recorded as part of this study.

Significance Evaluation of the Bull Creek Extension Channel

The BCEC was constructed in 1940 and was operational the following year. It was constructed with the intention of utilizing it to protect the Upper San Fernando and Lower San Fernando Reservoirs from silting, contamination, and water discoloration caused by storm runoff from the surrounding drainage area. In the 1960s, additions were made to the BCEC in the form of a diversion structure and flow-through channel at the Lower Debris Basin to provide better flood control for the Upper and Lower San Fernando Reservoirs. As the BCEC was determined to be historic in age (older than 45 years) it was evaluated for eligibility for listing on the California Register of Historic Resources (CRHP).

For a water system to be considered eligible under the CEQA, the resource must meet one or more of the criteria for listing on the CRHP. The CRHP was designed to be used by state and local agencies, private groups, and citizens to identify existing cultural resources within the state and to indicate which of those resources should be protected, to the extent prudent and feasible, from substantial adverse change. The following criteria have been established for the California Register (Pub. Res. Code §5024.1, Title 14 CCR, Section 4852). A resource is considered significant if it:

1. is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage; or
2. is associated with the lives of persons important in our past; or
3. embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. has yielded, or may be likely to yield, information important in prehistory or history.

Applying the criteria set forth above, the BCEC was evaluated for listing on the California Register. The assessment and application of eligibility criteria is provided below.

The BCEC did not demonstrate sufficient importance or association with significant events under Criterion 1. The BCEC does not have an association with an important person’s life and therefore does not meet Criterion 2. The BCEC spillway and associated diversion structure and flow-through channel has neither an innovative design of a significant method of construction, nor does it constitute a bold engineering achievement. It is therefore is not eligible under Criterion 3. Criterion 4 is usually reserved for archaeological sites. Since the BCEC has been fully researched, there is not further potential for the BCEC to yield information important in history, therefore the BCEC is not considered eligible under Criterion 4. As such, the BCEC has been evaluated against these eligibility criteria and was not found to be eligible for listing as a historic resource on the California Register of Historic Resources.

In addition, the channel does not retain integrity of design due to the changes that have been made to it over time and therefore would not be eligible for listing as a historic resource on the California Register of Historic Resource. DPR 523 forms recording and detailing the evaluation of the BCEC are included in Appendix A.

RECOMMENDATIONS

Although no archaeological resources have been previously recorded within the project area itself, based on recent monitoring finds and the results of the record search, it is possible that subsurface archaeological resources may be present within the project area. Because the potential to encounter archaeological resources exists for the proposed project, mitigation is required to reduce the impact to archaeological resources to a less than significant level.

In addition to CEQA, ground disturbing activities undertaken within the VNC are governed by the Permanent (Q) Qualified Conditions of City Plan Case no. 90-0596, which reads, "All subsurface excavation work in the VNC requires observation by archaeological and Native American Monitors" (LADWP 2006: 3-12 and 3-13). This stipulation is due to the discoveries of human remains and numerous sites documented from area within the VNC. In addition, to stipulations required by Condition Q and because the potential to encounter archaeological resources exists within the VNC property, qualified archaeological and Native American monitors shall perform monitoring during all ground disturbing activities, including but not limited to, excavation, trenching, boring, and grading at the project site. In the event that potential archaeological materials are encountered during construction, all construction activity in the area of the find shall cease until the discovery can be evaluated by a qualified archaeologist in accordance with the provisions of CEQA Guidelines Section 15064.5(f). The archaeological monitor shall have the authority, in coordination with the construction manager, to temporarily re-direct construction equipment in the event potential archaeological resources are encountered until appropriate action to protect the resource has occurred.

Grading or very shallow excavations in the uppermost few feet of younger Quaternary Alluvium in the project area are unlikely to uncover significant vertebrate fossils. Although not expected to occur, deeper excavations that extend down into older Quaternary deposits or exposures of the Saugus Formation, Towsley Formation, or Monterey Formation, could encounter fossil vertebrate remains. Therefore, in the event previously uncovered paleontological resources are encountered during project construction, the construction manager shall halt construction activities in the immediate area, in accordance with CEQA Guidelines Section 15064.5(f). LADWP shall retain a qualified paleontological monitor to make an immediate evaluation of the significance and appropriate treatment of the resource. Construction activities may continue on other parts of the construction site while evaluation and treatment of paleontological resources takes place, if necessary.

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APPENDIX A
DPR 523 FORMS

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code **Reviewer** **Date**

 *__Resource Name or #:__ Bull Creek Extension Channel

P1. Other Identifier:

***P2. Location:** ☐ **Not for Publication** ■**Unrestricted** ***a. County:** Los Angeles
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** San Fernando **Date:** 1981 **T** 3N; **R** 15W Unsectioned**; S.B.B.M.**
c. Address: 15751 Rinaldi Street City: Los Angeles Zip: 91341
d. UTM: Zone: 11; 363020mE/ 37960150mN (G.P.S.)
e. Other Locational Data: The Los Angeles Reservoir (LAR) is located near the base of the San Fernando Pass, which is the boundary between the San Gabriel Mountains to the northeast and the Santa Susana Mountains to the north. The Project area is depicted on the San Fernando, California 7.5 minute USGS map (1988), in Township 2 North, Range 16 West of an un-sectioned portion of the map. The Bull Creek Extension Channel (BCEC) is located, along the west side of the LAR, near the western boundary of the Van Norman Complex (VNC) .
Elevation: 1140 feet

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries) ; The BCEC is a partially concrete-lined stormwater channel withing the VNC, with an unchannelized portion located at the northern boundary of the VNC. Only the portions of the BCEC occurring within the VNC were evaluated as part of the current study.

***P3b. Resource Attributes:** (List attributes and codes) HP20. Canal / aqueduct

***P4. Resources Present:** ■Building ☐Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)
P5b. Description of Photo: See continuation sheets

***P6. Date Constructed/Age and Sources:** ■Historic (1940 and 1960)
☐Prehistoric ☐Both

***P7. Owner and Address:**
Los Angeles Department of Water and Power
111 North Hope Street, Room 1044
Los Angeles, California 90012-2607

***P8. Recorded by:** Sara Dietler, Linda Kry and Tim Harris
AECOM
515 S Flower Street, 9th Floor, Los Angeles, CA 90071

***P9. Date Recorded:** April 28, 2011

***P10. Survey Type:** Intensive

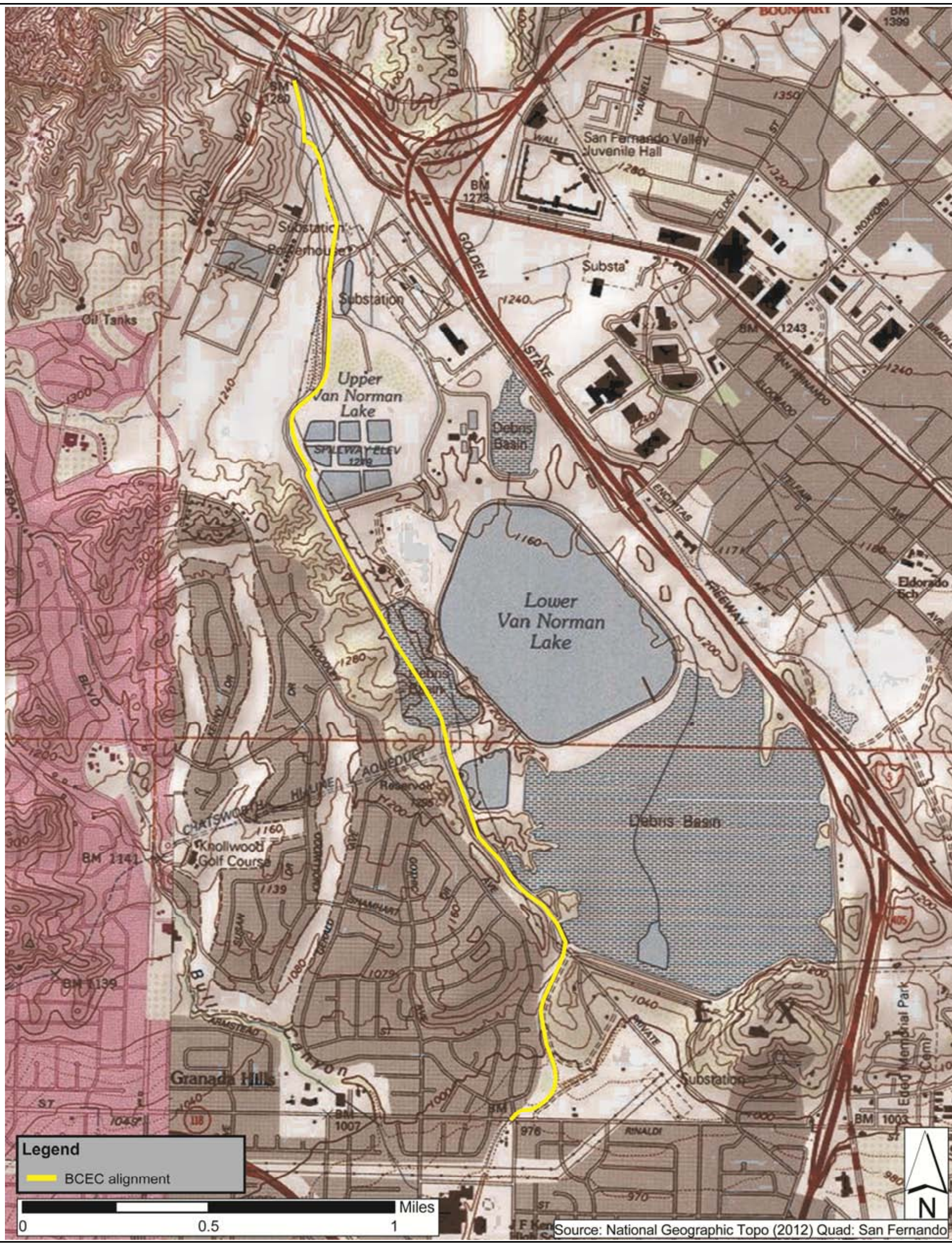
***P11. Report Citation:** Dietler, S., Linda Kry and Heather Gibson
2012 *Phase I Cultural Resources Assessment for the Van Norman Complex Water Quality Improvement Project, City of Los Angeles, California*. Report On File: AECOM, Los Angeles.

***Attachments:** ☐NONE ■Location Map ☐Sketch Map ■Continuation Sheet ☐Building, Structure, and Object Record ☐Archaeological Record ☐District Record ■Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California — The Resources Agency DEPARTMENT OF PARKS AND RECREATION **LOCATION MAP**	Primary # HRI# Trinomial

 *Resource Name or #: Bull Creek Extension Channel

*Map Name: San Fernando *Scale: 1:24,000 *Date of Map: 1981



California—The Resources Agency DEPARTMENT OF PARKS AND RECREATION **LINEAR FEATURE RECORD**	Primary # HRI # Trinomial

L1. Historic and/or Common Name: Bull Creek Channel

L2a. Portion Described: ☐ Entire Resource ■ Segment ☐ Point Observation Designation:

L2b. Location of point or segment: The recorded segment (within the VNC) runs from (south end) Woodley Avenue and Rinaldi Street Sycamore Avenue (363341 mE/ 3794134 mN) north to the intersection of Balboa Boulevard and San Fernando Road (362317 mE/ 3798619 mN). The channel continues in both directions outside of the VNC; however these sections were not evaluated as part of the current study.

L3. Description: (Describe construction details, materials, and artifacts found at this segment/point. Provide plans/sections as appropriate.)

The BCEC was constructed in 1940 and was operational the following year. It was constructed with the intention of utilizing it to protect the Upper San Fernando and Lower San Fernando Reservoirs from silting, contamination, and water discoloration caused by storm runoff from the surrounding drainage area. In the 1960s, additions were made to the BCEC in the form of a diversion structure and flow-through channel at the Lower Debris Basin to provide better flood control for the Upper and Lower San Fernando Reservoirs. As the BCEC was determined to be historic in age (older than 45 years) it was evaluated for eligibility for listing on the California Register of Historic Resources (CRHP).

L4. Dimensions: (In feet for historic features and meters for prehistoric features)

a. and b. Width: 10+ feet (varies)

c. Height: 11+ feet (varies)

d. Length of Segment: ~3.1 mile or ~16.368 ft (approximate length of segment within VNC)

L5. Associated Resources:

Primary flood control facilities at the VNC include the Lower San Fernando Storm Water Detention Basin, and the Lower San Fernando Dam. The VNC has undergone extensive changes and development as a result of the 1971 Sylmar Earthquake. Although the facility is historic in age it lacks integrity as a complex. As such the BCEC was evaluated as an independent resource.

L6. Setting: The Project area is located within the VNC at 13101 Sepulveda Boulevard located in the district of Sylmar in the City of Los Angeles, California, less than 0.5-miles west of Interstate-5 (Golden State Freeway) and Interstate-405 (San Diego Freeway) interchange (Figure 2). The VNC is surrounded by residential development along Rinaldi Street to the south and along Woodley Avenue to the west, and the Metropolitan Water District (MWD) Jensen Water Filtration Plant to the northwest. Various residential, commercial, and institutional developments lie to the east of the freeways. The VNC property is generally rolling terrain. It has been largely cleared and is occupied by facilities devoted primarily to water treatment and storage, flood control, and electrical power distribution. The VNC is owned and maintained by the LADWP.

L7. Integrity Considerations: The BCEC was constructed in 1940 and was operational the following year. It was constructed with the intention of utilizing it to protect the Upper San Fernando and Lower San Fernando Reservoirs from silting, contamination, and water discoloration caused by storm runoff from the surrounding drainage area. In the 1960s, additions were made to the BCEC in the form of a diversion structure and flow-through channel at the Lower Debris Basin to provide better flood control for the Upper and Lower San Fernando Reservoirs. As such, the BCEC has undergone significant changes over time and does not retain integrity of design.

L8a. Photograph, Map, or Drawing

L8b. Describe Photo, Map, or Drawing (View, scale, etc.)

Portion of the BCEC near the northern end, view to SW. Exp. 1911.

L9. Remarks: As the BCEC was determined to be historic in age it was evaluated for eligibility for listing on the California Register of Historic Resources (CRHP). The BCEC has been evaluated against the CRHP eligibility criteria and was not found to be eligible for listing as a historic resource on the California Register of Historic Resources.

In addition, the channel does not retain integrity of design due to the changes that have been made to it over time and therefore would not be eligible for listing as a historic resource on the California Register of Historic Resource.

L10. Form Prepared by:

Sara Dietler
AECOM
515 S. Flower Street, 9th Floor
Los Angeles, CA 90071

L11. Date: April 6, 2012

*Recorded by: Sara Dietler, Linda Kry and Tim Harris *Date: April 28, 2011 ■ Continuation □ Update

Northern Portion of BCEC Near Intersection of Balboa Boulevard and San Fernando Road, Exp. 1903, View to South.

Northern Portion of BCEC Near Intersection of Balboa Boulevard and San Fernando Road, Exp. 1906, View to North.

Mid Portion of Channel Convergence, Exp. 1934, View to Southeast

APPENDIX E

TRAFFIC STUDY

Traffic Study for
LADPW Van Norman Complex II EIR
Los Angeles, CA

March 28, 2012
DRAFT

Prepared For:
AECOM Technical Services, Inc.
515 South Flower Street, 9th Floor
Los Angeles, CA 90071
(213) 593-7700

Prepared by:

KOA CORPORATION
PLANNING & ENGINEERING

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Monterey Park, California 91754
(323) 260-4703

JB01215

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1. Introduction

The purpose of this traffic study is to assess the traffic impacts on the surrounding roadway system of proposed construction activities for the Van Norman Complex (VNC) Project.

The study quantitatively assesses project impacts on weekday a.m. and p.m. peak-hour operations at three study intersections near the Project site. This includes the major signalized intersection along employee vehicle and construction truck routes to and from the project site within the study area.

This traffic study assesses the impacts of Project construction-related traffic on adjacent area roadways. Once the Project construction efforts are completed, the trip generation from the project site is expected to return to existing levels. Any potential traffic impacts from this proposed project are expected to occur during project construction.

A. Project Location

The VNC is currently occupied by facilities devoted primarily to the production, storage, and/or transmission of drinking water and electricity or to regional flood control functions that is operated by the City of Los Angeles Department of Water and Power (LADWP). The plant consists of 1,340-acres and is located within the Knollwood neighborhood of the City of Los Angeles.

Figure 1 illustrates the layout of the existing Project site, which is located at 13101 Sepulveda Boulevard in the City of Los Angeles, along the west side of Interstate Highway 5 (Golden State Freeway, I-5) and Interstate Highway 405 (San Diego Freeway, I-405).

B. Project Construction and Operations

LADWP has proposed to make improvements to Bull Creek Extension Channel (BCEC), a concrete-lined storm water conveyance and flood control facility located within VNC. This project is being undertaken to comply with updated drinking water quality regulations promulgated by the United States Environmental Protection Agency (EPA) and updated requirements related to maintaining the integrity of several VNC water impoundment dams that fall under the jurisdiction of the State of California Division of Safety of Dams (DSOD).

As mentioned above, VNC is currently occupied by facilities devoted primarily to the production, storage, and/or transmission of drinking water and electricity or to regional flood control functions that is operated by the City of Los Angeles Department of Water and Power (LADWP). Other facilities located within the VNC include a Los Angeles Police Department training facility (which includes a driver training track and an indoor shooting range), a Los Angeles Fire Department structure fire training facility, a large green waste recycling facility, and various vehicle storage and construction materials supply yards. Other than an approximately 12-acre area in the southwestern corner of the VNC (along Rinaldi Street) occupied by public gardens and youth baseball fields, the property is inaccessible by the public. The perimeter of the complex is fenced or walled, and 24-hour manned security is provided.

LEGEND

Project Site

N

Not to Scale

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LADPW Van Norman Complex II EIR - Los Angeles

Figure 1

Project Location

The overall construction effort for the proposed project is estimated to take approximately 3 years to complete. During the majority of this time, the existing BCEC, including the overflow into the Lower Debris Basin, must be kept functional to accommodate storm water flows until the proposed improvements are completed and are capable of properly conveying storm water and controlling flows during high precipitation events. Although the construction for the proposed project would be essentially continuous, phases would generally occur sequentially in that some tasks must precede other tasks. While a certain amount of overlap between phases may occur as construction proceeds in different locations within the project site, in order to analyze potential environmental impacts related to the construction phase of the project, a preliminary plan was prepared that considers the phases separately as a means of identifying the overall sequence of construction and establishing the general level of activity related to functions such as equipment operations, truck deliveries, worker commute trips, and earthwork. Construction of the proposed project would consist of six primary phases of work: hillside grading; the realignment of BCEC within the Lower Debris Basin; the construction of the new diversion channel; the widening of BCEC north of the Lower Debris Basin; modifying and enlarging the existing Lower San Fernando Dam spillway structure; and increasing the height of the dike along the east side of Bull Creek, north of the concrete-lined portion of the channel.

To implement the above work and maintain functionality at the VNC to support existing operations, several concrete bridges would also be constructed during the proposed project, including across BCEC and the new diversion channel.

After the completion of the proposed project construction, the new facilities would require minimal maintenance that would involve no increase in personnel, equipment operations, or truck deliveries at the VNC beyond current levels.

The VNC construction period is for three years, but this report provides a review of the most-intense period. This provides a conservative analysis for the review of significant impacts during construction activities related to planned VNC improvements.

<u>Site Access Points</u>

The existing access points to VNC along Sepulveda Boulevard will be used by construction traffic and construction workers. The construction traffic and construction workers would primarily travel on the I-5 Freeway to access Roxford Street, which turns into Sepulveda Boulevard to the southwest of the intersection of Roxford Street with the I-5 southbound ramps.

Construction Duration and Intensity

Construction of the proposed project would occur over an approximate three-year period, planned by LADWP to start in August 2012 and finish in September 2015. Construction activities would peak in August 2014, with a total of 45 construction employees on-site. During this peak time, construction truck trips to/from the site are estimated to be 60 round trips each day. Although other construction periods will have a higher number of daily truck trips, the highest total trip generation will occur in August 2014 (Month 25). The planned construction phases are as follows:

- Phase 1: Hillside Grading (14 months)
- Phase 2: Realignment of BCEC within Lower Debris Basin (6 months)
- Phase 3: Construction of New Diversion Channel (10 months)
- Phase 4: Widening of BCEC North of Lower Debris Basin (5 months)
- Phase 5: Modifying and Enlarging the Existing Lower San Fernando Dam Spillway Structure (4 months)
- Phase 6: Increase Height of Dike along east side of Bull Creek (11 months)

Trip generation estimates for construction truck trips and construction employee vehicle trips are discussed further within Section 4 of this report.

C. Project Study Area

The Project construction activities would generate additional vehicle trips in the immediate area, based on necessary truck hauling/delivery trips and the construction employee population.

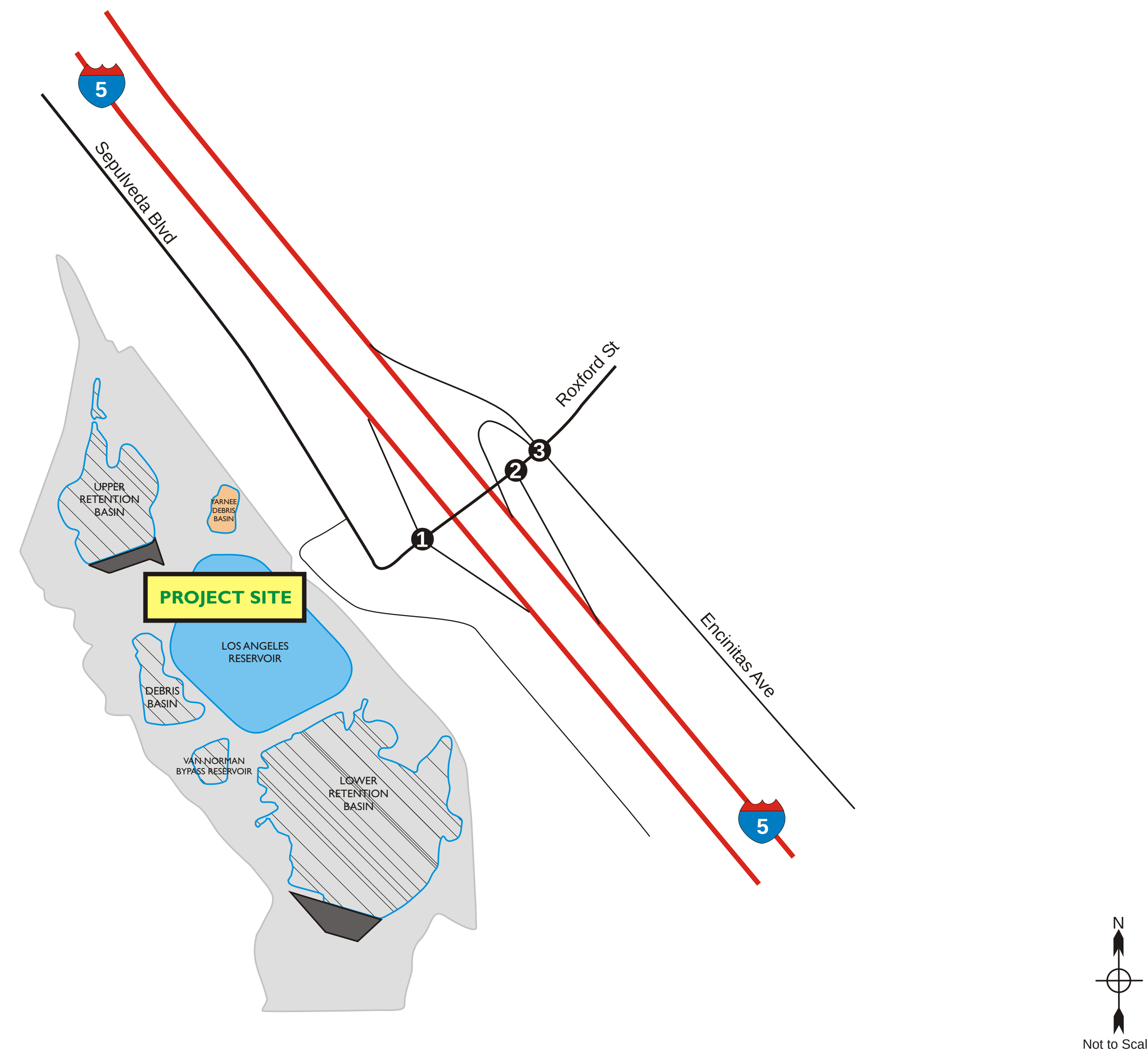
Operational activities will not increase from current conditions, and will therefore not exceed the LADOT threshold of 43 peak-hour trips for requiring an evaluation of operational traffic impacts.

Turn movement counts were conducted on a weekday during a.m. and p.m. peak periods (7:00 a.m. to 10:00 a.m., 4:00 p.m. to 7:00 p.m.) for each study intersection location.

The list below defines the study intersections that were included in the traffic impact analysis:

1. I-5 southbound on and off-ramps and Roxford Street
2. I-5 northbound off-ramp and Roxford Street
3. Encinitas Avenue/I-5 northbound on and off-ramps and Roxford Street

Figure 2 illustrates the locations of the study intersections.



LEGEND

Project Site

1 Study Intersections

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LADPW Van Norman Complex II EIR - Los Angeles

Figure 2

Study Intersections

D. Impact Analysis Methodology

As defined by the LADOT traffic study guidelines, significant impacts of a proposed project at an intersection must be mitigated to a level of insignificance. The guidelines are focused on development projects, where the impact potential is on-going for the life of a proposed development or facility. For this analysis, impacts are based on temporary construction-period impacts, but the same impact standards were applied.

In the sections that follow, the project-only and cumulative impacts of this development on study area roadways and intersections are discussed. Two separate future-period traffic analysis timeframes were reviewed for the peak construction period of the project:

- Existing Year-2012 Conditions
- Future Year-2014 No-Project Conditions
- Future Year-2014 with-Project Construction Conditions

A post-Project (operations) analysis was not undertaken, as the subject Project will not generate new trips after construction is complete, and therefore will not create a significant traffic impacts.

Existing traffic volumes were defined by peak-period intersection turn movement counts conducted for this report. From the three-hour peak period volume totals, peak-hour periods for each intersection and for each peak hour (AM and PM) were defined by the four highest consecutive 15-minute periods. Year-2012 volumes were considered adequate to represent existing conditions.

This methodology allows for the true peak-hour of each analyzed intersection to be examined. For this reason, volumes across adjacent intersections may vary, but the analysis provides peak conditions for each single study intersection.

Project construction would peak in August 2014. The Year 2014 was selected for the future analysis year due to the timing of the peak-period of Project construction.

KOA analyzed the trip distribution, trip assignment, and intersection level of service calculations for the study area roadway network. Intersection analysis was performed using Circular 212 Planning or Critical Movement Analysis (CMA) methodology. The CMA methodology is based on the volume-to-capacity ratios for each approach movement (left turns, thru movements, right turns) and the sums of critical movements for the intersection. Critical movements are the highest-volume opposing and conflicting movements, such as the eastbound thru movement and the westbound left turn. These movements cannot proceed through the intersection at the same time, so one movement affects the other.

The LADOT traffic study guidelines state that only signalized intersections should be included for traffic impact analysis. Non-signalized intersections should be evaluated to determine the need for the installation of a traffic signal or other traffic signal device. However, two stop-controlled study intersections are included in this traffic analysis in order to evaluate potential construction-related impacts. The average vehicle delay and associated level of service at these non-signalized intersections were determined using the Highway Capacity Manual (HCM) methodology.

Based on the LADOT traffic guidelines, an intersection is generally considered impacted when project related increases the volume-to-capacity (V/C) ratio of the study intersection to the threshold. The following increases in peak hour V/C ratios are considered significant impacts:

Level of Service	**Final V/C***	**Project Related V/C increase**
C	< 0.700 – 0.800	Equal to or greater than 0.040
D	< 0.800– 0.900	Equal to or greater than 0.020
E and F	0.901 or more	Equal to or greater than 0.010

** Final V/C is the V/C ratio at an intersection, considering impacts from the project, ambient and related project growth, and without proposed traffic impact mitigations.*

For study locations that are unsignalized, those intersections were also analyzed using the CMA methodology to determine the V/C ratios. These V/C ratios were used to calculate the increase in project-related V/C and to determine impacts when compared to the thresholds in the above table.

Appendix A provides further explanation of the level-of-service definitions.

2. Existing Year-2012 Conditions

This section documents existing traffic conditions in the study area. The discussion presented here is limited to the study intersections. Year-2012 volumes were used to provide the base data for this analysis.

A. Study Area Characteristics

The study area is comprised of three intersections at and near to the I-5 interchange that is adjacent to the project site construction ingress/egress point. The characteristics of key roadways within the study area are summarized in Table 1. The discussion presented here is limited to specific roadways that traverse the study intersections and serve the project site.

Figure 3 illustrates the lane configurations and intersection control at the study intersections.

Table 1 - Study Area Roadway Descriptions

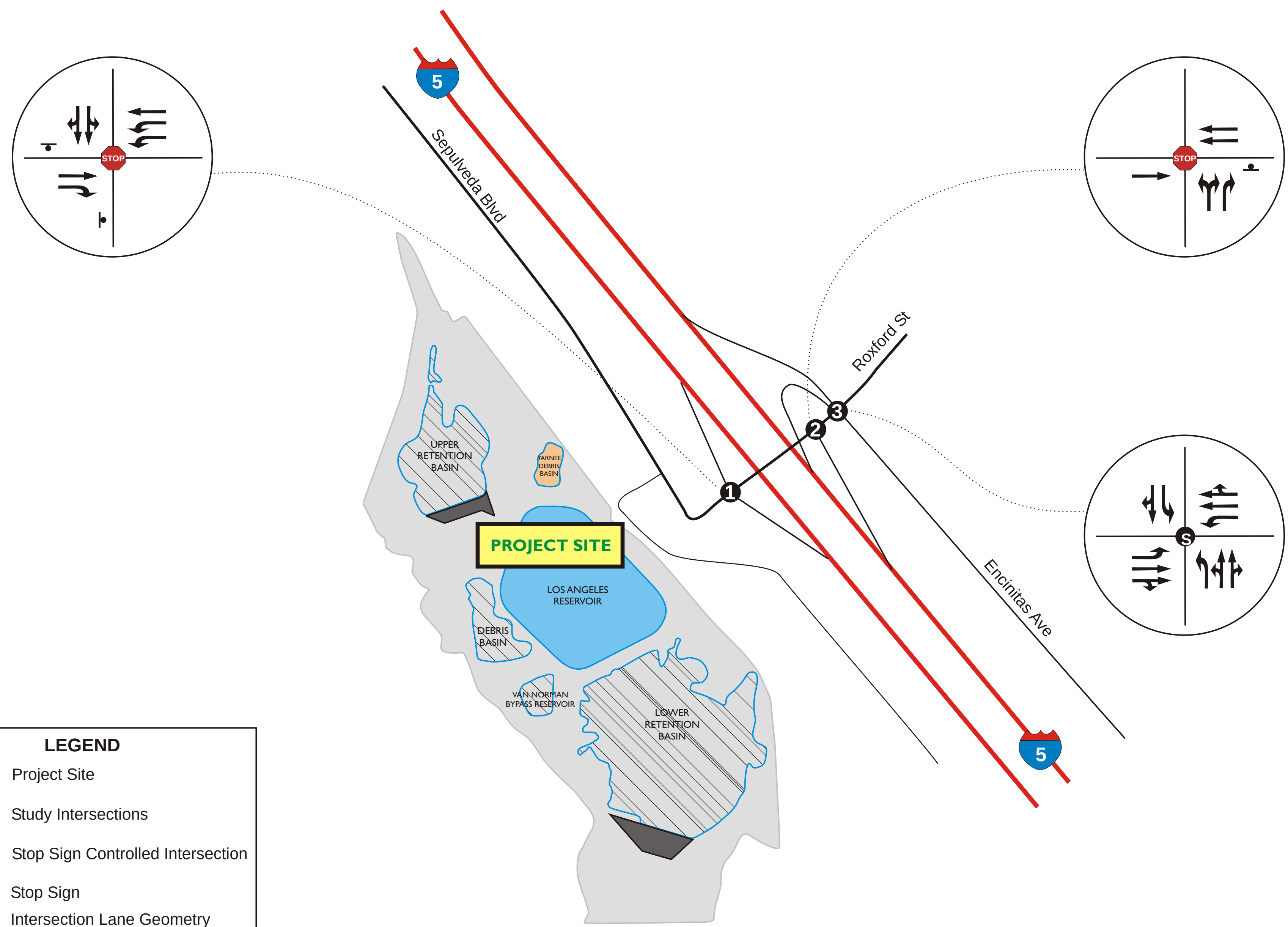
Segment	# Lanes		Median Type	Parking Restrictions		General Land Use	Posted Speed Limit (mph)
	NB/EB	SB/WB		North Side / East Side	South Side / West Side		
Roxford Street (Major Highway Class II)							
West of Encinitas Ave	1 to 2	2	Striped	NSAT	NSAT	Freeway/Commercial	35
Between Encinitas Ave & San Fernando Rd	1 to 2	1 to 2	Striped	2hr Parking 8AM to 6PM and No Parking 10AM to 12 Noon (Thursday)	No Parking 10AM to 12 Noon (Wednesday)	Residential/Commercial/ Industrial/Office	35
Encinitas Avenue (Secondary)							
Between Roxford St & Bledsoe St	1	1	Striped	No Parking 10AM to 12 Noon (Thursday)	No Parking 10AM to 12 Noon (Wednesday)	Residential/Office/ Industrial	25

Notes:
NSAT - No Stopping Any Time

B. Area Transit Service

There are not any public transit lines that operate in close proximity to the project site. The primary project trip generation analysis is based on the assumption that construction workers will use private vehicles to access the site.

The closest transit access is provided by a Metro bus line (Metro 224) that has stops located approximately one mile from the project site.



LEGEND

Project Site

Study Intersections

Stop Sign Controlled Intersection

Stop Sign

Intersection Lane Geometry

N

Not to Scale

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LADPW Van Norman Complex II EIR - Los Angeles

Figure 3

Existing Configurations and Intersection Control

C. Study Intersection Operations Analysis

Traffic counts at the study intersections and on the roadway segments were conducted on Wednesday, February 8, 2012. The traffic count data sheets are included in Appendix B of this report.

A level of service (LOS) analysis was conducted to determine peak-hour conditions at the study intersections. The Critical Movement Analysis (CMA) methodology was used for the analysis of signalized study intersections. The average vehicle delay and associated level of service at the non-signalized intersections were determined using the Highway Capacity Manual (HCM) methodology

Table 2 provides the results of this analysis. Bold text indicates those intersections determined to be currently operating at LOS E or F. The conditions at the I-5 Southbound Ramps/Roxford Street intersection are defined by the delay experienced by vehicles at the stop-sign controlled approaches to the intersection. The westbound movement is not controlled, and therefore cross-traffic must wait for gaps in this approach flow.

Table 2 – Study Intersection Levels of Service – Existing Conditions

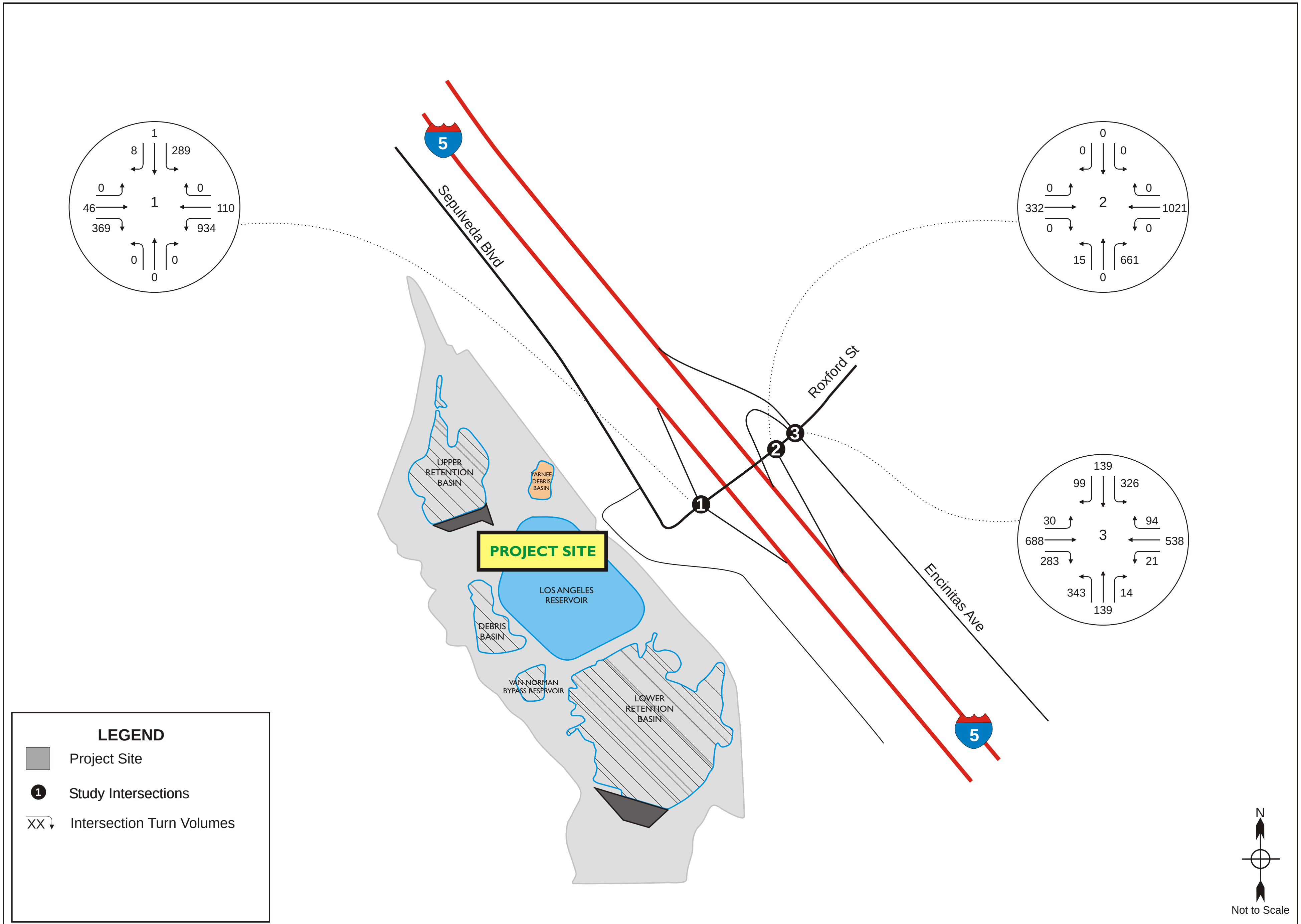
Study Intersections		AM Peak		PM Peak	
		ICU	LOS	ICU	LOS
1	I-5 SB Ramps & Roxford Street	Overflow	**F**	Overflow	**F**
2	I-5 NB Off Ramp & Roxford Street	15.0	B	16.1	C
3	I-5 NB Ramps/Encinitas Avenue & Roxford Street	0.825	D	0.667	B

As shown in Table 2 and noted below, one of the study intersections currently operate at LOS F.

- I-5 SB Ramps / Roxford Street – operates at LOS F in the a.m. and p.m. peak hours

The existing LOS calculation worksheets for the study intersections analyzed in CMA methodology are provided in Appendix C of this report.

Figure 4 and Figure 5 illustrate the existing a.m. and p.m. peak-hour traffic volumes at the study intersections.



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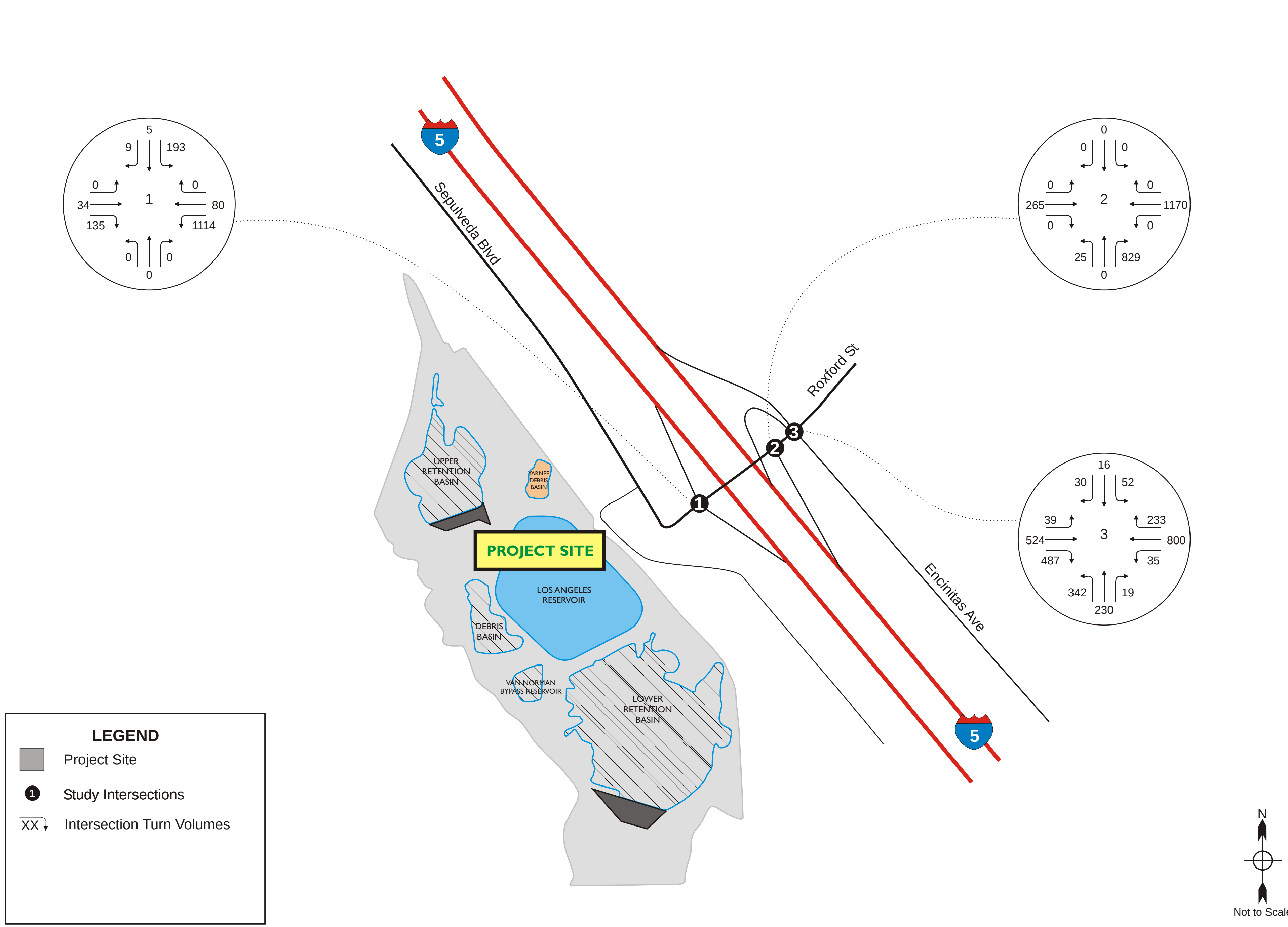
LADPW Van Norman Complex II EIR - Los Angeles

Figure 4

Existing Year 2012 AM Peak-Hour Intersection Volumes



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LADPW Van Norman Complex II EIR - Los Angeles

Figure 5

Existing Year 2012 PM Peak-Hour Intersection Volumes

3. Future Year-2014 No-Project Conditions

This section provides the analysis of "No Project" Conditions in the study area with ambient growth and area project trips. Project construction is anticipated to be completed by the end of year 2015. However, the future analysis year was defined as year 2014, since the project construction activities would peak in that year.

A. Ambient Growth

In order to forecast Year 2014 baseline traffic volumes, Year 2012 peak hour volumes were increased by an ambient growth rate of 1.0% per year (a three-year factor of 1.0201).

B. Area Projects

A one-mile radius line from three perimeter study intersections were used to define the capture area for approved and pending area projects. Information regarding area projects was obtained from LADOT.

Area projects included in the analysis were those considered to potentially contribute measurable traffic volumes to the study area during the future analysis period. Trip generations for area projects were either calculated using the rates from the Institute of Transportation Engineers' *Trip Generation Manual (8th Edition)*, obtained from environmental documentation or traffic studies, or provided by the jurisdiction.

The area projects included in this study for future period analysis, and the trip generation for each, are provided in Table 3. Figure 6 illustrates the locations of the included area projects.

Table 3 – Area Projects Trip Generation Estimates

Map #	Address	Project Title	Land Use	Size	Unit	Weekday Daily	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
1	12455 N San Fernando Mission Blvd	Mixed Use	Retail	1,500	Sq. ft	191	9	8	17	10	7	17
			Retail	4,167	Sq. ft	179	2	2	4	8	8	16
			Apartments	88	Units	585	9	36	45	36	19	55
			Sub Total			955	20	46	66	54	34	88
2	12415 San Fernando Rd	Senior Housing/Mixed Use	Senior Housing	150	Units	1,335	49	19	68	32	68	100
3	15900 Olden St	Voit Development - Olden St Manufacturing	Light Industrial	85,000	Sq. ft	593	69	9	78	11	73	84
			Light Industrial	106,631	Sq. ft	743	86	12	98	12	92	104
			Sub Total			1,336	155	21	176	23	165	188
4	12385 San Fernando Rd	Sylmar Village	Condominiums	246	Units	1,442	18	90	108	86	42	128
			Single Family Home	-1	Units	-10	0	-1	-1	-1	0	-1
			Shopping Center	9,000	Sq. ft	19	-1	-8	-9	-1	3	2
			General Office	900	Sq. ft	99	12	2	14	2	11	13
			Auto Care Center	-2,000	Sq. ft	-68	-4	-2	-6	-4	-3	-7
			Sub Total			1,482	25	81	106	82	53	135
5	13503 San Fernando Rd	Sylmar FlyAway, Industrial, Recreational	FlyAway, park n ride facility for buses to LAX	1,290	Acres	1,739	87	23	110	30	78	108
			Industrial	225,000	Sq. ft	1,568	164	44	208	62	158	220
			Recreational Facility	10	Acres	895	15	4	19	16	41	57
			Sub Total			4,202	266	71	337	108	277	385
6	13361 Glenoaks Blvd	First Lutheran School	School	350	Seats	-	169	108	277	63	84	147
7	15031 Rinaldi St	Holy Cross Medical Center Expansion	Hospital	136	Beds	1,606	108	46	154	64	113	177
8	16601 Foothill Blvd	Cascade-Silver Oaks Project	Apartments	550	Units	-	111	349	460	324	221	545
9	11601 Rinaldi St	Jewish Educational Trade School	Community Center	26,153	Sq. ft	598	26	16	42	13	30	43
			School	280	Enrollment	745	25	14	39	28	34	62
			Sub Total			1,343	51	30	81	41	64	105
10	15750 San Fernando Mission Blvd	Day Care Facility	Day Care	100	Enrollment	-	42	38	80	39	43	82
11	14550 Bledsoe St	LAUSD VR Span School # 1	School	1,047	Enrollment	573	0	0	0	0	0	0
12	15530 San Fernando Mission Blvd	New Office Building	Office	28,929	Sq. ft	319	36	6	42	7	36	43
13	13160 N Dronfield Ave	Apartment building	Apartments	96	Units	645	10	39	49	39	21	60
14	14445 Olive View Dr	Olive View Medical Center Expansion	Medical Offices	10,000	Sq. ft	361	20	5	25	10	27	37
15	13730 Foothill Blvd	Sylmar Square-Mixed Use Project	Apartments	48	Units	323	5	19	24	20	11	31
			Retail	2,500	Sq. ft	1,695	28	18	46	46	58	104
			Sub Total			2,018	33	37	70	66	69	135
16	13803 Foothill Blvd	Rite Aid Pharmacy and medical offices	Retail	17,145	Sq. ft	817	14	11	25	47	49	96
			Medical Office	10,000	Sq. ft	306	15	5	20	8	22	30
			Sub Total			1,123	29	16	45	55	71	126
17	13746 Foothill Blvd	Sylmar Square	Retail	Not Available. See Footnote.		471	10	40	50	40	10	50
18	Lakeside Debris Basin	Lakeside Park [1]	Baseball Fields	5	Field	400	7	4	3	100	88	12
			Soccer Fields	4	Field	285	6	3	3	83	57	26
			Skateboard Plaza	25,000	sq. ft.	125	0	0	0	32	16	16
			Sub Total			810	13	7	6	215	161	54

Source: LADOT

Note: The weekday daily and PM peak hour trip generation are based on LADOT database. For Saturday, trips were estimated based on rates from the Institute of Transportation Engineer's (ITE) Trip Generation Manual, 8th edition, where available. For some related projects that had an obscure project description or in which ITE rates were not available, the PM peak hour trips were assumed for the Saturday midday peak hour. For the two school projects (related project #6 and #11), zero trips were assumed for the weekend.

[1] Traffic Impact Study for the Lakeside Park, Los Angeles, November 2011, KOA Corporation.

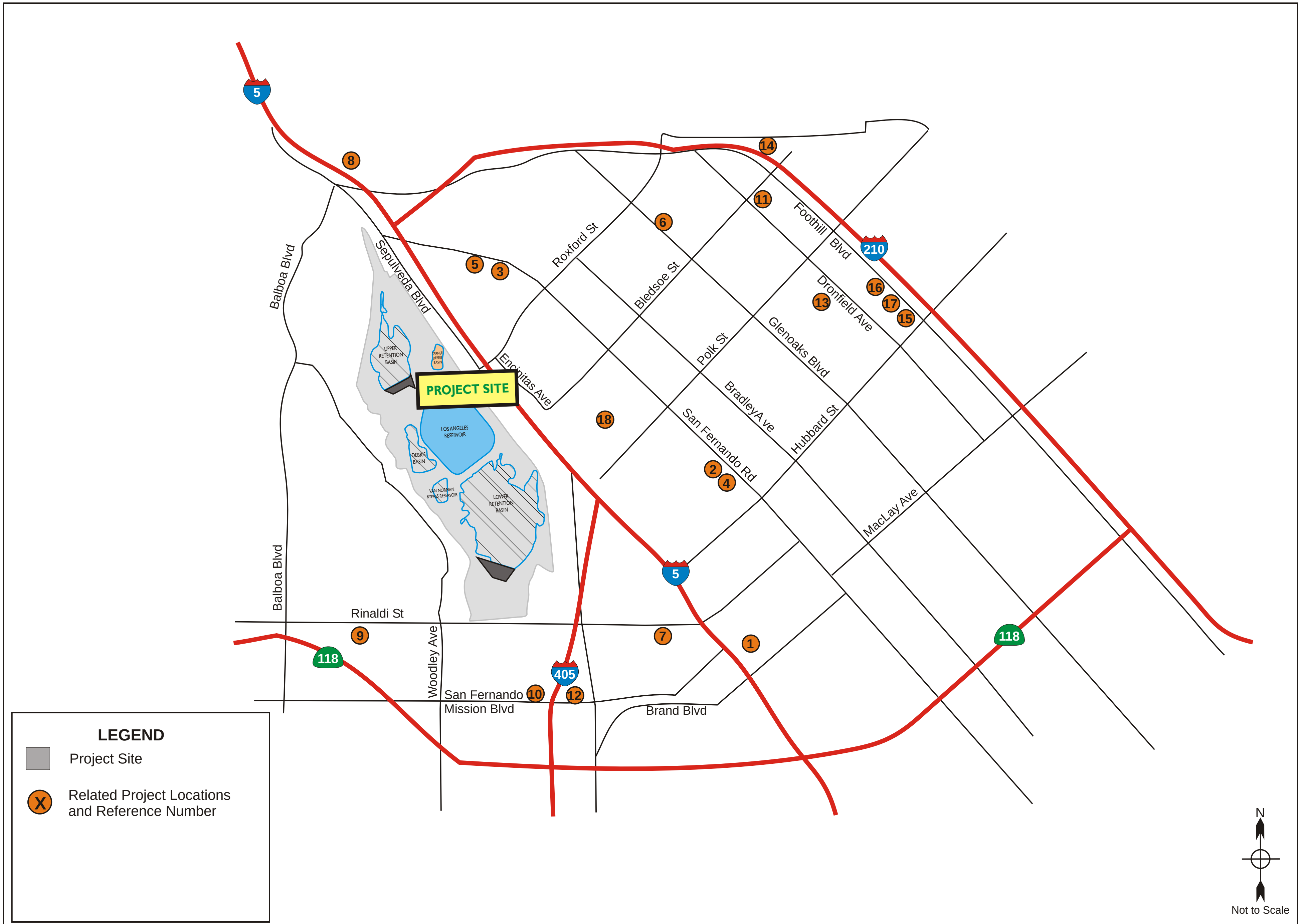

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Figure 6

Location of Area Projects

C. Study Intersection Operations Analysis

The CMA and HCM methodologies were used to analyze future intersection volumes with ambient growth traffic and area project trips.

The results of the level of service analysis for future Year-2014 no-project peak hour conditions are shown in Table 4. Bold text indicates those intersections that are forecast to operate at LOS E or F under this scenario.

Table 4 – Study Intersection Levels of Service – Future No-Project Conditions

Study Intersections		AM Peak		PM Peak	
		ICU	LOS	ICU	LOS
1	I-5 SB Ramps & Roxford Street	Overflow	**F**	Overflow	**F**
2	I-5 NB Off Ramp & Roxford Street	16.0	C	20.1	C
3	I-5 NB Ramps/Encinitas Avenue & Roxford Street	0.856	D	0.775	C

Under this scenario, one of the three study intersections would continue to operate at LOS F:

- <u>I-5 SB Ramps / Roxford Street</u> – operates at LOS F in the a.m. and p.m. peak hours

The future Year-2014 no-project calculation worksheets for the study intersections analyzed using CMA methodology are provided in Appendix C of this report.

The analyzed peak-hour traffic volumes at the study intersections for future Year-2014 no-project conditions are presented in Figure 7 (a.m. peak) and Figure 8 (p.m. peak).

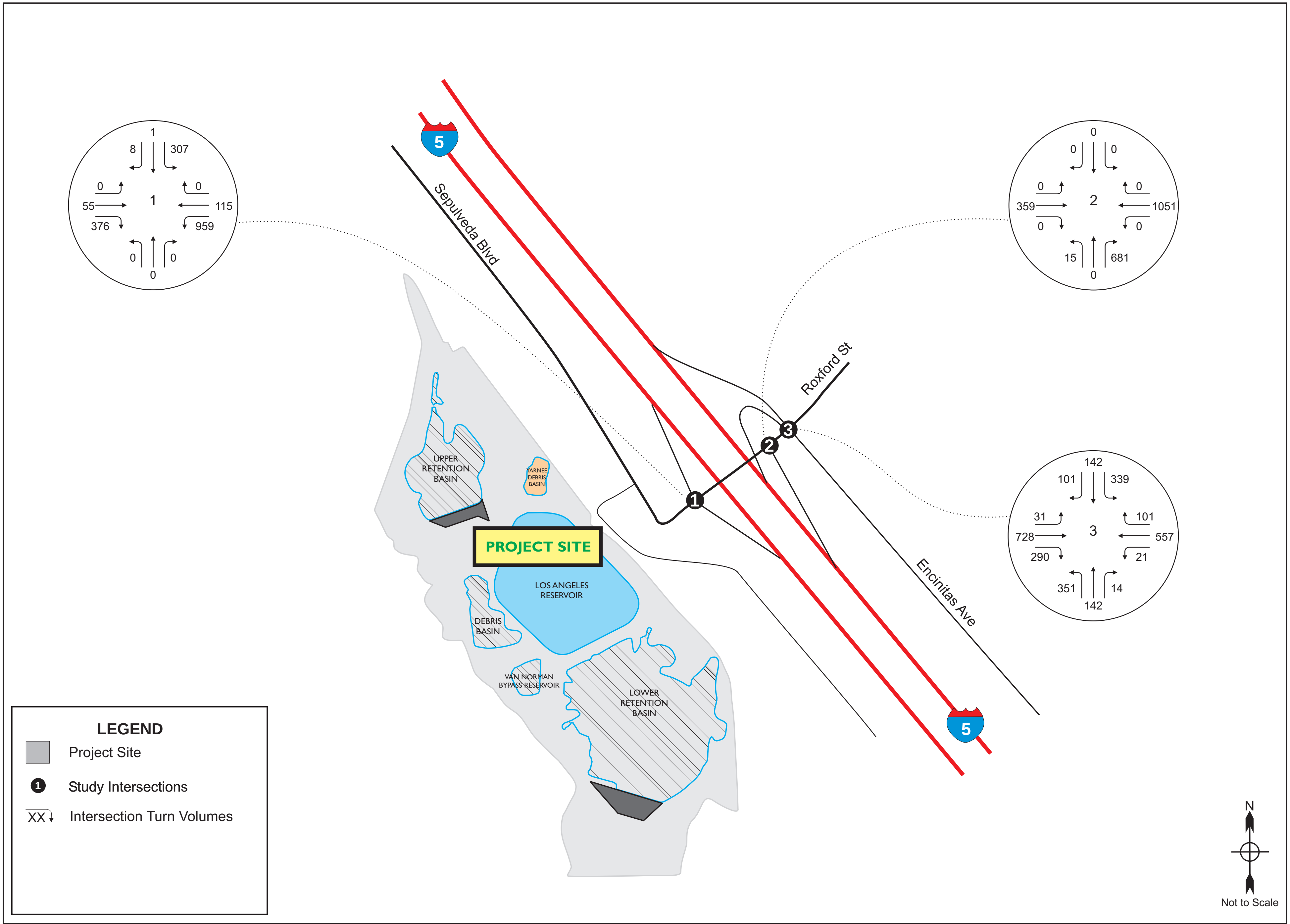

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Figure 7

Future Year 2014 No Project AM Peak-Hour Intersection Volumes

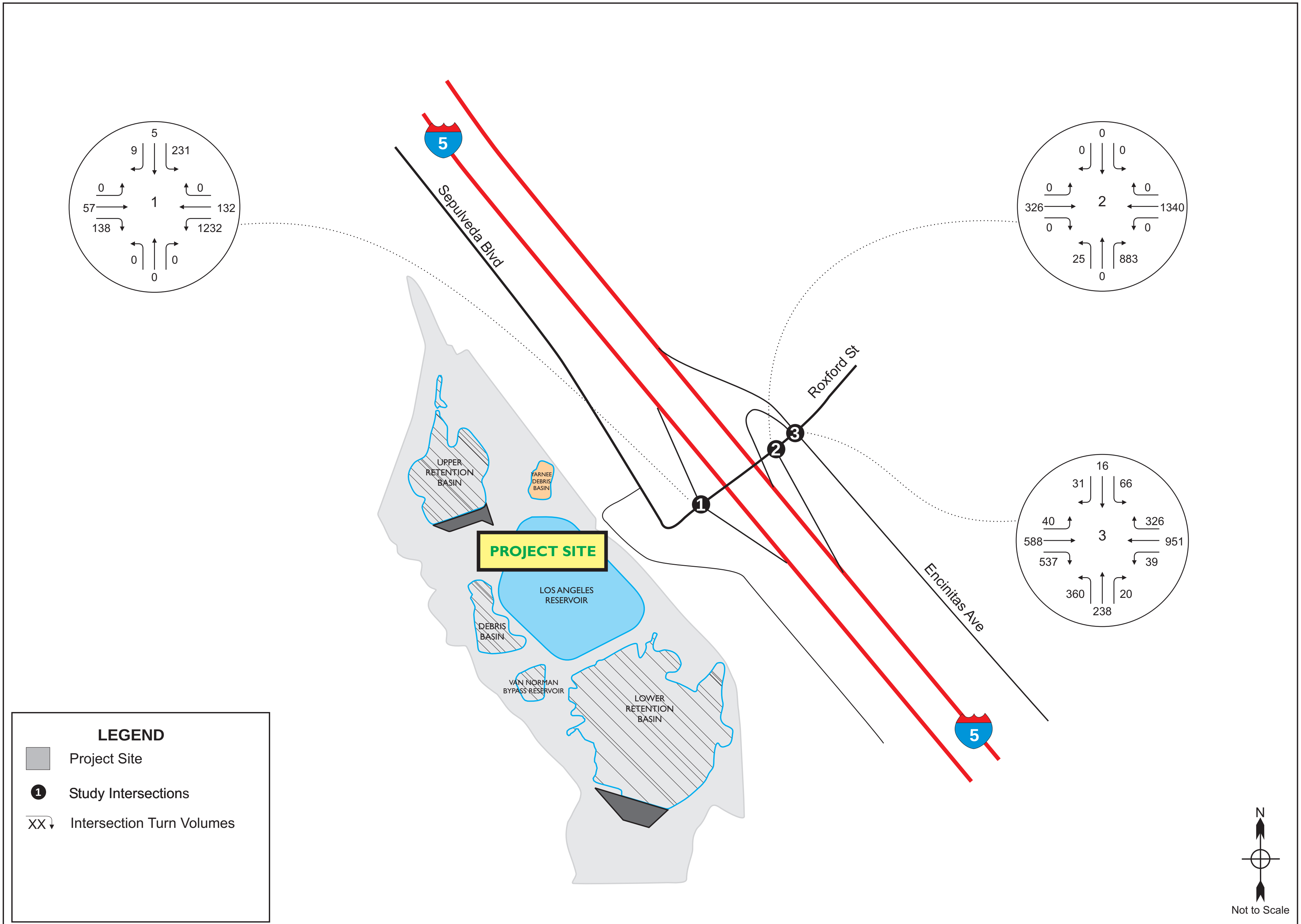

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Figure 8

Future Year 2014 No Project PM Peak-Hour Intersection Volumes

4. Project Construction Trips

This section focuses on the definition of construction truck and employee vehicle trips during the peak period of Project construction, along with the distribution and assignment of those trips to the study area roadway network.

A. Project Trip Generation Methodology

Project trip generation calculations included construction truck trip estimates and construction employee vehicle trips. The trip generation totals were determined based on the most intense period of construction activity for the project. Truck volumes were multiplied by a factor of 2.5 to estimate the number of passenger car equivalent trips, consistent with the SCAG *Heavy Duty Truck Model* analysis and other truck studies in the region.

The analysis summarized within this report was conducted at a planning-level of detail, used for the purposes of determining traffic impacts during the Project construction period. Empirical data for use in calculating peak hour and daily trip generation rates for construction sites is not generally available. Therefore, the methodology provided here is intended to develop trip generation forecasts that represent a worst-case scenario.

The maximum number of employees on site per day during the peak construction month (August 2014) would be 45 employees (40 field personnel and 5 office/supervision staff) and the maximum truck trip activity would be 60 round trips per day. There are other periods in the project construction schedule where more daily truck trips would be needed (up to 82 daily trips during months 32 and 33, in March and April of 2015), but the total trips analyzed represents the highest combined trips generated by both construction employees and trucks.

It is assumed that daily construction activities will occur in a single eight-hour shift that begins during the a.m. peak period, and is complete during the p.m. peak period.

B. Project Trip Generation

In calculating peak-hour trips for the project, it is assumed that employees will arrive and depart the VNC site via personal vehicles. The morning arrival by employees is assumed to overlap the a.m. peak hour by 25 percent, with the remaining 75 percent of employees assumed to be at the site before 7:00 a.m. The same would occur during the p.m. peak, with 75 percent of employees assumed to depart the site before 4:00 p.m. Therefore, the same reduction was taken for both peak periods.

The weekday peak-hour trip generation calculations for the Project construction activities are provided in Table 5.

Table 5 – Peak Hour Project Construction Trip Generation

TRIP GENERATION ELEMENT	PEAK SEPTEMBER 2014 DAILY TRIPS			AM PEAK HOUR						PM PEAK HOUR					
				Truck Trips		Employee Trips		Total Trips		Truck Trips		Employee Trips		Total Trips	
	Trucks	Employee	Total	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
Office and Supervision	0	10	10	0	0	1	0	1	0	0	0	0	1	0	1
Field Personnel	0	80	80	0	0	10	0	10	0	0	0	0	10	0	10
Delivery	60	0	60	4	4	0	0	4	4	4	4	0	0	4	4
TOTAL TRIPS	**60**	**90**	**150**	**4**	**4**	**11**	**0**	**15**	**4**	**4**	**4**	**0**	**11**	**4**	**15**

Passenger Car Equivalency (PCE) factor of 2.5 applied to truck trips.

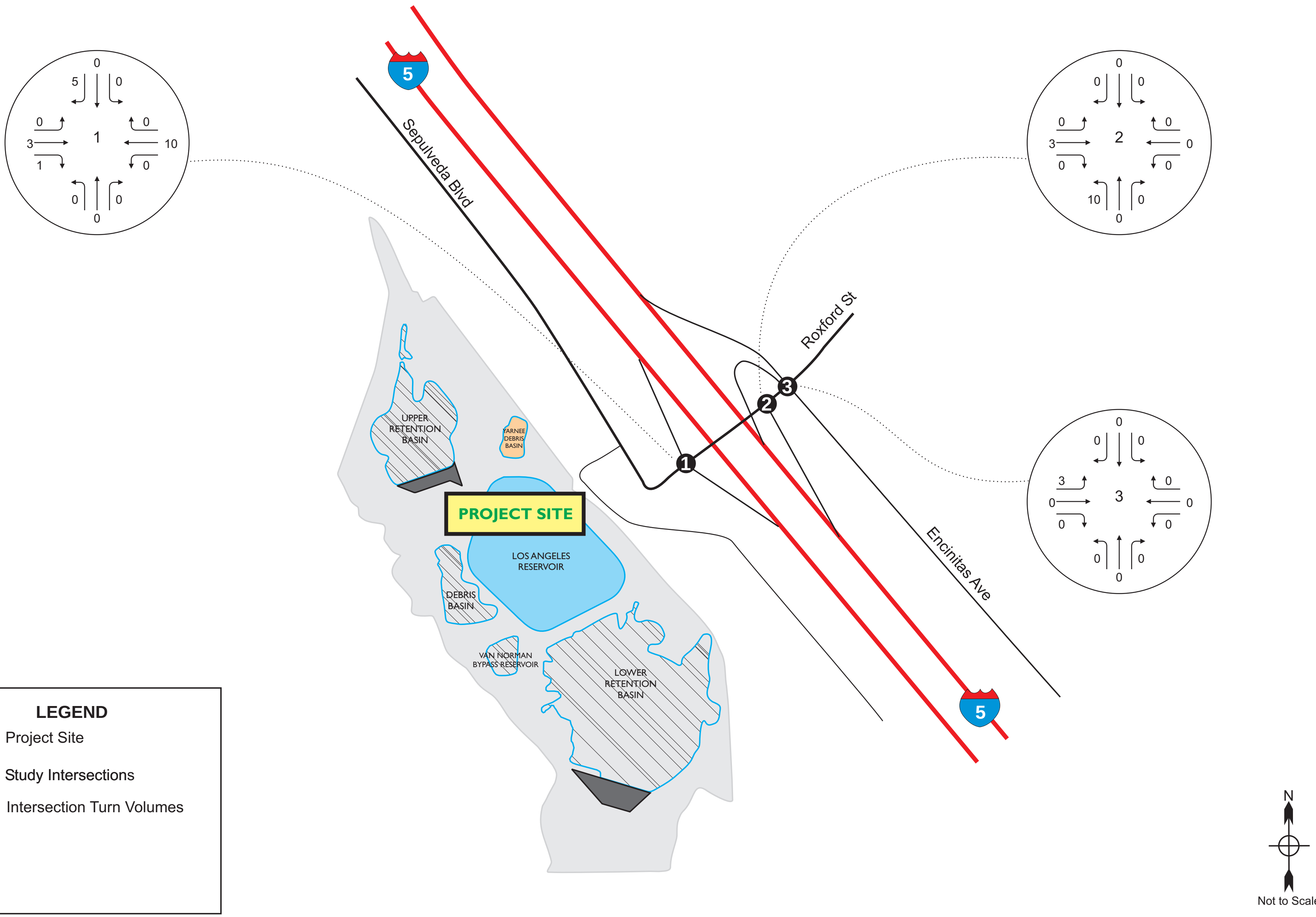
Field Personnel and Office/Supervision Staff - Inputs were 40 field personnel and 5 office/supervision staff, for August 2014 (month 25 of construction).

The totals within the bottom row of Table 5 indicate that, during the peak month of construction, the project would generate a daily total of 150 passenger car equivalent trips, with 15 trips occurring during the a.m. peak hour and 15 trips occurring during the p.m. peak hours.

C. Project Trip Distribution

Based on project characteristics and the best routes between the site access points and the nearby I-5 freeway interchange at Roxford Street, the project trip distribution patterns (Project construction employee vehicle trips) were developed. Employee vehicle trip patterns were based on the local roadway network, in addition to the locations of the freeway interchanges.

The assignment of the Project construction trips to the study area (i.e., employee construction vehicles) are illustrated on Figure 9 (a.m. peak) and Figure 10 (p.m. peak).



LEGEND

Project Site

Study Intersections

XX Intersection Turn Volumes

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Figure 9

Project Construction Peak-Hour Trip (Vehicles) Distribution - AM Peak-Hour Volumes

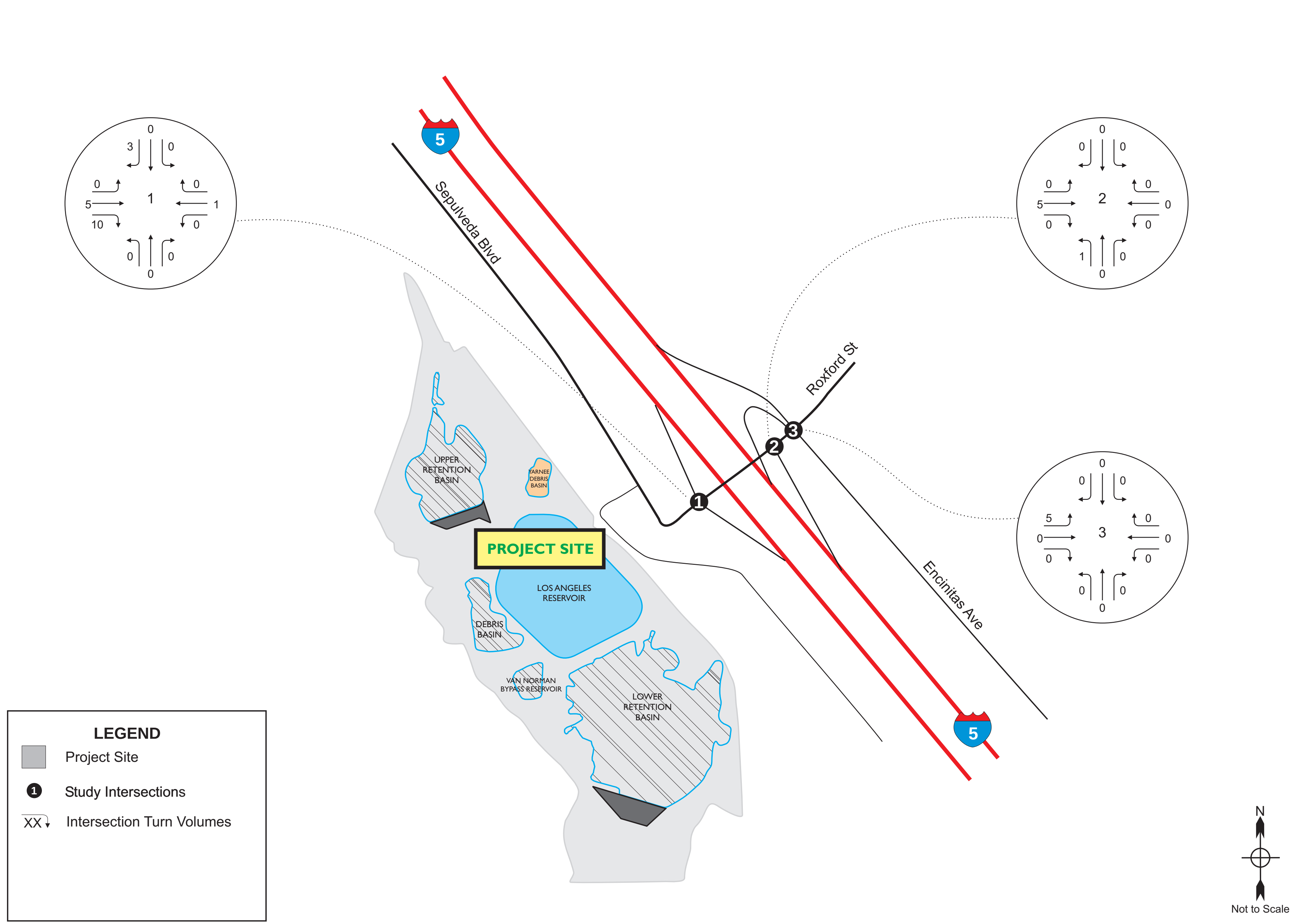

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Figure 10

Project Construction Peak-Hour Trip (Vehicles) Distribution - PM Peak-Hour Volumes

5. Future Year-2014 with-Project Construction Conditions

This section documents the future traffic conditions with Project construction activities within the study area. The traffic volumes for this scenario were derived by adding the project trips to the Year 2014 no-Project condition traffic volumes defined within Section 3 of this report.

A. Study Intersection Operations Analysis

A level of service analysis was conducted for the study intersections, in order to document peak-hour operations for this scenario. Table 6 provides the results of this analysis. Bold text indicates those intersections would that would operate at LOS E or F.

Table 6 – Study Intersection Levels of Service –
Future with-Project Construction Conditions

Study Intersections		AM Peak		PM Peak	
		ICU	**LOS**	**ICU**	**LOS**
1	I-5 SB Ramps & Roxford Street	Overflow	**F**	Overflow	**F**
2	I-5 NB Off Ramp & Roxford Street	16.7	C	20.5	C
3	I-5 NB Ramps/Encinitas Avenue & Roxford Street	0.856	D	0.779	C

Under this scenario, one of the three study intersections would continue to operate at LOS F:

- I-5 SB Ramps / Roxford Street – operates at LOS F in the a.m. and p.m. peak hours

The future Year-2014 with-Project calculation worksheets for the study intersections analyzed with CMA methodology are provided in Appendix C of this report. The analyzed peak-hour traffic volumes at the study intersections for the future with-Project Construction conditions are provided in Figure 11 (a.m. peak) and Figure 12 (p.m. peak).

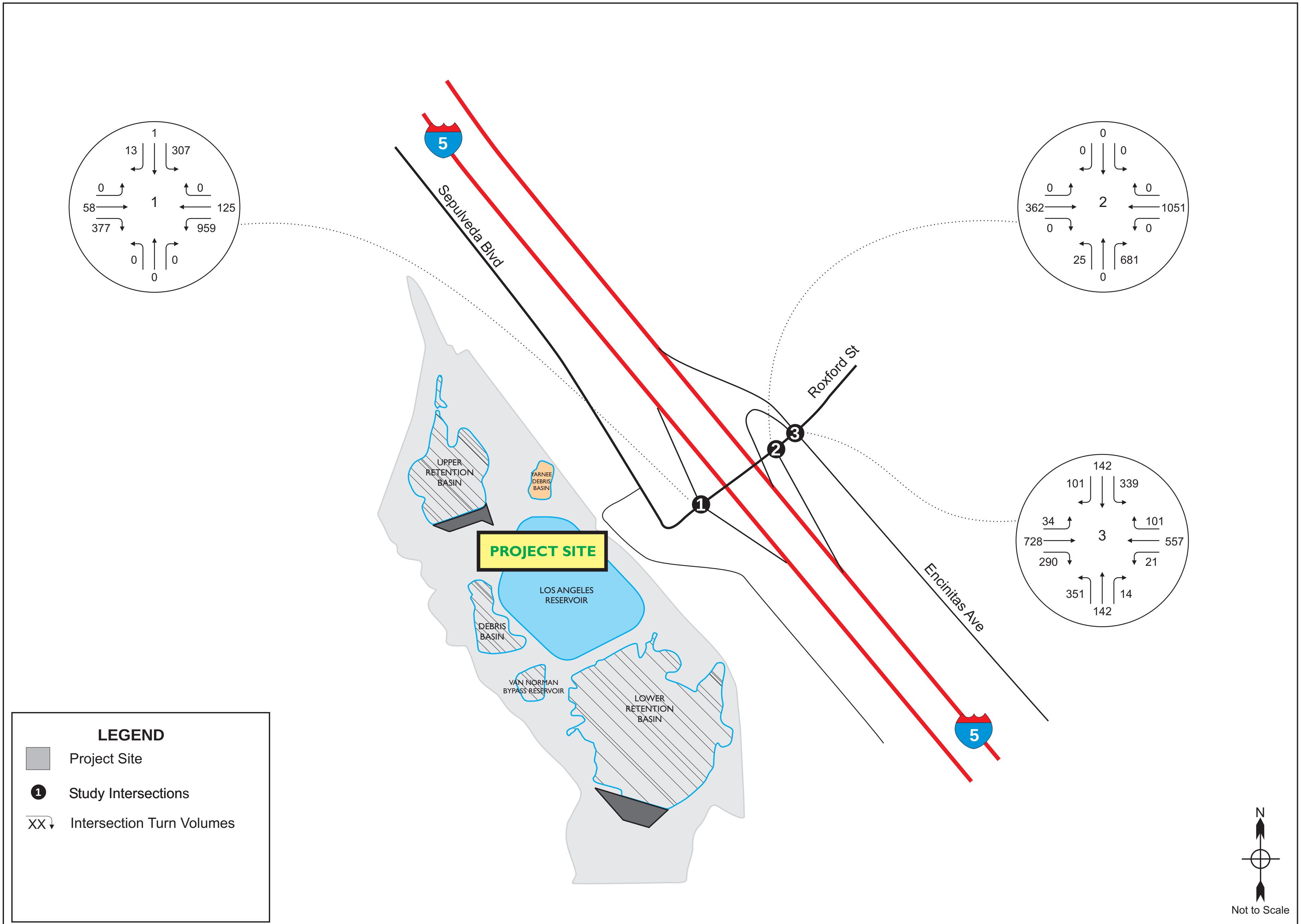

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Figure 11

Future Year 2014 With Project - AM Peak-Hour Intersection Volumes

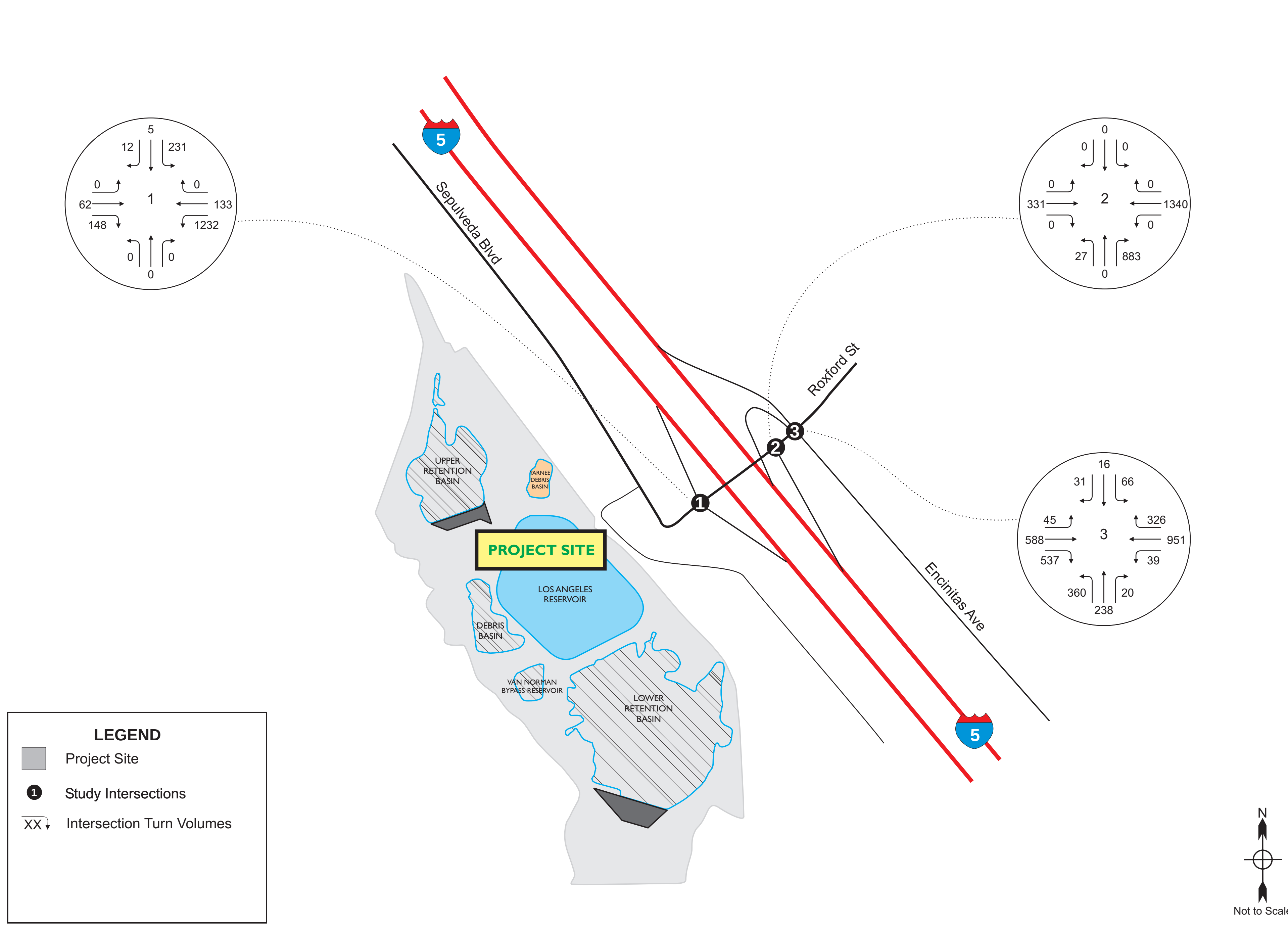

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Figure 12

Future Year 2014 With Project - PM Peak-Hour Intersection Volumes

6. Project Construction Impacts

A. Significant Impact Guidelines

Traffic impacts are identified if a proposed development will result in a significant change in traffic conditions at a study intersection. A significant impact is typically identified if project-related traffic will cause service levels to deteriorate beyond a threshold limit specified by the overseeing agency. Impacts can also be significant if an intersection is already operating below acceptable level of service and project traffic will cause a further decline below a threshold.

The City of Los Angeles Department of Transportation has established specific thresholds for project related increases in the volume-to-capacity ratio (V/C) of signalized study intersections. The following increases in peak-hour V/C ratios are considered significant impacts:

Level of Service	**Final V/C***	**Project Related v/c increase**
C	< 0.70 – 0.80	Equal to or greater than 0.040
D	< 0.80 – 0.90	Equal to or greater than 0.020
E and F	0.90 or more	Equal to or greater than 0.010

Note: Final V/C is the V/C ratio at an intersection, considering impacts from the project, ambient and related project growth, and without proposed traffic impact mitigations.

B. Project Construction Impact Calculations

The data within Table 7 provides a comparison of all analyzed scenarios for the study intersections. Traffic impacts created by the project were calculated by subtracting the volume-to-capacity (v/c) totals under the "Future No-Project Construction Conditions (Year 2014)" heading from the totals under the "Future with-Project Construction Conditions (Year 2014)" heading.

As the quantified impact at the unsignalized intersections would be unclear based on current operating conditions, and the overflow result produced by the calculations for the I-5 Southbound Ramps/Roxford Street intersection, a hybrid analysis was provided. The level of service output produced by the HCM analysis, and an impact increment produced by a theoretical signalized analysis of the same intersection, were both used to calculate significant impacts for this analysis. Therefore, the LOS of unsignalized conditions was acknowledged, but a quantifiable variable was able to be analyzed against impact standards.

The overall traffic impacts created by the construction project traffic and determination of significant impacts are provided in the right two columns of the table. LOS values of E or F and significant impact determinations are highlighted by bold text.

Table 7 – Project Construction Impact Calculations

	Study Intersections	Peak Hour	Existing (2012) Conditions		Future 2014 Without Construction		Future 2014 With Construction		Change in V/C or Delay	Sig Impact?
			V/C or Delay (sec)	LOS	V/C or Delay (sec)	LOS	V/C or Delay (sec)	LOS		
1	I-5 SB Ramps & Roxford Street [a]	AM	Overflow 0.822	**F**	Overflow 0.849	**F**	Overflow 0.850	**F**	0.001	No
		PM	Overflow 0.660	**F**	Overflow 0.735	**F**	Overflow 0.742	**F**	0.007	No
2	I-5 NB Off Ramp & Roxford Street [a]	AM	15.0 0.566	B	16.0 0.583	C	16.7 0.586	C	0.7 0.003	No
		PM	16.1 0.675	C	20.1 0.750	C	20.5 0.750	C	0.4 0.000	No
3	I-5 NB Ramps/Encinitas Avenue & Roxford Street [b]	AM	0.825	D	0.856	D	0.856	D	0.000	No
		PM	0.667	B	0.775	C	0.779	C	0.004	No

[a] Unsignalized intersection. Vehicle delay in seconds and "V/C" values are based on CMA methodology to determine the change in V/C due to project traffic.

[b] Signalized intersection. Analysis is based on LADOT CMA methodology worksheet.

As indicated by the right-most column of Table 7, the proposed Project would not create significant impacts at any of the three study intersections under the future with Project construction scenario.

C. Supplemental Existing with-Project Analysis

A supplemental analysis was included in this document to comply with court rulings in the recent *Sunnyvale* case regarding California Environmental Quality Act (CEQA) baseline analysis. Significant impacts for the proposed project were compared to existing conditions for the determination of impacts, and not project-year or buildout-year conditions.

Table 8 summarizes the results of the level of service analysis for this scenario. LOS values of E or F and significant impact determinations are highlighted by bold text.

Table 8 – Existing with-Project Construction Impacts Determination

	Study Intersections	Peak Hour	Existing (2012) Conditions		Existing (2012) + Construction		Change in V/C or Delay	Sig Impact?
			V/C or Delay (sec)	LOS	V/C or Delay (sec)	LOS		
1	I-5 SB Ramps & Roxford Street [a]	AM	Overflow 0.822	**F**	Overflow 0.823	**F**	0.001	No
		PM	Overflow 0.660	**F**	Overflow 0.667	**F**	0.007	No
2	I-5 NB Off Ramp & Roxford Street [a]	AM	15.0 0.566	B	15.6 0.569	C	0.6 0.003	No
		PM	16.1 0.675	C	16.3 0.675	C	0.2 0.000	No
3	I-5 NB Ramps/Encinitas Avenue & Roxford Street [b]	AM	0.825	D	0.825	D	0.000	No
		PM	0.667	B	0.670	B	0.003	No

[a] Unsignalized intersection. Vehicle delay in seconds and "V/C" values are based on CMA methodology to determine the change in V/C due to project traffic.
[b] Signalized intersection. Analysis is based on LADOT CMA methodology worksheet.

The proposed Project would not create significant impacts at any of the three study intersections under the existing with-Project analysis.

The existing Year-2012 with-Project calculation worksheets for the study intersections analyzed in CMA methodology are provided in Appendix D of this report. The analyzed peak-hour traffic volumes at the study intersections for this scenario are illustrated in Figure D-1 (a.m. peak) and Figure D-2 (p.m. peak) of Appendix D.

8. Congestion Management Plan Conformance

This section briefly demonstrates the ways in which this traffic study was prepared to be in conformance with the procedures mandated by the Congestion Management Program of the County of Los Angeles.

The Congestion Management Program (CMP) was created statewide because of Proposition 111 and has been implemented locally by the Los Angeles County Metropolitan Transportation Authority (Metro).

The CMP for Los Angeles County requires that the traffic impact of individual development projects of potentially regional significance be analyzed. A specific system of arterial roadways plus all freeways comprises the CMP system. Approximately 160 intersections are identified for monitoring on the system. This section describes the project-related analysis of the CMP system. The analysis has been conducted according to the guidelines set forth in the 1997 CMP for Los Angeles County. Per CMP Transportation Impact Analysis (TIA) Guidelines, a traffic impact analysis is conducted where:

- At CMP arterial monitoring intersections, including freeway on- or off-ramps, where the proposed project will add 50 or more trips during either AM or PM weekday peak hours.

- At CMP mainline freeway-monitoring locations, where the project will add 150 or more trips, in either direction, during the either the AM or PM weekday peak hours.

The nearest CMP arterial monitoring intersection to the project site is:

- CMP ID #66 – Topanga Canyon Boulevard and SR-118 Ramps

The nearest CMP arterial monitoring intersections are located approximately nine miles west of the project site. Based on the project trip generation and the distance of this location from the project site, it is not expected that 50 or more new trips per hour would be added at this CMP intersection. Therefore, no further analysis of potential CMP impacts is required.

The three nearest CMP mainline freeway-monitoring locations to the project site are:

- CMP Station 1007 – I-5 Freeway north of SR-170
- CMP Station 1058 – I-210 Freeway east of Polk Street

Based on the project trip assignment defined in Section 3, the proposed project is expected to add less than 150 new trips per hour, in either direction, to any freeway segments near the project site. Therefore, no further analysis of CMP freeway monitoring stations is required.

9. Conclusions and Recommendations

Project Background

The Los Angeles Department of Water and Power (LADWP) has proposed to make improvements to Bull Creek Extension Channel (BCEC), a concrete-lined storm water conveyance and flood control facility located within VNC.

Construction Period Trip Generation

The trip generation totals were determined based on the most intense period of construction activity for the project. Project trip generation calculations included construction truck trip estimates and construction employee vehicle trips.

The maximum number of employees on site per day during the peak construction month (August 2014) would be 45 employees (40 field personnel and 5 office/supervision staff) and the maximum truck trip activity would be 60 round trips per day. There are other periods in the project construction schedule where more daily truck trips would be needed (up to 82 daily trips during months 32 and 33, in March and April of 2015), but the total trips analyzed represents the highest combined trips generated by both construction employees and trucks. The project would generate a daily total of 150 passenger car equivalent trips, with 15 trips occurring during the a.m. peak hour and 15 trips occurring during the p.m. peak hours.

Significant Impacts and Recommended Mitigation Measures

Based on the City of Los Angeles significant traffic impact criteria, project construction will not create significant traffic impact at any of the three study intersections.

Post-Construction Operations

The project is not expected to generate increases in vehicle trips once project construction is completed. The project is therefore not expected to have long-term traffic impacts during the operations period.

APPENDIX A
Level-of-Service Definitions

CMA METHODLOGY FOR SIGNALIZED INTERSECTIONS

The City of Los Angeles Department of Transportation (LADOT) specifies that the Transportation Research Board Critical Movement Analysis (CMA), Circular 212 Method, be used to analyze traffic operating conditions at signalized intersections. The CMA analysis method for evaluating signalized intersections involves the computation of volume-to-capacity (V/C) ratios for each critical movement. Capacity, or saturation flow rate, is defined as the maximum rate of flow that can pass through a given intersection approach under prevailing traffic and roadway conditions. The sum of all critical movements on a critical lane basis is used to determine the total intersection volume to capacity ratio (V/C) and corresponding Level-of-Service A facility is "at capacity" (v/c of 1.00 or greater) when extreme congestion occurs. This volume/capacity ratio value is based upon volumes by lane, signal phases, and approach lane configuration

DEFINITIONS OF LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS

Level of Service	Volume/Capacity Ratio	Definition
A	0.000 - 0.600	EXCELLENT. No vehicle waits longer than one Red light and no approach phase is fully used.
B	0.601 - 0.700	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.701 – 0.800	GOOD. Occasionally, drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801 – 0.900	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.900 – 1.00	POOR. Represents the most vehicles that intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	Greater than 1.000	FAILURE. Backups from nearby intersections or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths.

HIGHWAY CAPACITY MANUAL METHODOLOGY FOR TWO-WAY STOP CONTROLLED INTERSECTIONS

Unsignalized intersection level of service is reported for the major street and minor street (generally, left-turn movements). The method assesses available and critical gaps in the traffic stream, which make it possible for side street traffic to enter the main street flow. The *2000 Highway Capacity Manual* describes the detailed methodology. It is not unusual for an intersection to experience Level of Service E or F conditions for the minor street left-turn movements. It should be understood that, often, a poor level of service is experienced by only a few vehicles and that the intersection as a whole operates acceptably.

Unsignalized levels of service are described in the following table.

Delay (seconds)	**Level of Service**
0-10	A
10-15	B
15-25	C
25-35	D
35-50	E
>50	F

Source: *2000 Highway Capacity Manual*, Transportation Research Board, Washington, D.C.

APPENDIX B
Traffic Count Data

City Of Los Angeles
Department Of Transportation
MANUAL TRAFFIC COUNT SUMMARY

STREET:
North/South I-5 SB Ramps

East/West Rox ford St

Day: Wednesday Date: February 8, 2012 Weather: SUNNY

Hours: 7-10AM 4-7PM Chekrs: NDS

School Day: YES District: I/S CODE

	N/B	S/B	E/B	W/B
DUAL-WHEELED	0	49	159	278
BIKES	0	0	0	0
BUSES	0	0	0	9

	N/B	TIME	S/B	TIME	E/B	TIME	W/B	TIME
AM PK 15 MIN	0	0.00	82	7.30	112	7.45	290	7.30
PM PK 15 MIN	0	0.00	61	17.45	51	16.30	359	17.00
AM PK HOUR	0	0.00	310	7.15	371	7.15	955	7.00
PM PK HOUR	0	0.00	224	17.00	145	16.00	1160	17.00

NORTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	0	0	0	0
8-9	0	0	0	0
9-10	0	0	0	0
16-17	0	0	0	0
17-18	0	0	0	0
18-19	0	0	0	0
TOTAL	0	0	0	0

SOUTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	278	1	6	285
8-9	220	0	13	233
9-10	168	1	4	173
16-17	167	1	10	178
17-18	215	3	6	224
18-19	155	1	4	160
TOTAL	1203	7	43	1253

Hours	**TOTAL** N-S	**XING S/L** Ped	Sch	**XING N/L** Ped	Sch
7-8	285	0	0	1	0
8-9	233	0	0	0	0
9-10	173	0	0	0	0
16-17	178	1	0	0	0
17-18	224	2	0	1	0
18-19	160	0	0	0	0
TOTAL	1253	3	0	2	0

EASTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	0	40	325	365
8-9	0	20	174	194
9-10	0	17	116	133
16-17	0	25	120	145
17-18	0	33	70	103
18-19	0	18	46	64
TOTAL	0	153	851	1004

WESTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	876	79	0	955
8-9	563	63	0	626
9-10	459	129	0	588
16-17	859	67	0	926
17-18	1104	56	0	1160
18-19	708	48	0	756
TOTAL	4569	442	0	5011

Hours	**TOTAL** E-W	**XING W/L** Ped	Sch	**XING E/L** Ped	Sch
7-8	1320	0	0	0	0
8-9	820	0	0	0	0
9-10	721	0	0	0	0
16-17	1071	0	0	0	0
17-18	1263	1	0	0	0
18-19	820	0	0	0	0
TOTAL	6015	1	0	0	0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5048_001 **Day:** WEDNESDAY

City: Los Angeles **TOTAL AM** **Date:** 02/08/12

NS/EW Streets:	I-5 SB Ramps			I-5 SB Ramps			Rox ford St			Rox ford St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0.5	1	0.5	0	1	1	2	1	0	
7:00 AM				55	0	2		4	76	206	26		369
7:15 AM				67	0	1		14	93	258	29		462
7:30 AM				85	0	4		9	96	279	31		504
7:45 AM				82	1	1		19	104	191	24		422
8:00 AM				81	0	5		6	79	166	15		352
8:15 AM				58	0	6		6	48	172	32		322
8:30 AM				40	0	9		3	53	140	32		277
8:45 AM				49	0	5		7	38	149	37		285
9:00 AM				55	0	1		6	47	139	42		290
9:15 AM				47	1	1		4	54	125	72		304
9:30 AM				42	0	0		6	41	117	49		255
9:45 AM				41	0	4		5	43	136	55		284

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	702	2	39	0	89	772	2078	444	0	4126
APPROACH %'s :	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	0	289	1	8	0	46	369	934	110	0	1757
PEAK HR FACTOR :		0.000			0.837			0.843			0.842		0.872

CONTROL :

BUS FACTOR	1.5
TRUCK FACTOR	2.5

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5048_001 **Day:** WEDNESDAY

City: Los Angeles **TOTAL PM** **Date:** 02/08/12

NS/EW Streets:	I-5 SB Ramps			I-5 SB Ramps			Rox ford St			Rox ford St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0.5	1	0.5	0	1	1	2	1	0	
4:00 PM				36	0	4		8	34	223	15		320
4:15 PM				54	0	3		6	50	205	23		341
4:30 PM				41	0	3		5	54	269	25		397
4:45 PM				46	1	2		8	32	182	23		294
5:00 PM				56	1	1		9	24	346	23		460
5:15 PM				50	3	3		12	25	317	9		419
5:30 PM				57	3	3		9	21	241	12		346
5:45 PM				62	0	1		5	21	228	14		331
6:00 PM				44	0	1		6	18	227	17		313
6:15 PM				48	0	0		2	13	172	11		246
6:30 PM				34	0	2		7	13	157	9		222
6:45 PM				33	1	1		3	9	162	13		222

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	561	9	24	0	80	314	2729	194	0	3911
APPROACH %'s :	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	0	0	0	193	5	9	0	34	135	1114	80	0	1570
PEAK HR FACTOR :		0.000			0.892			0.716			0.809		0.853

CONTROL :

BUS FACTOR	1.5
TRUCK FACTOR	2.5

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5048_001 **Day:** WEDNESDAY

City: Los Angeles PASSENGER CARS ONLY **Date:** 02/08/12

AM

NS/EW Streets:	I-5 SB Ramps			I-5 SB Ramps			Rox ford St			Rox ford St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0.5	1	0.5	0	1	1	2	1	0	
7:00 AM				52	0	2		1	53	178	13		299
7:15 AM				64	0	1		11	80	235	16		407
7:30 AM				77	0	1		6	78	256	21		439
7:45 AM				79	1	1		19	86	169	9		364
8:00 AM				76	0	0		6	54	144	5		285
8:15 AM				55	0	3		6	38	142	12		256
8:30 AM				40	0	1		3	35	116	7		202
8:45 AM				44	0	2		4	18	116	4		188
9:00 AM				50	0	1		6	24	112	12		205
9:15 AM				37	1	1		1	21	100	24		185
9:30 AM				37	0	0		3	13	99	19		171
9:45 AM				33	0	1		5	13	109	15		176
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	644	2	14	0	71	513	1776	157	0	3177
APPROACH %'s :	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	0	272	1	5	0	37	297	838	59	0	1509
PEAK HR FACTOR :		0.000			0.858			0.795			0.810		0.859

CONTROL :

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5048_001 **Day:** WEDNESDAY

City: Los Angeles PASSENGER CARS ONLY **Date:** 02/08/12

PM

NS/EW Streets:	I-5 SB Ramps			I-5 SB Ramps			Rox ford St			Rox ford St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0.5	1	0.5	0	1	1	2	1	0	
4:00 PM				33	0	1		5	11	213	10		273
4:15 PM				49	0	3		6	17	200	15		290
4:30 PM				36	0	3		5	41	259	12		356
4:45 PM				43	1	2		8	19	174	18		265
5:00 PM				51	1	1		9	11	333	20		426
5:15 PM				47	0	0		9	15	300	9		380
5:30 PM				52	0	3		9	18	233	12		327
5:45 PM				59	0	1		5	13	220	14		312
6:00 PM				44	0	1		6	10	224	17		302
6:15 PM				48	0	0		2	10	169	8		237
6:30 PM				31	0	2		7	13	152	9		214
6:45 PM				30	1	1		3	9	157	13		214

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	523	3	18	0	74	187	2634	157	0	3596
APPROACH %'s :	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

PEAK HR START TIME :	500 PM												TOTAL
PEAK HR VOL :	0	0	0	209	1	5	0	32	57	1086	55	0	1445
PEAK HR FACTOR :		0.000			0.896			0.824			0.808		0.848

CONTROL :

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 12-5048-001
N/S Street: I-5 SB Ramps
E/W Street: Rox ford St
DATE: 02/08/12 DAY: Wednesday
CITY: Los Angeles

A M

Adult Pedestrians

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	1	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0
TOTALS	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**

School-Aged Pedestrians

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
6:30 AM	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0
TOTALS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

P M

Adult Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
4:00 PM	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	1	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0
5:00 PM	0	0	1	1	0	0	0	0
5:15 PM	1	0	0	0	0	0	1	0
5:30 PM	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0
TOTALS	**1**	**0**	**1**	**2**	**0**	**0**	**1**	**0**

School-Aged Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
4:00 PM	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0
TOTALS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 12-5048-001
N/S Street: I-5 SB Ramps
E/W Street: Rox ford St
DATE: 02/08/12 DAY: Wednesday
CITY: Los Angeles

A M

BIKES

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0
TOTALS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

P M

BIKES

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
4:00 PM	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0
TOTALS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5048_001 **Day:** WEDNESDAY

City: Los Angeles **Date:** 02/08/12

AM

NS/EW Streets:	I-5 SB Ramps			I-5 SB Ramps			Rox ford St			Rox ford St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0.5	1	0.5	0	1	1	2	1	0	
7:00 AM										0			
7:15 AM										0			
7:30 AM										0			
7:45 AM										1			1
8:00 AM										1			1
8:15 AM										3			3
8:30 AM										1			1
8:45 AM										0			
9:00 AM										1			1
9:15 AM										0			
9:30 AM										0			
9:45 AM										1			1

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	8	0	0	8
APPROACH %'s :	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

PEAK HR START TIME :	745 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	6	0	0	6
PEAK HR FACTOR :		0.000			0.000			0.000			0.500		0.500

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5048_001 **Day:** WEDNESDAY

City: Los Angeles **Date:** 02/08/12

PM

NS/EW Streets:	I-5 SB Ramps			I-5 SB Ramps			Rox ford St			Rox ford St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0.5	1	0.5	0	1	1	2	1	0	
4:00 PM										0			
4:15 PM										0			
4:30 PM										0			
4:45 PM										0			
5:00 PM										0			
5:15 PM										1			1
5:30 PM										0			
5:45 PM										0			
6:00 PM										0			
6:15 PM										0			
6:30 PM										0			
6:45 PM										0			

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	1	0	0	1
APPROACH %'s :	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

PEAK HR START TIME :	515 PM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	1	0	0	1
PEAK HR FACTOR :		0.000			0.000			0.000			0.250		0.250

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5048_001 **Day:** WEDNESDAY

City: Los Angeles **Date:** 02/08/12

AM

NS/EW Streets:	I-5 SB Ramps			I-5 SB Ramps			Rox ford St			Rox ford St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0.5	1	0.5	0	1	1	2	1	0	
7:00 AM				1		0		1	9	11	5		27
7:15 AM				1		0		1	5	9	5		21
7:30 AM				3		1		1	7	9	4		25
7:45 AM				1		0		0	7	8	6		22
8:00 AM				2		2		0	10	8	4		26
8:15 AM				1		1		0	4	10	8		24
8:30 AM				0		3		0	7	9	10		29
8:45 AM				2		1		1	8	13	13		38
9:00 AM				2		0		0	9	10	12		33
9:15 AM				4		0		1	13	10	19		47
9:30 AM				2		0		1	11	7	12		33
9:45 AM				3		1		0	12	10	16		42

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	22	0	9	0	6	102	114	114	0	367
APPROACH %'s :	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

PEAK HR START TIME :	900 AM												TOTAL
PEAK HR VOL :	0	0	0	11	0	1	0	2	45	37	59	0	155
PEAK HR FACTOR :		0.000			0.750			0.839			0.828		0.824

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5048_001 **Day:** WEDNESDAY

City: Los Angeles **Date:** 02/08/12

PM

NS/EW Streets:	I-5 SB Ramps			I-5 SB Ramps			Rox ford St			Rox ford St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0.5	1	0.5	0	1	1	2	1	0	
4:00 PM				1	0	1		1	9	4	2		18
4:15 PM				2	0	0		0	13	2	3		20
4:30 PM				2	0	0		0	5	4	5		16
4:45 PM				1	0	0		0	5	3	2		11
5:00 PM				2	0	0		0	5	5	1		13
5:15 PM				1	1	1		1	4	6	0		14
5:30 PM				2	1	0		0	1	3	0		7
5:45 PM				1	0	0		0	3	3	0		7
6:00 PM				0	0	0		0	3	1	0		4
6:15 PM				0	0	0		0	1	1	1		3
6:30 PM				1	0	0		0	0	2	0		3
6:45 PM				1	0	0		0	0	2	0		3

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	14	2	2	0	2	49	36	14	0	119
APPROACH %'s :	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

PEAK HR START TIME :	400 PM												TOTAL
PEAK HR VOL :	0	0	0	6	0	1	0	1	32	13	12	0	65
PEAK HR FACTOR :		0.000			0.875			0.635			0.694		0.813

CONTROL : 0

City Of Los Angeles
Department Of Transportation
MANUAL TRAFFIC COUNT SUMMARY

STREET:
North/South I-5 NB Off-Ramp

East/West Rox ford St

Day: Wednesday Date: February 8, 2012 Weather: SUNNY

Hours: 7-10AM 4-7PM Chekrs: NDS

School Day: YES District: I/S CODE

	N/B	S/B	E/B	W/B
DUAL-WHEELED	39	0	42	265
BIKES	0	0	0	0
BUSES	1	0	0	9

	N/B	TIME	S/B	TIME	E/B	TIME	W/B	TIME
AM PK 15 MIN	184	7.15	0	0.00	99	7.45	293	7.30
PM PK 15 MIN	218	17.00	0	0.00	73	17.45	350	17.00
AM PK HOUR	682	7.15	0	0.00	342	7.15	940	7.00
PM PK HOUR	857	16.45	0	0.00	254	17.00	1142	17.00

NORTHBOUND Approach / **SOUTHBOUND Approach** / **TOTAL** / **XING S/L** / **XING N/L**

Hours	Lt	Th	Rt	Total	Hours	Lt	Th	Rt	Total	N-S	Ped	Sch	Ped	Sch
7-8	13	0	652	665	*7-8*	0	0	0	0	665	0	0	0	0
8-9	21	0	640	661	*8-9*	0	0	0	0	661	0	0	0	0
9-10	30	0	531	561	*9-10*	0	0	0	0	561	0	0	0	0
16-17	21	0	710	731	*16-17*	0	0	0	0	731	0	0	0	0
17-18	23	0	821	844	*17-18*	0	0	0	0	844	0	0	0	0
18-19	30	0	722	752	*18-19*	0	0	0	0	752	0	0	0	0
TOTAL	138	0	4076	4214	TOTAL	0	0	0	0	4214	0	0	0	0

EASTBOUND Approach / **WESTBOUND Approach** / **TOTAL** / **XING W/L** / **XING E/L**

Hours	Lt	Th	Rt	Total	Hours	Lt	Th	Rt	Total	E-W	Ped	Sch	Ped	Sch
7-8	0	318	0	318	*7-8*	0	940	0	940	1258	0	0	0	0
8-9	0	240	0	240	*8-9*	0	604	0	604	844	0	0	0	0
9-10	0	173	0	173	*9-10*	0	558	0	558	731	0	0	0	0
16-17	0	199	0	199	*16-17*	0	910	0	910	1109	0	0	0	0
17-18	0	254	0	254	*17-18*	0	1142	0	1142	1396	0	0	0	0
18-19	0	174	0	174	*18-19*	0	725	0	725	899	0	0	0	0
TOTAL	0	1358	0	1358	TOTAL	0	4879	0	4879	6237	0	0	0	0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5048_002 | **Day:** WEDNESDAY

City: Los Angeles | **TOTAL AM** | **Date:** 02/08/12

NS/EW Streets:	I-5 NB Off-Ramp			I-5 NB Off-Ramp			Rox ford St			Rox ford St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0.5	0	1.5	0	0	0	0	1	0	0	2	0	
7:00 AM	4		148					63			228		443
7:15 AM	8		180					73			276		537
7:30 AM	3		166					94			311		574
7:45 AM	0		167					102			206		475
8:00 AM	2		167					86			187		442
8:15 AM	8		176					64			186		434
8:30 AM	5		139					47			169		360
8:45 AM	11		166					52			172		401
9:00 AM	6		165					54			180		405
9:15 AM	13		140					49			179		381
9:30 AM	3		113					49			165		330
9:45 AM	12		130					39			177		358

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	75	0	1857	0	0	0	0	772	0	0	2436	0	5140
APPROACH %'s :	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	15	0	661	0	0	0	0	332	0	0	1021	0	2029
PEAK HR FACTOR :		0.899			0.000			0.814			0.821		0.884

CONTROL :

BUS FACTOR	1.5
TRUCK FACTOR	2.5

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5048_001 **Day:** WEDNESDAY

City: Los Angeles **TOTAL PM** **Date:** 02/08/12

NS/EW Streets:	I-5 NB Off-Ramp			I-5 NB Off-Ramp			Rox ford St			Rox ford St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0.5	0	1.5	0	0	0	0	1	0	0	2	0	
4:00 PM	5		139					46			232		422
4:15 PM	5		182					58			222		467
4:30 PM	3		190					49			292		534
4:45 PM	8		207					57			202		474
5:00 PM	5		215					62			360		642
5:15 PM	7		213					69			324		613
5:30 PM	7		206					59			250		522
5:45 PM	6		195					75			236		512
6:00 PM	11		194					43			233		481
6:15 PM	5		188					58			177		428
6:30 PM	5		185					43			166		399
6:45 PM	9		159					34			159		361

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	76	0	2273	0	0	0	0	653	0	0	2853	0	5855
APPROACH %'s :	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

PEAK HR START TIME :	500 PM												TOTAL
PEAK HR VOL :	25	0	829	0	0	0	0	265	0	0	1170	0	2289
PEAK HR FACTOR :		0.970			0.000			0.883			0.813		0.891

CONTROL :

BUS FACTOR	1.5
TRUCK FACTOR	2.5

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5048_002 **Day:** WEDNESDAY

City: Los Angeles PASSENGER CARS ONLY **Date:** 02/08/12

AM

NS/EW Streets:	I-5 NB Off-Ramp			I-5 NB Off-Ramp			Rox ford St			Rox ford St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0.5	0	1.5	0	0	0	0	1	0	0	2	0	
7:00 AM	4		148					58			190		400
7:15 AM	5		177					70			243		495
7:30 AM	3		163					84			281		531
7:45 AM	0		159					97			172		428
8:00 AM	2		167					83			155		407
8:15 AM	5		173					61			141		380
8:30 AM	5		134					47			120		306
8:45 AM	6		161					44			112		323
9:00 AM	6		150					49			123		328
9:15 AM	10		132					34			109		285
9:30 AM	3		113					44			116		276
9:45 AM	9		125					34			114		282

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	58	0	1802	0	0	0	0	705	0	0	1876	0	4441
APPROACH %'s :	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	10	0	666	0	0	0	0	334	0	0	851	0	1861
PEAK HR FACTOR :		0.929			0.000			0.861			0.757		0.876

CONTROL :

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5048_001 **Day:** WEDNESDAY

City: Los Angeles PASSENGER CARS ONLY **Date:** 02/08/12

PM

NS/EW Streets:	I-5 NB Off-Ramp			I-5 NB Off-Ramp			Rox ford St			Rox ford St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0.5	0	1.5	0	0	0	0	1	0	0	2	0	
4:00 PM	5		139					41			219		404
4:15 PM	5		179					53			209		446
4:30 PM	3		187					44			269		503
4:45 PM	8		200					54			189		451
5:00 PM	5		212					57			343		617
5:15 PM	4		208					64			311		587
5:30 PM	7		206					54			242		509
5:45 PM	6		190					72			228		496
6:00 PM	11		191					43			230		475
6:15 PM	5		185					58			172		420
6:30 PM	5		185					40			163		393
6:45 PM	9		159					31			154		353

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	73	0	2241	0	0	0	0	611	0	0	2729	0	5654
APPROACH %'s :	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

PEAK HR START TIME :	500 PM												TOTAL
PEAK HR VOL :	22	0	816	0	0	0	0	247	0	0	1124	0	2209
PEAK HR FACTOR :		0.965			0.000			0.858			0.819		0.895

CONTROL :

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 12-5048-002
N/S Street: I-5 NB Off-Ramp
E/W Street: Rox ford St
DATE: 02/08/12 DAY: Wednesday
CITY: Los Angeles

A M

Adult Pedestrians

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0
TOTALS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

School-Aged Pedestrians

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
6:30 AM	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0
TOTALS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

P M

Adult Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
4:00 PM	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0
TOTALS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

School-Aged Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
4:00 PM	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0
TOTALS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 12-5048-002
N/S Street: I-5 NB Off-Ramp
E/W Street: Rox ford St
DATE: 02/08/12 DAY: Wednesday
CITY: Los Angeles

A M

BIKES

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0
TOTALS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

P M

BIKES

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
4:00 PM	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0
TOTALS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5048_001 **Day:** WEDNESDAY

City: Los Angeles BUS **AM** **Date:** 02/08/12

NS/EW Streets:	I-5 NB Off-Ramp			I-5 NB Off-Ramp			Rox ford St			Rox ford St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0.5	0	1.5	0	0	0	0	1	0	0	2	0	
7:00 AM											0		
7:15 AM											0		
7:30 AM											0		
7:45 AM											1		1
8:00 AM											1		1
8:15 AM											3		3
8:30 AM											1		1
8:45 AM											0		
9:00 AM											1		1
9:15 AM											0		
9:30 AM											1		1
9:45 AM											0		

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	0	8	0	8
APPROACH %'s :	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

PEAK HR START TIME :	745 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	6	0	6
PEAK HR FACTOR :		0.000			0.000			0.000			0.500		0.500

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5048_001 **Day:** WEDNESDAY

City: Los Angeles BUS **PM** **Date:** 02/08/12

NS/EW Streets:	I-5 NB Off-Ramp			I-5 NB Off-Ramp			Rox ford St			Rox ford St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0.5	0	1.5	0	0	0	0	1	0	0	2	0	
4:00 PM			0								0		
4:15 PM			0								0		
4:30 PM			0								0		
4:45 PM			1								0		1
5:00 PM			0								1		1
5:15 PM			0								0		
5:30 PM			0								0		
5:45 PM			0								0		
6:00 PM			0								0		
6:15 PM			0								0		
6:30 PM			0								0		
6:45 PM			0								0		

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	1	0	0	0	0	0	0	0	1	0	2
APPROACH %'s :	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	0	0	1	0	0	0	0	0	0	0	1	0	2
PEAK HR FACTOR :	0.250			0.000			0.000			0.250			0.500

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5048_001 **Day:** WEDNESDAY

City: Los Angeles HEAVY TRUCK **Date:** 02/08/12

AM

NS/EW Streets:	I-5 NB Off-Ramp			I-5 NB Off-Ramp			Rox ford St			Rox ford St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0.5	0	1.5	0	0	0	0	1	0	0	2	0	
7:00 AM	0		0					2			15		17
7:15 AM	1		1					1			13		16
7:30 AM	0		1					4			12		17
7:45 AM	0		3					2			13		18
8:00 AM	0		0					1			12		13
8:15 AM	1		1					1			16		19
8:30 AM	0		2					0			19		21
8:45 AM	2		2					3			24		31
9:00 AM	0		6					2			22		30
9:15 AM	1		3					6			28		38
9:30 AM	0		0					2			19		21
9:45 AM	1		2					2			25		30

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	6	0	21	0	0	0	0	26	0	0	218	0	271
APPROACH %'s :	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

PEAK HR START TIME :	845 AM												TOTAL
PEAK HR VOL :	3	0	11	0	0	0	0	13	0	0	93	0	120
PEAK HR FACTOR :		0.583			0.000			0.542			0.830		0.789

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5048_001 **Day:** WEDNESDAY

City: Los Angeles HEAVY TRUCK **Date:** 02/08/12

PM

NS/EW Streets:	I-5 NB Off-Ramp			I-5 NB Off-Ramp			Rox ford St			Rox ford St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0.5	0	1.5	0	0	0	0	1	0	0	2	0	
4:00 PM	0		0					2			5		7
4:15 PM	0		1					2			5		8
4:30 PM	0		1					2			9		12
4:45 PM	0		2					1			5		8
5:00 PM	0		1					2			6		9
5:15 PM	1		2					2			5		10
5:30 PM	0		0					2			3		5
5:45 PM	0		2					1			3		6
6:00 PM	0		1					0			1		2
6:15 PM	0		1					0			2		3
6:30 PM	0		0					1			1		2
6:45 PM	0		0					1			2		3

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	0	11	0	0	0	0	16	0	0	47	0	75
APPROACH %'s :	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	1	0	6	0	0	0	0	7	0	0	25	0	39
PEAK HR FACTOR :		0.583			0.000			0.875			0.694		0.813

CONTROL : 0

City Of Los Angeles
Department Of Transportation
MANUAL TRAFFIC COUNT SUMMARY

STREET:
North/South I-5 NB Ramps/Encinitas Ave

East/West Rox ford St

Day: Wednesday Date: February 8, 2012 Weather: SUNNY

Hours: 7-10AM 4-7PM Chekrs: NDS

School Day: YES District: I/S CODE

	N/B	S/B	E/B	W/B
DUAL-WHEELED	33	234	72	137
BIKES	0	1	3	1
BUSES	3	1	1	6

	N/B	TIME	S/B	TIME	E/B	TIME	W/B	TIME
AM PK 15 MIN	150	7.30	185	8.00	254	7.45	187	7.30
PM PK 15 MIN	168	17.00	26	16.15	266	17.15	328	17.00
AM PK HOUR	486	7.00	515	7.30	979	7.15	628	7.00
PM PK HOUR	586	17.00	87	16.15	1031	17.00	1046	16.30

NORTHBOUND Approach / **SOUTHBOUND Approach** / **TOTAL** / **XING S/L** / **XING N/L**

Hours	Lt	Th	Rt	Total	Hours	Lt	Th	Rt	Total	N-S	Ped	Sch	Ped	Sch
7-8	351	127	8	486	*7-8*	211	90	54	355	841	2	0	0	0
8-9	231	99	24	354	*8-9*	215	72	64	351	705	0	0	0	0
9-10	189	89	14	292	*9-10*	30	16	105	151	443	0	0	0	0
16-17	250	133	21	404	*16-17*	31	16	37	84	488	0	0	0	0
17-18	339	228	19	586	*17-18*	31	16	26	73	659	6	4	1	0
18-19	254	135	19	408	*18-19*	20	8	18	46	454	0	0	0	0
TOTAL	1614	811	105	2530	TOTAL	538	218	304	1060	3590	8	4	1	0

EASTBOUND Approach / **WESTBOUND Approach** / **TOTAL** / **XING W/L** / **XING E/L**

Hours	Lt	Th	Rt	Total	Hours	Lt	Th	Rt	Total	E-W	Ped	Sch	Ped	Sch
7-8	22	655	259	936	*7-8*	17	534	77	628	1564	1	0	2	0
8-9	13	624	219	856	*8-9*	24	310	61	395	1251	0	0	1	1
9-10	19	450	186	655	*9-10*	29	262	61	352	1007	0	0	0	0
16-17	35	479	345	859	*16-17*	31	631	139	801	1660	0	0	2	0
17-18	35	509	487	1031	*17-18*	35	779	230	1044	2075	0	0	4	0
18-19	18	409	441	868	*18-19*	54	453	129	636	1504	0	0	0	0
TOTAL	142	3126	1937	5205	TOTAL	190	2969	697	3856	9061	1	0	9	1

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5048_003 **Day:** WEDNESDAY

City: Los Angeles **TOTAL AM** **Date:** 02/08/12

NS/EW Streets:	I-5 NB Ramps/Encinitas Ave			I-5 NB Ramps/Encinitas Ave			Rox ford St			Rox ford St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1.5	1	0.5	1	0.5	0.5	1	2	0	1	2	0	
7:00 AM	84	22	3	28	8	14	7	140	55	8	133	18	520
7:15 AM	91	39	3	52	13	24	8	158	77	2	156	26	649
7:30 AM	118	31	1	50	24	29	7	179	67	6	167	29	708
7:45 AM	61	45	1	101	47	23	10	188	64	7	121	19	687
8:00 AM	73	24	9	123	55	23	5	163	75	6	94	20	670
8:15 AM	66	19	8	70	9	24	2	181	57	11	91	13	551
8:30 AM	56	25	11	27	6	37	3	148	30	3	81	19	446
8:45 AM	43	38	2	16	2	46	5	144	57	6	81	27	467
9:00 AM	58	30	7	11	3	49	3	153	55	12	81	13	475
9:15 AM	37	21	4	13	6	60	8	118	46	4	73	23	413
9:30 AM	46	20	3	9	10	49	8	95	41	5	73	22	381
9:45 AM	49	20	4	12	2	61	7	109	51	13	65	15	408

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	782	334	56	512	185	439	73	1776	675	83	1216	244	6375
APPROACH %'s :	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	343	139	14	326	139	99	30	688	283	21	538	94	2714
PEAK HR FACTOR :		0.827			0.701			0.955			0.808		0.958

CONTROL :

BUS FACTOR	1.5
TRUCK FACTOR	2.5

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5048_001 **Day:** WEDNESDAY

City: Los Angeles **TOTAL PM** **Date:** 02/08/12

NS/EW Streets:	I-5 NB Ramps/Encinitas Ave			I-5 NB Ramps/Encinitas Ave			Rox ford St			Rox ford St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1.5	1	0.5	1	0.5	0.5	1	2	0	1	2	0	
4:00 PM	55	28	6	18	5	10	8	99	63	6	175	47	520
4:15 PM	69	36	4	18	2	15	7	132	93	12	129	23	540
4:30 PM	68	28	14	9	3	21	11	129	87	8	211	38	627
4:45 PM	58	43	3	11	6	13	11	132	106	12	132	33	560
5:00 PM	97	72	4	16	6	11	13	141	110	9	251	73	803
5:15 PM	89	59	7	12	3	6	13	138	121	16	232	55	751
5:30 PM	77	55	4	13	6	6	9	123	118	2	164	49	626
5:45 PM	79	44	4	11	1	7	4	122	138	8	153	56	627
6:00 PM	63	27	4	16	2	10	4	99	126	14	157	48	570
6:15 PM	62	38	7	3	1	5	4	111	118	8	114	34	505
6:30 PM	64	29	7	4	3	3	9	103	110	19	102	28	481
6:45 PM	67	43	3	7	6	2	3	100	89	13	88	19	440

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	848	502	67	138	44	109	96	1429	1279	127	1908	503	7050
APPROACH %'s :	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

PEAK HR START TIME :	500 PM												TOTAL
PEAK HR VOL :	342	230	19	52	16	30	39	524	487	35	800	233	2807
PEAK HR FACTOR :		0.854			0.742			0.965			0.802		0.874

CONTROL :

BUS FACTOR 1.5
TRUCK FACTOR 2.5

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5048_003 | **Day:** WEDNESDAY

City: Los Angeles | PASSENGER CARS ONLY | **Date:** 02/08/12

AM

NS/EW Streets:	I-5 NB Ramps/Encinitas Ave			I-5 NB Ramps/Encinitas Ave			Rox ford St			Rox ford St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1.5	1	0.5	1	0.5	0.5	1	2	0	1	2	0	
7:00 AM	79	19	3	13	8	6	4	137	55	5	110	15	454
7:15 AM	91	36	3	47	10	9	5	155	77	2	138	18	591
7:30 AM	118	31	1	50	24	11	2	174	64	3	154	21	653
7:45 AM	61	35	1	88	47	5	5	183	61	4	104	14	608
8:00 AM	68	21	9	110	55	10	5	160	75	6	80	12	611
8:15 AM	58	14	3	62	9	4	2	178	57	8	77	8	480
8:30 AM	56	22	6	19	6	4	3	143	30	3	64	11	367
8:45 AM	43	38	2	11	2	3	2	136	57	6	63	19	382
9:00 AM	56	27	4	8	3	1	3	135	50	7	73	13	380
9:15 AM	37	21	1	5	3	10	3	103	43	4	53	15	298
9:30 AM	46	20	3	4	5	11	5	92	41	5	61	14	307
9:45 AM	49	20	4	3	2	8	4	104	48	10	55	12	319

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	762	304	40	420	174	82	43	1700	658	63	1032	172	5450
APPROACH %'s :	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	338	123	14	295	136	35	17	672	277	15	476	65	2463
PEAK HR FACTOR :		0.792			0.666			0.970			0.781		0.943

CONTROL :

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5048_001 **Day:** WEDNESDAY

City: Los Angeles PASSENGER CARS ONLY **Date:** 02/08/12

PM

NS/EW Streets:	I-5 NB Ramps/Encinitas Ave			I-5 NB Ramps/Encinitas Ave			Rox ford St			Rox ford St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1.5	1	0.5	1	0.5	0.5	1	2	0	1	2	0	
4:00 PM	55	28	3	5	5	2	8	94	63	6	170	47	486
4:15 PM	69	33	1	8	2	10	7	127	90	9	121	20	497
4:30 PM	68	28	11	1	3	3	11	124	84	3	206	38	580
4:45 PM	58	43	3	1	6	8	8	125	106	9	124	33	524
5:00 PM	92	69	4	3	6	8	10	138	110	9	242	73	764
5:15 PM	89	59	7	4	3	3	13	128	121	16	222	55	720
5:30 PM	77	55	4	8	6	6	6	120	118	2	156	49	607
5:45 PM	79	44	4	3	1	7	4	114	138	8	145	51	598
6:00 PM	63	27	4	8	2	10	4	96	126	14	154	48	556
6:15 PM	62	38	7	0	1	2	4	111	115	8	111	34	493
6:30 PM	64	29	4	4	0	3	6	103	110	19	99	28	469
6:45 PM	64	40	3	2	3	2	3	97	89	13	85	19	420

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	840	493	55	47	38	64	84	1377	1270	116	1835	495	6714
APPROACH %'s :	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

PEAK HR START TIME :	500 PM												TOTAL
PEAK HR VOL :	337	227	19	18	16	24	33	500	487	35	765	228	2689
PEAK HR FACTOR :		0.883			0.725			0.973			0.793		0.880

CONTROL :

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 12-5048-003
N/S Street: I-5 NB Ramps/Encinitas Ave
E/W Street: Rox ford St
DATE: 02/08/12 DAY: Wednesday
CITY: Los Angeles

A M

Adult Pedestrians

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	1	0	0	0	0	0
7:15 AM	0	0	0	1	1	0	0	0
7:30 AM	0	0	0	0	0	1	0	0
7:45 AM	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	1	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0
TOTALS	**0**	**0**	**1**	**1**	**2**	**1**	**0**	**1**

School-Aged Pedestrians

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
6:30 AM	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	1	0	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0
TOTALS	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**

P M

Adult Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
4:00 PM	0	0	0	0	1	0	0	0
4:15 PM	0	0	0	0	0	1	0	0
4:30 PM	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	1	1	0	0	0
5:15 PM	0	0	1	0	0	2	0	0
5:30 PM	1	0	0	2	0	1	0	0
5:45 PM	0	0	1	1	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0
TOTALS	**1**	**0**	**2**	**4**	**2**	**4**	**0**	**0**

School-Aged Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
4:00 PM	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0
5:00 PM	0	0	1	1	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	2	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0
TOTALS	**0**	**0**	**1**	**3**	**0**	**0**	**0**	**0**

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 12-5048-003
N/S Street: I-5 NB Ramps/Encinitas Ave
E/W Street: Rox ford St
DATE: 02/08/12 DAY: Wednesday
CITY: Los Angeles

A M
BIKES

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0
TOTALS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

P M
BIKES

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
4:00 PM	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0
4:45 PM	0	0	1	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0
5:15 PM	0	1	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0
6:15 PM	0	0	2	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0
TOTALS	**0**	**1**	**3**	**0**	**0**	**0**	**0**	**1**

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5048_001 **Day:** WEDNESDAY

City: Los Angeles BUS **Date:** 02/08/12

AM

NS/EW Streets:	I-5 NB Ramps/Encinitas Ave			I-5 NB Ramps/Encinitas Ave			Rox ford St			Rox ford St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1.5	1	0.5	1	0.5	0.5	1	2	0	1	2	0	
7:00 AM	0			0							0		
7:15 AM	0			0							0		
7:30 AM	0			0							0		
7:45 AM	0			0							1		1
8:00 AM	0			0							1		1
8:15 AM	2			0							1		3
8:30 AM	0			0							1		1
8:45 AM	0			0							0		
9:00 AM	1			0							0		1
9:15 AM	0			0							0		
9:30 AM	0			0							1		1
9:45 AM	0			1							0		1

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	3	0	0	1	0	0	0	0	0	0	5	0	9
APPROACH %'s :	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

PEAK HR START TIME :	745 AM												TOTAL
PEAK HR VOL :	2	0	0	0	0	0	0	0	0	0	4	0	6
PEAK HR FACTOR :		0.250			0.000			0.000			1.000		0.500

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5048_001 **Day:** WEDNESDAY

City: Los Angeles BUS **PM** **Date:** 02/08/12

NS/EW Streets:	I-5 NB Ramps/Encinitas Ave			I-5 NB Ramps/Encinitas Ave			Rox ford St			Rox ford St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1.5	1	0.5	1	0.5	0.5	1	2	0	1	2	0	
4:00 PM								0			0		
4:15 PM								0			0		
4:30 PM								0			0		
4:45 PM								1			0		1
5:00 PM								0			1		1
5:15 PM								0			0		
5:30 PM								0			0		
5:45 PM								0			0		
6:00 PM								0			0		
6:15 PM								0			0		
6:30 PM								0			0		
6:45 PM								0			0		

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	1	0	0	1	0	2
APPROACH %'s :	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	1	0	0	1	0	2
PEAK HR FACTOR :	0.000			0.000			0.250			0.250			0.500

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5048_001 **Day:** WEDNESDAY

City: Los Angeles HEAVY TRUCK **Date:** 02/08/12

AM

NS/EW Streets:	I-5 NB Ramps/Encinitas Ave			I-5 NB Ramps/Encinitas Ave			Rox ford St			Rox ford St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1.5	1	0.5	1	0.5	0.5	1	2	0	1	2	0	
7:00 AM	2	1	0	6	0	3	1	1	0	1	9	1	25
7:15 AM	0	1	0	2	1	6	1	1	0	0	7	3	22
7:30 AM	0	0	0	0	0	7	2	2	1	1	5	3	21
7:45 AM	0	4	0	5	0	7	2	2	1	1	6	2	30
8:00 AM	2	1	0	5	0	5	0	1	0	0	5	3	22
8:15 AM	2	2	2	3	0	8	0	1	0	1	5	2	26
8:30 AM	0	1	2	3	0	13	0	2	0	0	6	3	30
8:45 AM	0	0	0	2	0	17	1	3	0	0	7	3	33
9:00 AM	0	1	1	1	0	19	0	7	2	2	3	0	36
9:15 AM	0	0	1	3	1	20	2	6	1	0	8	3	45
9:30 AM	0	0	0	2	2	15	1	1	0	0	4	3	28
9:45 AM	0	0	0	3	0	21	1	2	1	1	4	1	34

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	6	11	6	35	4	141	11	29	6	7	69	27	352
APPROACH %'s :	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

PEAK HR START TIME :	830 AM												TOTAL
PEAK HR VOL :	0	2	4	9	1	69	3	18	3	2	24	9	144
PEAK HR FACTOR :		0.500			0.823			0.667			0.795		0.800

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5048_001 **Day:** WEDNESDAY

City: Los Angeles HEAVY TRUCK **Date:** 02/08/12

PM

NS/EW Streets:	I-5 NB Ramps/Encinitas Ave			I-5 NB Ramps/Encinitas Ave			Rox ford St			Rox ford St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1.5	1	0.5	1	0.5	0.5	1	2	0	1	2	0	
4:00 PM	0	0	1	5	0	3	0	2	0	0	2	0	13
4:15 PM	0	1	1	4	0	2	0	2	1	1	3	1	16
4:30 PM	0	0	1	3	0	7	0	2	1	2	2	0	18
4:45 PM	0	0	0	4	0	2	1	2	0	1	3	0	13
5:00 PM	2	1	0	5	0	1	1	1	0	0	3	0	14
5:15 PM	0	0	0	3	0	1	0	4	0	0	4	0	12
5:30 PM	0	0	0	2	0	0	1	1	0	0	3	0	7
5:45 PM	0	0	0	3	0	0	0	3	0	0	3	2	11
6:00 PM	0	0	0	3	0	0	0	1	0	0	1	0	5
6:15 PM	0	0	0	1	0	1	0	0	1	0	1	0	4
6:30 PM	0	0	1	0	1	0	1	0	0	0	1	0	4
6:45 PM	1	1	0	2	1	0	0	1	0	0	1	0	7

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	3	3	4	35	2	17	4	19	3	4	27	3	124
APPROACH %'s :	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

PEAK HR START TIME :	415 PM												TOTAL
PEAK HR VOL :	2	2	2	16	0	12	2	7	2	4	11	1	61
PEAK HR FACTOR :		0.500			0.700			0.917			0.800		0.847

CONTROL : 0

APPENDIX C
Intersection Level-of-Service Worksheets
All Scenarios

```
--------------------------------------------------------------------------------
                    LADWP Van Norman Complex Proj II EIR
                            Existing Conditions
                               AM Peak Hour
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
            2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #1 I-5 SB Ramps & Roxford St/Sepulveda Blvd
********************************************************************************
Average Delay (sec/veh):    1353.9      Worst Case Level Of Service: F[7908.2]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0   0  1  0  1  0   0  0  1  0  1   2  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   289    1     8     0   46   369   934  110     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   289    1     8     0   46   369   934  110     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   289    1     8     0   46   369   934  110     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0   289    1     8     0   46   369   934  110     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  2209 2393   110  xxxx xxxx xxxxx   415 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx    49   34   949  xxxx xxxx xxxxx  1155 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx    16    7   949  xxxx xxxx xxxxx  1155 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx 17.94 0.15  0.01  xxxx xxxx  xxxx  0.81 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   8.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx  19.7 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     C    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx    16 xxxx    56  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx  37.2 xxxx   0.5 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  8151 xxxx  81.6 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     F    *     F     *    *     *     *    *     *
ApproachDel:     xxxxxx           7908.2           xxxxxx           xxxxxx
ApproachLOS:        *                F                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

```
-------------------------------------------------------------------------------
                    LADWP Van Norman Complex Proj II EIR
                            Existing Conditions
                               PM Peak Hour
-------------------------------------------------------------------------------

                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #1 I-5 SB Ramps & Roxford St/Sepulveda Blvd
*******************************************************************************
Average Delay (sec/veh):     909.4      Worst Case Level Of Service: F[6740.2]
*******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled      Uncontrolled
Rights:         Include          Include          Include           Include
Lanes:       0  0  0  0  0   0  1  0  1  0   0  0  1  0  1   2  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   193    5     9     0   34   135  1114   80     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   193    5     9     0   34   135  1114   80     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   193    5     9     0   34   135  1114   80     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0   193    5     9     0   34   135  1114   80     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  2410 2477    80  xxxx xxxx xxxxx   169 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx    37   30   986  xxxx xxxx xxxxx  1421 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx    13    7   986  xxxx xxxx xxxxx  1421 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx 14.91 0.77  0.01  xxxx xxxx  xxxx  0.78 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   7.8 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx  16.0 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     C    *     *
Movement:    LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx    13 xxxx    18  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx  26.0 xxxx   2.1 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  7187 xxxx 422.5 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     F    *     F     *    *     *     *    *     *
ApproachDel:     xxxxxx           6740.2           xxxxxx            xxxxxx
ApproachLOS:        *                F                *                 *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
---------------------------------------------------------------------------------
                        LADWP Van Norman Complex Proj II EIR
                            Future Pre-Project Conditions
                                  AM Peak  Hour
---------------------------------------------------------------------------------

                        Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*********************************************************************************
Intersection #1 I-5 SB Ramps & Roxford St/Sepulveda Blvd
*********************************************************************************
Average Delay (sec/veh):    1836.1      Worst Case Level Of Service: F[10499.1]
*********************************************************************************
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Uncontrolled      Uncontrolled
Rights:          Include          Include           Include           Include
Lanes:        0  0  0  0  0    0  1  0  1  0    0  0  1  0  1    2  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0     0     0   289     1     8     0    46   369   934   110     0
Growth Adj:  1.02  1.02  1.02  1.02  1.02  1.02  1.02  1.02  1.02  1.02  1.02  1.02
Initial Bse:    0     0     0   295     1     8     0    47   376   953   112     0
Added Vol:      0     0     0     0     0     0     0     0     0     0     0     0
PasserByVol:    0     0     0    12     0     0     0     8     0     6     3     0
Initial Fut:    0     0     0   307     1     8     0    55   376   959   115     0
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:     0     0     0   307     1     8     0    55   376   959   115     0
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
FinalVolume:    0     0     0   307     1     8     0    55   376   959   115     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx  xxxx xxxxx   6.4   6.5   6.2 xxxxx  xxxx xxxxx   4.1  xxxx xxxxx
FollowUpTim:xxxxx  xxxx xxxxx   3.5   4.0   3.3 xxxxx  xxxx xxxxx   2.2  xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx  xxxx xxxxx  2276  2464   115  xxxx  xxxx xxxxx   431  xxxx xxxxx
Potent Cap.: xxxx  xxxx xxxxx    45    31   943  xxxx  xxxx xxxxx  1139  xxxx xxxxx
Move Cap.:   xxxx  xxxx xxxxx    13     5   943  xxxx  xxxx xxxxx  1139  xxxx xxxxx
Volume/Cap:  xxxx  xxxx  xxxx 23.55  0.21  0.01  xxxx  xxxx  xxxx  0.84  xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx  xxxx xxxxx  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx   8.9  xxxx xxxxx
Control Del:xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx  22.2  xxxx xxxxx
LOS by Move:    *     *     *     *     *     *     *     *     *     C     *     *
Movement:     LT  - LTR  - RT    LT  - LTR  - RT    LT  - LTR  - RT    LT  - LTR  - RT
Shared Cap.: xxxx  xxxx xxxxx    13  xxxx    42  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx
SharedQueue:xxxxx  xxxx xxxxx  39.8  xxxx   0.7 xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx
Shrd ConDel:xxxxx  xxxx xxxxx 10809  xxxx 112.9 xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx
Shared LOS:     *     *     *     F     *     F     *     *     *     *     *     *
ApproachDel:      xxxxxx            xxxxxx            xxxxxx            xxxxxx
ApproachLOS:        *                 F                 *                 *
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
```

```
---------------------------------------------------------------------------------
                      LADWP Van Norman Complex Proj II EIR
                         Future Pre-Project Conditions
                                 PM Peak Hour
---------------------------------------------------------------------------------

                       Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
*********************************************************************************
Intersection #1 I-5 SB Ramps & Roxford St/Sepulveda Blvd
*********************************************************************************
Average Delay (sec/veh):    2696.3       Worst Case Level Of Service: F[19545.8]
*********************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  0    0  1  0  1  0    0  0  1  0  1    2  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   193    5     9     0   34   135  1114   80     0
Growth Adj:  1.02 1.02  1.02  1.02 1.02  1.02  1.02 1.02  1.02  1.02 1.02  1.02
Initial Bse:    0    0     0   197    5     9     0   35   138  1136   82     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0    34    0     0     0   22     0    96   50     0
Initial Fut:    0    0     0   231    5     9     0   57   138  1232  132     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   231    5     9     0   57   138  1232  132     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0   231    5     9     0   57   138  1232  132     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  2722 2791   132  xxxx xxxx xxxxx   194 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx    23   19   923  xxxx xxxx xxxxx  1391 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx     6    2   923  xxxx xxxx xxxxx  1391 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx 41.49 2.36  0.01  xxxx xxxx  xxxx  0.89 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  11.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx  23.1 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     C    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx     5 xxxx     6  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx  31.6 xxxx   2.9 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx 20622 xxxx  1770 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     F    *     F     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        *                F                *                *
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
```

```
------------------------------------------------------------------------------
                      LADWP Van Norman Complex Proj II EIR
                         Future Post-Project Conditions
                                  AM Peak Hour
------------------------------------------------------------------------------

                      Level Of Service Computation Report
            2000 HCM Unsignalized Method (Future Volume Alternative)
******************************************************************************
Intersection #1 I-5 SB Ramps & Roxford St/Sepulveda Blvd
******************************************************************************
Average Delay (sec/veh):   1875.8      Worst Case Level Of Service: F[10671.1]
******************************************************************************
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R   L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled      Uncontrolled
Rights:          Include          Include          Include           Include
Lanes:        0  0  0  0  0   0  1  0  1  0    0  0  1  0  1    2  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   289    1     8     0   46   369   934  110     0
Growth Adj:  1.02 1.02  1.02  1.02 1.02  1.02  1.02 1.02  1.02  1.02 1.02  1.02
Initial Bse:    0    0     0   295    1     8     0   47   376   953  112     0
Added Vol:      0    0     0     0    0     5     0    3     1     0   10     0
PasserByVol:    0    0     0    12    0     0     0    8     0     6    3     0
Initial Fut:    0    0     0   307    1    13     0   58   377   959  125     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   307    1    13     0   58   377   959  125     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0   307    1    13     0   58   377   959  125     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  2289 2478   125  xxxx xxxx xxxxx   435 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx    44   30   931  xxxx xxxx xxxxx  1135 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx    13    5   931  xxxx xxxx xxxxx  1135 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx 24.29 0.22  0.01  xxxx xxxx  xxxx  0.84 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   9.0 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx  22.5 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     C    *     *
Movement:      LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx    13 xxxx    61  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx  39.8 xxxx   0.8 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx 11159 xxxx  80.8 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     F    *     F     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        *                F                *                *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

```
--------------------------------------------------------------------------------
                        LADWP Van Norman Complex Proj II EIR
                           Future Post-Project Conditions
                                  PM Peak Hour
--------------------------------------------------------------------------------
                        Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #1 I-5 SB Ramps & Roxford St/Sepulveda Blvd
********************************************************************************
Average Delay (sec/veh):    2895.9      Worst Case Level Of Service: F[20964.7]
********************************************************************************
Approach:       North Bound      South Bound       East Bound        West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Stop Sign        Stop Sign       Uncontrolled      Uncontrolled
Rights:           Include          Include          Include           Include
Lanes:         0  0  0  0  0   0  1  0  1  0   0  0  1  0  1   2  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:         0    0     0   193    5     9     0   34   135  1114   80     0
Growth Adj:    1.02 1.02  1.02  1.02 1.02  1.02  1.02 1.02  1.02  1.02 1.02  1.02
Initial Bse:      0    0     0   197    5     9     0   35   138  1136   82     0
Added Vol:        0    0     0     0    0     3     0    5    10     0    1     0
PasserByVol:      0    0     0    34    0     0     0   22     0    96   50     0
Initial Fut:      0    0     0   231    5    12     0   62   148  1232  133     0
User Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:       1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:       0    0     0   231    5    12     0   62   148  1232  133     0
Reduct Vol:       0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:      0    0     0   231    5    12     0   62   148  1232  133     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  2733 2807   133  xxxx xxxx xxxxx   209 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx    23   18   922  xxxx xxxx xxxxx  1373 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx     5    2   922  xxxx xxxx xxxxx  1373 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx 44.80 2.69  0.01  xxxx xxxx  xxxx  0.90 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  11.4 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx  24.4 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     C    *     *
Movement:      LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx     5 xxxx     6  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx  31.7 xxxx   3.3 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx 22364 xxxx  1861 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     F    *     F     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        *                F                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	I-5 SB Ramps	Year of Count:	2012	Ambient Growth: (%):	1	Conducted by:		Date:	
1	East-West Street:	Roxford Street/Sepulveda	Projection Year:	2014	Peak Hour:	AM	Reviewed by:		Project:	

	Existing Condition	Existing Plus Project	Future Condition W/O Project	Future Condition W/ Project	Future W/ Project W/ Mitigation
No. of Phases	3	3	3	3	3
Opposed Ø'ing: N/S-1, E/W-2 or Both-3?	2	2	2	2	2
Right Turns: FREE-1, NRTOR-2 or OLA-3?	NB-- 0 SB-- 0; EB-- 0 WB-- 0	NB-- 0 SB-- 0; EB-- 0 WB-- 0	NB-- 0 SB-- 0; EB-- 0 WB-- 0	NB-- 0 SB-- 0; EB-- 0 WB-- 0	NB-- 0 SB-- 0; EB-- 0 WB-- 0
ATSAC-1 or ATSAC+ATCS-2?	0	0	0	0	0
Override Capacity	0	0	0	0	0

MOVEMENT		EXISTING CONDITION			EXISTING PLUS PROJECT			FUTURE CONDITION W/O PROJECT				FUTURE CONDITION W/ PROJECT				FUTURE W/ PROJECT W/ MITIGATION			
		Volume	No. of Lanes	Lane Volume	Project Traffic	Total Volume	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NORTHBOUND	Left	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Left-Through		0							0				0				0	
	Through	0	0	**0**	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**
	Through-Right		0							0				0				0	
	Right	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	289	1	**289**	0	289	**289**	12	307	1	**307**	0	307	1	**307**	0	307	1	**307**
	Left-Through		0							0				0				0	
	Through	1	0	9	0	1	14	0	1	0	9	0	1	0	14	0	1	0	14
	Through-Right		1							1				1				1	
	Right	8	0	0	5	13	0	0	8	0	0	5	13	0	0	0	13	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Left-Through		0							0				0				0	
	Through	46	1	46	3	49	49	8	55	1	55	3	58	1	58	0	58	1	58
	Through-Right		0							0				0				0	
	Right	369	1	**369**	1	370	**370**	0	376	1	**376**	1	377	1	**377**	0	377	1	**377**
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	934	2	**514**	0	934	**514**	6	959	2	**527**	0	959	2	**527**	0	959	2	**527**
	Left-Through		0							0				0				0	
	Through	110	1	110	10	120	120	3	115	1	115	10	125	1	125	0	125	1	125
	Through-Right		0							0				0				0	
	Right	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	

		Existing Condition	Existing Plus Project	Future Condition W/O Project	Future Condition W/ Project	Future W/ Project W/ Mitigation
CRITICAL VOLUMES	*North-South:*	289	289	307	307	307
	East-West:	883	884	903	904	904
	SUM:	1172	1173	1210	1211	1211
VOLUME/CAPACITY (*V/C*) RATIO:		0.822	0.823	0.849	0.850	0.850
V/C LESS ATSAC/ATCS ADJUSTMENT:		0.822	0.823	0.849	0.850	0.850
LEVEL OF SERVICE (LOS):		D	D	D	D	D

REMARKS:

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project: 0.001

Significant impacted? NO

PROJECT IMPACT

Change in *v/c* due to project: 0.001

Significant impacted? NO

Δ*v/c* after mitigation: 0.001

Fully mitigated? N/A

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	I-5 SB Ramps	Year of Count:	2012	Ambient Growth: (%):	1	Conducted by:		Date:	
1	East-West Street:	Roxford Street/Sepulveda	Projection Year:	2014	Peak Hour:	PM	Reviewed by:		Project:	

	Existing Condition	Existing Plus Project	Future Condition W/O Project	Future Condition W/ Project	Future W/ Project W/ Mitigation
No. of Phases	3	3	3	3	3
Opposed Ø'ing: N/S-1, E/W-2 or Both-3?	2	2	2	2	2
Right Turns: FREE-1, NRTOR-2 or OLA-3?	NB-- 0 SB-- 0 EB-- 0 WB-- 0	NB-- 0 SB-- 0 EB-- 0 WB-- 0	NB-- 0 SB-- 0 EB-- 0 WB-- 0	NB-- 0 SB-- 0 EB-- 0 WB-- 0	NB-- 0 SB-- 0 EB-- 0 WB-- 0
ATSAC-1 or ATSAC+ATCS-2?	0	0	0	0	0
Override Capacity	0	0	0	0	0

	MOVEMENT	EXISTING CONDITION			EXISTING PLUS PROJECT			FUTURE CONDITION W/O PROJECT				FUTURE CONDITION W/ PROJECT				FUTURE W/ PROJECT W/ MITIGATION			
		Volume	No. of Lanes	Lane Volume	Project Traffic	Total Volume	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NORTHBOUND	Left	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Left-Through		0							0				0				0	
	Through	0	0	**0**	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**
	Through-Right		0							0				0				0	
	Right	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	193	1	**193**	0	193	**193**	34	231	1	**231**	0	231	1	**231**	0	231	1	**231**
	Left-Through		0							0				0				0	
	Through	5	0	14	0	5	17	0	5	0	14	0	5	0	17	0	5	0	17
	Through-Right		1							1				1				1	
	Right	9	0	0	3	12	0	0	9	0	0	3	12	0	0	0	12	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Left-Through		0							0				0				0	
	Through	34	1	34	5	39	39	22	57	1	57	5	62	1	62	0	62	1	62
	Through-Right		0							0				0				0	
	Right	135	1	**135**	10	145	**145**	0	138	1	**138**	10	148	1	**148**	0	148	1	**148**
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	1114	2	**613**	0	1114	**613**	96	1232	2	**678**	0	1232	2	**678**	0	1232	2	**678**
	Left-Through		0							0				0				0	
	Through	80	1	80	1	81	81	50	132	1	132	1	133	1	133	0	133	1	133
	Through-Right		0							0				0				0	
	Right	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	

	Existing Condition	Existing Plus Project	Future Condition W/O Project	Future Condition W/ Project	Future W/ Project W/ Mitigation
CRITICAL VOLUMES — *North-South:*	193	193	231	231	231
East-West:	748	758	816	826	826
SUM:	941	951	1047	1057	1057
VOLUME/CAPACITY (*V/C*) RATIO:	0.660	0.667	0.735	0.742	0.742
V/C LESS ATSAC/ATCS ADJUSTMENT:	0.660	0.667	0.735	0.742	0.742
LEVEL OF SERVICE (LOS):	B	B	C	C	C

REMARKS:

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project: 0.007

Significant impacted? NO

PROJECT IMPACT

Change in *v/c* due to project: 0.007

Significant impacted? NO

Δ*v/c* after mitigation: 0.007

Fully mitigated? N/A

```
--------------------------------------------------------------------------------
                    LADWP Van Norman Complex Proj II EIR
                             Existing Conditions
                                AM Peak Hour
--------------------------------------------------------------------------------
                       Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #2 I-5 NB off Ramp & Roxford St
********************************************************************************
Average Delay (sec/veh):      5.0      Worst Case Level Of Service: B[ 15.0]
********************************************************************************
Street Name:          I-5 NB off Ramp                      Roxford St
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  1   0  0  0  0  0   0  0  1  0  0   0  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      15    0   661    0    0     0    0  332     0    0 1021     0
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:   15    0   661    0    0     0    0  332     0    0 1021     0
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Volume:    15    0   661    0    0     0    0  332     0    0 1021     0
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
FinalVolume:   15    0   661    0    0     0    0  332     0    0 1021     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  843 1353   332  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  337  151   714  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    337  151   714  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.04 0.00  0.93  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx   2.5  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx  14.3 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     B    *    *     *    *    *     *    *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  681 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  2.9 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 15.6 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    C     *    *    *     *    *    *     *    *    *     *
ApproachDel:       15.0            xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          B               *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

```
------------------------------------------------------------------------------
                     LADWP Van Norman Complex Proj II EIR
                             Existing Conditions
                                PM Peak Hour
------------------------------------------------------------------------------
                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Base Volume Alternative)
******************************************************************************
Intersection #2 I-5 NB off Ramp & Roxford St
******************************************************************************
Average Delay (sec/veh):       6.0      Worst Case Level Of Service: C[ 16.1]
******************************************************************************
Street Name:          I-5 NB off Ramp                       Roxford St
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  1   0  0  0  0  0   0  0  1  0  0   0  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      25    0   829     0    0     0     0  265     0     0 1170     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   25    0   829     0    0     0     0  265     0     0 1170     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    25    0   829     0    0     0     0  265     0     0 1170     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   25    0   829     0    0     0     0  265     0     0 1170     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  850 1435   265  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  334  135   779  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    334  135   779  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.07 0.00  1.06  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx   3.2  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx  14.8 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     B     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  724 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  4.2 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 17.4 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    C     *     *    *     *     *    *     *     *    *     *
ApproachDel:       16.1             xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          C                *                *                *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

```
--------------------------------------------------------------------------------
                     LADWP Van Norman Complex Proj II EIR
                        Future Pre-Project Conditions
                                AM Peak  Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #2 I-5 NB off Ramp & Roxford St
********************************************************************************
Average Delay (sec/veh):       5.3      Worst Case Level Of Service: C[ 16.0]
********************************************************************************
Street Name:          I-5 NB off Ramp                      Roxford St
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:         0  0  1! 0  1    0  0  0  0  0    0  0  1  0  0    0  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      15    0   661     0    0     0     0  332     0     0 1021     0
Growth Adj:  1.02 1.02  1.02  1.02 1.02  1.02  1.02 1.02  1.02  1.02 1.02  1.02
Initial Bse:   15    0   674     0    0     0     0  339     0     0 1042     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     7     0    0     0     0   20     0     0    9     0
Initial Fut:   15    0   681     0    0     0     0  359     0     0 1051     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    15    0   681     0    0     0     0  359     0     0 1051     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   15    0   681     0    0     0     0  359     0     0 1051     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  884 1409   359  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  318  140   690  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    318  140   690  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.05 0.00  0.99  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx   2.8  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx  15.2 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     C     *    *     *     *    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  657 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  3.3 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 16.8 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    C     *     *    *     *     *    *     *     *    *     *
ApproachDel:       16.0             xxxxxx            xxxxxx            xxxxxx
ApproachLOS:          C                *                 *                 *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

```
-------------------------------------------------------------------------------
                     LADWP Van Norman Complex Proj II EIR
                        Future Pre-Project Conditions
                                PM Peak Hour
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #2 I-5 NB off Ramp & Roxford St
********************************************************************************
Average Delay (sec/veh):      7.1      Worst Case Level Of Service: C[ 20.1]
********************************************************************************
Street Name:             I-5 NB off Ramp                       Roxford St
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Stop Sign        Stop Sign        Uncontrolled     Uncontrolled
Rights:           Include          Include           Include          Include
Lanes:         0  0  1! 0  1   0  0  0  0  0   0  0  1  0  0   0  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      25    0   829    0    0     0    0  265     0    0 1170     0
Growth Adj:  1.02 1.02  1.02 1.02 1.02  1.02 1.02 1.02  1.02 1.02 1.02  1.02
Initial Bse:   26    0   846    0    0     0    0  270     0    0 1194     0
Added Vol:      0    0     0    0    0     0    0    0     0    0    0     0
PasserByVol:    0    0    37    0    0     0    0   56     0    0  146     0
Initial Fut:   26    0   883    0    0     0    0  326     0    0 1340     0
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Volume:    26    0   883    0    0     0    0  326     0    0 1340     0
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
FinalVolume:   26    0   883    0    0     0    0  326     0    0 1340     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  996 1666   326  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  273   98   720  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    273   98   720  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.09 0.00  1.23  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    xxxx xxxx   4.2  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx  17.6 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     *    *     C     *    *     *     *    *     *     *    *     *
Movement:      LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx   661 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx   5.8 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 22.5 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    C     *     *    *     *     *    *     *     *    *     *
ApproachDel:        20.1           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          C                *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

```
--------------------------------------------------------------------------------
                     LADWP Van Norman Complex Proj II EIR
                        Future Post-Project Conditions
                                 AM Peak Hour
--------------------------------------------------------------------------------

                      Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #2 I-5 NB off Ramp & Roxford St
********************************************************************************
Average Delay (sec/veh):       5.6      Worst Case Level Of Service: C[ 16.7]
********************************************************************************
Street Name:             I-5 NB off Ramp                        Roxford St
Approach:        North Bound      South Bound      East Bound       West Bound
Movement:       L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:          Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:            Include          Include          Include          Include
Lanes:          0  0  1! 0  1    0  0  0  0  0    0  0  1  0  0    0  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        15     0   661     0     0     0     0   332     0     0  1021     0
Growth Adj:    1.02  1.02  1.02  1.02  1.02  1.02  1.02  1.02  1.02  1.02  1.02  1.02
Initial Bse:     15     0   674     0     0     0     0   339     0     0  1042     0
Added Vol:       10     0     0     0     0     0     0     3     0     0     0     0
PasserByVol:      0     0     7     0     0     0     0    20     0     0     9     0
Initial Fut:     25     0   681     0     0     0     0   362     0     0  1051     0
User Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:       1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:      25     0   681     0     0     0     0   362     0     0  1051     0
Reduct Vol:       0     0     0     0     0     0     0     0     0     0     0     0
FinalVolume:     25     0   681     0     0     0     0   362     0     0  1051     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:    6.4   6.5   6.2 xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx
FollowUpTim:    3.5   4.0   3.3 xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:    887  1412   362  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx
Potent Cap.:    317   139   688  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx
Move Cap.:      317   139   688  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx
Volume/Cap:    0.08  0.00  0.99  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:     xxxx  xxxx   2.8  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx
Control Del:xxxxx  xxxx  15.3 xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx
LOS by Move:      *     *     C     *     *     *     *     *     *     *     *     *
Movement:       LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx   636 xxxxx  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx
SharedQueue:xxxxx   3.7 xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx
Shrd ConDel:xxxxx  18.0 xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx
Shared LOS:       *     C     *     *     *     *     *     *     *     *     *     *
ApproachDel:         16.7            xxxxxx           xxxxxx           xxxxxx
ApproachLOS:            C               *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

```
--------------------------------------------------------------------------------
                     LADWP Van Norman Complex Proj II EIR
                        Future Post-Project Conditions
                                 PM Peak Hour
--------------------------------------------------------------------------------

                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #2 I-5 NB off Ramp & Roxford St
********************************************************************************
Average Delay (sec/veh):       7.2       Worst Case Level Of Service: C[ 20.5]
********************************************************************************
Street Name:            I-5 NB off Ramp                       Roxford St
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  1   0  0  0  0  0   0  0  1  0  0   0  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      25    0   829    0    0     0    0  265     0    0 1170     0
Growth Adj:  1.02 1.02  1.02 1.02 1.02  1.02 1.02 1.02  1.02 1.02 1.02  1.02
Initial Bse:   26    0   846    0    0     0    0  270     0    0 1194     0
Added Vol:      1    0     0    0    0     0    0    5     0    0    0     0
PasserByVol:    0    0    37    0    0     0    0   56     0    0  146     0
Initial Fut:   27    0   883    0    0     0    0  331     0    0 1340     0
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Volume:    27    0   883    0    0     0    0  331     0    0 1340     0
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
FinalVolume:   27    0   883    0    0     0    0  331     0    0 1340     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1001 1671   331  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  271   97   715  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    271   97   715  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.10 0.00  1.23  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx   4.3  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx  17.8 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     C    *    *     *    *    *     *    *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  654 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  6.0 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 23.1 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    C     *    *    *     *    *    *     *    *    *     *
ApproachDel:        20.5            xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          C                *                *                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	I-5 NB Ramps	Year of Count:	2012	Ambient Growth: (%):	1	Conducted by:		Date:	
2	East-West Street:	Roxford Street	Projection Year:	2014	Peak Hour:	AM	Reviewed by:		Project:	

	Existing Condition				Existing Plus Project				Future Condition W/O Project				Future Condition W/ Project				Future W/ Project W/ Mitigation			
No. of Phases				2				2				2				2				2
Opposed Ø'ing: N/S-1, E/W-2 or Both-3?				0				0				0				0				0
Right Turns: FREE-1, NRTOR-2 or OLA-3?	NB-- 0		SB--	0	NB-- 0		SB--	0	NB-- 0		SB--	0	NB-- 0		SB--	0	NB-- 0		SB--	0
	EB-- 0		WB--	0	EB-- 0		WB--	0	EB-- 0		WB--	0	EB-- 0		WB--	0	EB-- 0		WB--	0
ATSAC-1 or ATSAC+ATCS-2?				0				0				0				0				0
Override Capacity				0				0				0				0				0

MOVEMENT		EXISTING CONDITION Volume	No. of Lanes	Lane Volume	EXISTING PLUS PROJECT Project Traffic	Total Volume	Lane Volume	FUTURE CONDITION W/O PROJECT Added Volume	Total Volume	No. of Lanes	Lane Volume	FUTURE CONDITION W/ PROJECT Added Volume	Total Volume	No. of Lanes	Lane Volume	FUTURE W/ PROJECT W/ MITIGATION Added Volume	Total Volume	No. of Lanes	Lane Volume
NORTHBOUND	Left	15	0	15	10	25	25	0	15	0	15	10	25	0	25	0	25	0	25
	Left-Through		0							0				0				0	
	Through	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Through-Right		0							0				0				0	
	Right	661	1	338	0	661	343	7	681	1	348	0	681	1	353	0	681	1	353
	Left-Through-Right		0							0				0				0	
	Left-Right		1							1				1				1	
SOUTHBOUND	Left	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Left-Through		0							0				0				0	
	Through	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Through-Right		0							0				0				0	
	Right	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Left-Through		0							0				0				0	
	Through	332	1	332	3	335	335	20	359	1	359	3	362	1	362	0	362	1	362
	Through-Right		0							0				0				0	
	Right	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Left-Through		0							0				0				0	
	Through	1021	2	511	0	1021	511	9	1051	2	526	0	1051	2	526	0	1051	2	526
	Through-Right		0							0				0				0	
	Right	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
CRITICAL VOLUMES			*North-South:*	338		*North-South:*	343			*North-South:*	348			*North-South:*	353			*North-South:*	353
			East-West:	511		*East-West:*	511			*East-West:*	526			*East-West:*	526			*East-West:*	526
			SUM:	849		*SUM:*	854			*SUM:*	874			*SUM:*	879			*SUM:*	879
VOLUME/CAPACITY (*V/C*) RATIO:				0.566			0.569				0.583				0.586				0.586
V/C LESS ATSAC/ATCS ADJUSTMENT:				0.566			0.569				0.583				0.586				0.586
LEVEL OF SERVICE (LOS):				A			A				A				A				A

REMARKS:

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project: 0.003

Significant impacted? NO

PROJECT IMPACT

Change in *v/c* due to project: 0.003

Significant impacted? NO

Δ*v/c* after mitigation: 0.003

Fully mitigated? N/A

Level of Service Worksheet
(Circular 212 Method)

I/S #:	North-South Street:	I-5 NB Ramps	Year of Count:	2012	Ambient Growth: (%):	1	Conducted by:		Date:	
2	East-West Street:	Roxford Street	Projection Year:	2014	Peak Hour:	PM	Reviewed by:		Project:	

	Existing Condition	Existing Plus Project	Future Condition W/O Project	Future Condition W/ Project	Future W/ Project W/ Mitigation
No. of Phases	2	2	2	2	2
Opposed Ø'ing: N/S-1, E/W-2 or Both-3?	0	0	0	0	0
Right Turns: FREE-1, NRTOR-2 or OLA-3?	NB-- 0 SB-- 0 EB-- 0 WB-- 0	NB-- 0 SB-- 0 EB-- 0 WB-- 0	NB-- 0 SB-- 0 EB-- 0 WB-- 0	NB-- 0 SB-- 0 EB-- 0 WB-- 0	NB-- 0 SB-- 0 EB-- 0 WB-- 0
ATSAC-1 or ATSAC+ATCS-2?	0	0	0	0	0
Override Capacity	0	0	0	0	0

	MOVEMENT	EXISTING CONDITION			EXISTING PLUS PROJECT			FUTURE CONDITION W/O PROJECT				FUTURE CONDITION W/ PROJECT				FUTURE W/ PROJECT W/ MITIGATION			
		Volume	No. of Lanes	Lane Volume	Project Traffic	Total Volume	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NORTHBOUND	Left	25	0	25	1	26	26	0	26	0	26	1	27	0	27	0	27	0	27
	Left-Through		0							0				0				0	
	Through	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Through-Right		0							0				0				0	
	Right	829	1	427	0	829	428	37	883	1	455	0	883	1	455	0	883	1	455
	Left-Through-Right		0							0				0				0	
	Left-Right		1							1				1				1	
SOUTHBOUND	Left	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Left-Through		0							0				0				0	
	Through	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Through-Right		0							0				0				0	
	Right	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Left-Through		0							0				0				0	
	Through	265	1	265	5	270	270	56	326	1	326	5	331	1	331	0	331	1	331
	Through-Right		0							0				0				0	
	Right	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Left-Through		0							0				0				0	
	Through	1170	2	585	0	1170	585	146	1340	2	670	0	1340	2	670	0	1340	2	670
	Through-Right		0							0				0				0	
	Right	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
CRITICAL VOLUMES			North-South:	427		North-South:	428			North-South:	455			North-South:	455			North-South:	455
			East-West:	585		East-West:	585			East-West:	670			East-West:	670			East-West:	670
			SUM:	1012		SUM:	1013			SUM:	1125			SUM:	1125			SUM:	1125
VOLUME/CAPACITY (V/C) RATIO:				0.675			0.675				0.750				0.750				0.750
V/C LESS ATSAC/ATCS ADJUSTMENT:				0.675			0.675				0.750				0.750				0.750
LEVEL OF SERVICE (LOS):				B			B				C				C				C

REMARKS:

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project: 0.000

Significant impacted? NO

PROJECT IMPACT

Change in *v/c* due to project: 0.000

Significant impacted? NO

Δ*v/c* after mitigation: 0.000

Fully mitigated? N/A

Level of Service Worksheet
(Circular 212 Method)

I/S #: 3	North-South Street:	I-5 NB Ramps/Encinitas Avenue	Year of Count: 2012	Ambient Growth: (%): 1	Conducted by:	Date:	
	East-West Street:	Roxford Street	Projection Year: 2014	Peak Hour: AM	Reviewed by:	Project:	

	EXISTING CONDITION	EXISTING PLUS PROJECT	FUTURE CONDITION W/O PROJECT	FUTURE CONDITION W/ PROJECT	FUTURE W/ PROJECT W/ MITIGATION
No. of Phases	3	3	3	3	3
Opposed Ø'ing: N/S-1, E/W-2 or Both-3?	1	1	1	1	1
Right Turns: FREE-1, NRTOR-2 or OLA-3?	NB-- 0 SB-- 0 EB-- 0 WB-- 0	NB-- 0 SB-- 0 EB-- 0 WB-- 0	NB-- 0 SB-- 0 EB-- 0 WB-- 0	NB-- 0 SB-- 0 EB-- 0 WB-- 0	NB-- 0 SB-- 0 EB-- 0 WB-- 0
ATSAC-1 or ATSAC+ATCS-2?	0	0	0	0	0
Override Capacity	0	0	0	0	0

MOVEMENT		EXISTING CONDITION			EXISTING PLUS PROJECT			FUTURE CONDITION W/O PROJECT				FUTURE CONDITION W/ PROJECT				FUTURE W/ PROJECT W/ MITIGATION			
		Volume	No. of Lanes	Lane Volume	Project Traffic	Total Volume	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NORTHBOUND	Left	343	1	343	0	343	343	1	351	1	351	0	351	1	351	0	351	1	351
	Left-Through		0							0				0				0	
	Through	139	1	77	0	139	77	0	142	1	78	0	142	1	78	0	142	1	78
	Through-Right		1							1				1				1	
	Right	14	0	14	0	14	14	0	14	0	14	0	14	0	14	0	14	0	14
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	326	1	326	0	326	326	6	339	1	339	0	339	1	339	0	339	1	339
	Left-Through		0							0				0				0	
	Through	139	0	238	0	139	238	0	142	0	243	0	142	0	243	0	142	0	243
	Through-Right		1							1				1				1	
	Right	99	0	0	0	99	0	0	101	0	0	0	101	0	0	0	101	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	30	1	30	3	33	33	0	31	1	31	3	34	1	34	0	34	1	34
	Left-Through		0							0				0				0	
	Through	688	1	486	0	688	486	26	728	1	509	0	728	1	509	0	728	1	509
	Through-Right		1							1				1				1	
	Right	283	0	283	0	283	283	1	290	0	290	0	290	0	290	0	290	0	290
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	21	1	21	0	21	21	0	21	1	21	0	21	1	21	0	21	1	21
	Left-Through		0							0				0				0	
	Through	538	1	316	0	538	316	8	557	1	329	0	557	1	329	0	557	1	329
	Through-Right		1							1				1				1	
	Right	94	0	94	0	94	94	5	101	0	101	0	101	0	101	0	101	0	101
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
CRITICAL VOLUMES			North-South:	669		North-South:	669			North-South:	690			North-South:	690			North-South:	690
			East-West:	507		East-West:	507			East-West:	530			East-West:	530			East-West:	530
			SUM:	1176		SUM:	1176			SUM:	1220			SUM:	1220			SUM:	1220
VOLUME/CAPACITY (V/C) RATIO:				0.825			0.825				0.856				0.856				0.856
V/C LESS ATSAC/ATCS ADJUSTMENT:				0.825			0.825				0.856				0.856				0.856
LEVEL OF SERVICE (LOS):				D			D				D				D				D

REMARKS:

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project: 0.000

Significant impacted? NO

PROJECT IMPACT

Change in *v/c* due to project: 0.000

Significant impacted? NO

Δ*v/c* after mitigation: 0.000

Fully mitigated? N/A

Level of Service Workheet

(Circular 212 Method)

I/S #:	North-South Street:	I-5 NB Ramps/Encinitas Avenue	Year of Count:	2012	Ambient Growth: (%):	1	Conducted by:		Date:	
3	East-West Street:	Roxford Street	Projection Year:	2014	Peak Hour:	PM	Reviewed by:		Project:	

	Existing Condition	Existing Plus Project	Future Condition W/O Project	Future Condition W/ Project	Future W/ Project W/ Mitigation
No. of Phases	3	3	3	3	3
Opposed Ø'ing: N/S-1, E/W-2 or Both-3?	1	1	1	1	1
Right Turns: FREE-1, NRTOR-2 or OLA-3?	NB-- 0 SB-- 0 EB-- 0 WB-- 0	NB-- 0 SB-- 0 EB-- 0 WB-- 0	NB-- 0 SB-- 0 EB-- 0 WB-- 0	NB-- 0 SB-- 0 EB-- 0 WB-- 0	NB-- 0 SB-- 0 EB-- 0 WB-- 0
ATSAC-1 or ATSAC+ATCS-2?	0	0	0	0	0
Override Capacity	0	0	0	0	0

	MOVEMENT	EXISTING CONDITION			EXISTING PLUS PROJECT			FUTURE CONDITION W/O PROJECT				FUTURE CONDITION W/ PROJECT				FUTURE W/ PROJECT W/ MITIGATION			
		Volume	No. of Lanes	Lane Volume	Project Traffic	Total Volume	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NORTHBOUND	Left	342	1	342	0	342	342	11	360	1	360	0	360	1	360	0	360	1	360
	Left-Through		0							0				0				0	
	Through	230	1	125	0	230	125	3	238	1	129	0	238	1	129	0	238	1	129
	Through-Right		1							1				1				1	
	Right	19	0	19	0	19	19	1	20	0	20	0	20	0	20	0	20	0	20
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	52	1	52	0	52	52	13	66	1	66	0	66	1	66	0	66	1	66
	Left-Through		0							0				0				0	
	Through	16	0	46	0	16	46	0	16	0	47	0	16	0	47	0	16	0	47
	Through-Right		1							1				1				1	
	Right	30	0	0	0	30	0	0	31	0	0	0	31	0	0	0	31	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	39	1	39	5	44	44	0	40	1	40	5	45	1	45	0	45	1	45
	Left-Through		0							0				0				0	
	Through	524	1	506	0	524	506	53	588	1	563	0	588	1	563	0	588	1	563
	Through-Right		1							1				1				1	
	Right	487	0	487	0	487	487	40	537	0	537	0	537	0	537	0	537	0	537
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	35	1	35	0	35	35	3	39	1	39	0	39	1	39	0	39	1	39
	Left-Through		0							0				0				0	
	Through	800	1	517	0	800	517	135	951	1	639	0	951	1	639	0	951	1	639
	Through-Right		1							1				1				1	
	Right	233	0	233	0	233	233	88	326	0	326	0	326	0	326	0	326	0	326
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
CRITICAL VOLUMES			North-South:	394		North-South:	394			North-South:	426			North-South:	426			North-South:	426
			East-West:	556		East-West:	561			East-West:	679			East-West:	684			East-West:	684
			SUM:	950		SUM:	955			SUM:	1105			SUM:	1110			SUM:	1110
VOLUME/CAPACITY (V/C) RATIO:				0.667			0.670				0.775				0.779				0.779
V/C LESS ATSAC/ATCS ADJUSTMENT:				0.667			0.670				0.775				0.779				0.779
LEVEL OF SERVICE (LOS):				B			B				C				C				C

REMARKS:

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project: 0.003

Significant impacted? NO

PROJECT IMPACT

Change in *v/c* due to project: 0.004

Significant impacted? NO

Δ*v/c* after mitigation: 0.004

Fully mitigated? N/A

APPENDIX D
Supplemental Existing + Project Analysis Figures

```
---------------------------------------------------------------------------------
                        LADWP Van Norman Complex Proj II EIR
                           Existing + Project Conditions
                                   AM Peak Hour
---------------------------------------------------------------------------------
                          Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
*********************************************************************************
Intersection #1 I-5 SB Ramps & Roxford St/Sepulveda Blvd
*********************************************************************************
Average Delay (sec/veh):    1380.0       Worst Case Level Of Service: F[8014.9]
*********************************************************************************
Approach:       North Bound      South Bound       East Bound        West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign         Stop Sign       Uncontrolled      Uncontrolled
Rights:          Include           Include           Include           Include
Lanes:         0  0  0  0  0   0  1  0  1  0   0  0  1  0  1   2  0  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0    0     0   289    1     8     0   46   369   934  110     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0    0     0   289    1     8     0   46   369   934  110     0
Added Vol:       0    0     0     0    0     5     0    3     1     0   10     0
PasserByVol:     0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:     0    0     0   289    1    13     0   49   370   934  120     0
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:      0    0     0   289    1    13     0   49   370   934  120     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:     0    0     0   289    1    13     0   49   370   934  120     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx    6.4  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx    3.5  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   2222 2407   120  xxxx xxxx xxxxx   419 xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx     48   34   937  xxxx xxxx xxxxx  1151 xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx     16    6   937  xxxx xxxx xxxxx  1151 xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx 18.45 0.16  0.01  xxxx xxxx  xxxx  0.81 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx   8.1 xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx  19.9 xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     *    *     *     C    *     *
Movement:      LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx     16 xxxx    81  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx  37.2 xxxx   0.6 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  8399 xxxx  58.3 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    *     *     F    *     F     *    *     *     *    *     *
ApproachDel:     xxxxxx           8014.9            xxxxxx            xxxxxx
ApproachLOS:        *                F                 *                 *
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
```

LADWP Van Norman Complex Proj II EIR
Existing + Project Conditions
PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 I-5 SB Ramps & Roxford St/Sepulveda Blvd

Average Delay (sec/veh): 944.0 Worst Case Level Of Service: F[6983.4]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 1 0 1 0			0 0 1 0 1			2 0 1 0 0		
Volume Module:												
Base Vol:	0	0	0	193	5	9	0	34	135	1114	80	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	193	5	9	0	34	135	1114	80	0
Added Vol:	0	0	0	0	0	3	0	5	10	0	1	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	193	5	12	0	39	145	1114	81	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	193	5	12	0	39	145	1114	81	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	193	5	12	0	39	145	1114	81	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	2421	2493	81	xxxx	xxxx	xxxxx	184	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	36	30	985	xxxx	xxxx	xxxxx	1403	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	12	6	985	xxxx	xxxx	xxxxx	1403	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	15.60	0.82	0.01	xxxx	xxxx	xxxx	0.79	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	8.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	16.6	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	C	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	12	xxxx	20	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	26.1	xxxx	2.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	7548	xxxx	404.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	F	*	F	*	*	*	*	*	*
ApproachDel:	xxxxxx			6983.4			xxxxxx			xxxxxx		
ApproachLOS:	*			F			*			*		

Note: Queue reported is the number of cars per lane.

```
------------------------------------------------------------------------------
                     LADWP Van Norman Complex Proj II EIR
                        Existing + Project Conditions
                                AM Peak Hour
------------------------------------------------------------------------------
                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
******************************************************************************
Intersection #2 I-5 NB off Ramp & Roxford St
******************************************************************************
Average Delay (sec/veh):      5.2      Worst Case Level Of Service: C[ 15.6]
******************************************************************************
Street Name:            I-5 NB off Ramp                      Roxford St
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:         0  0  1! 0  1    0  0  0  0  0    0  0  1  0  0    0  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      15    0   661     0    0     0     0  332     0     0 1021     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   15    0   661     0    0     0     0  332     0     0 1021     0
Added Vol:     10    0     0     0    0     0     0    3     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   25    0   661     0    0     0     0  335     0     0 1021     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    25    0   661     0    0     0     0  335     0     0 1021     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   25    0   661     0    0     0     0  335     0     0 1021     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  846 1356   335  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  336  151   712  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    336  151   712  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.07 0.00  0.93  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx   2.5  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx  14.4 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     B     *    *     *     *    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  660 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  3.2 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 16.7 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    C     *     *    *     *     *    *     *     *    *     *
ApproachDel:       15.6            xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         C                *                *                *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

```
---------------------------------------------------------------------------------
                       LADWP Van Norman Complex Proj II EIR
                          Existing + Project Conditions
                                  PM Peak Hour
---------------------------------------------------------------------------------
                         Level Of Service Computation Report
              2000 HCM Unsignalized Method (Future Volume Alternative)
*********************************************************************************
Intersection #2 I-5 NB off Ramp & Roxford St
*********************************************************************************
Average Delay (sec/veh):        6.1      Worst Case Level Of Service: C[ 16.3]
*********************************************************************************
Street Name:            I-5 NB off Ramp                        Roxford St
Approach:       North Bound       South Bound        East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R     L  -  T  -  R     L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign         Stop Sign        Uncontrolled      Uncontrolled
Rights:          Include           Include           Include           Include
Lanes:        0  0  1! 0  1    0  0  0  0  0     0  0  1  0  0     0  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      25    0   829    0     0     0     0  265     0     0 1170     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   25    0   829    0     0     0     0  265     0     0 1170     0
Added Vol:      1    0     0    0     0     0     0    5     0     0    0     0
PasserByVol:    0    0     0    0     0     0     0    0     0     0    0     0
Initial Fut:   26    0   829    0     0     0     0  270     0     0 1170     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    26    0   829    0     0     0     0  270     0     0 1170     0
Reduct Vol:     0    0     0    0     0     0     0    0     0     0    0     0
FinalVolume:   26    0   829    0     0     0     0  270     0     0 1170     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.4  6.5   6.2 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  855 1440   270  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  331  134   774  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    331  134   774  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.08 0.00  1.07  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2WayQ5thQ:   xxxx xxxx   3.2  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx  14.9 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     B    *     *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT     LT - LTR - RT     LT - LTR - RT
Shared Cap.: xxxx  717 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  4.3 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx 17.7 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    C     *    *     *     *     *    *     *     *    *     *
ApproachDel:       16.3            xxxxxx            xxxxxx            xxxxxx
ApproachLOS:          C                *                 *                 *
*********************************************************************************
Note: Queue reported is the number of cars per lane.
*********************************************************************************
```

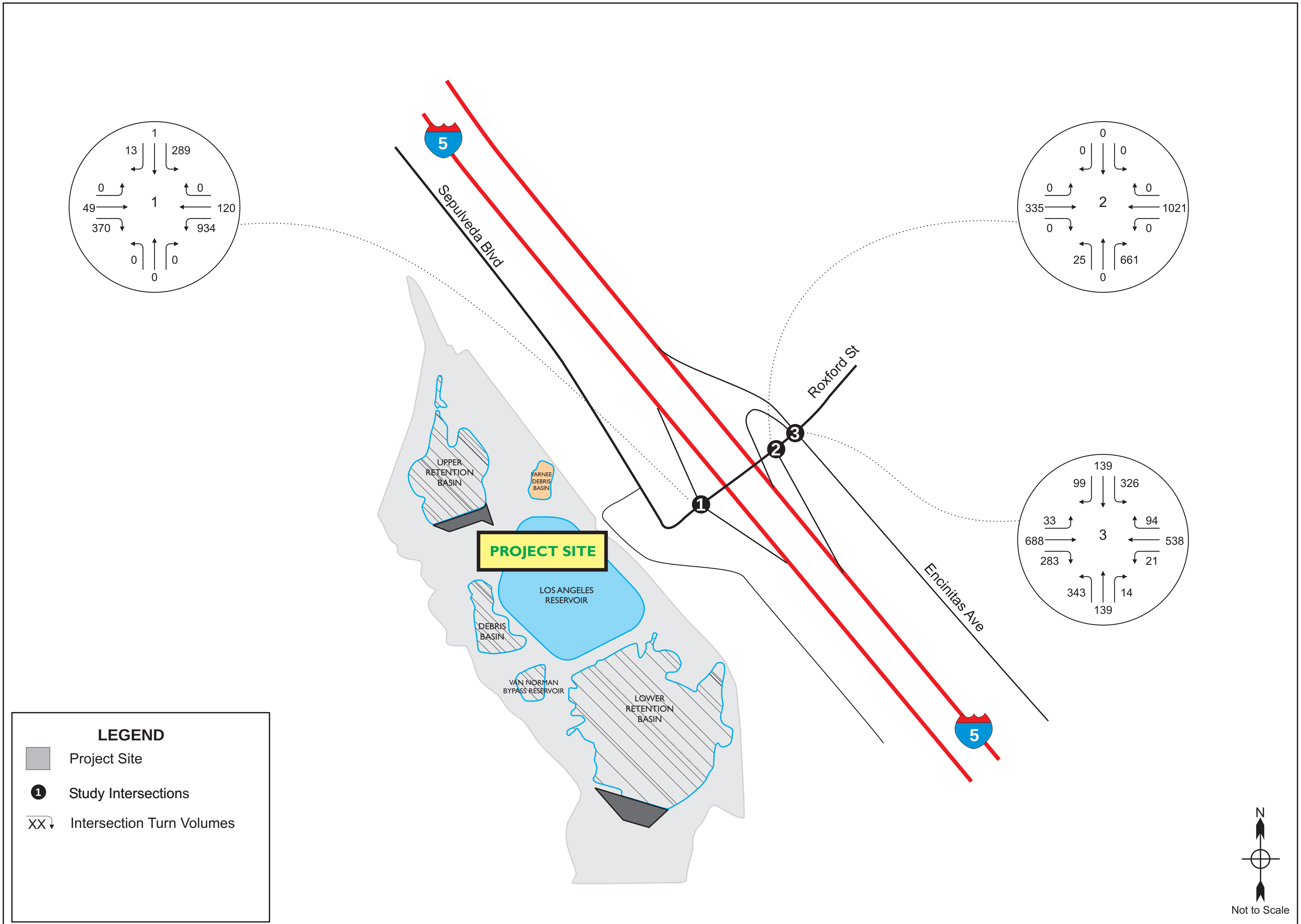

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Figure D-1

Existing Year 2012 With Project Construction - AM Peak-Hour Intersection Volumes

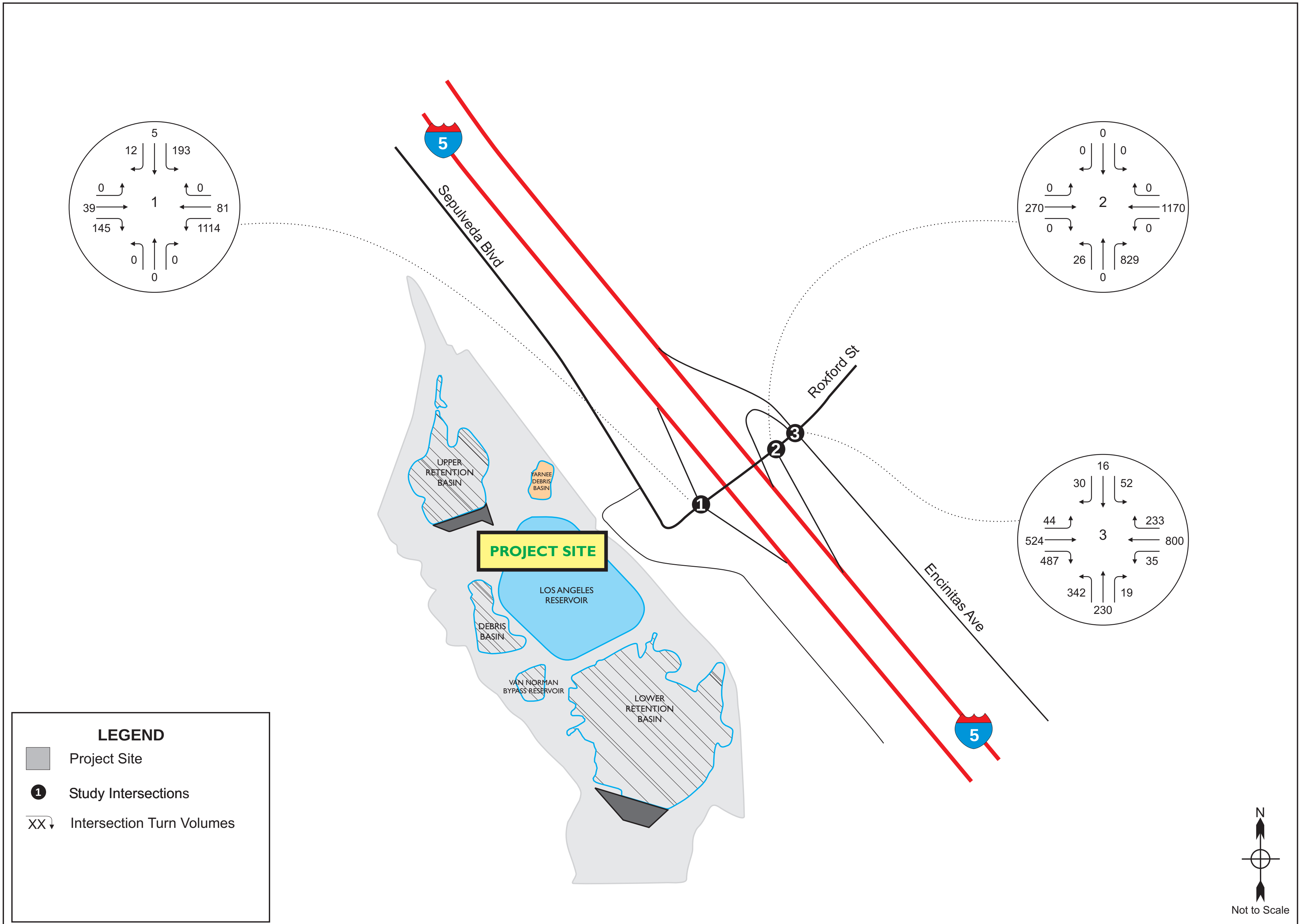

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Figure D-2

Existing Year 2012 With Project Construction - PM Peak-Hour Intersection Volumes