City of Los Angeles

Department of City Planning • Major Projects Section
City Hall • 200 N. Spring Street, Room 750 • Los Angeles, CA 90012

DRAFT ENVIRONMENTAL IMPACT REPORT APPENDICES

SHERMAN OAKS-STUDIO CITY-TOLUCA LAKE-CAHUENGA PASS COMMUNITY PLAN AREA

Volume 2 of 2

Appendices B - P

Studio City Senior Living Center Project

Case Number: ENV-2001-1196-EIR
State Clearinghouse Number: 2002031028

Project Location: 4141 Whitsett Avenue, Studio City, California, 91604
Council District: 2

Project Description: The proposed project includes the construction of a new 200-condominium unit senior housing development with an associated subterranean parking structure, known as the Studio City Senior Living Center (SCSLC), on a site currently used for recreational purposes known as Weddington Golf and Tennis. The existing 16 tennis courts and tennis uses on the site would be removed to accommodate the Project; however, the existing golf course, driving range, clubhouse, and other golf uses would be retained, with modifications. The Project would require several entitlements, including, among others, a Tract Map, Conditional Use Permits for the golf uses and alcohol sales, a Zone Variance, and, on a portion of the site, a General Plan Amendment from Open Space to Medium Residential and a Zone Change from A1-1XL to R3-1.

APPLICANT:	PREPARED BY:	ON BEHALF OF:
Weddington Golf and Tennis, LLC	Planning Associates, Inc.	The City of Los Angeles Department of City Planning Major Projects Section

JULY 2014

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AIR QUALITY & NOISE ASSESSMENTS

WEDDINGTON GOLF AND SENIOR HOUSING PROJECT
AIR QUALITY AND NOISE IMPACT REPORT

taha
environmental planners

Prepared for

PLANNING ASSOCIATES INC.

Prepared by

TERRY A. HAYES ASSOCIATES INC.

June 27, 2013
taha 2011-077

WEDDINGTON GOLF AND SENIOR HOUSING PROJECT

AIR QUALITY AND NOISE IMPACT REPORT

Prepared for

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1.0 SUMMARY OF FINDINGS

Terry A. Hayes Associates Inc. has completed an air quality and noise impact analysis for the proposed Weddington Golf and Senior Housing Project (proposed project). Key findings are listed below.

1.1 AIR QUALITY

- The proposed project would result in a less-than-significant impact related to regional construction emissions.
- Localized (i.e., on-site) particulate matter construction emissions would exceed the South Coast Air Quality Management District (SCAQMD) significance thresholds despite the implementation of Mitigation Measures **AQ1** through **AQ5**. Therefore, the proposed project would result in a significant and unavoidable impact related to localized construction emissions.
- The proposed project would result in a less-than-significant impact related to regional operational emissions.
- The proposed project would result in a less-than-significant impact related to operational carbon monoxide concentrations.
- The proposed project would result in a less-than-significant impact related to toxic air contaminant emissions.
- The proposed project would result in a less-than-significant impact related to odors.
- The proposed project would result in a less-than-significant impact related to consistency with the SCAQMD Air Quality Management Plan.
- The proposed project would result in a significant and unavoidable impact related to localized construction emissions. It is anticipated that related project development would also result in significant localized impacts. While mitigation measures would reduce air quality impacts, cumulative construction emissions would exceed SCAQMD localized significance thresholds. Therefore, the proposed project would result in a cumulatively considerable impact related to construction air quality.
- The proposed project would result in a less-than-significant impact related to greenhouse gas emissions.

1.2 NOISE AND VIBRATION

- Construction noise levels would exceed the City of Los Angeles significance thresholds at adjacent sensitive land uses despite the implementation of Mitigation Measures **N1** through **N6** would. Therefore, the proposed project would result in a significant and unavoidable impact related to construction noise.
- The proposed project would result in a less-than-significant impact related to mobile source noise levels.
- The proposed project would result in a less-than-significant impact related to stationary source noise levels.
- The proposed project would result in a less-than-significant impact related to construction and operational vibration levels.
- The proposed project would not contribute to a cumulatively considerable impact related to construction and operational vibration levels.

2.0 INTRODUCTION

2.1 PURPOSE OF REPORT

The purpose of this report is to evaluate the potential air quality and noise impacts associated with the proposed Weddington Golf and Senior Housing Project. Air quality and noise impacts have been analyzed for construction and operation of the proposed project. Mitigation measures for air quality and noise are recommended, where necessary.

2.2 PROJECT DESCRIPTION

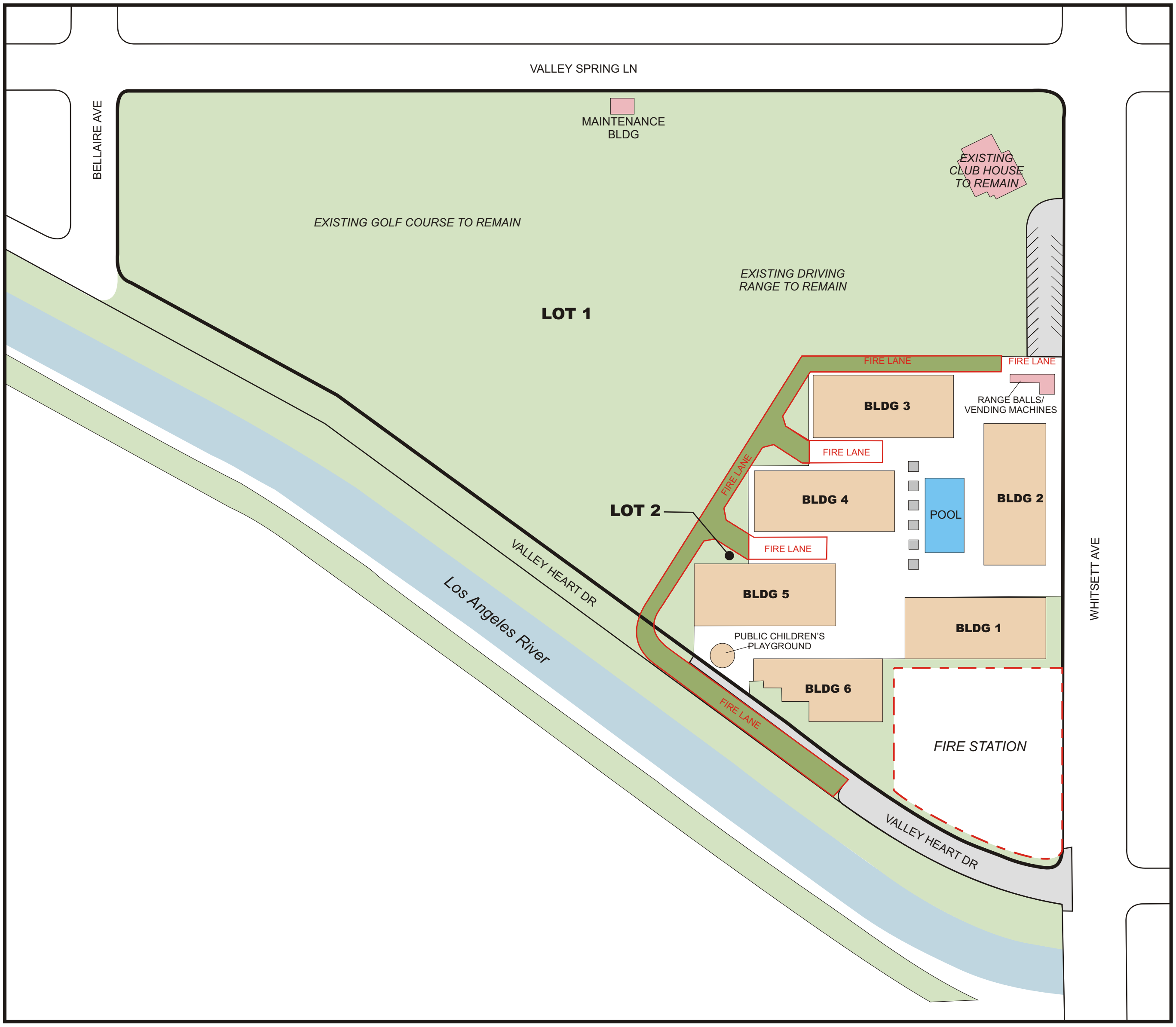
Summary

The Weddington Golf and Senior Housing Project involve the continuation of recreational uses at the Golf Course Site and the establishment of new multi-family residential uses at the Development Site. The proposed project would require subdividing the subject property into two parcels: Lots 1 and 2. Lot 1 would be 504,764 square feet (11.59 acres) and would retain, with minor alterations to accommodate the lot split, the existing nine-hole golf course, club house, driving range, and 22 surface parking spaces. Lot 2 would be 196,946 square feet (4.52 acres) and would be developed with an approximately 336,000-square-foot, 200-unit senior residential condominium campus.

The 4.52-acre Development Site would include six 45-foot, four-story buildings. The six buildings would be designed as a unified senior community campus. Outdoor project amenities, such as the lap pool, seating areas, fountains, and sculptures would be located throughout the large plaza area to interconnect the buildings. A public children's playground for guests would be located within the open area surrounding the buildings. The site plan is shown in **Figure 2-1**.

A total of approximately 613 subterranean parking spaces would be provided underneath the senior housing community. Primary automobile access would be provided via the westerly extension of Valleyheart Drive, which would be improved and extended as part of the proposed project. An inbound/outbound driveway for access to the subterranean parking garage would be provided off the extension of Valleyheart Drive. Secondary automobile access would be provided along Whitsett Avenue through two driveways (one inbound and one outbound) for access to the 22-space surface parking lot intended for golf course, driving range, and clubhouse patrons.

The proposed project has been designed to encourage pedestrian activity and walkability. Pedestrian walkways are planned throughout the Development Site to facilitate connectivity to the local recreational facilities and public sidewalks. The project site is adjacent to and accessible from nearby commercial uses (e.g., retail, restaurant, etc.) and other amenities along the Ventura Boulevard corridor, as well as adjacent to public bus transit stops. Pedestrian walkways within the Development Site and the adjacent sidewalks will be appropriately landscaped and adorned to provide a "friendly" walking environment, including lighting and wayfinding signage.



LEGEND:

Property Line

APPROX. SCALE

0 100 200 FEET

N

SOURCE: Franco & Associates, Inc., 2012

Weddington Golf and Senior Housing Project
Air Quality and Noise Impact Report

taha 2011-077

PLANNING ASSOCIATES, INC.

FIGURE 2-1

SITE PLAN

Sustainable Strategies

The proposed project incorporates many "sustainable" or "green" strategies that target sustainable site development, water savings, energy efficiency, green-oriented materials selection, and improved indoor environmental quality. Project sustainable strategies/features include:

- The proposed project would be conveniently located near basic commercial services and public transit opportunities. The project site would be within 0.5 miles of banks, groceries, and restaurants (primarily along Ventura Boulevard). The project site has convenient access to public transportation and alternative transportation features would be provided as part of the project, such as bicycle storage, changing room, and preferred parking for low-emitting and fuel efficient vehicles.
- The proposed project would be located adjacent to the existing golf course, which would allow utilization of the existing greenery as a heat absorption source. This would create a steady micro-climate that helps increase occupant comfort and lower air-conditioning and energy usage.
- The proposed project would recycle and/or salvage at least 50 percent of non–hazardous construction and demolition debris.
- The proposed project would use regional construction materials to reduce environmental impacts associated with the transportation of materials.
- The proposed project would use water efficient landscaping and native drought tolerant plants.
- The proposed project would use storm water infiltration and detention basins to manage storm water runoff and limit disruption and pollution of natural water flows.
- The proposed project would include easily accessible recycling areas dedicated to the collection and storage of non-hazardous materials such as paper, corrugated cardboard, glass, plastics, metals, and landscaping debris (trimmings).
- The proposed project would utilize natural light as the primary source of light in all dwelling units. Lighting systems would be controllable to achieve maximum efficiency, including the installation of occupancy sensors that would shut-off unnecessary/unused lights and decrease energy consumption. Photocells would be provided in daylight accessible spaces that would shut off unnecessary/unused lights within 15 feet of a window or skylight to conserve energy.
- The proposed project would include exterior lighting that would be either "dark-sky compliant", down lighting under covered areas, or fixtures with visors/louvers for glare and light control, thereby minimizing nighttime illumination.
- The proposed project would include efficient heating, ventilation, and air conditioning (HVAC) systems.
- The proposed project energy performance would be 20 percent more effective than required by California Title 24 Energy Design Standards, thereby reducing energy use, air pollutant emissions and greenhouse gas emissions.
- The proposed project would be designed to provide separate HVAC units for each dwelling unit and for common areas, thus providing a high level of thermal comfort controllability and satisfaction.
- The proposed project would implement energy management systems, energy saving fixtures, high performance windows, and possibly on-site renewable energy sources, such as solar panels.

- The proposed project design would incorporate cool and white roofing and "green" fiberglass insulation materials to reduce unwanted heat absorption and minimize energy consumption.

Construction

Although an exact construction schedule is not known at this time, demolition, grading and construction for the proposed project is anticipated to take approximately 24 months. Three primary construction phases are anticipated: 1) demolition of existing development (i.e., tennis courts) at the Development Site; 2) excavation, grading and preparation of the Development Site; and 3) construction of the buildings and parking structure at the Development Site. Minor construction activity is also anticipated at the Golf Course Site related to adjustments to the driving range and golf course greenways/fairways configuration and would most likely occur concurrent to the site preparation stage for the Development Site.

Demolition, grading and construction activities are anticipated to begin in year 2014 and occupancy is planned during year 2016. It is anticipated that the golf course, driving range, and clubhouse would continue to operate without significant disruption throughout the construction of the Development Site.

Demolition of the tennis courts would generate construction waste (primarily concrete, asphalt, green waste and fencing). During construction activities, the Applicant would recycle a considerable portion of demolition and construction materials, therefore reducing waste materials being transported to landfills. In order to minimize construction waste to be taken to landfills, the Applicant would require primary construction contractors to provide separate receptacles for materials that could be recycled such as wood scraps, metal scraps, and cardboard. Individual contractors would be required to emphasize diversion planning to ensure that the maximum amount of recyclable materials are separated and placed in the appropriate bins. Some of these materials may be temporarily stockpiled at the project site until they are either incorporated into the new construction and/or removed for off-site recycling.

Grading of the project site is expected to entail minor cuts and fills from the existing grades to establish the building pads and to provide surface drainage for the site. However, major excavation will be required to establish the two levels of subterranean parking at the Development Site. Soils are not expected to be imported to the project site; however, an estimated 82,000 cubic yards of earth materials excavated from the Development Site would be exported.

Construction activities generating noise are limited to the hours between 7:00 a.m. and 9:00 p.m. from Monday through Friday and between 8:00 a.m. and 6:00 p.m. on Saturday. The City of Los Angeles Noise Control Ordinance, which applies to construction activities being undertaken within 500 feet of a residential zone, prohibits noise that is "loud, unnecessary, and unusual, and substantially exceeds the noise customarily and necessarily attendant to the reasonable and efficient performance of work." Construction activities would comply with City regulations.

3.0 AIR QUALITY

This section examines the degree to which the proposed project may result in 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. This analysis focuses on air pollution from two perspectives: daily emissions and pollutant concentrations. "Emissions" refer to the quantity of pollutant released into the air, measured in ppd. "Concentrations" refer to the amount of pollutant material per volumetric unit of air, measured in 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, 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

[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.

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 Basin as attainment for SO_2, maintenance for CO and nonattainment for O_3, $PM_{2.5}$, PM_{10}, and Pb.

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**.

[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 Standards	California Attainment Status	Federal Standards	Federal 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 µg/m^3	Nonattainment
Carbon Monoxide (CO)	8-hour	9.0 ppm (10 mg/m^3)	Maintenance	9 ppm (10 mg/m^3)	Maintenance
	1-hour	20 ppm (23 mg/m^3)	Maintenance	35 ppm (40 mg/m^3)	Maintenance
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	Nonattainment	0.053 ppm (100 µg/m^3)	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	Nonattainment	--	--
	Calendar Quarter	--	--	1.5 µg/m^3	Nonattainment

n/a = not available
SOURCE: CARB, *Ambient Air Quality Standards*, June 7, 2012; CARB, State Standard Area Designations, http://www.arb.ca.gov/desig/statedesig.htm; USEPA, The Green Book Nonattainment Areas for Criteria Pollutants, http://www.epa.gov/air/oaqps/greenbk/index.html.

The CCAA requires CARB to designate areas within California as either attainment or non-attainment for each criteria pollutant based on whether the CAAQS have been achieved. Under the CCAA, areas are designated as non-attainment 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}, NO_2, and Pb.[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,

[4]CARB, Area Designation Maps, available at http://www.arb.ca.gov/desig/adm/adm.htm, accessed August 28, 2008.

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.

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.

LEGEND:

South Coast Air Basin

State of California

APPROX. SCALE

0 75 150 MILES

N

SOURCE: California Air Resources Board, State and Local Air Monitoring Network Plan, October 1998

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FIGURE 3-1

SOUTH COAST AIR BASIN

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.

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.

Assembly Bill 1493 (AB 1493). In September 2002, AB 1493 was enacted, requiring the development and adoption of regulations to achieve "the maximum feasible reduction of greenhouse gases" emitted by noncommercial passenger vehicles, light-duty trucks, and other vehicles used primarily for personal transportation in the State.

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.

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

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).

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 SETTING

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. This 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 is produced almost entirely from automobiles, the highest CO concentrations in the Basin are associated with heavy traffic. NO_2 levels are also generally higher during fall and winter days.

3.3.2 Local Climate

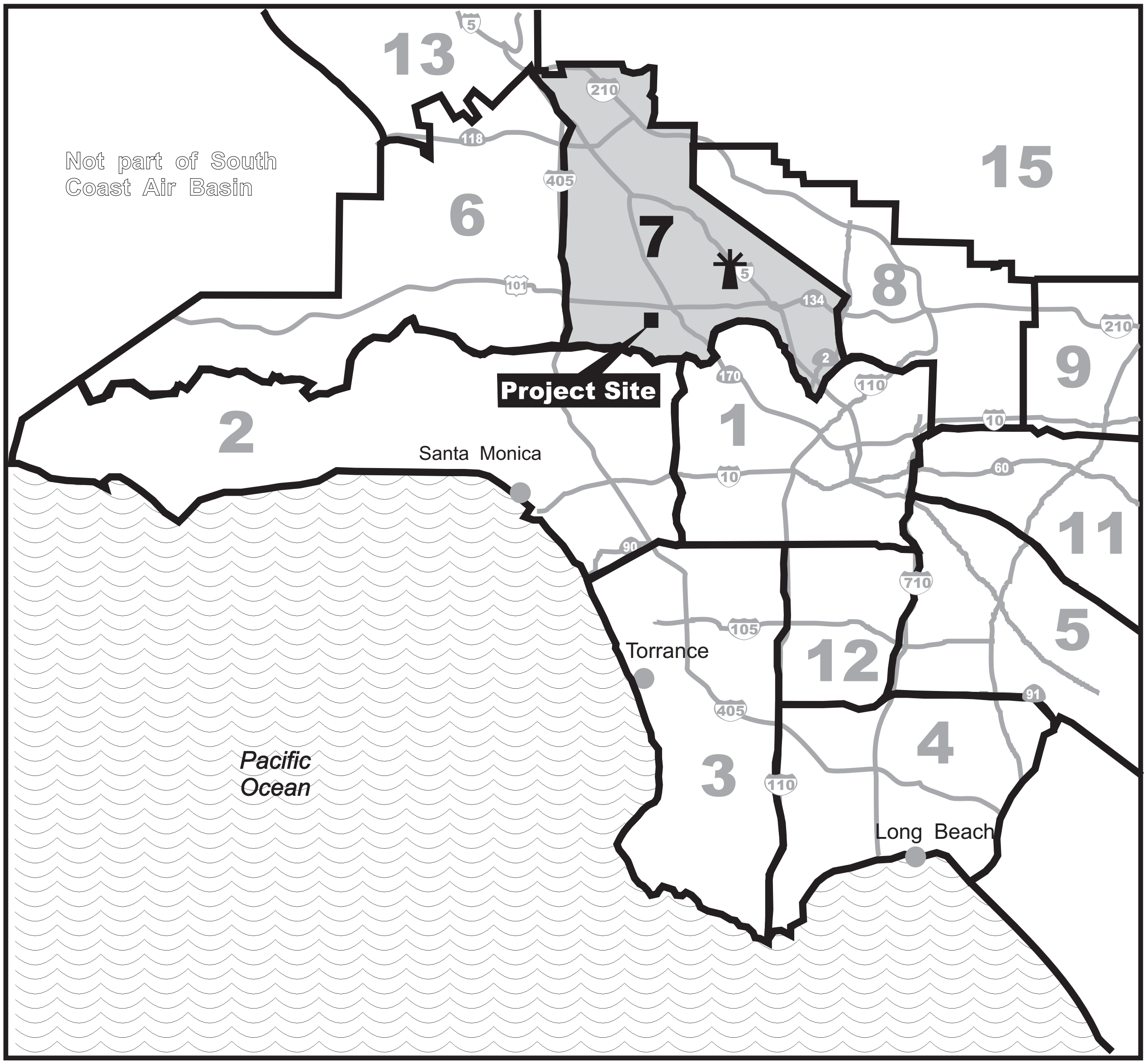
The mountains and hills within the Basin contribute to the variation of rainfall, temperature, and winds throughout the region. Within the project site and its vicinity, the average wind speed, as recorded at the Burbank Wind Monitoring Station, is approximately four miles per hour, with calm winds occurring approximately ten 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 64.1 degrees Fahrenheit (°F). The project area experiences an average winter temperature of approximately 55.2°F and an average summer temperature of approximately 73.1°F. Total precipitation in the project area averages approximately 16.5 inches annually. Precipitation occurs mostly during the winter and relatively infrequently during the summer. Precipitation averages approximately ten inches during the winter, approximately four inches during the spring, approximately two inches during the fall, and less than one inch during the summer.[7]

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 East San Fernando Valley Air Monitoring Subregion, which is served by the Burbank – West Palm Avenue Monitoring Station. The Burbank – West Palm Avenue Monitoring Station is located approximately 5.5 miles northeast of the project site near the intersection of Victory Boulevard and Olive Avenue (**Figure 3-2**). Historical data from the Burbank Monitoring Station were used to characterize existing conditions in the vicinity of the project area. Criteria pollutants monitored at the Burbank Monitoring Station include O_3, CO, NO_2, PM_{10}, $PM_{2.5}$, and SO_2.

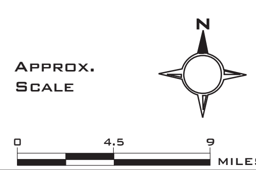
[6]SCAQMD, Meteorological Data, available at http://www.aqmd.gov/smog/metdata/MeteorologicalData.html, accessed November 30, 2011.
[7]Western Regional Climate Center, Historical Climate Information, available at http:// www.wrcc.dri.edu, accessed November 30, 2011.



LEGEND: Burbank 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

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FIGURE 3-2

AIR MONITORING AREAS

Table 3-2 shows pollutant levels, the State standards, and the number of exceedances recorded at the Burbank Monitoring Station from 2008 to 2010.[8] 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 3 to 20 times during this period while the one-hour federal standard for O3 was exceeded zero to one time during this period. The eight-hour State standard for O_3 was exceeded 9 to 34 times while the federal standard for O_3 was exceeded four to 17 times during this period. The 24-hour State standard for PM_{10} was exceeded 5 to 10 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

		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)	0.133 20 0.110 34	0.145 16 0.097 28	0.111 3 0.084 9
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)	3 0 2.48 0	3 0 2.89 0	— — 2.35 0
Nitrogen Dioxide (NO_2)	Maximum 1-hr Concentration (ppm) Days > 0.18 ppm (State 1-hr standard)	0.105 0	0.088 0	0.082 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	— —
Fine Particulate Matter ($PM_{2.5}$)	Maximum 24-hr concentration (μg/m^3) Exceed State Standard (12 μg/m^3)	68.9 Yes	67.5 Yes	43.7 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

"—" = There was insufficient (or no) data available to determine the value.
SOURCE: CARB, Air Quality Data Statistics, *Top 4 Summary*, http://www.arb.ca.gov/adam/topfour/topfour1.php, accessed November 30, 2011.
CO pollutant concentration was obtained from SCAQMD, Historical Data by Year, available at http://www.aqmd.gov/smog/historicaldata.htm, accessed November 30, 2011.

3.3.3 Greenhouse Gas Emissions

California is the fifteenth largest emitter of GHG on the planet, representing about two percent of the worldwide emissions.[9] **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.

[8]Monitored data for 2011 was not available when this analysis was completed.
[9]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 SF_6) 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 within one-quarter mile (1,320 feet) of the project site include the following:

- Single- and multi-family residences located 120 feet to the east
- Christian Science Church located 180 feet to the southeast
- Single- and multi- family residences located 415 feet to the north
- Single-family residences located 595 feet to the south
- Single-family residences located 995 feet to the northwest

The above 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

Construction

This air quality analysis is consistent with the methods described in the SCAQMD *CEQA Air Quality Handbook* (1993 edition), as well as the updates to the *CEQA Air Quality Handbook*, as provided on the SCAQMD website.

Construction emissions were estimated using the California Emissions Estimator Model (CalEEMod). CalEEMod is a Statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions associated with both construction and operational from a variety of land use projects. The model quantifies direct emissions from construction and operation (including vehicle use), as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. Construction assumptions used in the CalEEMod analysis include:

Phase 1: Demolition

- Duration: 6 weeks
- Demolition Amount: 508 tons of debris
- Total Number of Truck Trips Haul: 32 haul trucks

LEGEND:

Disturbed Area

\# Sensitive Receptors

1. Single- and Multi-Family Residences
2. Christian Science Church
3. Single- and Multi-Family Residences
4. Single-Family Residences
5. Single-Family Residences

APPROX. SCALE

0 250 500 FEET

N

SOURCE: ESRI and TAHA, 2012

Weddington Golf and Senior Housing Project
Air Quality and Noise Impact Report

taha 2011-077 PLANNING ASSOCIATES, INC.

FIGURE 3-3

AIR QUALITY SENSITIVE
RECEPTOR LOCATIONS

Phase 2: Grading

- Duration: 25 weeks
- Full-time Operating Equipment: 5
- Total Number of Truck Trips Haul: 7,688 haul trucks
- Amount of Materials Exported: 82,000 cubic yards of earth

Phase 3: Construction

- Duration: 39 weeks
- Full-time Operating Equipment: 8
- Total Operating Equipment: 4

Phase 4: Agricultural Coating

- Duration: 2 weeks
- Total Operating Equipment: 1

Phase 5: Asphalt Paving

- Duration: 1.5 weeks
- Full-time Operating Equipment: 1

Localized emissions, or on-site, emissions were also estimated using CalEEMod. Based on site specifics, the analysis utilized a 25-meter receptor distance and a five-acre project site. Emissions were compared to the SCAQMD Lookup Tables to assess the level of significance.

Operations

CalEEMod was used to calculate operational mobile and area source emissions. CalEEMod uses EMFAC2007 emissions rates to calculate vehicle emissions. EMFAC2007 is the latest emission inventory model for motor vehicles operating on roads in California. This model reflects the CARB's current understanding of how vehicles travel and how much they pollute. The EMFAC2007 model can be used to show how California motor vehicle emissions have changed over time and are projected to change in the future.

Localized CO emissions were calculated utilizing the USEPA's CAL3QHC dispersion model and the CARB's EMFAC 2007 model. CAL3QHC is a model developed by the USEPA to predict CO and other pollutant concentrations from motor vehicle emissions at roadway intersections. The model uses a traffic algorithm for estimating vehicular queue lengths at signalized intersections.

Greenhouse Gas Emissions

For the purpose of this analysis, GHG emissions were quantified from construction and operation of the proposed project using SCAQMD's CalEEMod. Operational emissions include both direct and indirect sources including mobile sources, water use, solid waste, area sources, natural gas, and electricity use emissions.

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**;
- 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)**
Volatile Organic Compounds (VOC)	75	--
Nitrogen Oxides (NO_X)	100	221
Carbon Monoxide (CO)	550	1,158
Sulfur Oxides (SO_X)	150	--
Fine Particulates ($PM_{2.5}$)	55	6
Particulates (PM_{10})	150	11
/a/ Localized thresholds based on 25-meter receptor distance and a five-acre project site. **SOURCE:** SCAQMD, 2012.		

Operations Phase Significance Criteria

The proposed project would have a significant impact if:

- Daily operational emissions were to exceed SCAQMD operational emissions thresholds for VOC, NO_X, CO, SO_X, $PM_{2.5}$, or PM_{10}, as presented in **Table 3-5**;
- Project-related traffic causes CO concentrations at study intersections to violate the CAAQS for either the one- or eight-hour period. The CAAQS for the one- and eight-hour periods are 20 ppm and 9.0 ppm, respectively;
- The proposed project would generate significant emissions of TACs;
- The proposed project would create an odor nuisance; and/or
- The proposed project would not be consistent with the AQMP.

TABLE 3-5: SCAQMD DAILY OPERATIONAL EMISSIONS THRESHOLDS	
Criteria Pollutant	**Pounds Per Day**
Volatile Organic Compounds (VOC)	55
Nitrogen Oxides (NO_X)	55
Carbon Monoxide (CO)	550
Sulfur Oxides (SO_X)	150
Fine Particulates ($PM_{2.5}$)	55
Particulates (PM_{10})	150
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. During the finishing phase, paving operations and the application of architectural coatings (e.g., paints) and other building materials would release VOCs. 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.

CalEEMod was used to calculate the daily construction emissions. **Table 3-6** shows the estimated daily emissions associated with each construction phase. Daily construction emissions for VOC, NO_X, CO, SO_X, $PM_{2.5}$ and PM_{10} would not exceed the SCAQMD regional thresholds. Therefore, the proposed project would result in a less-than-significant impact related to regional construction emissions.

TABLE 3-6: CONSTRUCTION EMISSIONS

	Pounds Per Day					
Construction Phase	**VOC**	**NO_X**	**CO**	**SO_X**	**$PM_{2.5}$ /a/**	**PM_{10} /a/**
DEMOLITION						
On-Site Emissions	7	53	30	<1	2	3
Off-Site Emissions	<1	<1	1	<1	<1	1
Total Emissions	*7*	*53*	*31*	*<1*	*2*	*4*
SITE PREPARATION						
On-Site Emissions	8	61	37	<1	10	15
Off-Site Emissions	2	23	14	<1	1	1
Total Emissions	*10*	*84*	*51*	*<1*	*11*	*16*
BUILDING						
On-Site Emissions	4	30	21	<1	2	2
Off-Site Emissions	3	14	28	<1	1	7
Total Emissions	*7*	*44*	*49*	*<1*	*3*	*9*
ARCHITECTURAL COATING						
On-Site Emissions	37	3	2	0	<1	<1
Off-Site Emissions	<1	<1	4	<1	1	<1
Total Emissions	*37*	*3*	*6*	*<1*	*1*	*<1*
PAVING						
On-Site Emissions	1	5	3	0	<1	<1
Off-Site Emissions	1	1	1	0	0	0
Total Emissions	*2*	*6*	*4*	*0*	*<1*	*<1*
Maximum Regional Total	37	84	51	<1	11	16
REGIONAL SIGNIFICANCE THRESHOLD	**75**	**100**	**550**	**150**	**55**	**150**
Exceed Threshold?	No	No	No	No	No	No
Maximum On-Site Total	37	61	37	--	10	15
LOCALIZED SIGNIFICANCE THRESHOLD /b/	**--**	**221**	**1,158**	**--**	**6**	**11**
Exceed Threshold?	--	No	No	--	Yes	Yes

/a/ CalEEMod emissions for fugitive dust were adjusted to account for a 61 percent control efficiency associated with SCAQMD Rule 403.
/b/ Assumed a 5-acre project site and a 25-meter (82-foot) receptor distance.
SOURCE: TAHA, 2012.

Localized Impacts

Emissions for the localized construction air quality analysis of $PM_{2.5}$, PM_{10}, CO, and NO_2 were compiled using LST methodology promulgated by the SCAQMD.[10] Localized on-site emissions were calculated using similar methodology to the regional emission calculations. LSTs were developed based upon the size or total area of the emissions source, the ambient air quality in each source receptor area, and the distance to the sensitive receptor. As shown in **Table 3-6**, estimated daily localized emissions associated with each construction phase. Daily construction emissions would not exceed the SCAQMD localized thresholds for NO_2 and CO, and these localized construction emissions would result in a less-than-significant impact. Daily construction emissions of $PM_{2.5}$ and PM_{10} would exceed the SCAQMD localized thresholds. Therefore, without mitigation, the proposed project would result in a significant impact related to localized construction emissions.

Toxic Air Contaminant Impacts

The greatest potential for TAC emissions during construction would be diesel particulate emissions associated with heavy-duty equipment operations. According to SCAQMD methodology, health effects from carcinogenic air toxics are described in terms of individual cancer risk. "Individual Cancer Risk" is the likelihood that a person continuously exposed to concentrations of TACs over a 70-year lifetime will contract cancer based on the use of standard risk assessment methodology. The majority of heavy-duty construction equipment activity would take place over a six month period during demolition and site preparation activity. These short-term emissions would not substantially contribute to a significant construction health risk. No residual emissions and corresponding individual cancer risk are anticipated after construction. 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 Water or a stabilizing agent shall be applied to exposed surfaces at least two times per day to prevent generation of dust plumes.

AQ2 The construction contractor shall utilize at least one or more of the following measures at each vehicle egress from the project site to a paved public road in order to effectively reduce the migration of dust and dirt offsite:

- 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;
- Pave the surface extending at least 100 feet and at least 20 feet wide;
- 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
- Install a wheel washing system to remove bulk material from tires and vehicle undercarriages.

[10]The concentrations of SO_2 are not estimated because construction activities would generate a small amount of SO_X emissions. No State standard exists for VOC. As such, concentrations for VOC were not estimated.

AQ3 All haul trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).

AQ4 Construction activity on unpaved surfaces shall be suspended when wind speed exceed 25 miles per hour (such as instantaneous gusts).

AQ5 Ground cover in disturbed areas shall be replaced as quickly as possible.

Impacts After Mitigation

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

Localized Impacts. Implementation of Mitigation Measures **AQ1** through **AQ5** would ensure that fugitive dust emissions would be reduced by approximately 61 percent. However, localized daily $PM_{2.5}$ and PM_{10} emissions would continue to exceed the localized significance. Therefore, the proposed project would result in a significant and unavoidable impact related to localized construction emissions.

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

Regional Impacts

Motor vehicles that access the project site would be the predominate source of long-term project emissions. Operational emissions are expected to be emitted primarily from vehicles accessing the project site for the on-site residences. The proposed project would generate 624 net daily vehicle trips.[11] **Table 3-7** compares emissions under existing conditions to existing plus project conditions and emissions under future no project conditions to future with project conditions. Regional operational emissions for both scenarios would not exceed SCAQMD significance thresholds. Therefore, the proposed project would result in a less-than-significant impact related to regional operational emissions.

Localized Impacts

CO concentrations in the future are expected to be lower than existing conditions due to stringent State and federal mandates for lowering vehicle emissions. Although traffic volumes would be higher in the future both without and with the implementation of the proposed project, CO emissions from mobile sources are expected to be much lower due to technological advances in vehicle emissions systems, as well as from normal turnover in the vehicle fleet. Accordingly, increases in traffic volumes are expected to be offset by increases in cleaner-running cars as a percentage of the entire vehicle fleet on the road.[12]

[11]Linscott, Law & Greenspan, Engineers, Studio City Senior Living Center Project Traffic Impact Study, February 2, 2012.
[12]Consistent with CARB's vehicle emissions inventory.

TABLE 3-7: OPERATIONAL EMISSIONS						
	Pounds Per Day					
	VOC	**NO_X**	**CO**	**SO_X**	**$PM_{2.5}$**	**PM_{10}**
EXISTING CONDITIONS (2012)						
Area Source	0	0	0	0	0	0
Mobile Source	7	16	62	<1	1	10
Total	**7**	**16**	**62**	**<1**	**1**	**10**
EXISTING PLUS PROJECT CONDITIONS (2012)						
Area Source	17	<1	17	0	<1	<1
Mobile Source	13	34	122	<1	2	21
Total	**30**	**34**	**139**	**<1**	**2**	**21**
Net Emissions	23	18	77	<1	1	11
Regional Significance Threshold	**55**	**55**	**550**	**150**	**55**	**150**
Exceed Threshold?	No	No	No	No	No	No
FUTURE NO PROJECT CONDITIONS (2016)						
Area Source	0	0	0	0	0	0
Mobile Source	5	12	46	<1	1	10
Total	**6**	**2**	**17**	**<1**	**1**	**4**
FUTURE WITH PROJECT CONDITIONS						
Area Source	17	<1	17	0	<1	<1
Mobile Source	10	25	90	<1	2	21
Total	**27**	**25**	**107**	**<1**	**2**	**21**
Net Emissions	21	23	90	<1	1	17
Regional Significance Threshold	**55**	**55**	**550**	**150**	**55**	**150**
Exceed Threshold?	No	No	No	No	No	No
SOURCE: TAHA, 2012.						

The State one- and eight-hour CO standards may potentially be exceeded at congested intersections with high traffic volumes. An exceedance of the State CO standards at an intersection is referred to as a CO hotspot. The SCAQMD recommends a CO hotspot evaluation of potential localized CO impacts when volume-to-capacity (V/C) ratios are increased by two percent at intersections with a LOS of D or worse. SCAQMD also recommends a CO hotspot evaluation when an intersection decreases in LOS by one level beginning when LOS changes from C to D.

Based on the traffic study, the only intersection that requires a localized CO analysis is Whitsett Avenue/Riverside Drive (AM Peak Hour) under existing plus project conditions. The USEPA CAL3QHC micro-scale dispersion model was used to calculate CO concentrations. One- and eight-hour CO concentrations would be approximately 3 and 2.4 ppm at worst-case sidewalk receptors, respectively. The State one- and eight-hour standards of 20 and 9.0 ppm, respectively, would not be exceeded at the study intersection. Therefore, the proposed project would result in a less-than-significant impact related to operational localized impacts.

Toxic Air Contaminant Impacts

The SCAQMD recommends that health risk assessments be conducted for substantial sources of diesel particulate emissions (e.g., truck stops and warehouse distribution facilities) and has provided guidance for analyzing mobile source diesel emissions.[13] The proposed project is not

[13]SCAQMD, Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Emissions, December 2002.

anticipated to generate a substantial number of daily truck trips. Based on the limited activity of TAC sources, the proposed project would not warrant the need for a health risk assessment associated with on-site activities, and potential TAC impacts are expected to be less than significant.

Typical sources of acutely and chronically hazardous TACs include industrial manufacturing processes and automotive repair facilities. The proposed project would not include any of these potential sources, although minimal emissions may result from the use of consumer products (e.g., aerosol sprays). It was expected that the proposed project would not release substantial amounts of TACs, and no significant impact on human health would occur.

The CARB has published guidance for locating new sensitive receptors (e.g., residences) out of harm's way with respect to nearby sources of air pollution.[14] Relevant recommendations include avoid locating new sensitive land uses within 500 feet of a freeway (defined as an urban roads with 100,000 vehicles per day) or 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). The project site is located approximately 4,000 feet from Interstate 101 and approximately 755 feet from the nearest gas station (Arco at 12500 Ventura Boulevard). Additional guidelines in the handbook include avoiding locating new sensitive receptors near rail yards, ports, refineries, distribution centers and dry cleaners. The proposed project would not be located near these air polluting sources. The location of the proposed project would be consistent with the CARB recommendations for locating new sensitive receptors. Therefore, the proposed project would have a less-than-significant impact related to TACs.

Odor Impacts

According to the SCAQMD *CEQA Air Quality Handbook*, land uses and industrial operations that are associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies and fiberglass molding. The project site would be developed with residences and not land uses that are typically associated with odor complaints. On-site trash receptacles would have the potential to create adverse odors. Trash receptacles would be located and maintained in a manner that promotes odor control and no adverse odor impacts are anticipated from these types of land uses. Therefore, the proposed project would result in a less-than-significant impact related to operational odors.

3.5.3 Consistency with the Air Quality Management Plan

The 2007 AQMP was prepared to accommodate growth, to reduce the high levels of pollutants within areas under the jurisdiction of SCAQMD, to return clean air to the region, and to minimize the impact on the economy. The AQMP includes short-term control measures for stationary and mobile sources developed by the SCAQMD. As shown in **Table 3-8**, the proposed project would not interfere with implementation of these control measures. In addition, the regional and localized emissions analysis demonstrated that the proposed project would not generate significant emissions according to the SCAQMD. Therefore, the proposed project would result in a less-than-significant impact related to the AQMP.

[14] CARB, Air Quality and Land Use Handbook: A Community Health Perspective, April 2005.

TABLE 3-8: PROJECT CONSISTENCY WITH THE AIR QUALITY MANAGEMENT PLAN	
Control Measure	**Project Consistency**
FACILITY MODERNIZATION	
Facility Modernization (NO_X, VOC, and $PM_{2.5}$)	**Not Applicable**: The proposed project would be a new development and would not include modernization. In addition, all new stationary sources would comply with SCAQMD rules and regulations to control emissions.
ENERGY EFFICIENCY/CONSERVATION	
Urban Heat Island (All Pollutants)	**Consistent**: The proposed project is adjacent to the existing golf course, which will allow utilization of the existing greenery as a heat absorption source. Therefore, the proposed project will result in lower air-conditioning and energy usage.
Energy Efficiency and Conservation (All Pollutants)	**Consistent**: The proposed project has been designed to have an energy performance goal of 20 percent more effective than required by California Title 24 Energy Design Standards. The proposed lighting system will be controllable for maximum efficiency (e.g., installation of occupancy sensors that will shut-off unnecessary/unused lights). In addition, the proposed project will implement energy management systems, energy saving fixtures, high performance windows, and possibly on-site renewable energy sources.
GOOD MANAGEMENT PRACTICES	
Improved Leak Detection and Repair (VOC)	**Not Applicable**: The proposed project would not include oil and gas production facilities, petroleum and chemical products processing, storage and transfer facilities, marine terminals, or other sources contributing to fugitive VOC emissions from piping components.
Emission Reductions from Gasoline Transfer and Dispensing Facilities (VOC)	**Not Applicable**: The proposed project would not include gasoline transfer and dispensing facilities.
Further Emission Reductions from Pipeline and Storage Tank Degassing (VOC)	**Not Applicable**: The proposed project would not include gasoline sources of pipeline and storage tank degassing.
PM Control Devices (Baghouses, Wet Scrubbers, Electrostatic Precipitators, and Other Devices) (PM)	**Consistent**: All stationary sources would comply with SCAQMD rules and regulations to control emissions.
Emissions Reduction from Green Waste Composting (VOC and PM)	**Consistent**: The proposed project would include recycling areas dedicated to the collection and storage of non-hazardous materials for recycling, including paper, corrugated cardboard, glas, plastics, metrals and landscaping debris.
Improved Start-up, Shut-down & Turnaround Procedures (All Pollutants)	**Not Applicable**: The proposed project would not include major stationary sources with start-up and shut-down procedures.
MARKET INCENTIVES/COMPLIANCE FLEXIBILITY	
Clean Coatings Certification Program (VOC)	**Not Applicable**: The proposed project would not include stationary sources of VOC emissions.
Further SOx Reduction for RECLAIM (SO_X)	**Not Applicable**: The proposed project would not include stationary sources of SO_X emissions.
Clean Air Act Emission Fees for Major Stationary Sources (VOC and NO_X)	**Not Applicable**: The proposed project would not include major stationary sources (e.g., power plants).
Economic Incentive Programs (All Pollutants)	**Not Applicable**: The proposed project would not include major sources of mobile (e.g., warehouse distribution facilities) or stationary emissions (e.g., power plants).
Petroleum Refinery Pilot Program (VOC and $PM_{2.5}$)	**Not Applicable**: The proposed project would not include a petroleum refinery.

TABLE 3-8: PROJECT CONSISTENCY WITH THE AIR QUALITY MANAGEMENT PLAN	
Control Measure	**Project Consistency**
EMISSION GROWTH MANAGEMENT	
Emission Reductions from New or Redevelopment Projects (NO_X, VOC and $PM_{2.5}$)	**Consistent**: All stationary sources would comply with SCAQMD rules and regulations to control emissions. The proposed project has been designed to be 20 percent more effective than required by California Title 24 Energy Design Standards, thereby, reducing air pollutant emissions and greenhouse gas emissions.
Emission Budget and Mitigation for General Conformity Projects (All Pollutants)	**Not Applicable**: The proposed project does not require a federal conformity analysis.
Emissions Mitigation at Federally Permitted Projects (All Pollutants)	**Not Applicable**: The proposed project does not require federal permits.
SOURCE: TAHA, 2010.	

Operational Phase Mitigation Measures

Operational air quality impacts would be less than significant, and no mitigation measures are required.

Impacts After Mitigation

Not Applicable: The project-related operational emissions would result in a less-than-significant impact without mitigation.

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 a significant regional impact during construction or operation. However, the proposed project would result in a significant localized PM_{10} impact during construction activities. As the proposed project results in a localized significant impact during construction relative to particulate matter, it is anticipated that related project development would also result in significant localized impacts. While mitigation measures would reduce air quality impacts, cumulative construction emissions would exceed SCAQMD localized significance thresholds. Therefore, the proposed project would 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 calculated for mobile sources, natural gas consumption, general electricity consumption, electricity consumption associated with the use and transport of water, and solid waste decomposition. Based on SCAQMD guidance, the emissions summary also includes construction emissions amortized over a 30-year span. As shown in **Table 3-9**, the proposed project would result in 1,919 metric tons of CO_2e per year under the future with project conditions. Existing plus project conditions would result in 1,986 metric tons of CO_2e per year. Estimated GHG emissions would be less than the 10,000 metric tons of CO_2e per year quantitative significance threshold. Therefore, the proposed project would result in a less-than-significant impact related to GHG emissions.

TABLE 3-9: GREENHOUSE GAS EMISSIONS

Source	Carbon Dioxide Equivalent (Metric Tons per Year)
EXISTING CONDITIONS (2012)	
Mobile	988
General Electricity	<1
Water Cycle Electricity	120
Natural Gas	<1
Solid Waste Decomposition	7
Total	**1,115**
EXISTING PLUS PROJECT CONDITIONS (2012)	
Mobile	2,085
General Electricity	509
Water Cycle Electricity	159
Natural Gas	265
Solid Waste Decomposition	42
Total	**3,060**
Net Operational Emissions	1,945
Construction Emissions Amortized	41
Net Emissions	**1,986**
Regional Significance Threshold	**10,000**
Exceed Threshold?	No
FUTURE NO PROJECT CONDITIONS (2016)	
Mobile	995
General Electricity	<1
Water Cycle Electricity	120
Natural Gas	<1
Solid Waste Decomposition	7
Total	**1,122**
FUTURE WITH PROJECT CONDITIONS (2016)	
Mobile	2,032
General Electricity	509
Water Cycle Electricity	159
Natural Gas	265
Solid Waste Decomposition	42
Total	**3,007**
Total Net Operational Emissions	1,885
Construction Emissions Amortized	34
Net Emissions	**1,919**
Regional Significance Threshold	**10,000**
Exceed Threshold?	No

SOURCE: TAHA, 2012.

GHG Reduction Plans and Policies

The proposed project incorporates many "sustainable" or "green" strategies that target sustainable site development, water savings, energy efficiency, green-oriented materials selection, and improved indoor environmental quality. Project sustainable strategies/features include:

- The proposed project would be conveniently located near basic commercial services and public transit opportunities. The project site would be within 0.5 miles of banks, groceries, and restaurants (primarily along Ventura Boulevard). The project site has convenient access to public transportation and alternative transportation features would be provided as part of the project, such as bicycle storage, changing room, and preferred parking for low-emitting and fuel efficient vehicles.
- The proposed project would be located adjacent to the existing golf course, which would allow utilization of the existing greenery as a heat absorption source. This would create a steady micro-climate that helps increase occupant comfort and lower air-conditioning and energy usage.
- The proposed project would recycle and/or salvage at least 50 percent of non–hazardous construction and demolition debris.
- The proposed project would use regional construction materials to reduce environmental impacts associated with the transportation of materials.
- The proposed project would use water efficient landscaping and native drought tolerant plants.
- The proposed project would use storm water infiltration and detention basins to manage storm water runoff and limit disruption and pollution of natural water flows.
- The proposed project would include easily accessible recycling areas dedicated to the collection and storage of non-hazardous materials, including paper, corrugated cardboard, glass, plastics, metals, and landscaping debris (trimmings).
- The proposed project would utilize natural light as the primary source of light in all dwelling units. Lighting systems would be controllable to achieve maximum efficiency, including the installation of occupancy sensors that would shut-off unnecessary/unused lights and decrease energy consumption. Photocells would be provided in daylight accessible spaces that would shut off unnecessary/unused lights within 15 feet of a window or skylight to conserve energy.
- The proposed project would include exterior lighting that would be either "dark-sky compliant", down lighting under covered areas, or fixtures with visors/louvers for glare and light control, thereby minimizing nighttime illumination.
- The proposed project energy performance would be 20 percent more effective than required by California Title 24 Energy Design Standards, thereby reducing energy use, air pollutant emissions and greenhouse gas emissions.
- The proposed project would be designed to provide separate HVAC units for each dwelling unit and for common areas, thus providing a high level of thermal comfort controllability and satisfaction.
- The proposed project would implement energy management systems, energy saving fixtures, high performance windows, and possibly on-site renewable energy sources, such as solar panels.
- The proposed project design would incorporate cool and white roofing and "green" fiberglass insulation materials to reduce unwanted heat absorption and minimize energy consumption.

The proposed project would meet the objectives and overall intent of reducing greenhouse gases consistent with direction/measures of the California Air Pollution Control Officers Association and the California Climate Action Team. Project consistency with GHG reduction policies are in shown in **Tables 3-10** and **3-11**. Therefore, the proposed project would result in a less-than-significant impact related to GHG reduction plans and policies.

TABLE 3-10: PROJECT CONSISTENCY WITH CLIMATE ACTION TEAM GREENHOUSE GAS EMISSION REDUCTION STRATEGIES

Strategy	Project Consistency
CALIFORNIA AIR RESOURCES BOARD	
Vehicle Climate Change Standards: AB 1493 required the state to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of climate change emissions emitted by passenger vehicles and light duty trucks. Regulations were adopted by the CARB in September 2004.	**Not Applicable**: These are CARB enforced standards for vehicle manufacturing. Therefore, this strategy is not applicable to the project.
Diesel Anti-Idling: The CARB adopted a measure to limit diesel-fueled commercial motor vehicle idling in July 2004.	**Consistent**: Current State law restricts diesel truck idling to five minutes or less. Diesel trucks making deliveries to the project site would be subject to this State-wide law. Construction vehicles would also subject to this regulation.
Hydrofluorocarbon Reduction: 1) Ban retail sale of HFC in small cans. 2) Require that only low GWP refrigerants be used in new vehicular systems. 3) Adopt specifications for new commercial refrigeration. 4) Add refrigerant leak-tightness to the pass criteria for vehicular inspection and maintenance programs. 5) Enforce federal ban on releasing HFCs.	**Not Applicable**: This strategy applies to the sale, manufacturing and regulation of consumer products. Therefore, this strategy is not applicable to the project.
Alternative Fuels: Biodiesel Blends: CARB would develop regulations to require the use of 1 to 4 percent biodiesel displacement of California diesel fuel.	**Not Applicable**: These are CARB strategies for regulating the use of alternative fuels and increasing heavy duty vehicle efficiency. Therefore, this strategy is not applicable to the project.
Alternative Fuels: Ethanol: Increased use of E-85 fuel.	
Heavy-Duty Vehicle Emission Reduction Measures: Increased efficiency in the design of heavy duty vehicles and an education program for the heavy duty vehicle sector.	
Achieve 50 Percent Statewide Recycling Goal: Achieving the State's 50 percent waste diversion mandate as established by the Integrated Waste Management Act of 1989, (AB 939, Sher, Chapter 1095, Statutes of 1989), will reduce climate change emissions associated with energy intensive material extraction and production as well as methane emission from landfills.	**Consistent**: The proposed project will contain easily accessible recycling areas dedicated to the collection and storage of non-hazardous materials for recycling, including paper, corrugated cardboard, glass, plastics, metals and landscaping debris. During construction, at least 50 percent of non-hazardous construction and demolition debris will be recycled and/or salvaged.
Zero Waste – High Recycling: Efforts to exceed the 50 percent goal would allow for additional reductions in climate change emissions.	
DEPARTMENT OF FORESTRY	
Urban Forestry: A new statewide goal of planting 5 million trees in urban areas by 2020 would be achieved through the expansion of local urban forestry programs.	**Consistent**: The project would include the planting of new trees on the project site.

TABLE 3-10: PROJECT CONSISTENCY WITH CLIMATE ACTION TEAM GREENHOUSE GAS EMISSION REDUCTION STRATEGIES

Strategy	Project Consistency
DEPARTMENT OF WATER RESOURCES	
Water Use Efficiency: Approximately 19 percent of all electricity, 30 percent of all natural gas, and 88 million gallons of diesel are used to convey, treat, distribute and use water and wastewater. Increasing the efficiency of water transport and reducing water use would reduce greenhouse gas emissions. Use both potable and non-potable water to maximum extent practicable; low flow appliances (i.e., toilets, dishwashers, showerheads, washing machines, etc); automatic shut off valves for sinks in restrooms; drought resistant landscaping; Place "Save Water" signs near water faucets.	**Consistent**: The project will comply with the City's Green Building Ordinance, which includes energy efficiency requirements to exceed Title 24 standards. The proposed project will be 20 percent more effective than required by Title 24 standards. The project will include storm water infiltration and detention basins to manage storm water runoff and limit disruption and pollution of natural water flows. In addition, the proposed project's landscaping would be required to comply with the City's Water-Efficient Landscape and Irrigation Standards. Landscaping will use water efficient plant species and native drought tolerant plants.
ENERGY COMMISSION (CEC)	
Building Energy Efficiency Standards in Place and in Progress: Public Resources Code 25402 authorizes the CEC to adopt and periodically update its building energy efficiency standards (that apply to newly constructed buildings and additions to and alterations to existing buildings).	**Consistent**: The project will comply with the City's Green Building Ordinance, which requires that the project exceed Title 24 standards. The proposed project will be 20 percent more effective than required by Title 24 standards.
Appliance Energy Efficiency Standards in Place and in Progress: Public Resources Code 25402 authorizes the Energy Commission to adopt and periodically update its appliance energy efficiency standards (that apply to devices and equipment using energy that are sold or offered for sale in California).	**Consistent**: The project will implement energy management systems, energy saving fixtures and high performance windows.
Fuel-Efficient Replacement Tires & Inflation Programs: State legislation established a statewide program to encourage the production and use of more efficient tires.	**Not Applicable**: This strategy is aimed at manufacturers and sellers of tires. Therefore, this strategy is not applicable to the project.
Municipal Utility Energy Efficiency Programs/Demand Response: Includes energy efficiency programs, renewable portfolio standard, combined heat and power, and transitioning away from carbon-intensive generation.	**Consistent**: The project will provide separate HVAC units for each dwelling unit and for common areas, thus providing a high level of thermal comfort controllability and satisfaction. The project will be constructed adjacent to the existing golf course, which will allow utilization of existing greenery as a heat absorption source. Thus, air-conditioning and energy usage will be lowered.
Municipal Utility Renewable Portfolio Standard: California's Renewable Portfolio Standard (RPS), established in 2002, requires that all load serving entities achieve a goal of 20 percent of retail electricity sales from renewable energy sources by 2017, within certain cost constraints.	
Municipal Utility Combined Heat and Power: Cost effective reduction from fossil fuel consumption in the commercial and industrial sector through the application of on-site power production to meet both heat and electricity loads.	
Alternative Fuels: Non-Petroleum Fuels: Increasing the use of non-petroleum fuels in California's transportation sector, as recommended as recommended in the CEC's 2003 and 2005 Integrated Energy Policy Reports.	**Not Applicable**: These strategies are aimed at the transportation sector. Therefore, this strategy is not applicable to the project.
Alternative Fuels: General: The project shall include the necessary infrastructure to encourage the use of alternative fuel vehicles (e.g., electric vehicle charging facilities and conveniently located alternative fueling stations.	**Consistent**: The project will provide a facility for low-emitting and fuel efficient vehicles.

TABLE 3-10: PROJECT CONSISTENCY WITH CLIMATE ACTION TEAM GREENHOUSE GAS EMISSION REDUCTION STRATEGIES	
Strategy	**Project Consistency**
BUSINESS, TRANSPORTATION, AND HOUSING	
Smart Land Use and Intelligent Transportation Systems (ITS): Smart land use strategies encourage jobs/housing proximity, promote transit-oriented development, and encourage high-density residential/commercial development along transit corridors.	**Consistent**: The project would be located in proximity to basic commercial services and public transit opportunities. The project site has pedestrian access to banks, groceries and restaurants within half a mile. Future residences will also have easy access to the Metropolitan Transit Authority bus service stops along adjacent roadways.
STATE AND CONSUMER SERVICE AGENCY (DEPARTMENT OF GENERAL SERVICES)	
Green Buildings Initiative: Green Building Executive Order, S-20-04 (CA 2004), sets a goal of reducing energy use in public and private buildings by 20 percent by the year 2015, as compared with 2003 levels. The Executive Order and related action plan spell out specific actions state agencies are to take with state-owned and -leased buildings. The order and plan also discuss various strategies and incentives to encourage private building owners and operators to achieve the 20 percent target.	**Consistent**: The project will include installation of occupancy sensors that will shut-off unnecessary/unused lights to decrease energy consumption. Photocells will be provided in daylight accessible spaces that will shut off unnecessary/unused lights within 15 feet of a window or skylight to conserve energy. The project will also incorporate cool and white roofing and “green” fiberglass insulation materials which serve to reduce unwanted heat absorption and minimize energy consumption.
SOURCE: TAHA, 2012.	

TABLE 3-11: PROJECT CONSISTENCY WITH CAPCOA GREENHOUSE GAS REDUCTION MEASURES	
CAPCOA-Suggested Measure	**Project Consistency**
T1: Bike Parking at Multi-Unit Residential: Long term bicycle parking is provided at apartment complexes or condominiums without garages (e.g., one long-term bicycle parking space for each unit without a garage). Long term facilities shall consist of one of the following: a bike locker, a locked room with standard racks and access limited to bicyclists only, or a standard rack in a location that is staffed and/or monitored by video surveillance 24 hours per day).	**Consistent**: The proposed project would provide bicycle storage on the project site.
T2: Proximity to Bike Path/ Bike Lanes: Project is located within 0.5 miles of an existing/planned Class I or Class II bike lane and project design includes a network that connects the project uses to the existing offsite facility. Project design includes a designated bicycle route connecting all units, onsite bicycle parking facilities, offsite bicycle facilities, site entrances, and primary building entrances to existing Class I or Class II bike lane(s) within 0.5 miles. Bicycle route connects to all streets contiguous with project site.	**Consistent**: The project would provide an on-site bicycle storage area.
T3: Minimum Parking: Provide minimum amount of parking required.	**Consistent**: The proposed project would include 613 subterranean parking spaces underneath the senior housing community. The parking structure will include 13 handicapped parking spaces to comply with the Americans with Disabilities Act. The 613 parking spaces will exceed the 500 parking spaces required by the LAMC for the senior housing project.

TABLE 3-11: PROJECT CONSISTENCY WITH CAPCOA GREENHOUSE GAS REDUCTION MEASURES	
CAPCOA-Suggested Measure	**Project Consistency**
T4: Residential Density: Employ Sufficient Density for New Residential Development to Support the Use of Public Transit. Project provides safe and convenient bicycle/pedestrian access to all transit stop(s) within 0.25 miles of project broader.	**Consistent**: The proposed project is located in a densely developed area. The project site is adjacent to and accessible from nearby commercial uses (e.g., retail, restaurants, etc.) and other amenities along the Ventura Boulevard corridor, as well as adjacent to public bus transit stops. Pedestrian walkways within the development site and adjacent sidewalks will be landscaped to provide a “friendly” walking environment.
T5: Suburban Mixed-Use: Have at least three of the following on site and/offsite within 0.25 miles: Residential Development, Retail Development, Park, Open Space, or Office.	**Consistent**: The proposed project is located in a densely developed area. The project site is adjacent to and accessible from nearby commercial uses (e.g., retail, restaurants, etc.). The proposed project will also include outdoor amenities, such as lap pool and children’s playground.
T6: Wood Burning Fireplaces/ Stoves: Project does not feature fireplaces or wood burning stoves.	**Consistent**: The project would not include fireplaces or wood burning stoves.
T7: Low-Water Use Appliances: Require the installation of low-water Use Appliances.	**Consistent**: **Consistent**: The proposed project would implement energy management system and energy saving fixtures.
T8: Landscaping: Project shall use drought resistant native trees, trees with low emissions and high carbon sequestration potential.	**Consistent**: The proposed project’s landscaping would be required to comply with the City’s Water-Efficient Landscape and Irrigation Standards. Landscaping will include water efficient and native drought tolerant plant.
T9: LEED Certification: Promote building approach to sustainability by recognizing performance in sustainable site development, water savings, energy efficiency, materials selection, and indoor environment quality.	**Consistent**: The proposed project intends to achieve LEED certification.
T10: Energy Star Roof: Project installs Energy Star labeled roof materials, where feasible.	**Consistent**: The proposed project will incorporates cool and white roofing and “green” fiberglass insulation materials.
T11: Exceed Title 24: Project exceeds title 24 requirements.	**Consistent**: The project plans to be 20 percent more effective than required by California Title 24 Energy Design standards.
T12: Energy Efficient Appliance Standard: Project uses energy efficient appliances.	**Consistent**: The proposed project would implement energy management system, energy saving fixtures and high performance windows.
T13: Green Building Materials: Project uses materials which are resource efficient and recycled, with long life cycles and manufactured in environmentally friendly way.	**Consistent**: The project will use regional construction materials. At least 50 percent of non-hazardous construction and demolition debris will be recycled and/or salvaged.
SOURCE: TAHA, 2012.	

4.0 NOISE & VIBRATION

This section evaluates noise and vibration levels associated with the implementation of the proposed project. The noise and vibration analysis in this section assesses existing noise and vibration conditions at the project site and its vicinity, as well as short-term construction and long-term operational noise and vibration impacts associated with the proposed project. Mitigation measures for potentially significant impacts are recommended when appropriate to reduce noise and vibration levels.

4.1 NOISE AND VIBRATION CHARACTERISTICS AND EFFECTS

4.1.1 Noise

Characteristics of Sound

Sound is technically described in terms of the loudness (amplitude) and frequency (pitch). The standard unit of measurement for sound is the decibel (dB). The human ear is not equally sensitive to sound at all frequencies. The "A-weighted scale," abbreviated dBA, reflects the normal hearing sensitivity range of the human ear. On this scale, the range of human hearing extends from approximately 3 to 140 dBA. **Figure 4-1** provides examples of A-weighted noise levels from common sounds.

Noise Definitions

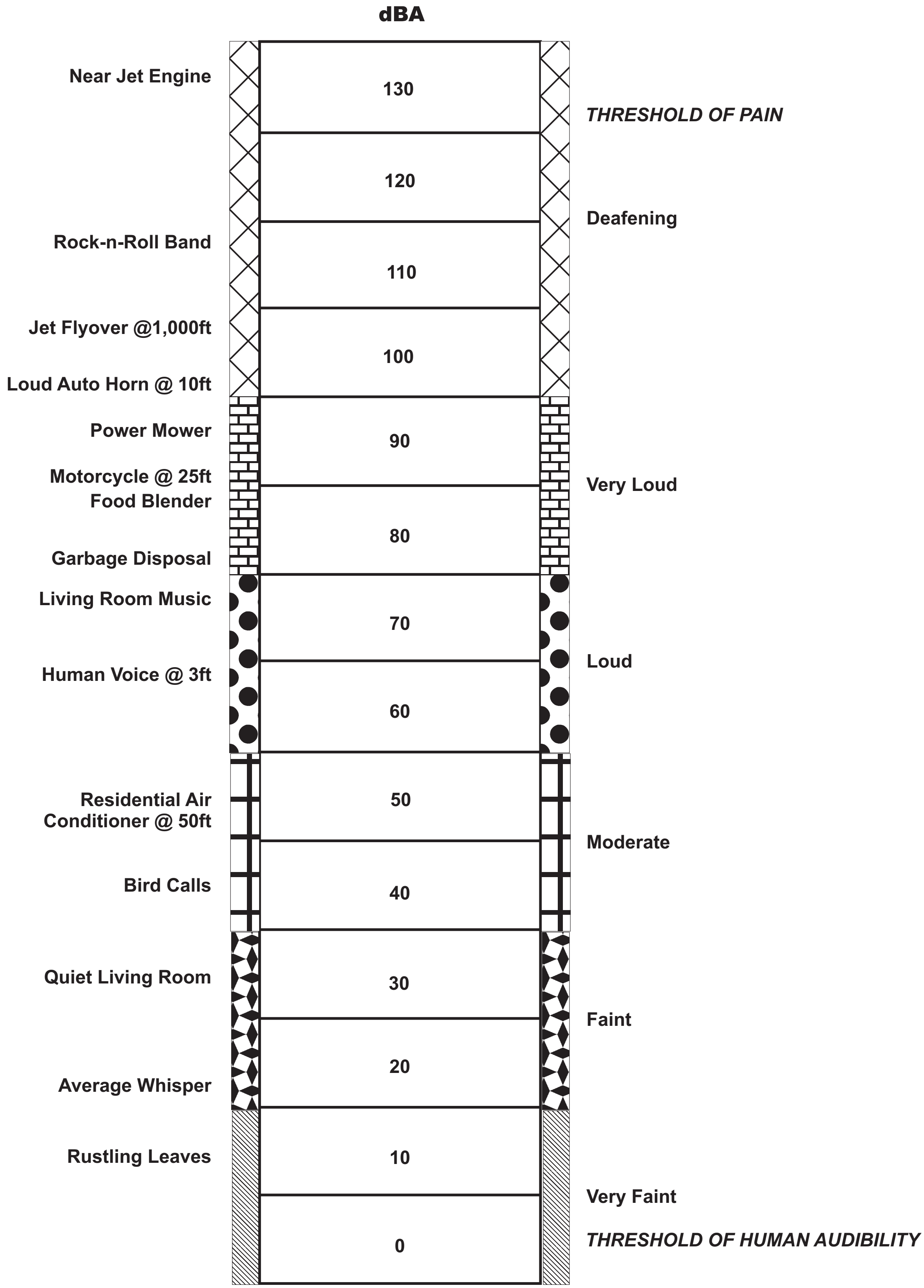
This noise analysis discusses sound levels in terms of Community Noise Equivalent Level (CNEL) and Equivalent Noise Level (L_{eq}).

Community Noise Equivalent Level. CNEL is an average sound level during a 24-hour period. CNEL is a noise measurement scale, which accounts for noise source, distance, single event duration, single event occurrence, frequency and time of day. Human reaction to sound between 7:00 p.m. and 10:00 p.m. is as if the sound were actually 5 decibels higher than if it occurred from 7:00 a.m. to 7:00 p.m. From 10:00 p.m. to 7:00 a.m., humans perceive sound as if it were 10 dBA higher due to the lower background level. Hence, the CNEL is obtained by adding an additional 5 dBA to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and 10 dBA to sound levels in the night before 7:00 a.m. and after 10:00 p.m. Because CNEL accounts for human sensitivity to sound, the CNEL 24-hour figure is always a higher number than the actual 24-hour average.

Equivalent Noise Level. L_{eq} is the average noise level on an energy basis for any specific time period. The L_{eq} for one hour is the energy average noise level during the hour. The average noise level is based on the energy content (acoustic energy) of the sound. L_{eq} can be thought of as the level of a continuous noise which has the same energy content as the fluctuating noise level. The equivalent noise level is expressed in units of dBA.

Effects of Noise

Noise is generally defined as unwanted sound. The degree to which noise can impact the human environment ranges from levels that interfere with speech and sleep (annoyance and nuisance) to levels that cause adverse health effects (hearing loss and psychological effects). Human response to noise is subjective and can vary greatly from person to person. Factors that influence individual response include the intensity, frequency, and pattern of noise, the amount of background noise present before the intruding noise, the nature of work or human activity that is exposed to the noise source.



SOURCE: Cowan, James P., *Handbook of Environmental Acoustics*

FIGURE 4-1

A-WEIGHTED DECIBEL SCALE

Audible Noise Changes

Studies have shown that the smallest perceptible change in sound level for a person with normal hearing sensitivity is approximately 3 dBA. A change of at least 5 dBA would be noticeable and would likely evoke a community reaction. A 10-dBA increase is subjectively heard as a doubling in loudness and would cause a community response.

Noise levels decrease as the distance from the noise source to the receiver increases. Noise generated by a stationary noise source, or “point source,” will decrease by approximately 6 dBA over hard surfaces (e.g., pavement) and 7.5 dBA over soft surfaces (e.g., grass) for each doubling of the distance. For example, if a noise source produces a noise level of 89 dBA at a reference distance of 50 feet, then the noise level would be 83 dBA at a distance of 100 feet from the noise source, 77 dBA at a distance of 200 feet, and so on. Noise generated by a mobile source will decrease by approximately 3 dBA over hard surfaces and 4.5 dBA over soft surfaces for each doubling of the distance.

Generally, noise is most audible when traveling by direct line-of-sight.[15] Barriers, such as walls, berms, or buildings, that break the line-of-sight between the source and the receiver greatly reduces noise levels from the source since sound can only reach the receiver by bending over the top of the barrier (diffraction). Sound barriers can reduce sound levels by up to 20 dBA. However, if a barrier is not high or long enough to break the line-of-sight from the source to the receiver, its effectiveness is greatly reduced. In situations where the source or the receiver is located three meters (approximately ten feet) above the ground, or whenever the line-of-sight averages more than three meters above the ground, sound levels would be reduced by approximately 3 dBA for each doubling of distance.

4.1.2 Vibration

Characteristics of Vibration

Vibration is an oscillatory motion through a solid medium in which the motion’s amplitude can be described in terms of displacement, velocity, or acceleration. Vibration can be a serious concern, causing buildings to shake and rumbling sounds to be heard. In contrast to noise, vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of vibration are trains, buses on rough roads, and construction activities, such as blasting, pile driving, and heavy earth-moving equipment.

Vibration Definitions

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings and is usually measured in inches per second. The root mean square (RMS) amplitude is most frequently used to describe the affect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (Vdb) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration.[16]

[15] Line-of-sight is an unobstructed visual path between the noise source and the noise receptor.
[16] Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, May 2006.

Effects of Vibration

High levels of vibration may cause physical personal injury or damage to buildings. However, 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 or interfere with equipment that is highly sensitive to vibration (e.g., electron microscopes).

To counter the effects of vibration, the FTA has published guidance relative to vibration impacts. According to the FTA, fragile buildings can be exposed to vibration levels of 0.3 inches per second PPV without experiencing structural damage.[17]

Perceptible Vibration Changes

In contrast to noise, vibration is not a phenomenon that most people experience every day. The background vibration velocity level in residential areas is usually 50 Vdb RMS or lower, well below the threshold of perception for humans which is around 65 Vdb RMS.[18] Most perceptible indoor vibration is caused by sources within buildings, such as operation of mechanical equipment, movement of people, or slamming of doors. Typical outdoor sources of perceptible vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If the roadway is smooth, the vibration from traffic is rarely perceptible.

4.2 REGULATORY SETTING

4.2.1 Noise

Noise Element of the General Plan

The City of Los Angeles has developed a Noise Element of the General Plan to guide in the development of noise regulations.[19] It addresses noise mitigation regulations, strategies and programs and delineates federal, State, and City jurisdiction relative to rail, automotive, aircraft and nuisance noise. Programs included in the Noise Element that are relevant to the proposed project include:

- For a proposed development project that is deemed to have a potentially significant noise impact on noise sensitive uses, as defined by this chapter, require mitigation measures, as appropriate, in accordance with CEQA and City procedures.
- When issuing discretionary permits for a proposed noise-sensitive use (as defined by this chapter) or a subdivision of four or more detached single-family units and which use is determined to be potentially significantly impacted by existing or proposed noise sources, require mitigation measures, as appropriate, in accordance with procedures set forth in the CEQA so as to achieve an interior noise level of a CNEL of 45 dB, or less, in any habitable room, as required by Los Angeles Municipal Code Section 91.
- Use, as appropriate, the "Guidelines for Noise Compatible Land Use", or other measures that are acceptable to the city, to guide land use and zoning reclassification, subdivision, conditional use and use variance determinations and environmental assessment considerations, especially relative to sensitive uses, as defined by this chapter, within a CNEL of 65 dB airport noise

[17] Federal Railway Administration, *High-Speed Ground Transportation Noise and Vibration Impact Assessment*, October 2005.
[18] Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, May 2006.
[19] City of Los Angeles, Noise Element of the Los Angeles City General Plan, February 3, 1999.

exposure areas and within a line of sight of freeways, major highways, railroads or truck haul routes.

The City of Los Angeles Municipal Code

The City of Los Angeles has established policies and regulations concerning the generation and control of noise that could adversely affect its citizens and noise sensitive land uses. Regarding construction, Section 41.40 (Noise Due to Construction, Excavation Work – When Prohibited) of the Los Angeles Municipal Code (LAMC) indicates that no construction or repair work shall be performed between the hours of 9:00 p.m. and 7:00 a.m., since such activities would generate loud noises and disturb persons occupying sleeping quarters in any adjacent dwelling, hotel, apartment or other place of residence. No person, other than an individual home owner engaged in the repair or construction of his/her single-family dwelling, shall perform any construction or repair work of any kind or perform such work within 500 feet of land so occupied before 8:00 a.m. or after 6:00 p.m. on any Saturday or on a federal holiday, nor at any time on any Sunday. Under certain conditions, the City may grant a waiver to allow limited construction activities to occur outside of the limits described above.

Section 112.05 (Maximum Noise Level of Powered Equipment or Powered Hand Tools) of the LAMC also specifies the maximum noise level of powered equipment or powered hand tools. Any powered equipment or hand tool that produces a maximum noise level exceeding 75 dBA at a distance of 50 feet is prohibited. However, this noise limitation does not apply where compliance is technically infeasible. Technically infeasible means the above noise limitation cannot be met despite the use of mufflers, shields, sound barriers and/or any other noise reduction device or techniques during the operation of equipment.

4.2.1 Vibration

There are no adopted City standards for ground-borne vibration. The County of Los Angeles vibration standard is stated in Title 12 (Environmental Protection), Chapter 12.08 (Noise Control), Section 12.08.560 (Vibration) of the Los Angeles County Code. The County Code states that, "Operating or permitting the operation of any device that creates vibration which is above the vibration perception threshold of any individual at or beyond the property boundary of the source if on private property, or at 150 feet (46 meters) from the source if on a public space or public right-of-way is prohibited. The perception threshold shall be a motion velocity of 0.01 in/sec over the range of 1 to 100 Hertz."

4.3 EXISTING SETTING

4.3.1 Existing Noise Environment

The existing noise environment of the project area is characterized by vehicular traffic and noises typical to a dense urban area (e.g., tennis facilities and sirens from the adjacent fire station). Sound measurements were taken using a SoundPro DL Sound Level Meter between 11:20 a.m. and 1:20 p.m. on January 12, 2012 to determine existing ambient daytime noise levels in the project vicinity. These readings were used to establish existing ambient noise conditions and to provide a baseline for evaluating construction noise impacts. As shown in **Table 4-1**, the existing ambient sound levels range between 53.3 and 68.6 dBA L_{eq}. Noise monitoring locations are shown in **Figure 4-2**.

A 24-hour sound measurement was taken from 10:30 a.m. Wednesday, January 18, 2012 to 10:30 a.m. Thursday, January 19, 2012. The recorded CNEL was 69.5 dBA.

LEGEND:

Disturbed Area

Sensitive Receptors

1. Christian Science Church
2. Single-Family Residence
3. Single-Family Residence
4. Single- and Multi-Family Residence
5. Single-Family Residence

APPROX. SCALE

N

0 250 500 FEET

SOURCE: ESRI and TAHA, 2012

Weddington Golf and Senior Housing Project
Air Quality and Noise Impact Report

taha 2011-077 PLANNING ASSOCIATES, INC.

FIGURE 4-2

NOISE MONITORING LOCATIONS

TABLE 4-1: EXISTING NOISE LEVELS		
Key to Figure 4-2	**Noise Monitoring Location**	**Sound Level (dBA, L_{eq})**
1	Christian Science Church – 4032 Whitsett Avenue	68.6
2	Single-Family Residence – 4118 Wilkinson Avenue	53.3
3	Single-Family Residence – 4202 Beeman Avenue	57.5
4	Single- and Multi-Family Residence – 12464 Sunswept Drive	66.5
5	Single-Family Residence – 4155 Bellaire Avenue	55.1
SOURCE: TAHA, 2012.		

4.3.2 Existing Vibration Environment

Similar to the environmental setting for noise, the vibration environment is dominated by traffic from nearby roadways. Heavy trucks can generate vibrations that vary depending on vehicle type, weight, and pavement conditions. As heavy trucks typically operate on major streets, existing vibration in the project vicinity is largely related to heavy truck traffic on the surrounding roadway network. Field observations indicate that truck travel is minimal on Whitsett Avenue. Vibration levels from adjacent roadways are not perceptible at the project site.

4.3.3 Sensitive Receptors

Noise- and vibration-sensitive land uses are locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Residences, schools, hospitals, guest lodging, libraries, and some passive recreation areas would each be considered noise- and vibration-sensitive and may warrant unique measures for protection from intruding noise. As shown in **Figure 3-3**, sensitive receptors near the project site include the following:

- Single- and multi-family residences located 120 feet to the east
- Christian Science Church located 180 feet to the southeast
- Single- and multi-family residences located 415 feet to the north
- Single-family residences located 595 feet to the south
- Single-family residences located 995 feet to the northwest

The above 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.

4.4 METHODOLOGY AND SIGNIFICANCE CRITERIA

4.4.1 Methodology

The noise and vibration analysis considers construction and operational sources. The noise level during the construction period at each receptor location was calculated by (1) making a distance adjustment to the construction source sound level and (2) logarithmically adding the adjusted construction noise source level to the ambient noise level. Reference noise levels for equipment were provided by the USEPA. Mobile source noise levels were estimated using guidance provided by the Federal Highway Administration. Operational vibration is qualitatively discussed based on guidance in the FTA Transit Noise and Vibration Impact Assessment. Construction vibration levels are estimated using equipment reference levels and propagation formulas provide by the FTA.

4.4.2 Significance Criteria

Based on the City of Los Angeles Noise Ordinance (LAMC Chapter XI), the City of Los Angeles *LA CEQA Thresholds Guide* (2006) and the State Land Use Compatibility Matrix,[20] the proposed project would result in significant noise impacts if it would generate noise levels in excess of the following thresholds.

Construction Phase Significance Criteria

A significant construction noise impact would result if:

- Construction activity would occur outside of the hours permitted by the City's Noise Ordinance (i.e., between the hours of 9:00 p.m. and 7:00 a.m. on weekdays, before 8:00 a.m. or after 6:00 p.m. on Saturday or any federal holiday, or anytime on Sunday);
- Construction activity would occur within 500 feet of a residential zone on Saturday unless an after-hours construction permit has been issued by the City. An after-hours permit could be issued by the City for low noise level construction activities (e.g., painting and interior improvements); and/or
- Construction activity would exceed existing ambient exterior noise levels by 5 dBA or more at a noise sensitive use.

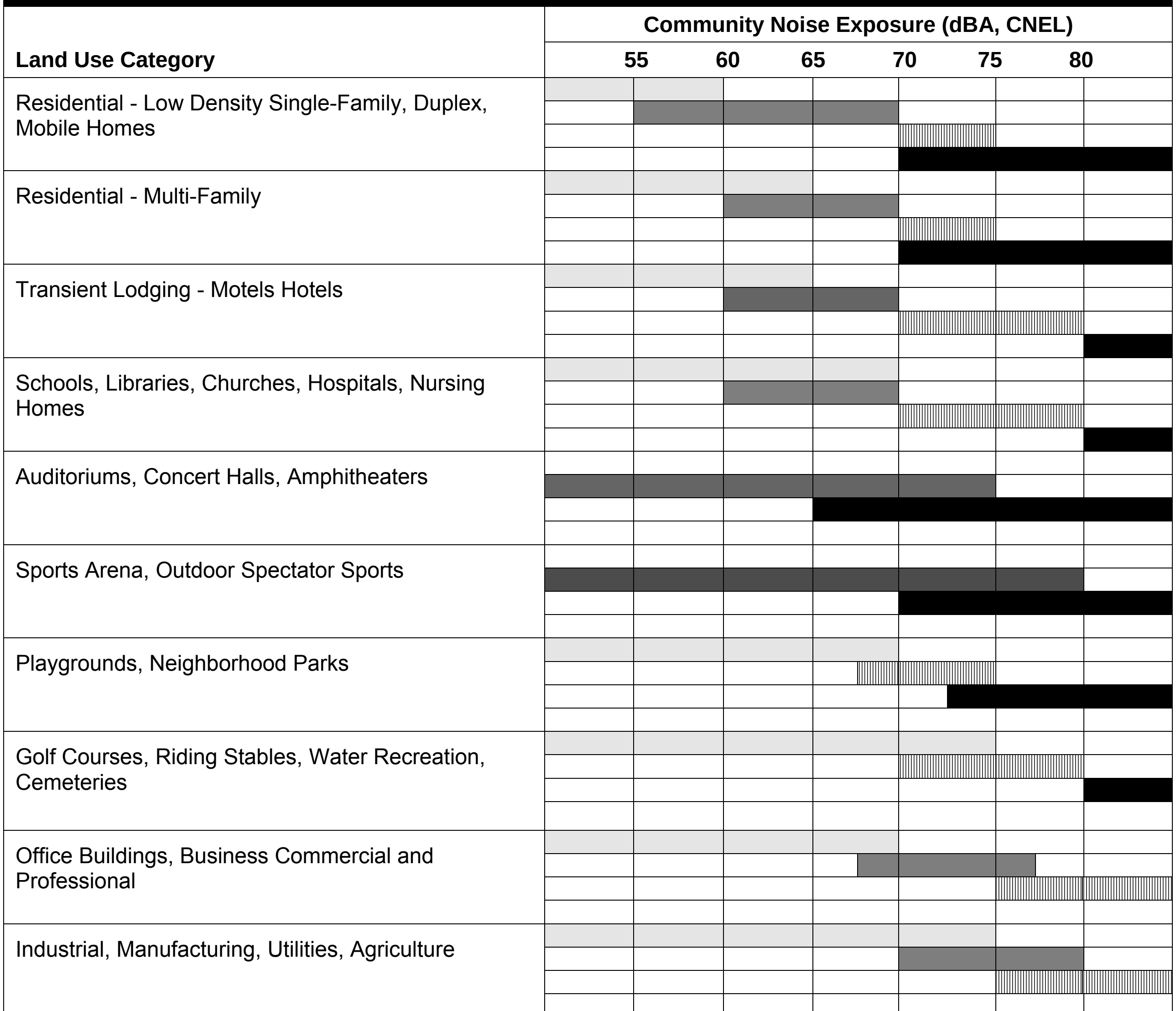
Operational Phase Significance Criteria

A significant operational noise impact would result if:

- The proposed project causes the ambient noise level measured at the property line of the affected uses to increase by 3 dBA CNEL to or within the "normally unacceptable" or "clearly unacceptable" category or any 5 dBA or more increase in noise level. As shown in **Table 4-2**, "normally unacceptable" ranges from 70 to 75 dBA CNEL for single- and multi-family residences, and 70 to 80 dBA CNEL for medical uses, which include hospitals and medical offices. "Clearly unacceptable" ranges from 70 to 85 dBA CNEL or greater for single- and multi-family residences, and 80 dBA CNEL or greater for medical uses; and/or
- The proposed project would expose new sensitive receptors to interior noise levels greater than 45 dBA.

[20]California Office of Noise Control, Department of Health Services.

TABLE 4-2: LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS



Normally Acceptable - Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

Conditionally Acceptable - New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply system or air conditioning will normally suffice.

Normally Unacceptable - New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable - New construction or development should generally not be undertaken.

SOURCE: California Office of Noise Control, Department of Health Services.

Vibration Significance Criteria

There are no adopted State or City of Los Angeles vibration standards. Based on federal guidelines, the proposed project would result in a significant construction or operational vibration impact if:

- The proposed project would expose buildings to the FTA building damage threshold level of 0.3 inches per second.[21]

4.5 ENVIRONMENTAL IMPACTS

4.5.1 Noise Impacts

Construction Impacts

General Construction Noise. Construction of the proposed project would result in temporary increases in ambient noise levels in the project area on an intermittent basis. The increase in noise would likely result in a temporary annoyance to nearby residents during the approximate 24-month construction schedule. Noise levels would fluctuate depending on the construction phase, equipment type and duration of use, distance between the noise source and receptor, and presence or absence of noise attenuation barriers.

Construction activities typically require the use of numerous pieces of noise-generating equipment. Typical noise levels from various types of equipment that may be used during construction are listed in **Table 4-3**. The table shows noise levels at distances of 50 and 100 feet from the construction noise source

TABLE 4-3: MAXIMUM NOISE LEVELS OF COMMON CONSTRUCTION MACHINES

	Noise Level (dBA) /a/	
Noise Source	**50 Feet**	**100 Feet**
Jackhammer	90	84
Crane	88	82
Street Paver	87	81
Backhoe	84	78
Street Compressor	81	75
Front-end Loader	80	74
Grader	87	81
Idling Haul Truck	89	83
Cement Mixer	82	76
Impact Pile Driving	101	95
Auger Drilling	77	71

/a/ Assumes a 6-dBA drop-off rate for noise generated by a "point source" and traveling over hard surfaces. Actual measured noise levels of the equipment listed in this table were taken at distances of ten and 30 feet from the noise source.
SOURCE: USEPA, *Noise from Construction Equipment and Operations, Building Equipment and Home Appliances*, PB 206717, 1971.

The noise levels shown in **Table 4-4** take into account the likelihood that more than one piece of construction equipment would be in operation at the same time and lists the typical overall noise levels that would be expected for each phase of construction. The highest noise levels are expected to occur during the grading/excavation and finishing phases of construction. A typical piece of noisy equipment is assumed to be active for 40 percent of the eight-hour workday (consistent with the USEPA studies of construction noise), generating a noise level of 89 dBA L_{eq} at a reference distance of 50 feet.

[21] Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, May 2006.

TABLE 4-4: TYPICAL OUTDOOR CONSTRUCTION NOISE LEVELS	
Construction Phase	**Noise Level At 50 Feet (dBA)**
Ground Clearing	84
Grading/Excavation	89
Foundations	78
Structural	85
Finishing	89
SOURCE: USEPA, *Noise from Construction Equipment and Operations, Building Equipment and Home Appliances*, PB 206717, 1971.	

The noise level during the construction period at each receptor location was calculated by (1) making a distance adjustment to the construction source sound level and (2) logarithmically adding the adjusted construction noise source level to the ambient noise level. The estimated construction noise levels at sensitive receptors are shown in **Table 4-5**. Noise levels related to construction activity would exceed the 5 dBA significance threshold at two of the five nearby sensitive receptors. The proposed project would result in a significant impact without incorporation of mitigation measures.

TABLE 4-5: CONSTRUCTION NOISE LEVELS – UNMITIGATED						
Key to Figure 4-3	**Sensitive Receptor**	**Distance (feet) /a/**	**Maximum Construction Noise Level (dBA) /b/**	**Monitored Existing Ambient (dBA, L_{eq}) /c/**	**Add New Ambient (dBA, L_{eq}) /d/**	**Increase /e/**
1	Christian Science Church – 4032 Whitsett Avenue	180	77.9	68.6	78.4	9.8
2	Single-Family Residence – 4118 Wilkinson Avenue	415	58.6	57.5	59.7	6.4
3	Single-Family Residence – 4202 Beeman Avenue	595	69.5	65.5	69.8	12.3
4	Single- and Multi-Family Residence – 12464 Sunswept Drive	753	66.4	66.5	69.5	3.0
5	Single-Family Residence – 4155 Bellaire Avenue	995	51.0	55.1	56.5	1.4

/a/ Distance of noise source from receptor.
/b/ Construction noise source's sound level at receptor location, with distance and building adjustment.
/c/ Pre-construction activity ambient sound level at receptor location.
/d/ New sound level at receptor location during the construction period, including noise from construction activity.
/e/ An incremental noise level increase of 5 dBA or more would result in a significant impact.
SOURCE: TAHA, 2012.

Pile Driving Noise. Pile driving activity would potentially occur during the construction process. Impact pile driving typically generates noise levels of 101 dBA L_{eq} at 50 feet. As shown in **Table 4-6**, the proposed project would increase the ambient noise levels during pile driving activity between 2.5 and 21.3 dBA L_{eq} at sensitive receptors in the project vicinity. Although temporary and intermittent, pile driving noise levels would exceed the 5 dBA significance threshold at three of the five nearby sensitive receptors. Therefore, the proposed project would result in a significant noise impact without mitigation.

TABLE 4-6: PILE DRIVING NOISE LEVELS - UNMITIGATED						
Key to Figure 4-2	**Sensitive Receptor**	**Distance (feet) /a/**	**Maximum Construction Noise Level (dBA) /b/**	**Monitored Existing Ambient (dBA, L_{eq}) /c/**	**Add New Ambient (dBA, L_{eq}) /d/**	**Increase /e/**
1	Christian Science Church – 4032 Whitsett Avenue	180	89.9	68.6	89.9	21.3
2	Single-Family Residence – 4118 Wilkinson Avenue	415	70.6	57.5	70.8	13.3
3	Single-Family Residence – 4202 Beeman Avenue	595	81.5	65.5	81.6	16.1
4	Single- and Multi-Family Residence – 12464 Sunswept Drive	753	65.4	66.5	69.0	2.5
5	Single-Family Residence – 4155 Bellaire Avenue	995	74.3	55.1	74.3	19.2

/a/ Distance of noise source from receptor.
/b/ Construction noise source's sound level at receptor location, with distance and building adjustment.
/c/ Pre-construction activity ambient sound level at receptor location.
/d/ New sound level at receptor location during the construction period, including noise from construction activity.
/e/ An incremental noise level increase of 5 dBA or more would result in a significant impact.
SOURCE: TAHA, 2012.

Construction Mitigation Measures

N1 All construction equipment shall be equipped with mufflers and other suitable noise attenuation devices.

N2 Grading and construction contractors shall use quieter equipment as opposed to noisier equipment (such as rubber-tired equipment rather than track equipment).

N3 Based on the Los Angeles Municipal Code (LAMC), construction activity shall be limited to between 7:00 a.m. and 9:00 p.m. on weekdays and 8:00 a.m. and 6:00 p.m. on Saturdays. Construction activity shall be prohibited on Sundays and federal holidays.

N4 All residential units located within 500 feet of the construction site shall be sent a notice regarding the construction schedule of the proposed project. A sign, legible at a distance of 50 feet shall also be posted at the construction site. All notices and the signs shall indicate the dates and duration of construction activities, as well as provide a telephone number where residents can inquire about the construction process and register complaints.

N5 A "noise disturbance coordinator" shall be established. The disturbance coordinator shall be responsible for responding to any local complaints about construction noise. The disturbance coordinator shall determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and shall be required to implement reasonable measures such that the complaint is resolved. All notices that are sent to residential units within 500 feet of the construction site and all signs posted at the construction site shall list the telephone number for the disturbance coordinator.

N6 The construction contractor shall utilize caisson drilling instead of pile driving on the project site.

Impacts After Mitigation

General Construction Noise. Mitigation Measure **N1** would reduce construction noise levels by 3 dBA. Mitigation Measures **N2** through **N5** would assist in attenuating construction noise levels. **Table 4-7** shows mitigated general construction noise levels. Construction noise levels would still exceed the significance threshold at various sensitive receptors. Therefore, general construction noise would result in a significant and unavoidable impact.

TABLE 4-7: CONSTRUCTION NOISE LEVELS – MITIGATED

Key to Figure 4-2	Sensitive Receptor	Distance (feet) /a/	Maximum Construction Noise Level (dBA) /b/	Monitored Existing Ambient (dBA, L_{eq}) /c/	Add New Ambient (dBA, L_{eq}) /d/	Increase /e/
1	Christian Science Church – 4032 Whitsett Avenue	180	74.9	68.6	75.8	7.2
2	Single-Family Residence – 4118 Wilkinson Avenue	415	55.6	57.5	59.7	2.2
3	Single-Family Residence – 4202 Beeman Avenue	595	66.5	65.5	69.0	3.5
4	Single- and Multi-Family Residence – 12464 Sunswept Drive	753	54.9	66.5	66.8	0.3
5	Single-Family Residence – 4155 Bellaire Avenue	995	54.8	55.1	58.0	2.9

/a/ Distance of noise source from receptor.
/b/ Construction noise source's sound level at receptor location, with distance and building adjustment.
/c/ Pre-construction activity ambient sound level at receptor location.
/d/ New sound level at receptor location during the construction period, including noise from construction activity.
/e/ An incremental noise level increase of 5 dBA or more would result in a significant impact.
SOURCE: TAHA, 2012.

Pile Driving Noise. Mitigation Measure **N6** would require caisson drilling instead of impact pile driving. Drilling would typically generate a noise level of 71 dBA L_{eq} at 50 feet. **Table 4-8** shows drilling noise levels. Construction noise levels would still exceed the significance threshold at various sensitive receptors. Therefore, drilling noise would result in a significant and unavoidable impact.

TABLE 4-8: CONSTRUCTION NOISE LEVELS – MITIGATED

Key to Figure 4-2	Sensitive Receptor	Distance (feet) /a/	Maximum Construction Noise Level (dBA) /b/	Monitored Existing Ambient (dBA, L_{eq}) /c/	Add New Ambient (dBA, L_{eq}) /d/	Increase /e/
1	Christian Science Church – 4032 Whitsett Avenue	180	65.9	68.6	70.5	1.9
2	Single-Family Residence – 4118 Wilkinson Avenue	415	46.6	68.6	68.6	0.0
3	Single-Family Residence – 4202 Beeman Avenue	595	57.5	57.5	60.5	3.0
4	Single- and Multi-Family Residence – 12464 Sunswept Drive	753	41.4	66.5	66.5	0.0
5	Single-Family Residence – 4155 Bellaire Avenue	995	50.3	55.1	56.3	1.2

/a/ Distance of noise source from receptor.
/b/ Construction noise source's sound level at receptor location, with distance and building adjustment.
/c/ Pre-construction activity ambient sound level at receptor location.
/d/ New sound level at receptor location during the construction period, including noise from construction activity.
/e/ An incremental noise level increase of 5 dBA or more would result in a significant impact.
SOURCE: TAHA, 2012.

Operational Impacts

Vehicular Noise. The predominant noise source for the proposed project is vehicular traffic. According to the traffic impact study prepared by Linscott, Law, and Greenspan, Engineers, the proposed project would generate 624 net daily vehicle trips.[22] **Table 4-9** shows peak hour mobile source noise levels along the analyzed roadway segments for future no project and future with project conditions. The greatest project-related noise increase would be 0.1 dBA L_{eq} along both Whitsett Avenue between Moorpark Street and Ventura and Moorpark Street between Whitsett and Coldwater Canyon Avenues. This would not exceed the most conservative roadway noise threshold of 3-dBA. Therefore, the proposed project would result in a less-than-significant related to future with project mobile noise levels.

TABLE 4-9: OPERATIONAL MOBILE SOURCE NOISE LEVELS – FUTURE WITH PROJECT CONDITIONS

Roadway	Estimated dBA, L_{eq}		
	No Project	Project (2016)	Project Impact
Whitsett Avenue between Riverside Drive and Moorpark Street	70.4	70.4	0
Whitsett Avenue between Moorpark Street and Ventura Boulevard	69.8	69.9	0.1
Moorpark Street between Coldwater Canyon and Whitsett Avenues	70.7	70.7	0
Moorpark Street between Whitsett Avenue and Laurel Canyon Boulevard	70.4	70.5	0.1
SOURCE: TAHA, 2012.			

Table 4-10 shows peak hour mobile source noise levels along the analyzed roadway segments for existing and existing plus project conditions. The greatest project-related noise increase would be 0.1 dBA L_{eq} along Whitsett Avenue. This would not exceed the most conservative roadway noise threshold of 3-dBA. Therefore, the proposed project would result in a less-than-significant related to existing plus project mobile noise levels.

TABLE 4-10: OPERATIONAL MOBILE SOURCE NOISE LEVELS – EXISTING PLUS PROJECT CONDITIONS

Roadway	Estimated dBA, L_{eq}		
	No Project	Project (2016)	Project Impact
Whitsett Avenue between Riverside Drive and Moorpark Street	69.9	70	0.1
Whitsett Avenue between Moorpark Street and Ventura Boulevard	69.3	69.4	0.1
Moorpark Street between Coldwater Canyon and Whitsett Avenues	70.2	70.2	0
Moorpark Street between Whitsett Avenue and Laurel Canyon Boulevard	70	70	0
SOURCE: TAHA, 2012.			

Stationary Noise. Potential stationary noise sources related to the long-term operations of the proposed project include mechanical equipment and parking areas. Mechanical equipment (e.g., parking structure air vents and HVAC equipment) would be designed so as to be located within an enclosure or confined to the rooftop of the proposed structure. HVAC equipment typically generates noise level of approximately 60 dBA L_{eq} at 50 feet. Mechanical equipment would be

[22]Linscott, Law & Greenspan, Engineers, *Studio City Senior Living Center Project Traffic Impact Study*, February 2, 2012.

screened from view as necessary to comply with provisions of the Municipal Code for on-site stationary sources. Operation of mechanical equipment would not be anticipated to increase ambient noise levels by 5 dBA or more. Therefore, the proposed project would result in a less-than-significant related to stationary equipment noise levels.

The proposed project would include common outdoor amenities such as a lap pool and a small children's playground. As shown in **Figure 2-1**, the pool and playground would generally be surrounded by proposed buildings and would not be in the direct line-of-site of any nearby sensitive receptors. It is anticipated that noise generated at these land uses would not be audible at adjacent noise-sensitive land uses. Therefore, the proposed project would result in a less-than-significant related to outdoor amenity noise levels.

Parking Noise. The proposed project would include 613 subterranean parking spaces underneath the senior housing community. Subterranean parking would be enclosed on all sides and noise generated by this facility would be inaudible at sensitive receivers. As such, parking structure activity would not be anticipated to incrementally increase ambient noise levels at sensitive receptors by 5 dBA or more. Therefore, the proposed project would result in a less-than-significant related to parking noise.

Land Use/Noise Compatibility. It is important that new residential land uses are located in noise compatible environments. Two residential buildings would be located at the project site's property line along Whitsett Avenue. The existing CNEL along Whitsett Avenue is 69.5 dBA. As shown in **Table 4-3**, this noise level is conditionally acceptable for multi-family residences. Conditionally acceptable means that new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply system or air conditioning will normally suffice. The project would be constructed to current design standards and regulations, and each unit would include an air conditioning system. Therefore, the proposed project would result in a less-than-significant related to land use and noise compatibility.

The project site is adjacent to a City of Los Angeles Fire Station No. 78. Noise generated by fire station activity was accounted for in the 24-hour measurement and the analysis presented above. Occasional siren activity may generate audible noise during daytime and nighttime hours. However, operational policy for the City's fire department is to limit the use of sirens and horns, as practical, when traveling past noise sensitive areas[23]. Due to the temporary and necessary nature of fire engine sirens, noise generated by this source is not considered a significant impact.

Operational Noise Mitigation Measures

Operational noise impacts would be less than significant, and no mitigation measures are required.

Impacts After Mitigation

Not Applicable. The project-related operational noise would result in a less-than-significant impact without mitigation.

[23]Department of City Planning Los Angeles, *Noise Element of the Los Angeles City General Plan*, February 3, 1999.

4.5.2 Vibration Impacts

General Construction Activity Vibration Impacts

Heavy-duty equipment activity on the project site would generate vibration. As shown in **Table 4-11**, typical heavy-duty equipment (e.g., a large bulldozer) generates vibration levels of 0.089 inches per second PPV at a distance of 25 feet. The closest sensitive receptor that has a potential impact from heavy equipment activity is a multi-family resident, along Whitsett Avenue and is located approximately 120 feet away from the project site. This sensitive receptor could experience vibration level of 0.008 inches per second PPV. Vibration levels would not exceed the potential building damage threshold of 0.3 inches per second PPV. Therefore, the proposed project would result in a less-than-significant related to general construction vibration.

TABLE 4-11: VIBRATION VELOCITIES FOR CONSTRUCTION EQUIPMENT	
Equipment	**PPV at 25 feet (Inches/Second) /a/**
Pile Driving (Impact)	0.644
Pile Driving (Sonic)	0.170
Large Bulldozer	0.089
Caisson Drilling	0.089
Loaded Trucks	0.076

/a/ Fragile buildings can be exposed to vibration levels of 0.5 inches per second PPV without experiencing structural damage.
SOURCE: Federal Transit Authority, *Transit Noise and Vibration Impact Assessment*, May 2006.

Pile Driving Vibration Impacts

Construction of the proposed project would require drilled or driven piles. Based on the noise analysis presented above, the construction contractor would be required to use a drilling technique to place piles as opposed to a driving, or impact, technique. Caisson drilling would generate a vibration level of 0.008 inches per second at the nearest sensitive receptor. Vibration levels would not exceed the potential building damage threshold of 0.3 inches per second PPV. Therefore, the proposed project would result in a less-than-significant related to drilling construction vibration.

Construction Vibration Mitigation Measures

Construction phase vibration impacts would be less than significant, and no mitigation measures are required.

Impacts After Mitigation

Not Applicable. Construction phase vibration impacts would result in a less-than-significant impact without mitigation.

Operational Vibration Impacts

The proposed project would not include significant stationary sources of vibration, such as heavy equipment operations. Operational vibration in the project vicinity would be generated by vehicular travel on the local roadways. However, similar to existing conditions, traffic-related vibration levels would not be perceptible by sensitive receptors. Thus, operational vibration would result in a less-than-significant impact.

Operational Vibration Mitigation Measures

Operational vibration impacts would be less than significant, and no mitigation measures are required.

Impacts After Mitigation

The project-related operational vibration would result in a less-than-significant impact.

4.6 CUMULATIVE IMPACTS

When calculating future traffic impacts, the traffic consultant took ten additional projects into consideration. Thus, the future traffic results without and with the proposed project already account for the cumulative impacts from these other projects. Since the noise impacts are generated directly from the traffic analysis results, the future without project and future with project noise impacts described in this report already reflect cumulative impacts.

Table 4-12 presents the cumulative increase in future traffic noise levels at various intersections (i.e., existing and future with project). The maximum cumulative roadway noise increase would be would be 0.6 dBA L_{eq} and would occur along Whitsett Avenue between Moorpark Street and Ventura Boulevard. Cumulative roadway noise levels would not exceed the 3 dBA threshold increment and would not result in a perceptible change in noise level. Therefore, the proposed project would not result in a cumulatively considerable impact related to roadway noise.

TABLE 4-12: CUMULATIVE MOBILE SOURCE NOISE LEVELS

	Estimated dBA, L_{eq}		
Roadway	**Existing**	**Project**	**Cumulative Impact**
Whitsett Avenue between Riverside Drive and Moorpark Street	69.9	70.4	0.5
Whitsett Avenue between Moorpark Street and Ventura Boulevard	69.3	69.9	0.6
Moorpark Street between Coldwater Canyon and Whitsett Avenues	70.2	70.7	0.5
Moorpark Street between Whitsett Avenue and Laurel Canyon Boulevard	70	70.5	0.5

SOURCE: TAHA, 2012.

The predominant vibration source near the project site is heavy truck travel on the local roadways. Neither the proposed project nor related projects would substantially increase heavy-duty vehicle traffic near the project site and would not cause a substantial increase in heavy-duty trucks on local roadways. The proposed project would not result in a cumulatively considerable impact related to roadway vibration.

Air Quality Appendix

A. Wind and Climate Information
B. Ambient Air Data
C. Construction Emissions – CalEEMod Output Files
D. Operational Emissions – CalEEMod Output Files
E. CO Hot Spot Analysis
F. SCAQMD Rule 403
G. Greenhouse Gas Emissions – CalEEMod Output Files

Appendix A

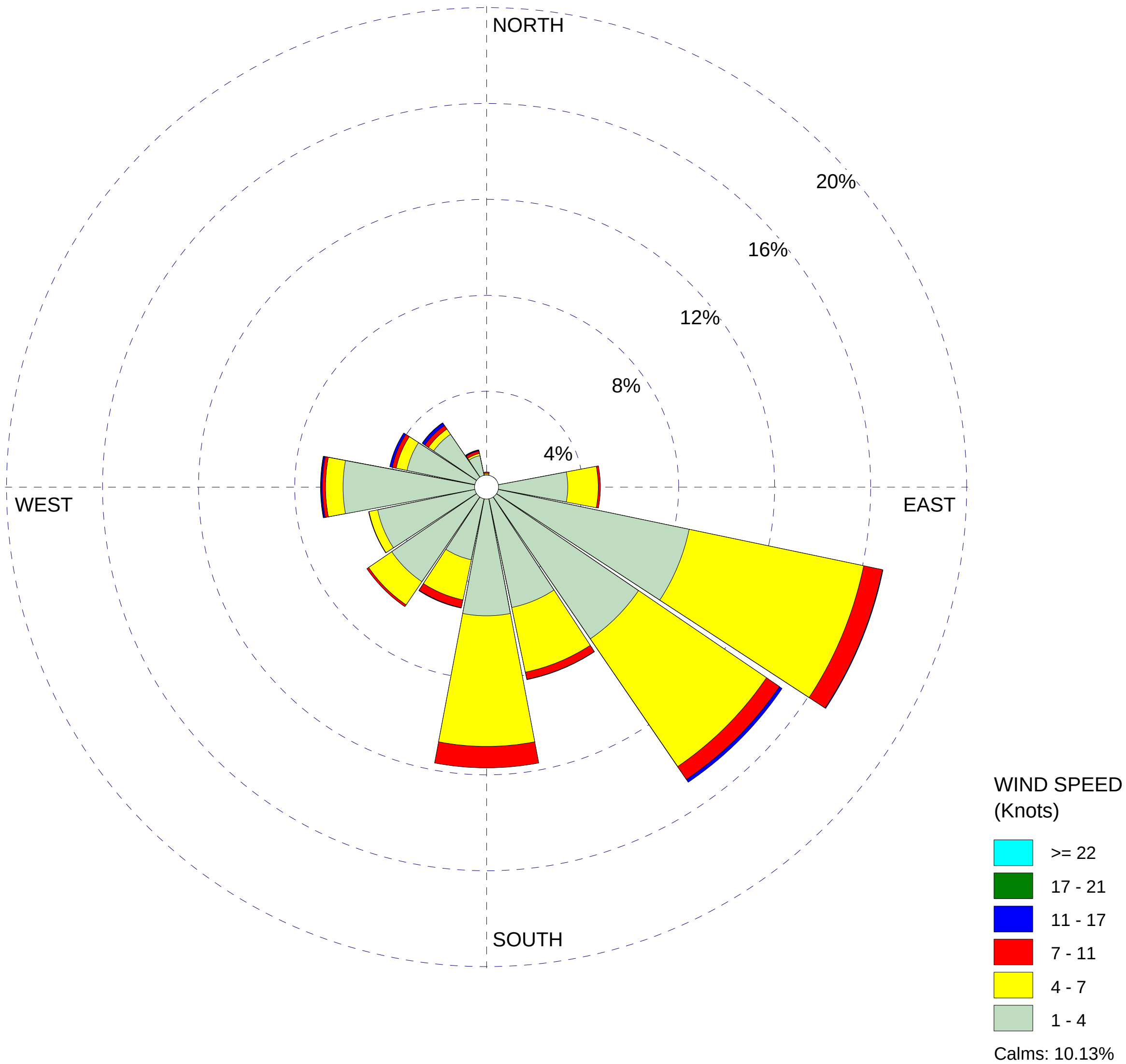
Wind and Climate Information

WIND ROSE PLOT:

Weddington Golf and Senior Housing Project

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:

10.13%

TOTAL COUNT:

8760 hrs.

AVG. WIND SPEED:

3.30 Knots

DATE:

2/29/2012

PROJECT NO.:

- 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.
- Monthly Precipitation Listings

Period of Record General Climate Summary - Precipitation

Station:(041194) BURBANK VALLEY PUMP PLA

From Year=1939 To Year=2006

	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	3.37	15.92	1995	0.00	1948	7.76	22/1943	6	4	2	1	0.1	4.7	1949
February	3.94	15.52	1998	0.00	1964	4.50	08/1993	6	4	2	1	0.0	0.0	1940
March	2.91	12.87	1978	0.00	1956	5.45	01/1983	6	4	2	1	0.0	0.5	1950
April	1.18	5.66	1965	0.00	1962	2.30	12/1956	4	2	1	0	0.0	0.0	1940
May	0.28	4.37	1998	0.00	1942	2.29	08/1977	2	1	0	0	0.0	0.0	1940
June	0.07	1.04	1993	0.00	1940	1.01	05/1993	1	0	0	0	0.0	0.0	1940
July	0.01	0.21	1986	0.00	1940	0.18	12/1992	0	0	0	0	0.0	0.0	1940
August	0.11	2.97	1977	0.00	1940	2.86	17/1977	1	0	0	0	0.0	0.0	1940
September	0.20	3.39	1976	0.00	1940	1.43	10/1976	1	1	0	0	0.0	0.0	1940
October	0.59	7.26	2004	0.00	1953	3.00	19/2004	2	1	0	0	0.0	0.0	1940
November	1.54	10.63	1965	0.00	1948	5.28	29/1970	3	2	1	0	0.0	0.0	1940
December	2.30	8.07	1940	0.00	1950	5.30	29/1965	5	3	2	1	0.0	0.0	1939
Annual	16.51	39.77	1983	3.52	1947	7.76	19430122	36	23	10	5	0.1	4.7	1949
Winter	9.62	32.33	2005	1.81	1961	7.76	19430122	17	12	6	3	0.1	4.7	1949
Spring	4.37	18.19	1983	0.00	1997	5.45	19830301	12	7	3	1	0.0	0.5	1950
Summer	0.19	2.97	1977	0.00	1940	2.86	19770817	2	0	0	0	0.0	0.0	1940
Fall	2.33	11.38	1965	0.00	1980	5.28	19701129	6	4	2	1	0.0	0.0	1940

Table updated on Jul 28, 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

- 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.
- Monthly Precipitation Listings

Period of Record General Climate Summary - Temperature

Station:(041194) BURBANK VALLEY PUMP PLA

From Year=1939 To Year=2006

	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	67.3	41.6	54.4	93	31/2003	22	29/1979	63.4	2003	45.1	1949	0.1	0.0	1.7	0.0
February	68.8	43.6	56.2	92	16/1977	27	15/1942	61.9	1954	50.7	1949	0.2	0.0	0.6	0.0
March	70.4	45.7	58.0	98	26/1988	22	07/1980	64.5	2004	52.7	1952	0.4	0.0	0.4	0.0
April	73.9	49.0	61.5	105	06/1989	32	05/1978	68.1	1989	53.4	1967	1.7	0.0	0.0	0.0
May	76.7	53.4	65.1	107	29/1984	39	21/1975	71.8	1984	60.6	1998	2.4	0.0	0.0	0.0
June	81.5	57.2	69.3	111	27/1976	43	14/1943	77.7	1981	64.0	1944	4.8	0.0	0.0	0.0
July	88.5	61.0	74.7	108	26/1943	45	02/1979	79.7	1984	69.0	1944	13.6	0.0	0.0	0.0
August	89.2	61.3	75.2	111	26/1944	46	28/1975	80.4	1994	71.7	1948	14.6	0.0	0.0	0.0
September	87.2	59.1	73.2	113	12/1971	43	26/1941	81.4	1984	67.3	1986	11.8	0.0	0.0	0.0
October	81.0	53.3	67.1	108	01/1980	33	30/1971	72.3	1991	62.7	2002	5.9	0.0	0.0	0.0
November	73.5	45.9	59.7	98	03/1976	29	30/1975	65.0	1949	54.0	1994	1.0	0.0	0.2	0.0
December	68.0	41.7	54.9	92	03/1958	22	08/1978	59.6	1958	49.3	1971	0.0	0.0	1.4	0.0
Annual	77.2	51.1	64.1	113	19710912	22	19781208	66.7	1984	61.9	1944	56.5	0.0	4.2	0.0
Winter	68.1	42.3	55.2	93	20030131	22	19781208	59.1	1981	48.6	1949	0.3	0.0	3.6	0.0
Spring	73.7	49.4	61.5	107	19840529	22	19800307	66.1	1993	58.2	1999	4.4	0.0	0.4	0.0
Summer	86.4	59.8	73.1	111	19440826	43	19430614	77.3	1981	69.1	1944	33.0	0.0	0.0	0.0
Fall	80.6	52.8	66.7	113	19710912	29	19751130	70.2	1991	63.9	1973	18.7	0.0	0.2	0.0

Table updated on Jul 28, 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

California Home ARB: Home Search Site Map Links Software Contact Us AQD: Home

Welcome to California

Air Resources Board

iADAM

Highest 4 Daily Maximum Hourly Ozone Measurements

Burbank-W Palm Avenue

FAQs

Year:	2008		2009		2010	
	Date	Measurement	Date	Measurement	Date	Measurement
First High:	May 18	0.133	Aug 31	0.145	Sep 26	0.111
Second High:	Jun 21	0.122	Aug 27	0.121	Sep 4	0.103
Third High:	Aug 2	0.118	Jul 19	0.118	Jun 5	0.096
Fourth High:	Jun 22	0.117	May 17	0.108	Jul 14	0.092
# Days Above State Standard:		20		16		3
California Designation Value:		0.14		0.13		0.12
Expected Peak Day Conc.:		0.137		0.125		0.120
# Days Above Nat'l Standard:		*1*		*1*		*0*
National Design Value:		*0.138*		*0.121*		*0.121*
Year Coverage:		98		97		92

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

Burbank-W Palm Avenue

FAQs

Year:	2008		2009		2010	
	Date	Measurement	Date	Measurement	Date	Measurement
First High:	Nov 13	0.105	Aug 31	0.088	Jan 7	0.082
Second High:	Oct 29	0.095	Nov 2	0.083	Aug 26	0.069
Third High:	Jun 20	0.094	Mar 18	0.077	Sep 24	0.069
Fourth High:	Oct 27	0.090	Oct 25	0.075	Jan 6	0.069
# Days Above State Standard:		0		0		0
Annual Average:		0.029		0.027		0.024
Year Coverage:		97		85		76

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.

Highest 4 Daily Maximum 8-Hour Ozone Averages

Burbank-W Palm Avenue

Year:	2008		2009		2010	
	Date	8-Hr Average	Date	8-Hr Average	Date	8-Hr Average
National:						
First High:	May 18	0.109	Aug 31	0.096	Jun 5	0.084
Second High:	Jun 21	0.095	Jul 19	0.094	Sep 26	0.079
Third High:	Jun 15	0.093	Aug 29	0.090	Sep 4	0.078
Fourth High:	Aug 2	0.092	Jul 18	0.086	Sep 25	0.076
California:						
First High:	May 18	0.110	Aug 31	0.097	Jun 5	0.084
Second High:	Jun 21	0.095	Jul 19	0.095	Sep 26	0.080
Third High:	Jun 15	0.094	Aug 29	0.090	Sep 4	0.079
Fourth High:	Aug 2	0.092	Jul 18	0.086	Sep 25	0.077
National:						
# Days Above '08 Nat'l Std.:		17		14		4
'08 Nat'l Std. Design Value:		0.092		0.088		0.084
National Year Coverage:		98		98		93
California:						
# Days Above State Standard:		34		28		9
California Designation Value:		0.110		0.097		0.097
Expected Peak Day Conc.:		0.110		0.101		0.098
California Year Coverage:		97		97		92

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

Highest 4 Daily Maximum 8-Hour Carbon Monoxide Averages

Burbank-W Palm Avenue

FAQs

Year:	2008		2009		2010	
	Date	8-Hr Average	Date	8-Hr Average	Date	8-Hr Average
National:						
First High:	Feb 9	2.48	Jan 1	2.89	Dec 4	2.35
Second High:	Nov 14	2.41	Nov 26	2.50	Jan 8	2.33
Third High:	Nov 22	2.40	Jan 8	2.39	Dec 3	2.30
Fourth High:	Nov 18	2.28	Jan 7	2.29	Dec 9	2.24
California:						
First High:	Feb 8	2.48	Jan 1	2.89	Dec 3	2.35
Second High:	Nov 13	2.41	Nov 25	2.50	Jan 7	2.33
Third High:	Nov 21	2.40	Jan 8	2.39	Dec 9	2.24
Fourth High:	Nov 17	2.28	Jan 7	2.29	Dec 2	2.24
# Days Above Nat'l Standard:		0		0		0
# Days Above State Standard:		0		0		0
Year Coverage:		97		97		85

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:	Dec 2	66.0	Jan 1	80.0	Aug 24	51.0
Second High:	Nov 20	65.0	Sep 22	76.0	Jun 1	50.0
Third High:	Jun 5	56.0	Mar 20	65.0	Jul 19	46.0
Fourth High:	Oct 21	53.0	Jan 7	63.0	Jan 14	43.0
California:						
First High:	Dec 2	61.0	Sep 22	76.0		*
Second High:	Nov 20	60.0	Jan 1	75.0		*
Third High:	Jun 5	55.0	Mar 20	66.0		*
Fourth High:	Mar 25	51.0	Aug 11	62.0		*
Measured:						
# Days Above Nat'l Standard:		0		0		0
# Days Above State Standard:		5		10		*
Estimated:						
3-Yr Avg # Days Above Nat'l Std:		*		*		*
# Days Above Nat'l Standard:		0.0		0.0		*
# Days Above State Standard:		*		60.9		*
State 3-Yr Maximum Average:		*		39		*
State Annual Average:		*		38.9		*
National 3-Year Average:		*30*		*33*		*34*
National Annual Average:		*35.6*		*39.2*		*27.5*
Year Coverage:		86		97		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

Highest 4 Daily 24-Hour PM2.5 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:	Jul 5	57.4	Jan 1	67.5	Oct 16	43.7
Second High:	Nov 23	50.4	Jan 2	53.0	Oct 14	38.7
Third High:	Jan 10	34.6	Mar 20	51.4	Oct 15	37.0
Fourth High:	Feb 18	32.5	Nov 8	43.9	Dec 4	36.5
California:						
First High:	Jul 5	68.9	Jan 1	67.5	Oct 16	43.7
Second High:	Jul 4	52.8	Mar 20	51.4	Oct 14	38.7
Third High:	Nov 23	50.4	Dec 26	38.2	Oct 15	37.0
Fourth High:	Jul 7	46.1	Dec 27	36.9	Dec 4	36.5
Estimated Days > Nat'l 24-Hr Std:		6.1		11.8		4.0
Measured Days > Nat'l 24-Hr Std:		2		11		4
Nat'l 24-Hr Std Design Value:		43		41		34
Nat'l 24-Hr Std 98th Percentile:		34.6		36.9		30.8
National Annual Std Design Value:		15.8		15.4		14.0
National Annual Average:		13.9		15.3		12.7
State Ann'l Std Designation Value:		14		14		14
State Annual Average:		13.9		14.3		12.4
Year Coverage:		95		100		100

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.

Switch: Hourly Ozone | 8-Hour Ozone | PM10 | Carbon Monoxide | Nitrogen Dioxide | Sulfur Dioxide | Hydrogen Sulfide

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

Highest 4 Daily Maximum State 24-Hour Sulfur Dioxide Averages

Burbank-W Palm Avenue

FAQs

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

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

Appendix C

Construction Emissions – CalEEMod Output Files

Weddington Golf and Senior Housing Project - Year 2016 Future With Project

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Parking Structure	613	Space
Condo/Townhouse High Rise	200	Dwelling Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Los Angeles Department of Water & Power
Climate Zone	12	**Precipitation Freq (Days)**	33		

1.3 User Entered Comments

Project Characteristics -

Land Use - The proposed senior housing will consist of 4-story buildings with 613 subterranean parking spaces underneath the senior housing condominiums. Lot-acreage and square-footage are provided.

Construction Phase - .

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Grading -

Vehicle Trips - The proposed project will approximately generate 1,771 daily trips.

Woodstoves - All units and common areas will have natural gas fireplaces.

Construction Off-road Equipment Mitigation - Compliance with Rule 403 would reduce regional PM emissions associated with construction activities by 61 percent.

Area Mitigation -

Energy Mitigation - Proposed project performance goal will be 20% more effective than required by California Title 24 Energy Design Standards.

Trips and VMT - Assuming a truck can haul 16 tons of material, it would take approximately 7,688 trips to haul 82,000 cubic yards of earth materials.

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	8.24	69.11	49.13	0.10	191.33	3.17	194.50	6.76	3.17	9.93	0.00	9,543.47	0.00	0.68	0.00	9,557.79
2015	37.30	39.48	46.63	0.10	5.08	2.17	7.25	0.22	2.17	2.38	0.00	9,476.37	0.00	0.58	0.00	9,488.47
2016	37.25	2.66	5.39	0.01	0.87	0.23	1.10	0.03	0.23	0.26	0.00	977.01	0.00	0.07	0.00	978.46
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	8.24	69.11	49.13	0.10	183.95	3.17	187.12	2.72	3.17	5.89	0.00	9,543.47	0.00	0.68	0.00	9,557.79
2015	37.30	39.48	46.63	0.10	5.08	2.17	7.25	0.22	2.17	2.38	0.00	9,476.37	0.00	0.58	0.00	9,488.47
2016	37.25	2.66	5.39	0.01	0.87	0.23	1.10	0.03	0.23	0.26	0.00	977.01	0.00	0.07	0.00	978.46
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.26	0.00	0.26	0.00	0.00	0.00						0.00
Off-Road	7.49	59.54	35.71	0.06		2.85	2.85		2.85	2.85		6,614.67		0.67		6,628.74
Total	**7.49**	**59.54**	**35.71**	**0.06**	**0.26**	**2.85**	**3.11**	**0.00**	**2.85**	**2.85**		**6,614.67**		**0.67**		**6,628.74**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.06	0.58	0.34	0.00	1.17	0.03	1.19	0.00	0.03	0.03		100.43		0.00		100.49
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.08	0.08	0.93	0.00	0.20	0.01	0.21	0.01	0.01	0.01		164.33		0.01		164.53
Total	**0.14**	**0.66**	**1.27**	**0.00**	**1.37**	**0.04**	**1.40**	**0.01**	**0.04**	**0.04**		**264.76**		**0.01**		**265.02**

3.2 Demolition - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.10	0.00	0.10	0.00	0.00	0.00						0.00
Off-Road	7.49	59.54	35.71	0.06		2.85	2.85		2.85	2.85	0.00	6,614.67		0.67		6,628.74
Total	**7.49**	**59.54**	**35.71**	**0.06**	**0.10**	**2.85**	**2.95**	**0.00**	**2.85**	**2.85**	**0.00**	**6,614.67**		**0.67**		**6,628.74**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.06	0.58	0.34	0.00	1.17	0.03	1.19	0.00	0.03	0.03		100.43		0.00		100.49
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.08	0.08	0.93	0.00	0.20	0.01	0.21	0.01	0.01	0.01		164.33		0.01		164.53
Total	**0.14**	**0.66**	**1.27**	**0.00**	**1.37**	**0.04**	**1.40**	**0.01**	**0.04**	**0.04**		**264.76**		**0.01**		**265.02**

3.3 Site Preparation - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					12.10	0.00	12.10	6.63	0.00	6.63						0.00
Off-Road	5.91	47.66	26.84	0.05		2.23	2.23		2.23	2.23		5,056.41		0.53		5,067.53
Total	**5.91**	**47.66**	**26.84**	**0.05**	**12.10**	**2.23**	**14.33**	**6.63**	**2.23**	**8.86**		**5,056.41**		**0.53**		**5,067.53**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.24	21.36	12.36	0.04	179.00	0.94	179.94	0.12	0.94	1.06		3,684.87		0.11		3,687.15
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.09	0.09	1.08	0.00	0.23	0.01	0.24	0.01	0.01	0.02		189.61		0.01		189.84
Total	**2.33**	**21.45**	**13.44**	**0.04**	**179.23**	**0.95**	**180.18**	**0.13**	**0.95**	**1.08**		**3,874.48**		**0.12**		**3,876.99**

3.3 Site Preparation - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.72	0.00	4.72	2.59	0.00	2.59						0.00
Off-Road	5.91	47.66	26.84	0.05		2.23	2.23		2.23	2.23	0.00	5,056.41		0.53		5,067.53
Total	**5.91**	**47.66**	**26.84**	**0.05**	**4.72**	**2.23**	**6.95**	**2.59**	**2.23**	**4.82**	**0.00**	**5,056.41**		**0.53**		**5,067.53**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.24	21.36	12.36	0.04	179.00	0.94	179.94	0.12	0.94	1.06		3,684.87		0.11		3,687.15
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.09	0.09	1.08	0.00	0.23	0.01	0.24	0.01	0.01	0.02		189.61		0.01		189.84
Total	**2.33**	**21.45**	**13.44**	**0.04**	**179.23**	**0.95**	**180.18**	**0.13**	**0.95**	**1.08**		**3,874.48**		**0.12**		**3,876.99**

3.4 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.04	30.13	21.10	0.04		1.85	1.85		1.85	1.85		3,833.33		0.36		3,840.91
Total	**4.04**	**30.13**	**21.10**	**0.04**		**1.85**	**1.85**		**1.85**	**1.85**		**3,833.33**		**0.36**		**3,840.91**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	1.12	11.69	7.55	0.02	0.71	0.42	1.13	0.05	0.42	0.47		2,107.50		0.06		2,108.67
Worker	1.78	1.72	20.48	0.04	4.37	0.15	4.53	0.16	0.15	0.32		3,602.64		0.21		3,606.96
Total	**2.90**	**13.41**	**28.03**	**0.06**	**5.08**	**0.57**	**5.66**	**0.21**	**0.57**	**0.79**		**5,710.14**		**0.27**		**5,715.63**

3.4 Building Construction - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.04	30.13	21.10	0.04		1.85	1.85		1.85	1.85	0.00	3,833.33		0.36		3,840.91
Total	**4.04**	**30.13**	**21.10**	**0.04**		**1.85**	**1.85**		**1.85**	**1.85**	**0.00**	**3,833.33**		**0.36**		**3,840.91**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	1.12	11.69	7.55	0.02	0.71	0.42	1.13	0.05	0.42	0.47		2,107.50		0.06		2,108.67
Worker	1.78	1.72	20.48	0.04	4.37	0.15	4.53	0.16	0.15	0.32		3,602.64		0.21		3,606.96
Total	**2.90**	**13.41**	**28.03**	**0.06**	**5.08**	**0.57**	**5.66**	**0.21**	**0.57**	**0.79**		**5,710.14**		**0.27**		**5,715.63**

3.4 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.72	27.29	20.95	0.04		1.64	1.64		1.64	1.64		3,833.33		0.33		3,840.34
Total	**3.72**	**27.29**	**20.95**	**0.04**		**1.64**	**1.64**		**1.64**	**1.64**		**3,833.33**		**0.33**		**3,840.34**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	1.01	10.61	6.83	0.02	0.71	0.37	1.08	0.05	0.37	0.43		2,112.70		0.05		2,113.75
Worker	1.66	1.58	18.85	0.04	4.37	0.16	4.53	0.16	0.16	0.32		3,530.34		0.19		3,534.37
Total	**2.67**	**12.19**	**25.68**	**0.06**	**5.08**	**0.53**	**5.61**	**0.21**	**0.53**	**0.75**		**5,643.04**		**0.24**		**5,648.12**

3.4 Building Construction - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.72	27.29	20.95	0.04		1.64	1.64		1.64	1.64	0.00	3,833.33		0.33		3,840.34
Total	**3.72**	**27.29**	**20.95**	**0.04**		**1.64**	**1.64**		**1.64**	**1.64**	**0.00**	**3,833.33**		**0.33**		**3,840.34**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	1.01	10.61	6.83	0.02	0.71	0.37	1.08	0.05	0.37	0.43		2,112.70		0.05		2,113.75
Worker	1.66	1.58	18.85	0.04	4.37	0.16	4.53	0.16	0.16	0.32		3,530.34		0.19		3,534.37
Total	**2.67**	**12.19**	**25.68**	**0.06**	**5.08**	**0.53**	**5.61**	**0.21**	**0.53**	**0.75**		**5,643.04**		**0.24**		**5,648.12**

3.5 Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.77	4.69	3.11	0.00		0.40	0.40		0.40	0.40		435.20		0.07		436.67
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**0.77**	**4.69**	**3.11**	**0.00**		**0.40**	**0.40**		**0.40**	**0.40**		**435.20**		**0.07**		**436.67**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.02	0.02	0.20	0.00	0.05	0.00	0.05	0.00	0.00	0.00		37.16		0.00		37.20
Total	**0.02**	**0.02**	**0.20**	**0.00**	**0.05**	**0.00**	**0.05**	**0.00**	**0.00**	**0.00**		**37.16**		**0.00**		**37.20**

3.5 Paving - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.77	4.69	3.11	0.00		0.40	0.40		0.40	0.40	0.00	435.20		0.07		436.67
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**0.77**	**4.69**	**3.11**	**0.00**		**0.40**	**0.40**		**0.40**	**0.40**	**0.00**	**435.20**		**0.07**		**436.67**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.02	0.02	0.20	0.00	0.05	0.00	0.05	0.00	0.00	0.00		37.16		0.00		37.20
Total	**0.02**	**0.02**	**0.20**	**0.00**	**0.05**	**0.00**	**0.05**	**0.00**	**0.00**	**0.00**		**37.16**		**0.00**		**37.20**

3.6 Architectural Coating - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	36.57					0.00	0.00		0.00	0.00						0.00
Off-Road	0.41	2.57	1.90	0.00		0.22	0.22		0.22	0.22		281.19		0.04		281.96
Total	**36.98**	**2.57**	**1.90**	**0.00**		**0.22**	**0.22**		**0.22**	**0.22**		**281.19**		**0.04**		**281.96**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.33	0.32	3.77	0.01	0.87	0.03	0.91	0.03	0.03	0.06		706.07		0.04		706.87
Total	**0.33**	**0.32**	**3.77**	**0.01**	**0.87**	**0.03**	**0.91**	**0.03**	**0.03**	**0.06**		**706.07**		**0.04**		**706.87**

3.6 Architectural Coating - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	36.57					0.00	0.00		0.00	0.00						0.00
Off-Road	0.41	2.57	1.90	0.00		0.22	0.22		0.22	0.22	0.00	281.19		0.04		281.96
Total	**36.98**	**2.57**	**1.90**	**0.00**		**0.22**	**0.22**		**0.22**	**0.22**	**0.00**	**281.19**		**0.04**		**281.96**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.33	0.32	3.77	0.01	0.87	0.03	0.91	0.03	0.03	0.06		706.07		0.04		706.87
Total	**0.33**	**0.32**	**3.77**	**0.01**	**0.87**	**0.03**	**0.91**	**0.03**	**0.03**	**0.06**		**706.07**		**0.04**		**706.87**

3.6 Architectural Coating - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	36.57					0.00	0.00		0.00	0.00						0.00
Off-Road	0.37	2.37	1.88	0.00		0.20	0.20		0.20	0.20		281.19		0.03		281.89
Total	**36.94**	**2.37**	**1.88**	**0.00**		**0.20**	**0.20**		**0.20**	**0.20**		**281.19**		**0.03**		**281.89**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.31	0.29	3.51	0.01	0.87	0.03	0.91	0.03	0.03	0.06		695.82		0.04		696.58
Total	**0.31**	**0.29**	**3.51**	**0.01**	**0.87**	**0.03**	**0.91**	**0.03**	**0.03**	**0.06**		**695.82**		**0.04**		**696.58**

3.6 Architectural Coating - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	36.57					0.00	0.00		0.00	0.00						0.00
Off-Road	0.37	2.37	1.88	0.00		0.20	0.20		0.20	0.20	0.00	281.19		0.03		281.89
Total	**36.94**	**2.37**	**1.88**	**0.00**		**0.20**	**0.20**		**0.20**	**0.20**	**0.00**	**281.19**		**0.03**		**281.89**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.31	0.29	3.51	0.01	0.87	0.03	0.91	0.03	0.03	0.06		695.82		0.04		696.58
Total	**0.31**	**0.29**	**3.51**	**0.01**	**0.87**	**0.03**	**0.91**	**0.03**	**0.03**	**0.06**		**695.82**		**0.04**		**696.58**

Weddington Golf and Senior Housing Project - Year 2016 Future With Project

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Parking Structure	613	Space
Condo/Townhouse High Rise	200	Dwelling Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Los Angeles Department of Water & Power
Climate Zone	12	**Precipitation Freq (Days)**	33		

1.3 User Entered Comments

Project Characteristics -

Land Use - The proposed senior housing will consist of 4-story buildings with 613 subterranean parking spaces underneath the senior housing condominiums. Lot-acreage and square-footage are provided.

Construction Phase - .

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Grading -

Vehicle Trips - The proposed project will approximately generate 1,771 daily trips.

Woodstoves - All units and common areas will have natural gas fireplaces.

Construction Off-road Equipment Mitigation - Compliance with Rule 403 would reduce regional PM emissions associated with construction activities by 61 percent.

Area Mitigation -

Energy Mitigation - Proposed project performance goal will be 20% more effective than required by California Title 24 Energy Design Standards.

Trips and VMT - Assuming a truck can haul 16 tons of material, it would take approximately 7,688 trips to haul 82,000 cubic yards of earth materials.

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	8.30	70.24	49.03	0.09	191.33	3.18	194.51	6.76	3.18	9.94	0.00	9,263.09	0.00	0.68	0.00	9,277.40
2015	37.33	40.16	46.54	0.09	5.08	2.17	7.26	0.22	2.17	2.39	0.00	9,200.55	0.00	0.57	0.00	9,212.55
2016	37.27	2.71	5.18	0.01	0.87	0.23	1.10	0.03	0.23	0.26	0.00	925.77	0.00	0.07	0.00	927.19
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	8.30	70.24	49.03	0.09	183.95	3.18	187.13	2.72	3.18	5.89	0.00	9,263.09	0.00	0.68	0.00	9,277.40
2015	37.33	40.16	46.54	0.09	5.08	2.17	7.26	0.22	2.17	2.39	0.00	9,200.55	0.00	0.57	0.00	9,212.55
2016	37.27	2.71	5.18	0.01	0.87	0.23	1.10	0.03	0.23	0.26	0.00	925.77	0.00	0.07	0.00	927.19
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.26	0.00	0.26	0.00	0.00	0.00						0.00
Off-Road	7.49	59.54	35.71	0.06		2.85	2.85		2.85	2.85		6,614.67		0.67		6,628.74
Total	**7.49**	**59.54**	**35.71**	**0.06**	**0.26**	**2.85**	**3.11**	**0.00**	**2.85**	**2.85**		**6,614.67**		**0.67**		**6,628.74**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.06	0.61	0.36	0.00	1.17	0.03	1.19	0.00	0.03	0.03		99.95		0.00		100.01
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.09	0.09	0.88	0.00	0.20	0.01	0.21	0.01	0.01	0.01		152.24		0.01		152.43
Total	**0.15**	**0.70**	**1.24**	**0.00**	**1.37**	**0.04**	**1.40**	**0.01**	**0.04**	**0.04**		**252.19**		**0.01**		**252.44**

3.2 Demolition - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.10	0.00	0.10	0.00	0.00	0.00						0.00
Off-Road	7.49	59.54	35.71	0.06		2.85	2.85		2.85	2.85	0.00	6,614.67		0.67		6,628.74
Total	**7.49**	**59.54**	**35.71**	**0.06**	**0.10**	**2.85**	**2.95**	**0.00**	**2.85**	**2.85**	**0.00**	**6,614.67**		**0.67**		**6,628.74**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.06	0.61	0.36	0.00	1.17	0.03	1.19	0.00	0.03	0.03		99.95		0.00		100.01
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.09	0.09	0.88	0.00	0.20	0.01	0.21	0.01	0.01	0.01		152.24		0.01		152.43
Total	**0.15**	**0.70**	**1.24**	**0.00**	**1.37**	**0.04**	**1.40**	**0.01**	**0.04**	**0.04**		**252.19**		**0.01**		**252.44**

3.3 Site Preparation - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					12.10	0.00	12.10	6.63	0.00	6.63						0.00
Off-Road	5.91	47.66	26.84	0.05		2.23	2.23		2.23	2.23		5,056.41		0.53		5,067.53
Total	**5.91**	**47.66**	**26.84**	**0.05**	**12.10**	**2.23**	**14.33**	**6.63**	**2.23**	**8.86**		**5,056.41**		**0.53**		**5,067.53**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.29	22.48	13.38	0.04	179.00	0.94	179.95	0.12	0.94	1.07		3,667.27		0.11		3,669.61
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.10	0.11	1.02	0.00	0.23	0.01	0.24	0.01	0.01	0.02		175.66		0.01		175.88
Total	**2.39**	**22.59**	**14.40**	**0.04**	**179.23**	**0.95**	**180.19**	**0.13**	**0.95**	**1.09**		**3,842.93**		**0.12**		**3,845.49**

3.3 Site Preparation - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.72	0.00	4.72	2.59	0.00	2.59						0.00
Off-Road	5.91	47.66	26.84	0.05		2.23	2.23		2.23	2.23	0.00	5,056.41		0.53		5,067.53
Total	**5.91**	**47.66**	**26.84**	**0.05**	**4.72**	**2.23**	**6.95**	**2.59**	**2.23**	**4.82**	**0.00**	**5,056.41**		**0.53**		**5,067.53**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.29	22.48	13.38	0.04	179.00	0.94	179.95	0.12	0.94	1.07		3,667.27		0.11		3,669.61
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.10	0.11	1.02	0.00	0.23	0.01	0.24	0.01	0.01	0.02		175.66		0.01		175.88
Total	**2.39**	**22.59**	**14.40**	**0.04**	**179.23**	**0.95**	**180.19**	**0.13**	**0.95**	**1.09**		**3,842.93**		**0.12**		**3,845.49**

3.4 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.04	30.13	21.10	0.04		1.85	1.85		1.85	1.85		3,833.33		0.36		3,840.91
Total	**4.04**	**30.13**	**21.10**	**0.04**		**1.85**	**1.85**		**1.85**	**1.85**		**3,833.33**		**0.36**		**3,840.91**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	1.18	12.21	8.57	0.02	0.71	0.42	1.13	0.05	0.42	0.48		2,092.19		0.06		2,093.42
Worker	1.93	2.00	19.36	0.03	4.37	0.15	4.53	0.16	0.15	0.32		3,337.57		0.20		3,341.71
Total	**3.11**	**14.21**	**27.93**	**0.05**	**5.08**	**0.57**	**5.66**	**0.21**	**0.57**	**0.80**		**5,429.76**		**0.26**		**5,435.13**

3.4 Building Construction - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.04	30.13	21.10	0.04		1.85	1.85		1.85	1.85	0.00	3,833.33		0.36		3,840.91
Total	**4.04**	**30.13**	**21.10**	**0.04**		**1.85**	**1.85**		**1.85**	**1.85**	**0.00**	**3,833.33**		**0.36**		**3,840.91**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	1.18	12.21	8.57	0.02	0.71	0.42	1.13	0.05	0.42	0.48		2,092.19		0.06		2,093.42
Worker	1.93	2.00	19.36	0.03	4.37	0.15	4.53	0.16	0.15	0.32		3,337.57		0.20		3,341.71
Total	**3.11**	**14.21**	**27.93**	**0.05**	**5.08**	**0.57**	**5.66**	**0.21**	**0.57**	**0.80**		**5,429.76**		**0.26**		**5,435.13**

3.4 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.72	27.29	20.95	0.04		1.64	1.64		1.64	1.64		3,833.33		0.33		3,840.34
Total	**3.72**	**27.29**	**20.95**	**0.04**		**1.64**	**1.64**		**1.64**	**1.64**		**3,833.33**		**0.33**		**3,840.34**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	1.07	11.04	7.83	0.02	0.71	0.38	1.09	0.05	0.38	0.43		2,096.93		0.05		2,098.04
Worker	1.80	1.83	17.76	0.03	4.37	0.16	4.53	0.16	0.16	0.32		3,270.30		0.18		3,274.17
Total	**2.87**	**12.87**	**25.59**	**0.05**	**5.08**	**0.54**	**5.62**	**0.21**	**0.54**	**0.75**		**5,367.23**		**0.23**		**5,372.21**

3.4 Building Construction - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.72	27.29	20.95	0.04		1.64	1.64		1.64	1.64	0.00	3,833.33		0.33		3,840.34
Total	**3.72**	**27.29**	**20.95**	**0.04**		**1.64**	**1.64**		**1.64**	**1.64**	**0.00**	**3,833.33**		**0.33**		**3,840.34**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	1.07	11.04	7.83	0.02	0.71	0.38	1.09	0.05	0.38	0.43		2,096.93		0.05		2,098.04
Worker	1.80	1.83	17.76	0.03	4.37	0.16	4.53	0.16	0.16	0.32		3,270.30		0.18		3,274.17
Total	**2.87**	**12.87**	**25.59**	**0.05**	**5.08**	**0.54**	**5.62**	**0.21**	**0.54**	**0.75**		**5,367.23**		**0.23**		**5,372.21**

3.5 Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.77	4.69	3.11	0.00		0.40	0.40		0.40	0.40		435.20		0.07		436.67
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**0.77**	**4.69**	**3.11**	**0.00**		**0.40**	**0.40**		**0.40**	**0.40**		**435.20**		**0.07**		**436.67**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.02	0.02	0.19	0.00	0.05	0.00	0.05	0.00	0.00	0.00		34.42		0.00		34.46
Total	**0.02**	**0.02**	**0.19**	**0.00**	**0.05**	**0.00**	**0.05**	**0.00**	**0.00**	**0.00**		**34.42**		**0.00**		**34.46**

3.5 Paving - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.77	4.69	3.11	0.00		0.40	0.40		0.40	0.40	0.00	435.20		0.07		436.67
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**0.77**	**4.69**	**3.11**	**0.00**		**0.40**	**0.40**		**0.40**	**0.40**	**0.00**	**435.20**		**0.07**		**436.67**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.02	0.02	0.19	0.00	0.05	0.00	0.05	0.00	0.00	0.00		34.42		0.00		34.46
Total	**0.02**	**0.02**	**0.19**	**0.00**	**0.05**	**0.00**	**0.05**	**0.00**	**0.00**	**0.00**		**34.42**		**0.00**		**34.46**

3.6 Architectural Coating - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	36.57					0.00	0.00		0.00	0.00						0.00
Off-Road	0.41	2.57	1.90	0.00		0.22	0.22		0.22	0.22		281.19		0.04		281.96
Total	**36.98**	**2.57**	**1.90**	**0.00**		**0.22**	**0.22**		**0.22**	**0.22**		**281.19**		**0.04**		**281.96**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.36	0.37	3.55	0.01	0.87	0.03	0.91	0.03	0.03	0.06		654.06		0.04		654.83
Total	**0.36**	**0.37**	**3.55**	**0.01**	**0.87**	**0.03**	**0.91**	**0.03**	**0.03**	**0.06**		**654.06**		**0.04**		**654.83**

3.6 Architectural Coating - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	36.57					0.00	0.00		0.00	0.00						0.00
Off-Road	0.41	2.57	1.90	0.00		0.22	0.22		0.22	0.22	0.00	281.19		0.04		281.96
Total	**36.98**	**2.57**	**1.90**	**0.00**		**0.22**	**0.22**		**0.22**	**0.22**	**0.00**	**281.19**		**0.04**		**281.96**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.36	0.37	3.55	0.01	0.87	0.03	0.91	0.03	0.03	0.06		654.06		0.04		654.83
Total	**0.36**	**0.37**	**3.55**	**0.01**	**0.87**	**0.03**	**0.91**	**0.03**	**0.03**	**0.06**		**654.06**		**0.04**		**654.83**

3.6 Architectural Coating - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	36.57					0.00	0.00		0.00	0.00						0.00
Off-Road	0.37	2.37	1.88	0.00		0.20	0.20		0.20	0.20		281.19		0.03		281.89
Total	**36.94**	**2.37**	**1.88**	**0.00**		**0.20**	**0.20**		**0.20**	**0.20**		**281.19**		**0.03**		**281.89**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.34	0.34	3.29	0.01	0.87	0.03	0.91	0.03	0.03	0.06		644.58		0.03		645.31
Total	**0.34**	**0.34**	**3.29**	**0.01**	**0.87**	**0.03**	**0.91**	**0.03**	**0.03**	**0.06**		**644.58**		**0.03**		**645.31**

3.6 Architectural Coating - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	36.57					0.00	0.00		0.00	0.00						0.00
Off-Road	0.37	2.37	1.88	0.00		0.20	0.20		0.20	0.20	0.00	281.19		0.03		281.89
Total	**36.94**	**2.37**	**1.88**	**0.00**		**0.20**	**0.20**		**0.20**	**0.20**	**0.00**	**281.19**		**0.03**		**281.89**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.34	0.34	3.29	0.01	0.87	0.03	0.91	0.03	0.03	0.06		644.58		0.03		645.31
Total	**0.34**	**0.34**	**3.29**	**0.01**	**0.87**	**0.03**	**0.91**	**0.03**	**0.03**	**0.06**		**644.58**		**0.03**		**645.31**

Appendix D

Operational Emissions – CalEEMod Output Files

Weddington Golf and Senior Housing Project-Existing

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Golf Course	16.11	Acre

1.2 Other Project Characteristics

Urbanization Urban

Climate Zone 12

Wind Speed (m/s) 2.2

Precipitation Freq (Days) 33

Utility Company Los Angeles Department of Water & Power

1.3 User Entered Comments

Project Characteristics -

Woodstoves -

Construction Off-road Equipment Mitigation - Compliance with Rule 403 would reduce regional PM emissions associated with construction activities by approximately 61 percent.

Energy Mitigation - Proposed project energy performance goal will be 20 percent more effective than required by California Title 24 Energy Design Standards.

Land Use - The existing site will include golf driving range, golf course, and tennis courts.

Vehicle Trips - The total daily trips at the existing site uses will be approximately 1,147.

2.0 Emissions Summary

2.1 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	6.28	14.85	61.38	0.09	9.17	0.58	9.75	0.32	0.58	0.89		8,737.36		0.50		8,747.94
Total	**6.28**	**14.85**	**61.38**	**0.09**	**9.17**	**0.58**	**9.75**	**0.32**	**0.58**	**0.89**		**8,737.36**		**0.50**	**0.00**	**8,747.94**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	6.28	14.85	61.38	0.09	9.17	0.58	9.75	0.32	0.58	0.89		8,737.36		0.50		8,747.94
Total	**6.28**	**14.85**	**61.38**	**0.09**	**9.17**	**0.58**	**9.75**	**0.32**	**0.58**	**0.89**		**8,737.36**		**0.50**	**0.00**	**8,747.94**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.28	14.85	61.38	0.09	9.17	0.58	9.75	0.32	0.58	0.89		8,737.36		0.50		8,747.94
Unmitigated	6.28	14.85	61.38	0.09	9.17	0.58	9.75	0.32	0.58	0.89		8,737.36		0.50		8,747.94
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Golf Course	1,147.00	0.00	0.00	1,978,070	1,978,070
Total	1,147.00	0.00	0.00	1,978,070	1,978,070

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Golf Course	8.90	13.30	7.40	33.00	48.00	19.00

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Golf Course	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Golf Course	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.00					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.00					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Weddington Golf and Senior Housing Project-Existing

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Golf Course	16.11	Acre

1.2 Other Project Characteristics

Urbanization Urban

Climate Zone 12

Wind Speed (m/s) 2.2

Precipitation Freq (Days) 33

Utility Company Los Angeles Department of Water & Power

1.3 User Entered Comments

Project Characteristics -

Woodstoves -

Construction Off-road Equipment Mitigation - Compliance with Rule 403 would reduce regional PM emissions associated with construction activities by approximately 61 percent.

Energy Mitigation - Proposed project energy performance goal will be 20 percent more effective than required by California Title 24 Energy Design Standards.

Land Use - The existing site will include golf driving range, golf course, and tennis courts.

Vehicle Trips - The total daily trips at the existing site uses will be approximately 1,147.

2.0 Emissions Summary

2.1 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	6.66	16.08	61.51	0.08	9.17	0.59	9.75	0.32	0.59	0.90		8,202.98		0.52		8,213.92
Total	**6.66**	**16.08**	**61.51**	**0.08**	**9.17**	**0.59**	**9.75**	**0.32**	**0.59**	**0.90**		**8,202.98**		**0.52**	**0.00**	**8,213.92**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	6.66	16.08	61.51	0.08	9.17	0.59	9.75	0.32	0.59	0.90		8,202.98		0.52		8,213.92
Total	**6.66**	**16.08**	**61.51**	**0.08**	**9.17**	**0.59**	**9.75**	**0.32**	**0.59**	**0.90**		**8,202.98**		**0.52**	**0.00**	**8,213.92**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.66	16.08	61.51	0.08	9.17	0.59	9.75	0.32	0.59	0.90		8,202.98		0.52		8,213.92
Unmitigated	6.66	16.08	61.51	0.08	9.17	0.59	9.75	0.32	0.59	0.90		8,202.98		0.52		8,213.92
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Golf Course	1,147.00	0.00	0.00	1,978,070	1,978,070
Total	1,147.00	0.00	0.00	1,978,070	1,978,070

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Golf Course	8.90	13.30	7.40	33.00	48.00	19.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Golf Course	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Golf Course	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.00					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.00					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Weddington Golf and Senior Housing Project - Year 2012 Existing With Project

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Parking Structure	613	Space
Condo/Townhouse High Rise	200	Dwelling Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Los Angeles Department of Water & Power
Climate Zone	12	**Precipitation Freq (Days)**	33		

1.3 User Entered Comments

Project Characteristics -

Land Use - The proposed senior housing will consist of 4-story buildings with 613 subterranean parking spaces underneath the senior housing condominiums. Lot-acreage and square-footage are provided.

Construction Phase - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment -

Off-road Equipment - .

Off-road Equipment -

Grading -

Vehicle Trips - The proposed project will approximately generate 1,771 daily trips.

Woodstoves - All units and common areas will have natural gas fireplaces.

Construction Off-road Equipment Mitigation - Compliance with Rule 403 would reduce regional PM emissions associated with construction activities by 61 percent.

Area Mitigation -

Energy Mitigation - Proposed project performance goal will be 20% more effective than required by California Title 24 Energy Design Standards.

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	17.14	0.21	17.38	0.00		0.00	0.36		0.00	0.36	0.00	4,286.54		0.12	0.08	4,313.16
Energy	0.15	1.25	0.53	0.01		0.00	0.10		0.00	0.10		1,593.31		0.03	0.03	1,603.00
Mobile	12.07	30.15	123.79	0.18	19.52	1.21	20.74	0.67	1.21	1.89		18,454.67		1.04		18,476.55
Total	**29.36**	**31.61**	**141.70**	**0.19**	**19.52**	**1.21**	**21.20**	**0.67**	**1.21**	**2.35**	**0.00**	**24,334.52**		**1.19**	**0.11**	**24,392.71**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	16.75	0.21	17.36	0.00		0.00	0.09		0.00	0.09	0.00	30.07		0.03	0.00	30.79
Energy	0.12	1.03	0.44	0.01		0.00	0.08		0.00	0.08		1,318.24		0.03	0.02	1,326.26
Mobile	12.07	30.15	123.79	0.18	19.52	1.21	20.74	0.67	1.21	1.89		18,454.67		1.04		18,476.55
Total	**28.94**	**31.39**	**141.59**	**0.19**	**19.52**	**1.21**	**20.91**	**0.67**	**1.21**	**2.06**	**0.00**	**19,802.98**		**1.10**	**0.02**	**19,833.60**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	12.07	30.15	123.79	0.18	19.52	1.21	20.74	0.67	1.21	1.89		18,454.67		1.04		18,476.55
Unmitigated	12.07	30.15	123.79	0.18	19.52	1.21	20.74	0.67	1.21	1.89		18,454.67		1.04		18,476.55
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Condo/Townhouse High Rise	1,771.00	0.00	0.00	4,213,177	4,213,177
Parking Structure	0.00	0.00	0.00		
Total	1,771.00	0.00	0.00	4,213,177	4,213,177

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Condo/Townhouse High Rise	12.70	7.00	9.50	40.20	19.20	40.60
Parking Structure	8.90	13.30	7.40	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.12	1.03	0.44	0.01		0.00	0.08		0.00	0.08		1,318.24		0.03	0.02	1,326.26
NaturalGas Unmitigated	0.15	1.25	0.53	0.01		0.00	0.10		0.00	0.10		1,593.31		0.03	0.03	1,603.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Condo/Townhouse High Rise	13543.1	0.15	1.25	0.53	0.01		0.00	0.10		0.00	0.10		1,593.31		0.03	0.03	1,603.00
Parking Structure	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.15**	**1.25**	**0.53**	**0.01**		**0.00**	**0.10**		**0.00**	**0.10**		**1,593.31**		**0.03**	**0.03**	**1,603.00**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Condo/Townhouse High Rise	11.205	0.12	1.03	0.44	0.01		0.00	0.08		0.00	0.08		1,318.24		0.03	0.02	1,326.26
Parking Structure	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.12**	**1.03**	**0.44**	**0.01**		**0.00**	**0.08**		**0.00**	**0.08**		**1,318.24**		**0.03**	**0.02**	**1,326.26**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	16.75	0.21	17.36	0.00		0.00	0.09		0.00	0.09	0.00	30.07		0.03	0.00	30.79
Unmitigated	17.14	0.21	17.38	0.00		0.00	0.36		0.00	0.36	0.00	4,286.54		0.12	0.08	4,313.16
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.85					0.00	0.00		0.00	0.00						0.00
Consumer Products	13.31					0.00	0.00		0.00	0.00						0.00
Hearth	0.39	0.00	0.02	0.00		0.00	0.27		0.00	0.27	0.00	4,256.47		0.08	0.08	4,282.37
Landscaping	0.59	0.21	17.36	0.00		0.00	0.09		0.00	0.09		30.07		0.03		30.79
Total	**17.14**	**0.21**	**17.38**	**0.00**		**0.00**	**0.36**		**0.00**	**0.36**	**0.00**	**4,286.54**		**0.11**	**0.08**	**4,313.16**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.85					0.00	0.00		0.00	0.00						0.00
Consumer Products	13.31					0.00	0.00		0.00	0.00						0.00
Hearth	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00
Landscaping	0.59	0.21	17.36	0.00		0.00	0.09		0.00	0.09		30.07		0.03		30.79
Total	**16.75**	**0.21**	**17.36**	**0.00**		**0.00**	**0.09**		**0.00**	**0.09**	**0.00**	**30.07**		**0.03**	**0.00**	**30.79**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

CalEEMod Version: CalEEMod.2011.1.1 Date: 2/16/2012

Weddington Golf and Senior Housing Project - Year 2012 Existing With Project

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Parking Structure	613	Space
Condo/Townhouse High Rise	200	Dwelling Unit

1.2 Other Project Characteristics

Urbanization Urban

Wind Speed (m/s) 2.2

Utility Company Los Angeles Department of Water & Power

Climate Zone 12

Precipitation Freq (Days) 33

1.3 User Entered Comments

Project Characteristics -

Land Use - The proposed senior housing will consist of 4-story buildings with 613 subterranean parking spaces underneath the senior housing condominiums. Lot-acreage and square-footage are provided.

Construction Phase - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment -

Off-road Equipment - .

Off-road Equipment -

Grading -

Vehicle Trips - The proposed project will approximately generate 1,771 daily trips.

Woodstoves - All units and common areas will have natural gas fireplaces.

Construction Off-road Equipment Mitigation - Compliance with Rule 403 would reduce regional PM emissions associated with construction activities by 61 percent.

Area Mitigation -

Energy Mitigation - Proposed project performance goal will be 20% more effective than required by California Title 24 Energy Design Standards.

2.0 Emissions Summary

2.1 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	17.14	0.21	17.38	0.00		0.00	0.36		0.00	0.36	0.00	4,286.54		0.12	0.08	4,313.16
Energy	0.15	1.25	0.53	0.01		0.00	0.10		0.00	0.10		1,593.31		0.03	0.03	1,603.00
Mobile	12.86	32.77	121.75	0.17	19.52	1.22	20.75	0.67	1.22	1.90		17,322.31		1.07		17,344.76
Total	**30.15**	**34.23**	**139.66**	**0.18**	**19.52**	**1.22**	**21.21**	**0.67**	**1.22**	**2.36**	**0.00**	**23,202.16**		**1.22**	**0.11**	**23,260.92**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	16.75	0.21	17.36	0.00		0.00	0.09		0.00	0.09	0.00	30.07		0.03	0.00	30.79
Energy	0.12	1.03	0.44	0.01		0.00	0.08		0.00	0.08		1,318.24		0.03	0.02	1,326.26
Mobile	12.86	32.77	121.75	0.17	19.52	1.22	20.75	0.67	1.22	1.90		17,322.31		1.07		17,344.76
Total	**29.73**	**34.01**	**139.55**	**0.18**	**19.52**	**1.22**	**20.92**	**0.67**	**1.22**	**2.07**	**0.00**	**18,670.62**		**1.13**	**0.02**	**18,701.81**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	12.86	32.77	121.75	0.17	19.52	1.22	20.75	0.67	1.22	1.90		17,322.31		1.07		17,344.76
Unmitigated	12.86	32.77	121.75	0.17	19.52	1.22	20.75	0.67	1.22	1.90		17,322.31		1.07		17,344.76
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Condo/Townhouse High Rise	1,771.00	0.00	0.00	4,213,177	4,213,177
Parking Structure	0.00	0.00	0.00		
Total	1,771.00	0.00	0.00	4,213,177	4,213,177

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Condo/Townhouse High Rise	12.70	7.00	9.50	40.20	19.20	40.60
Parking Structure	8.90	13.30	7.40	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.12	1.03	0.44	0.01		0.00	0.08		0.00	0.08		1,318.24		0.03	0.02	1,326.26
NaturalGas Unmitigated	0.15	1.25	0.53	0.01		0.00	0.10		0.00	0.10		1,593.31		0.03	0.03	1,603.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Condo/Townhouse High Rise	13543.1	0.15	1.25	0.53	0.01		0.00	0.10		0.00	0.10		1,593.31		0.03	0.03	1,603.00
Parking Structure	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.15**	**1.25**	**0.53**	**0.01**		**0.00**	**0.10**		**0.00**	**0.10**		**1,593.31**		**0.03**	**0.03**	**1,603.00**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Condo/Townhouse High Rise	11.205	0.12	1.03	0.44	0.01		0.00	0.08		0.00	0.08		1,318.24		0.03	0.02	1,326.26
Parking Structure	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.12**	**1.03**	**0.44**	**0.01**		**0.00**	**0.08**		**0.00**	**0.08**		**1,318.24**		**0.03**	**0.02**	**1,326.26**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	16.75	0.21	17.36	0.00		0.00	0.09		0.00	0.09	0.00	30.07		0.03	0.00	30.79
Unmitigated	17.14	0.21	17.38	0.00		0.00	0.36		0.00	0.36	0.00	4,286.54		0.12	0.08	4,313.16
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.85					0.00	0.00		0.00	0.00						0.00
Consumer Products	13.31					0.00	0.00		0.00	0.00						0.00
Hearth	0.39	0.00	0.02	0.00		0.00	0.27		0.00	0.27	0.00	4,256.47		0.08	0.08	4,282.37
Landscaping	0.59	0.21	17.36	0.00		0.00	0.09		0.00	0.09		30.07		0.03		30.79
Total	**17.14**	**0.21**	**17.38**	**0.00**		**0.00**	**0.36**		**0.00**	**0.36**	**0.00**	**4,286.54**		**0.11**	**0.08**	**4,313.16**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.85					0.00	0.00		0.00	0.00						0.00
Consumer Products	13.31					0.00	0.00		0.00	0.00						0.00
Hearth	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00
Landscaping	0.59	0.21	17.36	0.00		0.00	0.09		0.00	0.09		30.07		0.03		30.79
Total	**16.75**	**0.21**	**17.36**	**0.00**		**0.00**	**0.09**		**0.00**	**0.09**	**0.00**	**30.07**		**0.03**	**0.00**	**30.79**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Weddington Golf and Senior Housing Project - Year 2016 Future Pre-Project

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Golf Course	16.11	Acre

1.2 Other Project Characteristics

Urbanization Urban
Wind Speed (m/s) 2.2
Utility Company Los Angeles Department of Water & Power
Climate Zone 12
Precipitation Freq (Days) 33

1.3 User Entered Comments

Project Characteristics -

Land Use - The existing land use includes golf driving range, golf course, and tennis courts.

Construction Phase - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment -

Off-road Equipment - .

Off-road Equipment -

Grading -

Vehicle Trips - The proposed project will approximately generate 1,147 daily trips.

Woodstoves -

Construction Off-road Equipment Mitigation - Compliance with Rule 403 would reduce regional PM emissions associated with construction activities by 61 percent.

Area Mitigation -

Energy Mitigation -

Demolition -

2.0 Emissions Summary

2.1 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	4.86	11.51	45.73	0.09	9.17	0.53	9.69	0.32	0.53	0.84		8,513.53		0.32		8,520.22
Total	**4.86**	**11.51**	**45.73**	**0.09**	**9.17**	**0.53**	**9.69**	**0.32**	**0.53**	**0.84**		**8,513.53**		**0.32**	**0.00**	**8,520.22**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	4.86	11.51	45.73	0.09	9.17	0.53	9.69	0.32	0.53	0.84		8,513.53		0.32		8,520.22
Total	**4.86**	**11.51**	**45.73**	**0.09**	**9.17**	**0.53**	**9.69**	**0.32**	**0.53**	**0.84**		**8,513.53**		**0.32**	**0.00**	**8,520.22**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.86	11.51	45.73	0.09	9.17	0.53	9.69	0.32	0.53	0.84		8,513.53		0.32		8,520.22
Unmitigated	4.86	11.51	45.73	0.09	9.17	0.53	9.69	0.32	0.53	0.84		8,513.53		0.32		8,520.22
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Golf Course	1,147.00	93.76	94.73	2,043,081	2,043,081
Total	1,147.00	93.76	94.73	2,043,081	2,043,081

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Golf Course	8.90	13.30	7.40	33.00	48.00	19.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Golf Course	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Golf Course	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.00					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.00					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Weddington Golf and Senior Housing Project - Year 2016 Future Pre-Project

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Golf Course	16.11	Acre

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Los Angeles Department of Water & Power
Climate Zone	12	**Precipitation Freq (Days)**	33		

1.3 User Entered Comments

Project Characteristics -

Land Use - The existing land use includes golf driving range, golf course, and tennis courts.

Construction Phase - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment -

Off-road Equipment - .

Off-road Equipment -

Grading -

Vehicle Trips - The proposed project will approximately generate 1,147 daily trips.

Woodstoves -

Construction Off-road Equipment Mitigation - Compliance with Rule 403 would reduce regional PM emissions associated with construction activities by 61 percent.

Area Mitigation -

Energy Mitigation -

Demolition -

2.0 Emissions Summary

2.1 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	5.17	12.27	45.74	0.08	9.17	0.53	9.70	0.32	0.53	0.85		8,005.69		0.32		8,012.48
Total	**5.17**	**12.27**	**45.74**	**0.08**	**9.17**	**0.53**	**9.70**	**0.32**	**0.53**	**0.85**		**8,005.69**		**0.32**	**0.00**	**8,012.48**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	5.17	12.27	45.74	0.08	9.17	0.53	9.70	0.32	0.53	0.85		8,005.69		0.32		8,012.48
Total	**5.17**	**12.27**	**45.74**	**0.08**	**9.17**	**0.53**	**9.70**	**0.32**	**0.53**	**0.85**		**8,005.69**		**0.32**	**0.00**	**8,012.48**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.17	12.27	45.74	0.08	9.17	0.53	9.70	0.32	0.53	0.85		8,005.69		0.32		8,012.48
Unmitigated	5.17	12.27	45.74	0.08	9.17	0.53	9.70	0.32	0.53	0.85		8,005.69		0.32		8,012.48
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Golf Course	1,147.00	93.76	94.73	2,043,081	2,043,081
Total	1,147.00	93.76	94.73	2,043,081	2,043,081

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Golf Course	8.90	13.30	7.40	33.00	48.00	19.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Golf Course	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Golf Course	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.00					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.00					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Weddington Golf and Senior Housing Project - Year 2016 Future With Project

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Parking Structure	613	Space
Condo/Townhouse High Rise	200	Dwelling Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Los Angeles Department of Water & Power
Climate Zone	12	**Precipitation Freq (Days)**	33		

1.3 User Entered Comments

Project Characteristics -

Land Use - The proposed senior housing will consist of 4-story buildings with 613 subterranean parking spaces underneath the senior housing condominiums. Lot-acreage and square-footage are provided.

Construction Phase - .

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Grading -

Vehicle Trips - The proposed project will approximately generate 1,771 daily trips.

Woodstoves - All units and common areas will have natural gas fireplaces.

Construction Off-road Equipment Mitigation - Compliance with Rule 403 would reduce regional PM emissions associated with construction activities by 61 percent.

Area Mitigation -

Energy Mitigation - Proposed project performance goal will be 20% more effective than required by California Title 24 Energy Design Standards.

Trips and VMT - Assuming a truck can haul 16 tons of material, it would take approximately 7,688 trips to haul 82,000 cubic yards of earth materials.

2.0 Emissions Summary

2.1 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	17.08	0.20	16.95	0.00		0.00	0.36		0.00	0.36	0.00	4,286.54		0.11	0.08	4,313.09
Energy	0.15	1.25	0.53	0.01		0.00	0.10		0.00	0.10		1,593.31		0.03	0.03	1,603.00
Mobile	9.28	22.90	92.19	0.19	19.53	1.10	20.63	0.68	1.10	1.78		17,970.03		0.66		17,983.80
Total	**26.51**	**24.35**	**109.67**	**0.20**	**19.53**	**1.10**	**21.09**	**0.68**	**1.10**	**2.24**	**0.00**	**23,849.88**		**0.80**	**0.11**	**23,899.89**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	16.69	0.20	16.93	0.00		0.00	0.09		0.00	0.09	0.00	30.07		0.03	0.00	30.72
Energy	0.12	1.03	0.44	0.01		0.00	0.08		0.00	0.08		1,318.24		0.03	0.02	1,326.26
Mobile	9.28	22.90	92.19	0.19	19.53	1.10	20.63	0.68	1.10	1.78		17,970.03		0.66		17,983.80
Total	**26.09**	**24.13**	**109.56**	**0.20**	**19.53**	**1.10**	**20.80**	**0.68**	**1.10**	**1.95**	**0.00**	**19,318.34**		**0.72**	**0.02**	**19,340.78**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	9.28	22.90	92.19	0.19	19.53	1.10	20.63	0.68	1.10	1.78		17,970.03		0.66		17,983.80
Unmitigated	9.28	22.90	92.19	0.19	19.53	1.10	20.63	0.68	1.10	1.78		17,970.03		0.66		17,983.80
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Condo/Townhouse High Rise	1,771.00	0.00	0.00	4,213,177	4,213,177
Parking Structure	0.00	0.00	0.00		
Total	1,771.00	0.00	0.00	4,213,177	4,213,177

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Condo/Townhouse High Rise	12.70	7.00	9.50	40.20	19.20	40.60
Parking Structure	8.90	13.30	7.40	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.12	1.03	0.44	0.01		0.00	0.08		0.00	0.08		1,318.24		0.03	0.02	1,326.26
NaturalGas Unmitigated	0.15	1.25	0.53	0.01		0.00	0.10		0.00	0.10		1,593.31		0.03	0.03	1,603.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Condo/Townhouse High Rise	13543.1	0.15	1.25	0.53	0.01		0.00	0.10		0.00	0.10		1,593.31		0.03	0.03	1,603.00
Parking Structure	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.15**	**1.25**	**0.53**	**0.01**		**0.00**	**0.10**		**0.00**	**0.10**		**1,593.31**		**0.03**	**0.03**	**1,603.00**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Condo/Townhouse High Rise	11.205	0.12	1.03	0.44	0.01		0.00	0.08		0.00	0.08		1,318.24		0.03	0.02	1,326.26
Parking Structure	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.12**	**1.03**	**0.44**	**0.01**		**0.00**	**0.08**		**0.00**	**0.08**		**1,318.24**		**0.03**	**0.02**	**1,326.26**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	16.69	0.20	16.93	0.00		0.00	0.09		0.00	0.09	0.00	30.07		0.03	0.00	30.72
Unmitigated	17.08	0.20	16.95	0.00		0.00	0.36		0.00	0.36	0.00	4,286.54		0.11	0.08	4,313.09
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.85					0.00	0.00		0.00	0.00						0.00
Consumer Products	13.31					0.00	0.00		0.00	0.00						0.00
Hearth	0.39	0.00	0.02	0.00		0.00	0.27		0.00	0.27	0.00	4,256.47		0.08	0.08	4,282.37
Landscaping	0.53	0.20	16.93	0.00		0.00	0.09		0.00	0.09		30.07		0.03		30.72
Total	**17.08**	**0.20**	**16.95**	**0.00**		**0.00**	**0.36**		**0.00**	**0.36**	**0.00**	**4,286.54**		**0.11**	**0.08**	**4,313.09**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.85					0.00	0.00		0.00	0.00						0.00
Consumer Products	13.31					0.00	0.00		0.00	0.00						0.00
Hearth	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00
Landscaping	0.53	0.20	16.93	0.00		0.00	0.09		0.00	0.09		30.07		0.03		30.72
Total	**16.69**	**0.20**	**16.93**	**0.00**		**0.00**	**0.09**		**0.00**	**0.09**	**0.00**	**30.07**		**0.03**	**0.00**	**30.72**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

CalEEMod Version: CalEEMod.2011.1.1 Date: 2/16/2012

Weddington Golf and Senior Housing Project - Year 2016 Future With Project

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Parking Structure	613	Space
Condo/Townhouse High Rise	200	Dwelling Unit

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 2.2 **Utility Company** Los Angeles Department of Water & Power

Climate Zone 12 **Precipitation Freq (Days)** 33

1.3 User Entered Comments

Project Characteristics -

Land Use - The proposed senior housing will consist of 4-story buildings with 613 subterranean parking spaces underneath the senior housing condominiums. Lot-acreage and square-footage are provided.

Construction Phase - .

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Grading -

Vehicle Trips - The proposed project will approximately generate 1,771 daily trips.

Woodstoves - All units and common areas will have natural gas fireplaces.

Construction Off-road Equipment Mitigation - Compliance with Rule 403 would reduce regional PM emissions associated with construction activities by 61 percent.

Area Mitigation -

Energy Mitigation - Proposed project performance goal will be 20% more effective than required by California Title 24 Energy Design Standards.

Trips and VMT - Assuming a truck can haul 16 tons of material, it would take approximately 7,688 trips to haul 82,000 cubic yards of earth materials.

2.0 Emissions Summary

2.1 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	17.08	0.20	16.95	0.00		0.00	0.36		0.00	0.36	0.00	4,286.54		0.11	0.08	4,313.09
Energy	0.15	1.25	0.53	0.01		0.00	0.10		0.00	0.10		1,593.31		0.03	0.03	1,603.00
Mobile	9.96	24.58	90.32	0.17	19.53	1.11	20.64	0.68	1.11	1.79		16,896.01		0.66		16,909.94
Total	**27.19**	**26.03**	**107.80**	**0.18**	**19.53**	**1.11**	**21.10**	**0.68**	**1.11**	**2.25**	**0.00**	**22,775.86**		**0.80**	**0.11**	**22,826.03**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	16.69	0.20	16.93	0.00		0.00	0.09		0.00	0.09	0.00	30.07		0.03	0.00	30.72
Energy	0.12	1.03	0.44	0.01		0.00	0.08		0.00	0.08		1,318.24		0.03	0.02	1,326.26
Mobile	9.96	24.58	90.32	0.17	19.53	1.11	20.64	0.68	1.11	1.79		16,896.01		0.66		16,909.94
Total	**26.77**	**25.81**	**107.69**	**0.18**	**19.53**	**1.11**	**20.81**	**0.68**	**1.11**	**1.96**	**0.00**	**18,244.32**		**0.72**	**0.02**	**18,266.92**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	9.96	24.58	90.32	0.17	19.53	1.11	20.64	0.68	1.11	1.79		16,896.01		0.66		16,909.94
Unmitigated	9.96	24.58	90.32	0.17	19.53	1.11	20.64	0.68	1.11	1.79		16,896.01		0.66		16,909.94
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Condo/Townhouse High Rise	1,771.00	0.00	0.00	4,213,177	4,213,177
Parking Structure	0.00	0.00	0.00		
Total	1,771.00	0.00	0.00	4,213,177	4,213,177

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Condo/Townhouse High Rise	12.70	7.00	9.50	40.20	19.20	40.60
Parking Structure	8.90	13.30	7.40	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.12	1.03	0.44	0.01		0.00	0.08		0.00	0.08		1,318.24		0.03	0.02	1,326.26
NaturalGas Unmitigated	0.15	1.25	0.53	0.01		0.00	0.10		0.00	0.10		1,593.31		0.03	0.03	1,603.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Condo/Townhouse High Rise	13543.1	0.15	1.25	0.53	0.01		0.00	0.10		0.00	0.10		1,593.31		0.03	0.03	1,603.00
Parking Structure	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.15**	**1.25**	**0.53**	**0.01**		**0.00**	**0.10**		**0.00**	**0.10**		**1,593.31**		**0.03**	**0.03**	**1,603.00**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Condo/Townhouse High Rise	11.205	0.12	1.03	0.44	0.01		0.00	0.08		0.00	0.08		1,318.24		0.03	0.02	1,326.26
Parking Structure	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.12**	**1.03**	**0.44**	**0.01**		**0.00**	**0.08**		**0.00**	**0.08**		**1,318.24**		**0.03**	**0.02**	**1,326.26**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	16.69	0.20	16.93	0.00		0.00	0.09		0.00	0.09	0.00	30.07		0.03	0.00	30.72
Unmitigated	17.08	0.20	16.95	0.00		0.00	0.36		0.00	0.36	0.00	4,286.54		0.11	0.08	4,313.09
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.85					0.00	0.00		0.00	0.00						0.00
Consumer Products	13.31					0.00	0.00		0.00	0.00						0.00
Hearth	0.39	0.00	0.02	0.00		0.00	0.27		0.00	0.27	0.00	4,256.47		0.08	0.08	4,282.37
Landscaping	0.53	0.20	16.93	0.00		0.00	0.09		0.00	0.09		30.07		0.03		30.72
Total	**17.08**	**0.20**	**16.95**	**0.00**		**0.00**	**0.36**		**0.00**	**0.36**	**0.00**	**4,286.54**		**0.11**	**0.08**	**4,313.09**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.85					0.00	0.00		0.00	0.00						0.00
Consumer Products	13.31					0.00	0.00		0.00	0.00						0.00
Hearth	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00
Landscaping	0.53	0.20	16.93	0.00		0.00	0.09		0.00	0.09		30.07		0.03		30.72
Total	**16.69**	**0.20**	**16.93**	**0.00**		**0.00**	**0.09**		**0.00**	**0.09**	**0.00**	**30.07**		**0.03**	**0.00**	**30.72**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Appendix E

CO Hot-Spot Analysis

Weddington Golf and Senior Housing Project

Concentrations of CO for Project

Year 2012 Existing Plus Project	1-Hour Bckgrnd Conc.	8-Hour Bckgrnd Conc.	Model RESULTS	Parts Per Million	
Intersection			1-hour	1-hour	8-hour
Whisett Ave and Riverside Dr	3	2.35	0.04	3	2.4
State Standard				20	9.0

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 95221

JOB: Weddington Golf and Senior Housing RUN: CAL3QHC RUN

DATE : 2/16/12
TIME : 12: 9:51

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = .0 CM/S VD = .0 CM/S Z0 = 100. CM
U = 1.0 M/S CLAS = 6 (F) ATIM = 60. MINUTES MIXH = 1000. M AMB = .0 PPM

LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	LENGTH (M)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (M)	W (M)	V/C	QUEUE (VEH)
	LINK COORDINATES (M)												
1. Link_1	524.0	.0	524.0	500.0	500.	360.	AG	541.	3.2	.0	20.6		
2. Link_2	524.0	500.0	524.0	1000.0	500.	360.	AG	428.	3.2	.0	20.6		
3. Link_3	524.0	452.0	524.0	417.5	34.	180.	AG	7.	100.0	.0	20.6	.85	5.7
4. Link_4	476.0	1000.0	476.0	500.0	500.	180.	AG	1385.	3.2	.0	20.6		
5. Link_5	476.0	500.0	476.0	.0	500.	180.	AG	1149.	3.2	.0	20.6		
6. Link_6	476.0	548.0	476.0	2939.3	2391.	360.	AG	7.	100.0	.0	20.6	2.17	398.5
7. Link_7	.0	476.0	500.0	476.0	500.	90.	AG	1333.	3.2	.0	20.6		
8. Link_8	500.0	476.0	1000.0	476.0	500.	90.	AG	1537.	3.2	.0	20.6		
9. Link_9	452.0	476.0	-1357.3	476.0	1809.	270.	AG	6.	100.0	.0	20.6	1.72	301.6
10. Link_10	1000.0	524.0	500.0	524.0	500.	270.	AG	987.	3.2	.0	20.6		
11. Link_11	500.0	524.0	.0	524.0	500.	270.	AG	1132.	3.2	.0	20.6		
12. Link_12	548.0	524.0	1285.7	524.0	738.	90.	AG	6.	100.0	.0	20.6	1.28	123.0

JOB: Weddington Golf and Senior Housing RUN: CAL3QHC RUN

DATE : 2/16/12
TIME : 12: 9:51

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
3. Link_3	60	31	3.0	541	1600	4.81	1	3
6. Link_6	60	31	3.0	1385	1600	4.81	1	3
9. Link_9	60	26	3.0	1333	1600	4.81	1	3
12. Link_12	60	26	3.0	987	1600	4.81	1	3

RECEPTOR LOCATIONS

RECEPTOR	X	Y	Z
	COORDINATES (M)		
1. Rcpt_1	432.0	568.0	1.8
2. Rcpt_2	568.0	568.0	1.8
3. Rcpt_3	432.0	432.0	1.8
4. Rcpt_4	568.0	432.0	1.8

JOB: Weddington Golf and Senior Housing RUN: CAL3QHC RUN

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR)	REC1	REC2	REC3	REC4
	CONCENTRATION (PPM)			
0.	.0	.0	.1	.1
10.	.1	.0	.2	.1
20.	.1	.0	.2	.1
30.	.1	.0	.2	.1
40.	.1	.0	.2	.1
50.	.1	.0	.2	.1
60.	.1	.0	.3	.2
70.	.1	.0	.3	.2
80.	.1	.0	.3	.1
90.	.1	.0	.1	.0
100.	.3	.1	.1	.0
110.	.3	.2	.1	.0
120.	.2	.2	.1	.0
130.	.3	.2	.1	.0
140.	.2	.2	.1	.0
150.	.2	.2	.1	.0
160.	.2	.2	.1	.0
170.	.2	.2	.1	.0
180.	.1	.2	.0	.0
190.	.1	.4	.0	.1
200.	.1	.3	.0	.1
210.	.2	.3	.0	.1
220.	.1	.1	.0	.0
230.	.2	.2	.0	.0
240.	.2	.2	.0	.0
250.	.2	.2	.0	.0
260.	.1	.2	.0	.0
270.	.0	.0	.0	.0
280.	.0	.0	.1	.1
290.	.0	.0	.2	.2
300.	.0	.1	.2	.2
310.	.0	.1	.1	.1
320.	.0	.1	.1	.2
330.	.0	.1	.1	.2
340.	.0	.1	.1	.2
350.	.0	.0	.1	.2
360.	.0	.0	.1	.1
MAX	.3	.4	.3	.2
DEGR.	100	190	60	60

THE HIGHEST CONCENTRATION OF .40 PPM OCCURRED AT RECEPTOR REC2 .

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 G

Greenhouse Gas Emissions – CalEEMod Output Files

Weddington Golf and Senior Housing Project-Existing

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Golf Course	16.11	Acre

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Los Angeles Department of Water & Power
Climate Zone	12	**Precipitation Freq (Days)**	33		

1.3 User Entered Comments

Project Characteristics -

Woodstoves -

Construction Off-road Equipment Mitigation - Compliance with Rule 403 would reduce regional PM emissions associated with construction activities by approximately 61 percent.

Energy Mitigation - Proposed project energy performance goal will be 20 percent more effective than required by California Title 24 Energy Design Standards.

Land Use - The existing site will include golf driving range, golf course, and tennis courts.

Vehicle Trips - The total daily trips at the existing site uses will be approximately 1,147.

2.0 Emissions Summary

2.1 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.81	1.97	8.05	0.01	1.07	0.08	1.14	0.04	0.08	0.12	0.00	986.25	986.25	0.06	0.00	987.53
Waste						0.00	0.00		0.00	0.00	3.04	0.00	3.04	0.18	0.00	6.81
Water						0.00	0.00		0.00	0.00	0.00	119.80	119.80	0.00	0.00	120.19
Total	**0.81**	**1.97**	**8.05**	**0.01**	**1.07**	**0.08**	**1.14**	**0.04**	**0.08**	**0.12**	**3.04**	**1,106.05**	**1,109.09**	**0.24**	**0.00**	**1,114.53**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.81	1.97	8.05	0.01	1.07	0.08	1.14	0.04	0.08	0.12	0.00	986.25	986.25	0.06	0.00	987.53
Waste						0.00	0.00		0.00	0.00	3.04	0.00	3.04	0.18	0.00	6.81
Water						0.00	0.00		0.00	0.00	0.00	119.80	119.80	0.00	0.00	120.19
Total	**0.81**	**1.97**	**8.05**	**0.01**	**1.07**	**0.08**	**1.14**	**0.04**	**0.08**	**0.12**	**3.04**	**1,106.05**	**1,109.09**	**0.24**	**0.00**	**1,114.53**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.81	1.97	8.05	0.01	1.07	0.08	1.14	0.04	0.08	0.12	0.00	986.25	986.25	0.06	0.00	987.53
Unmitigated	0.81	1.97	8.05	0.01	1.07	0.08	1.14	0.04	0.08	0.12	0.00	986.25	986.25	0.06	0.00	987.53
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Golf Course	1,147.00	0.00	0.00	1,978,070	1,978,070
Total	1,147.00	0.00	0.00	1,978,070	1,978,070

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Golf Course	8.90	13.30	7.40	33.00	48.00	19.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Golf Course	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Golf Course	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Golf Course	0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Golf Course	0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					119.80	0.00	0.00	120.19
Unmitigated					119.80	0.00	0.00	120.19
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Golf Course	0 / 19.1948					119.80	0.00	0.00	120.19
Total						**119.80**	**0.00**	**0.00**	**120.19**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Golf Course	0 / 19.1948					119.80	0.00	0.00	120.19
Total						**119.80**	**0.00**	**0.00**	**120.19**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					3.04	0.18	0.00	6.81
Unmitigated					3.04	0.18	0.00	6.81
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Golf Course	14.98					3.04	0.18	0.00	6.81
Total						**3.04**	**0.18**	**0.00**	**6.81**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Golf Course	14.98					3.04	0.18	0.00	6.81
Total						**3.04**	**0.18**	**0.00**	**6.81**

9.0 Vegetation

CalEEMod Version: CalEEMod.2011.1.1 Date: 2/16/2012

Weddington Golf and Senior Housing Project - Year 2012 Existing With Project

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Parking Structure	613	Space
Condo/Townhouse High Rise	200	Dwelling Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Los Angeles Department of Water & Power
Climate Zone	12	**Precipitation Freq (Days)**	33		

1.3 User Entered Comments

Project Characteristics -

Land Use - The proposed senior housing will consist of 4-story buildings with 613 subterranean parking spaces underneath the senior housing condominiums. Lot-acreage and square-footage are provided.

Construction Phase - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment -

Off-road Equipment - .

Off-road Equipment -

Grading -

Vehicle Trips - The proposed project will approximately generate 1,771 daily trips.

Woodstoves - All units and common areas will have natural gas fireplaces.

Construction Off-road Equipment Mitigation - Compliance with Rule 403 would reduce regional PM emissions associated with construction activities by 61 percent.

Area Mitigation -

Energy Mitigation - Proposed project performance goal will be 20% more effective than required by California Title 24 Energy Design Standards.

2.0 Emissions Summary

2.1 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.07	0.04	3.17	0.00		0.00	0.03		0.00	0.03	0.00	149.78	149.78	0.01	0.00	150.78
Energy	0.03	0.23	0.10	0.00		0.00	0.02		0.00	0.02	0.00	771.12	771.12	0.02	0.01	774.37
Mobile	1.56	3.99	15.98	0.02	2.27	0.16	2.43	0.09	0.16	0.25	0.00	2,082.62	2,082.62	0.13	0.00	2,085.26
Waste						0.00	0.00		0.00	0.00	18.68	0.00	18.68	1.10	0.00	41.85
Water						0.00	0.00		0.00	0.00	0.00	146.74	146.74	0.40	0.01	158.63
Total	**4.66**	**4.26**	**19.25**	**0.02**	**2.27**	**0.16**	**2.48**	**0.09**	**0.16**	**0.30**	**18.68**	**3,150.26**	**3,168.94**	**1.66**	**0.02**	**3,210.89**

2.1 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.06	0.04	3.17	0.00		0.00	0.02		0.00	0.02	0.00	4.97	4.97	0.01	0.00	5.09
Energy	0.02	0.19	0.08	0.00		0.00	0.02		0.00	0.02	0.00	713.08	713.08	0.02	0.01	716.02
Mobile	1.56	3.99	15.98	0.02	2.27	0.16	2.43	0.09	0.16	0.25	0.00	2,082.62	2,082.62	0.13	0.00	2,085.26
Waste						0.00	0.00		0.00	0.00	18.68	0.00	18.68	1.10	0.00	41.85
Water						0.00	0.00		0.00	0.00	0.00	146.74	146.74	0.40	0.01	158.63
Total	**4.64**	**4.22**	**19.23**	**0.02**	**2.27**	**0.16**	**2.47**	**0.09**	**0.16**	**0.29**	**18.68**	**2,947.41**	**2,966.09**	**1.66**	**0.02**	**3,006.85**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.56	3.99	15.98	0.02	2.27	0.16	2.43	0.09	0.16	0.25	0.00	2,082.62	2,082.62	0.13	0.00	2,085.26
Unmitigated	1.56	3.99	15.98	0.02	2.27	0.16	2.43	0.09	0.16	0.25	0.00	2,082.62	2,082.62	0.13	0.00	2,085.26
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Condo/Townhouse High Rise	1,771.00	0.00	0.00	4,213,177	4,213,177
Parking Structure	0.00	0.00	0.00		
Total	1,771.00	0.00	0.00	4,213,177	4,213,177

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Condo/Townhouse High Rise	12.70	7.00	9.50	40.20	19.20	40.60
Parking Structure	8.90	13.30	7.40	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	494.83	494.83	0.01	0.00	496.44
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	507.33	507.33	0.01	0.00	508.98
NaturalGas Mitigated	0.02	0.19	0.08	0.00		0.00	0.02		0.00	0.02	0.00	218.25	218.25	0.00	0.00	219.58
NaturalGas Unmitigated	0.03	0.23	0.10	0.00		0.00	0.02		0.00	0.02	0.00	263.79	263.79	0.01	0.00	265.40
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Condo/Townhouse High Rise	4.94324e+006	0.03	0.23	0.10	0.00		0.00	0.02		0.00	0.02	0.00	263.79	263.79	0.01	0.00	265.40
Parking Structure	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**0.03**	**0.23**	**0.10**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**	**0.00**	**263.79**	**263.79**	**0.01**	**0.00**	**265.40**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Condo/Townhouse High Rise	4.08983e+006	0.02	0.19	0.08	0.00		0.00	0.02		0.00	0.02	0.00	218.25	218.25	0.00	0.00	219.58
Parking Structure	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**0.02**	**0.19**	**0.08**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**	**0.00**	**218.25**	**218.25**	**0.00**	**0.00**	**219.58**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Condo/Townhouse High Rise	903076					507.33	0.01	0.00	508.98
Parking Structure	0					0.00	0.00	0.00	0.00
Total						**507.33**	**0.01**	**0.00**	**508.98**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Condo/Townhouse High Rise	880828					494.83	0.01	0.00	496.44
Parking Structure	0					0.00	0.00	0.00	0.00
Total						**494.83**	**0.01**	**0.00**	**496.44**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	3.06	0.04	3.17	0.00		0.00	0.02		0.00	0.02	0.00	4.97	4.97	0.01	0.00	5.09
Unmitigated	3.07	0.04	3.17	0.00		0.00	0.03		0.00	0.03	0.00	149.78	149.78	0.01	0.00	150.78
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.52					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	2.43					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.01	0.00	0.00	0.00		0.00	0.01		0.00	0.01	0.00	144.80	144.80	0.00	0.00	145.68
Landscaping	0.11	0.04	3.17	0.00		0.00	0.02		0.00	0.02	0.00	4.97	4.97	0.01	0.00	5.09
Total	**3.07**	**0.04**	**3.17**	**0.00**		**0.00**	**0.03**		**0.00**	**0.03**	**0.00**	**149.77**	**149.77**	**0.01**	**0.00**	**150.77**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.52					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	2.43					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.11	0.04	3.17	0.00		0.00	0.02		0.00	0.02	0.00	4.97	4.97	0.01	0.00	5.09
Total	**3.06**	**0.04**	**3.17**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**	**0.00**	**4.97**	**4.97**	**0.01**	**0.00**	**5.09**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					146.74	0.40	0.01	158.63
Unmitigated					146.74	0.40	0.01	158.63
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Condo/Townhouse High Rise	13.0308 / 8.21507					146.74	0.40	0.01	158.63
Parking Structure	0 / 0					0.00	0.00	0.00	0.00
Total						**146.74**	**0.40**	**0.01**	**158.63**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Condo/Townhouse High Rise	13.0308 / 8.21507					146.74	0.40	0.01	158.63
Parking Structure	0 / 0					0.00	0.00	0.00	0.00
Total						**146.74**	**0.40**	**0.01**	**158.63**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					18.68	1.10	0.00	41.85
Unmitigated					18.68	1.10	0.00	41.85
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Condo/Townhouse High Rise	92					18.68	1.10	0.00	41.85
Parking Structure	0					0.00	0.00	0.00	0.00
Total						**18.68**	**1.10**	**0.00**	**41.85**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Condo/Townhouse High Rise	92					18.68	1.10	0.00	41.85
Parking Structure	0					0.00	0.00	0.00	0.00
Total						**18.68**	**1.10**	**0.00**	**41.85**

9.0 Vegetation

Weddington Golf and Senior Housing Project - Year 2016 Future Pre-Project

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Golf Course	16.11	Acre

1.2 Other Project Characteristics

Urbanization Urban

Wind Speed (m/s) 2.2

Utility Company Los Angeles Department of Water & Power

Climate Zone 12

Precipitation Freq (Days) 33

1.3 User Entered Comments

Project Characteristics -

Land Use - The existing land use includes golf driving range, golf course, and tennis courts.

Construction Phase - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment -

Off-road Equipment - .

Off-road Equipment -

Grading -

Vehicle Trips - The proposed project will approximately generate 1,147 daily trips.

Woodstoves -

Construction Off-road Equipment Mitigation - Compliance with Rule 403 would reduce regional PM emissions associated with construction activities by 61 percent.

Area Mitigation -

Energy Mitigation -

Demolition -

2.0 Emissions Summary

2.1 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.65	1.56	6.18	0.01	1.10	0.07	1.17	0.04	0.07	0.11	0.00	993.75	993.75	0.04	0.00	994.58
Waste						0.00	0.00		0.00	0.00	3.04	0.00	3.04	0.18	0.00	6.81
Water						0.00	0.00		0.00	0.00	0.00	119.80	119.80	0.00	0.00	120.19
Total	**0.65**	**1.56**	**6.18**	**0.01**	**1.10**	**0.07**	**1.17**	**0.04**	**0.07**	**0.11**	**3.04**	**1,113.55**	**1,116.59**	**0.22**	**0.00**	**1,121.58**

2.1 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.65	1.56	6.18	0.01	1.10	0.07	1.17	0.04	0.07	0.11	0.00	993.75	993.75	0.04	0.00	994.58
Waste						0.00	0.00		0.00	0.00	3.04	0.00	3.04	0.18	0.00	6.81
Water						0.00	0.00		0.00	0.00	0.00	119.80	119.80	0.00	0.00	120.19
Total	**0.65**	**1.56**	**6.18**	**0.01**	**1.10**	**0.07**	**1.17**	**0.04**	**0.07**	**0.11**	**3.04**	**1,113.55**	**1,116.59**	**0.22**	**0.00**	**1,121.58**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.65	1.56	6.18	0.01	1.10	0.07	1.17	0.04	0.07	0.11	0.00	993.75	993.75	0.04	0.00	994.58
Unmitigated	0.65	1.56	6.18	0.01	1.10	0.07	1.17	0.04	0.07	0.11	0.00	993.75	993.75	0.04	0.00	994.58
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Golf Course	1,147.00	93.76	94.73	2,043,081	2,043,081
Total	1,147.00	93.76	94.73	2,043,081	2,043,081

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Golf Course	8.90	13.30	7.40	33.00	48.00	19.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Golf Course	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Golf Course	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Golf Course	0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Golf Course	0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					119.80	0.00	0.00	120.19
Unmitigated					119.80	0.00	0.00	120.19
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Golf Course	0 / 19.1948					119.80	0.00	0.00	120.19
Total						**119.80**	**0.00**	**0.00**	**120.19**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Golf Course	0 / 19.1948					119.80	0.00	0.00	120.19
Total						**119.80**	**0.00**	**0.00**	**120.19**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					3.04	0.18	0.00	6.81
Unmitigated					3.04	0.18	0.00	6.81
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Golf Course	14.98					3.04	0.18	0.00	6.81
Total						**3.04**	**0.18**	**0.00**	**6.81**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Golf Course	14.98					3.04	0.18	0.00	6.81
Total						**3.04**	**0.18**	**0.00**	**6.81**

9.0 Vegetation

CalEEMod Version: CalEEMod.2011.1.1 Date: 2/16/2012

Weddington Golf and Senior Housing Project - Year 2016 Future With Project

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Parking Structure	613	Space
Condo/Townhouse High Rise	200	Dwelling Unit

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 2.2 **Utility Company** Los Angeles Department of Water & Power

Climate Zone 12 **Precipitation Freq (Days)** 33

1.3 User Entered Comments

Project Characteristics -

Land Use - The proposed senior housing will consist of 4-story buildings with 613 subterranean parking spaces underneath the senior housing condominiums. Lot-acreage and square-footage are provided.

Construction Phase - .

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Grading -

Vehicle Trips - The proposed project will approximately generate 1,771 daily trips.

Woodstoves - All units and common areas will have natural gas fireplaces.

Construction Off-road Equipment Mitigation - Compliance with Rule 403 would reduce regional PM emissions associated with construction activities by 61 percent.

Area Mitigation -

Energy Mitigation - Proposed project performance goal will be 20% more effective than required by California Title 24 Energy Design Standards.

Trips and VMT - Assuming a truck can haul 16 tons of material, it would take approximately 7,688 trips to haul 82,000 cubic yards of earth materials.

2.0 Emissions Summary

2.1 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.06	0.04	3.09	0.00		0.00	0.03		0.00	0.03	0.00	149.78	149.78	0.01	0.00	150.77
Energy	0.03	0.23	0.10	0.00		0.00	0.02		0.00	0.02	0.00	771.12	771.12	0.02	0.01	774.37
Mobile	1.21	3.01	11.87	0.02	2.27	0.14	2.42	0.09	0.14	0.23	0.00	2,030.41	2,030.41	0.08	0.00	2,032.05
Waste						0.00	0.00		0.00	0.00	18.68	0.00	18.68	1.10	0.00	41.85
Water						0.00	0.00		0.00	0.00	0.00	146.74	146.74	0.40	0.01	158.63
Total	**4.30**	**3.28**	**15.06**	**0.02**	**2.27**	**0.14**	**2.47**	**0.09**	**0.14**	**0.28**	**18.68**	**3,098.05**	**3,116.73**	**1.61**	**0.02**	**3,157.67**

2.1 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.05	0.04	3.09	0.00		0.00	0.02		0.00	0.02	0.00	4.97	4.97	0.01	0.00	5.08
Energy	0.02	0.19	0.08	0.00		0.00	0.02		0.00	0.02	0.00	713.08	713.08	0.02	0.01	716.02
Mobile	1.21	3.01	11.87	0.02	2.27	0.14	2.42	0.09	0.14	0.23	0.00	2,030.41	2,030.41	0.08	0.00	2,032.05
Waste						0.00	0.00		0.00	0.00	18.68	0.00	18.68	1.10	0.00	41.85
Water						0.00	0.00		0.00	0.00	0.00	146.74	146.74	0.40	0.01	158.63
Total	**4.28**	**3.24**	**15.04**	**0.02**	**2.27**	**0.14**	**2.46**	**0.09**	**0.14**	**0.27**	**18.68**	**2,895.20**	**2,913.88**	**1.61**	**0.02**	**2,953.63**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.21	3.01	11.87	0.02	2.27	0.14	2.42	0.09	0.14	0.23	0.00	2,030.41	2,030.41	0.08	0.00	2,032.05
Unmitigated	1.21	3.01	11.87	0.02	2.27	0.14	2.42	0.09	0.14	0.23	0.00	2,030.41	2,030.41	0.08	0.00	2,032.05
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Condo/Townhouse High Rise	1,771.00	0.00	0.00	4,213,177	4,213,177
Parking Structure	0.00	0.00	0.00		
Total	1,771.00	0.00	0.00	4,213,177	4,213,177

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Condo/Townhouse High Rise	12.70	7.00	9.50	40.20	19.20	40.60
Parking Structure	8.90	13.30	7.40	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	494.83	494.83	0.01	0.00	496.44
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	507.33	507.33	0.01	0.00	508.98
NaturalGas Mitigated	0.02	0.19	0.08	0.00		0.00	0.02		0.00	0.02	0.00	218.25	218.25	0.00	0.00	219.58
NaturalGas Unmitigated	0.03	0.23	0.10	0.00		0.00	0.02		0.00	0.02	0.00	263.79	263.79	0.01	0.00	265.40
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Condo/Townhouse High Rise	4.94324e+006	0.03	0.23	0.10	0.00		0.00	0.02		0.00	0.02	0.00	263.79	263.79	0.01	0.00	265.40
Parking Structure	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**0.03**	**0.23**	**0.10**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**	**0.00**	**263.79**	**263.79**	**0.01**	**0.00**	**265.40**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Condo/Townhouse High Rise	4.08983e+006	0.02	0.19	0.08	0.00		0.00	0.02		0.00	0.02	0.00	218.25	218.25	0.00	0.00	219.58
Parking Structure	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**0.02**	**0.19**	**0.08**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**	**0.00**	**218.25**	**218.25**	**0.00**	**0.00**	**219.58**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Condo/Townhouse High Rise	903076					507.33	0.01	0.00	508.98
Parking Structure	0					0.00	0.00	0.00	0.00
Total						**507.33**	**0.01**	**0.00**	**508.98**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Condo/Townhouse High Rise	880828					494.83	0.01	0.00	496.44
Parking Structure	0					0.00	0.00	0.00	0.00
Total						**494.83**	**0.01**	**0.00**	**496.44**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	3.05	0.04	3.09	0.00		0.00	0.02		0.00	0.02	0.00	4.97	4.97	0.01	0.00	5.08
Unmitigated	3.06	0.04	3.09	0.00		0.00	0.03		0.00	0.03	0.00	149.78	149.78	0.01	0.00	150.77
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.52					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	2.43					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.01	0.00	0.00	0.00		0.00	0.01		0.00	0.01	0.00	144.80	144.80	0.00	0.00	145.68
Landscaping	0.10	0.04	3.09	0.00		0.00	0.02		0.00	0.02	0.00	4.97	4.97	0.01	0.00	5.08
Total	**3.06**	**0.04**	**3.09**	**0.00**		**0.00**	**0.03**		**0.00**	**0.03**	**0.00**	**149.77**	**149.77**	**0.01**	**0.00**	**150.76**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.52					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	2.43					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.10	0.04	3.09	0.00		0.00	0.02		0.00	0.02	0.00	4.97	4.97	0.01	0.00	5.08
Total	**3.05**	**0.04**	**3.09**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**	**0.00**	**4.97**	**4.97**	**0.01**	**0.00**	**5.08**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					146.74	0.40	0.01	158.63
Unmitigated					146.74	0.40	0.01	158.63
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Condo/Townhouse High Rise	13.0308 / 8.21507					146.74	0.40	0.01	158.63
Parking Structure	0 / 0					0.00	0.00	0.00	0.00
Total						**146.74**	**0.40**	**0.01**	**158.63**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Condo/Townhouse High Rise	13.0308 / 8.21507					146.74	0.40	0.01	158.63
Parking Structure	0 / 0					0.00	0.00	0.00	0.00
Total						**146.74**	**0.40**	**0.01**	**158.63**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					18.68	1.10	0.00	41.85
Unmitigated					18.68	1.10	0.00	41.85
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Condo/Townhouse High Rise	92					18.68	1.10	0.00	41.85
Parking Structure	0					0.00	0.00	0.00	0.00
Total						**18.68**	**1.10**	**0.00**	**41.85**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Condo/Townhouse High Rise	92					18.68	1.10	0.00	41.85
Parking Structure	0					0.00	0.00	0.00	0.00
Total						**18.68**	**1.10**	**0.00**	**41.85**

9.0 Vegetation

Weddington Golf and Senior Housing Project - Year 2016 Future With Project

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Parking Structure	613	Space
Condo/Townhouse High Rise	200	Dwelling Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Los Angeles Department of Water & Power
Climate Zone	12	**Precipitation Freq (Days)**	33		

1.3 User Entered Comments

Project Characteristics -

Land Use - The proposed senior housing will consist of 4-story buildings with 613 subterranean parking spaces underneath the senior housing condominiums. Lot-acreage and square-footage are provided.

Construction Phase - .

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Grading -

Vehicle Trips - The proposed project will approximately generate 1,771 daily trips.

Woodstoves - All units and common areas will have natural gas fireplaces.

Construction Off-road Equipment Mitigation - Compliance with Rule 403 would reduce regional PM emissions associated with construction activities by 61 percent.

Area Mitigation -

Energy Mitigation - Proposed project performance goal will be 20% more effective than required by California Title 24 Energy Design Standards.

Trips and VMT - Assuming a truck can haul 16 tons of material, it would take approximately 7,688 trips to haul 82,000 cubic yards of earth materials.

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	1.03	8.26	5.40	0.01	15.25	0.39	15.64	0.60	0.39	0.99	0.00	1,020.48	1,020.48	0.08	0.00	1,022.09
2015	1.09	4.65	5.49	0.01	0.54	0.26	0.79	0.03	0.26	0.28	0.00	991.32	991.32	0.06	0.00	992.61
2016	0.04	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.85	0.85	0.00	0.00	0.85
Total	**2.16**	**12.91**	**10.90**	**0.02**	**15.79**	**0.65**	**16.43**	**0.63**	**0.65**	**1.27**	**0.00**	**2,012.65**	**2,012.65**	**0.14**	**0.00**	**2,015.55**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	1.03	8.26	5.40	0.01	14.60	0.39	14.99	0.24	0.39	0.63	0.00	1,020.48	1,020.48	0.08	0.00	1,022.09
2015	1.09	4.65	5.49	0.01	0.54	0.26	0.79	0.03	0.26	0.28	0.00	991.32	991.32	0.06	0.00	992.61
2016	0.04	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.85	0.85	0.00	0.00	0.85
Total	**2.16**	**12.91**	**10.90**	**0.02**	**15.14**	**0.65**	**15.78**	**0.27**	**0.65**	**0.91**	**0.00**	**2,012.65**	**2,012.65**	**0.14**	**0.00**	**2,015.55**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.16	1.25	0.75	0.00		0.06	0.06		0.06	0.06	0.00	125.98	125.98	0.01	0.00	126.25
Total	**0.16**	**1.25**	**0.75**	**0.00**	**0.01**	**0.06**	**0.07**	**0.00**	**0.06**	**0.06**	**0.00**	**125.98**	**125.98**	**0.01**	**0.00**	**126.25**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.01	0.01	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	1.91	1.91	0.00	0.00	1.91
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.97	2.97	0.00	0.00	2.97
Total	**0.00**	**0.01**	**0.03**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**4.88**	**4.88**	**0.00**	**0.00**	**4.88**

3.2 Demolition - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.16	1.25	0.75	0.00		0.06	0.06		0.06	0.06	0.00	125.98	125.98	0.01	0.00	126.25
Total	**0.16**	**1.25**	**0.75**	**0.00**	**0.00**	**0.06**	**0.06**	**0.00**	**0.06**	**0.06**	**0.00**	**125.98**	**125.98**	**0.01**	**0.00**	**126.25**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.01	0.01	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	1.91	1.91	0.00	0.00	1.91
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.97	2.97	0.00	0.00	2.97
Total	**0.00**	**0.01**	**0.03**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**4.88**	**4.88**	**0.00**	**0.00**	**4.88**

3.3 Site Preparation - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.06	0.00	1.06	0.58	0.00	0.58	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.52	4.19	2.36	0.00		0.20	0.20		0.20	0.20	0.00	403.55	403.55	0.04	0.00	404.44
Total	**0.52**	**4.19**	**2.36**	**0.00**	**1.06**	**0.20**	**1.26**	**0.58**	**0.20**	**0.78**	**0.00**	**403.55**	**403.55**	**0.04**	**0.00**	**404.44**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.20	1.88	1.14	0.00	14.04	0.08	14.13	0.01	0.08	0.09	0.00	293.59	293.59	0.01	0.00	293.77
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.09	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	14.35	14.35	0.00	0.00	14.37
Total	**0.21**	**1.89**	**1.23**	**0.00**	**14.06**	**0.08**	**14.15**	**0.01**	**0.08**	**0.09**	**0.00**	**307.94**	**307.94**	**0.01**	**0.00**	**308.14**

3.3 Site Preparation - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.42	0.00	0.42	0.23	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.52	4.19	2.36	0.00		0.20	0.20		0.20	0.20	0.00	403.55	403.55	0.04	0.00	404.44
Total	**0.52**	**4.19**	**2.36**	**0.00**	**0.42**	**0.20**	**0.62**	**0.23**	**0.20**	**0.43**	**0.00**	**403.55**	**403.55**	**0.04**	**0.00**	**404.44**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.20	1.88	1.14	0.00	14.04	0.08	14.13	0.01	0.08	0.09	0.00	293.59	293.59	0.01	0.00	293.77
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.09	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	14.35	14.35	0.00	0.00	14.37
Total	**0.21**	**1.89**	**1.23**	**0.00**	**14.06**	**0.08**	**14.15**	**0.01**	**0.08**	**0.09**	**0.00**	**307.94**	**307.94**	**0.01**	**0.00**	**308.14**

3.4 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.08	0.63	0.44	0.00		0.04	0.04		0.04	0.04	0.00	73.01	73.01	0.01	0.00	73.15
Total	**0.08**	**0.63**	**0.44**	**0.00**		**0.04**	**0.04**		**0.04**	**0.04**	**0.00**	**73.01**	**73.01**	**0.01**	**0.00**	**73.15**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.02	0.24	0.17	0.00	0.01	0.01	0.02	0.00	0.01	0.01	0.00	40.03	40.03	0.00	0.00	40.05
Worker	0.04	0.04	0.41	0.00	0.08	0.00	0.09	0.00	0.00	0.01	0.00	65.09	65.09	0.00	0.00	65.17
Total	**0.06**	**0.28**	**0.58**	**0.00**	**0.09**	**0.01**	**0.11**	**0.00**	**0.01**	**0.02**	**0.00**	**105.12**	**105.12**	**0.00**	**0.00**	**105.22**

3.4 Building Construction - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.08	0.63	0.44	0.00		0.04	0.04		0.04	0.04	0.00	73.01	73.01	0.01	0.00	73.15
Total	**0.08**	**0.63**	**0.44**	**0.00**		**0.04**	**0.04**		**0.04**	**0.04**	**0.00**	**73.01**	**73.01**	**0.01**	**0.00**	**73.15**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.02	0.24	0.17	0.00	0.01	0.01	0.02	0.00	0.01	0.01	0.00	40.03	40.03	0.00	0.00	40.05
Worker	0.04	0.04	0.41	0.00	0.08	0.00	0.09	0.00	0.00	0.01	0.00	65.09	65.09	0.00	0.00	65.17
Total	**0.06**	**0.28**	**0.58**	**0.00**	**0.09**	**0.01**	**0.11**	**0.00**	**0.01**	**0.02**	**0.00**	**105.12**	**105.12**	**0.00**	**0.00**	**105.22**

3.4 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.43	3.18	2.44	0.00		0.19	0.19		0.19	0.19	0.00	405.02	405.02	0.04	0.00	405.76
Total	**0.43**	**3.18**	**2.44**	**0.00**		**0.19**	**0.19**		**0.19**	**0.19**	**0.00**	**405.02**	**405.02**	**0.04**	**0.00**	**405.76**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.12	1.23	0.87	0.00	0.07	0.04	0.12	0.01	0.04	0.05	0.00	222.59	222.59	0.01	0.00	222.71
Worker	0.19	0.19	2.11	0.00	0.46	0.02	0.47	0.02	0.02	0.04	0.00	353.81	353.81	0.02	0.00	354.22
Total	**0.31**	**1.42**	**2.98**	**0.00**	**0.53**	**0.06**	**0.59**	**0.03**	**0.06**	**0.09**	**0.00**	**576.40**	**576.40**	**0.03**	**0.00**	**576.93**

3.4 Building Construction - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.43	3.18	2.44	0.00		0.19	0.19		0.19	0.19	0.00	405.02	405.02	0.04	0.00	405.76
Total	**0.43**	**3.18**	**2.44**	**0.00**		**0.19**	**0.19**		**0.19**	**0.19**	**0.00**	**405.02**	**405.02**	**0.04**	**0.00**	**405.76**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.12	1.23	0.87	0.00	0.07	0.04	0.12	0.01	0.04	0.05	0.00	222.59	222.59	0.01	0.00	222.71
Worker	0.19	0.19	2.11	0.00	0.46	0.02	0.47	0.02	0.02	0.04	0.00	353.81	353.81	0.02	0.00	354.22
Total	**0.31**	**1.42**	**2.98**	**0.00**	**0.53**	**0.06**	**0.59**	**0.03**	**0.06**	**0.09**	**0.00**	**576.40**	**576.40**	**0.03**	**0.00**	**576.93**

3.5 Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00	0.00	1.97	1.97	0.00	0.00	1.98
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.02**	**0.02**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**1.97**	**1.97**	**0.00**	**0.00**	**1.98**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.16	0.00	0.00	0.16
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.16**	**0.16**	**0.00**	**0.00**	**0.16**

3.5 Paving - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00	0.00	1.97	1.97	0.00	0.00	1.98
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.02**	**0.02**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**1.97**	**1.97**	**0.00**	**0.00**	**1.98**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.16	0.00	0.00	0.16
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.16**	**0.16**	**0.00**	**0.00**	**0.16**

3.6 Architectural Coating - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.33					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.30	2.30	0.00	0.00	2.30
Total	**0.33**	**0.02**	**0.02**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**2.30**	**2.30**	**0.00**	**0.00**	**2.30**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	5.47	5.47	0.00	0.00	5.47
Total	**0.00**	**0.00**	**0.03**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**5.47**	**5.47**	**0.00**	**0.00**	**5.47**

3.6 Architectural Coating - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.33					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.30	2.30	0.00	0.00	2.30
Total	**0.33**	**0.02**	**0.02**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**2.30**	**2.30**	**0.00**	**0.00**	**2.30**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	5.47	5.47	0.00	0.00	5.47
Total	**0.00**	**0.00**	**0.03**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**5.47**	**5.47**	**0.00**	**0.00**	**5.47**

3.6 Architectural Coating - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.04					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.26	0.26	0.00	0.00	0.26
Total	**0.04**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.26**	**0.26**	**0.00**	**0.00**	**0.26**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.60	0.00	0.00	0.60
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.60**	**0.60**	**0.00**	**0.00**	**0.60**

3.6 Architectural Coating - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.04					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.26	0.26	0.00	0.00	0.26
Total	**0.04**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.26**	**0.26**	**0.00**	**0.00**	**0.26**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.60	0.00	0.00	0.60
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.60**	**0.60**	**0.00**	**0.00**	**0.60**

Noise Appendix

A. Construction Noise Calculations
B. Mobile Noise Calculations
C. TNM Look-Up Output Files

Appendix A

Construction Noise Calculations

Weddington Golf and Senior Housing Project - Construction Noise - Mitigated

Reference Noise Distance	50					
Reference Noise Level	**89**					
Sensitive Receptor	**Distance (feet)**	**Attenuation Factors**	**Maximum Construction Noise Level (dBA)**	**Existing Ambient (dBA, Leq)**	**New Ambient (dBA, Leq)**	**Increase**
Christian Science Church – 4032 Whitsett Avenue	180	3	**74.9**	**68.6**	**75.8**	**7.2**
Single-Family Residence – 4118 Wilkinson Avenue	415	15	**55.6**	**57.5**	**59.7**	**2.2**
Single-Family Residence – 4202 Beeman Avenue	595	10.5	**66.5**	**65.5**	**69.0**	**3.5**
Single- and Multi-Family Residence – 12464 Sunswept Drive	753	10.5	**54.9**	**66.5**	**66.8**	**0.3**
Single-Family Residences located to the northwest	995	15	**54.8**	**55.1**	**58.0**	**2.9**

A 3 dBA reduction was given for mufflers.

Weddington Golf and Senior Housing Project - Construction Noise - Unmitigated

Reference Noise Distance	**50**
Reference Noise Level	**89**

Sensitive Receptor	Distance (feet)	Attenuation Factors	Maximum Construction Noise Level (dBA)	Existing Ambient (dBA, Leq)	New Ambient (dBA, Leq)	Increase
Christian Science Church – 4032 Whitsett Avenue	180	0	**77.9**	**68.6**	**78.4**	**9.8**
Single-Family Residence – 4118 Wilkinson Avenue	415	12	**58.6**	**57.5**	**61.1**	**3.6**
Single-Family Residence – 4202 Beeman Avenue	595	7.5	**69.5**	**65.5**	**71.0**	**5.5**
Single- and Multi-Family Residence – 12464 Sunswept Drive	753	7.5	**66.4**	**66.5**	**69.5**	**3.0**
Single-Family Residences located to the northwest	995	12	**51.0**	**55.1**	**56.5**	**1.4**

Weddington Golf and Senior Housing Project -Pile Driving Noise - Unmitigated

Reference Noise Distance	**50**					
Reference Noise Level	**101**					
Sensitive Receptor	**Distance (feet)**	**Attenuation Factors**	**Maximum Construction Noise Level (dBA)**	**Existing Ambient (dBA, Leq)**	**New Ambient (dBA, Leq)**	**Increase**
Christian Science Church – 4032 Whitsett Avenue	180	0	**89.9**	**68.6**	**89.9**	**21.3**
Single-Family Residence – 4118 Wilkinson Avenue	415	12	**70.6**	**57.5**	**70.8**	**13.3**
Single-Family Residence – 4202 Beeman Avenue	595	7.5	**81.5**	**65.5**	**81.6**	**16.1**
Single- and Multi-Family Residence – 12464 Sunswept Drive	753	12	**65.4**	**66.5**	**69.0**	**2.5**
Single-Family Residences located to the northwest	995	7.5	**74.3**	**55.1**	**74.3**	**19.2**

Weddington Golf and Senior Housing Project -Auger Drilling Noise - Unmitigated

Reference Noise Distance	**50**
Reference Noise Level	**77**

Sensitive Receptor	Distance (feet)	Attenuation Factors	Maximum Construction Noise Level (dBA)	Existing Ambient (dBA, Leq)	New Ambient (dBA, Leq)	Increase
Christian Science Church – 4032 Whitsett Avenue	180	0	**65.9**	**68.6**	**70.5**	**1.9**
Single-Family Residence – 4118 Wilkinson Avenue	415	12	**46.6**	**68.6**	**68.6**	**0.0**
Single-Family Residence – 4202 Beeman Avenue	595	7.5	**57.5**	**57.5**	**60.5**	**3.0**
Single- and Multi-Family Residence – 12464 Sunswept Drive	753	12	**41.4**	**66.5**	**66.5**	**0.0**
Single-Family Residences located to the northwest	995	7.5	**50.3**	**55.1**	**56.3**	**1.2**

Appendix B

Mobile Noise Calculations

Mobile Noise

Year 2012 Existing No Project

ROAD SEGMENT	from:	to:	TOT. # VEH.	Auto %	Auto	MT %	MT	HT %	HT	Speed	dBA (from TNM)
Whitsett Ave	Riverside Dr	Whitsett Ave	1457	91	1325	6	87	3	44	35	69.9
Whitsett Ave	Ventura Blvd	Whitsett Ave	1269	91	1154	6	76	3	38	35	69.3
Moorpark St	Coldwater Cyn Ave	Moorpark St	1556	91	1416	6	93	3	47	35	70.2
Moorpark St	Laurel Cyn Blvd	Moorpark St	1479	91	1345	6	89	3	44	35	70
				91	0	6	0	3	0		

Year 2012 Existing Plus Project

ROAD SEGMENT	from:	to:	TOT. # VEH.	Auto %	Auto	MT %	MT	HT %	HT	Speed	dBA (from TNM)	Increase from Existing
Whitsett Ave	Riverside Dr	Whitsett Ave	1470	91	1337	6	88	3	44	35	70	0.1
Whitsett Ave	Ventura Blvd	Whitsett Ave	1286	91	1170	6	77	3	39	35	69.4	0.1
Moorpark St	Coldwater Cyn Ave	Moorpark St	1561	91	1421	6	94	3	47	35	70.2	0
Moorpark St	Laurel Cyn Blvd	Moorpark St	1484	91	1350	6	89	3	45	35	70	0
				91	0	6	0	3	0			

Year 2016 Future No Project

ROAD SEGMENT	from:	to:	TOT. # VEH.	Auto %	Auto	MT %	MT	HT %	HT	Speed	dBA (from TNM)
Whitsett Ave	Riverside Dr	Whitsett Ave	1621	91	1475	6	97	3	49	35	70.4
Whitsett Ave	Ventura Blvd	Whitsett Ave	1420	91	1292	6	85	3	43	35	69.8
Moorpark St	Coldwater Cyn Ave	Moorpark St	1721	91	1566	6	103	3	52	35	70.7
Moorpark St	Laurel Cyn Blvd	Moorpark St	1643	91	1495	6	99	3	49	35	70.4
				91	0	6	0	3	0		

Year 2016 Future Plus Project

ROAD SEGMENT	from:	to:	TOT. # VEH.	Auto %	Auto	MT %	MT	HT %	HT	Speed	dBA (from TNM)	Increase from Base	Increase from Existing
Whitsett Ave	Riverside Dr	Whitsett Ave	1634	91	1487	6	98	3	49	35	70.4	0	0.5
Whitsett Ave	Ventura Blvd	Whitsett Ave	1437	91	1307	6	86	3	43	35	69.9	0.1	0.6
Moorpark St	Coldwater Cyn Ave	Moorpark St	1727	91	1571	6	104	3	52	35	70.7	0	0.5
Moorpark St	Laurel Cyn Blvd	Moorpark St	1649	91	1500	6	99	3	49	35	70.5	0.1	0.5
				91	0	6	0	3	0				

Appendix C

TNM Look-Up Output Files

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Weddington Golf and Senior Housing Project - Year 2012 Existing No Project_PM Peak Hour Whitsett Avenue/Riverside Drive

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1325.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	87.0
Average medium truck speed (mph):	35.0
Heavy truck volume (v/h):	44.0
Average heavy truck speed (mph):	35.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Distance from center of 12-ft wide, single lane roadway (ft): 32.8
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 69.9

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Weddington Golf and Senior Housing Project - Year 2012 Existing No Project_PM Peak Hour Moorpark Street/Laurel Canyon Boulevard

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1345.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	89.0
Average medium truck speed (mph):	35.0
Heavy truck volume (v/h):	44.0
Average heavy truck speed (mph):	35.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Distance from center of 12-ft wide, single lane roadway (ft): 32.8
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 70.0

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Weddington Golf and Senior Housing Project - Year 2012 Existing No Project_PM Peak Hour Moorpark Street/Coldwater Canyon Avenue

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1416.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	93.0
Average medium truck speed (mph):	35.0
Heavy truck volume (v/h):	47.0
Average heavy truck speed (mph):	35.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Distance from center of 12-ft wide, single lane roadway (ft): 32.8
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 70.2

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Weddington Golf and Senior Housing Project - Year 2012 Existing No Project_PM Peak Hour Whitsett Avenue/Ventura Boulevard

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1154.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	76.0
Average medium truck speed (mph):	35.0
Heavy truck volume (v/h):	38.0
Average heavy truck speed (mph):	35.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Distance from center of 12-ft wide, single lane roadway (ft): 32.8
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 69.3

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Weddington Golf and Senior Housing Project - Year 2012 Existing Plus Project_PM Peak Hour Whitsett Avenue/Riverside Drive

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1337.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	88.0
Average medium truck speed (mph):	35.0
Heavy truck volume (v/h):	44.0
Average heavy truck speed (mph):	35.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Distance from center of 12-ft wide, single lane roadway (ft): 32.8
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 70.0

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Weddington Golf and Senior Housing Project - Year 2012 Existing Plus Project_PM Peak Hour Moorpark Street/Laurel Canyon Boulevard

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1350.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	89.0
Average medium truck speed (mph):	35.0
Heavy truck volume (v/h):	45.0
Average heavy truck speed (mph):	35.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Distance from center of 12-ft wide, single lane roadway (ft): 32.8
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 70.0

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Weddington Golf and Senior Housing Project - Year 2012 Existing Plus Project_PM Peak Hour Moorpark Street/Coldwater Canyon Avenue

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1421.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	94.0
Average medium truck speed (mph):	35.0
Heavy truck volume (v/h):	47.0
Average heavy truck speed (mph):	35.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Distance from center of 12-ft wide, single lane roadway (ft): 32.8
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 70.2

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Weddington Golf and Senior Housing Project - Year 2012 Existing Plus Project_PM Peak Hour Whitsett Avenue/Ventura Boulevard

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1170.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	77.0
Average medium truck speed (mph):	35.0
Heavy truck volume (v/h):	39.0
Average heavy truck speed (mph):	35.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Distance from center of 12-ft wide, single lane roadway (ft): 32.8
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 69.4

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Weddington Golf and Senior Housing Project - Year 2016 Future No Project_PM Peak Hour Whitsett Avenue/Riverside Drive

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1475.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	97.0
Average medium truck speed (mph):	35.0
Heavy truck volume (v/h):	49.0
Average heavy truck speed (mph):	35.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Distance from center of 12-ft wide, single lane roadway (ft): 32.8
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 70.4

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Weddington Golf and Senior Housing Project - Year 2016 Future No Project_PM Peak Hour Moorpark Street/Laural Canyon Boulevard

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1495.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	99.0
Average medium truck speed (mph):	35.0
Heavy truck volume (v/h):	49.0
Average heavy truck speed (mph):	35.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Distance from center of 12-ft wide, single lane roadway (ft): 32.8
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 70.4

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Weddington Golf and Senior Housing Project - Year 2016 Future No Project_PM Peak Hour Moorpark Street/Coldwater Canyon Avenue

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1566.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	103.0
Average medium truck speed (mph):	35.0
Heavy truck volume (v/h):	52.0
Average heavy truck speed (mph):	35.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Distance from center of 12-ft wide, single lane roadway (ft): 32.8
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 70.7

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Weddington Golf and Senior Housing Project - Year 2016 Future No Project_PM Peak Hour Whitsett Avenue/Ventura Boulevard

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1292.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	85.0
Average medium truck speed (mph):	35.0
Heavy truck volume (v/h):	43.0
Average heavy truck speed (mph):	35.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Distance from center of 12-ft wide, single lane roadway (ft): 32.8
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 69.8

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Weddington Golf and Senior Housing Project - Year 2016 Future Plus Project_PM Peak Hour Whitsett Avenue/Riverside Drive

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1487.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	98.0
Average medium truck speed (mph):	35.0
Heavy truck volume (v/h):	49.0
Average heavy truck speed (mph):	35.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Distance from center of 12-ft wide, single lane roadway (ft): 32.8
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 70.4

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Weddington Golf and Senior Housing Project - Year 2016 Future Plus Project_PM Peak Hour Moorpark Street/Laurel Canyon Boulevard

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1500.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	99.0
Average medium truck speed (mph):	35.0
Heavy truck volume (v/h):	49.0
Average heavy truck speed (mph):	35.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Distance from center of 12-ft wide, single lane roadway (ft): 32.8
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 70.5

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Weddington Golf and Senior Housing Project - Year 2016 Future Plus Project_PM Peak Hour Moorpark Street/Coldwater Canyon Avenue

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1571.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	104.0
Average medium truck speed (mph):	35.0
Heavy truck volume (v/h):	52.0
Average heavy truck speed (mph):	35.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Distance from center of 12-ft wide, single lane roadway (ft): 32.8
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 70.7

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Weddington Golf and Senior Housing Project - Year 2016 Future Plus Project_PM Peak Hour Whitsett Avenue/Ventura Boulevard

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1307.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	86.0
Average medium truck speed (mph):	35.0
Heavy truck volume (v/h):	43.0
Average heavy truck speed (mph):	35.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Distance from center of 12-ft wide, single lane roadway (ft): 32.8
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 69.9

APPENDIX C

BIOLOGICAL RESOURCES REPORT

AQUATIC CONSULTING SERVICES, INC.

January 19, 2009

Mr. Dwight Steinert, Vice President
Planning Associates, Inc.
4040 Vineland Avenue, Suite 108
Studio City, CA 91604

RE: 2008 Biological Surveys on Studio City Golf Course, Los Angles County, California

Dear Mr. Steinert:

This is a follow-up to our previous telephone discussion relative to site development for the Studio City Golf Course. Per your previous request, Aquatic Consulting Services Inc, biological staff conducted additional field surveys at the referenced site on June 25, July 1, 9, 16, 25, 31, and August 8, 2008. The purpose of these surveys was to identify the squirrels and birds found at the site as a follow-up to the 2007 surveys. We summarized these surveys in draft Field Report 109.08 titled, "Results of Biological Surveys performed on the Studio City Golf Course Property, City of Los Angeles, Los Angeles County, California." Allen Concepcion reviewed this draft report and requested some revisions/corrections. Enclosed find a copy of the revised report for your review and comment.

Should you have any questions regarding the enclosed report, please call me at (805) 521-1397.

Sincerely,

Louis Courtois

Louis A. Courtois, President

Enclosure: Revised Field Report 109.08

RESULTS OF BIOLOGICAL SURVEYS PERFORMED ON THE STUDIO CITY GOLF COURSE PROPERTY, CITY OF LOS ANGELES, LOS ANGELES COUNTY, CALIFORNIA

Prepared for:

Planning Associates
Studio City, California

Prepared by:

Aquatic Consulting Services, Inc.
Fillmore, California
Field Report 109.08
October 2008 (Revised 12-23-08)

I. INTRODUCTION

This report summarizes the findings of surveys performed on the Studio City Golf and Tennis Property by Aquatic Consulting Services, Inc. (ACS) at the request of Planning Associates, Inc. (Planning Associates) in response to public comments made during the scoping sessions regarding public concern for a proposed senior housing project to potentially affect squirrels and exotic parakeets known to occur in the vicinity of the property (public comments provided at scoping sessions: January and April 2007, and April 2008, personal communication: Dwight Steinert, Planning Associates, October 10, 2008). These surveys provide baseline biological information regarding the animal species residing in and around the golf course at the present time.

II. SITE LOCATION AND DESCRIPTION

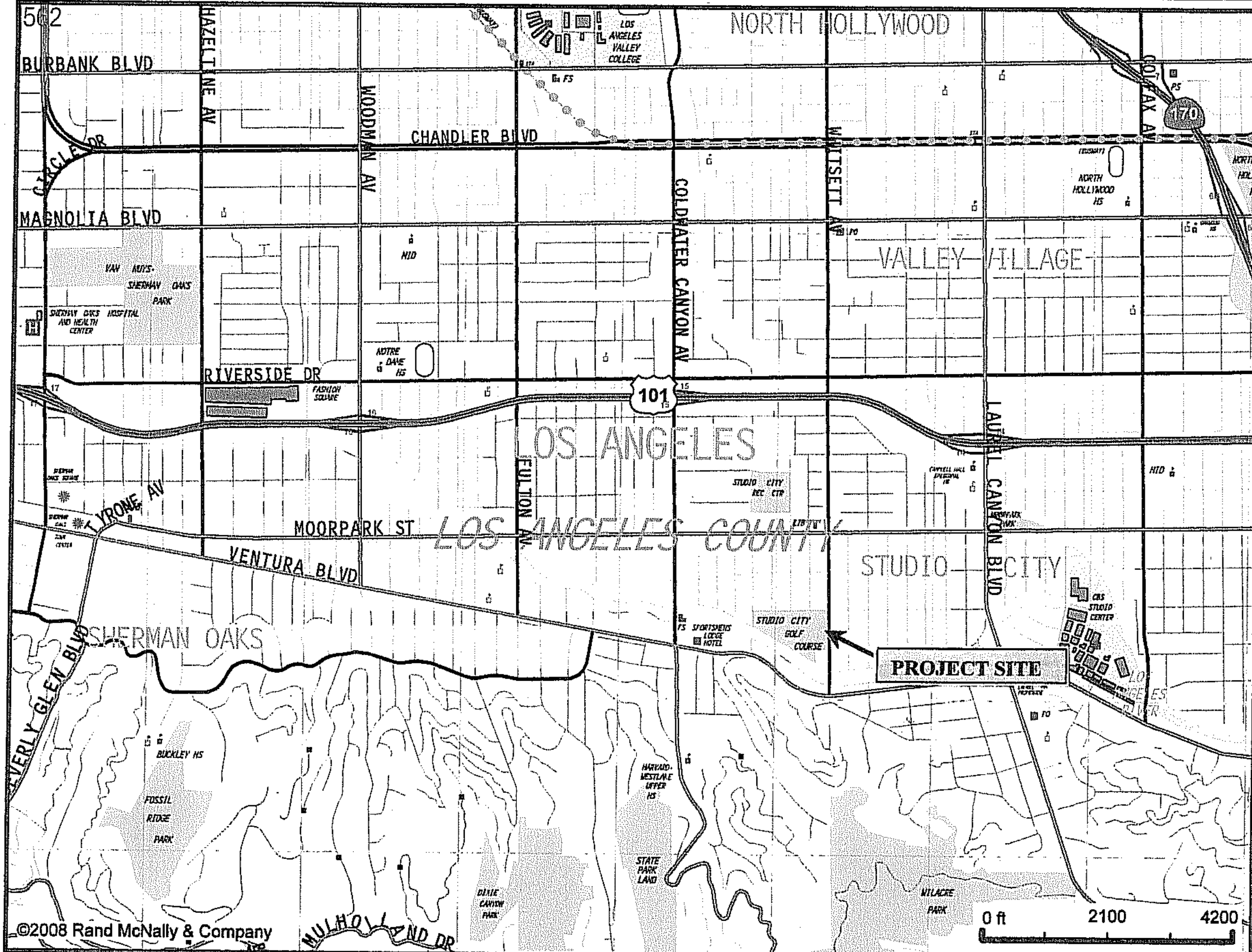
The approximately 16.1-acre Studio City Golf and Tennis Property is located west of Whitsett Avenue and north of the Los Angeles River flood-control channel in Studio City, City of Los Angeles, Los Angeles County, California. Figures 1 and 2, respectively, show the general geographic location of the project site and the specific location relative to existing roadways. Figure 3 shows the property limits of the proposed 4.44-acre tennis court development area, and locations of ground-level photographs are provided at the end of this report.

III. BACKGROUND

Survey efforts for both the 2007 and 2008 surveys have been focused within the golf course portion of the property (hereafter, Studio City Golf Course) due to the lack of suitable habitat for squirrels and nesting birds within the tennis court complex. The following summarizes findings of the 2007 surveys and provides information regarding the focus of the 2008 surveys.

In 2007, ACS performed surveys within the Studio City Golf Course (Survey Dates: April 2, 9, 17, and 25, 2007). The purpose of the 2007 surveys was to identify squirrels and bird species occurring on site, and determine if any birds were actively nesting. The Studio City Golf Course is a developed golf course vegetated by turf grass and ornamental trees and shrubs. Although dominated by exotics, the vegetation on-site does provide suitable nesting and foraging habitat for native bird species. Similarly, the presence of vegetative cover and lack of paved surfaces within the Studio City Golf Course provides suitable habitat for squirrels. Two common squirrel species and a variety of bird species, including exotic parakeets, were observed during the 2007 surveys[1]. Of the 22 bird species observed in 2007, possible and confirmed nesting activities were observed for two species (possible nesting activity observed 2007: bushtit, *Psaltriparus minimus*; Nesting confirmed 2007: house finch, *Carpodacus mexicanus*).

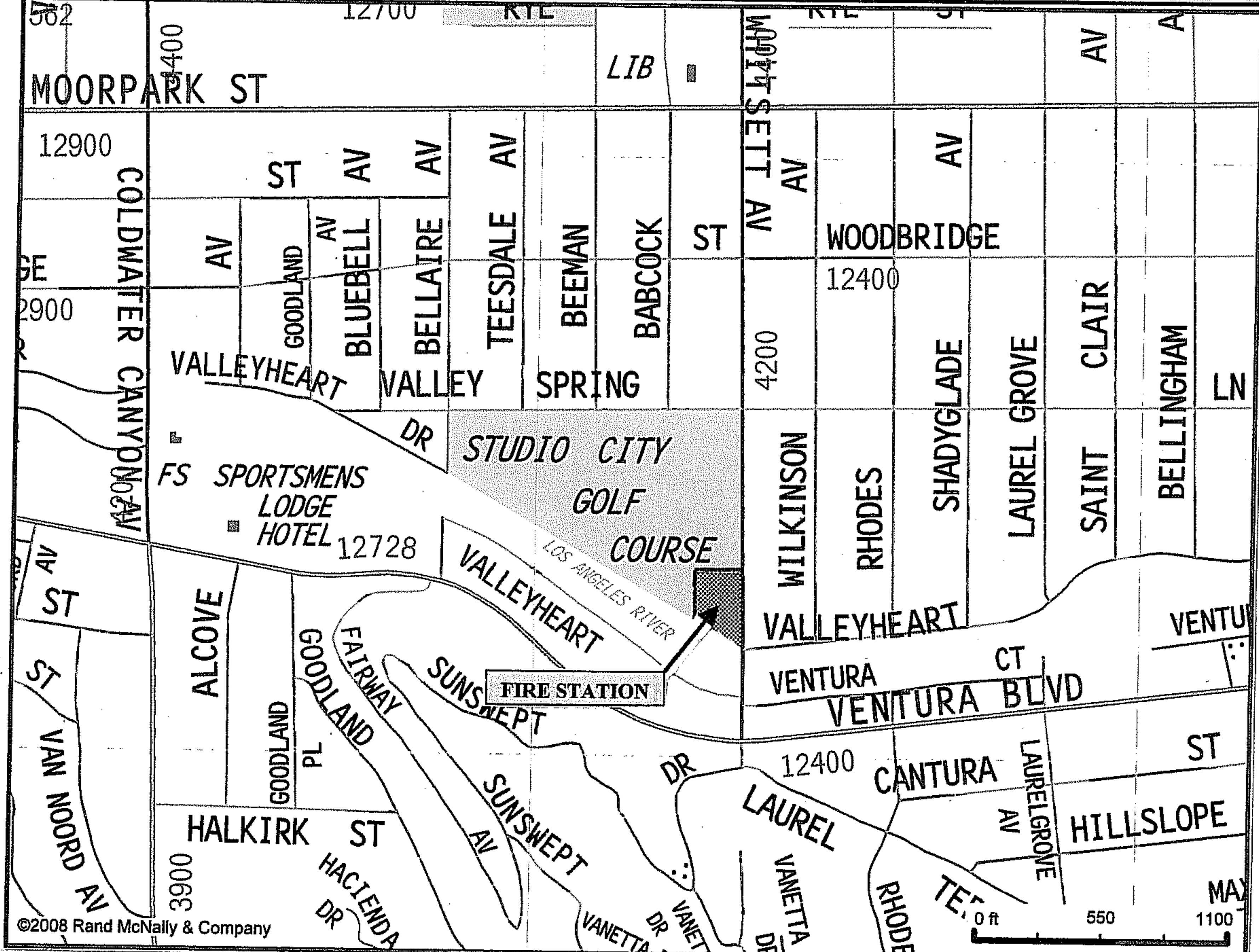
[1] May 7, 2007 Aquatic Consulting Services, Inc. letter to Planning Associates concerning preliminary results of 2007 biological surveys.



ACS

General Geographic Location Map of Project Site
(From: 2008 Thomas Guide, Los Angeles County)

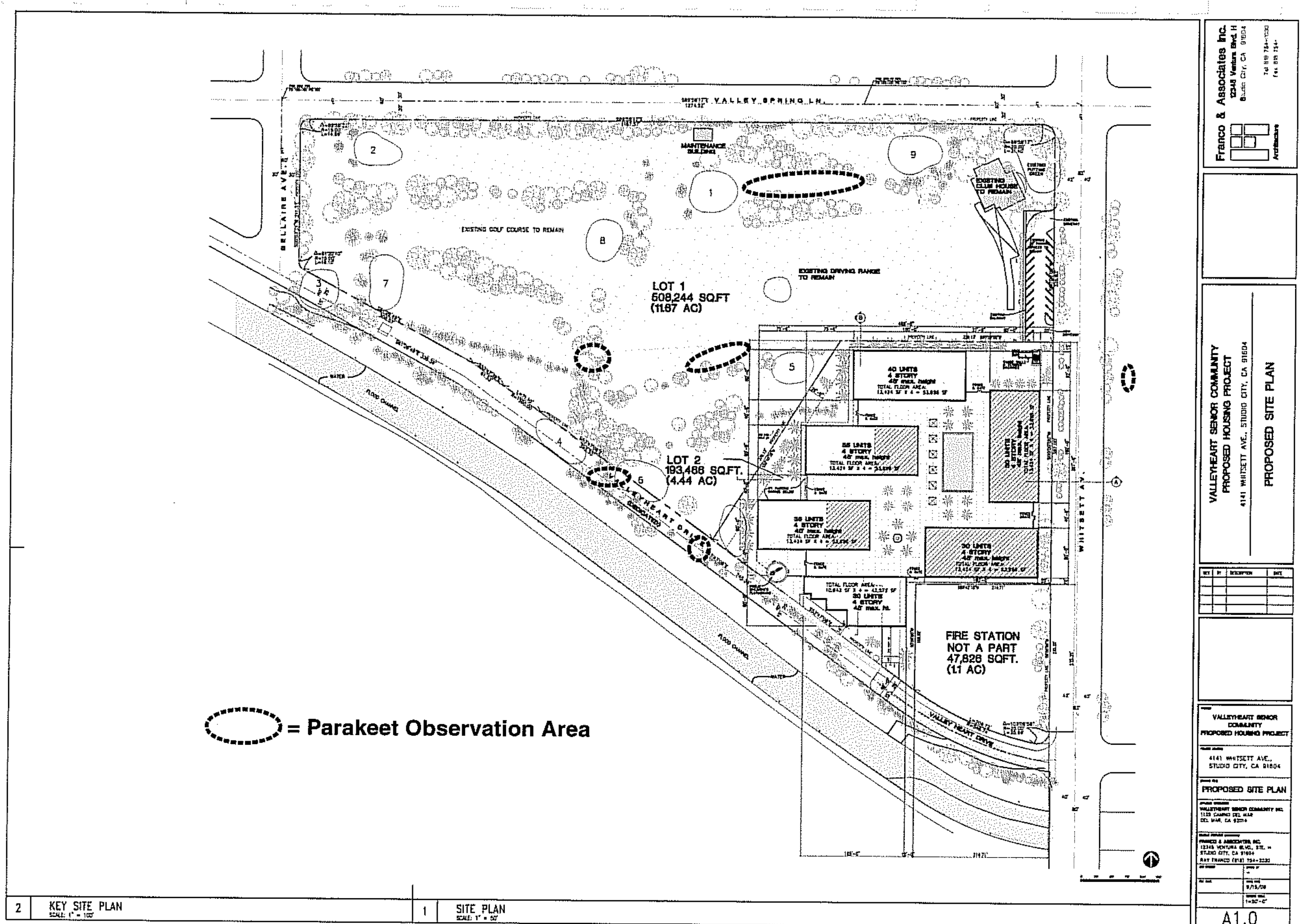
FIGURE 1



ACS

Specific Location of Project Site
(From: 2008 Thomas Guide, Los Angeles County)

FIGURE 2



ACS

Map Showing Property Limits, Proposed Development Area, and Locations of Exotic Parakeet Observations
(From Franco & Associates Proposed Site Plan, 9-15-08)

FIGURE 3

The parakeets were not identified to species at the time of the 2007 surveys because their rapid, high elevation flight pattern prevented observation of diagnostic features. In 2008, Planning Associates requested that ACS perform additional bird surveys focusing on identifying the parakeets to species. Subsequently, ACS performed bird surveys within the Studio City Golf Course on June 25; July 1, 9, 16, 25, 31; and August 8, 2008 and identified the parakeets as the red-masked parakeet (*Aratinga erythrogenys*).

IV. SURVEY METHODOLOGY

Both the 2007 and 2008 survey series were performed on the Studio City Golf Course between 7:00 and 10:30 a.m. in weather conditions that were conducive to bird and mammal surveying. Survey areas were walked and visually surveyed. Squirrels were identified by direct observation, and birds were identified by direct observation and/or call.

V. SURVEY RESULTS

The following table is a composite list of animal species encountered during the 2007 and 2008 survey series performed on the Studio City Golf Course.

Table 1. Vertebrate Species Identified (by physical sighting, track, scat, or call) on the Studio City Golf Course[2]

COMMON NAME	SCIENTIFIC NAME
REPTILIA[3]	
Iguanid Lizards	**Iguanidae**
Western fence lizard	*Sceloporus occidentalis*
MAMMALIA[4]	
Squirrels	***Sciuridae***
California ground squirrel	*Spermophilus beecheyi*
Fox Squirrel[5]	*Sciurus niger*
AVES[6]	
Hawks	**Accipitridae**
Hawk, Cooper's	*Accipiter cooperii*
Hawk, Red-shouldered	*Buteo lineatus*
Hawk, Red-tailed	*Buteo jamaicensis*
Pigeons and Doves	**Columbidae**
Dove, Mourning	*Zenaida macroura*
Parrots and allies	**Psittacidae**
Red-masked parakeet	*Aratinga erythrogenys*

[2] This composite list includes species observations from the 2007 and 2008 survey series.

[3] Nomenclature from: Western Reptiles and Amphibians, Stebbins 1985.

[4] Nomenclature from: The Audubon Society Field Guide to North American Mammals, Whitaker Jr. 1980.

[5] Previously (2007) identified as the Eastern Gray Squirrel (*Sciurus carolinensis)*

[6] Nomenclature from: Sibley Guide to Birds (2003), National Audubon Society.

Swifts	**Apodidae**
White throated swift	*Aeronautes saxatalis*
Hummingbirds	**Trochilidae**
Hummingbird, Allen's	*Salasphorus sasin*
Hummingbird, Anna's	*Calypte anna*
Hummingbird, black-chinned	Archilochus alexandri
Hummingbird, Rufous	*Selasphorus sasin*
Woodpeckers	**Picidae**
Nuttal's woodpecker	*Picoides nuttallii*
Tyrant Flycatchers	**Tyrannidae**
Phoebe, black	*Sayornis nigricans*
Swallows	**Hirundinidae**
Swallow, barn	*Hirundo rustica*
Swallow, cliff	*Hirundo pyrrhonota*
Bushtits	**Aegithalidae**
Bushtit	*Psaltriparus minimus*
Wrens	**Troglodytidae**
Wren, Bewick's	*Thryomanes bewickii*
Kinglets, gnatcatchers, Thrushes and Babblers	**Muscicapidae**
Ruby-crowned kinglet	*Regulus calendula*
Starlings and Mynas	**Sturnidae**
European starling	*Sturnus vulgaris*
Warblers	**Parulidae**
Black and white warbler	*Mniotilta varia*
Hermit warbler	*Dendroica occidentalis*
Townend's warbler	*Dendroica townsendi*
Yellow-rumped warbler	*Dendroica coronata*
Emberizids	**Emberizidae**
White-crowned sparrow	*Zonotrichia leucophrys*
Blackbirds	***Icteridae***
Bullock's oriole	*Icterus bulockii*
Hooded oriole	*Icterus cucullatus*
Finches	**Fringillidae**
Finch, House	*Carpodacus mexicanus*
lesser goldfinch	*Carduelis psaltria*
Old World Sparrows	**Passeridae**
Passer domesticus	*House sparrow*

Of the species listed in Table 1, five (Allen's hummingbird, rufous hummingbird, Cooper's hawk, Nuttal's woodpecker, and hermit warbler) are listed on the California Department of Fish and Game's California Natural Diversity Database CNDDB) Special Animals List (California Department of Fish and Game, February 2008). "Special Animals" is a broad term used to refer to all fauna the CNDDB is interested in tracking, regardless of their legal or protection status. These taxa generally fall into one or more of the following categories:

- Officially listed or proposed for listing under the State and/or Federal Endangered Species Acts;
- State or Federal candidate for possible listing;

- Taxa which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the California Environmental Quality Act (CEQA) Guidelines;
- Taxa considered by the California Department of Fish and Game to be a Species of Special Concern;
- Taxa that are biologically rare, very restricted in distribution, declining throughout their range, or have a critical, vulnerable stage in their life cycle that warrants monitoring;
- Population(s) in California that may be peripheral of a taxon's range, but are threatened with extirpation in California;
- Taxa closely associated with a habitat that is declining in California at an alarming rate (e.g., wetlands, riparian, old growth forests, desert aquatic systems, native grasslands, vernal pools, etc.);
- Taxa designated as a special status, sensitive, or declining species by other state or federal agencies, or non-governmental organization.

Table 2 lists the current regulatory status of animal species that occur on site. The following provides specific life history information for these special-status species, as well as fauna of particular interest to these surveys (squirrels and parakeets).

Table 2. Special-Status Animals Occurring on the Studio City Golf Course Property

COMMON NAME	SCIENTIFIC NAME	STATUS	COMMENTS
BIRDS			
Allen's hummingbird	*Salasphorus sasin*	AUDUBON–WL, IUCN[7]-LC, USBC-WL	Of interest only when nesting
Cooper's hawk	*Accipiter cooperii*	DFG – WL, IUCN-LC	Of interest only when nesting
Hermit warbler	*Dendroica occidentalis*	ABC – GL, AUDUBON–WL, IUCN-LC	Of interest only when nesting
Nuttal's woodpecker	*Picoides nuttallii*	ABC – GL, AUDUBON–WL, IUCN-LC, USBC-WL	Of interest only when nesting
Rufous hummingbird	*Selasphorus rufous*	ABC – GL, AUDUBON–WL, IUCN-LC, USBC-WL	Of interest only when nesting

Status Abbreviations:

California Endangered Species Act Listing Codes		**Other listing Codes (continued)**	
CESA–E	California Endangered Species Act - Endangered	DFG-FP	California Department of Fish and Game –Fully Protected Species
Endangered Species Act (Federal) Listing Codes		IUCN-DD	IUCN – Data Deficient
ESA-E	Federal Endangered Species Act - Endangered	IUCN-EN	IUCN - Endangered
ESA-FC	Federal Endangered Species Act – Candidate Species	IUCN-LC	IUCN – Least Concern
ESA–T	Federal Endangered Species Act - Threatened	IUCN-NT	IUCN – Near Threatened
Other listing Codes		IUCN-VU	IUCN - Vulnerable
ABC – GL	American Bird Conservancy Green List	USFS-S	U.S. Forest Service - Sensitive
AUDUBON–WL	Audubon Watch List	USFWS-BCC	U.S. Fish and Wildlife Service Birds of Conservation Concern
BLM-S	Bureau of Land Management-Sensitive	WBWG-H	Western Bat Working Group – High Priority
DFG-SSC	California Department of Fish and Game – Species of Special Concern	WBWG-M	Western Bat Working Group – Medium Priority
DFG – WL	California Department of Fish and Game – Watch List	USBC-WL	United States Bird Conservation Watch List

[7] IUCN = International Union for Conservation of Nature

A. SPECIAL-STATUS ANIMALS

1. Birds

a. Allen's hummingbird (*Salasphorus sasin*)

Allen's hummingbird is a common summer resident (January to July) and migrant along most of the California coast. Breeders are most common in coastal scrub, valley foothill hardwood, and valley foothill riparian habitats, but also are common in closed-cone pine-cypress, urban, and redwood habitats. Sprinklers, birdbaths, and other human water sources are used for bathing and possibly drinking, but water is also obtained from nectar and dew. Breeding occurs in sparse and open woodlands, coastal redwoods, and sparse to dense scrub habitats from mid-February to early August with peak activity in April. The Special Animals List indicates that monitoring organizations are only interested in tracking nesting locations. Nesting was not confirmed on the Studio City Golf Course; however, this species has the potential to be a resident on or near the property due to the presence of large, mature trees within the Studio City Golf Course and surrounding off-site residential neighborhoods that could provide suitable nesting habitat.

b. Cooper's hawk (*Accipiter cooperi*)

Cooper's hawk is frequently found in patchy woodlands, with dense stands of live oak, riparian deciduous, or other forest habitats occurring near water. Cooper's hawk is breeding resident throughout most of the wooded portion of the state, with nesting occurring in dense stands containing moderate crown-depth. Small birds, especially young during nesting season, and small mammals, are the primary prey; however, reptiles and amphibians are also taken. Hunting occurs in broken woodland and habitat edges; prey is caught in the air, on the ground, and in vegetation. Vegetative cover is required to hide, attack, and approach prey. This common winter migrant and occasional summer resident in Southern California breeds in oak woodland habitats and southern cottonwood-willow riparian woodland. The Watch List designation for this species refers to actively nesting individuals, only. Nesting was not confirmed on the Studio City Golf Course; however, this species has the potential to be a resident on or near the property due to the presence of large, mature trees within the Studio City Golf Course and surrounding off-site residential neighborhoods that could provide suitable nesting habitat.

c. Hermit warbler (*Dendroica occidentalis*)

Hermit warbler is a fairly-common to common summer visitor and migrant throughout California. Spring migration occurs through April and May; fall migration occurs through August and early September. They are common spring and fall migrants in the mountains, and also occur in valley foothill hardwood habitat and in stands of planted pines during migration and in winter. Breeding occurs in mature ponderosa pine, montane hardwood-conifer, mixed conifer, Douglas fir, redwood, red fir, and Jeffery pine habitats within major mountain ranges from San Gabriel and San Bernardino Mountains northward, excluding coastal ranges south of Santa Cruz County. The Special Animals List indicates that monitoring organizations are only interested in tracking nesting locations. The observations of this species on the Studio City Golf Course were limited to two survey days in April of 2007. Considering that these observations occurred during the spring migration period, and were limited to two survey days, hermit warbler is not expected to breed at the Studio City Golf Course, or be a resident on-site.

d. Nuttal's woodpecker (*Picoides nuttallii*)
Nuttal's woodpecker occurs in the Central Valley, Transverse and Peninsular Ranges, Coast Ranges north to Sonoma County and rarely to Humboldt County, lower portions of the Cascade and Sierra Nevada Ranges, and as a vagrant in the Owens Valley. Nuttal's woodpecker is a common, permanent resident of low-elevation riparian deciduous and oak habitats, and forages mostly within oak and riparian habitats; insects are gleaned from foliage, and sap is acquired by pecking, probing, or drilling into trunks and branches. Nuttal's woodpecker was observed on-site during the 2007 and 2008 surveys. The Special Animals List indicates that monitoring organizations are only interested in tracking nesting locations. Nesting was not confirmed on the Studio City Golf Course; however, this species has the potential to be a resident on or near the property due to the presence of large, mature trees within the Studio City Golf Course and surrounding off-site residential neighborhoods that could provide suitable nesting habitat in-spite of the lack of preferred native riparian and oak habitats.

e. Rufous hummingbird (*Selasphorus rufous*)
Rufous hummingbird is a common migrant and uncommon summer resident of California in general, and a rare, but likely regular winter resident in southern California. Rufous hummingbird is found in a wide variety of habitats that provide nectar-producing flowers, and trees and shrubs in many habitats provide cover. The Special Animals List indicates that monitoring organizations are only interested in tracking nesting locations. Nesting was not confirmed on the Studio City Golf Course; however, suitable habitat is present, and both male and female rufous hummingbirds were observed together during the 2007 surveys, indicating the potential for nesting to occur on-site.

B. OTHER ANIMALS OF INTEREST

The following are not special-status species; however, as the public has expressed concern for these species, they have been included in this discussion.

1. Parakeets

The parakeets occurring on the Studio City Golf Course have been identified as red-masked parakeet (*Aratinga erythrogenys*); however per conversations with Kimball Garrett,[8] both the red-masked and mitred parakeets (*Aratinga mitrata*), which may form mixed flocks with red-masked parakeets, also occur in the vicinity of the Studio City Golf Course. Both the red-masked parakeet and the mitred parakeet are native to South America; however escaped individuals previously kept as pets have become naturalized in residential, urban, and suburban areas primarily within coastal southern California. Scattered observations and smaller naturalized populations occur elsewhere in California, including the San Francisco Bay Area. In their native range, red-masked parakeet occurs in a range of habitats including

[8] Personal communication with Mr. Kimball Garrett (Collections Manager, Natural History Museum of Los Angeles County) on October 6, 2008 discussing wild parakeet populations located within the Studio City area.

humid forests, deciduous forest, dry Acacia scrub, open sparsely vegetated desert, and intensely farmed areas and towns, while mitred parakeet is found primarily in small forest patches, arid mountain slopes and valleys, steep hills and rock faces, and legume-dominated cloud forest. In North America, the nesting season for both species generally extends between spring and summer. Nesting typically occurs within cavities; older trees are preferred, but non-traditional cavities (drain pipes, abandoned cavity nests used by other species, etc) are also used. Based on Forshaw (2006), the female has one clutch per year. Eggs incubate for 23 days, and the young typically fledge within 50 days. Food items vary from nectar to seeds and berries.

Although not included in the Special Animals list, and not afforded regulatory protection in California or the United States due to their presence as an introduced exotic species, both red-masked parakeet and mitred parakeet have been evaluated for population status by the International Union for Conservation of Nature (IUCN) within their natural range: the red-masked parakeet has been assigned a status of Near Threatened (IUCN-NT), indicating that this species nearly qualifies for listing as threatened within its range; mitred parakeet has been assigned a status of Least Concern (IUCN-LC), indicating that it does not approach the threshold for the population decline criterion used by the IUCN (i.e., declining more than 30% in ten years or three generations).

2. Squirrels

a. California ground squirrel (*Spermophilus beecheyi*)

California ground squirrels are found within open areas, including rocky outcrops, fields, pastures, and sparsely wooded hillsides from southern central Washington, western Oregon, most of California, and west central Nevada. California ground squirrels form loose colonies of multiple individuals that occupy a single burrow that is accessed individually through used and maintained entrances. California ground squirrels may climb into brush or trees to bask, but otherwise remain on the ground. Plant materials are the primary food source; however insects and small vertebrates may be eaten. Hibernation occurs from November through February; however, first-year individuals may remain above ground. California ground squirrels are residents within the Studio City Golf Course.

b. Fox Squirrel (*Sciurus niger*)

Fox squirrel, the largest of the North American tree squirrels, is native to the eastern United States, and inhabits woods, mixed forests, cypress and mangrove swamps, and areas containing pine trees. The fox squirrels present on the Studio City Golf Course are not native to California, but likely represent a small population that has become established and locally naturalized within the golf course and the portions of the surrounding neighborhoods that contain suitable tree cover. Fox squirrels are active all year, and feed on nuts, seeds, berries, some fungi, and corn in areas of agricultural production. Summer nests are located in tree branches and formed of leaves; winter nests may be in a tree cavity and occupied with several other squirrels. These squirrels are somewhat larger than the Eastern gray squirrel (*Sciurus carolinensis*)[9]. Their coat is more colorful and has a brownish tinge to the tail and rusty-gray under parts with a rusty-yellow or orange belly.

[9] Originally identified as occurring on site in 2007.

VI. CONCLUSIONS

Based on biological surveys conducted in 2007 and 2008, the Studio City Golf Course contains a variety of wildlife (reptiles, birds, and mammals) that have adapted to normal golf course operations. Although the proposed senior housing development located within the area currently containing tennis courts has no specific habitat area, the surrounding golf course provides suitable mature trees, brush, and vegetative cover used by existing wildlife species. The proposed development project will not remove any of the mature trees or brush so potential bird nesting habitat and squirrel nesting areas will remain intact. However, since the proposed development footprint is contiguous to these existing habitat areas, resident bird and wildlife species will need to be protected during construction. The following recommendations are proposed for protecting wildlife resources during project construction.

VII. RECOMMENDATIONS

A. BIRDS

The exotic parakeets observed on-site are not protected by state or federal regulation, but are of interest to the general public in the area. Acknowledging this public concern, the developer could, at their discretion, apply the following avoidance/protection measures (typically extended only to native bird species) to the exotic parakeets occurring on the Studio City Golf Course and thereby provide adequate measures to prevent impacts to these birds.

As most of the proposed construction is planned to occur within the existing footprint of the tennis court complex and immediately adjacent area, which generally lack suitable nesting and foraging habitat for the bird species observed on-site, it is likely that proposed construction activities within the tennis court area will have negligible impacts to birds generally occurring within the Studio City Golf Course area. However, as a standard measure, the following recommendations are presented to ensure that proposed construction activities comply with the conditions of the California Fish and Game Code, and the Federal Migratory Bird Species Treaty Act, which provide regulatory protection for nesting birds. It is recommended that:

- Biological monitoring of all construction activities be performed during the regular nesting season (February 1 through September 1). If birds begin to nest during construction, these nest areas will be marked and a 50-foot buffer/avoidance zone will be established to protect nesting/fledgling birds. Any nesting birds within this zone should be avoided until such time that all young have fledged and the nest is no longer active, or until the nest is observed to have been abandoned for a sufficient period of time to preclude egg viability. Heavy equipment (dozer, backhoe, trucks, excavator, and pile driver) used for project construction will avoid working within this 50-foot buffer area.

- Alternatively, excavation, grading, fill, pile driving or any other construction activity requiring the use of heavy equipment should be conducted outside the typical nesting season.

B. MAMMALS

Neither fox squirrels nor the California ground squirrels occurring on-site are special-status species, and are not provided any special state or federal regulatory protection. As most of the proposed construction is planned to occur within the 4.44-acre tennis court project area and the areas immediately adjacent, which generally lack suitable burrowing, nesting, and foraging habitat for the squirrel species observed on-site, it is likely that proposed operations will have negligible impacts to squirrels occurring on the adjacent Studio City Golf Course area. In addition, it should be noted that fox squirrels are exotic to California (native to the eastern portion of the United States), and the ground squirrel population occurring on-site is presently managed by golf course landscape and maintenance personnel in order to minimize damage caused by these burrowing mammals to the golf course fairway and green areas. Since the mature trees on site will be left intact, any fox squirrel nests will be left intact during construction. Therefore, there are no specific recommendations for protecting these animals.

VIII. REFERENCES

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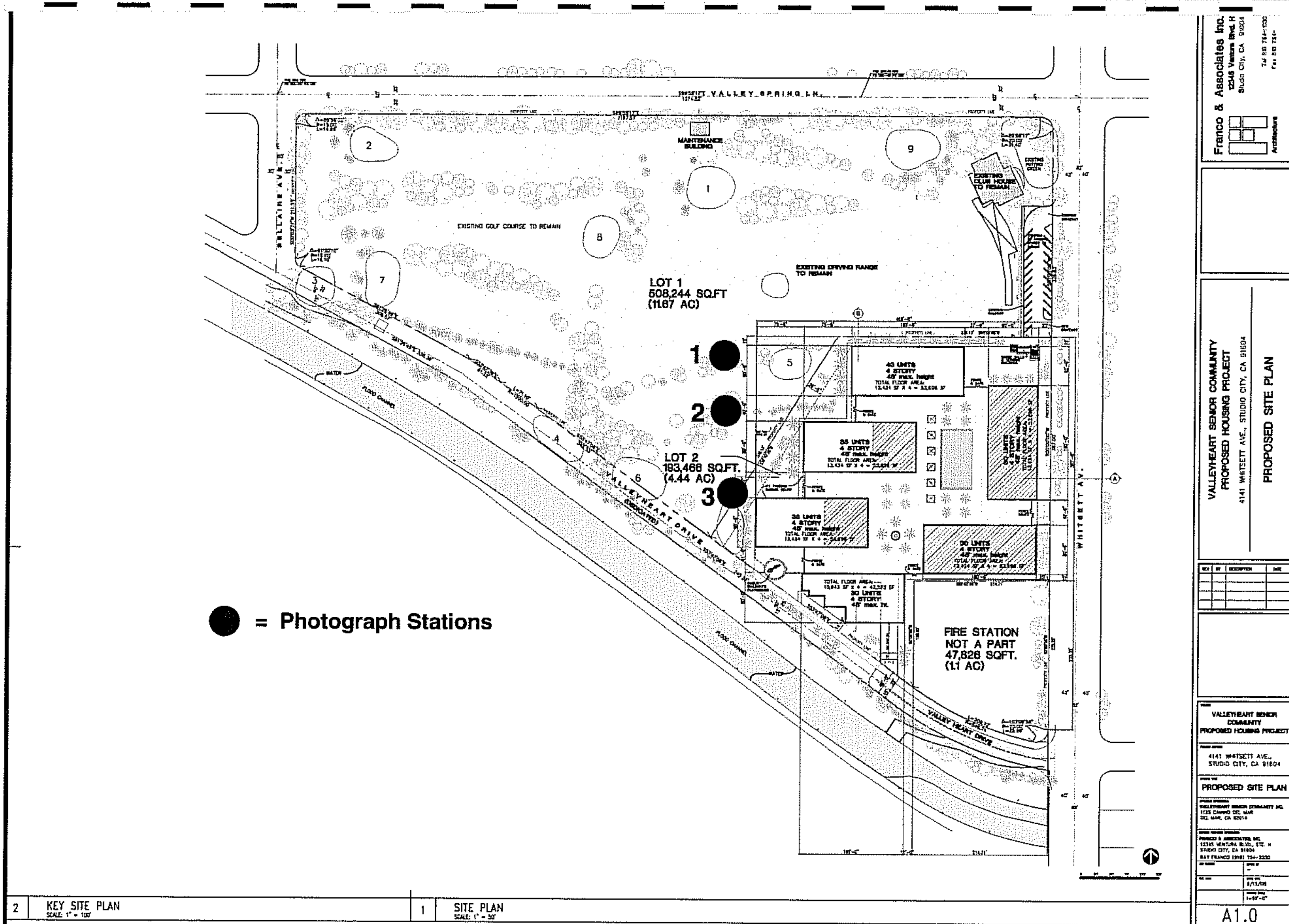
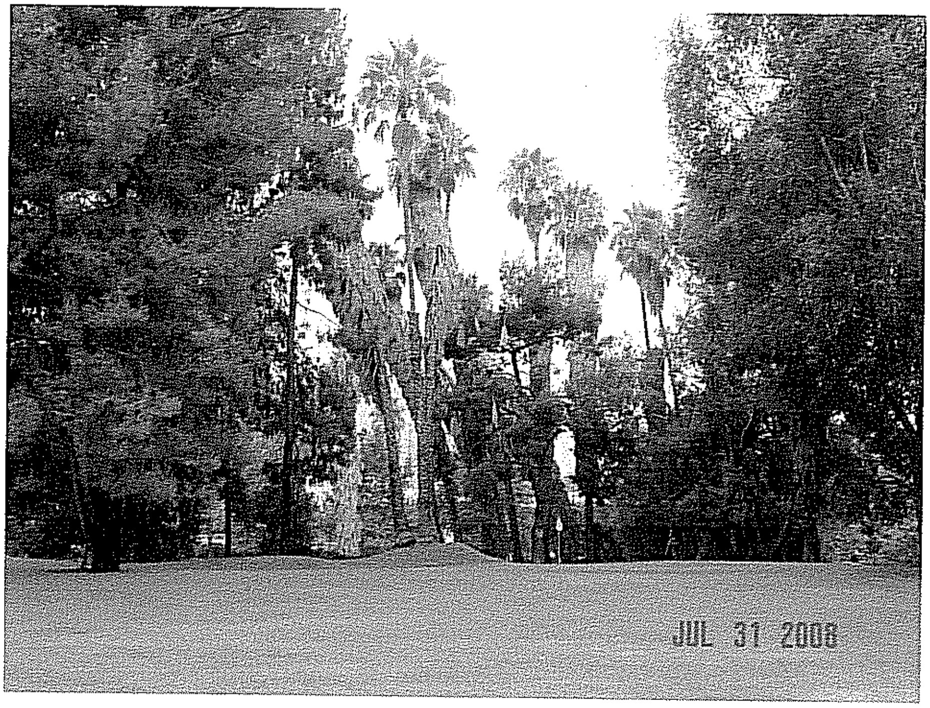


ACS

Photograph Station Locations



Photograph 1. View west taken from Photograph Station 1. Photograph shows the golf course area west of the proposed development area. Exotic parakeets have been observed within the fan palms shown within the center of the photograph. Date of Photograph: July 31, 2008.

Photograph 2. View west taken from Photograph Station 2. Photograph shows the golf course area west of the proposed development area. Exotic parakeets have been observed within the large eucalyptus trees shown within the center of the photograph (background). Date of Photograph: July 31, 2008.

Photograph 3. View west taken from Photograph Station 3. Photograph shows the golf course area west of the proposed development area. Exotic parakeets have been observed within the large eucalyptus trees shown within the center of the photograph (background). Date of Photograph: July 31, 2008.

APPENDIX D

GEOTECHNICAL & SOILS REPORT

Geotechnologies, Inc.
Consulting Geotechnical Engineers

Celebrating 40 Years of Service 1971-2011

December 14, 2011
File No. 20255

Planning Associates, Inc.
4040 Vineland Avenue
Studio City, California 91604

Attention: Allen Concepcion

<u>Subject</u>: Geotechnical Engineering Investigation
Proposed Studio City Senior Living Center
4141 Whitsett Avenue, Studio City, California

Ladies and Gentlemen:

This letter transmits the Geotechnical Engineering Investigation for the subject property prepared by Geotechnologies, Inc. This report provides geotechnical recommendations for the development of the site, including earthwork, seismic design, retaining walls, excavations, shoring and foundation design. Engineering for the proposed project should not begin until approval of the geotechnical investigation is granted by the local building official. Significant changes in the geotechnical recommendations may result due to the building department review process.

The validity of the recommendations presented herein is dependant upon review of the geotechnical aspects of the project during construction by this firm. The subsurface conditions described herein have been projected from limited subsurface exploration and laboratory testing. The exploration and testing presented in this report should in no way be construed to reflect any variations which may occur between the exploration locations or which may result from changes in subsurface conditions.

Should you have any questions please contact this office.

Respectfully submitted,
GEOTECHNOLOGIES, INC.

REGISTERED PROFESSIONAL ENGINEER
EDWARD F. HILL
No. 2126
Exp. 6/30/12
GEOTECHNICAL
STATE OF CALIFORNIA

EDWARD F. HILL
G.E. 2126/E.G. 1403

EFH:aa

Distribution: (5) Addressee
(2) Ray Franco

Email: Allen Concepcion [ajc@pai-la.com]
Ray Franco [rayfranco@aol.com]

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GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED SENIOR LIVING CENTER
4141 WHITSETT AVENUE
NORTH HOLLYWOOD, CALIFORNIA

INTRODUCTION

This report presents the results of the geotechnical engineering investigation performed on the subject property. The purpose of this investigation was to identify the distribution and engineering properties of the earth materials underlying the site, and to provide geotechnical recommendations for the design of the proposed development.

This investigation included fifteen exploratory excavations and six cone penetration soundings(CPT), collection of representative samples, laboratory testing, engineering analysis, review of published geologic data, review of available geotechnical engineering information and the preparation of this report. The exploratory excavation locations are shown on the enclosed Plot Plan. The results of the exploration and the laboratory testing are presented in the Appendix of this report.

PROPOSED DEVELOPMENT

Information concerning the proposed development was furnished by Planning Associates. The site is proposed to be developed with a senior living center. The center is to be four stories over subterranean parking. The easterly portion of the site will be serviced by two subterranean levels of parking. The westerly portions of the site will be serviced by one subterranean level of parking.

Column loads are estimated to be between 400 and 800 kips. Wall loads are estimated to be between 3 and 6 kips per lineal foot. These loads reflect the dead plus live load, of which the dead load is approximately 75 percent. Grading will consist of excavations to depths between 10 and 20 feet for the proposed subterranean parking levels. A portion of the southwesterly part of the structure will not be serviced by subterranean parking. This portion of the structure will be constructed at- or near existing grades.

Any changes in the design of the project or location of any structure, as outlined in this report, should be reviewed by this office. The recommendations contained in this report should not be considered valid until reviewed and modified or reaffirmed, in writing, subsequent to such review.

SITE CONDITIONS

The subject property consists of a golf course, driving range and tennis center located at the southwest corner of Whitsett Avenue and Valleyspring Drive, in the Studio City area of the City of Los Angeles, California. The proposed development will be located at the southeast corner of the subject site, in an area currently occupied by a maintenance facility, tennis courts and parking lots. The golf course and driving range will remain, although the configuration will be slightly changed in some areas. The area of the proposed development will be bounded by the existing driving range to the north, the existing golf course to the west, the Los Angeles River flood control channel to the southwest, and Whitsett Avenue to the east.

The majority of the subject area is roughly level, with total relief of approximately 5 to 6 feet. South of the site, a 10 to 15 foot high, 2:1 slope descends towards the Los Angeles River channel. There is an existing level area approximately 25 feet wide adjacent to the vertical channel walls.

Vegetation on the site consists of grasses, shrubs and trees in landscaped areas. Drainage is by sheetflow along the existing contours generally southward, or towards area drains.

GEOTECHNICAL EXPLORATION

FIELD EXPLORATION

The site was explored on March 30 and 31, 2000, and June 4, 6, and 12, 2007 by drilling 15 exploratory borings, performing five Cone Penetrometer Test (CPT) soundings and excavating one test pit. The borings varied in depth from 30 to 60 feet below the existing site grade, and the CPT soundings were all pushed to refusal, which occurred at depths between 45 and 72 feet below the site grade. The borings were excavated with the aid of a truck mounted, hollow stem auger drilling rig, and were approximately 8 inches in diameter. The boring locations are shown on the Site Survey, and the earth materials encountered are logged on Plates A-1 through A-16.

The location of exploratory excavations was determined by information furnished by the client. Elevations of the exploratory excavations were determined by hand level or interpolation from data provided. The location and elevation of the exploratory excavations should be considered accurate only to the degree implied by the method used.

GEOLOGIC MATERIALS

Fill Material

Fill materials were encountered during exploration to depths between 1 and 7 feet below the existing ground surface. The fill consists of sandy silt and silty sand, which range from light brown to black, and are slightly moist to moist, medium dense to dense, and fine to coarse grained.

Native Soils

The native soils underlying the site consist of silty sand, clayey silt, silty clay, clayey sand, sandy silt and sand, which range from light brown to grey to dark brown, and are slightly moist to wet, soft to very dense, and fine to coarse grained. The native earth materials consist of alluvial sediments deposited by river and stream action typical to this area of the San Fernando Valley.

Bedrock

Bedrock was encountered below the native soils in some of the exploratory borings at depths ranging from approximately 42.5 to 55 feet below the existing site grade. The bedrock consists of shale, siltstone and mudstone of the Miocene Monterey formation. The bedrock is light brown to greyish-green to black, moist to very moist, and hard to very hard. More detailed profiles of the earth materials may be obtained from the individual boring logs.

GROUNDWATER AND CAVING

Groundwater was encountered during exploration at depths of 23 to 39 feet below the existing site grade, with the highest encountered level of 23 feet below grade encountered in CPT-4. This corresponds to an elevation of approximately 595.5 feet. Historic high groundwater levels are reported to be about 30 feet below grade, according to Ziony (1985). However the historic high groundwater level based on California Geological Survey Seismic Hazard Evaluation Report 08 Plate 1.2 entitled "Historically Highest Ground Water Contours" is 0 feet below grade. For purposes of this report, this historically high groundwater level will be utilized.

The borings were excavated utilizing hollow stem auger drilling equipment, in which the borings are cased by the augers, and caving is not possible.

Fluctuations in the level of groundwater may occur due to variations in rainfall, temperature, and other factors not evident at the time of the measurements reported herein. Fluctuations also may occur across the site. High groundwater levels can result in changed conditions.

SEISMIC EVALUATION

REGIONAL GEOLOGIC SETTING

The subject property is located in the Transverse Ranges Geomorphic Province. The Transverse Ranges are characterized by roughly east-west trending mountains and the northern and southern boundaries are formed by reverse fault scarps. The convergent deformational features of the Transverse Ranges are a result of north-south shortening due to plate tectonics. This has resulted in local folding and uplift of the mountains along with the propagation of thrust faults (including blind thrusts). The intervening valleys have been filled with sediments derived from the bordering mountains.

The site is underlain by unconsolidated alluvial sediments deposited by river and stream action, that are deeper than 200 feet.

REGIONAL FAULTING

Based on criteria established by the California Division of Mines and Geology (CDMG) now called California Geologic Survey(CGS), faults may be categorized as active, potentially active, or inactive. Active faults are those which show evidence of surface displacement within the last 11,000 years (Holocene-age). Potentially-active faults are those that show evidence of most recent surface displacement within the last 1.6 million years (Quaternary-age). Faults showing no evidence of surface displacement within the last 1.6 million years are considered inactive for most purposes, with the exception of design of some critical structures.

Buried thrust faults are faults without a surface expression but are a significant source of seismic activity. They are typically broadly defined based on the analysis of seismic wave recordings of hundreds of small and large earthquakes in the southern California area. Due to the buried nature of these thrust faults, their existence is usually not known until they produce an earthquake. The risk for surface rupture potential of these buried thrust faults is inferred to be low (Leighton, 1990). However, the seismic risk of these buried structures in terms of recurrence and maximum potential magnitude, is not well established. Therefore, the potential for surface rupture on these surface-verging splays at magnitudes higher than 6.0 cannot be precluded.

SEISMIC HAZARDS AND DESIGN CONSIDERATIONS

The primary geologic hazard at the site is moderate to strong ground motion (acceleration) caused by an earthquake on any of the local or regional faults. The potential for other earthquake-induced hazards was also evaluated including surface rupture, liquefaction, dynamic settlement, inundation and landsliding.

Surface Rupture

In 1972, the Alquist-Priolo Special Studies Zones Act (now known as the Alquist-Priolo Earthquake Fault Zoning Act) was passed into law. The Act defines "active" and "potentially active" faults utilizing the same aging criteria as that used by California Geological Survey (CGS). However, established state policy has been to zone only those faults which have direct evidence of movement within the last 11,000 years. It is this recency of fault movement that the CGS considers as a characteristic for faults that have a relatively high potential for ground rupture in the future.

CGS policy is to delineate a boundary from 200 to 500 feet wide on each side of the known fault trace based on the location precision, the complexity, or the regional significance of the fault. If a site lies within an Earthquake Fault Zone, a geologic fault rupture investigation must be performed that demonstrates that the proposed building site is not threatened by surface displacement from the fault before development permits may be issued.

Ground rupture is defined as surface displacement which occurs along the surface trace of the causative fault during an earthquake. Based on research of available literature and results of site reconnaissance, no known active or potentially active faults underlie the subject site. In addition, the subject site is not located within an Alquist-Priolo Earthquake Fault Zone. Based on these considerations, the potential for surface ground rupture at the subject site is considered low.

2010 California Building Code Seismic Parameters

According to Table 1613.5.2 of the 2010 California Building Code, the subject site is classified as Site Class F due to the liquefiable nature of the underlying soils. Section 1613 of the 2007 California Building Code is developed based on the standards presented in ASCE 7. According to Section 20.3.1 (site class definition for Site Class F) found in Chapter 20, titled "Site Classification Procedure for Seismic Design", ASCE 7-05, Minimum Design Loads for Buildings and Other Structures, an exception is provided under Site Classification F.

The proposed structure is four stories in height. It is recommended that the project structural engineer design the structure with a the fundamental period of vibration of the structure less than 0.5 second. The average field standard penetration resistance (SPT) blowcounts recorded from the exploratory excavations were determined to vary between 11 and 100 blows for the native soils above the bedrock. The average blow count in the native soils was found to be 33. The soils underlying the subject site does not fall under any other characteristics of Site Class E, but falls within the characteristics of Site Class D. Therefore, the subject site may be classified as Site Class D, which corresponds to a "Stiff Soil" Profile, in accordance with the ASCE 7 standard.

Based on information derived from the subsurface investigation, the subject site is classified as Site Class D, which corresponds to a "Stiff Soil" Profile, according to Table 1613.5.2 of the 2010 California Building Code. This information and the site coordinates were input into the USGS Ground Motion Parameter Calculator (Version 5.1.0)to calculate the Maximum Considered Earthquake (MCE) Ground Motions for the site. The Maximum Considered Earthquake Ground motions are equivalent to the 2475-year recurrence interval ground motions adjusted by a deterministic limit. These values are consistent with the 2009 International Building Code requirements.

2010 CALIFORNIA BUILDING CODE SEISMIC PARAMETERS	
Site Class	D
Mapped Spectral Acceleration at Short Periods (S_S)	1.500g
Site Coefficient (F_a)	1.0
Maximum Considered Earthquake Spectral Response for Short Periods (S_{MS})	1.500g
Five-Percent Damped Design Spectral Response Acceleration at Short Periods (S_{DS})	1.000g
Mapped Spectral Acceleration at One-Second Period (S_1)	0.600g
Site Coefficient (F_v)	1.5
Maximum Considered Earthquake Spectral Response for One-Second Period (S_{M1})	0.900g
Five-Percent Damped Design Spectral Response Acceleration for One-Second Period (S_{D1})	0.600g

According to Section 1802.2.7, of the California Building Code, a peak ground acceleration, equivalent to Five-Percent Damped Design Spectral Response Acceleration at Short Periods (S_{DS}) divided by 2.5, shall be utilized for liquefaction analysis. Based on the site coordinates and Site Class, Five-Percent Damped Design Spectral Response Acceleration at Short Periods (S_{DS}) divided by 2.5 is equal to 0.40g.

Seismic Hazard Zone Report

The CDMG has published Seismic Hazard Zone Report 007, Seismic Hazard Zone Report for the Canoga Park 7.5-Minute Quadrangle, Los Angeles County, California (1997, revised 2005). Figure 3.3 (Alluvium Conditions) indicates the PGA_{DBE} for this area of Los Angeles to be 0.52g. Figure 3.4 (Predominant Earthquake) indicates an earthquake with a moment magnitude of 6.4 (M_W) as the Design-Basis Earthquake (DBE) ground motion for this area of Los Angeles.

Liquefaction

Liquefaction is a phenomenon in which saturated silty to cohesionless soils below the groundwater table are subject to a temporary loss of strength due to the buildup of excess pore pressure during cyclic loading conditions such as those induced by an earthquake. Liquefaction-related effects include loss of bearing strength, amplified ground oscillations, lateral spreading, and flow failures.

The historic high groundwater level was obtained from review of California Geological Survey Seismic Hazard Evaluation Report 98-08. Review of this report indicates that the historically highest groundwater level is 0 feet below grade. A copy of this map is included in the Appendix.

Liquefaction analysis of the soils underlying the site was performed using the spreadsheet template LIQ2_30.WQ1 developed by Thomas F. Blake (1996). This program utilizes the 1996 NCEER method of analysis. The liquefaction potential evaluation was performed by assuming a magnitude 6.4 earthquake and a peak horizontal acceleration of 0.67g. This semi-empirical method is based on a correlation between measured values of Standard Penetration Test (SPT) resistance and field performance data. The enclosed liquefaction analysis included in the Appendix, indicates that site soils could be subject to liquefaction during the ground motion expected during the design based earthquake.

Surface Manifestation

It has been shown in recent studies by O'Rourke and Pease (1997) and Youd and Garris (1995), building upon work by Ishihara (1985), that the visible effects of liquefaction on the ground surface are only manifested if the relative and absolute thicknesses of liquefiable soils to overlying non-liquefiable surface material fall within a certain range. On the subject site, given the relatively deep groundwater level, the relative thicknesses of liquefiable soils to overlying non-liquefiable surface material fall well outside the bounds within which surface effects of liquefaction have been observed during past earthquakes. As a result, the likelihood that surface effects of liquefaction would occur on the subject site would be considered very low to non-existent. Therefore, it is the opinion of this firm that, should liquefaction occur within the potentially liquefiable zones, there would be a negligible effect on the proposed structures.

The study by Ishihara (1985) presents data from three separate earthquakes where subsurface information was available regarding the absolute and relative thicknesses of liquefiable earth materials and overlying non-liquefiable materials. Information was obtained from sites where the surface effects of liquefaction were observed, and from sites where there were no visible surface effects. From this data, Ishihara (1985) graphs the liquefiable soil thickness vs. the overlying non-liquefiable thickness, and presents bounds identifying a zone within which surface effects of liquefaction were observed.

Youd and Garris (1995) build upon the work by Ishihara (1985), compiling data from 308 borings taken at sites shaken by 15 different earthquakes, ranging in magnitude from 5.3 to 8.0. They find that the boundaries presented by Ishihara relating the thicknesses of non-liquefiable surface layers to underlying potentially liquefiable layers remain valid for this extensive set of data, with very few exceptions. The particular site conditions which contributed to the few exceptional cases are not present on the subject site.

O'Rourke and Pease (1997) also compare the liquefiable vs. non-liquefiable thickness bounds initially proposed by Ishihara (1985) with data obtained from areas of San Francisco where the surface effects of liquefaction were observed during the 1989 Loma Prieta earthquake. They find general agreement with the previous findings of Ishihara (1985) and Youd and Garris (1995).

Lateral Spreading

Lateral spreading is the most pervasive type of liquefaction-induced ground failure. During lateral spread, blocks of mostly intact, surficial soil displace downslope or towards a free face along a shear zone that has formed within the liquefied sediment. According to the procedure provided by Bartlett, Hansen, and Youd, "Revised Multilinear Regression Equations for Prediction of Lateral Spread Displacement", ASCE, Journal of Geotechnical Engineering, Vol. 128, No. 12, December 2002, when the saturated cohesionless sediments with $(N_1)_{60} > 15$, significant displacement is not likely for $M < 8$ earthquakes.

The enclosed liquefaction analysis included in the Appendix, indicates that site soils could be subject prone to liquefaction during 475 year return period ground motion. The saturated cohesionless sediments underlying the subject site have corrected $(N_1)_{60}$ value greater than 15. Therefore, the potential for lateral spread is considered to be remote for the subject site.

Dynamic Dry Settlement

Seismically-induced settlement or compaction of dry or moist, cohesionless soils can be an effect related to earthquake ground motion. Such settlements are typically most damaging when the settlements are differential in nature across the length of structures.

Some seismically-induced settlement of the proposed structures should be expected as a result of strong ground-shaking, however, due to the uniform nature of the underlying earth materials, excessive differential settlements are not expected to occur.

Tsunamis, Seiches and Flooding

Tsunamis are large ocean waves generated by sudden water displacement caused by a submarine earthquake, landslide, or volcanic eruption. Review of the County of Los Angeles Flood and Inundation Hazards Map, Leighton (1990), indicates the site does not lie within the mapped tsunami inundation boundaries.

Seiches are oscillations generated in enclosed bodies of water which can be caused by ground shaking associated with an earthquake. Review of the County of Los Angeles Flood and Inundation Hazards Map, Leighton (1990), indicates the site lies within mapped inundation boundaries due to a seiche or a breached upgradient reservoir. A determination of whether a higher site elevation would remove the site from the potential inundation zones is beyond the scope of this investigation.

Landsliding

The probability of seismically-induced landslides occurring on the site is considered to be low due to the general lack of elevation difference slope geometry across or adjacent to the site.

CONCLUSIONS AND RECOMMENDATIONS

Based upon the exploration, laboratory testing, and research, it is the finding of this firm that construction of the proposed senior living center is considered feasible from a geotechnical engineering standpoint provided the advice and recommendations presented herein are followed and implemented during construction.

The soils underlying the site are subject to liquefaction during a major seismic event. It is estimated that settlement as a result of liquefaction could be just under two inches. Therefore, in order to mitigate against the effects of liquefaction, it is recommended that the proposed structure should be supported on a mat foundation. The mat foundation should be designed to resist the possible one inch of differential settlement which could result due to seismic shaking. Support of the proposed structure in this manner would serve to greatly reduce the potential for damage should liquefaction occur, but would not completely eliminate the potential for damage.

The existing fill materials and upper native soils are not suitable for support of the proposed foundations, floor slabs or additional fill. Excavation of the proposed subterranean level will remove the unsuitable materials in the building area. Proposed foundations may bear in native earth materials found at the level of the proposed excavation.

Where not removed by the proposed excavations, the existing fill materials and upper native soils are not suitable for support of the proposed foundations, floor slabs or additional fill. In the area of the shallow foundations all existing fill materials should be removed and recompacted. Where the existing fill materials are shallower than 4 feet in depth, all soils should be removed to a minimum depth of three feet below proposed foundations and recompacted as controlled fill prior to foundation excavation. This compacted fill blanket will also reduce differential settlement between the shallow and deep foundations.

Foundations for small outlying structures, such as property line walls, which will not be tied-in to the proposed mixed use structure may be supported on conventional foundations bearing in native earth materials.

FILL SOILS

The maximum depth of fill encountered on the site was 7 feet. This material and any fill generated during demolition should be removed during the excavation of the subterranean level and wasted from the site. Where not removed by the proposed excavations, this material and any fill generated during demolition should be removed and recompacted as controlled fill prior to foundation excavation.

EXPANSIVE SOILS

The onsite earth materials are in the low to moderate expansion range. The Expansion Index was found to be between 32 and 80 for remolded bulk samples. Reinforcing beyond the minimum required by the City of Los Angeles Department of Building and Safety is not required.

WATER-SOLUBLE SULFATES

The portland cement portion of concrete is subject to attack when exposed to water-soluble sulfates. Usually the two most common sources of exposure are from soil and marine environments.

The source of natural sulfate minerals in soils include the sulfates of calcium, magnesium, sodium, and potassium. When these minerals interact and dissolve in subsurface water, a sulfate concentration is created, which will react with exposed concrete. Over time sulfate attack will destroy improperly proportioned concrete well before the end of its intended service life.

The water-soluble sulfate content of the onsite earth materials was tested by California Test 417. The water-soluble sulfate content was determined to be less than 0.2% percentage by weight for the soils tested. Based on the 1997 Uniform Building Code, Table 19-A-4, the sulfate exposure is considered to be moderate for earth materials with less than 0.1% and Type II cement may be utilized for concrete foundations in contact with the site soils. In addition a water-cement ratio of 0.5 should be maintained in the poured concrete. Minimum concrete strength for moderate sulfate exposure should be a minimum of 4,000psi.

GRADING GUIDELINES

Site Preparation

All vegetation, existing fill, and soft or disturbed geologic materials should be removed from the areas to receive controlled fill. The excavated areas shall be carefully observed by the geotechnical engineer prior to placing compacted fill.

Any vegetation or associated root system located within the footprint of the proposed structures should be removed during grading. Any existing or abandoned utilities located within the footprint of the proposed structures should be removed or relocated as appropriate. All existing fill materials and any disturbed geologic materials resulting from grading operations should be removed and properly recompacted prior to foundation excavation.

The at-grade portions of the proposed building areas shall be excavated to a minimum depth of 3 feet below the bottom of all foundations. The excavation shall extend at least five feet beyond the edge of foundations or for a distance equal to the depth of fill below the foundations, whichever is greater. It is very important that the positions of the proposed structures is accurately located so that the limits of the graded area are accurate and the grading operation proceeds efficiently.

Subsequent to the indicated removals, the exposed grade shall be scarified to a depth of six inches, moistened to optimum moisture content, and recompacted in excess of the minimum required comparative density.

Compaction

The City of Los Angles Department of Building and Safety requires a minimum comparative compaction of 95 percent of the laboratory maximum density where the soils to be utilized in the fill have less than 15 percent finer than 0.005 millimeters. The soils tested by this firm would require the 95 percent compaction requirement.

All fill should be mechanically compacted in layers not more than 8 inches thick. All fill shall be compacted to at least 90 or 95 percent of the maximum laboratory density for the materials used.

The maximum density shall be determined by the laboratory operated by Geotechnologies, Inc. using test method ASTM D 1557-07 or equivalent.

Field observation and testing shall be performed by a representative of the geotechnical engineer during grading to assist the contractor in obtaining the required degree of compaction and the proper moisture content. Where compaction is less than required, additional compactive effort shall be made with adjustment of the moisture content, as necessary, until a minimum of 90 or 95 percent compaction is obtained.

Acceptable Materials

The excavated onsite materials are considered satisfactory for reuse in the controlled fills as long as any debris and/or organic matter is removed.

Any imported materials shall be observed and tested by the representative of the geotechnical engineer prior to use in fill areas. Imported materials should contain sufficient fines so as to be relatively impermeable and result in a stable subgrade when compacted. Any required import materials should consist of geologic materials with an expansion index of less than 50. The water-soluble sulfate content of the import materials should be less than 0.1% percentage by weight.

Imported materials should be free from chemical or organic substances which could effect the proposed development. A competent professional should be retained in order to test imported materials and address environmental issues and organic substances which might effect the proposed development.

Utility Trench Backfill

Utility trenches should be backfilled with controlled fill. The utility should be bedded with clean sands at least one foot over the crown. The remainder of the backfill may be onsite soil compacted to 90 or 95 percent of the laboratory maximum density. Utility trench backfill should be tested by representatives of this firm in accordance with ASTM D-1557-07.

Wet Soils

At the time of exploration the soils which will be exposed at the bottom of the excavation were locally well above optimum moisture content. It is anticipated that the excavated material to be placed as compacted fill, and the materials exposed at the bottom of excavated plane will most likely require significant drying and aeration prior to recompaction.

Pumping (yielding or vertical deflection) of the high-moisture content soils at the bottom of the excavation may occur during operation of heavy equipment. Where pumping is encountered, angular minimum ¾-inch gravel should be placed and worked into the subgrade. The exact thickness of the gravel would be a trial and error procedure, and would be determined in the field. It would likely be on the order of 1 to 2 feet thick.

The gravel will help to densify the subgrade as well as function as a stabilization material upon which heavy equipment may operate. It is not recommended that rubber tire construction equipment attempt to operate directly on the pumping subgrade soils prior to placing the gravel. Direct operation of rubber tire equipment on the soft subgrade soils will likely result in excessive disturbance to the soils, which in turn will result in a delay to the construction schedule since those disturbed soils would then have to be removed and properly recompacted. Extreme care should be utilized to place gravel as the subgrade becomes exposed.

Shrinkage

Shrinkage results when a volume of soil removed at one density is compacted to a higher density. A shrinkage factor between 5 and 15 percent should be anticipated when excavating and recompacting the existing fill and underlying native geologic materials on the site to an average comparative compaction of 92 percent.

Weather Related Grading Considerations

When rain is forecast all fill that has been spread and awaits compaction shall be properly compacted prior to stopping work for the day or prior to stopping due to inclement weather. These fills, once compacted, shall have the surface sloped to drain to an area where water can be removed.

Temporary drainage devices should be installed to collect and transfer excess water to the street in non-erosive drainage devices. Drainage should not be allowed to pond anywhere on the site, and especially not against any foundation or retaining wall. Drainage should not be allowed to flow uncontrolled over any descending slope.

Work may start again, after a period of rainfall, once the site has been reviewed by a representative of this office. Any soils saturated by the rain shall be removed and aerated so that the moisture content will fall within three percent of the optimum moisture content.

Surface materials previously compacted before the rain shall be scarified, brought to the proper moisture content and recompacted prior to placing additional fill, if considered necessary by a representative of this firm.

Abandoned Seepage Pits

No abandoned seepage pits were encountered during exploration and none are known to exist on the site. However, should such a structure be encountered during grading, options to permanently abandon seepage pits include complete removal and backfill of the excavation with compacted fill, or drilling out the loose materials and backfilling to within a few feet of grade with slurry, followed by a compacted fill cap.

If the subsurface structures are to be removed by grading, the entire structure should be demolished. The resulting void may be refilled with compacted soil. Concrete and brick generated during the seepage pit removal may be reused in the fill as long as all fragments are less than 6 inches in longest dimension and the debris comprises less than 15 percent of the fill by volume. All grading should comply with the recommendations of this report.

Where the seepage pit structure is to be left in place, the seepage pits should cleaned of all soil and debris. This may be accomplished by drilling. The pits should be filled with minimum 1-1/2 sack concrete slurry to within 5 feet of the bottom of the proposed foundations. In order to provide a more uniform foundation condition, the remainder of the void should be filled with controlled fill.

Geotechnical Observations and Testing During Grading

Geotechncial observations and testing during grading are considered to be a continuation of the geotechnical investigation. It is critical that the geotechnical aspects of the project be reviewed by representatives of Geotechnologies, Inc. during the construction process. Compliance with the design concepts, specifications or recommendations during construction requires review by this firm during the course of construction. Any fill which is placed should be observed, tested, and verified if used for engineered purposes. Please advise this office at least twenty-four hours prior to any required site visit.

LEED Considerations

The Leadership in Energy and Environmental Design (LEED) Green Building Rating System encourages adoption of sustainable green building and development practices. Credit for LEED Certification can be assigned for reuse of construction waste and diversion of materials from landfills in new construction.

In an effort to provide the design team with a viable option in this regard, demolition debris could be crushed onsite in order to use it in the ongoing grading operations. The environmental ramifications of this option, if any, should be considered by the team.

The demolition debris should be limited to concrete, asphalt and other non-deleterious materials. All deleterious materials should be removed including, but not limited to, paper, garbage, ceramic materials and wood.

For structural fill applications, the materials should be crushed to 2 inches in maximum dimension or smaller. The crushed materials should be throughly blended and mixed with onsite soils prior to placement as compacted fill. The amount of crushed material should not exceed 20 percent. The blended and mixed materials should be tested by this office prior to placement to insure it is suitable for compaction purposes. The blended and mixed materials should be tested by Geotechnologies, Inc. during placement to insure that it has been compacted in a suitable manner.

FOUNDATION DESIGN

Conventional

Conventional foundations for structures such as privacy walls or trash enclosures which will not be rigidly connected to the proposed facility may bear in native soils. Continuous footings may be designed for a bearing capacity of 1,000 pounds per square foot, and should be a minimum of 12 inches in width, 18 inches in depth below the lowest adjacent grade and 18 inches into the recommended bearing material. No bearing capacity increases are recommended.

Since the recommended bearing capacity is a net value, the weight of concrete in the foundations may be taken as 50 pounds per cubic foot and the weight of the soil backfill may be neglected when determining the downward load on the foundations.

Foundation Reinforcement

Due to a moderate expansion potential for the onsite earth materials, all foundations should be reinforced with a minimum of four #4 steel bars. Two should be placed near the top of the foundation, and two should be placed near the bottom.

Lateral Design

Resistance to lateral loading may be provided by friction acting at the base of foundations and by passive earth pressure. An allowable coefficient of friction of 0.2 may be used with the dead load forces.

Passive earth pressure for the sides of foundations poured against undisturbed or recompacted soil may be computed as an equivalent fluid having a density of 300 pounds per cubic foot with a maximum earth pressure of 3,000 pounds per square foot.

When combining passive and friction for lateral resistance, the passive component should be reduced by one third. A one-third increase in the passive value may be used for wind or seismic loads.

Foundation Settlement

Settlement of the foundation system is expected to occur on initial application of loading. The maximum settlement is expected to be 3/4 inch and occur below the heaviest loaded columns. Differential settlement is not expected to exceed 1/4 inch.

Foundation Observations

It is critical that all foundation excavations are observed by a representative of this firm to verify penetration into the recommended bearing materials. The observation should be performed prior to the placement of reinforcement. Foundations should be deepened to extend into satisfactory earth materials, if necessary.

Foundation excavations should be cleaned of all loose soils prior to placing steel and concrete. Any required foundation backfill should be mechanically compacted, flooding is not permitted.

FOUNDATION DESIGN - MAT FOUNDATION

Mat Foundation

The mat should be founded exclusively in native soils found 10 feet below existing site grades. For the at-grade portion of the structure, the mat should bear in a minimum of newly placed compacted fill, subsequent to the recommended grading. The bottom of the mat foundation should be a minimum of 18 inches in depth below the lowest adjacent grade at the perimeter of the structure. An allowable bearing pressure of 850 pounds per square foot may be utilized in the design of the proposed mat foundation. The mat foundation may be designed utilizing a modulus of subgrade reaction of 100 pounds per cubic inch.

Lateral Design for Mat Foundation

Resistance to lateral loading may be provided by soil friction, and by the passive resistance of the soils. A coefficient of friction of 0.2 may be used with the dead load forces between footings and the underlying supporting soils.

Passive earth pressure for the sides of footings poured against undisturbed soil may be computed as an equivalent fluid having a density of 300 pounds per cubic foot, with a maximum earth pressure of 3,000 pounds per square foot. When combining passive and friction for lateral resistance, the passive component should be reduced by one third. A one-third increase in the passive value may be used for wind or seismic loads. A minimum safety factor of 2 has been utilized in determining the allowable passive pressure.

Foundation Settlement

The majority of the foundation settlement is expected to occur on initial application of loading. The maximum settlement is not expected to exceed approximately 1 inch, and will occur below the most heavily loaded area of the mat foundation. Differential settlement is not expected to exceed ½ inch.

DEWATERING

The historic high groundwater level was established by review of California Division of Mines and Geology Open File Report 98-20 Plate 1.2 entitled "Historically Highest Ground Water Contours". Review of this plate indicates that the historically highest groundwater level is between 0 feet below grade. Exploration indicated groundwater could be encountered between 23 and 39 feet below site grades. The proposed basement of the structure will be on the order of 20 feet below grade. Therefore the Building Official requires that the building should be designed for potential hydrostatic and buoyancy pressures or a drainage system should be installed which would operate in the unlikely event that the reported historic high groundwater level is attained again. This report has been prepared assuming that the walls will not be drained.

RETAINING WALL DESIGN

Cantilever Retaining Walls

Retaining walls supporting a level backslope may be designed utilizing a triangular distribution of pressure. Cantilever retaining walls may be designed for 31.5 pounds per cubic foot for walls retaining up to 6 feet of earth.

For this equivalent fluid pressure to be valid, walls which are to be restrained at the top should be backfilled prior to the upper connection being made. Additional active pressure should be added for a surcharge condition due to sloping ground, vehicular traffic or adjacent structures.

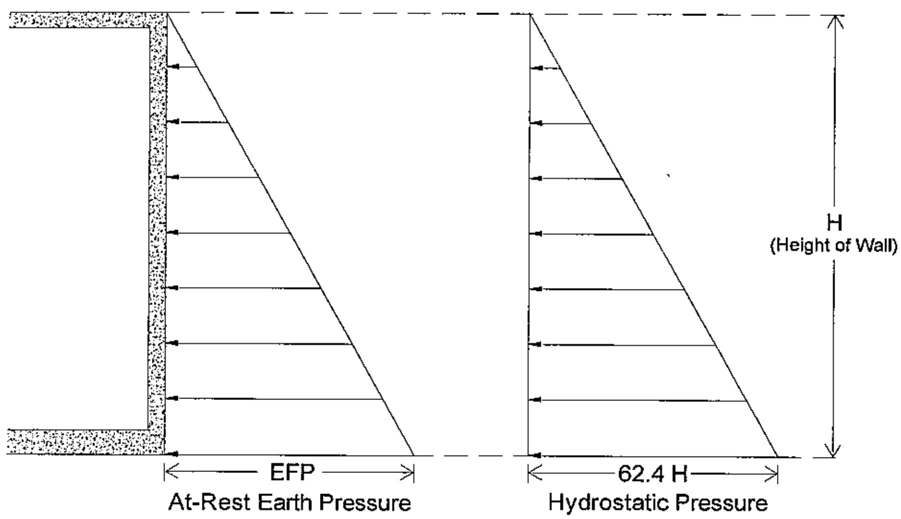
Retaining Wall Drainage

Retaining walls should be provided with a subdrain covered with a minimum of 12 inches of gravel, and a compacted fill blanket or other seal at the surface. The onsite geologic materials are acceptable for use as retaining wall backfill as long as they are compacted to a minimum of 90 or 95 percent of the maximum density as determined by ASTM D 1557-07 or equivalent.

Certain types of subdrain pipe are not acceptable to the various municipal agencies, it is recommended that prior to purchasing subdrainage pipe, the type and brand is cleared with the proper municipal agencies. Subdrainage pipes should outlet to an acceptable location.

Restrained Undrained Retaining Walls

Restrained retaining walls may be designed to resist a triangular pressure distribution of at-rest earth pressure and hydrostatic pressure as indicated in the diagram below. The at-rest soils pressure for design purposes would be 41 pounds per cubic foot. Additional earth pressure should be added for a surcharge condition due to sloping ground, vehicular traffic or adjacent structures.

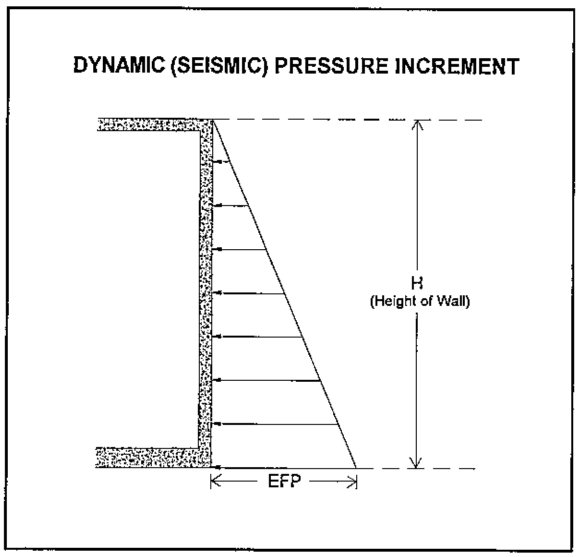


In addition to the recommended earth pressure, the upper ten feet of the retaining wall adjacent to streets, driveways or parking areas should be designed to resist a uniform lateral pressure of 100 pounds per square foot, acting as a result of an assumed 300 pounds per square foot surcharge behind the walls due to normal street traffic. If the traffic is kept back at least ten feet from the retaining walls, the traffic surcharge may be neglected.

The lateral earth pressures recommended above for undrained retaining walls assume that permanent drainage system will not be provided. Where necessary, the retaining walls should be designed to accommodate any surcharge pressures that may be imposed by existing buildings on the adjacent property.

Dynamic (Seismic) Lateral Forces

The maximum dynamic active pressure is equal to the sum of the initial static pressure and the dynamic (seismic) pressure increment. Under the most recent building code, as interpreted by most building departments, seismic earth pressure is required in the design of restraining walls which support over 12 feet of earth. The pressure may be designed utilizing a triangular distribution as indicated below. The recommended dynamic active pressure is 21.1ounds per cubic foot.



Based on "Dynamic Earth Pressures on Deep Building Basements" by Lew and Sitar, et. al. Published in 2010 Structural Engineers of California Convention Proceedings, use of the indicated seismic earth pressure and the active pressure for calculation of the lateral earth pressure with a load factor of 1.6. However, a reduced load factor would be appropriate when considering the transitory nature of the seismic component and the low likelihood that the maximum loads occurring simultaneously. Based on these considerations, a load factor of 1.0 is proposed to be applied to the seismic increment component of the earth pressure while the 1.6 load factor is applied to the at-rest pressure component.

Surcharge from Adjacent Structures

As indicated herein, additional active pressure should be added for a surcharge condition due to sloping ground, vehicular traffic or adjacent structures for retaining walls and shoring design.

The following surcharge equation provided in the LADBS Information Bulletin Document No. P/BC 2008-83, may be utilized to determine the surcharge loads on basement walls and shoring system for existing structures located within the 1:1 (h:v) surcharge influence zone of the excavation and basement.

Resultant lateral force: $R = (0.3*P*h^2)/(x^2+h^2)$

Location of lateral resultant: $d = x*[(x^2/h^2+1)*\tan^{-1}(h/x)-(x/h)]$

where:

R	=	resultant lateral force measured in pounds per foot of wall width.
P	=	resultant surcharge loads of continuous or isolated footings measured in pounds per foot of length parallel to the wall.
x	=	distance of resultant load from back face of wall measured in feet.
h	=	depth below point of application of surcharge loading to top of wall footing measured in feet.

d = depth of lateral resultant below point of application of surcharge loading measure in feet.

$\tan^{-1}(h/x)$ = the angle in radians whose tangent is equal to h/x.

The structural engineer and shoring engineer may use this equation to determine the surcharge loads based on the loading of the adjacent structures located within the surcharge influence zone.

Waterproofing

Moisture effecting retaining walls is one of the most common post construction complaints. Poorly applied or omitted waterproofing can lead to efflorescense or standing water inside the building. Efflorescence is a process in which a powdery substance is produced on the surface of the concrete by the evaporation of water. The white powder usually consists of soluble salts such as gypsum, calcite, or common salt. Efflorescence is common to retaining walls and does not effect their strength or integrity.

It is recommended that retaining walls be waterproofed. Waterproofing design and inspection of its installation is not the responsibility of the geotechnical engineer. A qualified waterproofing consultant should be retained in order to recommend a product or method which would provide protection to below grade walls.

Retaining Wall Backfill

Any required backfill should be mechanically compacted in layers not more than 8 inches thick, to at least 90 or 95 percent of the maximum density obtainable by the ASTM Designation D 1557-07 method of compaction. Flooding should not be permitted. Proper compaction of the backfill will be necessary to reduce settlement of overlying walks and paving. Some settlement of required backfill should be anticipated, and any utilities supported therein should be designed to accept differential settlement, particularly at the points of entry to the structure.

TEMPORARY EXCAVATIONS

Excavations on the order of 10 to 25 feet in vertical height will be required for the subterranean levels considering the proposed foundation and the recommended recompaction. The excavations are expected to expose fill and dense native soils, which are suitable for vertical excavations up to 5 feet where not surcharged by adjacent traffic or structures. Excavations which will be surcharged by adjacent traffic or structures should be shored.

Where sufficient space is available, temporary unsurcharged embankments could be cut at a uniform 1:1 slope gradient. A uniform sloped excavation does not have a vertical component.

Where sloped embankments are utilized, the tops of the slopes should be barricaded to prevent vehicles and storage loads near the top of slope within a horizontal distance equal to the depth of the excavation. If the temporary construction embankments are to be maintained during the rainy season, berms are strongly recommended along the tops of the slopes to prevent runoff water from entering the excavation and eroding the slope faces. Water should not be allowed to pond on top of the excavation nor to flow towards it.

Temporary Dewatering

Currently it is proposed that the structure will extend to a maximum depth of 20 feet below existing site grades. Continuous groundwater could be encountered locally in the deeper portions of the excavation.

Temporary dewatering should be installed as necessary. Temporary dewatering should consist of gravel-filled drainage trenches leading to a sump area. The collected water should be pumped to an acceptable disposal area.

Where the exposed subgrade is wet pumping may be encountered. Under these conditions please refer to the "Wet Soils" section of this report.

Excavation Observations

It is critical that the soils exposed in the cut slopes are observed by a representative of this office during excavation so that modifications of the slopes can be made if variations in the earth material conditions occur. Many building officials require that temporary excavations should be made during the continuous observations of the geotechnical engineer. All excavations should be stabilized within 30 days of initial excavation.

SHORING DESIGN

The following information on the design and installation of the shoring is as complete as possible at this time. It is suggested that this office review the final shoring plans and specifications prior to bidding or negotiating with a shoring contractor.

One method of shoring would consist of steel soldier piles, placed in drilled holes and backfilled with concrete. The soldier piles may be designed as cantilevers or laterally braced utilizing drilled tied-back anchors or raker braces.

Soldier Piles

Drilled cast-in-place soldier piles should be placed no closer than 2 diameters on center. The minimum diameter of the piles is 18 inches. Structural concrete should be used for the soldier piles below the excavation; lean-mix concrete may be employed above that level. As an alternative, lean-mix concrete may be used throughout the pile where the reinforcing consists of a wideflange section. The slurry must be of sufficient strength to impart the lateral bearing pressure developed by the wideflange section to the earth materials. For design purposes, an allowable passive value for the earth materials below the bottom plane of excavation, may be assumed to be 600 pounds per square foot per foot. To develop the full lateral value, provisions should be implemented to assure firm contact between the soldier piles and the undisturbed earth materials.

Groundwater was encountered during exploration at a depth of 23 feet below grade. Proposed piles may be in excess of 23 feet in depth and will, therefore, encounter water. Piles placed below the water level require the use of a tremie to place the concrete into the bottom of the hole. A tremie shall consist of a water-tight tube having a diameter of not less than 10 inches with a hopper at the top. The tube shall be equipped with a device that will close the discharge end and prevent water from entering the tube while it is being charged with concrete. The tremie shall be supported so as to permit free movement of the discharge end over the entire top surface of the work and to permit rapid lowering when necessary to retard or stop the flow of concrete. The discharge end shall be closed at the start of the work to prevent water entering the tube and shall be entirely sealed at all times, except when the concrete is being placed. The tremie tube shall be kept full of concrete. The flow shall be continuous until the work is completed and the resulting concrete seal shall be monolithic and homogeneous. The tip of the tremie tube shall always be kept about five feet below the surface of the concrete and definite steps and safeguards should be taken to insure that the tip of the tremie tube is never raised above the surface of the concrete.

A special concrete mix should be used for concrete to be placed below water. The design shall provide for concrete with a strength p.s.i. of 1,000 over the initial job specification. An admixture that reduces the problem of segregation of paste/aggregates and dilution of paste shall be included. The slump shall be commensurate to any research report for the admixture, provided that it shall also be the minimum for a reasonable consistency for placing when water is present.

Casing may be required should caving be experienced in the saturated earth materials. If casing is used, extreme care should be employed so that the pile is not pulled apart as the casing is withdrawn. At no time should the distance between the surface of the concrete and the bottom of the casing be less than 5 feet.

The frictional resistance between the soldier piles and retained earth material may be used to resist the vertical component of the anchor load. The coefficient of friction may be taken as 0.2 based on uniform contact between the steel beam and lean-mix concrete and retained earth. The portion of soldier piles below the plane of excavation may also be employed to resist the downward loads. The downward capacity may be determined using a frictional resistance of 400 pounds per square foot. The minimum depth of embedment for shoring piles is 5 feet below the bottom of the footing excavation or 7 feet below the bottom of excavated plane whichever is deeper.

Lagging

It is possible that lagging between soldier piles could be omitted within more cohesive earth materials where the clear spacing between soldier piles does not exceed four feet. In less cohesive earth materials, such as sands and gravels, lagging would be necessary. It is recommended that a representative of this firm observe the exposed earth materials to verify their nature and establish areas where lagging could be omitted, if any. At this time, it is expected that most of the excavation will require continuous lagging.

Soldier piles and anchors should be designed for the full anticipated pressures. Due to arching in the earth materials, the pressure on the lagging will be less. It is recommended that the lagging be designed for the full design pressure but be limited to a maximum of 400 pounds per square foot.

Lateral Pressures

Cantilevered shoring supporting a level backslope may be designed utilizing a triangular distribution of pressure as indicated in the following table:

HEIGHT OF SHORING "H" (feet)	EQUIVALENT FLUID PRESSURE (pounds per cubic foot)
Up to 25	58.5

A trapezoidal distribution of lateral earth pressure would be appropriate where shoring is to be restrained at the top by bracing or tie backs, with the trapezoidal distribution as shown in the diagram in the 'Restrained Retaining Walls' section of this report. Restrained shoring supporting a level backslope may be designed utilizing a trapezoidal distribution of pressure as indicated in the following table:

HEIGHT OF SHORING "H" (feet)	DESIGN SHORING FOR (Where H is the height of the wall)
Up to 25	36.6H

Where a combination of sloped embankment and shoring is utilized, the pressure will be greater and must be determined for each combination. Additional active pressure should be applied where the shoring will be surcharged by adjacent traffic or structures. Where a combination of sloped embankment and shoring is utilized, the pressure will be greater and must be determined for each combination.

Deflection

It is difficult to accurately predict the amount of deflection of a shored embankment. It should be realized that some deflection will occur. It is estimated that the deflection could be on the order of one inch at the top of the shored embankment. If greater deflection occurs during construction, additional bracing may be necessary to minimize settlement of adjacent buildings and utilities in adjacent street and alleys. If desired to reduce the deflection, a greater active pressure could be used in the shoring design. Where internal bracing is used, the rakers should be tightly wedged to minimize deflection. The proper installation of the raker braces and the wedging will be critical to the performance of the shoring.

Monitoring

Because of the depth of the excavation, some mean of monitoring the performance of the shoring system is suggested. The monitoring should consist of periodic surveying of the lateral and vertical locations of the tops of all soldier piles and the lateral movement along the entire lengths of selected soldier piles. Also, some means of periodically checking the load on selected anchors will be necessary, where applicable.

Some movement of the shored embankments should be anticipated as a result of the relatively deep excavation. It is recommended that photographs of the existing buildings on the adjacent properties be made during construction to record any movements for use in the event of a dispute.

Shoring Observations

It is critical that the installation of shoring is observed by a representative of this office. Many building officials require that shoring installation should be performed under continuous observation of a representative of the geotechnical engineer. The observations insure that the recommendations of the geotechnical report are implemented and so that modifications of the recommendations can be made if variations in the earth material or groundwater conditions warrant. The observations will allow for a report to be prepared on the installation of shoring for the use of the local building official, where necessary.

SLABS ON GRADE

Concrete Slabs-on Grade

Concrete floor slabs should be a minimum of 5 inches in thickness. Slabs-on-grade should be cast over undisturbed natural earth materials or properly controlled fill materials. Any earth materials loosened or over-excavated should be wasted from the site or properly compacted to 90 or 95 percent of the maximum dry density.

Outdoor concrete flatwork should be a minimum of 4 inches in thickness. Outdoor concrete flatwork should be cast over undisturbed natural earth materials or properly controlled fill materials. Any earth materials loosened or over-excavated should be wasted from the site or properly compacted to 90 or 95 percent of the maximum dry density.

Design Of Slabs That Receive Moisture-Sensitive Floor Coverings

Geotechnologies, Inc. does not practice in the field of moisture vapor transmission evaluation and mitigation. Therefore it is recommended that a qualified consultant be engaged to evaluate the general and specific moisture vapor transmission paths and any impact on the proposed construction. The qualified consultant should provide recommendations for mitigation of potential adverse impacts of moisture vapor transmission on various components of the structure.

Where dampness would be objectionable, it is recommended that the floor slabs should be waterproofed. A qualified waterproofing consultant should be retained in order to recommend a product or method which would provide protection for concrete slabs-on-grade.

All concrete slabs-on-grade should be supported on vapor retarder. The design of the slab and the installation of the vapor retarder should comply with ASTM E 1643-98 and ASTM E 1745-97 (Reapproved 2004). Where a vapor retarder is used, a low-slump concrete should be used to minimize possible curling of the slabs. The barrier can be covered with a layer of trimmable, compactible, granular fill, where it is thought to be beneficial. See ACI 302.2R-32, Chapter 7 for information on the placement of vapor retarders and the use of a fill layer.

Concrete Crack Control

The recommendations presented in this report are intended to reduce the potential for cracking of concrete slabs-on-grade due to settlement. However even where these recommendations have been implemented, foundations, stucco walls and concrete slabs-on-grade may display some cracking due to minor soil movement and/or concrete shrinkage. The occurrence of concrete cracking may be reduced and/or controlled by limiting the slump of the concrete used, proper concrete placement and curing, and by placement of crack control joints at reasonable intervals, in particular, where re-entrant slab corners occur.

For standard crack control maximum expansion joint spacing of 8 feet should not be exceeded. Lesser spacings would provide greater crack control. Joints at curves and angle points are recommended. The crack control joints should be installed as soon as practical following concrete placement. Crack control joints should extend a minimum depth of one-fourth the slab thickness. Construction joints should be designed by a structural engineer.

Complete removal of the existing fill soils beneath outdoor flatwork such as walkways or patio areas, is not required, however, due to the rigid nature of concrete, some cracking, a shorter design life and increased maintenance costs should be anticipated. In order to provide uniform support beneath the flatwork it is recommended that a minimum of 12 inches of the exposed subgrade beneath the flatwork be scarified and recompacted to 90 percent relative compaction.

Slab Reinforcing

Concrete slabs-on-grade should be reinforced with a minimum of #4 steel bars on 16-inch centers each way.

Outdoor flatwork should be reinforced with a minimum of #3 steel bars on 18-inch centers each way.

PAVEMENTS

Prior to placing paving, the existing grade should be scarified to a depth of 12 inches, moistened as required to obtain optimum moisture content, and recompacted to 90 percent of the maximum density as determined by ASTM D 1557-02. The client should be aware that removal of all existing fill in the area of new paving is not required, however, pavement constructed in this manner will most likely have a shorter design life and increased maintenance costs. An assumed r-value of 13 has been used for this analysis. The following pavement sections are recommended:

Service	**Asphalt Pavement Thickness Inches**	**Base Course Inches**
Passenger Cars (TI=4)	3	6
Moderate Truck (TI=6)	4	9

Aggregate base should be compacted to a minimum of 95 percent of the ASTM D 1557-02 laboratory maximum dry density. Base materials should conform with Sections 200-2.2 or 200-2.4 of the "Standard Specifications for Public Works Construction", (Green Book), 1991 Edition.

The performance of pavement is highly dependant upon providing positive surface drainage away from the edges. Ponding of water on or adjacent to pavement can result in saturation of the subgrade materials and subsequent pavement distress. If planter islands are planned, the perimeter curb should extend a minimum of 12 inches below the bottom of the aggregate base.

SITE DRAINAGE

Proper surface drainage is critical to the future performance of the project. Saturation of a soil can cause it to lose internal shear strength and increase its compressibility, resulting in a change in the designed engineering properties. Proper site drainage should be maintained at all times.

All site drainage should be collected and transferred to the street in non-erosive drainage devices. The proposed structure should be provided with roof drainage. Discharge from downspouts, roof drains and scuppers should not be permitted on unprotected soils within five feet of the building perimeter. Drainage should not be allowed to pond anywhere on the site, and especially not against any foundation or retaining wall. Drainage should not be allowed to flow uncontrolled over any descending slope. Planters which are located within retaining wall backfill should be sealed to prevent moisture intrusion into the backfill.

STORMWATER DISPOSAL

Recently regulatory agencies have been requiring the disposal of a certain amount of stormwater generated on a site by infiltration into the site soils. This requirement is not prudent engineering practice. Increasing the moisture content of a soil can cause it to lose internal shear strength and increase its compressibility, resulting in a change in the designed engineering properties. This means that any overlying structure, including buildings, pavements and concrete flatwork, could sustain damage due to saturation of the subgrade soils. Structures serviced by subterranean levels could be adversely impacted by stormwater disposal by increasing the design fluid pressures on retaining walls and causing leaks in the walls. Proper site drainage is critical to the performance of any structure in the built environment.

This site would not be considered a candidate for stormwater infiltration. It is the understanding of this firm that infiltration must be effected a minimum of 10 feet above the historic high groundwater level. As indicated elsewhere in this report the historic high is at the ground surface.

Where percolation of stormwater into the subgrade soils is not advisable, some Building Officials have allowed the stormwater to be filtered through soils in planter areas. Once the water has been filtered through a planter it may be released into the storm drain system. It is recommended that overflow pipes are incorporated into the design of the discharge system in the planters to prevent flooding. In addition, the planters shall be sealed and waterproofed to prevent leakage. Please be advised that adverse impact to landscaping and periodic maintenance may result due to excessive water and contaminates discharged into the planters.

It is recommended that the design team (including the structural engineer, waterproofing consultant, plumbing engineer, and landscape architect) be consulted in regards to the design and construction of filtration systems.

Please be advised that stormwater infiltration and treatment is a relatively new requirement by the various regulatory agencies and has been subject to change without notice.

DESIGN REVIEW

Engineering of the proposed project should not begin until approval of the geotechnical report by the Building Official is obtained in writing. Significant changes in the geotechnical recommendations may result during the building department review process.

It is recommended that the geotechnical aspects of the project be reviewed by this firm during the design process. This review provides assistance to the design team by providing specific recommendations for particular cases, as well as review of the proposed construction to evaluate whether the intent of the recommendations presented herein are satisfied.

CONSTRUCTION MONITORING

Geotechncial observations and testing during construction are considered to be a continuation of the geotechnical investigation. It is critical that this firm review the geotechnical aspects of the project during the construction process. Compliance with the design concepts, specifications or recommendations during construction requires review by this firm during the course of construction.

All foundations should be observed by a representative of this firm prior to placing concrete or steel. Any fill which is placed should be observed, tested, and verified if used for engineered purposes. Please advise this office at least twenty-four hours prior to any required site visit.

If conditions encountered during construction appear to differ from those disclosed herein, notify this office immediately so the need for modifications may be considered in a timely manner.

It is the responsibility of the contractor to ensure that all excavations and trenches are properly sloped or shored. All temporary excavations should be cut and maintained in accordance with applicable OSHA rules and regulations.

EXCAVATION CHARACTERISTICS

The exploration performed for this investigation is limited to the geotechnical excavations described. Direct exploration of the entire site would not be economically feasible. The owner, design team and contractor must understand that differing excavation and drilling conditions may be encountered based on boulders, gravel, oversize materials, groundwater and many other conditions. Fill materials, especially when they were placed without benefit of modern grading codes, regularly contain materials which could impede efficient grading and drilling. Southern California sedimentary bedrock is known to contain variable layers which reflect differences in depositional environment. Such layers may include abundant gravel, cobbles and boulders. Similarly bedrock can contain concretions. Concretions are typically lenticular and follow the bedding. They are formed by mineral deposits. Concretions can be very hard. Excavation and drilling in these areas may require full size equipment and coring capability. The contractor should be familiar with the site and the geologic materials in the vicinity.

CLOSURE AND LIMITATIONS

The purpose of this report is to aid in the design and completion of the described project. Implementation of the advice presented in this report is intended to reduce certain risks associated with construction projects. The professional opinions and geotechnical advice contained in this report are sought because of special skill in engineering and geology and were prepared in accordance with generally accepted geotechnical engineering practice. Geotechnologies, Inc. has a duty to exercise the ordinary skill and competence of members of the engineering profession. Those who hire Geotechnologies, Inc. are not justified in expecting infallibility, but can expect reasonable professional care and competence.

The scope of the geotechnical services provided did not include any environmental site assessment for the presence or absence of organic substances, hazardous/toxic materials in the soil, surface water, groundwater, or atmosphere, or the presence of wetlands.

Proper compaction is necessary to reduce settlement of overlying improvements. Some settlement of compacted fill should be anticipated. Any utilities supported therein should be designed to accept differential settlement. Differential settlement should also be considered at the points of entry to the structure.

The City of Los Angeles does not require corrosion testing. However, if corrosion sensitive improvements are planned, it is recommended that a comprehensive corrosion study should be commissioned. The study will develop recommendations to avoid premature corrosion of buried pipes and concrete structures in direct contact with the soils.

GEOTECHNICAL TESTING

Classification and Sampling

The soil is continuously logged by a representative of this firm and classified by visual examination in accordance with the Unified Soil Classification system. The field classification is verified in the laboratory, also in accordance with the Unified Soil Classification System. Laboratory classification may include visual examination, Atterberg Limit Tests and grain size distribution. The final classification is shown on the excavation logs.

Samples of the geologic materials encountered in the exploratory excavations were collected and transported to the laboratory. Undisturbed samples of soil are obtained at frequent intervals. Unless noted on the excavation logs as an SPT sample, samples acquired while utilizing a hollow-stem auger drill rig are obtained by driving a thin-walled, California Modified Sampler with successive 30-inch drops of a 140-pound hammer. Samples from bucket-auger drilling are obtained utilizing a California Modified Sampler with successive 12-inch drops of a kelly bar, whose weight is noted on the excavation logs. The soil is retained in brass rings of 2.50 inches outside diameter and 1.00 inch in height. The central portion of the samples are stored in close fitting, waterproof containers for transportation to the laboratory. Samples noted on the excavation logs as SPT samples are obtained in accordance with ASTM D 1586-08. Samples are retained for 30 days after the date of the geotechnical report.

Grain Size Distribution

These tests cover the quantitative determination of the distribution of particle sizes in soils. Sieve analysis is used to determine the grain size distribution of the soil larger than the Number 200 sieve.

ASTM D 422-63 (Reapproved 2007) is used to determine particle sizes smaller than the Number 200 sieve. A hydrometer is used to determine the distribution of particle sizes by a sedimentation process.

The grain size distributions are plotted on the E-Plates presented in the Appendix of this report.

Moisture and Density Relationships

The field moisture content and dry unit weight are determined for each of the undisturbed soil samples, and the moisture content is determined for SPT samples by ASTM D 4959-07 or ASTM D 4643-08. This information is useful in providing a gross picture of the soil consistency between exploration locations and any local variations. The dry unit weight is determined in pounds per cubic foot and shown on the "Excavation Logs", A-Plates. The field moisture content is determined as a percentage of the dry unit weight.

Direct Shear Testing

Shear tests are performed by ASTM D 3080-04 with a strain controlled, direct shear machine manufactured by Soil Test, Inc. or a Direct Shear Apparatus manufactured by GeoMatic, Inc. The rate of deformation is approximately 0.025 inches per minute. Each sample is sheared under varying confining pressures in order to determine the Mohr-Coulomb shear strength parameters of the cohesion intercept and the angle of internal friction. Samples are generally tested in an artificially saturated condition. Depending upon the sample location and future site conditions, samples may be tested at field moisture content. The results are plotted on the "Shear Test Diagram," B-Plates.

ASTM 3080-04 limits the particle size to 10 percent of the diameter of the direct shear test specimen. The sheared sample is inspected by the laboratory technician running the test. The inspection is performed by splitting the sample along the sheared plane and observing the soils exposed on both sides. Where oversize particles are observed in the shear plane, the results are discarded and the test run again with a fresh sample.

Consolidation Testing

Settlement predictions of the soil's behavior under load are made on the basis of the consolidation tests ASTM D 2435-04. The consolidation apparatus is designed to receive a single one-inch high ring. Loads are applied in several increments in a geometric progression, and the resulting deformations are recorded at selected time intervals. Porous stones are placed in contact with the top and bottom of each specimen to permit addition and release of pore fluid. Samples are generally tested at increased moisture content to determine the effects of water on the bearing soil. The normal pressure at which the water is added is noted on the drawing. Results are plotted on the "Consolidation Test," C-Plates.

Expansion Index Testing

The expansion tests performed on the remolded samples are in accordance with the Expansion Index testing procedures, as described in the ASTM D4829-08. The soil sample is compacted into a metal ring at a saturation degree of 50 percent. The ring sample is then placed in a consolidometer, under a vertical confining pressure of 1 lbf/square inch and inundated with distilled water. The deformation of the specimen is recorded for a period of 24 hour or until the rate of deformation becomes less than 0.0002 inches/hour, whichever occurs first. The expansion index, EI, is determined by dividing the difference between final and initial height of the ring sample by the initial height, and multiplied by 1,000.

Laboratory Compaction Characteristics

The maximum dry unit weight and optimum moisture content of a soil are determined by use of ASTM D 1557-07. A soil at a selected moisture content is placed in five layers into as mold of given dimensions, with each layer compacted by 25 blows of a 10 pound hammer dropped from a distance of 18 inches subjecting the soil to a total compactive effort of about 56,000 pounds per cubic foot. The resulting dry unit weight is determined. The procedure is repeated for a sufficient number of moisture contents to establish a relationship between the dry unit weight and the water content of the soil. The data when plotted, represent a curvilinear relationship know as the compaction curve. The values of optimum moisture content and modified maximum dry unit weight are determined from the compaction curve.

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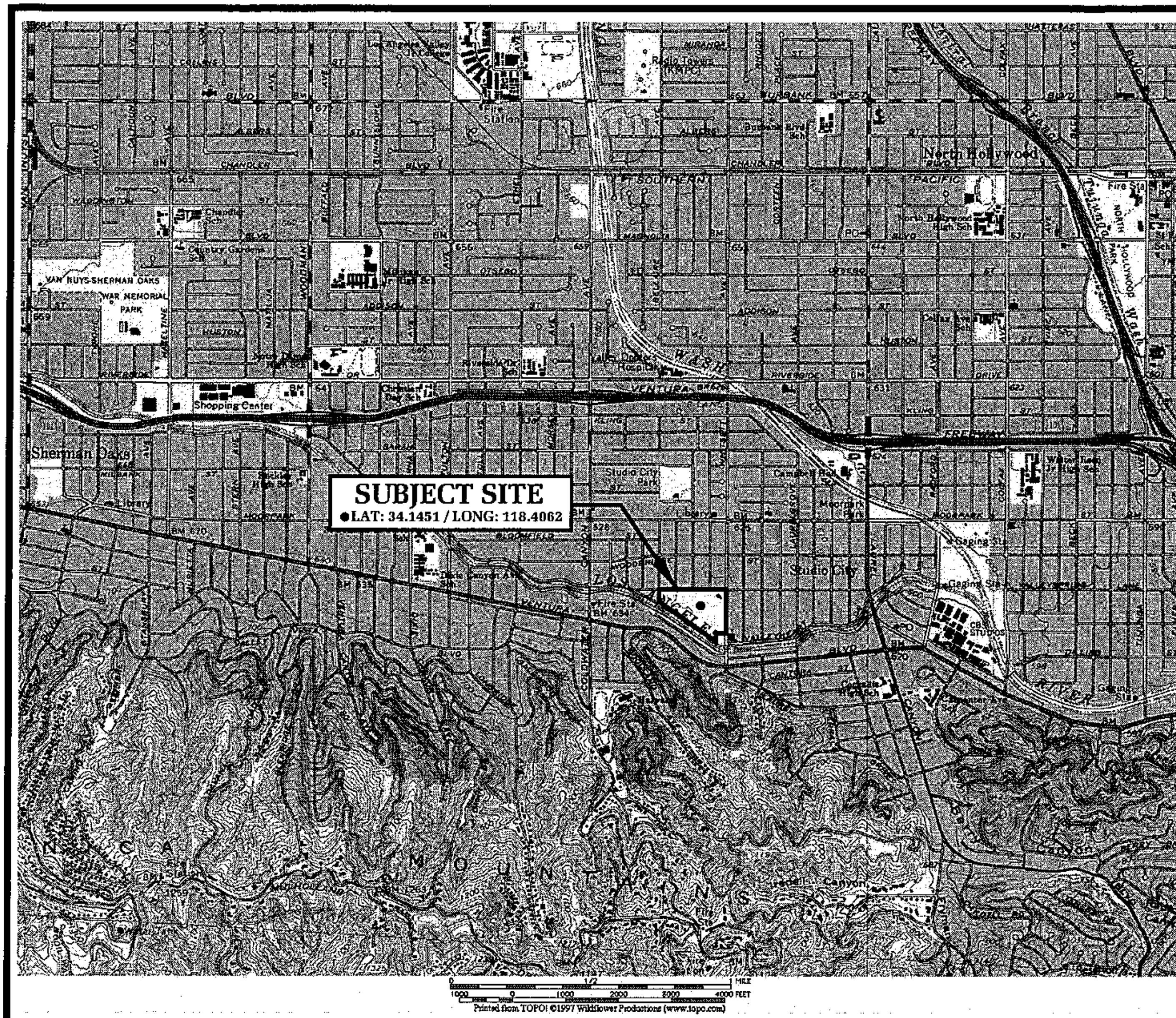


REFERENCE: U.S.G.S. TOPOGRAPHIC MAPS, 7.5 MINUTE SERIES,
VUN NUYS, CA QUADRANGLE

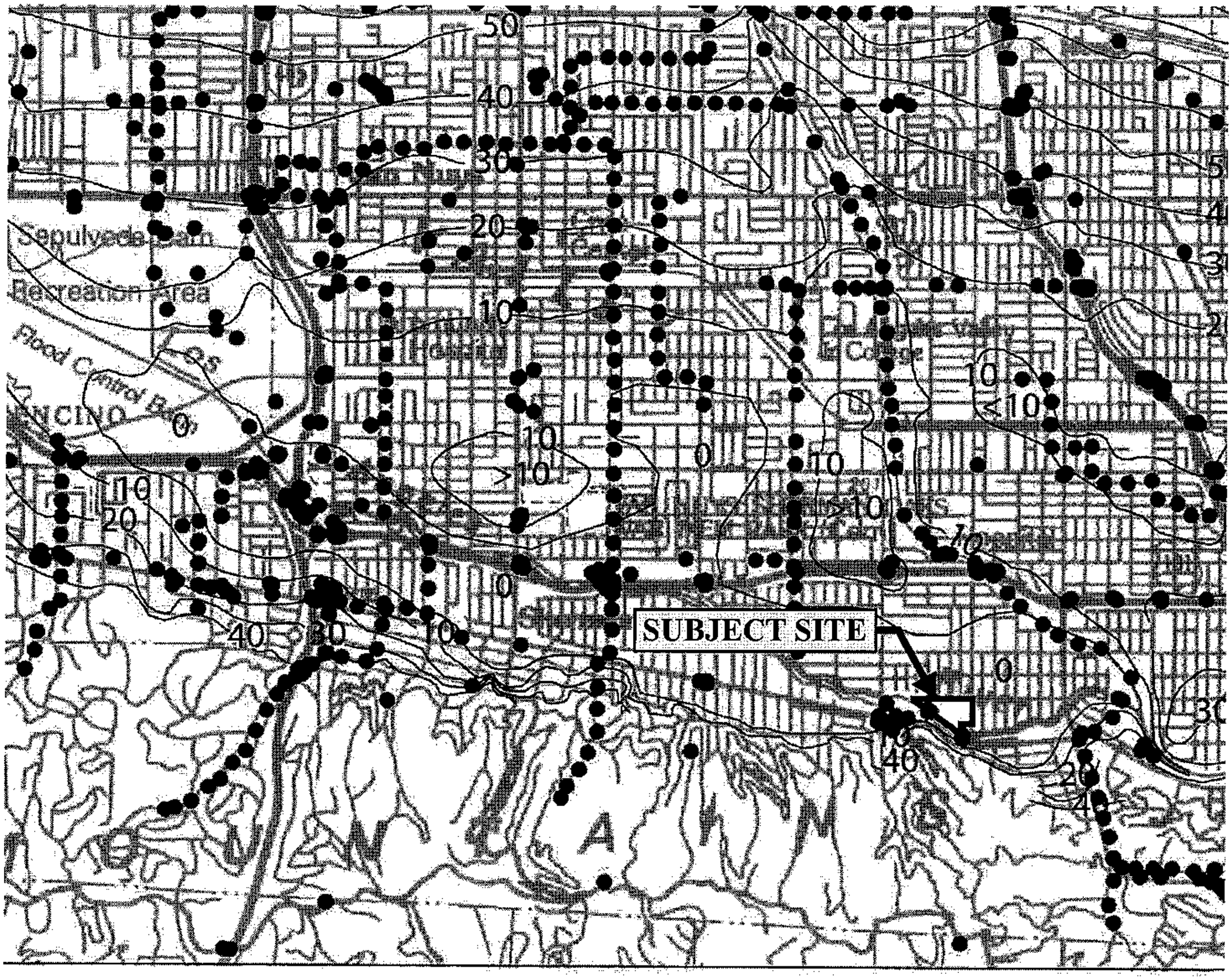
N

VICINITY MAP

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255



VAN NUYS QUADRANGLE

20 Depth to groundwater in feet

REFERENCE: PLATE 1.2, GROUNDWATER MAP, SEISMIC HAZARD EVALUATION REPORT, SHZR08
7.5 MINUTE QUADRANGLES, VUN NUYS, CA QUADRANGLE

N

HISTORICALLY HIGHEST GROUNDWATER LEVELS

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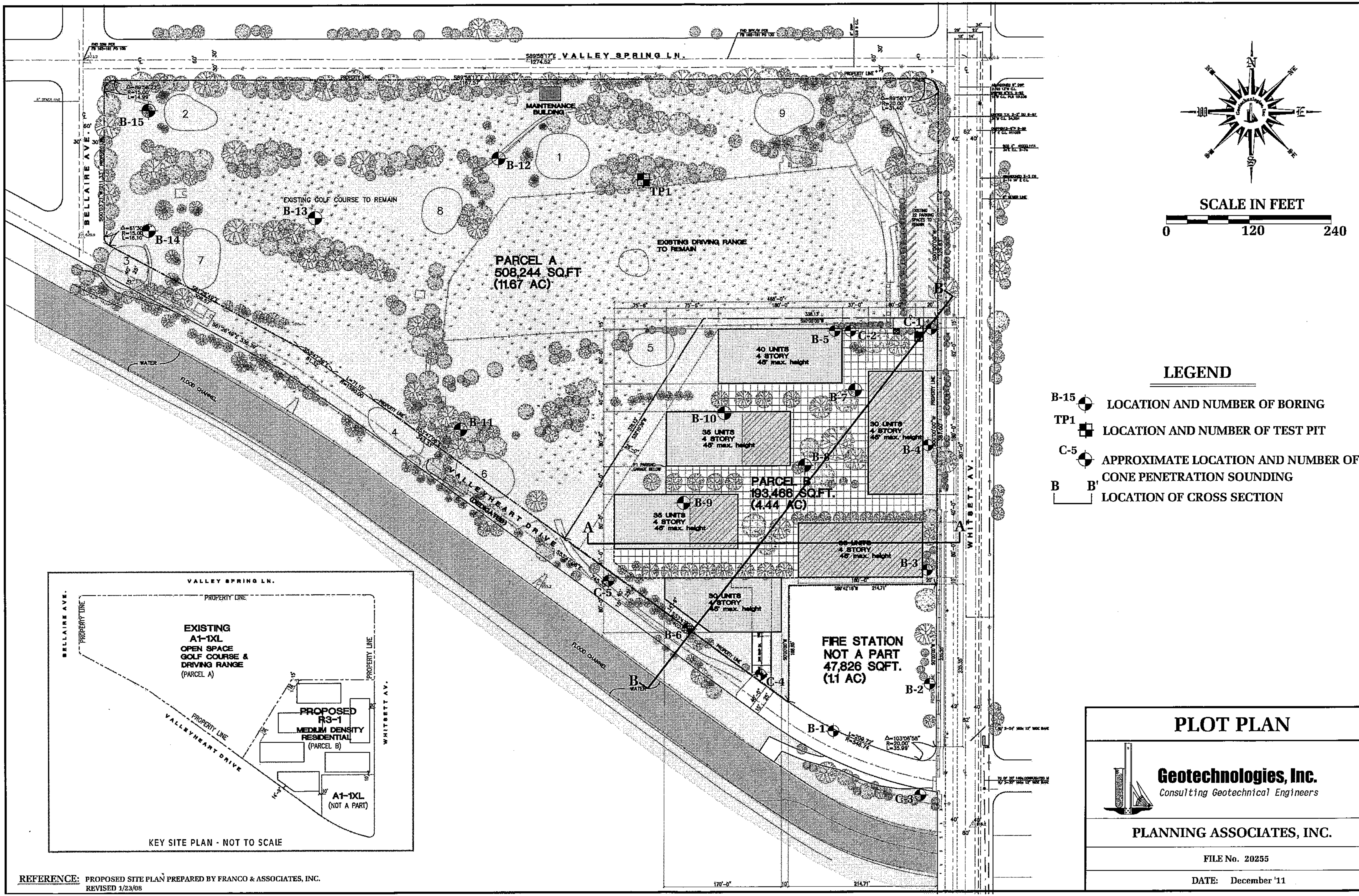
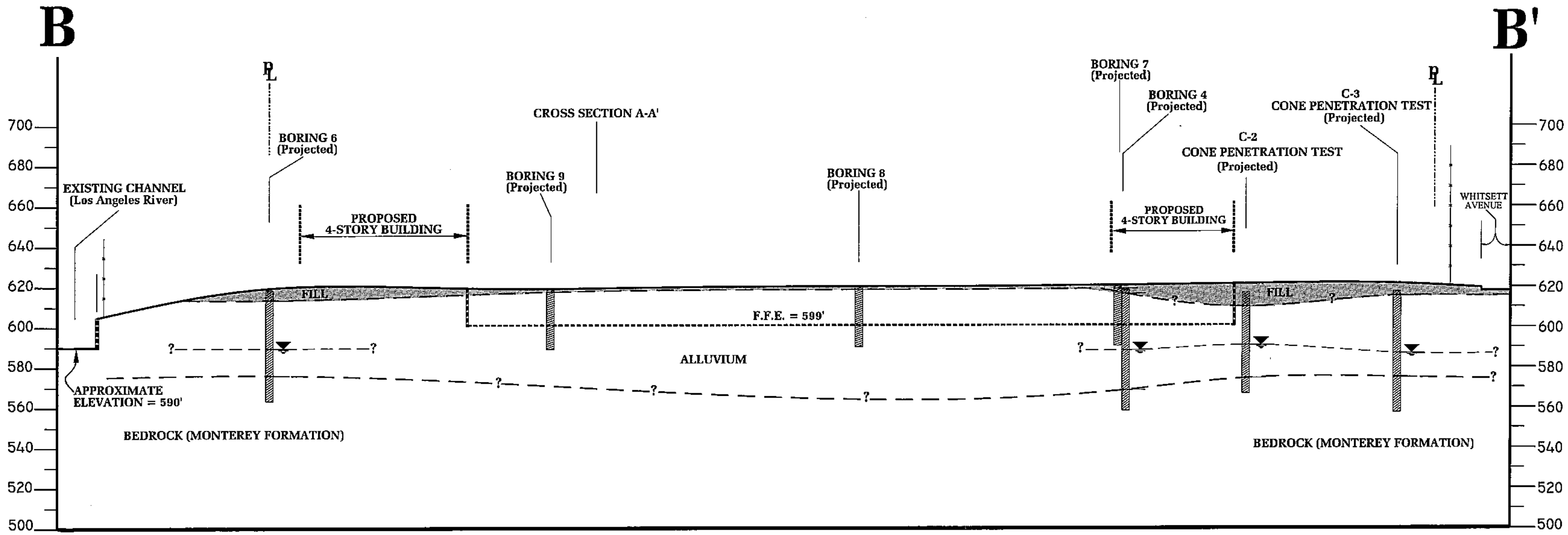
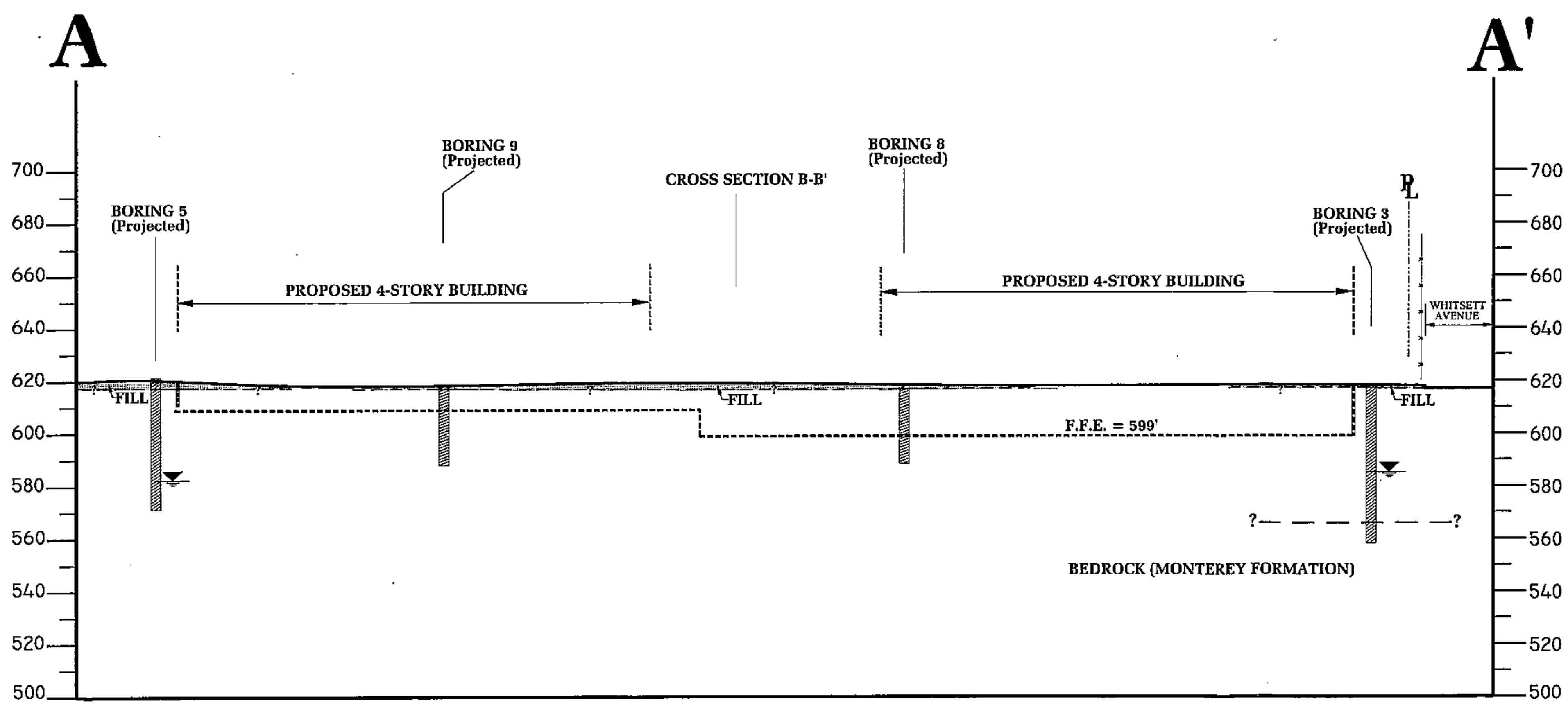

VALLEY SPRING LN.
BELLAIRE AVE.
WHITSETT AV.
VALLEYHEART DRIVE
FLOOD CHANNEL
WATER
PROPERTY LINE
MAINTENANCE BUILDING
EXISTING GOLF COURSE TO REMAIN
EXISTING DRIVING RANGE TO REMAIN
PARCEL A
508,244 SQ.FT
(11.67 AC)
PARCEL B
193,466 SQ.FT.
(4.44 AC)
40 UNITS
4 STORY
45' max. height
35 UNITS
4 STORY
45' max. height
30 UNITS
4 STORY
45' max. height
FIRE STATION
NOT A PART
47,826 SQFT.
(1.1 AC)
B-1
B-2
B-3
B-4
B-5
B-6
B-7
B-8
B-9
B-10
B-11
B-12
B-13
B-14
B-15
TP1
C-1
C-2
C-3
C-4
C-5
A
A
B
B'
SCALE IN FEET
0
120
240
LEGEND
B-15 LOCATION AND NUMBER OF BORING
TP1 LOCATION AND NUMBER OF TEST PIT
C-5 APPROXIMATE LOCATION AND NUMBER OF CONE PENETRATION SOUNDING
B B' LOCATION OF CROSS SECTION
KEY SITE PLAN - NOT TO SCALE
EXISTING
A1-1XL
OPEN SPACE
GOLF COURSE &
DRIVING RANGE
(PARCEL A)
PROPOSED
R3-1
MEDIUM DENSITY
RESIDENTIAL
(PARCEL B)
A1-1XL
(NOT A PART)
REFERENCE: PROPOSED SITE PLAN PREPARED BY FRANCO & ASSOCIATES, INC.
REVISED 1/23/08
PLOT PLAN
Geotechnologies, Inc.
Consulting Geotechnical Engineers
PLANNING ASSOCIATES, INC.
FILE No. 20255
DATE: December '11



SCALE IN FEET

0 20 40 60 120

NOTE: Not Same Scale as Plot Plan



CROSS SECTIONS A-A' AND B-B'

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE No. 20255

DATE: December '11

BORING LOG NUMBER 1

Drilling Date: 03/31/00 — **Elevation: 617'**

Project: File No.20255 — **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: 3-inch Asphalt, No Base
				0		FILL: Sandy Silt, light brown, slightly moist, stiff
1	15	8.9	87.9	1		
				2		Silty Sand, medium brown, moist, medium dense, fine grained
3	38	4.0	103.3	3		
				4		trace medium coarse grained sand
5	30	5.0	97.5	5		
				6		
7	32	11.5	92.2	7		
				8	SM	Silty Sand, brown, slightly moist, medium dense, fine grained, few decayed roots
				9		
10	32	15.2	81.3	10		
				11	ML	Clayey Silt, light brown with mottled dark brown, slightly moist, medium firm, few decayed roots
				12		
				13		
				14		
15	35	13.0	105.0	15		
				16		firm, dark brown
				17		
				18		
				19		
20	49	18.7	108.3	20		
				21		caliche, grades more clayey
				22		
				23		
				24		
25	40	26.2	94.2	25	CL	Silty Clay, gray-brown, moist, firm

BORING LOG NUMBER 1

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				-		
				26 --		- - - - - - - - - - - - - -
				-		Water
				27 --		
				-		
				28 --		
				-		
				29 --		
				-		
30	17	23.3	102.3	30 --		- - - - - - - - - - - - - -
				-		very moist to wet
				31 --		
				-		
				32 --		
				-		
				33 --		
				-		
				34 --		
				-		
35	22	22.8	104.7	35 --		
				-	SC	Clayey Sand, brown, wet, medium dense, fine grained
				36 --		
				-		
				37 --		
37.5	41	10.7	Disturbed	-		Sandy lenses, occasional small gravel
				38 --		
				-		
				39 --		
				-		
40	21	22.7	SPT	40 --		- - - - - - - - - - - - - -
				-		light brown to reddish-brown, interbedded clayey silt lenses
				41 --		
				-		
				42 --		
42.5	24 50/5"	47.4	72.8	-		
				43 --		BEDROCK: Shale bedded, light brown to black, very moist, hard, slightly weathered
				-		
				44 --		
				-		
45	50 50/3"	18.5	93.1	45 --		- - - - - - - - - - - - - -
				-		very hard
				46 --		NOTE: The stratification lines represent the approximate boundary between earth types; the transition may be gradual
				-		
				47 --		
				-		Used 8-inch diameter Hollow-Stem Auger
				48 --		140-lb. Slide Hammer, 30-inch drop
				-		Modified California Sampler used unless otherwise noted
				49 --		
				-		SPT=Standard Penetration Test
50	44 50/2"	50.9	71.4	50 --		
				-		Total depth: 50 feet; Water at 26 feet; Fill to 7 feet

BORING LOG NUMBER 2

Drilling Date: 03/30/00 **Elevation: 617.5'**

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Grass Lawn
				0 --		FILL: Silty Sand, medium brown, slightly moist to moist, dense, fine grained
				-		
				1 --		
				-		
2	22	19.2	79.4	2 --		
				-	ML	Sandy Silt, medium brown, moist, medium firm, slightly porous, caliche
				3 --		
				-		
4	31	17.9	100.2	4 --		
				-	ML	Clayey Silt, dark brown, slightly moist, medium firm, porous, caliche
				5 --		
				-		
				6 --		
				-		
7	40	17.7	96.9	7 --		
				-		firm
				8 --		
				-		
				9 --		
				-		
10	65	15.9	89.4	10 --	SM	Silty Sand, light gray, slightly moist, medium dense, fine grained
				-		
				11 --	SC	Clayey Sand, medium brown, moist, dense, fine grained
				-		
12	67	20.1	99.9	12 --		
				-		medium to dark brown, porous
				13 --		
				-		
				14 --		
				-		
15	64	27.6	91.5	15 --		
				-	ML	Clayey Silt, medium brown, moist, firm, slightly porous, caliche
				16 --		
				-		
				17 --		
				-		
				18 --		
				-		
				19 --		
				-		
20	46	17.4	101.2	20 --		
				-	SM	Silty Sand, orange-brown and medium brown, medium dense, fine grained, slightly porous
				21 --		
				-		
				22 --		
				-		
				23 --		
				-		
				24 --		
				-		
25	38	29.0	93.6	25 --		Clayey Silt, mottled medium brown and gray, moist to very moist, medium firm, fine grained
				-	ML	

BORING LOG NUMBER 2

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		
				29		
30	26	23.7	102.5	30		medium brown, wet to saturated
				31		
				32		
				33		
				34		
35	66	16.6	116.6	35	SC	Clayey Sand, medium brown, very moist, dense, fine to medium grained
				36		
				37		
				38		
				39		
40	45	23.4	105.3	40		tan to brown, saturated, medium dense
				41		
				42		
42.5	60/6"	No Recovery				
				43		BEDROCK: Shale, black, moist, hard, weakly bedded, slightly weathered
				44		
				45		
				46		
				47		
47.5	12 50/3"	38.6	79.6			
				48		
				49		
				50		

BORING LOG NUMBER 2

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				51		
				52		
52.5	150/6"	44.8	69.5			
				53		gray to black
				54		
				55		
				56		
				57		
57.5	30/6" 200/5"	43.7	73.1			
				58		less weathered
				59		
				60		
				61		Total depth: 60 feet Water at 30½ feet Fill to 2 feet
				62		
				63		
				64		
				65		
				66		
				67		
				68		
				69		
				70		
				71		
				72		
				73		
				74		
				75		

BORING LOG NUMBER 3

Drilling Date: 03/30/00 **Elevation: 617.5'**

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Grass Lawn
				0		FILL: Silty Sand, medium brown, slightly moist, dense, fine grained
1	18	16.0	94.9	1		
					SM	Silty Sand, dark brown, moist, medium dense, fine grained
				2		
3	19	12.4	82.9	3		
					ML	Sandy Silt, brown, slightly moist, firm, slightly porous
				4		
5	45	15.5	85.1	5		
						slight clay binder, slightly sandier
				6		
7	55	19.6	91.1	7		
						brown and light gray, moist, some rootlets, slightly porous
				8		
				9		
10	55	14.6	87.8	10	SM	Silty Sand, tan, slightly moist, dense, fine grained
				11	ML	Sandy Silt, mottled tan and light gray, slightly moist, firm, few decayed roots
				12		
				13		
				14		
15	40	22.5	93.0	15		
					SC	Clayey Sand, brown, moist, medium dense, fine grained, caliche
				16		
				17		
18	40	22.1	90.7	18		mottled brown and light gray, porous, few decayed roots
				19		
20	36	16.5	96.3	20		
					SM	Clay binder, medium brown, tract rootlets, Silty Sand, brown, slightly moist, medium dense, fine grained, few decayed roots
				21		
				22		
				23		
				24		
25	36	26.7	93.4	25		
					ML	Clayey Silt, brown, moist, medium firm

BORING LOG NUMBER 3

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		
				29		
30	26	33.9	91.6	30		very moist to wet
				31		
				32		
				33		water
				34		
35	36	15.8	119.4	35	SC	Clayey Sand, dark brown, very moist to wet, medium dense, fine to coarse grained, some gravel
				36		
				37		
				38		
				39		
40	42	25.9	Disturbed	40		
				41		
				42		
42.5	46	33.9	89.2	43	ML	Clayey Silt, medium to dark brown, very moist, medium firm
				44		
				45		
				46		
				47		
47.5	58	33.6	86.8	48	ML	Sandy to Clayey Silt, gray and orange-brown, saturated, firm, fine grained
				49		
				50		

BORING LOG NUMBER 3

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				51		
				52		
52.5	1508	35.4	87.0			
				53		BEDROCK: (MONTEREY FORMATION): Shale, black, moist, hard, Weakley bedded, bedding is sub horizontal
				54		
				55		
				56		
				57		
57.5	1503	16.7	110.0			
				58		interbeds of greenish-gray mudstone, moist, hard, massive
				59		
				60		
				61		Total depth: 60 feet Water at 33 feet Fill to 1 foot
				62		
				63		
				64		
				65		
				66		
				67		
				68		
				69		
				70		
				71		
				72		
				73		
				74		
				75		

BORING LOG NUMBER 4

Drilling Date: 03/31/00 **Elevation: 618.5'**

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: 3-inch Asphalt, No Base
				0		FILL: Silty Sand, black, slightly moist to moist, dense, fine grained
				1		
2	20	19.5	104.8	2		
				-	ML	Clayey Silt, dark brown, moist, medium firm
				3		
				4		
5	25	16.3	97.0	5		
				-	ML	Sandy Silt, light brown, moist, medium firm
				6		
7	33	17.0	98.8	7		
				-		caliche
				8		
				9		
10	27	14.2	98.2	10		
				-		grades less sandy
				11		
				12		
				13		
				14		
15	18	23.4	100.7	15		
				-	ML	Clayey Silt, dark brown, very moist, firm
				16		
				17		
				18		
				19		
20	18	29.1	92.6	20		
				-		grades more clayey
				21		
				22		
				23		
				24		
25	18	29.9	93.7	25		
				-		very moist to wet

BORING LOG NUMBER 4

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		
				29		
30	15	28.7	95.5	30		water
				31		
				32		
				33		
				34		
35	16	21.1	SPT	35		
				36	SC	Clayey Sand, medium brown, wet, medium dense, fine to coarse grained sand
				37		
37.5	31	7.7	112.7			
				38	SW	Sand, light to medium brown, wet, medium dense, fine to coarse grained, some gravel
				39		
40	54	16.6	SPT	40		dense, fine grained
				41		
				42		
42.5	62	16.3	110.9			
				43		
				44		
45	56	No Recovery		45		
				46		
				47		
47.5	58	12.9	123.0			fine to coarse grained, some gravel
				48		
				49		
50	93/3"	41.9	SPT	50		BEDROCK: Siltstone, gray-green, very moist, hard, trace carbonate

BORING LOG NUMBER 4

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				51		
				52		
				53		
				54		
55	88/4"	61.6	68.7	55		
				56		
				57		
				58		
				59		
60	90/5"	45.3	75.0	60		
				61		Total depth: 60 feet Water at 30 feet Fill to 2 feet
				62		
				63		
				64		
				65		
				66		
				67		
				68		
				69		
				70		
				71		
				72		
				73		
				74		
				75		

BORING LOG NUMBER 5

Drilling Date: 03/31/00 **Elevation: 621.5'**

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: 3-inch Asphalt, No Base
				0		FILL: Silty Sand, black to dark brown, moist, dense, fine grained
				1		
2	11	17.9	93.8	2		
				3		
4	17	15.3	104.2	4		
					SM	Silty Sand, brown, slightly moist, medium dense, fine grained
				5		
				6		
7	18	20.8	100.5	7		
					ML	Sandy to Clayey Silt, brown to dark brown, slightly moist, medium firm, porous
				8		
				9		
10	19	21.3	103.5	10		
						grades sandier, light brown, moist
				11		
				12		
				13		
				14		
15	22	21.3	106.6	15		
						abundant caliche
				16		
				17		
				18		
				19		
20	17	34.3	89.7	20		
					ML	Clayey Silt, dark brown, very moist, medium firm
				21		
				22		
				23		
				24		
25	21	24.3	102.4	25		
					ML	Sandy to Clayey Silt, medium to dark brown, very moist, medium firm

BORING LOG NUMBER 5

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		Franco and Associates
				29		
30	19	29.5	93.2	30		
				31	ML	Clayey Silt, olive-brown, very moist, medium firm
				32		
				33		
				34		
35	31	25.0	103.4	35		
				36		some fine sand
				37		
				38		
				39		
40	18	30.7	SPT	40		
				41		water
				42		
42.5	29	28.3	96.6	43		
				44		
45	13	38.7	SPT	45		
				46	CL	Silty Clay, olive-brown, very moist, soft, caliche
				47		
47.5	32	36.3	88.6	48		
				49		
50	11	34.0	SPT	50		slightly sandy
						Total depth: 50 feet; Water at 30 feet; Fill to 4 feet

BORING LOG NUMBER 6

Drilling Date: 03/31/00 | **Elevation: 618.5'**

Project: File No.20255 | **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: 3-inch Asphalt, No Base
						FILL: Sandy Silt, medium brown, moist, firm, fine sand
1	11	21.7	96.5	1		
				2		
3	10	18.5	98.9	3		medium brown
				4		
5	11	24.6	98.2	5		
					ML	Clayey Silt, black, moist, soft, very porous, caliche
				6		
7	19	23.8	99.2	7		olive-brown, very moist
				8		
				9		
10	16	23.2	95.6	10		
					SM	Silty Sand, medium brown, moist, medium dense, very fine grained
				11		
				12		
				13		
				14		
15	15	29.1	93.6	15		
					ML	Clayey Silt, brown, very moist, soft
				16		
				17		
				18		
				19		
20	27	29.1	92.1	20		dark brown, trace fine sand, medium firm
				21		
				22		
				23		
				24		
25	25	29.7	91.7	25		dark brown to black

BORING LOG NUMBER 6

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		
				29		
30	17	26.3	99.7	30		wet
				31		
				32		
				33		
				34		
35	14	24.2	SPT	35		wet, soft, some fine grained sand
				36		
				37		
37.5	82	22.9	106.9	38	SW	Sand, medium brown, wet, dense, fine to coarse grained, some silt, some clayey sand
				39		
40	63	28.2	SPT	40	SC	Clayey Sand, brown, wet, dense, fine to medium grained
				41		
				42		
42.5	50/5"	47.5	72.9	43		BEDROCK (MONTEREY FORMATION): Siltstone, gray-green to black, moist, hard
				44		
45	76	43.6	SPT	45		
				46		
				47		
				48		
				49		
50	90/3"	40.6	78.8	50		

BORING LOG NUMBER 6

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				51 --		
				52 --		
				53 --		
				54 --		
55	83/2"	No Recovery		55 --		
				56 --		Total depth: 55 feet Water at 29 feet Fill to 5 feet
				57 --		
				58 --		
				59 --		
				60 --		
				61 --		
				62 --		
				63 --		
				64 --		
				65 --		
				66 --		
				67 --		
				68 --		
				69 --		
				70 --		
				71 --		
				72 --		
				73 --		
				74 --		
				75 --		

BORING LOG NUMBER 7

Drilling Date: 06/04/07 | **Elevation:**

Project: File No. 20255 | **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Lawn Area
				0		FILL: Silty Sand, medium brown to yellowish-brown, slightly moist to moist, medium dense, fine grained
1	19	5.7	85.2	1		
				2	SM	Silty Sand, yellowish-brown, moist, medium dense, fine grained
3	20	8.4	86.0	3		moist
				4		slight porous, moist
5	32	9.6	93.2	5		moist
				6	SC	Clayey Sand, medium brown, moist, medium dense, fine grained, medium stiff
7	22	13.9	97.1	7		
				8	SM	Silty Sand, yellowish-brown with dark brown and light gray mottling to yellowish-brown with medium brown mottling, moist, medium dense, fine grained, slight Clay
				9		
10	29	15.9	101.2	10	SM/ML	Silty Sand to Sandy Silt, yellowish-brown with light gray mottling, moist, medium dense, fine grained
				11		
				12		
				13		
				14		
15	26	25.6	96.9	15	SC	Clayey Sand, yellowish-brown with light gray and brown mottling to medium brown with yellowish-brown mottling, moist, medium dense, fine grained, medium stiff
				16		
				17		
				18		
				19		
20	25	23.1	92.3	20	CL	Sandy Clay, medium brown with yellowish-brown mottling, moist, medium stiff
				21		
				22		
				23		
				24		
25	20	23.0	96.7	25	CL/SC	Sandy Clay to Clayey Sand, medium brown with yellowish-brown mottling, moist, medium dense, fine grained, medium stiff

BORING LOG NUMBER 7

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		
				29		
30	38	27.3	93.1	30	CL	Sandy Clay, medium brown with yellowish-brown and light gray mottling, moist, medium stiff
				31		Total depth: 30 feet
				32		No Water
				33		Fill to 1½ feet
				34		
				35		
				36		
				37		
				38		
				39		
				40		
				41		
				42		
				43		
				44		
				45		
				46		
				47		
				48		
				49		
				50		

BORING LOG NUMBER 8

Drilling Date: 06/04/07 **Elevation:**

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Lawn Area
				0		FILL: Silty Sand, dark brown to yellowish-brown, moist, medium dense, fine grained
				1		
2	12	15.7	98.0	2	SM	Silty Sand, medium brown, slightly porous, moist, medium dense, fine grained
				3		moist
4	16	14.7	102.9	4		
				5	SM/SC	Silty to Clayey Sand, medium brown to brown, moist, medium dense, fine grained, medium stiff
				6		
7	27	25.8	93.8	7		
				8	SC/SM	Clayey to Silty Sand, dark brown with medium brown mottling to yellowish-brown with light gray mottling, moist, medium dense, fine grained, medium stiff
				9		
10	35	6.1	101.3	10		
				11	SM/SP	Silty Sand to Sand, yellowish-brown with light gray mottling, moist, medium dense, fine grained
				12		
				13		
				14		
15	25	22.3	95.7	15		
				16	CL	Sandy Clay, medium brown with dark brown and light gray mottling, moist, medium stiff
				17		
				18		
				19		
20	27	29.9	89.4	20		yellowish-brown with medium brown and light gray mottling, moist, medium stiff
				21		
				22		
				23		
				24		
25	32	24.0	97.2	25		yellowish-brown with light gray mottling, moist, medium stiff

BORING LOG NUMBER 8

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				-		
				26 --		
				-		
				27 --		
				-		
				28 --		
				-		
				29 --		
				-		
30	27	22.5	99.7	30 --		moist
				-		
				31 --		Total depth: 30 feet
				-		No Water
				32 --		Fill to 1½ feet
				-		
				33 --		
				-		
				34 --		
				-		
				35 --		
				-		
				36 --		
				-		
				37 --		
				-		
				38 --		
				-		
				39 --		
				-		
				40 --		
				-		
				41 --		
				-		
				42 --		
				-		
				43 --		
				-		
				44 --		
				-		
				45 --		
				-		
				46 --		
				-		
				47 --		
				-		
				48 --		
				-		
				49 --		
				-		
				50 --		
				-		

BORING LOG NUMBER 9

Drilling Date: 06/04/07 **Elevation:**

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Lawn Area
				0 --		FILL: Silty Sand, medium brown, moist, medium dense, fine grained
1	30	7.9	90.0	1 --		yellowish-brown, moist
				2 --		medium brown, slightly porous, moist, medium dense, fine grained
3	24	7.4	81.1	3 --	SM	Silty Sand, yellowish-brown, moist, medium dense, fine grained
				4 --		yellowish-brown to yellowish-brown with medium brown mottling, slightly porous, moist, medium dense, fine grained
5	28	12.3	84.8	5 --		
				6 --	SM/SC	Silty Sand to Clayey Sand, light gray with yellowish-brown mottling, slight caliche, slightly porous, moist, medium dense, fine grained, medium stiff
7	37	15.3	103.0	7 --		
				8 --	SC	Clayey Sand, medium brown with gray mottling, slightly porous, moist, medium dense, fine grained, medium stiff
				9 --		
10	45	16.3	105.1	10 --		
				11 --	ML/SM	Clayey Silt to Silty Sand, medium brown with gray mottling to medium brown, slightly porous, moist, medium dense, fine grained, medium stiff
				12 --		
				13 --		
				14 --		
15	43	18.3	106.7	15 --		
				16 --	SC	Clayey Sand, dark brown to medium brown, moist, medium dense, fine grained, medium stiff
				17 --		
				18 --		
				19 --		
20	50	24.0	98.9	20 --		
				21 --	CL	Sandy Clay, medium brown, moist, medium stiff
				22 --		
				23 --		
				24 --		
25	55	25.5	95.2	25 --		medium brown with gray mottling to medium brown with gray and yellowish-brown mottling, moist, stiff

BORING LOG NUMBER 9

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		
				29		
						medium brown with gray mottling, moist, medium stiff
30	29	22.9	97.2	30		
						Total depth: 30 feet No Water Fill to 1½ feet
				31		
				32		
				33		
				34		
				35		
				36		
				37		
				38		
				39		
				40		
				41		
				42		
				43		
				44		
				45		
				46		
				47		
				48		
				49		
				50		

BORING LOG NUMBER 10

Drilling Date: 06/12/07 **Elevation:**

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Lawn Area
				0		FILL: Silty Sand, yellowish-brown, moist, medium dense, fine grained
				1		
2	65	5.0	104.7	2		moist
				3	SM	Silty Sand, yellowish-brown, porous, moist, dense, fine grained
4	34	7.1	100.3	4		moist
				5		
				6		
7	46	10.3	96.9	7		slightly Clayey, yellowish-brown with light gray mottling, slightly porous, moist, medium dense, fine grained
				8		
				9		
10	60	7.6	109.5	10		yellowish-brown with light gray mottling, slight caliche, moist, dense, fine grained
				11		
				12		
				13		
				14		
15	41	17.3	104.9	15	CL/SC	Sandy Clay to Clayey Sand, medium brown to yellowish-brown, moist, medium dense, fine grained, medium stiff
				16		
				17		
				18		
				19		
20	38	21.3	100.8	20	CL	Sandy Clay, yellowish-brown, caliche, moist, medium stiff
				21		
				22		
				23		
				24		
25	36	18.8	107.4	25	CL/SC	Sandy Clay to Clayey Sand, medium brown with light gray mottling to yellowish-brown with light gray mottling, moist, medium dense, fine grained, medium stiff

BORING LOG NUMBER 10

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		
				29		
30	33	23.1	98.7	30	CL	Sandy Clay, yellowish-brown with light gray mottling, moist, medium stiff
				31		Total depth: 30 feet No Water Fill to 2½ feet
				32		
				33		
				34		
				35		
				36		
				37		
				38		
				39		
				40		
				41		
				42		
				43		
				44		
				45		
				46		
				47		
				48		
				49		
				50		

BORING LOG NUMBER 11

Drilling Date: 06/12/07 **Elevation:**

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Lawn Area
				0		FILL: Silty Sand, yellowish-brown, moist, medium dense, fine grained
				1		
2	33	6.5	97.6	2	SM	Silty Sand, yellowish-brown, moist, medium dense, fine grained
				3		medium brown with yellowish-brown mottling, moist, medium dense, fine grained
4	36	10.8	100.2	4		yellowish-brown with white and light gray mottling, moist, medium dense, fine grained
				5		
				6		
7	28	13.1	103.6	7		slightly Clayey, yellowish-brown to medium brown with gray mottling, moist, medium dense, fine grained
				8	SC	Clayey Sand, medium brown with light gray, gray and white mottling, moist, medium dense, fine grained, medium stiff
				9		
10	29	13.7	100.3	10	SM	Silty Sand, yellowish-brown with light gray and medium brown mottling, moist, medium dense, fine grained
				11		
				12		
				13		
				14		
15	32	11.0	109.8	15	SP/SM	Sand to Silty Sand with slight Clayey, yellowish-brown with light gray mottling to medium brown with slight caliche, moist, medium dense, fine grained
				16		
				17		
				18		
				19		
20	50	18.1	104.1	20	SM/CL	Silty Sand to Sandy Clay, medium brown to medium brown with light gray and white mottling, moist, medium dense, fine grained, medium stiff
				21		
				22		
				23		
				24		
25	50	22.3	98.1	25	CL	Sandy Clay, medium brown with gray and yellowish-brown mottling, slight caliche, moist, medium stiff

BORING LOG NUMBER 11

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26 --		
				27 --		
				28 --		
				29 --		
30	57	27.2	90.9	30 --		medium brown with yellowish-brown and light gray mottling, moist, stiff
				31 --		Total depth: 30 feet No Water Fill to 1½ feet
				32 --		
				33 --		
				34 --		
				35 --		
				36 --		
				37 --		
				38 --		
				39 --		
				40 --		
				41 --		
				42 --		
				43 --		
				44 --		
				45 --		
				46 --		
				47 --		
				48 --		
				49 --		
				50 --		

BORING LOG NUMBER 12

Drilling Date: 06/04/07 | **Elevation:**

Project: File No. 20255 | **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Lawn Area
				0		FILL: Silty Sand, yellowish-brown, moist, medium dense, fine grained
				1		
2	15	5.9	88.9	2	SM	Silty Sand, medium brown, moist, medium dense, fine grained
				3		light olive-brown, moist
4	20	9.2	87.7	4		yellowish-brown, slightly porous, moist, medium dense, fine grained
				5		
				6		
7	40	8.5	107.2	7		yellowish-brown to medium brown with light gray mottling, moist, medium dense, fine grained, slightly Clayey
				8		
				9		
10	50	19.2	101.8	10	ML	Sandy to Clayey Silt, yellowish-brown with brown and light gray mottling, moist, medium dense, fine grained, medium stiff
				11		
				12		
				13		
				14		
15	44	9.8	93.4	15	SP/SM	Sand to Silty Sand, yellowish-brown, moist, medium dense, fine grained
				16		
				17		
				18		
				19		
20	36	21.5	95.1	20	CL	Sandy Clay, medium brown with yellowish-brown mottling, moist, medium stiff
				21		
				22		
				23		
				24		
25	36	23.6	99.5	25		moist

BORING LOG NUMBER 12

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		
				29		
30	57	27.2	90.9	30		medium brown with yellowish-brown and light gray mottling, moist, stiff
				31		
				32		Total depth: 30 feet No Water Fill to 1½ feet
				33		
				34		
				35		
				36		
				37		
				38		
				39		
				40		
				41		
				42		
				43		
				44		
				45		
				46		
				47		
				48		
				49		
				50		

BORING LOG NUMBER 13

Drilling Date: 06/12/07 | **Elevation:**

Project: File No. 20255 | **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Lawn Area
				0 --		FILL: Silty Sand, medium brown, moist, medium dense, fine grained
				-		
1	22	8.6	98.4	1 --		
				-	SC/SM	Clayey to Silty Sand, yellowish-brown to olive-brown, moist, medium dense, fine grained, medium stiff
				2 --		
				-		
3	24	8.3	106.9	3 --		
				-	SM/SC	Silty to Clayey Sand, olive-brown with yellowish-brown mottling, moist, medium dense, fine grained, medium stiff
				4 --		
				-		
5	30	15.0	SPT	5 --		
				-	SC/SM	Clayey to Silty Sand, olive-brown with light gray mottling to yellowish-brown, moist, medium dense, fine grained, medium stiff
				6 --		
				-	SC	
				7 --		Clayey Sand, olive-brown with light gray and white mottling, slight caliche, moist, medium dense, fine grained, medium stiff
7.5	32	18.2	102.8	-		
				8 --		
				-	SM/SC	Silty to Clayey Sand, medium brown with light gray and yellowish-brown mottling, slightly porous, moist, medium dense, fine grained, medium stiff
				9 --		
				-		
10	15	17.8	SPT	10 --		
				-	CL	Sandy Clay, yellowish-brown, moist, firm
				11 --		
				-		
				12 --		
12.5	52	18.7	99.7	-		
				13 --		olive-brown with light gray mottling, moist, stiff
				-		
				14 --		
				-		
15	18	13.3	SPT	15 --		
				-	SC	Clayey Sand, medium brown, moist, medium dense, fine grained
				16 --		
				-		
				17 --		
17.5	29	27.4	92.6	-		
				18 --		slight caliche, moist, medium dense, fine grained
				-		
				19 --		
				-		
20	33	25.8	SPT	20 --		
				-	CL/SC	Sandy Clay to Clayey Sand, yellowish-brown with light gray mottling, slight caliche, moist, medium dense, fine grained, medium stiff
				21 --		
				-		
				22 --		
22.5	58 50/6"	26.4	94.0	-		
				23 --	CL	Sandy Clay, medium brown with gray and light gray mottling, caliche, moist, very stiff
				-		
				24 --		
				-		
25	31	24.7	SPT	25 --		yellowish-brown with gray mottling, caliche, moist, medium stiff, slight gravel
				-		

BORING LOG NUMBER 13

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
27.5	43	27.9	92.9			
				28		yellowish-brown with light gray mottling, moist, medium stiff
				29		
30	13	26.3	SPT	30		
				31		medium brown with light gray mottling to yellowish-brown with light gray mottling, slight caliche, moist, medium stiff
				32		
32.5	47	18.5	108.0			
				33		yellowish-brown with light gray mottling, moist, medium stiff
				34		
35	19	22.4	SPT	35		
				36		moist
				37		
37.5	33	19.7	106.6			
				38		yellowish-brown with olive-brown mottling to yellowish-brown, moist, medium stiff
				39		
40	14	26.3	SPT	40		
				41	CL	Sandy Clay, yellowish-brown with light gray mottling, very moist, medium dense, fine grained, medium stiff
				42		
42.5	36	24.8	99.5			
				43	SM	Silty Sand, yellowish-brown with light gray mottling, wet, medium dense, fine grained
				44		
45	25	22.2	SPT	45		
				46		yellowish-brown with reddish-brown, wet, medium dense, fine to medium grained
				47		
47.5	58 50/6"	6.3	125.6			
				48		yellowish-brown, wet, very dense, fine to coarse grained, abundant gravel
				49		
50	30	12.2	SPT	50		
						yellowish-brown, wet, medium dense, fine to coarse grained, abundant gravel

BORING LOG NUMBER 13

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				51		
				52		
52.5	35 50/6"	10.1	122.2	53		wet, very dense, fine to coarse grained, more gravel
				54		
55	50/6"	45.4	SPT	55	SM	Silty Sand, gray with white and greenish-gray layered, moist, dense, fine grained
				56		
				57		
57.5	75/7"	No Recovery		58		
				59		
60	28 50/5"	55.1	SPT	60	SM/ML	Silty Sand to Sandy Silt, gray with light and white layers, moist, very dense, fine grained
				61		Total depth: 60 feet Water at 34 feet Fill to 1 foot
				62		
				63		
				64		
				65		
				66		
				67		
				68		
				69		
				70		
				71		
				72		
				73		
				74		
				75		

BORING LOG NUMBER 14

Drilling Date: 06/12/07 **Elevation:**

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Lawn Area
				0 --		FILL: Silty Sand, yellowish-brown, moist, medium dense, fine grained
				1 --	SM	Silty Sand, medium brown, moist, medium dense, fine grained
				2 --		slightly porous, moist, medium dense, fine grained
				3 --		
4	16	9.5	99.3	4 --		medium brown with yellowish-brown mottling to yellowish-brown, moist, medium dense, fine grained
				5 --		
				6 --		
7	23	11.7	106.9	7 --	SC	Clayey Sand, medium brown with gray mottling, moist, medium dense, fine grained, medium stiff
				8 --		
				9 --		
10	40	18.3	106.8	10 --	SM	Silty Sand, yellowish-brown with gray mottling to yellowish-brown with light gray mottling, moist, medium dense, fine grained
				11 --		
				12 --		
				13 --		
				14 --		
15	43	16.7	102.8	15 --	CL	Sandy Clay, olive-brown with gray and yellowish-brown mottling to medium brown with gray and yellowish-brown mottling, moist, medium stiff
				16 --		
				17 --		
				18 --		
				19 --		
20	36	28.5	87.0	20 --		medium brown with gray mottling to yellowish-brown, moist, medium stiff
				21 --		
				22 --		
				23 --		
				24 --		
25	47	22.7	94.9	25 --		medium brown with light gray and yellowish-brown mottling, moist, medium stiff

BORING LOG NUMBER 14

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		
				29		
30	35	27.4	92.6	30		yellowish-brown with light gray mottling to medium brown with light gray mottling, moist, medium stiff
				31		Total depth: 30 feet No Water Fill to 1 foot
				32		
				33		
				34		
				35		
				36		
				37		
				38		
				39		
				40		
				41		
				42		
				43		
				44		
				45		
				46		
				47		
				48		
				49		
				50		

BORING LOG NUMBER 15

Drilling Date: 06/04/07 **Elevation:**

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Lawn Area
				0 --		FILL: Silty Sand, medium brown to yellowish-brown, moist, medium dense, fine grained with minor bedrock fragments
				1 --		
2	19	6.1	93.2	2 --	SM	Silty Sand, yellowish-brown, moist, medium dense, fine grained
				3 --		medium brown to yellowish-brown, moist, medium dense, fine grained
4	20 50/6"	8.8	100.8	4 --		medium brown with yellowish-brown mottling, moist, dense, fine grained, slightly Clayey
				5 --		
				6 --		
7	42	12.5	100.4	7 --		yellowish-brown with gray mottling, slightly porous, moist, medium dense, fine grained
				8 --		
				9 --		
10	50	14.4	82.5	10 --	ML	Sandy Silt, yellowish-brown with light gray mottling, moist, medium dense, fine grained
				11 --		
				12 --		
				13 --		
				14 --		
15	30	25.5	90.8	15 --	CL	Sandy Clay, medium brown with yellowish-brown mottling, moist, medium stiff
				16 --		
				17 --		
				18 --		
				19 --		
20	30 50/5"	18.3	96.7	20 --	SC/CL	Clayey Sand to Sandy Clay, yellowish-brown, caliche, moist, very dense, fine grained, very stiff
				21 --		
				22 --		
				23 --		
				24 --		
25	20 50/5"	24.1	95.8	25 --	CL	Sandy Clay, yellowish-brown with gray mottling, caliche, moist, very stiff

BORING LOG NUMBER 15

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		
				29		
30	46	23.8	94.8	30		moist
				31		Total depth: 30 feet No Water Fill to 1½ feet
				32		
				33		
				34		
				35		
				36		
				37		
				38		
				39		
				40		
				41		
				42		
				43		
				44		
				45		
				46		
				47		
				48		
				49		
				50		

LOG OF TEST PIT NUMBER 1

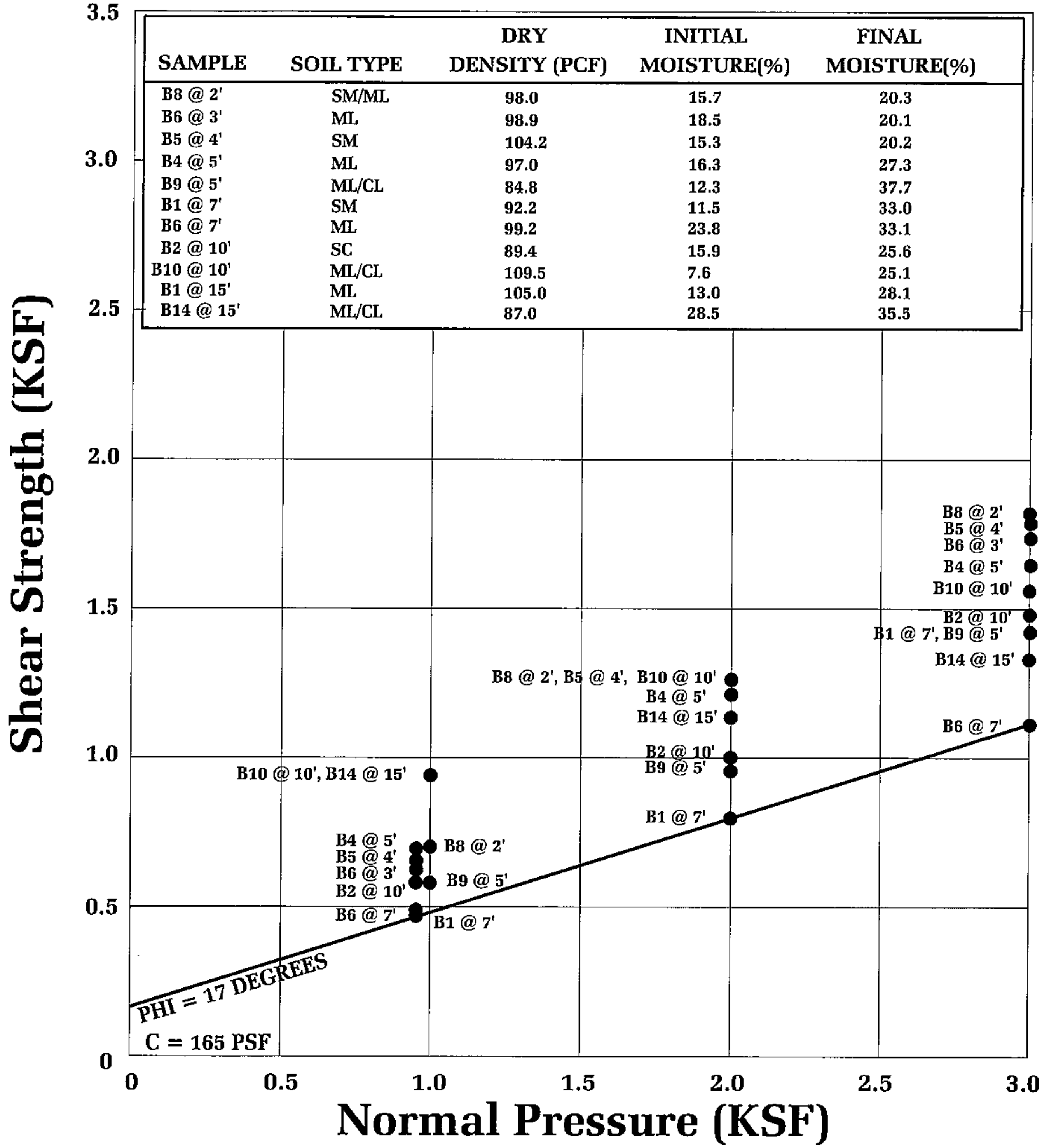
Drilling Date: 06/06/07 **Elevation:**

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Moisture Content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Lawn Area
			0 --		NO FILL Silty Sand, yellowish-brown, slightly porous, moist, medium dense, fine grained
			1 --		
			2 --		
			3 --		
			4 --		yellowish-brown with medium brown mottling, porous, moist, medium dense, fine grained
			5 --		
			6 --		
			7 --		Total depth: 6 feet No Water No Fill
			8 --		
			9 --		
			10 --		
			11 --		
			12 --		
			13 --		
			14 --		
			15 --		
			16 --		
			17 --		
			18 --		
			19 --		
			20 --		
			21 --		
			22 --		
			23 --		
			24 --		
			25 --		

SAMPLE	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE(%)	FINAL MOISTURE(%)
B8 @ 2'	SM/ML	98.0	15.7	20.3
B6 @ 3'	ML	98.9	18.5	20.1
B5 @ 4'	SM	104.2	15.3	20.2
B4 @ 5'	ML	97.0	16.3	27.3
B9 @ 5'	ML/CL	84.8	12.3	37.7
B1 @ 7'	SM	92.2	11.5	33.0
B6 @ 7'	ML	99.2	23.8	33.1
B2 @ 10'	SC	89.4	15.9	25.6
B10 @ 10'	ML/CL	109.5	7.6	25.1
B1 @ 15'	ML	105.0	13.0	28.1
B14 @ 15'	ML/CL	87.0	28.5	35.5



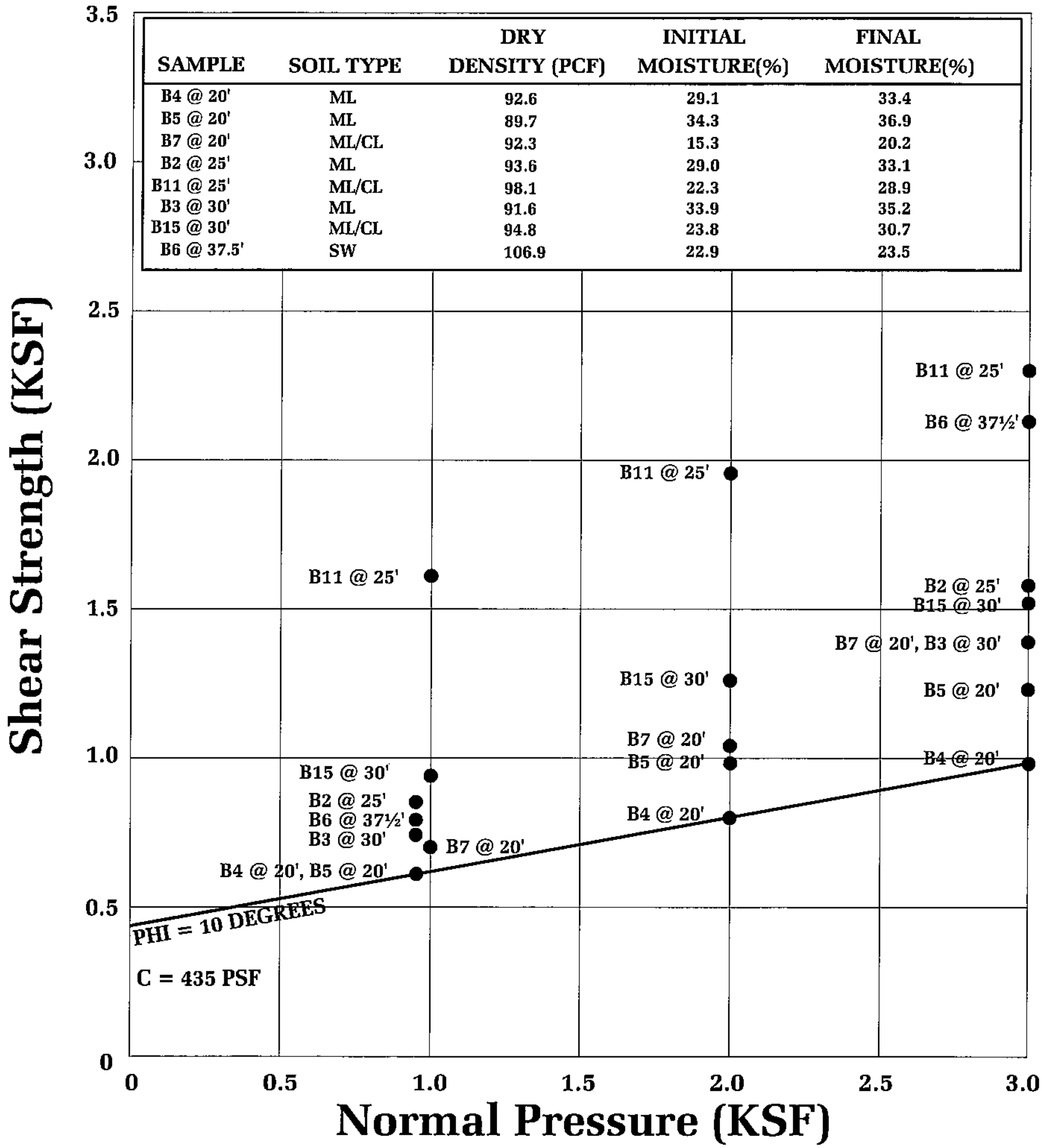
● Direct Shear, Saturated

SHEAR TEST DIAGRAM

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255 PLATE: B-1



SAMPLE	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE(%)	FINAL MOISTURE(%)
B4 @ 20'	ML	92.6	29.1	33.4
B5 @ 20'	ML	89.7	34.3	36.9
B7 @ 20'	ML/CL	92.3	15.3	20.2
B2 @ 25'	ML	93.6	29.0	33.1
B11 @ 25'	ML/CL	98.1	22.3	28.9
B3 @ 30'	ML	91.6	33.9	35.2
B15 @ 30'	ML/CL	94.8	23.8	30.7
B6 @ 37.5'	SW	106.9	22.9	23.5

● Direct Shear, Saturated

SHEAR TEST DIAGRAM

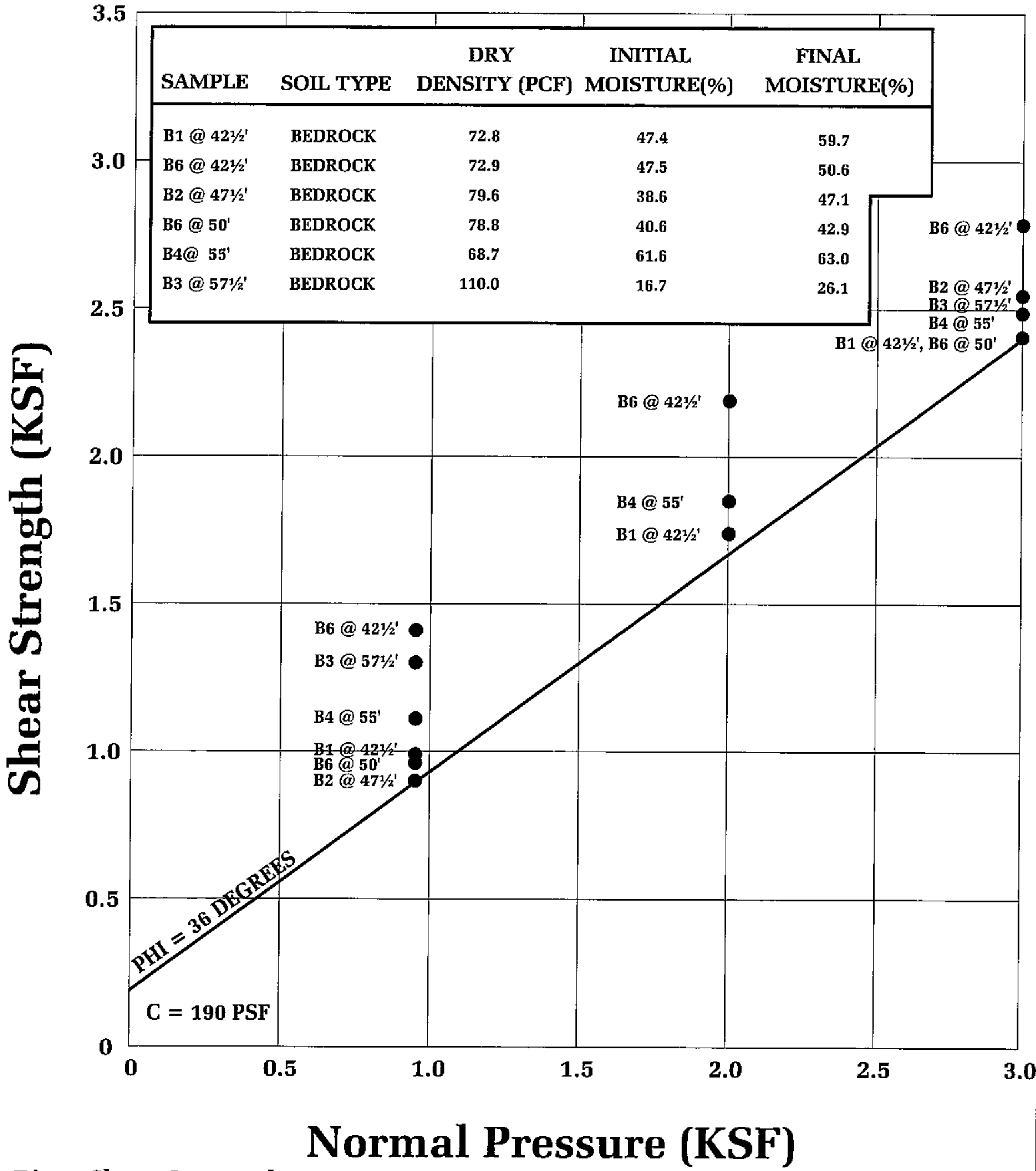
Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255 | PLATE: B-2

BEDROCK

SAMPLE	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE(%)	FINAL MOISTURE(%)
B1 @ 42½'	BEDROCK	72.8	47.4	59.7
B6 @ 42½'	BEDROCK	72.9	47.5	50.6
B2 @ 47½'	BEDROCK	79.6	38.6	47.1
B6 @ 50'	BEDROCK	78.8	40.6	42.9
B4@ 55'	BEDROCK	68.7	61.6	63.0
B3 @ 57½'	BEDROCK	110.0	16.7	26.1



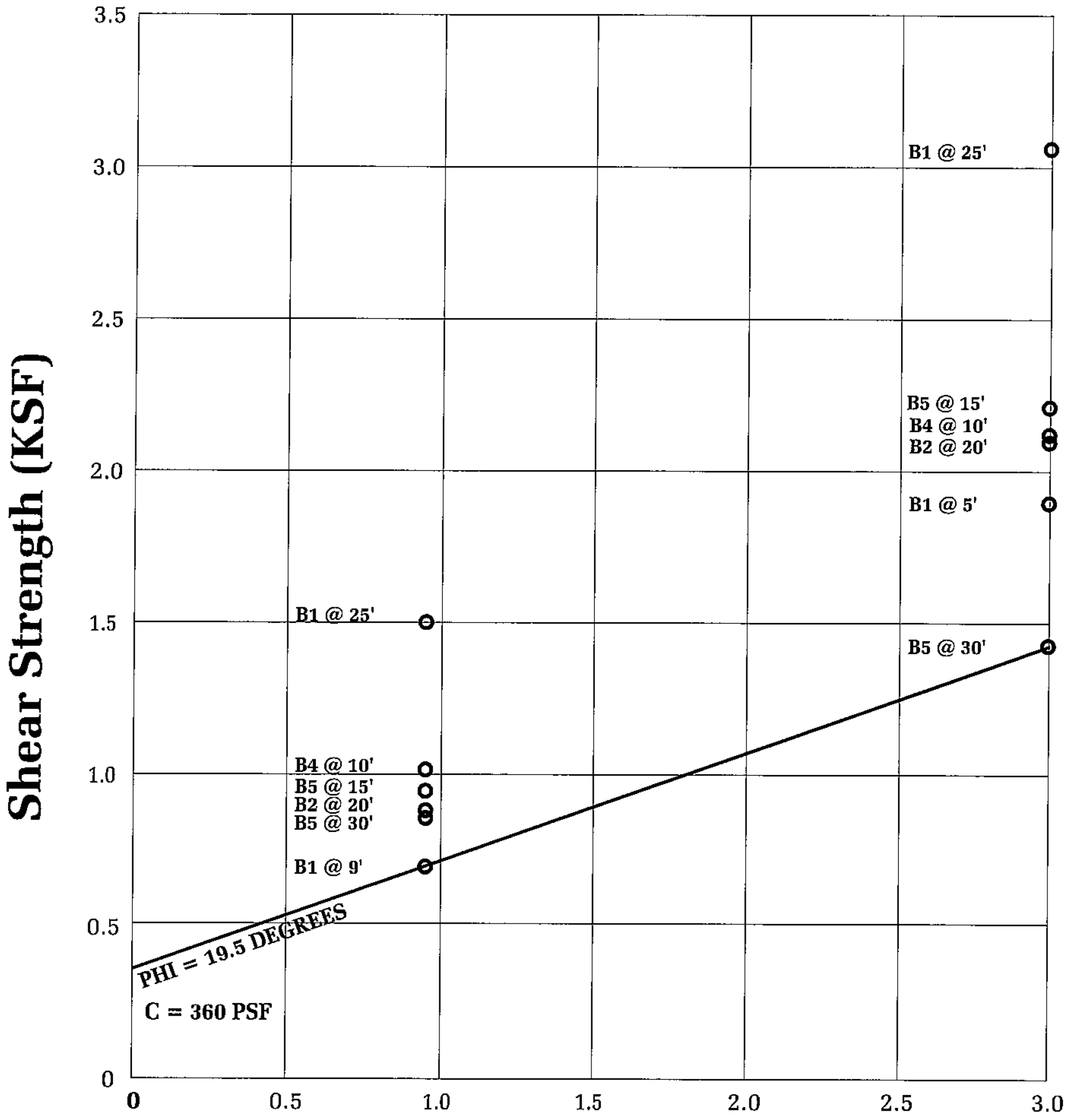
● Direct Shear, Saturated

SHEAR TEST DIAGRAM

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255 | PLATE: B-3



● Direct Shear, Field Moisture

SHEAR TEST DIAGRAM

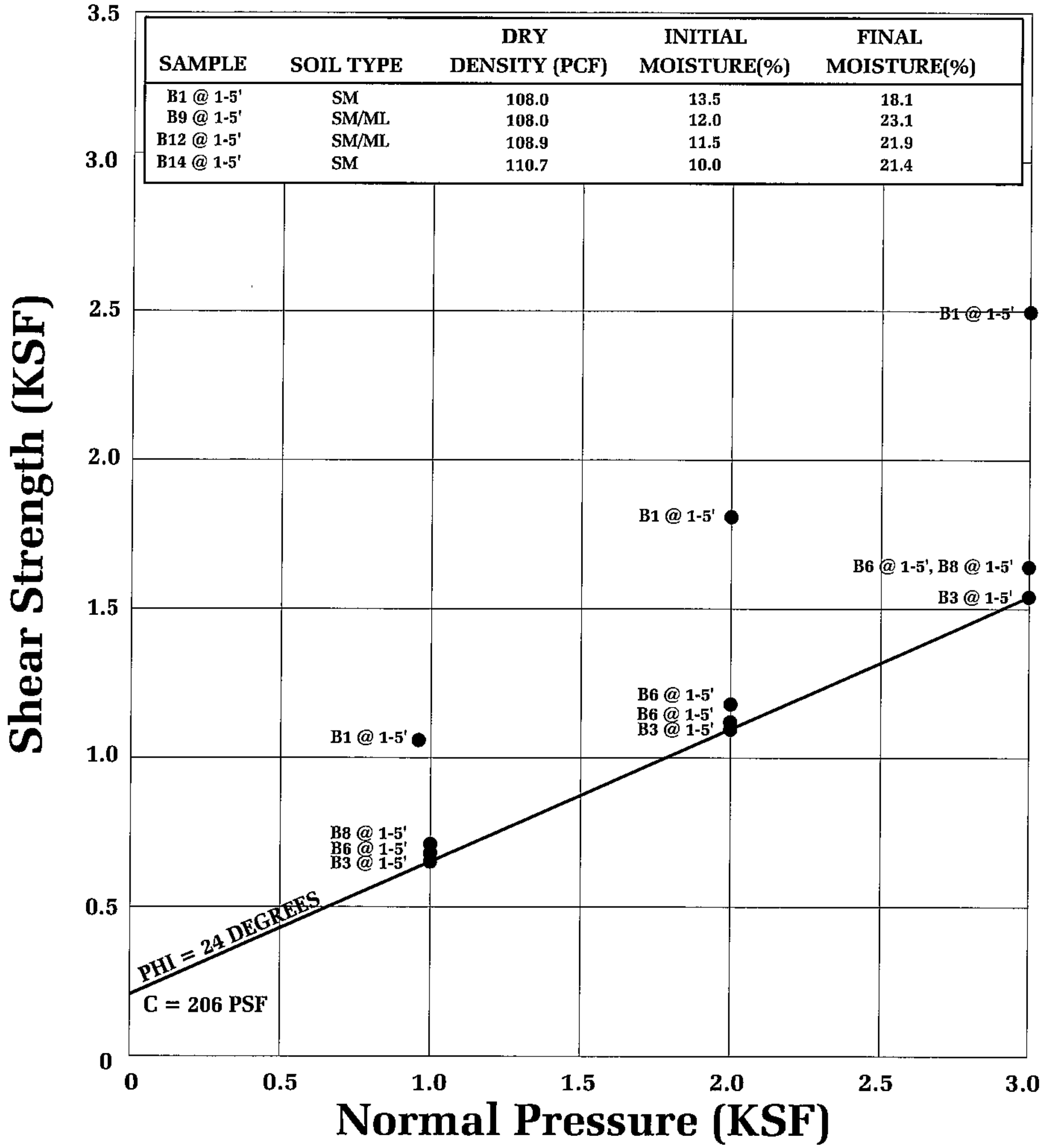
Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255 | PLATE: B-4

BULK SAMPLE REMOLDED TO 90 PERCENT OF THE MAXIMUM LABORATORY DENSITY

SAMPLE	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE(%)	FINAL MOISTURE(%)
B1 @ 1-5'	SM	108.0	13.5	18.1
B9 @ 1-5'	SM/ML	108.0	12.0	23.1
B12 @ 1-5'	SM/ML	108.9	11.5	21.9
B14 @ 1-5'	SM	110.7	10.0	21.4



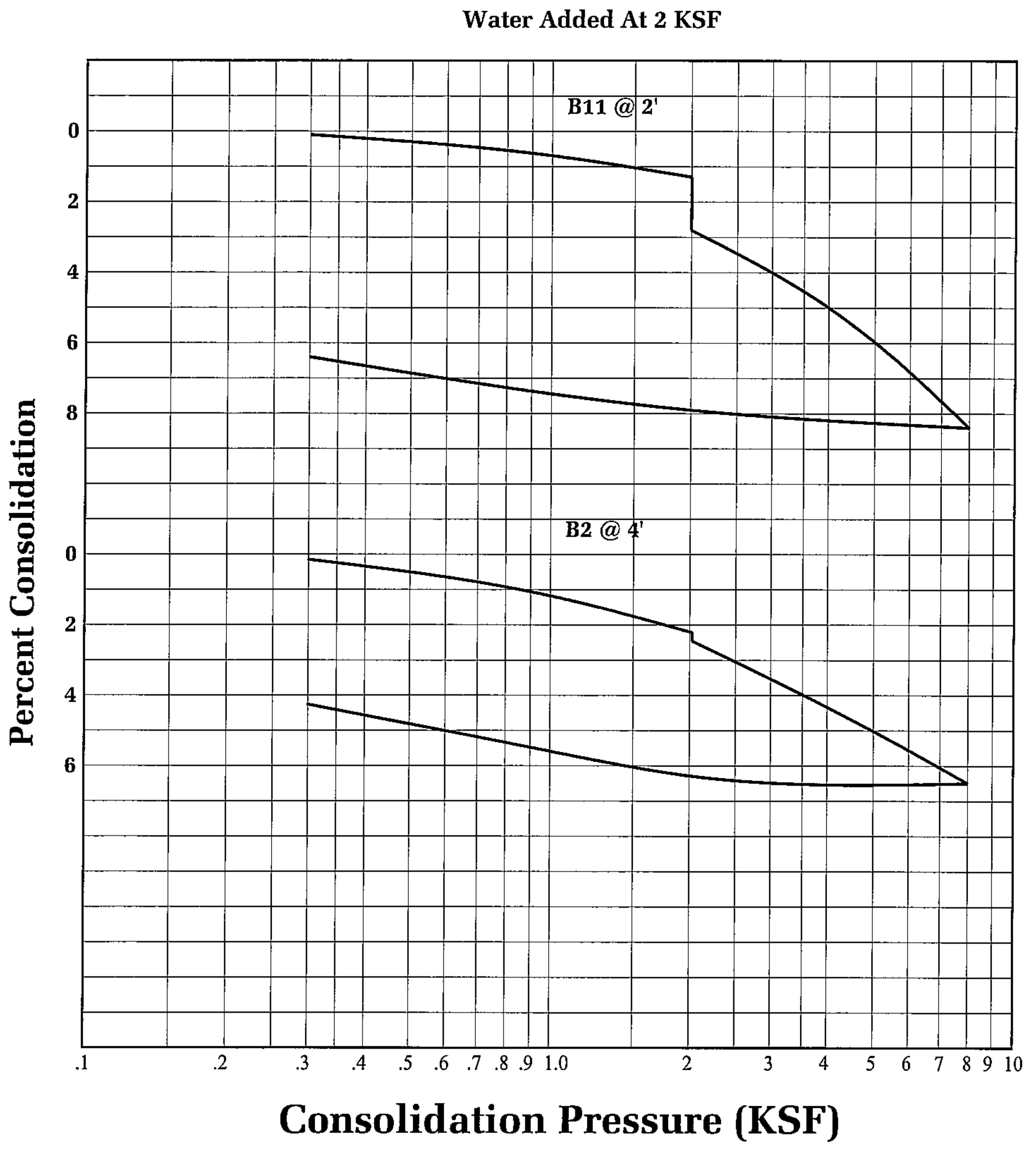
● Direct Shear, Saturated

SHEAR TEST DIAGRAM

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255 | PLATE: B-5

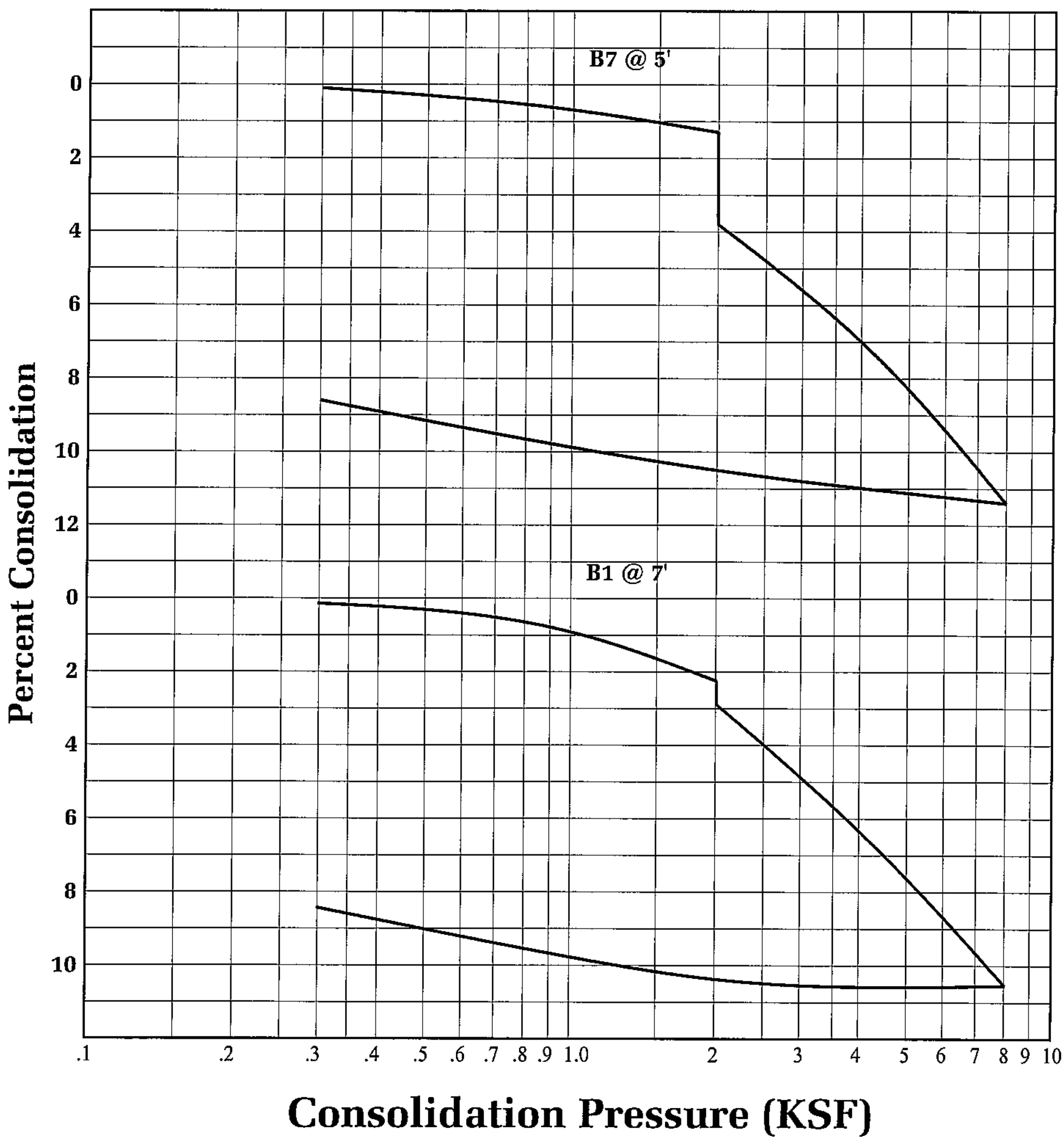


CONSOLIDATION TEST

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.	
FILE NO. 20255	PLATE: C-1

Water Added At 2 KSF

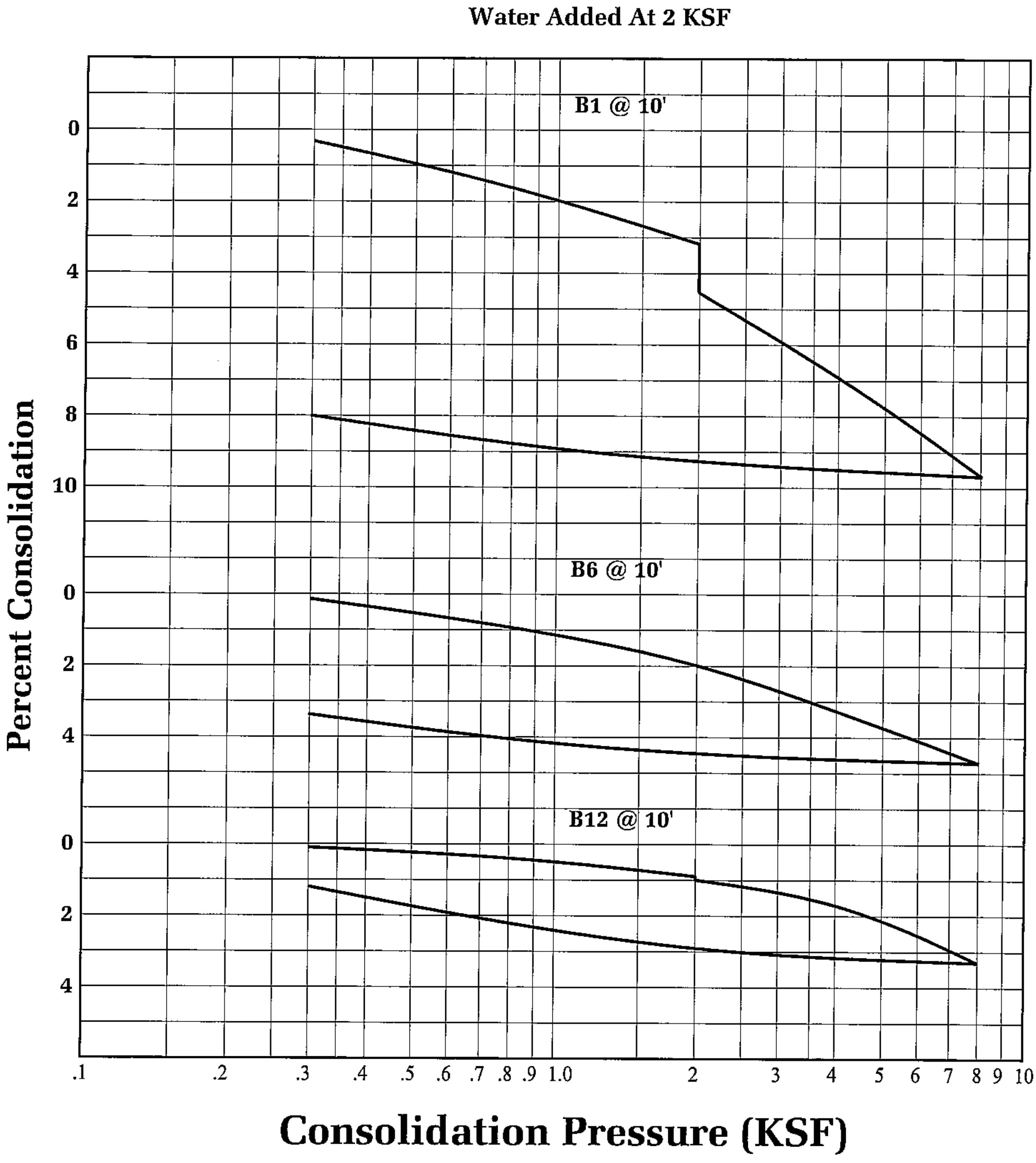


CONSOLIDATION TEST

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255 | PLATE: C-2



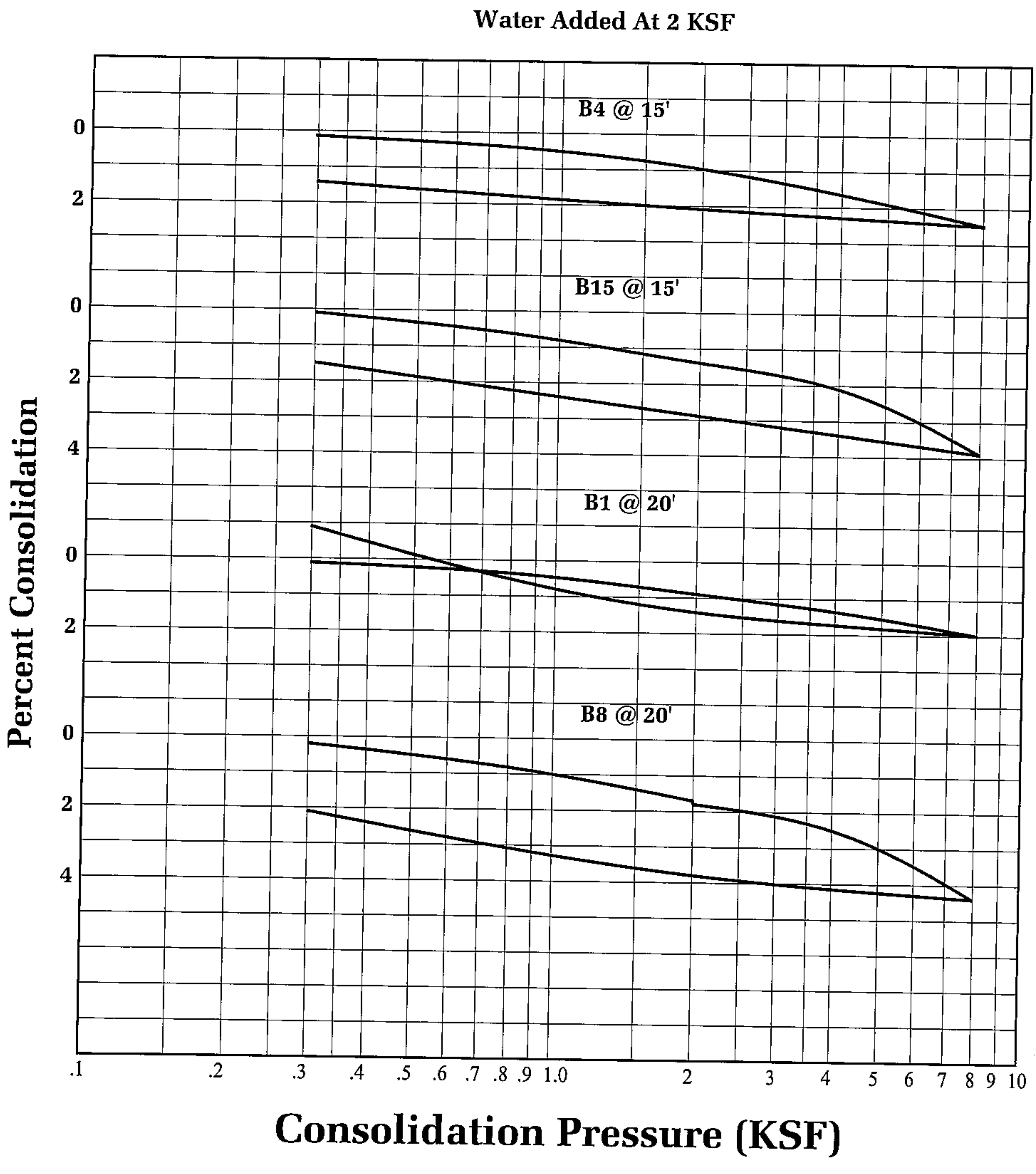
CONSOLIDATION TEST

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255

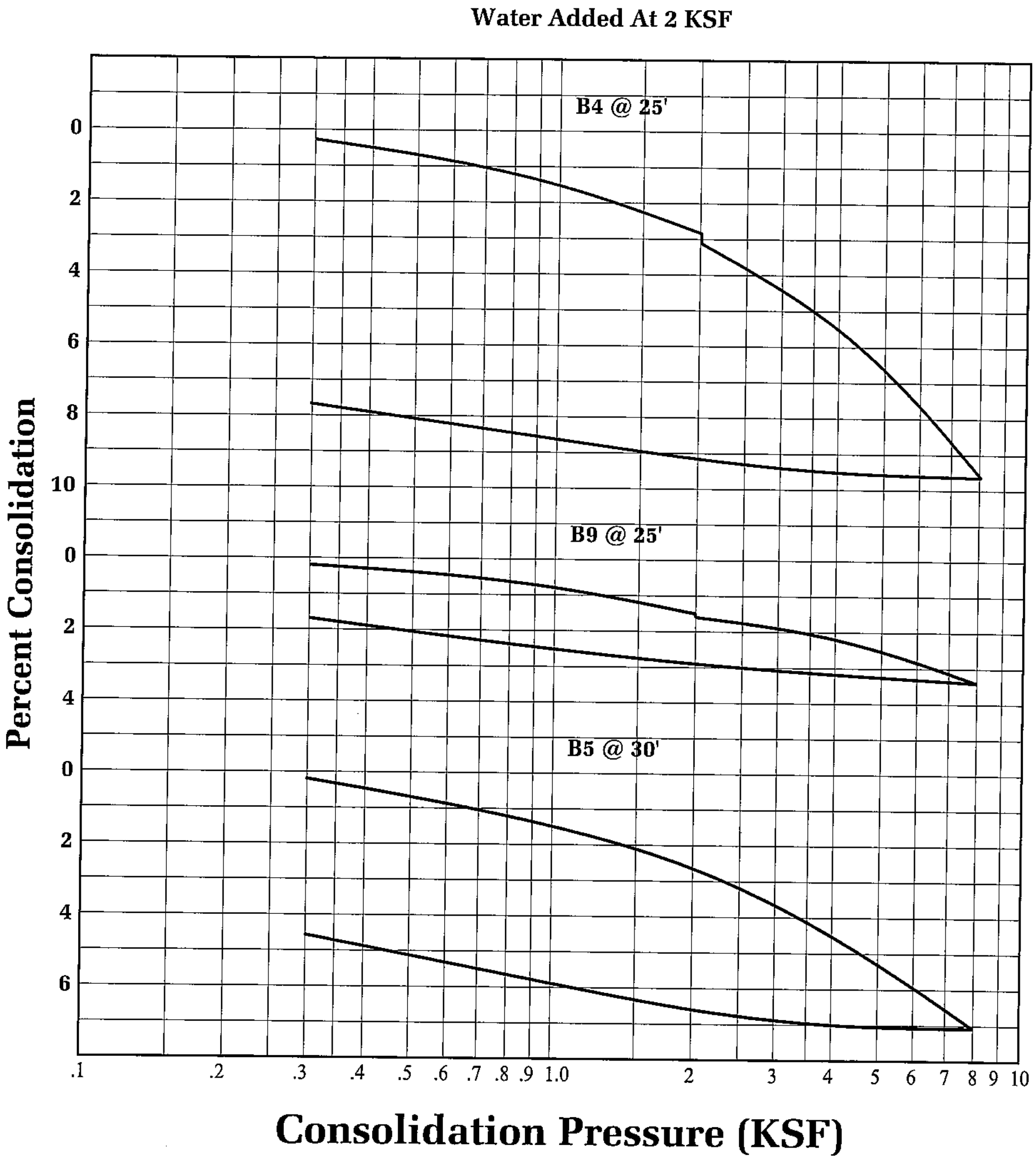
PLATE: C-3



CONSOLIDATION TEST

Geotechnologies, Inc.
Consulting Geotechnical Engineers

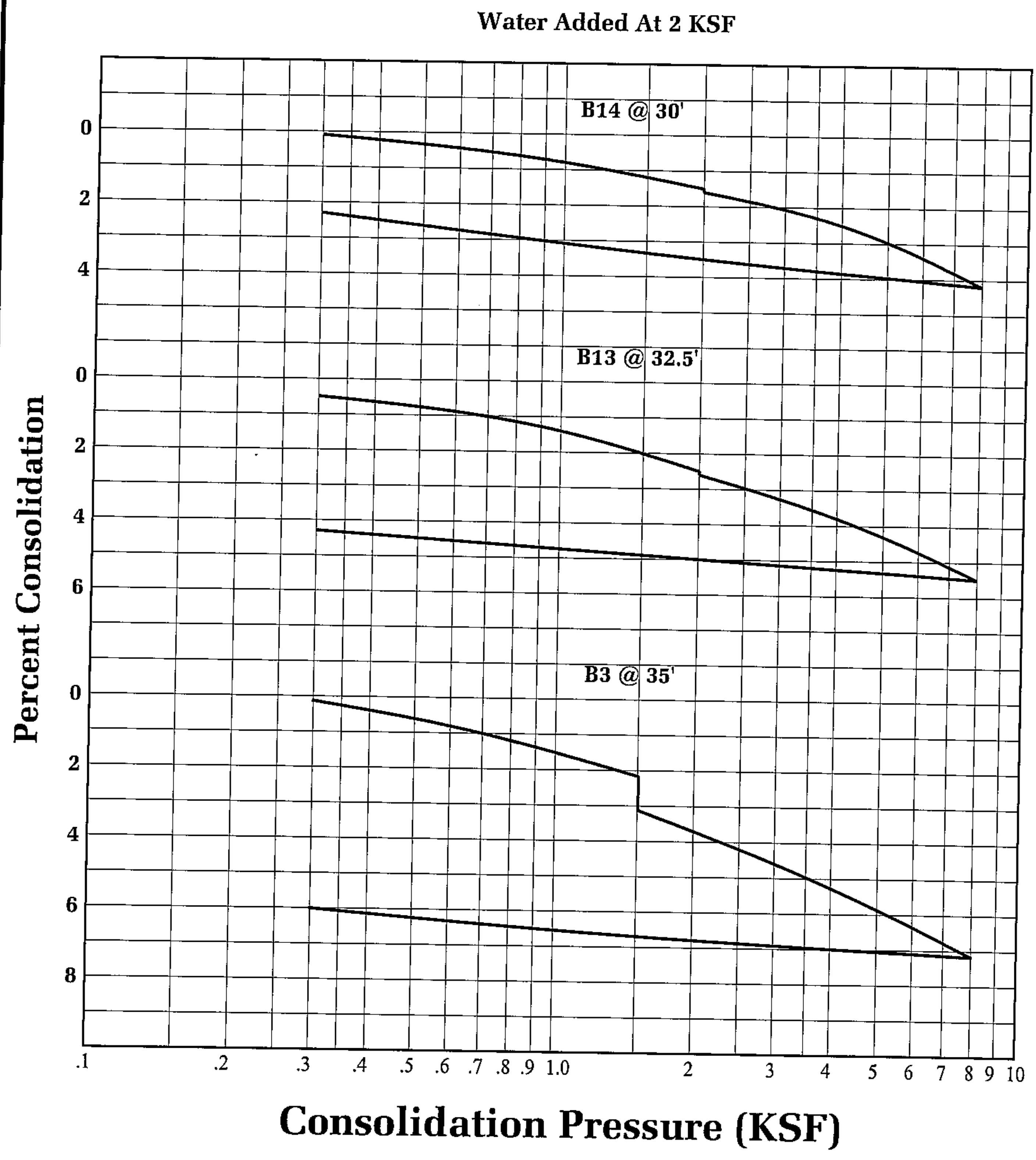
PLANNING ASSOCIATES, INC.	
FILE NO. 20255	PLATE: C-4



CONSOLIDATION TEST

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.	
FILE NO. 20255	PLATE: C-5



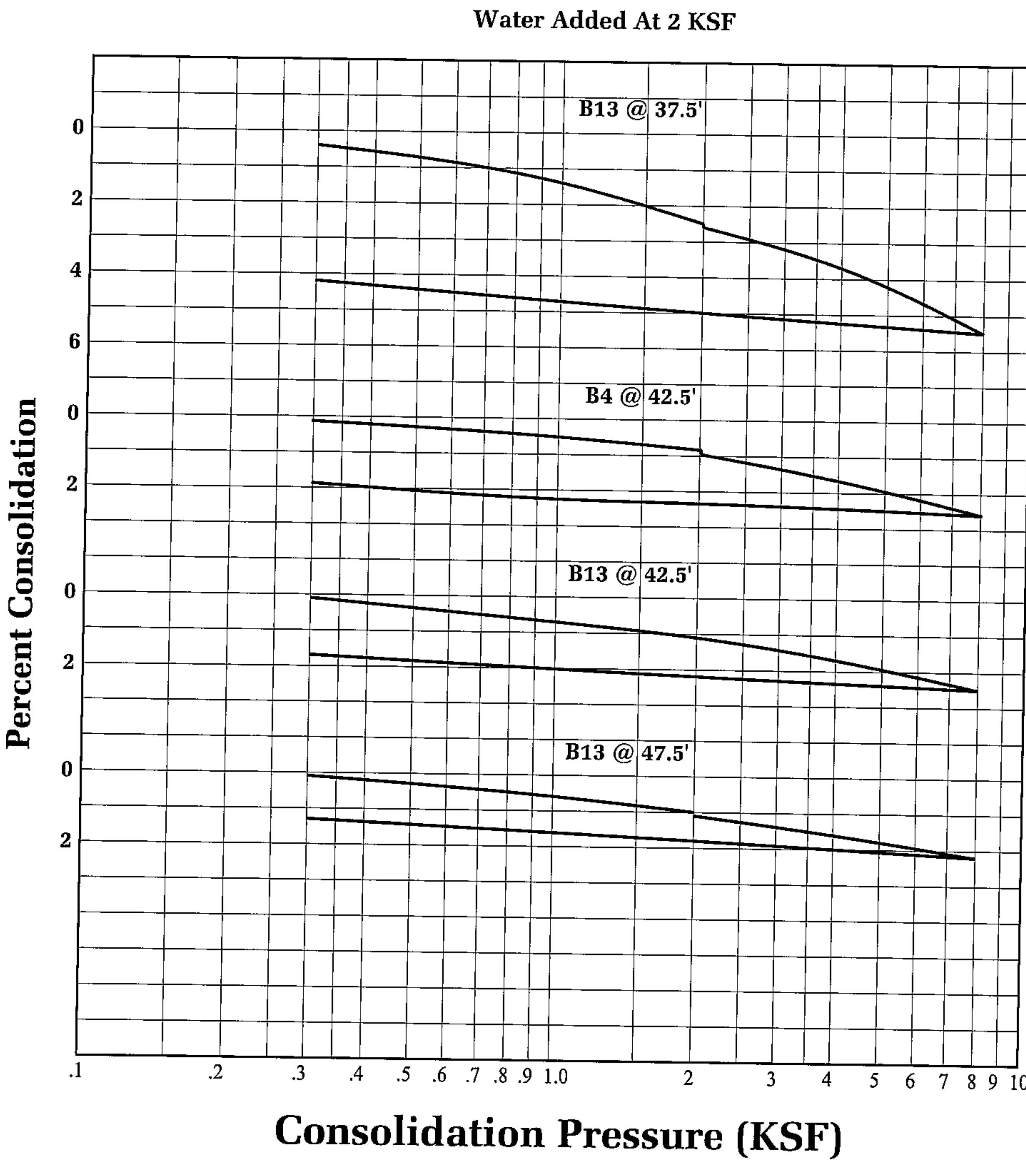
CONSOLIDATION TEST

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255

PLATE: C-6



CONSOLIDATION TEST

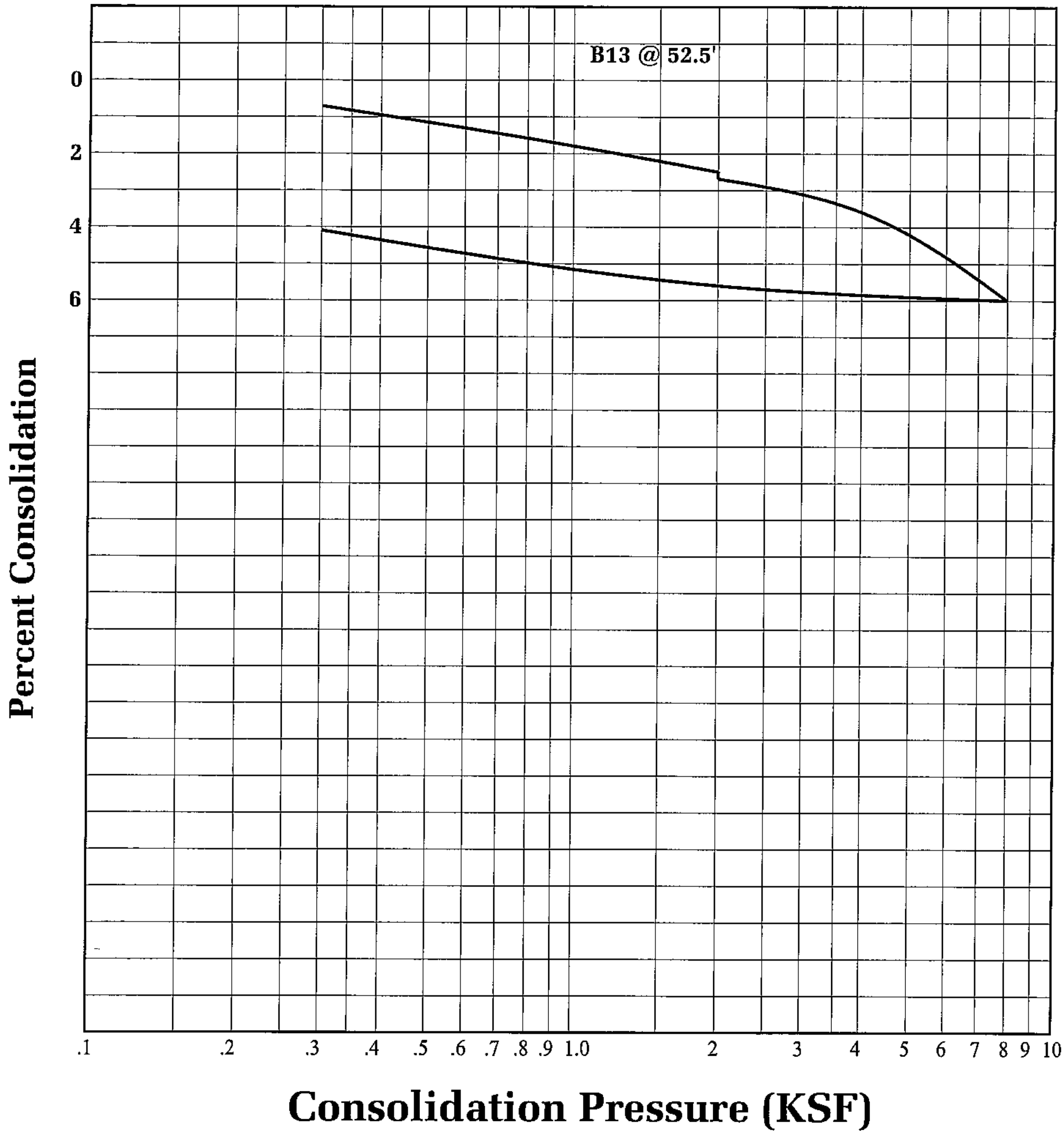
Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255

PLATE: C-7

Water Added At 2 KSF



CONSOLIDATION TEST

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.	
FILE NO. 20255	PLATE: C-8

ASTM D-1557

SAMPLE	B1 @ 1- 5'	B9 @ 1- 5'	B12 @ 1-5'	B14 @ 1-5'
SOIL TYPE:	SM	SM/ML	SM/ML	SM
MAXIMUM DENSITY pcf.	120.0	120.0	121.0	123.0
OPTIMUM MOISTURE %	13.5	12.0	11.5	10.0

ASTM D 4829-03

SAMPLE	B1 @ 1- 5'	B9 @ 1- 5'	B12 @ 1-5'	B14 @ 1-5'
SOIL TYPE:	SM	SM/ML	SM/ML	SM
EXPANSION INDEX UBC STANDARD 18-2	32	80	70	63
EXPANSION CHARACTER	LOW	MODERATE	MODERATE	MODERATE

SULFATE CONTENT

SAMPLE	B9 @ 1- 5'	B12 @ 1-5'	B14 @ 1-5'
SULFATE CONTENT: (percentage by weight)	< 0.2 %	< 0.2 %	< 0.2 %

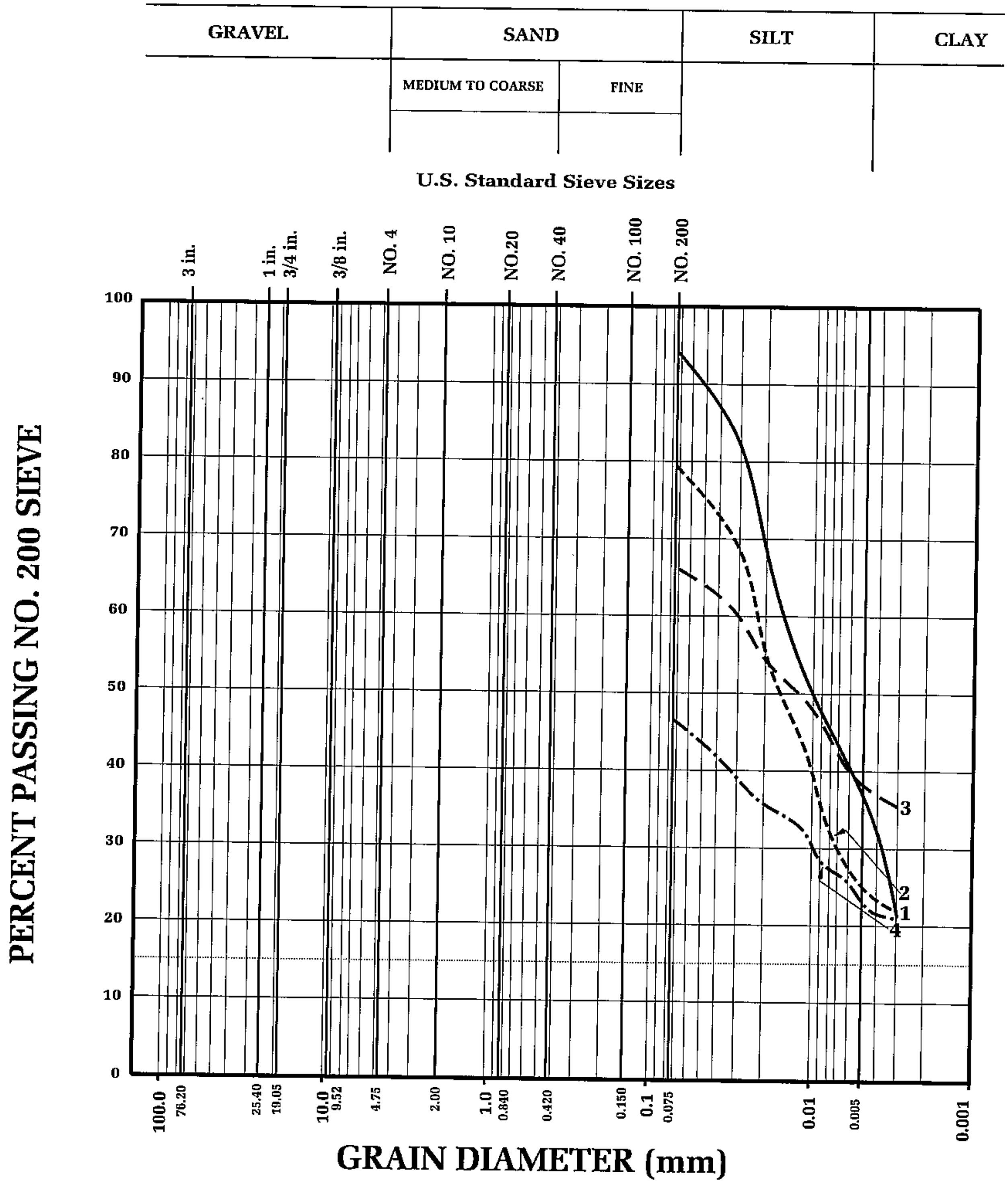
COMPACTION/EXPANSION/SULFATE DATA SHEET

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255

PLATE: D



SAMPLE		UNIFIED SOIL CLASSIFICATION
1- B5 @ 10'	———	MC
2- B13 @ 10'	- - -	CL
3- B4 @ 15'	— —	CL
4- B13 @ 15'	—·—	SC

GRAIN SIZE DISTRIBUTION

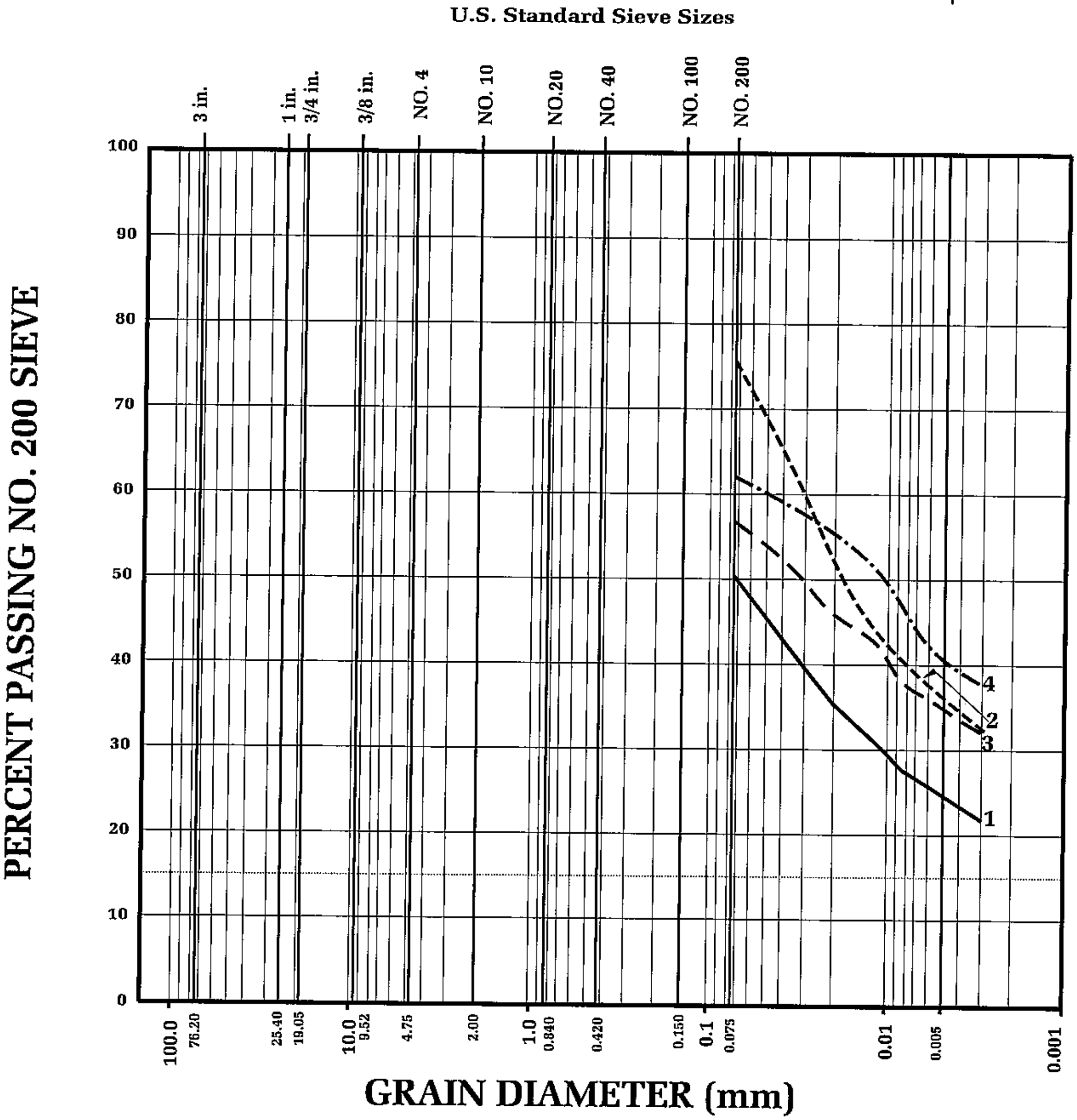
Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255

PLATE: E-1

GRAVEL	SAND		SILT	CLAY
	MEDIUM TO COARSE	FINE		



SAMPLE		UNIFIED SOIL CLASSIFICATION
1- B3 @ 20'	———	SM
2- B1 @ 30'	- - - -	CL
3- B13 @ 30'	— —	CL
4- B4 @ 35'	—·—	CL

GRAIN SIZE DISTRIBUTION

Geotechnologies, Inc.
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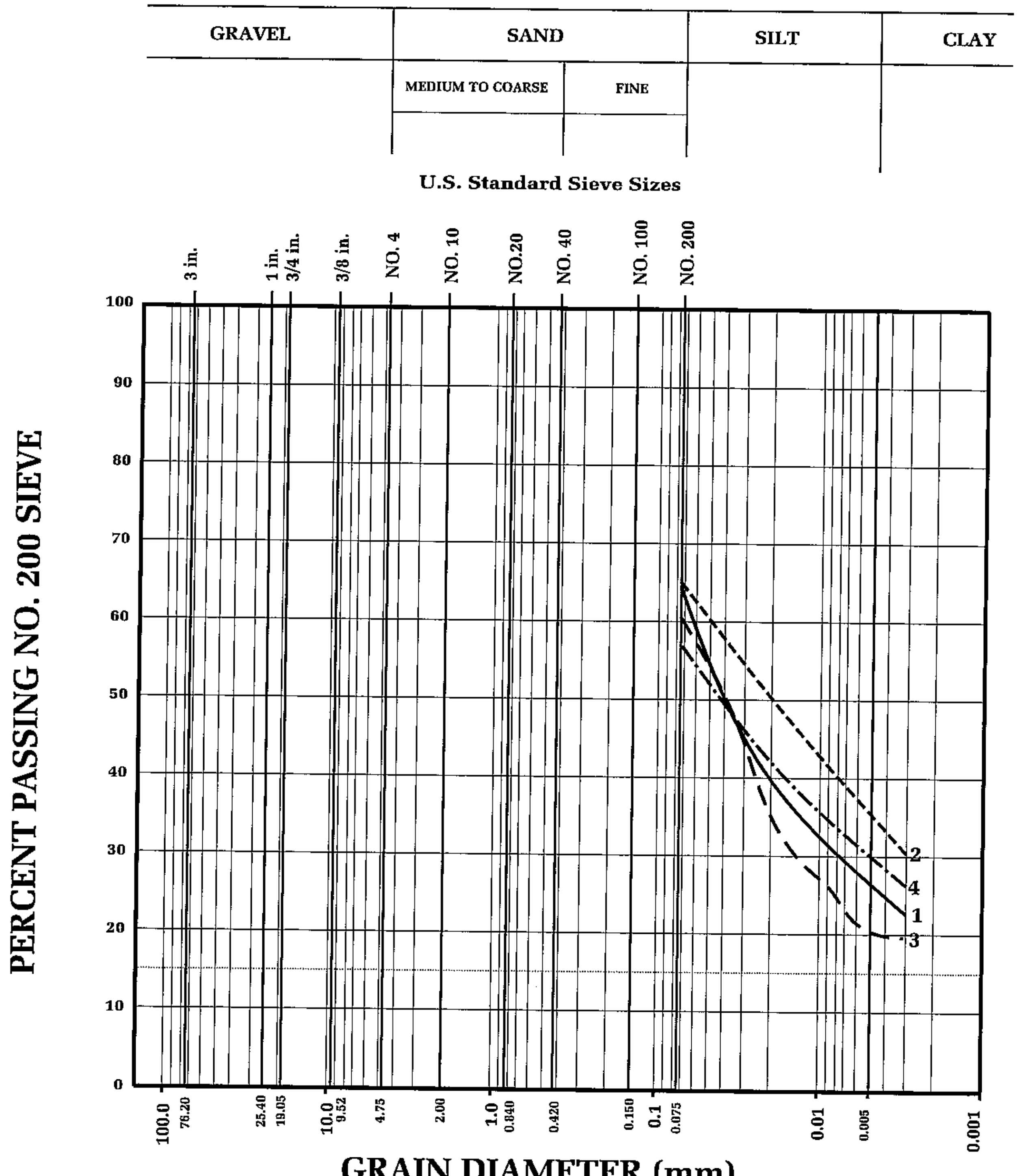
PLANNING ASSOCIATES, INC.

FILE NO. 20255

PLATE: E-2



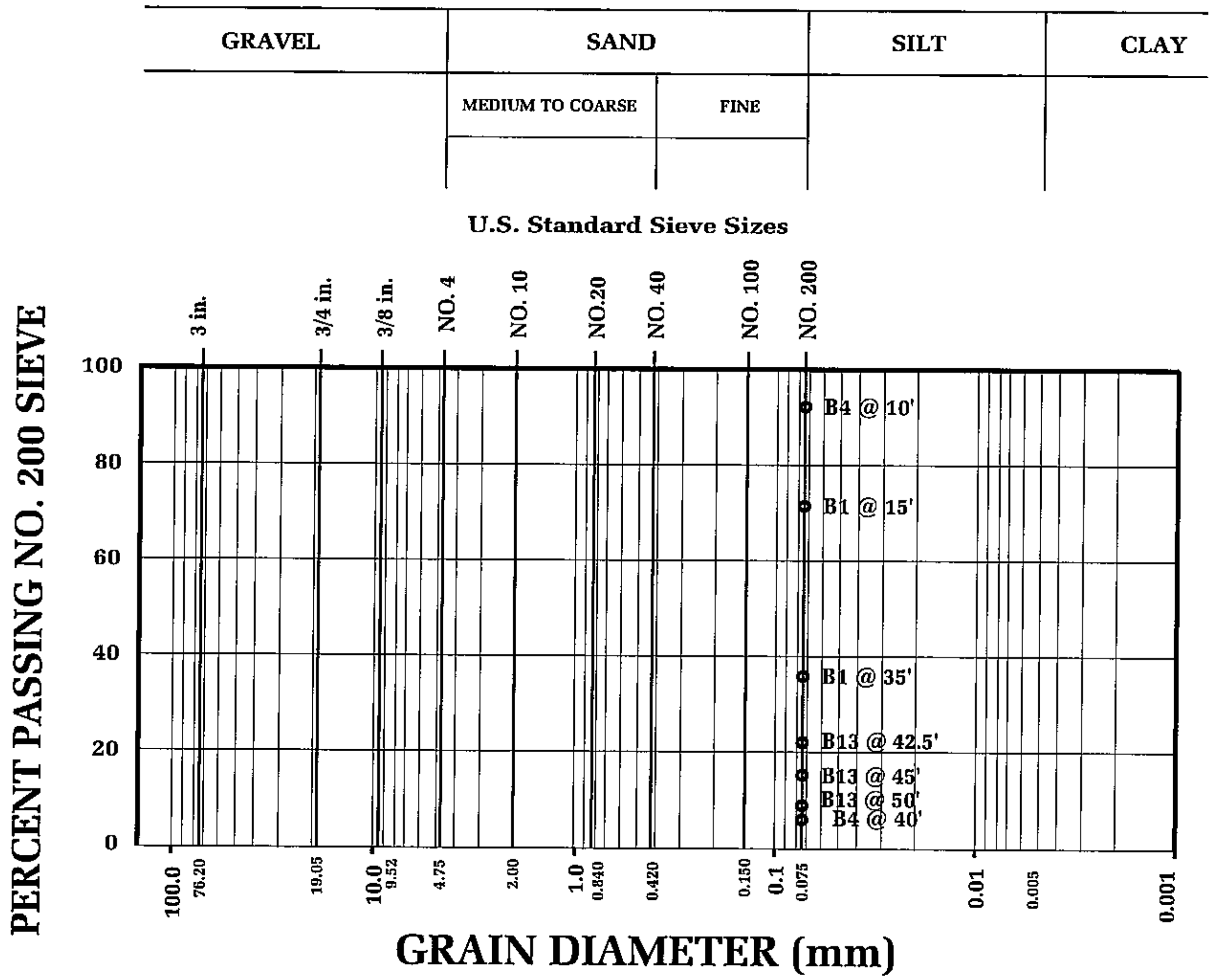
SAMPLE		UNIFIED SOIL CLASSIFICATION
1- B5 @ 35'	———	SM/MC
2- B6 @ 35'	– – – ·	MC
3- B13 @ 40'	— —	CL
4- B5 @ 50'	—·—	CL

GRAIN SIZE DISTRIBUTION

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255 | PLATE: E-3



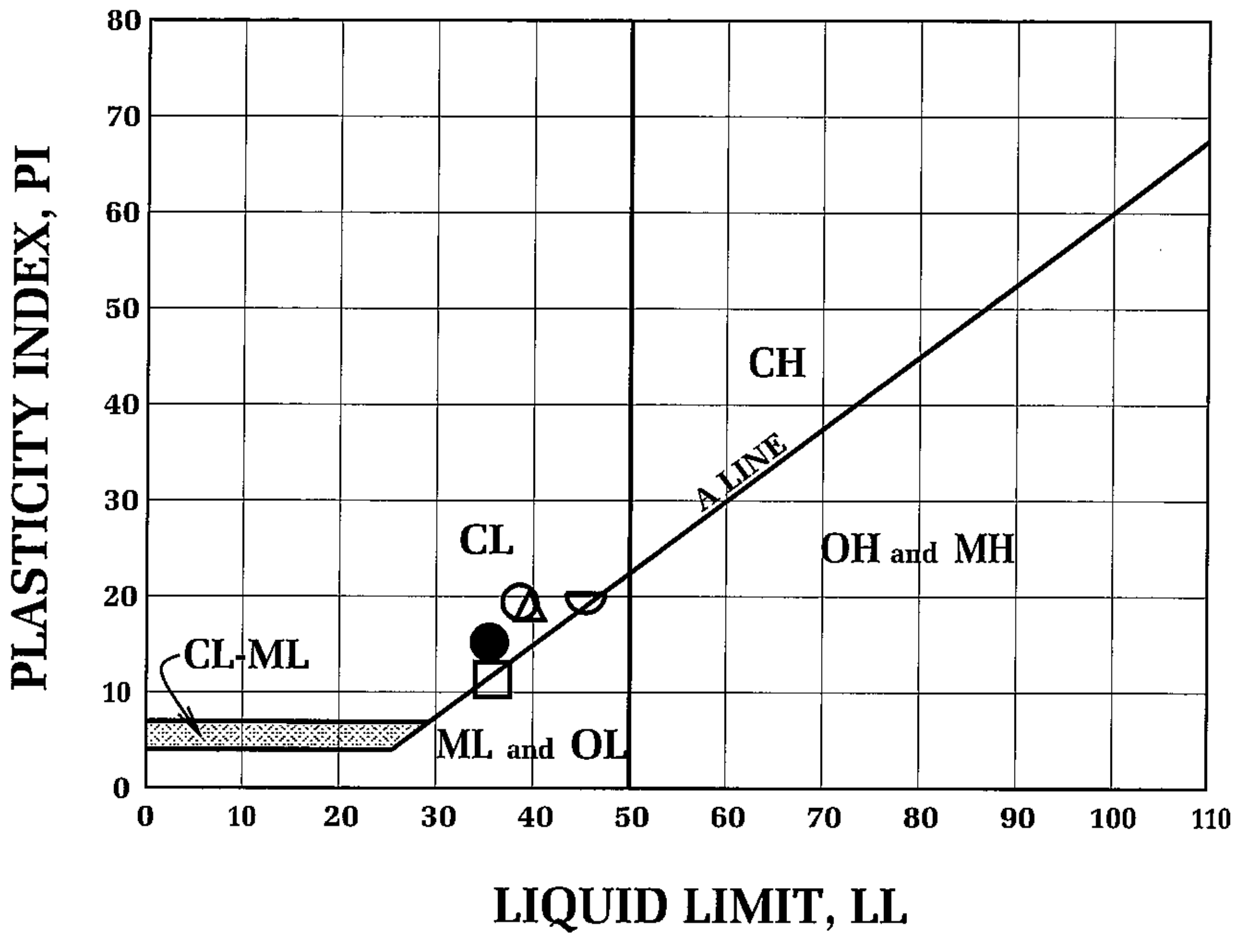
SAMPLE	PERCENT PASSING NO. 200 SIEVE
B1 @ 15'	71.5
B1 @ 35'	35.9
B4 @ 10'	92.2
B4 @ 40'	6.1
B13 @ 42.5'	25.6
B13 @ 45'	15.3
B13 @ 50'	8.8

GRAIN SIZE ANALYSIS

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255 | PLATE: E-4



BORING NUMBER	DEPTH (FEET)	TEST SYMBOL	LL	PL	PI	UNIFIED SOIL CLASSIFICATION SYSTEM
B1	30	○	38	19.2	18.8	CL
B4	15	●	35.4	19.9	15.5	CL
B4	35	△	39.1	21	18.1	CL
B5	10	□	36.5	24.8	11.7	ML
B5	50	◡	46	26.6	19.4	CL

ATTERBERG LIMITS DETERMINATION

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255 | PLATE: F

Geotechnologies, Inc.

Project: Planning Associates, Inc.
File No.: 20255
Description: Liquefaction Analysis
Boring Number: 13

EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL

NCEER (1996) METHOD — By Thomas F. Blake (1994-1996) — LIQ2_30.WQ1

EARTHQUAKE INFORMATION:

Earthquake Magnitude:	6.4
Peak Horiz. Acceleration (g):	0.52
Calculated Mag.Wtg.Factor:	0.670

GROUNDWATER INFORMATION:

Current Groundwater Level (ft):	34.0
Historic Highest Groundwater Level* (ft):	0.0
Unit Wt. Water (pcf):	62.4

* Based on California Geological Survey Seismic Hazard Evaluation Report

ENERGY & ROD CORRECTIONS:

Energy Correction (CE) for N60:	1.00
Rod Len.Corr.(CR)(0-no or 1-yes):	1.0
Bore Dia. Corr. (CB):	1.00
Sampler Corr. (CS):	1.20
Use Ksigma (0 or 1):	1.0

LIQUEFACTION CALCULATIONS:

Depth to Base (ft)	Total Unit Wt. (pcf)	Current Water Level (0 or 1)	FIELD SPT (N)	Depth of SPT (ft)	Liq.Sus. (0 or 1)	-200 (%)	Est. Dr (%)	CN Factor	Corrected $(N_1)_{60}$	Resist. CRR	rd Factor	Induced CSR	Liquefac. Safe.Fact.
1.0	106.2	0	30.0	5.0	1	0.0	108	2.000	54.0	Infin.	0.998	0.226	Non-Liq.
2.0	106.2	0	30.0	5.0	1	0.0	108	2.000	54.0	Infin.	0.993	0.225	Non-Liq.
3.0	106.2	0	30.0	5.0	1	0.0	108	2.000	54.0	Infin.	0.989	0.224	Non-Liq.
4.0	115.8	0	30.0	5.0	1	0.0	108	2.000	54.0	Infin.	0.984	0.223	Non-Liq.
5.0	115.8	0	30.0	5.0	1	0.0	108	2.000	54.0	Infin.	0.979	0.222	Non-Liq.
6.0	115.8	0	30.0	5.0	1	0.0	108	2.000	54.0	Infin.	0.975	0.221	Non-Liq.
7.0	115.8	0	30.0	5.0	1	0.0	108	2.000	54.0	Infin.	0.970	0.220	Non-Liq.
8.0	121.5	0	30.0	5.0	1	0.0	108	2.000	54.0	Infin.	0.966	0.219	Non-Liq.
9.0	121.5	0	30.0	5.0	1	0.0	108	2.000	54.0	Infin.	0.961	0.218	Non-Liq.
10.0	121.5	0	30.0	5.0	1	0.0	108	2.000	54.0	Infin.	0.957	0.216	Non-Liq.
11.0	121.5	0	15.0	10.0	0	79.4		1.396	25.8	~	0.952	0.215	~
12.0	121.5	0	15.0	10.0	0	79.4		1.396	25.8	~	0.947	0.214	~
13.0	118.4	0	15.0	10.0	0	79.4		1.396	25.8	~	0.943	0.213	~
14.0	118.4	0	15.0	10.0	0	79.4		1.396	25.8	~	0.938	0.212	~
15.0	118.4	0	15.0	10.0	0	79.4		1.396	25.8	~	0.934	0.211	~
16.0	118.4	0	18.0	15.0	0	46.6		1.121	26.5	~	0.929	0.210	~
17.0	118.4	0	18.0	15.0	0	46.6		1.121	26.5	~	0.925	0.209	~
18.0	117.9	0	18.0	15.0	0	46.6		1.121	26.5	~	0.920	0.208	~
19.0	117.9	0	18.0	15.0	0	46.6		1.121	26.5	~	0.915	0.207	~
20.0	117.9	0	18.0	15.0	0	46.6		1.121	26.5	~	0.911	0.206	~
21.0	117.9	0	33.0	20.0	1	0.0	86	0.964	34.2	Infin.	0.906	0.205	Non-Liq.
22.0	117.9	0	33.0	20.0	1	0.0	86	0.964	34.2	Infin.	0.902	0.204	Non-Liq.
23.0	118.8	0	31.0	25.0	1	0.0	78	0.859	30.5	Infin.	0.897	0.203	Non-Liq.
24.0	118.8	0	31.0	25.0	1	0.0	78	0.859	30.5	Infin.	0.893	0.202	Non-Liq.
25.0	118.8	0	31.0	25.0	1	0.0	78	0.859	30.5	Infin.	0.888	0.201	Non-Liq.
26.0	118.8	0	31.0	25.0	1	0.0	78	0.859	30.5	Infin.	0.883	0.200	Non-Liq.
27.0	118.8	0	31.0	25.0	1	0.0	78	0.859	30.5	Infin.	0.879	0.199	Non-Liq.
28.0	118.9	0	31.0	25.0	1	0.0	78	0.859	30.5	Infin.	0.874	0.198	Non-Liq.
29.0	118.9	0	31.0	25.0	1	0.0	78	0.859	30.5	Infin.	0.870	0.197	Non-Liq.
30.0	118.9	0	31.0	25.0	1	0.0	78	0.859	30.5	Infin.	0.865	0.196	Non-Liq.
31.0	118.9	0	13.0	30.0	0	56.8		0.782	19.2	~	0.861	0.195	~
32.0	118.9	0	13.0	30.0	0	56.8		0.782	19.2	~	0.856	0.194	~
33.0	128.0	0	13.0	30.0	0	56.8		0.782	19.2	~	0.851	0.193	~
34.0	128.0	0	13.0	30.0	0	56.8		0.782	19.2	~	0.847	0.192	~
35.0	128.0	1	13.0	30.0	0	56.8		0.782	19.2	~	0.842	0.192	~
36.0	128.0	1	19.0	35.0	0	56.8		0.723	23.5	~	0.838	0.194	~
37.0	128.0	1	19.0	35.0	0	56.8		0.723	23.5	~	0.833	0.196	~
38.0	127.6	1	19.0	35.0	0	56.8		0.723	23.5	~	0.829	0.197	~
39.0	127.6	1	19.0	35.0	0	56.8		0.723	23.5	~	0.824	0.199	~
40.0	127.6	1	19.0	35.0	0	56.8		0.723	23.5	~	0.819	0.200	~
41.0	127.6	1	14.0	40.0	0	60.6		0.695	18.7	~	0.815	0.201	~
42.0	127.6	1	14.0	40.0	0	60.6		0.695	18.7	~	0.810	0.202	~
43.0	124.1	1	25.0	45.0	1	25.6	60	0.672	25.0	0.248	0.806	0.203	1.22
44.0	124.1	1	25.0	45.0	1	25.6	60	0.672	25.0	0.248	0.801	0.205	1.21
45.0	124.1	1	25.0	45.0	1	25.6	60	0.672	25.0	0.248	0.797	0.205	1.21
46.0	124.1	1	25.0	45.0	1	15.3	60	0.672	22.5	0.217	0.792	0.206	1.05
47.0	124.1	1	25.0	45.0	1	15.3	60	0.672	22.5	0.217	0.787	0.207	1.05
48.0	133.5	1	25.0	45.0	1	15.3	60	0.672	22.5	0.217	0.783	0.208	1.04
49.0	133.5	1	25.0	45.0	1	15.3	60	0.672	22.5	0.217	0.778	0.208	1.04
50.0	133.5	1	30.0	45.0	1	15.3	66	0.672	26.6	0.274	0.774	0.209	1.31
51.0	133.5	0	30.0	50.0	1	8.8	64	0.649	24.2	0.234	0.769	0.208	1.13
52.0	133.5	0	30.0	50.0	1	8.8	64	0.649	24.2	0.234	0.765	0.206	1.14
53.0	134.6	0	30.0	50.0	1	8.8	64	0.649	24.2	0.234	0.760	0.204	1.15
54.0	134.6	0	30.0	50.0	1	8.8	64	0.649	24.2	0.234	0.755	0.202	1.16
55.0	134.6	0	30.0	50.0	1	8.8	64	0.649	24.2	0.234	0.751	0.200	1.17
56.0	134.6	0	100.0	55.0	1	0.0	112	0.611	73.4	Infin.	0.746	0.198	Non-Liq.
57.0	134.6	0	100.0	55.0	1	0.0	112	0.611	73.4	Infin.	0.742	0.196	Non-Liq.
58.0	134.6	1	100.0	55.0	1	0.0	112	0.611	73.4	Infin.	0.737	0.195	Non-Liq.
59.0	134.6	1	100.0	55.0	1	0.0	112	0.611	73.4	Infin.	0.733	0.195	Non-Liq.
60.0	134.6	1	88.0	60.0	1	0.0	102	0.600	63.4	Infin.	0.728	0.196	Non-Liq.

Geotechnologies, Inc.

Project: Planning Associates, Inc.
File No.: 20255
Description: Liquefaction Analysis
Boring Number: 13

LIQUEFACTION SETTLEMENT ANALYSIS

REF: TOKIMATSU & SEED (1987)

EARTHQUAKE INFORMATION:

Earthquake Magnitude:	6.4
Peak Horiz. Acceleration (g):	0.5
Calculated Mag.Wtg.Factor:	0.670

GROUNDWATER INFORMATION:

Current Groundwater Level (ft):	34.0
Historic Highest Groundwater Level* (ft):	0.0
Unit Wt. Water (pcf):	62.4

* Based on California Geological Survey Seismic Hazard Evaluation Report

Table 4-3

SETTLEMENT CALCULATIONS:

Depth to Base (feet)	Field Blowcount N	Wet Density (pcf)	Total Stress O (tsf)	Effective Stress O' (tsf)	Relative Density D_r (%)	Corrected Blowcount $(N_1)_{60}$	Tsf/O'	Factor of Safety Against Liquefaction	Volumetric Strain E_c (%)	Liquefaction Settlement S (inches)
1.0	30.0	106.2	0.027	0.027	108	54.0	0.338	Non-Liq.		0.00
2.0	30.0	106.2	0.080	0.080	108	54.0	0.338	Non-Liq.		0.00
3.0	30.0	106.2	0.133	0.133	108	54.0	0.338	Non-Liq.		0.00
4.0	30.0	115.8	0.188	0.188	108	54.0	0.338	Non-Liq.		0.00
5.0	30.0	115.8	0.246	0.246	108	54.0	0.338	Non-Liq.		0.00
6.0	30.0	115.8	0.304	0.304	108	54.0	0.338	Non-Liq.		0.00
7.0	30.0	115.8	0.362	0.362	108	54.0	0.338	Non-Liq.		0.00
8.0	30.0	121.5	0.421	0.421	108	54.0	0.338	Non-Liq.		0.00
9.0	30.0	121.5	0.482	0.482	108	54.0	0.338	Non-Liq.		0.00
10.0	30.0	121.5	0.543	0.543	108	54.0	0.338	Non-Liq.		0.00
11.0	15.0	121.5	0.604	0.604		25.8	0.338	~		0.00
12.0	15.0	121.5	0.664	0.664		25.8	0.338	~		0.00
13.0	15.0	118.4	0.724	0.724		25.8	0.338	~		0.00
14.0	15.0	118.4	0.783	0.783		25.8	0.338	~		0.00
15.0	15.0	118.4	0.843	0.843		25.8	0.338	~		0.00
16.0	18.0	118.4	0.902	0.902		26.5	0.338	~		0.00
17.0	18.0	118.4	0.961	0.961		26.5	0.338	~		0.00
18.0	18.0	117.9	1.020	1.020		26.5	0.338	~		0.00
19.0	18.0	117.9	1.079	1.079		26.5	0.338	~		0.00
20.0	18.0	117.9	1.138	1.138		26.5	0.338	~		0.00
21.0	33.0	117.9	1.197	1.197	86	34.2	0.338	Non-Liq.		0.00
22.0	33.0	117.9	1.256	1.256	86	34.2	0.338	Non-Liq.		0.00
23.0	31.0	118.8	1.315	1.315	78	30.5	0.338	Non-Liq.		0.00
24.0	31.0	118.8	1.375	1.375	78	30.5	0.338	Non-Liq.		0.00
25.0	31.0	118.8	1.434	1.434	78	30.5	0.338	Non-Liq.		0.00
26.0	31.0	118.8	1.493	1.493	78	30.5	0.338	Non-Liq.		0.00
27.0	31.0	118.8	1.553	1.553	78	30.5	0.338	Non-Liq.		0.00
28.0	31.0	118.9	1.612	1.612	78	30.5	0.338	Non-Liq.		0.00
29.0	31.0	118.9	1.672	1.672	78	30.5	0.338	Non-Liq.		0.00
30.0	31.0	118.9	1.731	1.731	78	30.5	0.338	Non-Liq.		0.00
31.0	13.0	118.9	1.790	1.790		19.2	0.338	~		0.00
32.0	13.0	118.9	1.850	1.850		19.2	0.338	~		0.00
33.0	13.0	128.0	1.912	1.912		19.2	0.338	~		0.00
34.0	13.0	128.0	1.976	1.976		19.2	0.338	~		0.00
35.0	13.0	128.0	2.040	2.024		19.2	0.341	~		0.00
36.0	19.0	128.0	2.104	2.057		23.5	0.346	~		0.00
37.0	19.0	128.0	2.168	2.090		23.5	0.351	~		0.00
38.0	19.0	127.6	2.232	2.122		23.5	0.355	~		0.00
39.0	19.0	127.6	2.295	2.155		23.5	0.360	~		0.00
40.0	19.0	127.6	2.359	2.188		23.5	0.365	~		0.00
41.0	14.0	127.6	2.423	2.220		18.7	0.369	~		0.00
42.0	14.0	127.6	2.487	2.253		18.7	0.373	~		0.00
43.0	25.0	124.1	2.550	2.284	60	25.0	0.377	1.22	1.12	0.134
44.0	25.0	124.1	2.612	2.315	60	25.0	0.381	1.21	1.15	0.138
45.0	25.0	124.1	2.674	2.346	60	25.0	0.385	1.21	1.15	0.138
46.0	25.0	124.1	2.736	2.377	60	22.5	0.389	1.05	1.38	0.166
47.0	25.0	124.1	2.798	2.408	60	22.5	0.393	1.05	1.40	0.168
48.0	25.0	133.5	2.862	2.441	60	22.5	0.396	1.04	1.40	0.168
49.0	25.0	133.5	2.929	2.477	60	22.5	0.400	1.04	1.40	0.168
50.0	30.0	133.5	2.996	2.512	66	26.6	0.403	1.31	1.05	0.126
51.0	30.0	133.5	3.063	2.563	64	24.2	0.404	1.13	1.23	0.148
52.0	30.0	133.5	3.129	2.630	64	24.2	0.402	1.14	1.23	0.148
53.0	30.0	134.6	3.196	2.697	64	24.2	0.401	1.15	1.23	0.148
54.0	30.0	134.6	3.264	2.764	64	24.2	0.399	1.16	1.23	0.148
55.0	30.0	134.6	3.331	2.832	64	24.2	0.398	1.17	1.23	0.148
56.0	100.0	134.6	3.398	2.899	112	73.4	0.396	Non-Liq.		0.00
57.0	100.0	134.6	3.466	2.966	112	73.4	0.395	Non-Liq.		0.00
58.0	100.0	134.6	3.533	3.018	112	73.4	0.396	Non-Liq.		0.00
59.0	100.0	134.6	3.600	3.054	112	73.4	0.398	Non-Liq.		0.00
60.0	88.0	134.6	3.667	3.090	102	63.4	0.401	Non-Liq.		0.00
							Total Liquefaction Settlement (inches):			**1.94**

PRESENTATION OF CONE PENETRATION TEST DATA

HOMEPLACE

LOS ANGELES, CALIFORNIA

Prepared for:

JERRY KOVACS & ASSOCIATES
Glendale, California

Prepared by:

GREGG IN SITU, INC.
Signal Hill, California

Prepared on:

April 4, 2000

TABLE OF CONTENTS

PRESENTATION OF CONE PENETRATION TEST DATA

1.0 INTRODUCTION

This report presents the results of a Cone Penetration Testing (CPT) program carried out at Homeplace site located in Los Angeles, CA. The work was performed on March 31, 2000. The scope of work was performed as directed by JERRY KOVACS & ASSOCIATES personnel.

2.0 FIELD EQUIPMENT & PROCEDURES

The Cone Penetration Tests (CPT) were carried out by GREGG IN SITU, INC. of Signal Hill, CA using an integrated electronic cone system. The CPT soundings were performed in accordance with ASTM standards (D3441). A 10 ton capacity cone was used for all of the soundings. This cone has a tip area of 10 sq.cm. and friction sleeve area of 150 sq.cm. The cone is designed with an equal end area friction sleeve and a tip end area ratio of 0.85.

The cones used during the program recorded the following parameters at 5 cm depth intervals:

- Tip Resistance (Qc)
- Sleeve Friction (Fs)
- Dynamic Pore Pressure (Ut)

The above parameters were printed simultaneously on a printer and stored on a computer diskette for future analysis and reference.

The pore water pressure element was located directly behind the cone tip. The pore water pressure element was 5.0 mm thick and consisted of porous plastic. Each of the elements were saturated in glycerin under vacuum pressure prior to penetration. Pore pressure dissipations were recorded at 5 second intervals when appropriate during pauses in the penetration.

A complete set of baseline readings was taken prior to each sounding to determine temperature shifts and any zero load offsets. Monitoring base line readings ensures that the cone electronics are operating properly.

The cones were pushed using GREGG IN SITU's CPT rig, having a down pressure capacity of approximately 25 tons. Five CPT soundings were performed. The penetration tests were carried to depths of approximately 45 to 72 feet below ground surface. Test locations and depths were determined in the field by JERRY KOVACS & ASSOCIATES personnel.

GREGG IN SITU, INC.
April 4, 2000

JERRY KOVACS & ASSOCIATES
Homeplace
Los Angeles, CA

3.0 CONE PENETRATION TEST DATA & INTERPRETATION

The cone penetration test data is presented in graphical form in the attached Appendix. Penetration depths are referenced to existing ground surface. This data includes CPT logs of measured soil parameters and a computer tabulation of interpreted soil types along with additional geotechnical parameters and pore pressure dissipation data.

The stratigraphic interpretation is based on relationships between cone bearing (Qt), sleeve friction (Fs), and penetration pore pressure (Ut). The friction ratio (Rf), which is sleeve friction divided by cone bearing, is a calculated parameter which is used to infer soil behavior type. Generally, cohesive soils (clays) have high friction ratios, low cone bearing and generate large excess pore water pressures. Cohesionless soils (sands) have lower friction ratios, high cone bearing and generate little in the way of excess pore water pressures.

Pore Pressure Dissipation Tests (PPDT's) were taken at various intervals in order to measure hydrostatic water pressures and approximate depth to groundwater table. In addition, the PPDT data can be used to estimate the horizontal permeability (k_h) of the soil. The correlation to permeability is based on the time required for 50 percent of the measured dynamic pore pressure to dissipate (t_{50}). A summary of the PPDT data is provided in Table 2. The PPDT plots and correlation figure are provided in the Appendix.

The interpretation of soils encountered on this project was carried out using recent correlations developed by Robertson et al, 1998. It should be noted that it is not always possible to clearly identify a soil type based on Qt, Fs and Ut. In these situations, experience and judgement and an assessment of the pore pressure dissipation data should be used to infer the soil behavior type. The soil classification chart used to interpret soil types based on Qt and Rf is provided in the Appendix.

We hope the information presented is sufficient for your purposes. If you have any questions, please do not hesitate to contact our office at (562) 427-6899.

Sincerely,
GREGG IN SITU, INC.

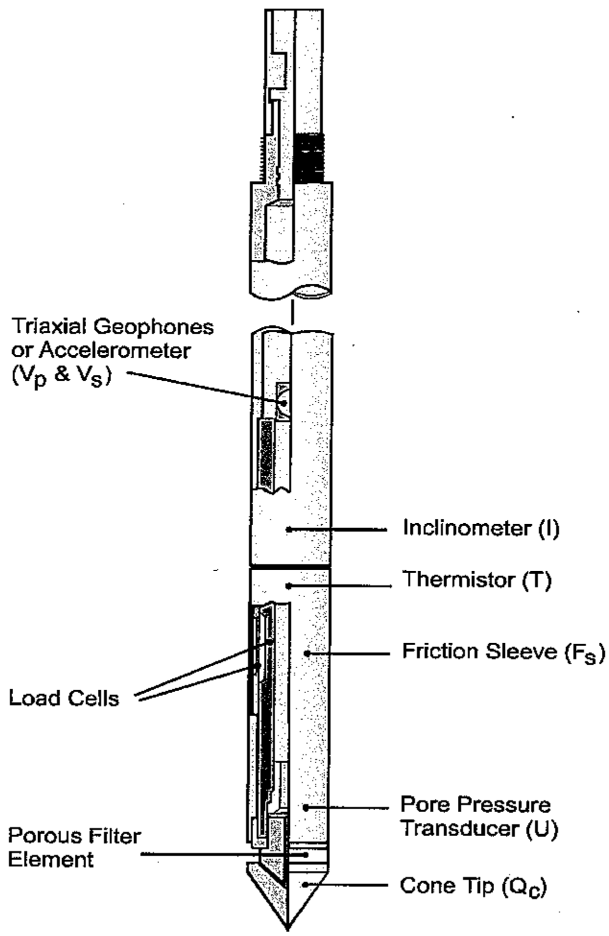
Brian Savela
Operations Manager

APPENDIX

GREGG IN SITU, INC.

Geotechnical and Environmental In Situ Testing Contractors

THE PIEZO CONE PENETROMETER



The electrical piezocone (CPTU) is the premier soil logging tool. The CPTU provides a rapid, reliable and economic means of determining soil stratigraphy, relative density, strength and equilibrium groundwater pressures.

Gregg In Situ offers a choice of 2.5, 5, 10 and 15 ton tip (Qc) capacity cones. Our cones also have variable capacity friction sleeves (Fs) and pore pressure (U). The pore pressure can be measured at one of 2 locations, either on the face of the cone tip or behind the cone tip. Pore pressure dissipation data is recorded automatically.

All data is displayed in real time at the ground surface, facilitating the on site decision making process. Field data reduction, plotting and CPT interpretation can be carried out upon request.

Geotechnical and Environmental In Situ Testing Contractors

Los Angeles • San Francisco • Houston • Aiken
Vancouver • Edmonton • Salt Lake City • New Jersey

Tel: (562)427-6899 • Fax: (562)427-3314 • E-mail: jgregg@greggdrilling.com

Gregg In Situ CPT Interpretations as of January 7, 1999 (Release 1.00.19)

Gregg In Situ's interpretation routine should be considered a calculator of current published CPT correlations and is subject to change to reflect the current state of practice. The interpreted values are not considered valid for all soil types. The interpretations are presented only as a guide for geotechnical use and should be carefully scrutinized for consideration in any geotechnical design. Reference to current literature is strongly recommended.

The CPT interpretations are based on values of tip, sleeve friction and pore pressure averaged over a user specified interval (typically 0.25m). Note that Qt is the recorded tip value, Qc, corrected for pore pressure effects. Since all Gregg In Situ cones have equal end area friction sleeves, pore pressure corrections to sleeve friction, Fs, are not required.

The tip correction is: $Qt = Qc + (1\text{-}a) \bullet Ud$

where: *Qt* is the corrected tip load
Qc is the recorded tip load
Ud is the recorded dynamic pore pressure
a is the Net Area Ratio for the cone (typically 0.85 for Gregg In Situ cones)

Effective vertical overburden stresses are calculated based on a hydrostatic distribution of equilibrium pore pressures below the water table or from a user defined equilibrium pore pressure profile (this can be obtained from CPT dissipation tests). The stress calculations use unit weights assigned to the Soil Behavior Type zones or from a user defined unit weight profile.

Details regarding the interpretation methods for all of the interpreted parameters is given in table 1. The appropriate references referred to in table 1 are listed in table 2.

The estimated Soil Behavior Type is based on the charts developed by Robertson and Campanella shown in figure 1.

Table 1 CPT Interpretation Methods

Interpreted Parameter	Description	Equation	Ref
Depth	mid layer depth		
AvgQt	Averaged corrected tip (Qt)	$AvgQt = \frac{1}{n}\sum_{i=1}^{n} Qt_i$	
AvgFs	Averaged sleeve friction (Fs)	$AvgFs = \frac{1}{n}\sum_{i=1}^{n} Fs_i$	
AvgRf	Averaged friction ratio (Rf)	$AvgRf = 100\% \bullet \frac{AvgFs}{AvgQt}$	
AvgUd	Averaged dynamic pore pressure (Ud)	$AvgUd = \frac{1}{n}\sum_{i=1}^{n} Ud_i$	
SBT	Soil Behavior Type as defined by Robertson and Campanella		1

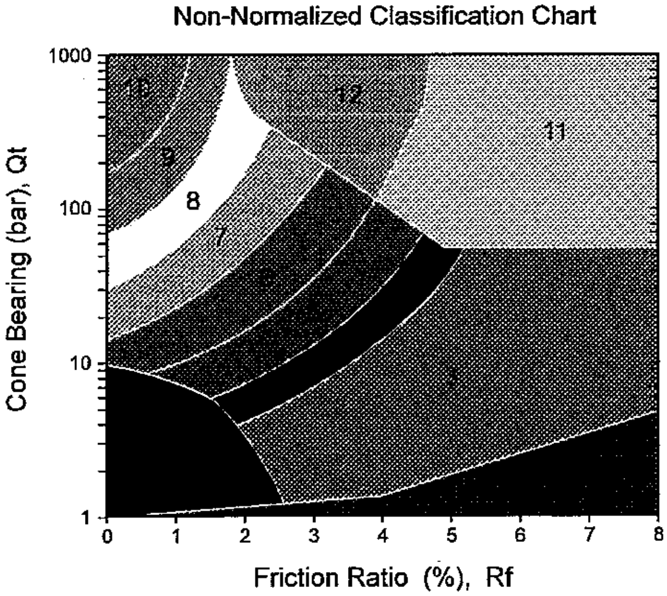
CPT Interpretations

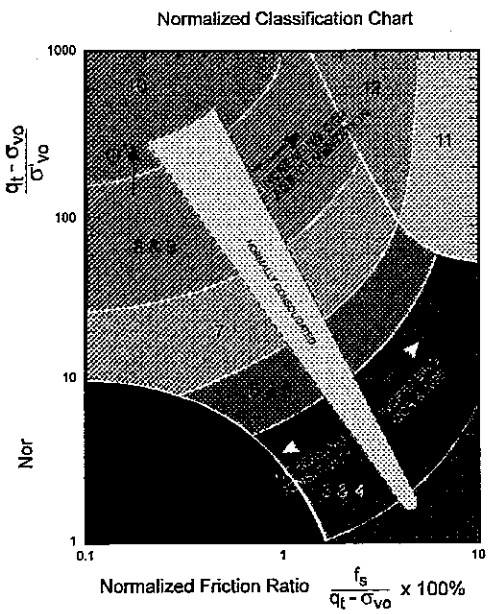
U.Wt.	Unit Weight of soil determined from: 1) uniform value or 2) value assigned to each SBT zone 3) user supplied unit weight profile		
TStress	Total vertical overburden stress at mid layer depth	$TStress = \sum_{i=1}^{n} \gamma_i h_i$ where γ_i is layer unit weight h_i is layer thickness	
EStress	Effective vertical overburden stress at mid layer depth	$EStress = TStress - Ueq$	
Ueq	Equilibrium pore pressure determined from: 1) hydrostatic from water table depth 2) user supplied profile		
Cn	SPT N_{60} overburden correction factor	$Cn=(\sigma_v')^{-0.5}$ where σ_v' is in tsf $0.5 < C_n < 2.0$	
N_{60}	SPT N value at 60% energy calculated from Qt/N ratios assigned to each SBT zone		3
$(N1)_{60}$	SPT N_{60} value corrected for overburden pressure	$N1_{60} = Cn \bullet N_{60}$	3
$\Delta(N1)_{60}$	Equivalent Clean Sand Correction to $(N1)_{60}$	$\Delta(N1)_{60} = \frac{K_{SPT}}{1-K_{SPT}} \bullet (N1)_{60}$ Where: K_{SPT} is defined as: 0.0 for FC < 5% 0.0167 • (FC - 5) for 5% < FC < 35% 0.5 for FC > 35% FC - Fines Content in %	7
$(N1)_{60cs}$	Equivalent Clean Sand $(N1)_{60}$	$(N1)_{60cs} = (N1)_{60} + \Delta(N1)_{60}$	7
Su	Undrained shear strength - Nkt is use selectable	$Su = \frac{Qt - \sigma_v}{N_{kt}}$	2
k	Coefficient of permeability (assigned to each SBT zone)		6
Bq	Pore pressure parameter	$Bq = \frac{\Delta u}{Qt - \sigma_v}$	2
Qtn	Normalized Qt for Soil Behavior Type classification as defined by Robertson, 1990	$Qtn = \frac{Qt - \sigma_v}{\sigma'_v}$	4
Rfn	Normalized Rf for Soil Behavior Type classification as defined by Robertson, 1990	$Rfn = 100\% \bullet \frac{f_s}{Qt - \sigma_v}$	4
SBTn	Normalized Soil Behavior Type (slightly modified from that published by Robertson, 1990. This version includes all the soil zones of the original non-normalized SBT chart - see figure 1)		4
Qc1	Normalized Qt for seismic analysis	$qc1 = qc \bullet (Pa/\sigma_v')^{0.5}$ where: Pa = atm. pressure	5
Qc1N	Dimensionless Normalized Qt1	qc1N = qc1 / Pa where: Pa = atm. pressure	

CPT Interpretations

ΔQc1N1	Equivalent clean sand correction	$\Delta qc1N = \frac{K_{CPT}}{1 - K_{CPT}} \bullet qc1N$ Where: K_{CPT} is defined as: 0.0 for FC < 5% 0.0267 • (FC - 5) for 5% < FC < 35% 0.5 for FC > 35% FC - Fines Content in %	5
Qc1Ncs	Clean Sand equivalent Qc1N	*qc1Ncs = qc1N + Δqc1N*	5
Ic	Soil index for estimating grain characteristics	$Ic = [(3.47 - \log Q)^2 + (\log F + 1.22)^2]^{0.5}$	5
FC	Fines content (%)	$FC = 1.75(Ic^{3.25}) - 3.7$ *FC=100 for Ic > 3.5* *FC=0 for Ic < 1.26* *FC = 5% if 1.64 < Ic < 2.6 AND Rfn<0.5*	8
PHI	Friction Angle	Campanella and Robertson Durunoglu and Mitchel Janbu	1
Dr	Relative Density	Ticino Sand Hokksund Sand Schmertmann 1976 Jamiolkowski - All Sands	1
OCR	Over Consolidation Ratio		1
State Parameter			9
CRR	Cyclic Resistance Ratio		7

GREGG





Zone		Q_t / N	Soil Behaviour Type
1	■	2	sensitive fine grained
2	■	1	organic material
3		1	clay
4	■	1.5	silty clay to clay
5		2	clayey silt to silty clay
6		2.5	sandy silt to clayey silt
7		3	
8		4	and to silty sand
9		6	sand
10		6	gravelly sand to sand
11		1	very stiff fine grained *
12		2	sand to clayey sand *

Figure 1   Non-Normalized and Normalized Soil Behavior Type Classification Charts

Table 2 References

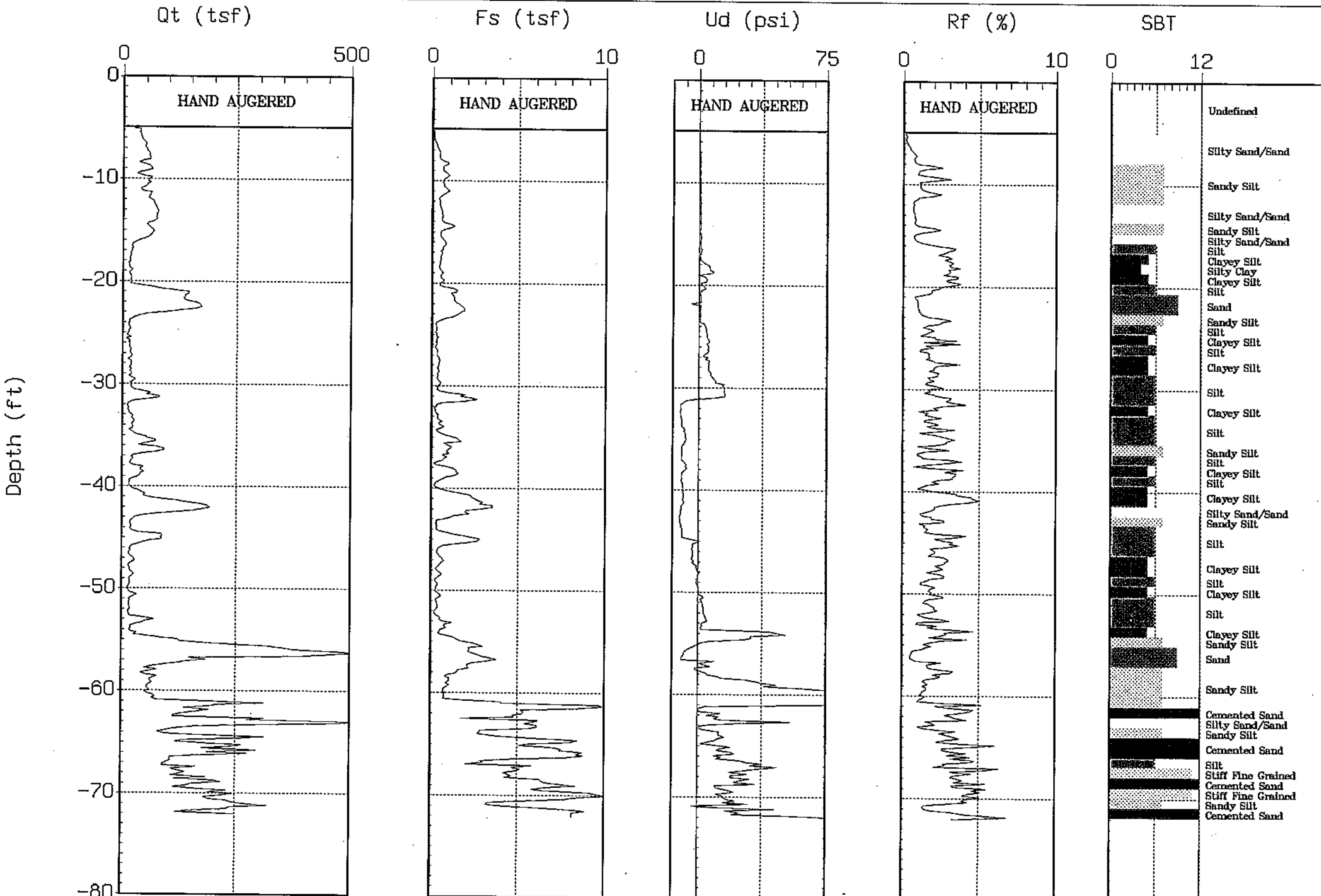
No.	Reference
1	Robertson, P.K. and Campanella, R.G., 1986, "Guidelines for Use, Interpretation and Application of the CPT and CPTU", UBC, Soil Mechanics Series No. 105, Civil Eng. Dept., Vancouver, B.C., Canada
2	Robertson, P.K., Campanella, R.G., Gillespie, D. and Greig, J., 1986, "Use of Piezometer Cone Data", Proceedings of InSitu 86, ASCE Specialty Conference, Blacksburg, Virginia.
3	Robertson, P.K. and Campanella, R.G., 1989, "Guidelines for Geotechnical Design Using CPT and CPTU", UBC, Soil Mechanics Series No. 120, Civil Eng. Dept., Vancouver, B.C., Canada
4	Robertson, P.K., 1990, "Soil Classification Using the Cone Penetration Test", Canadian Geotechnical Journal, Volume 27.
5	Robertson, P.K. and Fear, C.E., 1995, "Liquefaction of Sands and its Evaluation", Keynote Lecture, First International Conference on Earthquake Geotechnical Engineering, Tokyo, Japan.
6	Gregg In Situ Internal Report
7	Robertson, P.K and Wride, C.E., 1997, "Cyclic Liquefaction and its Evaluation Based on SPT and CPT", NCEER Workshop Paper, January 22, 1997
8	Wride, C.E. and Robertson, P.K., 1997, "Phase II Data Review Report (Massey and Kidd Sites, Fraser River Delta)", Volume 1 - Data Report (June 1997), University of Alberta.
9	Plewes, H.D., Davies, M.P. and Jefferies, M.G., 1992, "CPT Based Screening Procedure for Evaluating Liquefaction Susceptibility", 45th Canadian Geotechnical Conference, Toronto, Ontario, October 1992.

GREGG

JERRY KOVACS

Site : HOMEPLACE
Location : CPT-1

Engineer : S. MOORE
Date : 03:31:00 07:54



Max. Depth: 72.01 (ft)

Depth Inc.: 0.164 (ft)

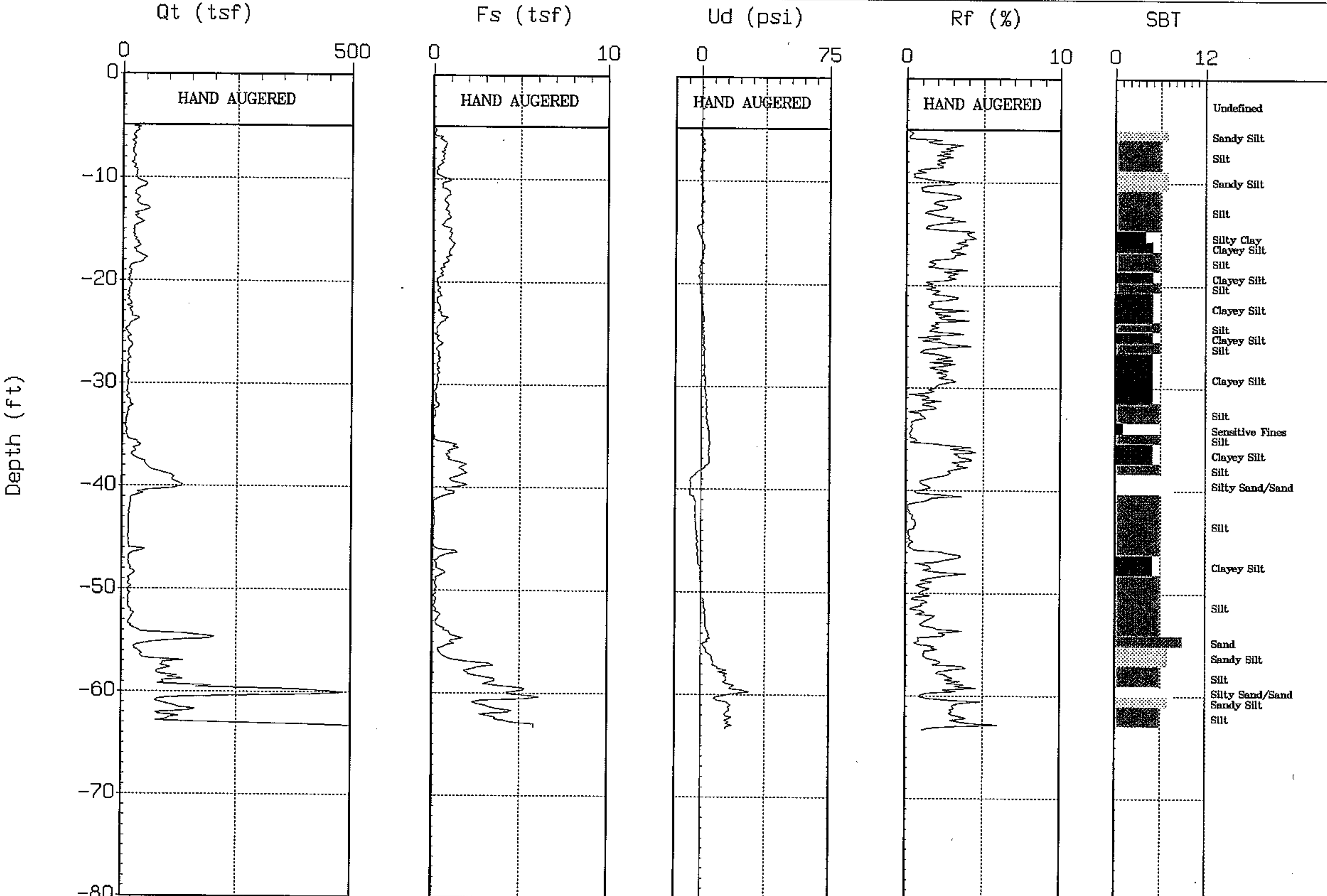
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

JERRY KOVACS

Site : HOMEPLACE
Location : CPT-2

Engineer : S. MOORE
Date : 03:31:00 09:02



Max. Depth: 63.32 (ft)

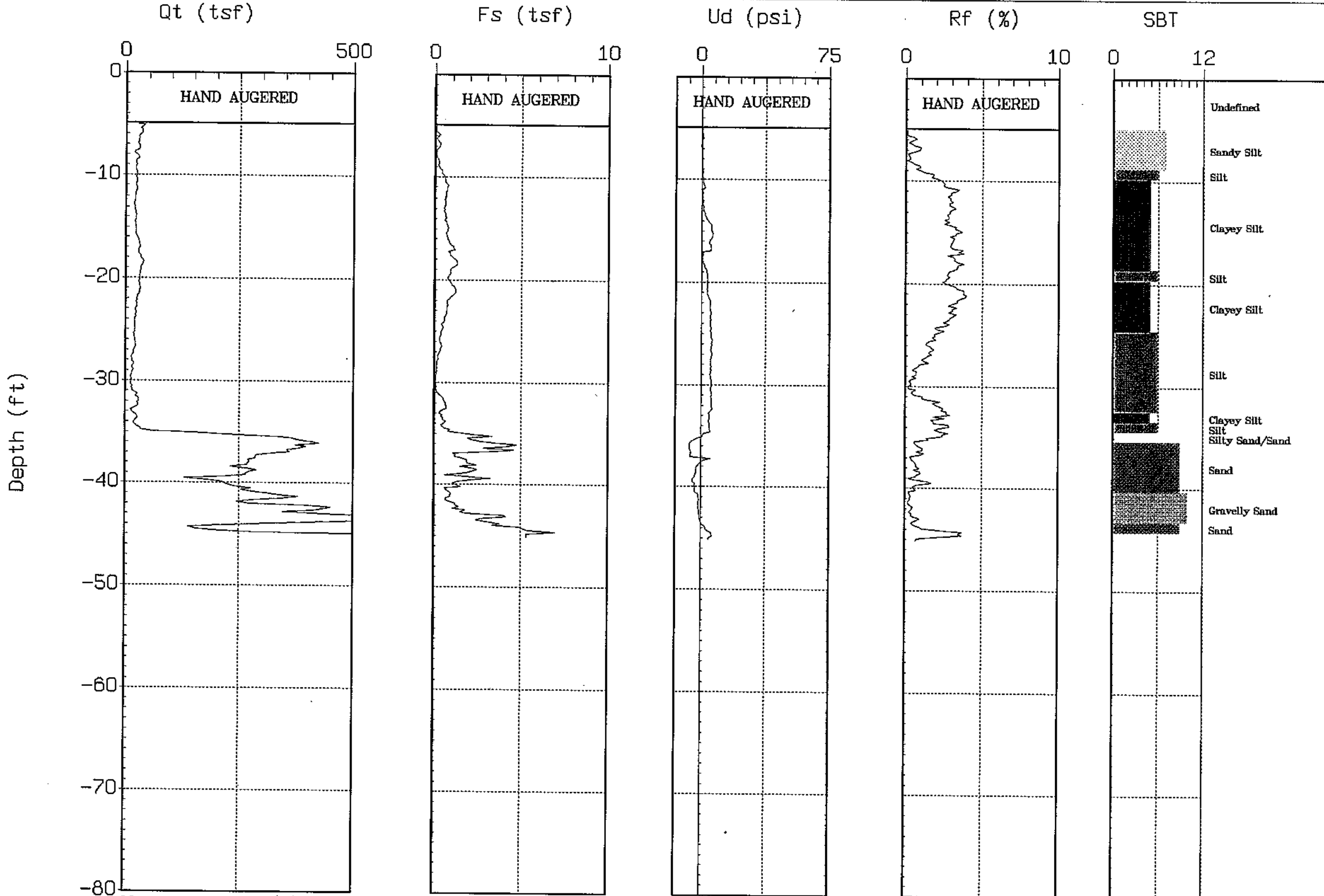
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

JERRY KOVACS

Site : HOMEPLACE
Location : CPT-3

Engineer : S. MOORE
Date : 03:31:00 10:04



Max. Depth: 45.11 (ft)
Depth Inc.: 0.164 (ft)

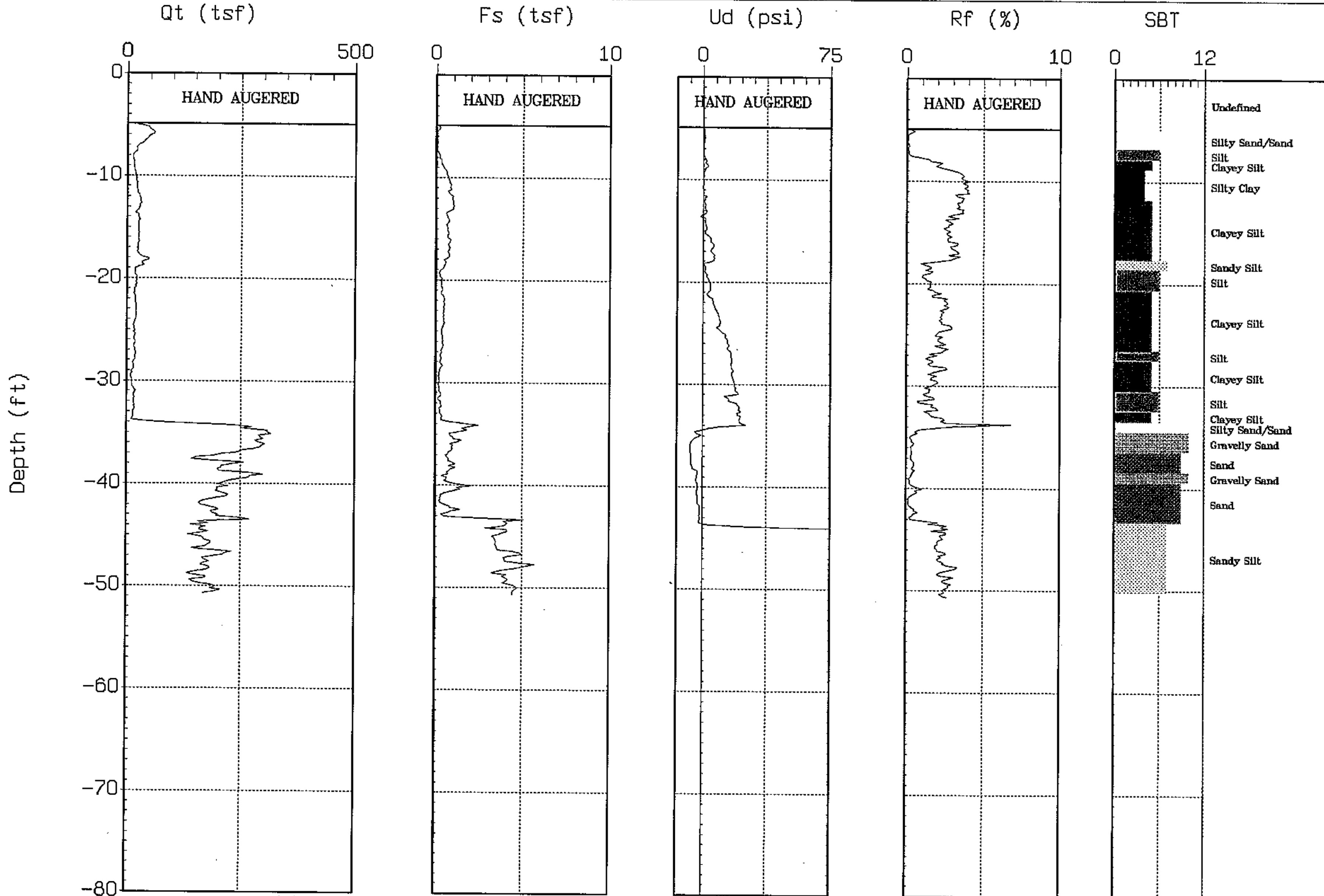
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

JERRY KOVACS

Site : HOMEPLACE
Location : CPT-4

Engineer : S. MOORE
Date : 03:31:00 11:11



Max. Depth: 50.69 (ft)

Depth Inc.: 0.164 (ft)

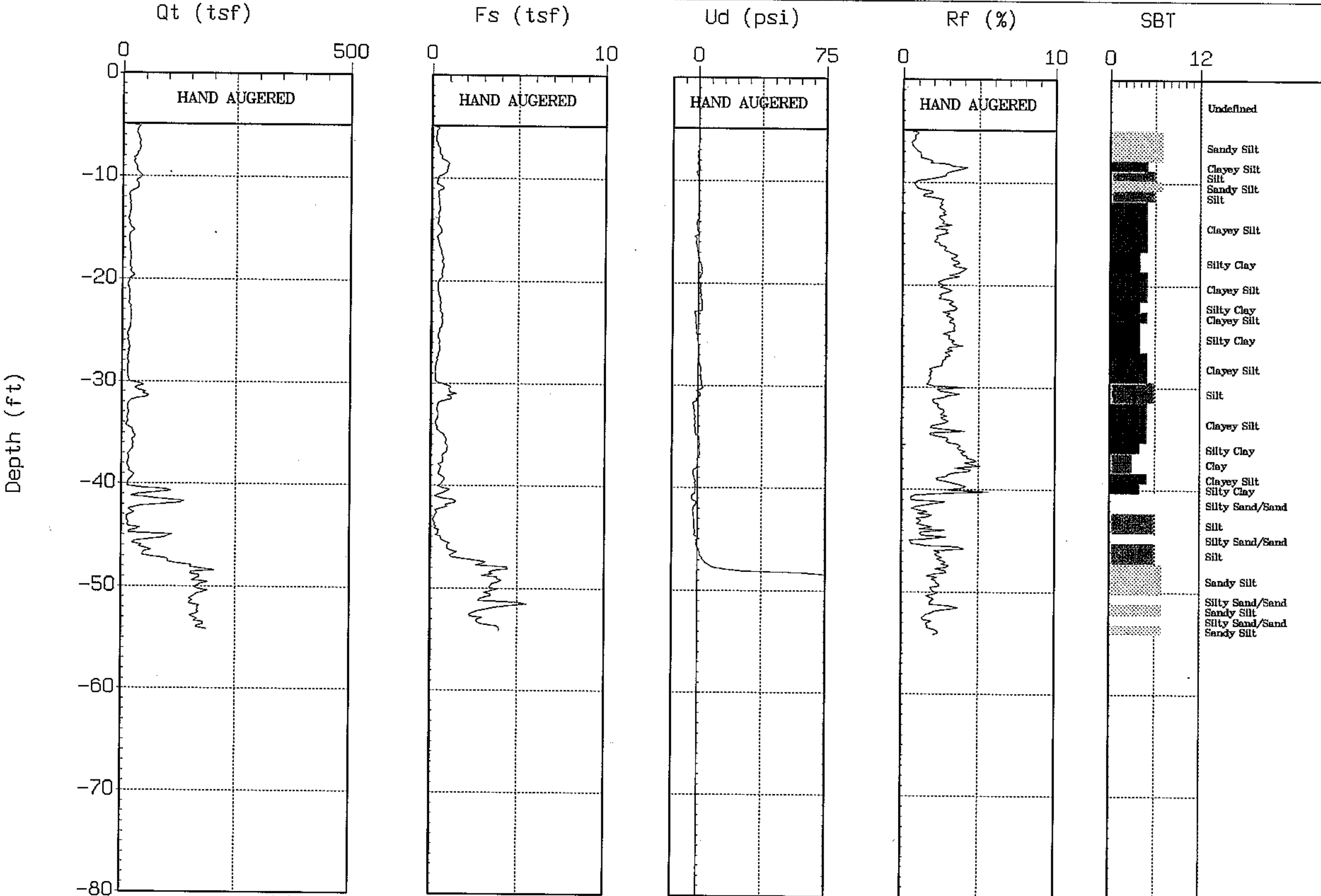
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

JERRY KOVACS

Site : HOMEPLACE
Location : CPT-5

Engineer : S. MOORE
Date : 03:31:00 12:47



Max. Depth: 54.13 (ft)
Depth Inc.: 0.164 (ft)

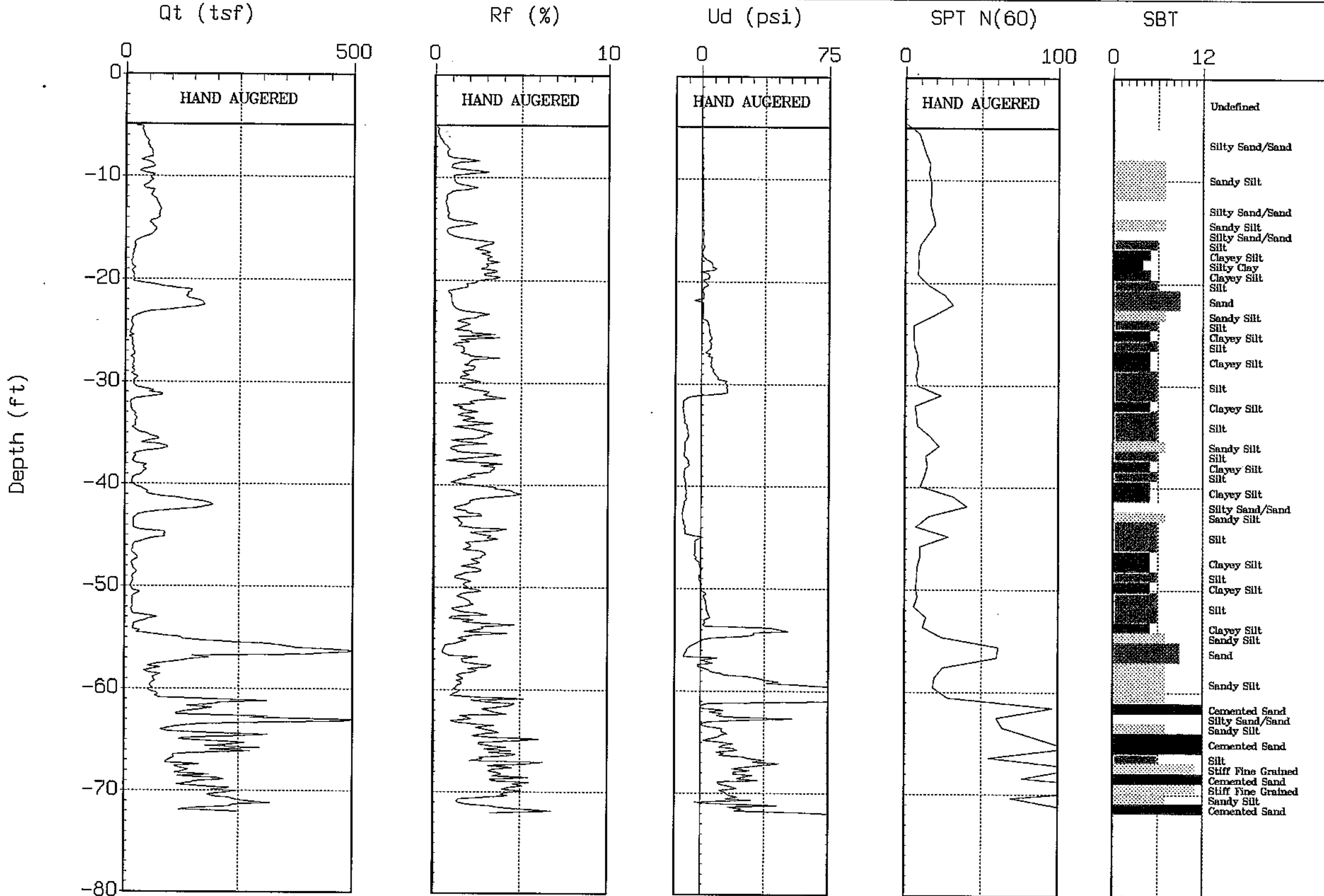
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

JERRY KOVACS

Site : HOMEPLACE
Location : CPT-1

Engineer : S. MOORE
Date : 03:31:00 07:54



Max. Depth: 72.01 (ft)

Depth Inc.: 0.164 (ft)

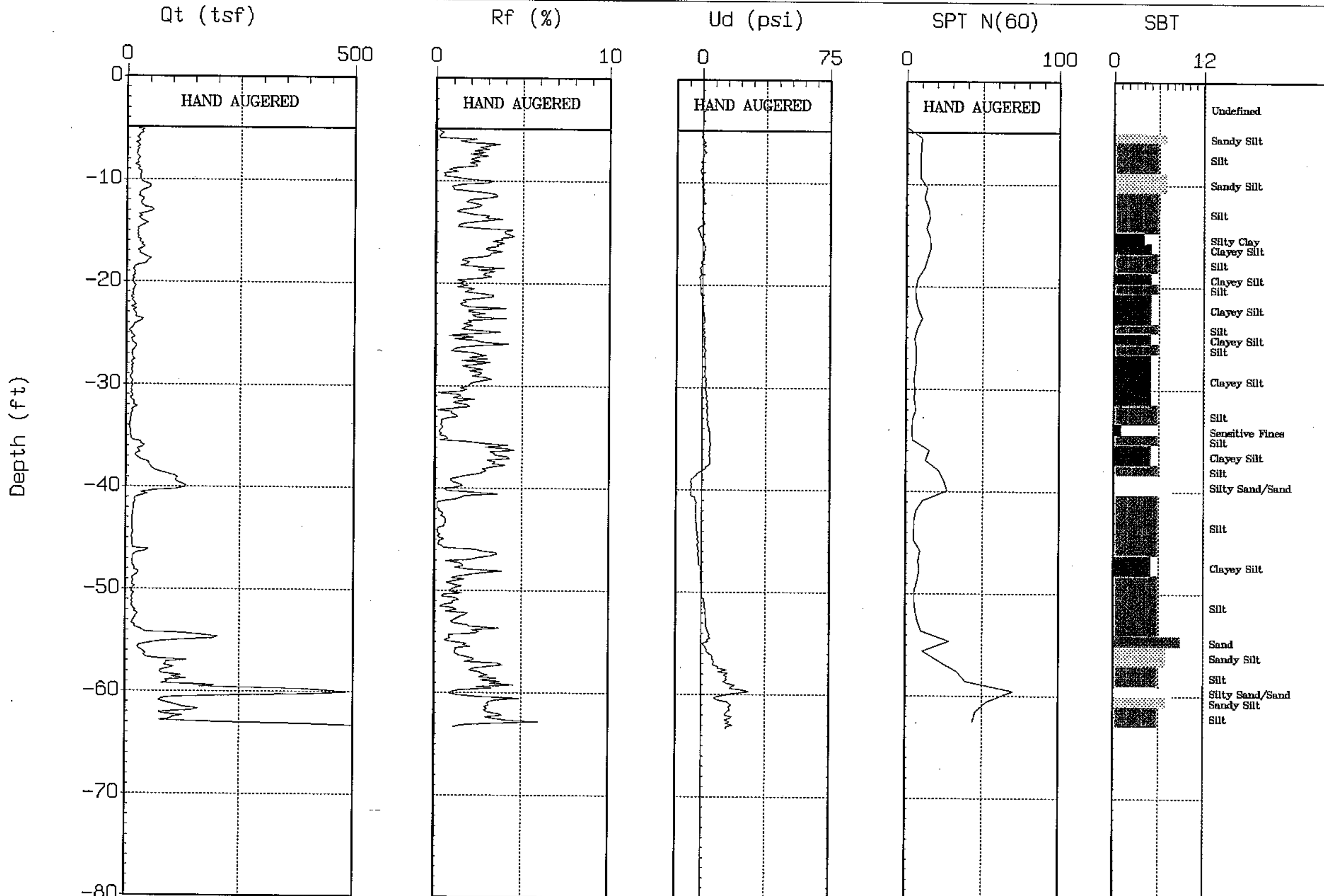
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

JERRY KOVACS

Site : HOMEPLACE
Location : CPT-2

Engineer : S. MOORE
Date : 03:31:00 09:02



Max. Depth: 63.32 (ft)
Depth Inc.: 0.164 (ft)

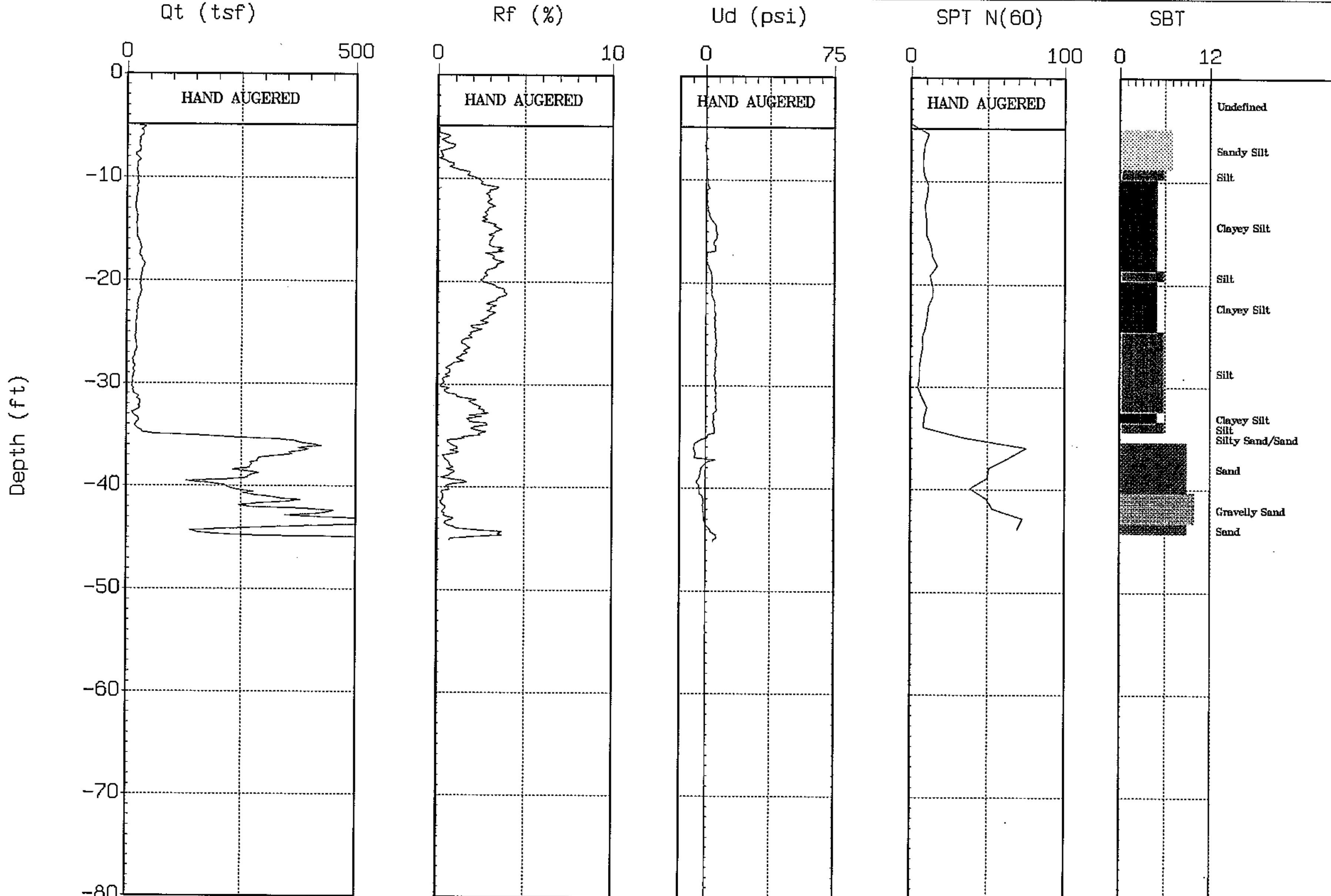
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

JERRY KOVACS

Site : HOMEPLACE
Location : CPT-3

Engineer : S. MOORE
Date : 03:31:00 10:04



Max. Depth: 45.11 (ft)
Depth Inc.: 0.164 (ft)

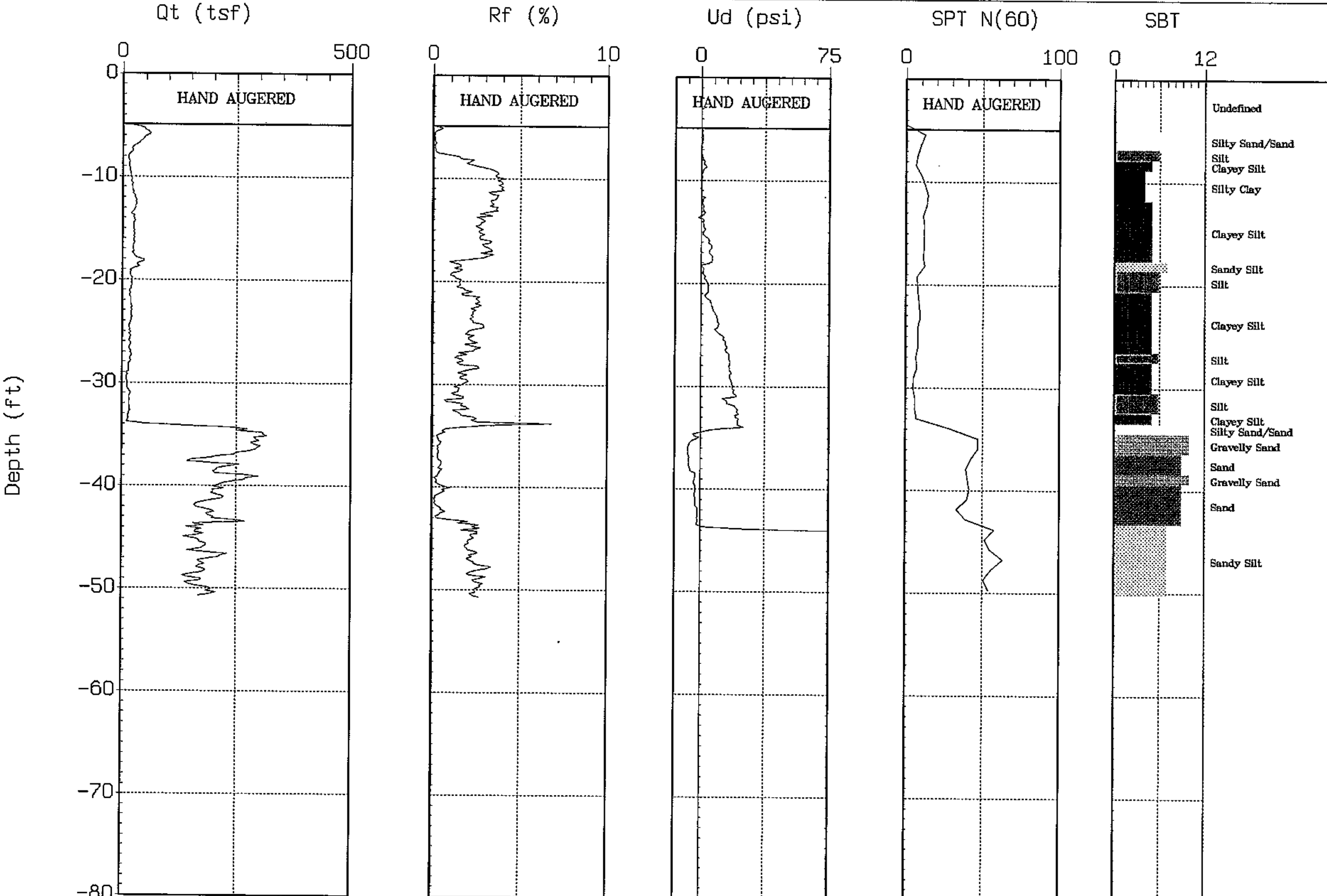
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

JERRY KOVACS

Site : HOMEPLACE
Location : CPT-4

Engineer : S. MOORE
Date : 03:31:00 11:11



Max. Depth: 50.69 (ft)

Depth Inc.: 0.164 (ft)

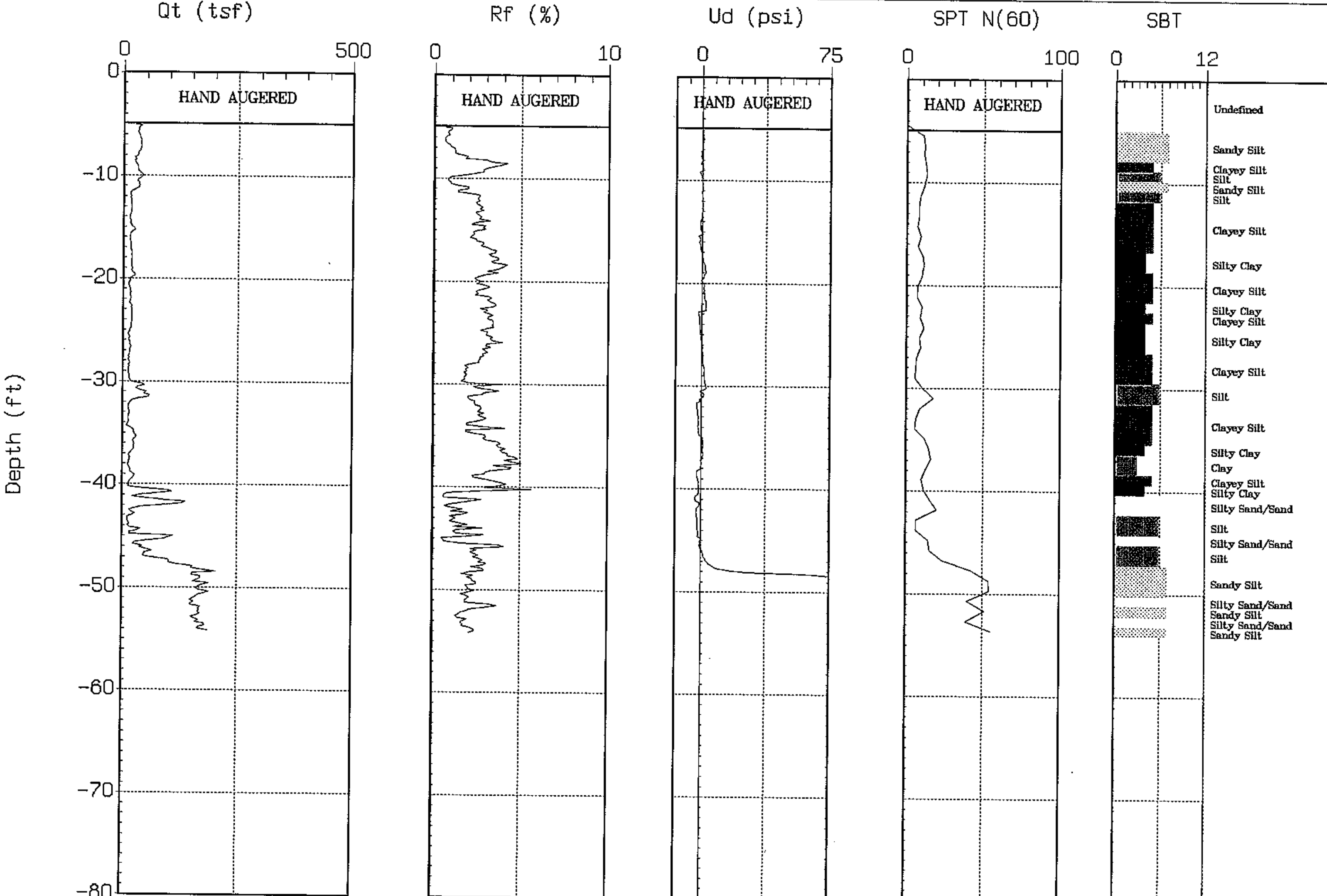
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

JERRY KOVACS

Site : HOMEPLACE
Location : CPT-5

Engineer : S. MOORE
Date : 03:31:00 12:47

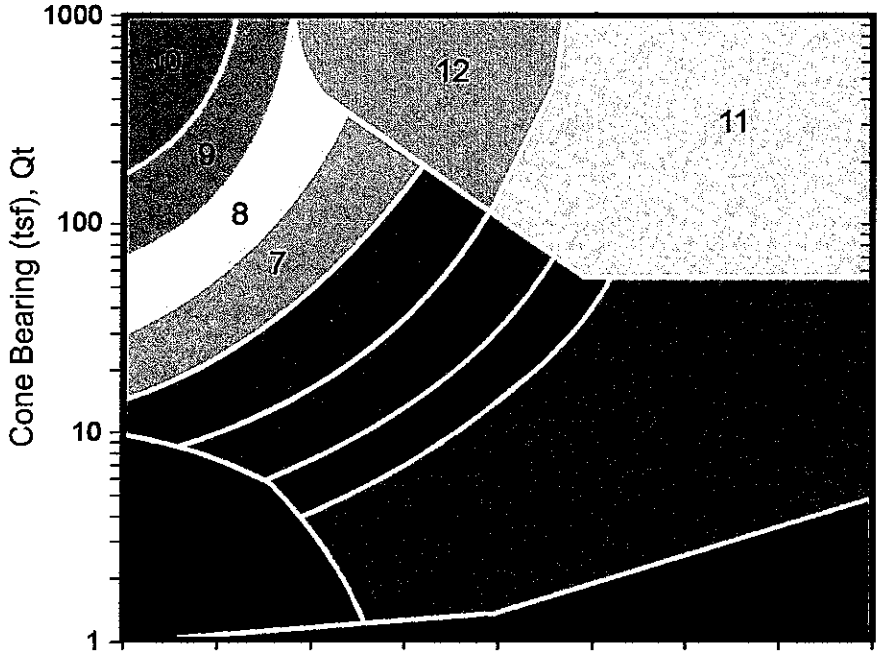


Max. Depth: 54.13 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

CPT Classification Chart
(after Robertson and Campanella, 1988)



Zone	Q_t / N	Soil Behaviour Type
1	2	sensitive fine grained
2	1	organic material
3	1	clay
4	1.5	silty clay to clay
5	2	clayey silt to silty clay
6	2.5	sandy silt to clayey silt
7	3	silty sand to sandy silt
8	4	sand to silty sand
9	5	sand
10	6	gravelly sand to sand
11	1	very stiff fine grained *
12	2	sand to clayey sand *

* overconsolidated or cemented

GREGG

Gregg In Situ, Inc.

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 00-0403-0737-3247
Job No: 00-597SH
Client: JERRY KOVACS
Project: CPT Site Investigation
Site: HOMEPLACE
Location: CPT-1
Engineer: S. MOORE
CPT Date: 00/31/03
CPT Time: 07:54
CPT File: 597C1.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 9.69 (ft): 31.8
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
0.49	0.0	0.00	0.00	0.0	UnDef	124.1	0.03	0.03	0.00	2.00	UnDef	UnDef	UnDef	0.00
1.48	0.0	0.00	0.00	0.0	UnDef	124.1	0.09	0.09	0.00	2.00	UnDef	UnDef	UnDef	0.00
2.46	0.0	0.00	0.00	0.0	UnDef	124.1	0.15	0.15	0.00	2.00	UnDef	UnDef	UnDef	0.00
3.44	0.0	0.00	0.00	0.0	UnDef	124.1	0.21	0.21	0.00	2.00	UnDef	UnDef	UnDef	0.00
4.43	0.0	0.00	0.00	0.0	UnDef	124.1	0.27	0.27	0.00	1.91	UnDef	UnDef	UnDef	0.00
5.41	37.4	0.06	0.17	-0.3	8	120.9	0.34	0.34	0.00	1.73	8.9	15.4	UnDef	0.10
6.40	45.8	0.20	0.43	-0.4	8	120.9	0.39	0.39	0.00	1.59	11.0	17.5	UnDef	0.11
7.30	54.1	0.39	0.73	0.4	8	120.9	0.45	0.45	0.00	1.49	12.9	19.3	UnDef	0.14
8.20	50.1	0.67	1.33	0.7	7	117.8	0.50	0.50	0.00	1.41	16.0	22.5	UnDef	0.14
9.19	47.8	0.75	1.56	0.8	7	117.8	0.56	0.56	0.00	1.34	15.3	20.4	UnDef	0.14
10.17	55.8	0.64	1.15	1.1	7	117.8	0.62	0.62	0.00	1.27	17.8	22.7	UnDef	0.14
11.15	50.2	0.68	1.37	0.9	7	117.8	0.68	0.68	0.00	1.22	16.0	19.5	UnDef	0.14
12.14	64.8	0.41	0.64	1.5	8	120.9	0.74	0.74	0.00	1.17	15.5	18.1	UnDef	0.13
13.21	73.8	0.54	0.73	1.5	8	120.9	0.80	0.80	0.00	1.12	17.7	19.8	UnDef	0.15
14.27	60.8	0.88	1.44	1.3	7	117.8	0.86	0.86	0.00	1.08	19.4	20.9	UnDef	0.16
15.26	61.0	0.49	0.81	1.9	8	120.9	0.92	0.92	0.00	1.04	14.6	15.2	UnDef	0.13
16.24	25.6	0.66	2.56	2.0	6	114.6	0.98	0.98	0.00	1.01	9.8	9.9	1.97	0.27
17.22	17.0	0.48	2.85	1.6	5	114.6	1.04	1.04	0.00	0.98	8.1	8.0	1.28	0.13
18.21	13.4	0.42	3.10	13.6	4	114.6	1.09	1.09	0.00	0.96	8.6	8.2	0.99	0.10
19.19	16.9	0.53	3.16	8.7	5	114.6	1.15	1.15	0.00	0.93	8.1	7.5	1.26	0.12
20.18	39.1	0.80	2.04	4.5	6	114.6	1.21	1.21	0.00	0.91	15.0	13.6	3.03	0.21
21.16	135.1	1.23	0.91	2.0	9	124.1	1.26	1.26	0.00	0.89	25.9	23.0	UnDef	0.31
22.15	161.4	1.65	1.02	-0.1	9	124.1	1.33	1.33	0.00	0.87	30.9	26.8	UnDef	0.43
23.13	59.7	1.14	1.91	1.8	7	117.8	1.39	1.39	0.00	0.85	19.1	16.2	UnDef	0.21
24.11	14.3	0.23	1.64	8.8	6	114.6	1.44	1.44	0.00	0.83	5.5	4.6	1.03	0.10
25.10	11.6	0.24	2.09	11.9	5	114.6	1.50	1.50	0.00	0.82	5.6	4.5	0.81	0.09
26.08	15.2	0.23	1.51	12.1	6	114.6	1.56	1.56	0.00	0.80	5.8	4.7	1.09	0.10
27.07	16.5	0.33	2.02	10.3	5	114.6	1.61	1.61	0.00	0.79	7.9	6.2	1.19	0.10
28.05	17.2	0.36	2.10	13.6	5	114.6	1.67	1.67	0.00	0.77	8.2	6.4	1.24	0.11
29.04	18.7	0.32	1.71	19.4	6	114.6	1.72	1.72	0.00	0.76	7.2	5.4	1.36	0.11
30.02	20.5	0.39	1.91	33.8	6	114.6	1.78	1.78	0.00	0.75	7.8	5.9	1.49	0.12
31.00	60.8	1.87	3.08	6.8	6	114.6	1.84	1.84	0.00	0.74	23.3	17.2	4.72	0.00
31.99	13.7	0.27	1.96	-24.3	5	114.6	1.89	1.89	0.01	0.73	6.5	4.8	0.94	0.09
32.97	19.1	0.36	1.91	-23.3	6	114.6	1.95	1.91	0.04	0.72	7.3	5.3	1.37	0.11
33.96	20.8	0.42	2.02	-20.3	6	114.6	2.01	1.94	0.07	0.72	8.0	5.7	1.50	0.12
34.94	42.0	1.16	2.76	-18.1	6	114.6	2.06	1.96	0.10	0.71	16.1	11.5	3.20	0.37
35.92	69.0	0.91	1.32	-22.4	7	117.8	2.12	1.99	0.13	0.71	22.0	15.6	UnDef	0.18
36.91	35.3	0.69	1.95	-21.4	6	114.6	2.18	2.02	0.16	0.70	13.5	9.5	2.65	0.25
37.89	30.1	0.88	2.92	-18.9	5	114.6	2.23	2.04	0.19	0.70	14.4	10.1	2.23	0.18
38.88	32.4	0.84	2.60	-22.7	6	114.6	2.29	2.07	0.22	0.70	12.4	8.6	2.41	0.21
39.86	20.4	0.52	2.54	-20.9	5	114.6	2.35	2.09	0.25	0.69	9.8	6.8	1.45	0.11
40.85	65.1	2.41	3.71	-20.5	5	114.6	2.40	2.12	0.28	0.69	31.2	21.4	5.02	0.00

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
41.83	169.5	2.75	1.62	-23.5	8	120.9	2.46	2.15	0.31	0.68	40.6	27.7	UnDef	0.00
42.81	49.0	0.96	1.97	-24.9	7	117.8	2.52	2.18	0.34	0.68	15.6	10.6	UnDef	0.00
43.80	18.4	0.39	2.11	-22.4	6	114.6	2.58	2.20	0.37	0.67	7.1	4.8	1.27	0.10
44.78	73.3	2.17	2.96	-10.7	6	114.6	2.63	2.23	0.41	0.67	28.1	18.8	5.66	0.00
45.77	25.5	0.55	2.17	-7.9	6	114.6	2.69	2.25	0.44	0.67	9.8	6.5	1.83	0.13
46.75	20.5	0.54	2.65	-7.5	5	114.6	2.75	2.28	0.47	0.66	9.8	6.5	1.42	0.11
47.74	16.6	0.39	2.33	-1.2	5	114.6	2.80	2.30	0.50	0.66	8.0	5.3	1.11	0.09
48.72	19.9	0.34	1.73	-1.5	6	114.6	2.86	2.33	0.53	0.66	7.6	5.0	1.37	0.10
49.70	14.6	0.29	1.97	0.3	5	114.6	2.91	2.36	0.56	0.65	7.0	4.6	0.93	0.09
50.69	21.1	0.37	1.76	5.1	6	114.6	2.97	2.38	0.59	0.65	8.1	5.2	1.45	0.11
51.67	15.6	0.27	1.73	7.3	6	114.6	3.03	2.41	0.62	0.64	6.0	3.8	1.00	0.09
52.66	35.7	0.56	1.57	8.8	6	114.6	3.08	2.43	0.65	0.64	13.7	8.8	2.61	0.21
53.64	24.4	0.62	2.55	55.1	5	114.6	3.14	2.46	0.68	0.64	11.7	7.5	1.70	0.12
54.63	74.7	1.43	1.91	37.1	7	117.8	3.20	2.48	0.71	0.63	23.8	15.1	UnDef	0.00
55.61	318.5	2.41	0.76	-14.2	9	124.1	3.26	2.51	0.74	0.63	61.0	38.5	UnDef	0.00
56.59	311.7	3.03	0.97	-5.7	9	124.1	3.32	2.54	0.77	0.63	59.7	37.4	UnDef	0.00
57.58	77.7	1.79	2.30	6.2	7	117.8	3.38	2.57	0.80	0.62	24.8	15.5	UnDef	0.00
58.56	60.9	0.95	1.56	64.5	7	117.8	3.44	2.60	0.84	0.62	19.4	12.0	UnDef	0.45
59.55	58.0	0.81	1.40	158.0	7	117.8	3.49	2.63	0.87	0.62	18.5	11.4	UnDef	0.39
60.53	88.2	1.97	2.24	261.8	7	117.8	3.55	2.65	0.90	0.61	28.2	17.3	UnDef	0.00
61.52	201.3	7.29	3.62	9.2	12	120.9	3.61	2.68	0.93	0.61	96.4	58.9	UnDef	0.00
62.42	190.8	4.68	2.45	52.4	7	117.8	3.66	2.71	0.96	0.61	60.9	37.0	UnDef	0.00
63.32	276.8	4.82	1.74	13.1	8	120.9	3.72	2.73	0.98	0.60	66.3	40.1	UnDef	0.00
64.30	172.7	5.70	3.30	22.2	6	114.6	3.78	2.76	1.01	0.60	66.1	39.8	13.51	0.00
65.29	214.1	6.89	3.22	36.0	12	120.9	3.83	2.79	1.05	0.60	102.5	61.4	UnDef	0.00
66.27	158.6	5.94	3.75	47.4	12	120.9	3.89	2.82	1.08	0.60	75.9	45.2	UnDef	0.00
67.26	113.1	4.47	3.95	71.8	5	114.6	3.95	2.84	1.11	0.59	54.2	32.1	8.73	0.00
68.24	146.9	5.44	3.71	56.8	12	120.9	4.01	2.87	1.14	0.59	70.3	41.5	UnDef	0.00
69.22	168.6	7.32	4.34	33.0	11	130.5	4.07	2.90	1.17	0.59	161.5	94.8	UnDef	0.00
70.21	208.8	7.38	3.53	43.4	12	120.9	4.13	2.93	1.20	0.58	100.0	58.4	UnDef	0.00
71.19	241.2	6.27	2.60	41.8	7	117.8	4.19	2.96	1.23	0.58	77.0	44.7	UnDef	0.00

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 00-0403-0737-3247
Job No: 00-597SH
Client: JERRY KOVACS
Project: CPT Site Investigation
Site: HOMEPLACE
Location: CPT-1
Engineer: S. MOORE
CPT Date: 00/31/03
CPT Time: 07:54
CPT File: 597C1.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 9.69 (ft): 31.8
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	1.0E-15	0.00	2.4	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
1.48	1.0E-15	0.00	0.1	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
2.46	1.0E-15	0.00	0.1	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
3.44	1.0E-15	0.00	0.0	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
4.43	1.0E-15	0.00	0.0	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
5.41	5.0E-03	0.00	110.4	0.17	9	63.1	0.0	63.1	2.8	42	54.1	1.0	-0.05	0.0	15.4
6.40	5.0E-03	0.00	115.1	0.44	9	71.4	0.0	71.4	5.0	42	57.6	1.0	-0.13	0.0	17.5
7.30	5.0E-03	0.00	119.3	0.73	9	78.9	5.4	84.3	7.4	42	60.5	1.0	-0.18	0.8	20.1
8.20	5.0E-04	0.00	98.6	1.34	9	69.1	18.6	87.7	12.9	42	56.7	1.0	-0.22	3.4	26.0
9.19	5.0E-04	0.00	84.2	1.58	7	62.5	25.1	87.6	15.7	42	53.8	1.0	-0.22	4.4	24.8
10.17	5.0E-04	0.00	89.2	1.16	9	69.5	17.9	87.4	12.7	42	56.8	1.0	-0.19	3.3	26.0
11.15	5.0E-04	0.00	73.1	1.38	7	59.7	24.7	84.4	16.0	40	52.5	1.0	-0.19	4.4	23.8
12.14	5.0E-03	0.00	87.1	0.64	9	74.0	9.0	83.0	9.1	42	58.6	1.0	-0.14	1.3	19.4
13.21	5.0E-03	0.00	91.3	0.73	9	80.8	10.8	91.6	9.4	42	61.2	1.0	-0.15	1.6	21.3
14.27	5.0E-04	0.00	69.4	1.46	7	64.0	30.1	94.2	17.0	40	54.5	1.0	-0.19	5.2	26.1
15.26	5.0E-03	0.00	65.1	0.82	9	62.1	17.3	79.4	13.2	40	53.6	1.0	-0.13	2.4	17.6
16.24	5.0E-05	0.00	25.1	2.66	6	25.3	101.3	126.6	37.6	34	30.0	6.0	-0.15	9.9	19.8
17.22	5.0E-06	0.00	15.4	3.03	6	16.4	65.4	81.8	48.7	UnDef	UnDef	6.0	UnDef	8.0	16.0
18.21	5.0E-07	0.03	11.3	3.37	4	12.6	50.3	62.8	57.4	UnDef	UnDef	3.0	UnDef	8.2	16.4
19.19	5.0E-06	0.02	13.7	3.39	4	15.4	61.5	76.9	53.1	UnDef	UnDef	6.0	UnDef	7.5	15.1
20.18	5.0E-05	0.00	31.4	2.10	7	34.8	77.9	112.7	30.9	36	37.0	6.0	-0.14	10.4	24.0
21.16	5.0E-02	0.00	105.8	0.92	9	117.6	16.7	134.2	9.6	42	71.9	1.0	-0.19	1.9	25.0
22.15	5.0E-02	0.00	120.7	1.03	9	137.2	18.2	155.3	9.4	42	76.3	1.0	-0.21	2.1	29.0
23.13	5.0E-04	0.00	42.1	1.95	7	49.6	62.1	111.7	25.8	38	47.2	1.0	-0.17	8.6	24.8
24.11	5.0E-05	0.02	8.9	1.82	6	11.6	46.5	58.1	53.5	30	30.0	3.0	0.01	4.6	9.1
25.10	5.0E-06	0.04	6.7	2.40	4	9.3	37.1	46.3	64.6	UnDef	UnDef	3.0	UnDef	4.5	9.1
26.08	5.0E-05	0.03	8.8	1.68	6	11.9	47.6	59.6	52.7	30	30.0	3.0	0.01	4.7	9.3
27.07	5.0E-06	0.02	9.2	2.24	4	12.7	50.8	63.5	55.6	UnDef	UnDef	3.0	UnDef	6.2	12.4
28.05	5.0E-06	0.03	9.3	2.32	4	13.0	52.2	65.2	55.9	UnDef	UnDef	3.0	UnDef	6.4	12.8
29.04	5.0E-05	0.04	9.8	1.88	6	13.9	55.7	69.6	51.6	30	30.0	3.0	-0.01	5.4	10.9
30.02	5.0E-05	0.06	10.5	2.09	6	15.0	60.0	75.0	51.6	30	30.0	3.0	-0.02	5.9	11.8
31.00	5.0E-05	0.00	32.1	3.18	6	43.9	175.5	219.4	36.0	36	43.7	6.0	-0.20	17.2	34.4
31.99	5.0E-06	-0.06	6.2	2.27	4	9.7	38.9	48.7	65.8	UnDef	UnDef	1.5	UnDef	4.8	9.5
32.97	5.0E-05	-0.04	9.0	2.13	4	13.5	54.0	67.5	55.6	30	30.0	3.0	-0.01	5.3	10.6
33.96	5.0E-05	-0.04	9.7	2.24	4	14.6	58.4	72.9	54.5	30	30.0	3.0	-0.02	5.7	11.4
34.94	5.0E-05	-0.02	20.3	2.90	6	29.3	117.4	146.7	42.6	34	32.1	6.0	-0.13	11.5	23.0
35.92	5.0E-04	-0.01	33.6	1.36	7	47.8	55.8	103.7	25.2	36	46.1	1.0	-0.11	7.9	23.5
36.91	5.0E-05	-0.03	16.4	2.07	6	24.3	97.2	121.6	42.0	32	30.0	6.0	-0.07	9.5	19.0
37.89	5.0E-06	-0.03	13.7	3.15	4	20.6	82.5	103.2	51.9	UnDef	UnDef	6.0	UnDef	10.1	20.2
38.88	5.0E-05	-0.03	14.6	2.79	6	22.1	88.3	110.4	48.6	32	30.0	6.0	-0.09	8.6	17.3
39.86	5.0E-06	-0.05	8.6	2.87	4	13.8	55.2	69.0	61.2	UnDef	UnDef	3.0	UnDef	6.8	13.5
40.85	5.0E-06	-0.01	29.6	3.85	6	43.8	175.0	218.8	40.1	UnDef	UnDef	6.0	UnDef	21.4	42.8

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E-03	-0.01	77.8	1.65	7	113.2	52.6	165.8	16.9	40	70.8	1.0	-0.21	6.9	34.6
42.81	5.0E-04	-0.02	21.3	2.08	6	32.5	130.0	162.4	37.1	34	35.0	1.0	-0.10	10.6	21.2
43.80	5.0E-05	-0.07	7.2	2.45	4	12.2	48.6	60.8	63.2	30	30.0	3.0	0.00	4.8	9.5
44.78	5.0E-05	-0.01	31.7	3.07	6	48.1	192.3	240.4	35.6	36	46.3	6.0	-0.20	18.8	37.6
45.77	5.0E-05	-0.03	10.1	2.43	4	16.6	66.6	83.2	54.6	30	30.0	3.0	-0.03	6.5	13.0
46.75	5.0E-06	-0.04	7.8	3.06	4	13.3	53.1	66.3	64.9	UnDef	UnDef	3.0	UnDef	6.5	13.0
47.74	5.0E-06	-0.04	6.0	2.80	4	10.7	42.9	53.7	70.4	UnDef	UnDef	1.5	UnDef	5.3	10.5
48.72	5.0E-05	-0.03	7.3	2.02	4	12.8	51.1	63.9	59.7	30	30.0	3.0	0.01	5.0	10.0
49.70	5.0E-06	-0.05	5.0	2.46	4	9.3	37.2	46.5	73.6	UnDef	UnDef	1.5	UnDef	4.6	9.1
50.69	5.0E-05	-0.02	7.6	2.05	4	13.4	53.6	67.0	59.0	30	30.0	3.0	0.01	5.2	10.5
51.67	5.0E-05	-0.03	5.2	2.15	4	9.8	39.3	49.1	70.0	30	30.0	1.5	0.05	3.8	7.7
52.66	5.0E-05	-0.01	13.4	1.72	6	22.4	89.5	111.9	43.7	32	30.0	6.0	-0.04	8.8	17.5
53.64	5.0E-06	0.05	8.7	2.93	4	15.2	60.9	76.2	61.4	UnDef	UnDef	3.0	UnDef	7.5	14.9
54.63	5.0E-04	0.01	28.8	2.00	7	46.4	114.5	160.8	31.7	36	45.2	1.0	-0.13	12.1	27.3
55.61	5.0E-02	0.00	125.4	0.76	9	196.6	12.9	209.4	7.3	44	86.7	1.0	-0.18	1.5	40.0
56.59	5.0E-02	0.00	121.2	0.98	9	191.2	23.1	214.3	9.0	42	85.9	1.0	-0.20	2.7	40.1
57.58	5.0E-04	-0.01	28.9	2.41	6	47.4	159.9	207.3	33.9	36	45.9	1.0	-0.15	14.4	29.9
58.56	5.0E-04	0.02	22.1	1.65	6	36.9	121.7	158.7	33.7	34	38.7	1.0	-0.08	11.1	23.2
59.55	5.0E-04	0.07	20.7	1.49	6	35.0	114.0	149.0	33.7	34	37.2	1.0	-0.06	10.5	21.9
60.53	5.0E-04	0.09	31.9	2.33	6	53.0	135.2	188.2	31.9	36	49.1	1.0	-0.15	14.1	31.4
61.52	1.0E-15	0.00	73.7	3.69	6	120.3	160.7	281.0	26.4	40	72.6	1.0	-0.35	32.8	91.7
62.42	5.0E-04	0.00	69.1	2.50	7	113.5	98.6	212.0	22.4	40	70.9	1.0	-0.26	15.2	52.2
63.32	5.0E-03	0.00	99.9	1.76	7	163.8	60.6	224.5	15.1	42	81.4	1.0	-0.25	8.2	48.2
64.30	5.0E-05	0.00	61.2	3.38	6	101.7	153.6	255.3	27.5	40	67.8	10.0	-0.30	24.0	63.8
65.29	1.0E-15	0.00	75.4	3.28	7	125.5	138.3	263.7	24.6	40	73.8	1.0	-0.32	30.0	91.4
66.27	1.0E-15	0.00	54.9	3.84	6	92.5	201.8	294.3	30.7	40	65.0	1.0	-0.32	34.0	79.2
67.26	5.0E-06	0.01	38.4	4.09	6	65.6	262.6	328.2	36.8	UnDef	UnDef	6.0	UnDef	32.1	64.2
68.24	1.0E-15	0.00	49.8	3.81	6	84.8	216.9	301.7	31.9	38	62.6	1.0	-0.30	33.9	75.4
69.22	1.0E-15	0.00	56.7	4.45	6	96.8	262.9	359.8	32.4	40	66.4	1.0	-0.38	79.8	174.6
70.21	1.0E-15	0.00	69.8	3.60	6	119.3	165.6	284.9	26.8	40	72.3	1.0	-0.34	33.3	91.7
71.19	5.0E-04	0.00	80.0	2.64	7	137.2	107.1	244.2	21.4	42	76.3	1.0	-0.28	16.9	61.7

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 00-0403-0737-3275
Job No: 00-597SH
Client: JERRY KOVACS
Project: CPT Site Investigation
Site: HOMEPLACE
Location: CPT-2
Engineer: S. MOORE
CPT Date: 00/31/03
CPT Time: 09:02
CPT File: 597C2.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 10.64 (ft): 34.9
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
0.49	0.0	0.00	0.00	0.0	UnDef	124.1	0.03	0.03	0.00	2.00	UnDef	UnDef	UnDef	0.00
1.48	0.0	0.00	0.00	0.0	UnDef	124.1	0.09	0.09	0.00	2.00	UnDef	UnDef	UnDef	0.00
2.46	0.0	0.00	0.00	0.0	UnDef	124.1	0.15	0.15	0.00	2.00	UnDef	UnDef	UnDef	0.00
3.44	0.0	0.00	0.00	0.0	UnDef	124.1	0.21	0.21	0.00	2.00	UnDef	UnDef	UnDef	0.00
4.43	0.0	0.00	0.00	0.0	UnDef	124.1	0.27	0.27	0.00	1.91	UnDef	UnDef	UnDef	0.00
5.41	29.3	0.14	0.49	-0.5	7	117.8	0.33	0.33	0.00	1.73	9.4	16.2	UnDef	0.09
6.40	24.0	0.60	2.52	1.3	6	114.6	0.39	0.39	0.00	1.60	9.2	14.7	1.89	0.12
7.30	22.4	0.55	2.43	0.7	6	114.6	0.44	0.44	0.00	1.50	8.6	12.9	1.76	0.12
8.20	23.4	0.46	1.96	-1.5	6	114.6	0.49	0.49	0.00	1.42	9.0	12.7	1.83	0.11
9.19	27.7	0.21	0.75	-1.7	7	117.8	0.55	0.55	0.00	1.35	8.8	11.9	UnDef	0.09
10.17	38.1	0.65	1.71	0.0	6	114.6	0.61	0.61	0.00	1.28	14.6	18.7	3.00	0.13
11.15	32.8	0.80	2.43	0.6	6	114.6	0.67	0.67	0.00	1.23	12.6	15.4	2.57	0.16
12.14	33.7	0.72	2.14	0.5	6	114.6	0.72	0.72	0.00	1.18	12.9	15.2	2.64	0.14
13.21	41.1	0.84	2.04	-0.6	6	114.6	0.78	0.78	0.00	1.13	15.7	17.8	3.23	0.15
14.27	33.9	0.68	2.02	-3.4	6	114.6	0.84	0.84	0.00	1.09	13.0	14.1	2.64	0.15
15.26	24.0	0.97	4.02	-1.9	4	114.6	0.90	0.90	0.00	1.05	15.3	16.2	1.85	0.26
16.24	32.6	1.08	3.30	2.2	5	114.6	0.96	0.96	0.00	1.02	15.6	16.0	2.53	0.00
17.22	35.2	0.86	2.45	0.9	6	114.6	1.01	1.01	0.00	0.99	13.5	13.4	2.73	0.25
18.21	30.7	0.63	2.04	-2.1	6	114.6	1.07	1.07	0.00	0.97	11.7	11.4	2.37	0.22
19.19	15.5	0.41	2.65	-2.8	5	114.6	1.13	1.13	0.00	0.94	7.4	7.0	1.15	0.11
20.18	15.4	0.26	1.68	-2.7	6	114.6	1.18	1.18	0.00	0.92	5.9	5.4	1.14	0.11
21.16	12.8	0.31	2.43	-0.5	5	114.6	1.24	1.24	0.00	0.90	6.2	5.5	0.93	0.10
22.15	15.5	0.30	1.92	0.3	5	114.6	1.30	1.30	0.00	0.88	7.4	6.5	1.13	0.11
23.13	21.0	0.51	2.45	2.3	5	114.6	1.35	1.35	0.00	0.86	10.1	8.7	1.57	0.14
24.11	18.6	0.34	1.84	1.2	6	114.6	1.41	1.41	0.00	0.84	7.1	6.0	1.38	0.12
25.10	11.1	0.20	1.83	2.4	5	114.6	1.46	1.46	0.00	0.83	5.3	4.4	0.77	0.09
26.08	16.7	0.32	1.91	3.2	6	114.6	1.52	1.52	0.00	0.81	6.4	5.2	1.22	0.11
27.07	13.6	0.30	2.23	3.3	5	114.6	1.58	1.58	0.00	0.80	6.5	5.2	0.96	0.09
28.05	11.9	0.27	2.27	3.6	5	114.6	1.63	1.63	0.00	0.78	5.7	4.5	0.82	0.09
29.04	10.4	0.27	2.63	4.1	5	114.6	1.69	1.69	0.00	0.77	5.0	3.8	0.69	0.00
30.02	11.7	0.21	1.76	5.0	5	114.6	1.75	1.75	0.00	0.76	5.6	4.2	0.80	0.09
31.00	11.1	0.13	1.18	6.0	5	114.6	1.80	1.80	0.00	0.74	5.3	4.0	0.74	0.09
31.99	16.3	0.20	1.20	6.3	6	114.6	1.86	1.86	0.00	0.73	6.3	4.6	1.16	0.10
32.97	10.6	0.09	0.82	7.0	6	114.6	1.92	1.92	0.00	0.72	4.0	2.9	0.69	0.08
33.96	7.5	0.02	0.31	8.8	1	79.6	1.96	1.96	0.00	0.71	3.6	2.6	0.44	0.00
34.94	10.2	0.08	0.78	10.5	6	114.6	2.01	2.01	0.00	0.71	3.9	2.8	0.66	0.08
35.92	31.6	1.11	3.52	10.4	5	114.6	2.07	2.04	0.03	0.70	15.1	10.6	2.36	0.00
36.91	26.3	0.93	3.55	10.2	5	114.6	2.12	2.06	0.06	0.70	12.6	8.8	1.93	0.00
37.89	54.9	1.70	3.10	1.3	6	114.6	2.18	2.09	0.09	0.69	21.0	14.6	4.22	0.00
38.88	102.0	1.36	1.33	-12.8	8	120.9	2.24	2.11	0.12	0.69	24.4	16.8	UnDef	0.23
39.86	110.9	1.28	1.15	-14.7	8	120.9	2.30	2.14	0.15	0.68	26.5	18.1	UnDef	0.23
40.85	28.1	0.47	1.67	-9.9	6	114.6	2.36	2.17	0.19	0.68	10.8	7.3	2.06	0.16

Gregg In Situ, Inc.
Run No: 00-0403-0737-3275
CPT File: 597C2.COR

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
41.83	16.7	0.03	0.20	-8.2	6	114.6	2.41	2.20	0.22	0.67	6.4	4.3	1.15	0.00
42.81	13.9	0.07	0.50	-7.8	6	114.6	2.47	2.22	0.25	0.67	5.3	3.6	0.91	0.00
43.80	13.5	0.04	0.27	-6.8	6	114.6	2.52	2.25	0.28	0.67	5.2	3.5	0.88	0.00
44.78	13.5	0.04	0.26	-5.4	6	114.6	2.58	2.27	0.31	0.66	5.2	3.4	0.87	0.00
45.77	24.3	0.53	2.18	-5.0	6	114.6	2.64	2.30	0.34	0.66	9.3	6.1	1.73	0.12
46.75	16.4	0.39	2.37	-4.2	5	114.6	2.69	2.32	0.37	0.66	7.8	5.1	1.09	0.09
47.74	17.8	0.40	2.24	-1.3	5	114.6	2.75	2.35	0.40	0.65	8.5	5.6	1.21	0.10
48.72	19.0	0.26	1.37	-0.9	6	114.6	2.81	2.38	0.43	0.65	7.3	4.7	1.29	0.10
49.70	14.2	0.17	1.16	0.0	6	114.6	2.86	2.40	0.46	0.65	5.4	3.5	0.91	0.09
50.69	14.4	0.13	0.88	2.5	6	114.6	2.92	2.43	0.49	0.64	5.5	3.5	0.92	0.09
51.67	16.2	0.16	0.97	4.9	6	114.6	2.98	2.45	0.52	0.64	6.2	4.0	1.06	0.09
52.66	20.1	0.26	1.30	5.9	6	114.6	3.03	2.48	0.55	0.64	7.7	4.9	1.37	0.10
53.64	26.7	0.64	2.41	8.1	6	114.6	3.09	2.50	0.59	0.63	10.2	6.5	1.89	0.13
54.63	147.1	1.25	0.85	7.2	9	124.1	3.15	2.53	0.62	0.63	28.2	17.7	UnDef	0.25
55.61	34.7	0.48	1.40	7.9	7	117.8	3.21	2.56	0.65	0.63	11.1	6.9	UnDef	0.19
56.59	68.8	1.53	2.23	15.7	7	117.8	3.26	2.59	0.68	0.62	22.0	13.7	UnDef	0.00
57.58	87.4	2.38	2.72	27.9	6	114.6	3.32	2.61	0.71	0.62	33.5	20.7	6.73	0.00
58.56	102.7	3.15	3.07	35.2	6	114.6	3.38	2.64	0.74	0.62	39.3	24.2	7.94	0.00
59.55	292.9	4.56	1.56	45.8	8	120.9	3.44	2.67	0.77	0.61	70.1	43.0	UnDef	0.00
60.53	166.4	4.09	2.46	28.9	7	117.8	3.50	2.69	0.80	0.61	53.1	32.4	UnDef	0.00
61.52	119.4	3.62	3.03	35.6	6	114.6	3.55	2.72	0.83	0.61	45.7	27.7	9.27	0.00
62.42	96.7	3.79	3.92	36.3	5	114.6	3.60	2.74	0.86	0.60	46.3	27.9	7.45	0.00

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 00-0403-0737-3275
Job No: 00-597SH
Client: JERRY KOVACS
Project: CPT Site Investigation
Site: HOMEPLACE
Location: CPT-2
Engineer: S. MOORE
CPT Date: 00/31/03
CPT Time: 09:02
CPT File: 597C2.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 10.64 (ft): 34.9
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	1.0E-15	0.00	2.4	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
1.48	1.0E-15	0.00	0.1	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
2.46	1.0E-15	0.00	0.1	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
3.44	1.0E-15	0.00	0.0	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
4.43	1.0E-15	0.00	0.0	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
5.41	5.0E-04	0.00	86.7	0.50	9	49.6	0.0	49.6	5.0	42	47.2	1.0	-0.11	0.0	16.2
6.40	5.0E-05	0.00	60.2	2.56	7	37.5	39.8	77.3	24.3	40	39.1	10.0	-0.24	7.0	21.6
7.30	5.0E-05	0.00	49.6	2.48	7	33.0	43.8	76.8	26.4	38	35.5	6.0	-0.22	7.2	20.1
8.20	5.0E-05	0.00	46.2	2.00	7	32.5	36.6	69.1	24.8	38	35.1	6.0	-0.18	6.3	19.0
9.19	5.0E-04	0.00	49.2	0.77	7	36.5	14.5	51.0	15.6	38	38.4	1.0	-0.10	2.6	14.5
10.17	5.0E-05	0.00	61.5	1.74	7	47.8	31.6	79.4	19.9	40	46.1	10.0	-0.20	6.2	24.9
11.15	5.0E-05	0.00	48.2	2.48	7	39.3	54.4	93.7	26.7	38	40.5	6.0	-0.21	8.8	24.2
12.14	5.0E-05	0.00	45.6	2.19	7	38.8	49.6	88.4	26.0	38	40.1	6.0	-0.19	8.2	23.4
13.21	5.0E-05	0.00	51.5	2.07	7	45.4	46.1	91.5	23.9	38	44.7	10.0	-0.20	8.2	26.0
14.27	5.0E-05	0.00	39.1	2.07	7	36.1	54.1	90.2	27.5	38	38.0	6.0	-0.17	8.5	22.6
15.26	5.0E-07	0.00	25.7	4.18	6	24.8	99.0	123.8	43.9	UnDef	UnDef	6.0	UnDef	16.2	32.3
16.24	5.0E-06	0.00	33.1	3.40	6	32.6	130.5	163.1	36.4	UnDef	UnDef	6.0	UnDef	16.0	31.9
17.22	5.0E-05	0.00	33.7	2.52	6	34.2	89.1	123.3	32.1	36	36.5	6.0	-0.17	11.0	24.4
18.21	5.0E-05	0.00	27.7	2.12	6	29.0	85.5	114.5	33.0	36	31.8	6.0	-0.13	10.0	21.3
19.19	5.0E-06	-0.01	12.7	2.85	4	14.3	57.1	71.3	51.9	UnDef	UnDef	6.0	UnDef	7.0	14.0
20.18	5.0E-05	-0.01	12.0	1.82	6	13.9	55.4	69.3	46.7	30	30.0	3.0	-0.03	5.4	10.8
21.16	5.0E-06	0.00	9.4	2.69	4	11.3	45.2	56.5	58.1	UnDef	UnDef	3.0	UnDef	5.5	11.1
22.15	5.0E-06	0.00	10.9	2.10	6	13.3	53.2	66.5	50.7	UnDef	UnDef	3.0	UnDef	6.5	13.0
23.13	5.0E-06	0.00	14.6	2.62	6	17.7	70.8	88.5	47.7	UnDef	UnDef	6.0	UnDef	8.7	17.3
24.11	5.0E-05	0.00	12.2	1.99	6	15.4	61.5	76.8	47.5	30	30.0	3.0	-0.04	6.0	12.0
25.10	5.0E-06	0.01	6.6	2.11	4	9.0	36.0	45.0	63.1	UnDef	UnDef	3.0	UnDef	4.4	8.8
26.08	5.0E-05	0.01	10.0	2.10	6	13.3	53.1	66.4	52.7	30	30.0	3.0	-0.02	5.2	10.4
27.07	5.0E-06	0.01	7.6	2.53	4	10.6	42.4	53.0	62.2	UnDef	UnDef	3.0	UnDef	5.2	10.4
28.05	5.0E-06	0.01	6.3	2.63	4	9.1	36.6	45.7	67.9	UnDef	UnDef	3.0	UnDef	4.5	8.9
29.04	5.0E-06	0.01	5.1	3.14	1	7.8	UnDef	UnDef	100.0	UnDef	UnDef	1.5	UnDef	UnDef	UnDef
30.02	5.0E-06	0.02	5.7	2.06	4	8.7	34.7	43.3	66.8	UnDef	UnDef	1.5	UnDef	4.2	8.5
31.00	5.0E-06	0.02	5.1	1.40	4	8.1	32.3	40.4	63.9	UnDef	UnDef	1.5	UnDef	4.0	7.9
31.99	5.0E-05	0.01	7.8	1.35	6	11.7	46.9	58.6	52.7	30	30.0	3.0	0.04	4.6	9.2
32.97	5.0E-05	0.03	4.5	1.00	4	7.5	29.9	37.4	63.3	30	30.0	1.5	0.11	2.9	5.8
33.96	1.0E-07	0.05	2.8	0.42	1	5.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
34.94	5.0E-05	0.04	4.1	0.98	4	7.1	28.2	35.3	65.7	30	30.0	1.5	0.12	2.8	5.5
35.92	5.0E-06	0.01	14.5	3.76	1	21.7	UnDef	UnDef	100.0	UnDef	UnDef	6.0	UnDef	UnDef	UnDef
36.91	5.0E-06	0.01	11.7	3.87	1	17.9	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
37.89	5.0E-05	0.00	25.3	3.23	6	37.2	148.9	186.1	40.2	34	38.9	6.0	-0.17	14.6	29.1
38.88	5.0E-03	-0.01	47.2	1.36	7	68.7	49.4	118.1	20.7	38	56.5	1.0	-0.14	6.0	22.8
39.86	5.0E-03	-0.01	50.7	1.18	7	74.1	42.1	116.2	18.6	38	58.7	1.0	-0.14	5.3	23.4
40.85	5.0E-05	-0.02	11.9	1.82	6	18.7	74.6	93.3	46.9	30	30.0	3.0	-0.03	7.3	14.6

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E-05	-0.03	6.5	0.23	1	11.1	UnDef	UnDef	100.0	30	30.0	3.0	0.17	UnDef	UnDef
42.81	5.0E-05	-0.04	5.1	0.61	1	9.1	UnDef	UnDef	100.0	30	30.0	1.5	0.12	UnDef	UnDef
43.80	5.0E-05	-0.04	4.9	0.33	1	8.8	UnDef	UnDef	100.0	30	30.0	1.5	0.17	UnDef	UnDef
44.78	5.0E-05	-0.04	4.8	0.32	1	8.8	UnDef	UnDef	100.0	30	30.0	1.5	0.17	UnDef	UnDef
45.77	5.0E-05	-0.02	9.4	2.45	4	15.7	62.7	78.4	56.4	30	30.0	3.0	-0.02	6.1	12.3
46.75	5.0E-06	-0.04	5.9	2.84	4	10.5	42.0	52.5	71.2	UnDef	UnDef	1.5	UnDef	5.1	10.3
47.74	5.0E-06	-0.03	6.4	2.65	4	11.4	45.6	56.9	67.6	UnDef	UnDef	3.0	UnDef	5.6	11.1
48.72	5.0E-05	-0.03	6.8	1.61	4	12.0	48.1	60.2	58.4	30	30.0	3.0	0.04	4.7	9.4
49.70	5.0E-05	-0.04	4.7	1.46	4	9.0	35.9	44.9	66.9	30	30.0	1.5	0.08	3.5	7.0
50.69	5.0E-05	-0.04	4.7	1.11	4	9.0	36.1	45.2	63.2	30	30.0	1.5	0.09	3.5	7.1
51.67	5.0E-05	-0.03	5.4	1.19	4	10.1	40.5	50.7	60.4	30	30.0	1.5	0.08	4.0	7.9
52.66	5.0E-05	-0.02	6.9	1.53	4	12.5	50.0	62.5	57.4	30	30.0	3.0	0.04	4.9	9.8
53.64	5.0E-05	-0.01	9.4	2.73	4	16.5	66.2	82.7	58.1	30	30.0	3.0	-0.03	6.5	12.9
54.63	5.0E-02	0.00	56.9	0.87	9	90.5	32.5	123.0	14.9	40	64.4	1.0	-0.12	3.5	21.2
55.61	5.0E-04	-0.01	12.3	1.54	6	21.2	84.8	106.0	44.0	30	30.0	1.0	-0.02	6.9	13.8
56.59	5.0E-04	0.00	25.3	2.34	6	41.9	167.4	209.3	35.7	34	42.3	1.0	-0.13	13.7	27.3
57.58	5.0E-05	0.00	32.2	2.83	6	52.9	189.6	242.5	34.3	36	49.0	6.0	-0.18	19.8	40.5
58.56	5.0E-05	0.00	37.6	3.17	6	61.8	194.7	256.6	33.4	38	53.5	6.0	-0.22	21.9	46.1
59.55	5.0E-03	0.00	108.6	1.58	9	175.5	50.8	226.3	13.4	42	83.4	1.0	-0.24	7.0	50.0
60.53	5.0E-04	0.00	60.4	2.51	7	99.2	102.5	201.6	24.0	40	67.0	1.0	-0.24	15.1	47.4
61.52	5.0E-05	0.00	42.6	3.12	6	70.8	168.9	239.8	31.4	38	57.4	6.0	-0.24	21.8	49.6
62.42	5.0E-06	0.00	33.9	4.07	6	57.1	228.4	285.5	38.7	UnDef	UnDef	6.0	UnDef	27.9	55.9

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 00-0403-0737-3302
Job No: 00-597SH
Client: JERRY KOVACS
Project: CPT Site Investigation
Site: HOMEPLACE
Location: CPT-3
Engineer: S. MOORE
CPT Date: 00/31/03
CPT Time: 10:04
CPT File: 597C3.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 7.44 (ft): 24.4
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
0.49	0.0	0.00	0.00	0.0	UnDef	124.1	0.03	0.03	0.00	2.00	UnDef	UnDef	UnDef	0.00
1.48	0.0	0.00	0.00	0.0	UnDef	124.1	0.09	0.09	0.00	2.00	UnDef	UnDef	UnDef	0.00
2.46	0.0	0.00	0.00	0.0	UnDef	124.1	0.15	0.15	0.00	2.00	UnDef	UnDef	UnDef	0.00
3.44	0.0	0.00	0.00	0.0	UnDef	124.1	0.21	0.21	0.00	2.00	UnDef	UnDef	UnDef	0.00
4.43	0.0	0.00	0.00	0.0	UnDef	124.1	0.27	0.27	0.00	1.91	UnDef	UnDef	UnDef	0.00
5.41	35.5	0.08	0.23	0.2	7	117.8	0.33	0.33	0.00	1.73	11.3	19.6	UnDef	0.10
6.40	27.8	0.16	0.57	-0.6	7	117.8	0.39	0.39	0.00	1.60	8.9	14.2	UnDef	0.09
7.30	26.3	0.09	0.36	-0.3	7	117.8	0.45	0.45	0.00	1.50	8.4	12.6	UnDef	0.09
8.20	23.6	0.12	0.50	0.2	7	117.8	0.50	0.50	0.00	1.42	7.5	10.7	UnDef	0.09
9.19	21.4	0.29	1.35	0.7	6	114.6	0.56	0.56	0.00	1.34	8.2	11.0	1.67	0.10
10.17	23.2	0.56	2.42	1.9	6	114.6	0.61	0.61	0.00	1.28	8.9	11.4	1.81	0.15
11.15	22.0	0.67	3.05	1.2	5	114.6	0.67	0.67	0.00	1.22	10.5	12.9	1.71	0.29
12.14	19.4	0.58	2.99	1.4	5	114.6	0.72	0.72	0.00	1.17	9.3	10.9	1.49	0.21
13.21	19.7	0.55	2.78	3.7	5	114.6	0.79	0.79	0.00	1.13	9.5	10.7	1.52	0.20
14.27	21.3	0.65	3.03	11.6	5	114.6	0.85	0.85	0.00	1.09	10.2	11.1	1.64	0.22
15.26	21.3	0.69	3.23	13.8	5	114.6	0.90	0.90	0.00	1.05	10.2	10.7	1.63	0.20
16.24	26.8	0.84	3.12	11.5	5	114.6	0.96	0.96	0.00	1.02	12.8	13.1	2.07	0.30
17.22	28.9	0.94	3.25	3.0	5	114.6	1.02	1.02	0.00	0.99	13.8	13.7	2.23	0.34
18.21	35.5	1.20	3.39	2.7	5	114.6	1.07	1.07	0.00	0.97	17.0	16.4	2.75	0.00
19.19	31.8	0.87	2.73	7.1	6	114.6	1.13	1.13	0.00	0.94	12.2	11.5	2.46	0.37
20.18	29.2	0.90	3.09	7.6	5	114.6	1.19	1.19	0.00	0.92	14.0	12.9	2.24	0.29
21.16	29.6	1.10	3.73	8.6	5	114.6	1.24	1.24	0.00	0.90	14.2	12.7	2.27	0.28
22.15	23.5	0.73	3.09	11.3	5	114.6	1.30	1.30	0.00	0.88	11.3	9.9	1.78	0.18
23.13	21.7	0.64	2.94	12.0	5	114.6	1.35	1.35	0.00	0.86	10.4	8.9	1.63	0.15
24.11	19.8	0.47	2.38	12.2	5	114.6	1.41	1.41	0.00	0.84	9.5	8.0	1.47	0.13
25.10	18.9	0.35	1.86	13.0	6	114.6	1.47	1.45	0.02	0.83	7.3	6.0	1.40	0.12
26.08	20.1	0.32	1.57	13.4	6	114.6	1.52	1.47	0.05	0.82	7.7	6.4	1.49	0.13
27.07	17.1	0.24	1.38	13.4	6	114.6	1.58	1.50	0.08	0.82	6.6	5.4	1.24	0.11
28.05	14.7	0.12	0.80	12.6	6	114.6	1.64	1.52	0.11	0.81	5.6	4.6	1.05	0.10
29.04	14.1	0.07	0.51	12.1	6	114.6	1.69	1.55	0.14	0.80	5.4	4.3	0.99	0.10
30.02	11.9	0.04	0.35	12.8	6	114.6	1.75	1.57	0.18	0.80	4.6	3.6	0.82	0.00
31.00	18.7	0.23	1.25	13.4	6	114.6	1.81	1.60	0.21	0.79	7.2	5.7	1.35	0.12
31.99	26.9	0.60	2.24	13.7	6	114.6	1.86	1.63	0.24	0.78	10.3	8.1	2.01	0.18
32.97	18.0	0.39	2.14	10.4	5	114.6	1.92	1.65	0.27	0.78	8.6	6.7	1.29	0.11
33.96	21.8	0.50	2.29	10.7	6	114.6	1.97	1.68	0.30	0.77	8.4	6.5	1.59	0.13
34.94	141.3	1.78	1.26	0.3	8	120.9	2.03	1.70	0.33	0.77	33.8	25.9	UnDef	0.34
35.92	392.4	3.35	0.85	-15.0	9	124.1	2.09	1.73	0.36	0.76	75.2	57.1	UnDef	0.00
36.91	333.1	2.17	0.65	-7.0	9	124.1	2.15	1.76	0.39	0.75	63.8	48.0	UnDef	0.00
37.89	266.4	1.95	0.73	-4.4	9	124.1	2.22	1.79	0.42	0.75	51.0	38.1	UnDef	0.00
38.88	261.2	1.98	0.76	-9.1	9	124.1	2.28	1.82	0.45	0.74	50.0	37.0	UnDef	0.00
39.86	201.9	1.32	0.66	-9.1	9	124.1	2.34	1.85	0.48	0.73	38.7	28.4	UnDef	0.43
40.85	307.1	0.82	0.27	-4.4	10	127.3	2.40	1.89	0.51	0.73	49.0	35.7	UnDef	0.00

Gregg In Situ, Inc.
Run No: 00-0403-0737-3302
CPT File: 597C3.COR

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
41.83	332.2	1.04	0.31	-3.3	10	127.3	2.46	1.92	0.54	0.72	53.0	38.3	UnDef	0.00
42.81	456.3	2.65	0.58	-2.0	10	127.3	2.52	1.95	0.57	0.72	72.8	52.2	UnDef	0.00
43.80	362.1	3.80	1.05	4.0	9	124.1	2.59	1.98	0.61	0.71	69.4	49.3	UnDef	0.00

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 00-0403-0737-3302
Job No: 00-597SH
Client: JERRY KOVACS
Project: CPT Site Investigation
Site: HOMEPLACE
Location: CPT-3
Engineer: S. MOORE
CPT Date: 00/31/03
CPT Time: 10:04
CPT File: 597C3.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 7.44 (ft): 24.4
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	1.0E-15	0.00	2.4	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
1.48	1.0E-15	0.00	0.1	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
2.46	1.0E-15	0.00	0.1	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
3.44	1.0E-15	0.00	0.0	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
4.43	1.0E-15	0.00	0.0	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
5.41	5.0E-04	0.00	105.2	0.23	9	60.1	0.0	60.1	3.8	42	52.7	1.0	-0.07	0.0	19.6
6.40	5.0E-04	0.00	69.8	0.58	9	43.4	7.3	50.7	10.4	40	43.3	1.0	-0.11	1.4	15.6
7.30	5.0E-04	0.00	57.9	0.37	9	38.5	0.0	38.5	5.0	40	39.9	1.0	-0.05	0.0	12.6
8.20	5.0E-04	0.00	46.3	0.51	9	32.7	10.0	42.7	13.8	38	35.3	1.0	-0.06	1.8	12.5
9.19	5.0E-05	0.00	37.6	1.38	7	28.2	28.3	56.4	23.8	38	30.9	6.0	-0.12	5.0	16.1
10.17	5.0E-05	0.00	37.0	2.48	6	29.1	61.8	90.8	30.5	38	31.9	6.0	-0.18	8.4	19.8
11.15	5.0E-06	0.00	31.9	3.15	6	26.3	105.3	131.6	35.9	UnDef	UnDef	6.0	UnDef	12.9	25.8
12.14	5.0E-06	0.00	25.8	3.10	6	22.3	89.2	111.5	39.3	UnDef	UnDef	6.0	UnDef	10.9	21.8
13.21	5.0E-06	0.01	24.1	2.89	6	21.8	87.2	109.0	39.4	UnDef	UnDef	6.0	UnDef	10.7	21.3
14.27	5.0E-06	0.02	24.2	3.16	6	22.7	90.7	113.4	40.6	UnDef	UnDef	6.0	UnDef	11.1	22.2
15.26	5.0E-06	0.02	22.5	3.37	6	21.9	87.5	109.4	42.9	UnDef	UnDef	6.0	UnDef	10.7	21.4
16.24	5.0E-06	0.01	26.9	3.24	6	26.8	107.0	133.8	39.2	UnDef	UnDef	6.0	UnDef	13.1	26.2
17.22	5.0E-06	0.00	27.4	3.37	6	28.1	112.2	140.3	39.4	UnDef	UnDef	6.0	UnDef	13.7	27.5
18.21	5.0E-06	0.00	32.1	3.49	6	33.5	134.0	167.5	37.3	UnDef	UnDef	6.0	UnDef	16.4	32.8
19.19	5.0E-05	0.01	27.2	2.83	6	29.3	117.3	146.6	37.1	36	32.1	6.0	-0.16	11.5	23.0
20.18	5.0E-06	0.01	23.7	3.22	6	26.3	105.1	131.4	41.3	UnDef	UnDef	6.0	UnDef	12.9	25.7
21.16	5.0E-06	0.01	22.8	3.89	6	26.0	103.9	129.9	44.9	UnDef	UnDef	6.0	UnDef	12.7	25.4
22.15	5.0E-06	0.02	17.1	3.27	6	20.2	80.8	101.0	47.8	UnDef	UnDef	6.0	UnDef	9.9	19.8
23.13	5.0E-06	0.02	15.0	3.14	4	18.3	73.1	91.4	49.8	UnDef	UnDef	6.0	UnDef	8.9	17.9
24.11	5.0E-06	0.02	13.0	2.56	6	16.3	65.1	81.4	49.8	UnDef	UnDef	6.0	UnDef	8.0	15.9
25.10	5.0E-05	0.02	12.1	2.02	6	15.4	61.6	77.1	47.9	30	30.0	3.0	-0.03	6.0	12.1
26.08	5.0E-05	0.02	12.6	1.70	6	16.2	64.9	81.2	44.7	30	30.0	6.0	-0.03	6.4	12.7
27.07	5.0E-05	0.02	10.4	1.52	6	13.7	54.8	68.4	47.5	30	30.0	3.0	0.00	5.4	10.7
28.05	5.0E-05	0.02	8.6	0.89	6	11.7	46.7	58.3	45.6	30	30.0	3.0	0.05	4.6	9.1
29.04	5.0E-05	0.02	8.0	0.58	6	11.1	44.3	55.4	43.1	30	30.0	3.0	0.09	4.3	8.7
30.02	5.0E-05	0.02	6.5	0.41	1	9.3	UnDef	UnDef	100.0	30	30.0	3.0	0.13	UnDef	UnDef
31.00	5.0E-05	0.01	10.6	1.38	6	14.5	57.9	72.4	46.0	30	30.0	3.0	0.00	5.7	11.3
31.99	5.0E-05	0.01	15.4	2.41	6	20.7	82.7	103.4	45.3	32	30.0	6.0	-0.08	8.1	16.2
32.97	5.0E-06	0.00	9.8	2.40	4	13.7	54.9	68.6	55.3	UnDef	UnDef	3.0	UnDef	6.7	13.4
33.96	5.0E-05	0.00	11.8	2.52	6	16.5	65.9	82.4	51.6	30	30.0	3.0	-0.05	6.5	12.9
34.94	5.0E-03	0.00	81.8	1.28	9	106.0	34.7	140.7	14.2	42	68.9	1.0	-0.19	4.7	30.7
35.92	5.0E-02	0.00	225.2	0.86	9	291.7	0.0	291.7	4.5	46	95.0	1.0	-0.25	0.0	57.1
36.91	5.0E-02	0.00	187.6	0.65	9	245.4	0.0	245.4	4.1	44	93.0	1.0	-0.21	0.0	48.0
37.89	5.0E-02	0.00	147.3	0.74	9	194.6	5.7	200.4	6.1	44	86.4	1.0	-0.20	0.7	38.8
38.88	5.0E-02	0.00	141.9	0.76	9	189.3	7.8	197.0	6.5	44	85.6	1.0	-0.20	0.9	38.0
39.86	5.0E-02	0.00	107.6	0.66	9	145.1	10.9	156.0	7.6	42	77.9	1.0	-0.16	1.3	29.7
40.85	5.0E+00	0.00	161.6	0.27	9	218.9	0.0	218.9	1.7	44	89.7	1.0	-0.12	0.0	35.7

Gregg In Situ, Inc.
Run No: 00-0403-0737-3302
CPT File: 597C3.COR

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E+00	0.00	171.9	0.32	9	234.8	0.0	234.8	1.9	44	91.7	1.0	-0.14	0.0	38.3
42.81	5.0E+00	0.00	232.8	0.58	9	319.8	0.0	319.8	2.5	46	95.0	1.0	-0.22	0.0	52.2
43.80	5.0E-02	0.00	181.5	1.06	9	251.8	12.8	264.6	6.8	44	93.7	1.0	-0.25	1.5	50.8

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 00-0403-0737-3324
Job No: 00-597SH
Client: JERRY KOVACS
Project: CPT Site Investigation
Site: HOMEPLACE
Location: CPT-4
Engineer: S. MOORE
CPT Date: 00/31/03
CPT Time: 11:11
CPT File: 597C4.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 6.95 (ft): 22.8
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
0.49	0.0	0.00	0.00	0.0	UnDef	124.1	0.03	0.03	0.00	2.00	UnDef	UnDef	UnDef	0.00
1.48	0.0	0.00	0.00	0.0	UnDef	124.1	0.09	0.09	0.00	2.00	UnDef	UnDef	UnDef	0.00
2.46	0.0	0.00	0.00	0.0	UnDef	124.1	0.15	0.15	0.00	2.00	UnDef	UnDef	UnDef	0.00
3.44	0.0	0.00	0.00	0.0	UnDef	124.1	0.21	0.21	0.00	2.00	UnDef	UnDef	UnDef	0.00
4.43	0.0	0.00	0.00	0.0	UnDef	124.1	0.27	0.27	0.00	1.91	UnDef	UnDef	UnDef	0.00
5.41	50.6	0.08	0.16	1.4	8	120.9	0.34	0.34	0.00	1.73	12.1	20.9	UnDef	0.14
6.40	39.4	0.03	0.07	0.6	8	120.9	0.39	0.39	0.00	1.59	9.4	15.0	UnDef	0.10
7.30	20.1	0.05	0.27	0.3	7	117.8	0.45	0.45	0.00	1.49	6.4	9.6	UnDef	0.00
8.20	12.6	0.24	1.93	4.0	5	114.6	0.50	0.50	0.00	1.41	6.0	8.5	0.97	0.13
9.19	14.7	0.50	3.38	1.6	4	114.6	0.56	0.56	0.00	1.34	9.4	12.6	1.13	0.16
10.17	18.7	0.72	3.81	0.1	4	114.6	0.61	0.61	0.00	1.28	12.0	15.3	1.45	0.23
11.15	21.1	0.78	3.68	0.8	4	114.6	0.67	0.67	0.00	1.22	13.4	16.4	1.63	0.27
12.14	27.7	0.94	3.41	2.0	5	114.6	0.73	0.73	0.00	1.17	13.2	15.5	2.15	0.45
13.21	23.7	0.77	3.24	1.8	5	114.6	0.79	0.79	0.00	1.13	11.4	12.8	1.83	0.29
14.27	24.4	0.66	2.71	3.4	5	114.6	0.85	0.85	0.00	1.09	11.7	12.7	1.88	0.28
15.26	24.4	0.66	2.72	5.3	5	114.6	0.91	0.91	0.00	1.05	11.7	12.3	1.88	0.26
16.24	24.2	0.73	3.02	12.3	5	114.6	0.96	0.96	0.00	1.02	11.6	11.8	1.86	0.24
17.22	23.1	0.72	3.11	13.3	5	114.6	1.02	1.02	0.00	0.99	11.1	11.0	1.77	0.21
18.21	37.3	0.50	1.35	5.2	7	117.8	1.08	1.08	0.00	0.96	11.9	11.5	UnDef	0.12
19.19	18.6	0.24	1.30	4.2	6	114.6	1.13	1.13	0.00	0.94	7.1	6.7	1.40	0.14
20.18	19.6	0.30	1.54	8.9	6	114.6	1.19	1.19	0.00	0.92	7.5	6.9	1.47	0.14
21.16	16.4	0.34	2.07	8.1	5	114.6	1.24	1.24	0.00	0.90	7.8	7.0	1.21	0.11
22.15	18.1	0.45	2.51	14.6	5	114.6	1.30	1.30	0.00	0.88	8.7	7.6	1.34	0.12
23.13	19.1	0.43	2.26	20.4	5	114.6	1.36	1.35	0.01	0.86	9.1	7.9	1.42	0.13
24.11	16.2	0.42	2.59	21.8	5	114.6	1.41	1.37	0.04	0.85	7.7	6.6	1.18	0.11
25.10	15.9	0.32	2.04	28.5	5	114.6	1.47	1.40	0.07	0.85	7.6	6.4	1.15	0.11
26.08	16.0	0.37	2.31	33.4	5	114.6	1.53	1.42	0.10	0.84	7.7	6.4	1.16	0.11
27.07	17.2	0.28	1.65	37.8	6	114.6	1.58	1.45	0.13	0.83	6.6	5.5	1.25	0.11
28.05	14.5	0.28	1.95	38.9	5	114.6	1.64	1.48	0.16	0.82	6.9	5.7	1.03	0.10
29.04	10.4	0.17	1.67	39.9	5	114.6	1.70	1.50	0.19	0.82	5.0	4.1	0.70	0.09
30.02	9.8	0.16	1.59	43.1	5	114.6	1.75	1.53	0.23	0.81	4.7	3.8	0.64	0.09
31.00	15.3	0.21	1.34	39.4	6	114.6	1.81	1.55	0.26	0.80	5.9	4.7	1.08	0.10
31.99	14.9	0.23	1.52	45.4	6	114.6	1.87	1.58	0.29	0.80	5.7	4.5	1.04	0.10
32.97	13.9	0.27	1.92	48.9	5	114.6	1.92	1.60	0.32	0.79	6.7	5.3	0.96	0.09
33.96	119.4	1.38	1.16	30.9	8	120.9	1.98	1.63	0.35	0.78	28.6	22.4	UnDef	0.26
34.94	294.8	1.11	0.38	-9.0	10	127.3	2.04	1.66	0.38	0.78	47.1	36.5	UnDef	0.00
35.92	294.6	1.05	0.36	-16.5	10	127.3	2.10	1.69	0.41	0.77	47.0	36.1	UnDef	0.00
36.91	221.4	0.71	0.32	-16.0	9	124.1	2.17	1.72	0.44	0.76	42.4	32.3	UnDef	0.00
37.89	205.0	0.91	0.44	-13.4	9	124.1	2.23	1.75	0.47	0.75	39.3	29.6	UnDef	0.40
38.88	250.9	0.61	0.24	-8.0	10	127.3	2.29	1.79	0.50	0.75	40.1	30.0	UnDef	0.00
39.86	216.3	1.20	0.56	-7.6	9	124.1	2.35	1.82	0.53	0.74	41.4	30.7	UnDef	0.00
40.85	208.1	0.44	0.21	-7.5	9	124.1	2.41	1.85	0.56	0.74	39.9	29.3	UnDef	0.39

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
41.83	172.4	0.66	0.38	-5.1	9	124.1	2.47	1.88	0.59	0.73	33.0	24.1	UnDef	0.25
42.81	203.8	1.55	0.76	-4.2	9	124.1	2.53	1.91	0.62	0.72	39.0	28.3	UnDef	0.46
43.80	180.4	3.82	2.12	197.5	7	117.8	2.59	1.94	0.66	0.72	57.6	41.4	UnDef	0.00
44.78	161.0	3.62	2.25	786.1	7	117.8	2.65	1.96	0.69	0.71	51.4	36.7	UnDef	0.00
45.77	172.1	3.51	2.04	1162.5	7	117.8	2.71	1.99	0.72	0.71	54.9	38.9	UnDef	0.00
46.75	197.8	4.40	2.23	777.7	7	117.8	2.77	2.02	0.75	0.70	63.1	44.4	UnDef	0.00
47.74	175.1	4.75	2.71	780.1	7	117.8	2.82	2.05	0.78	0.70	55.9	39.1	UnDef	0.00
48.72	158.3	3.81	2.41	698.0	7	117.8	2.88	2.07	0.81	0.69	50.5	35.1	UnDef	0.00
49.70	168.8	4.36	2.59	947.7	7	117.8	2.94	2.10	0.84	0.69	53.9	37.2	UnDef	0.00

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 00-0403-0737-3324
Job No: 00-597SH
Client: JERRY KOVACS
Project: CPT Site Investigation
Site: HOMEPLACE
Location: CPT-4
Engineer: S. MOORE
CPT Date: 00/31/03
CPT Time: 11:11
CPT File: 597C4.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 6.95 (ft): 22.8
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	1.0E-15	0.00	2.4	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
1.48	1.0E-15	0.00	0.1	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
2.46	1.0E-15	0.00	0.1	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
3.44	1.0E-15	0.00	0.0	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
4.43	1.0E-15	0.00	0.0	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
5.41	5.0E-03	0.00	150.0	0.16	9	85.6	0.0	85.6	1.1	44	62.8	1.0	-0.07	0.0	20.9
6.40	5.0E-03	0.00	98.9	0.07	9	61.4	0.0	61.4	2.5	42	53.3	1.0	0.03	0.0	15.0
7.30	5.0E-04	0.00	43.9	0.27	9	29.4	0.0	29.4	5.0	38	32.2	1.0	-0.01	0.0	9.6
8.20	5.0E-06	0.01	24.1	2.01	6	17.4	65.3	82.7	34.6	UnDef	UnDef	6.0	UnDef	8.3	16.8
9.19	5.0E-07	0.00	25.4	3.52	6	19.3	77.1	96.4	41.4	UnDef	UnDef	6.0	UnDef	12.6	25.2
10.17	5.0E-07	0.00	29.5	3.94	6	23.4	93.7	117.1	40.5	UnDef	UnDef	6.0	UnDef	15.3	30.6
11.15	5.0E-07	0.00	30.4	3.80	6	25.2	100.7	125.9	39.4	UnDef	UnDef	6.0	UnDef	16.4	32.9
12.14	5.0E-06	0.00	37.1	3.51	6	31.8	127.0	158.8	35.1	UnDef	UnDef	6.0	UnDef	15.5	31.1
13.21	5.0E-06	0.00	29.1	3.35	6	26.1	104.6	130.7	38.3	UnDef	UnDef	6.0	UnDef	12.8	25.6
14.27	5.0E-06	0.00	27.7	2.81	6	25.9	103.5	129.4	36.6	UnDef	UnDef	6.0	UnDef	12.7	25.3
15.26	5.0E-06	0.01	25.9	2.82	6	25.1	100.2	125.3	37.8	UnDef	UnDef	6.0	UnDef	12.3	24.5
16.24	5.0E-06	0.02	24.2	3.14	6	24.2	96.8	121.0	40.6	UnDef	UnDef	6.0	UnDef	11.8	23.7
17.22	5.0E-06	0.02	21.7	3.26	6	22.4	89.6	111.9	43.1	UnDef	UnDef	6.0	UnDef	11.0	21.9
18.21	5.0E-04	0.00	33.7	1.39	7	35.2	41.9	77.1	25.3	36	37.3	1.0	-0.11	5.9	17.4
19.19	5.0E-05	0.01	15.4	1.39	6	17.1	68.3	85.4	38.3	32	30.0	6.0	-0.03	6.7	13.4
20.18	5.0E-05	0.02	15.5	1.64	6	17.6	70.3	87.9	40.1	32	30.0	6.0	-0.04	6.9	13.8
21.16	5.0E-06	0.02	12.1	2.24	6	14.3	57.4	71.7	49.3	UnDef	UnDef	3.0	UnDef	7.0	14.0
22.15	5.0E-06	0.03	12.9	2.70	6	15.5	62.1	77.7	50.7	UnDef	UnDef	6.0	UnDef	7.6	15.2
23.13	5.0E-06	0.04	13.1	2.43	6	16.1	64.3	80.4	48.8	UnDef	UnDef	6.0	UnDef	7.9	15.7
24.11	5.0E-06	0.04	10.7	2.84	4	13.5	54.0	67.5	55.7	UnDef	UnDef	3.0	UnDef	6.6	13.2
25.10	5.0E-06	0.06	10.3	2.25	6	13.1	52.6	65.7	53.1	UnDef	UnDef	3.0	UnDef	6.4	12.9
26.08	5.0E-06	0.06	10.2	2.55	4	13.1	52.5	65.7	55.2	UnDef	UnDef	3.0	UnDef	6.4	12.9
27.07	5.0E-05	0.07	10.8	1.82	6	14.0	55.8	69.8	49.1	30	30.0	3.0	-0.01	5.5	10.9
28.05	5.0E-06	0.08	8.7	2.19	4	11.7	46.8	58.5	56.6	UnDef	UnDef	3.0	UnDef	5.7	11.4
29.04	5.0E-06	0.12	5.8	1.99	4	8.3	33.2	41.6	65.8	UnDef	UnDef	1.5	UnDef	4.1	8.1
30.02	5.0E-06	0.14	5.2	1.94	4	7.7	30.9	38.6	68.2	UnDef	UnDef	1.5	UnDef	3.8	7.6
31.00	5.0E-05	0.07	8.7	1.52	6	12.0	48.2	60.2	51.5	30	30.0	3.0	0.02	4.7	9.4
31.99	5.0E-05	0.09	8.2	1.73	6	11.6	46.3	57.9	54.6	30	30.0	3.0	0.02	4.5	9.1
32.97	5.0E-06	0.10	7.5	2.22	4	10.8	43.1	53.9	60.6	UnDef	UnDef	3.0	UnDef	5.3	10.5
33.96	5.0E-03	0.01	72.0	1.18	7	91.5	32.4	123.9	14.8	40	64.7	1.0	-0.17	4.4	26.8
34.94	5.0E+00	0.00	176.2	0.38	9	223.8	0.0	223.8	2.3	44	90.4	1.0	-0.15	0.0	36.5
35.92	5.0E+00	0.00	172.7	0.36	9	221.5	0.0	221.5	2.2	44	90.1	1.0	-0.15	0.0	36.1
36.91	5.0E-02	0.00	127.1	0.32	9	165.0	0.0	165.0	3.6	44	81.6	1.0	-0.11	0.0	32.3
37.89	5.0E-02	0.00	115.6	0.45	9	151.4	0.0	151.4	5.0	42	79.2	1.0	-0.13	0.0	29.6
38.88	5.0E+00	0.00	139.2	0.24	9	183.8	0.0	183.8	2.3	44	84.7	1.0	-0.10	0.0	30.0
39.86	5.0E-02	0.00	117.8	0.56	9	157.0	5.1	162.1	6.2	42	80.2	1.0	-0.15	0.6	31.4
40.85	5.0E-02	0.00	111.3	0.22	9	149.9	0.0	149.9	3.2	42	78.9	1.0	-0.07	0.0	29.3

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E-02	0.00	90.5	0.39	9	123.1	0.0	123.1	5.0	42	73.2	1.0	-0.10	0.0	24.1
42.81	5.0E-02	0.00	105.5	0.77	9	144.4	15.3	159.7	8.6	42	77.8	1.0	-0.17	1.8	30.1
43.80	5.0E-04	0.03	91.8	2.15	7	126.9	65.8	192.6	17.8	42	74.1	1.0	-0.26	11.2	52.6
44.78	5.0E-04	0.15	80.6	2.28	7	112.4	72.9	185.3	19.7	42	70.6	1.0	-0.24	12.0	48.6
45.77	5.0E-04	0.21	85.1	2.07	7	119.4	64.8	184.2	18.2	42	72.3	1.0	-0.23	11.0	49.9
46.75	5.0E-04	0.12	96.6	2.26	7	136.2	70.7	206.9	17.8	42	76.1	1.0	-0.26	12.1	56.5
47.74	5.0E-04	0.14	84.2	2.76	7	119.8	92.8	212.6	21.3	42	72.4	1.0	-0.28	14.7	53.7
48.72	5.0E-04	0.14	74.9	2.45	7	107.6	82.9	190.4	21.3	40	69.4	1.0	-0.25	13.1	48.2
49.70	5.0E-04	0.17	79.0	2.63	7	114.0	89.8	203.8	21.5	42	71.0	1.0	-0.26	14.2	51.3

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 00-0403-0737-3351
Job No: 00-597SH
Client: JERRY KOVACS
Project: CPT Site Investigation
Site: HOMEPLACE
Location: CPT-5
Engineer: S. MOORE
CPT Date: 00/31/03
CPT Time: 12:47
CPT File: 597C5.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 8.41 (ft): 27.6
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
0.49	0.0	0.00	0.00	0.0	UnDef	124.1	0.03	0.03	0.00	2.00	UnDef	UnDef	UnDef	0.00
1.48	0.0	0.00	0.00	0.0	UnDef	124.1	0.09	0.09	0.00	2.00	UnDef	UnDef	UnDef	0.00
2.46	0.0	0.00	0.00	0.0	UnDef	124.1	0.15	0.15	0.00	2.00	UnDef	UnDef	UnDef	0.00
3.44	0.0	0.00	0.00	0.0	UnDef	124.1	0.21	0.21	0.00	2.00	UnDef	UnDef	UnDef	0.00
4.43	0.0	0.00	0.00	0.0	UnDef	124.1	0.27	0.27	0.00	1.91	UnDef	UnDef	UnDef	0.00
5.41	32.8	0.27	0.82	0.5	7	117.8	0.33	0.33	0.00	1.73	10.5	18.1	UnDef	0.10
6.40	35.6	0.25	0.70	-0.1	7	117.8	0.39	0.39	0.00	1.60	11.4	18.1	UnDef	0.10
7.30	35.5	0.43	1.20	-1.4	7	117.8	0.45	0.45	0.00	1.50	11.3	17.0	UnDef	0.11
8.20	26.2	0.75	2.88	-0.8	5	114.6	0.50	0.50	0.00	1.42	12.5	17.8	2.06	0.16
9.19	30.5	0.79	2.60	-1.3	6	114.6	0.55	0.55	0.00	1.34	11.7	15.7	2.39	0.15
10.17	35.1	0.32	0.91	0.0	7	117.8	0.61	0.61	0.00	1.28	11.2	14.3	UnDef	0.10
11.15	25.8	0.46	1.80	-0.2	6	114.6	0.67	0.67	0.00	1.22	9.9	12.1	2.01	0.12
12.14	15.3	0.38	2.50	0.3	5	114.6	0.72	0.72	0.00	1.17	7.3	8.6	1.16	0.14
13.21	15.9	0.41	2.59	-0.2	5	114.6	0.79	0.79	0.00	1.13	7.6	8.6	1.21	0.14
14.27	14.3	0.38	2.64	-2.4	5	114.6	0.85	0.85	0.00	1.09	6.9	7.5	1.08	0.12
15.26	18.9	0.44	2.33	-2.3	5	114.6	0.90	0.90	0.00	1.05	9.0	9.5	1.44	0.17
16.24	14.6	0.39	2.68	-2.7	5	114.6	0.96	0.96	0.00	1.02	7.0	7.1	1.09	0.12
17.22	16.3	0.55	3.39	-0.4	4	114.6	1.02	1.02	0.00	0.99	10.4	10.3	1.23	0.13
18.21	17.0	0.63	3.73	2.9	4	114.6	1.07	1.07	0.00	0.97	10.8	10.5	1.27	0.00
19.19	19.6	0.58	2.97	2.6	5	114.6	1.13	1.13	0.00	0.94	9.4	8.8	1.48	0.15
20.18	13.9	0.38	2.71	1.9	5	114.6	1.19	1.19	0.00	0.92	6.6	6.1	1.01	0.10
21.16	14.3	0.39	2.70	3.3	5	114.6	1.24	1.24	0.00	0.90	6.9	6.2	1.05	0.10
22.15	15.6	0.50	3.19	4.7	4	114.6	1.30	1.30	0.00	0.88	9.9	8.7	1.14	0.00
23.13	18.1	0.56	3.10	-3.9	5	114.6	1.35	1.35	0.00	0.86	8.7	7.5	1.34	0.12
24.11	17.3	0.57	3.32	-2.9	4	114.6	1.41	1.41	0.00	0.84	11.1	9.3	1.27	0.00
25.10	13.2	0.40	3.03	-1.5	4	114.6	1.47	1.47	0.00	0.83	8.4	6.9	0.94	0.00
26.08	13.8	0.44	3.17	0.3	4	114.6	1.52	1.52	0.00	0.81	8.8	7.2	0.99	0.00
27.07	13.6	0.39	2.83	1.1	5	114.6	1.58	1.58	0.00	0.80	6.5	5.2	0.96	0.00
28.05	12.4	0.26	2.10	2.4	5	114.6	1.64	1.62	0.01	0.79	5.9	4.7	0.86	0.09
29.04	11.8	0.21	1.80	3.5	5	114.6	1.69	1.65	0.04	0.78	5.6	4.4	0.81	0.09
30.02	27.1	0.70	2.58	3.8	6	114.6	1.75	1.67	0.08	0.77	10.4	8.0	2.03	0.18
31.00	45.7	1.12	2.45	0.7	6	114.6	1.81	1.70	0.11	0.77	17.5	13.4	3.51	0.00
31.99	17.9	0.44	2.48	-5.7	5	114.6	1.86	1.73	0.14	0.76	8.6	6.5	1.28	0.11
32.97	12.9	0.35	2.74	-4.5	5	114.6	1.92	1.75	0.17	0.76	6.2	4.7	0.88	0.00
33.96	11.6	0.28	2.38	-4.0	5	114.6	1.97	1.78	0.20	0.75	5.6	4.2	0.77	0.09
34.94	25.0	0.67	2.70	-0.2	5	114.6	2.03	1.80	0.23	0.75	12.0	8.9	1.84	0.15
35.92	23.2	0.88	3.79	1.7	4	114.6	2.09	1.83	0.26	0.74	14.8	11.0	1.69	0.00
36.91	16.8	0.72	4.29	0.9	3	111.4	2.14	1.85	0.29	0.73	16.1	11.8	1.17	0.00
37.89	13.1	0.55	4.21	-2.2	3	111.4	2.20	1.88	0.32	0.73	12.6	9.2	0.88	0.00
38.88	20.7	0.57	2.77	-4.8	5	114.6	2.25	1.90	0.35	0.73	9.9	7.2	1.48	0.12
39.86	18.0	0.66	3.67	-3.5	4	114.6	2.31	1.93	0.38	0.72	11.5	8.3	1.26	0.00
40.85	64.6	0.66	1.02	-6.0	8	120.9	2.37	1.95	0.41	0.72	15.5	11.1	UnDef	0.15

Gregg In Situ, Inc.
Run No: 00-0403-0737-3351
CPT File: 597C5.COR

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
41.83	83.8	0.90	1.07	-4.8	8	120.9	2.43	1.98	0.44	0.71	20.1	14.2	UnDef	0.17
42.81	16.7	0.22	1.31	-5.4	6	114.6	2.49	2.01	0.48	0.71	6.4	4.5	1.14	0.10
43.80	17.2	0.25	1.48	-4.5	6	114.6	2.54	2.04	0.51	0.70	6.6	4.6	1.17	0.10
44.78	60.4	0.47	0.78	-2.0	8	120.9	2.60	2.06	0.54	0.70	14.5	10.1	UnDef	0.13
45.77	40.3	0.98	2.43	0.1	6	114.6	2.66	2.09	0.57	0.69	15.4	10.7	3.01	0.32
46.75	61.7	1.58	2.56	6.0	6	114.6	2.71	2.12	0.60	0.69	23.6	16.2	4.72	0.00
47.74	133.7	3.53	2.64	46.9	7	117.8	2.77	2.14	0.63	0.68	42.7	29.2	UnDef	0.00
48.72	169.6	3.60	2.12	245.0	7	117.8	2.83	2.17	0.66	0.68	54.1	36.8	UnDef	0.00
49.70	169.8	3.58	2.11	424.8	7	117.8	2.89	2.20	0.69	0.67	54.2	36.6	UnDef	0.00
50.69	166.2	3.11	1.87	967.4	8	120.9	2.95	2.23	0.72	0.67	39.8	26.7	UnDef	0.00
51.67	160.1	4.08	2.55	965.8	7	117.8	3.00	2.25	0.75	0.67	51.1	34.1	UnDef	0.00
52.66	162.3	2.53	1.56	1443.1	8	120.9	3.06	2.28	0.78	0.66	38.9	25.7	UnDef	0.45

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 00-0403-0737-3351
Job No: 00-597SH
Client: JERRY KOVACS
Project: CPT Site Investigation
Site: HOMEPLACE
Location: CPT-5
Engineer: S. MOORE
CPT Date: 00/31/03
CPT Time: 12:47
CPT File: 597C5.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 8.41 (ft): 27.6
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	1.0E-15	0.00	2.4	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
1.48	1.0E-15	0.00	0.1	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
2.46	1.0E-15	0.00	0.1	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
3.44	1.0E-15	0.00	0.0	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
4.43	1.0E-15	0.00	0.0	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
5.41	5.0E-04	0.00	97.2	0.83	9	55.6	7.9	63.5	9.7	42	50.4	1.0	-0.17	1.5	19.7
6.40	5.0E-04	0.00	89.7	0.71	9	55.6	7.4	63.0	9.4	42	50.5	1.0	-0.15	1.4	19.6
7.30	5.0E-04	0.00	78.6	1.21	9	52.0	16.9	68.9	14.2	42	48.5	1.0	-0.18	3.1	20.0
8.20	5.0E-06	0.00	51.6	2.93	7	36.3	57.2	93.5	27.9	UnDef	UnDef	10.0	UnDef	11.0	28.8
9.19	5.0E-05	0.00	54.0	2.65	7	40.1	51.4	91.5	26.1	40	41.1	10.0	-0.24	8.5	24.2
10.17	5.0E-04	0.00	56.4	0.92	7	44.0	17.0	61.0	15.4	40	43.7	1.0	-0.13	3.0	17.4
11.15	5.0E-05	0.00	37.6	1.85	7	30.9	42.8	73.7	26.8	38	33.6	6.0	-0.15	6.9	19.0
12.14	5.0E-06	0.00	20.1	2.63	6	17.6	70.3	87.8	41.4	UnDef	UnDef	6.0	UnDef	8.6	17.2
13.21	5.0E-06	0.00	19.2	2.73	6	17.5	70.2	87.7	42.8	UnDef	UnDef	6.0	UnDef	8.6	17.2
14.27	5.0E-06	-0.01	15.9	2.81	6	15.3	61.0	76.3	46.9	UnDef	UnDef	6.0	UnDef	7.5	14.9
15.26	5.0E-06	0.00	19.9	2.45	6	19.5	77.8	97.3	40.6	UnDef	UnDef	6.0	UnDef	9.5	19.0
16.24	5.0E-06	-0.01	14.2	2.86	6	14.6	58.4	73.0	49.5	UnDef	UnDef	6.0	UnDef	7.1	14.3
17.22	5.0E-07	0.00	15.1	3.61	4	15.9	63.4	79.3	52.0	UnDef	UnDef	6.0	UnDef	10.3	20.7
18.21	5.0E-07	0.01	14.8	3.98	1	16.0	UnDef	UnDef	100.0	UnDef	UnDef	6.0	UnDef	UnDef	UnDef
19.19	5.0E-06	0.00	16.4	3.15	6	18.0	72.2	90.2	48.1	UnDef	UnDef	6.0	UnDef	8.8	17.7
20.18	5.0E-06	0.00	10.7	2.96	4	12.5	49.8	62.3	56.5	UnDef	UnDef	3.0	UnDef	6.1	12.2
21.16	5.0E-06	0.01	10.5	2.96	4	12.6	50.3	62.9	56.8	UnDef	UnDef	3.0	UnDef	6.2	12.3
22.15	5.0E-07	0.01	11.0	3.48	1	13.4	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
23.13	5.0E-06	-0.01	12.4	3.35	4	15.2	61.0	76.2	55.1	UnDef	UnDef	3.0	UnDef	7.5	14.9
24.11	5.0E-07	-0.01	11.3	3.61	1	14.3	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
25.10	5.0E-07	0.00	8.0	3.41	1	10.6	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
26.08	5.0E-07	0.00	8.1	3.57	1	11.0	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
27.07	5.0E-06	0.00	7.6	3.20	1	10.6	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
28.05	5.0E-06	0.01	6.6	2.42	4	9.5	38.1	47.6	65.2	UnDef	UnDef	3.0	UnDef	4.7	9.3
29.04	5.0E-06	0.01	6.1	2.10	4	9.0	36.0	44.9	65.1	UnDef	UnDef	1.5	UnDef	4.4	8.8
30.02	5.0E-05	0.00	15.2	2.76	6	20.5	82.1	102.6	47.6	32	30.0	6.0	-0.09	8.0	16.1
31.00	5.0E-05	0.00	25.8	2.55	6	34.3	137.3	171.6	36.5	34	36.6	6.0	-0.14	13.4	26.9
31.99	5.0E-06	-0.02	9.3	2.76	4	13.3	53.3	66.6	58.7	UnDef	UnDef	3.0	UnDef	6.5	13.0
32.97	5.0E-06	-0.03	6.3	3.22	1	9.6	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
33.96	5.0E-06	-0.03	5.4	2.87	4	8.5	34.2	42.7	73.7	UnDef	UnDef	1.5	UnDef	4.2	8.4
34.94	5.0E-06	-0.01	12.7	2.93	4	18.2	72.8	91.0	52.3	UnDef	UnDef	6.0	UnDef	8.9	17.8
35.92	5.0E-07	-0.01	11.6	4.17	1	16.8	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
36.91	5.0E-08	-0.02	7.9	4.92	1	12.1	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
37.89	5.0E-08	-0.04	5.8	5.05	1	9.4	UnDef	UnDef	100.0	UnDef	UnDef	1.5	UnDef	UnDef	UnDef
38.88	5.0E-06	-0.03	9.7	3.11	4	14.7	58.9	73.6	59.5	UnDef	UnDef	3.0	UnDef	7.2	14.4
9.86	5.0E-07	-0.03	8.1	4.21	1	12.7	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
0.85	5.0E-03	-0.01	31.8	1.06	7	45.2	44.4	89.6	23.6	36	44.5	1.0	-0.08	5.0	16.0

Gregg In Situ, Inc.
Run No: 00-0403-0737-3351
CPT File: 597C5.COR

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E-03	-0.01	41.0	1.11	7	58.2	41.5	99.7	20.6	38	51.8	1.0	-0.11	5.0	19.3
42.81	5.0E-05	-0.05	7.1	1.54	4	11.5	46.1	57.6	56.8	30	30.0	3.0	0.03	4.5	9.0
43.80	5.0E-05	-0.04	7.2	1.73	4	11.8	47.1	58.9	58.0	30	30.0	3.0	0.02	4.6	9.2
44.78	5.0E-03	-0.01	28.0	0.81	7	41.1	38.7	79.8	23.2	36	41.8	1.0	-0.05	4.4	14.4
45.77	5.0E-05	-0.01	18.0	2.60	6	27.3	109.2	136.4	43.3	32	30.1	6.0	-0.11	10.7	21.4
46.75	5.0E-05	-0.01	27.9	2.68	6	41.5	166.0	207.5	35.9	36	42.1	6.0	-0.16	16.2	32.5
47.74	5.0E-04	0.01	61.1	2.70	7	89.4	99.6	189.0	24.7	40	64.1	1.0	-0.25	14.3	43.5
48.72	5.0E-04	0.04	76.9	2.16	7	112.7	72.4	185.1	19.7	40	70.7	1.0	-0.24	11.9	48.7
49.70	5.0E-04	0.08	76.0	2.14	7	112.1	72.4	184.5	19.7	40	70.5	1.0	-0.24	11.9	48.5
50.69	5.0E-03	0.18	73.4	1.91	7	109.1	64.2	173.3	18.9	40	69.8	1.0	-0.20	8.1	34.7
51.67	5.0E-04	0.19	69.7	2.60	7	104.4	93.9	198.3	22.7	40	68.5	1.0	-0.24	14.3	48.4
52.66	5.0E-03	0.28	69.8	1.59	7	105.2	53.7	158.8	17.7	40	68.7	1.0	-0.16	6.9	32.6

APPENDIX E

HISTORICAL RESOURCES REPORT

WEDDINGTON GOLF & TENNIS CLUB
Historic Resources Assessment Report

4141 Whitsett Ave.
Studio City, Los Angeles, California

prepared for:
Planning Associates Inc
4040 Vineland Ave, Suite 108
Studio City, CA 91604

prepared by:
Architectural Resources Group, Inc.
Architects, Planners & Conservators
65 N. Raymond Ave., No. 220
Pasadena, CA 91103

January 30, 2012

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Table of Contents

I. Introduction

At the request of Planning Associates, Inc., Architectural Resources Group (ARG) has completed a historic resources assessment of the Weddington Golf and Tennis Club located at 4141 Whitsett Avenue in Studio City, California. ARG's assessment of the potential historic resources on the site serves as the basis for review of the project based on the requirements of the California Environmental Quality Act (CEQA) to identify the impacts of the proposed project on potential historic and cultural resources. CEQA Section 21084.1 states "a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment."

CEQA defines substantial adverse change in the significance of a resource as the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the resource is materially impaired (CEQA Guidelines 15064.5). Under CEQA, the significance of an historical resource is considered to be materially impaired when a project demolishes or materially alters in an adverse manner those characteristics that convey its historical significance and account for its inclusion on an historical resource list. ARG staff's understanding of the proposed project is based on plans, a project description, and proposed site plan prepared by Franco & Associates, Inc. and dated January 23, 2008 and updated December 23, 2011 provided to ARG by Planning Associates, Inc. The site plan overlay illustrating the effect on the existing golf and tennis facilities is attached at the end of this report.

On May 29, 2007, ARG representatives visited the project site to document existing conditions. Research was conducted at the Los Angeles Public Library and at the Los Angeles Building Department. In addition, an informal interview was conducted with George McCallister, Jr. on May 29, 2007 to gather oral history.

ARG first evaluated the significance of the property in 2007 and has evaluated several iterations of the proposed project as it has developed since that time. As a result of our evaluation, we found that the property appears eligible for the California Register of Historical Resources, with the exclusion of the tennis facilities, and therefore was significant for purposes of CEQA. The project that ARG has reviewed for this final report appears to meet the Secretary of the Interior's Standards and will not have a significant impact on the historic resource of the golf club.

NOTE: The Weddington Golf and Tennis Club was historically called the Studio City Golf and Tennis Club. For the purposes of this report, it is referred to by its current name, except when appropriate for historical context.

II. Existing Conditions

The project site is located within the boundaries of Studio City, which is a part of the City of Los Angeles located in the San Fernando Valley. Residential neighborhoods occupy most of the surrounding land to the north, east and west. The Los Angeles River channel and Ventura

Boulevard, a major commercial thoroughfare, are directly south of the property.

Site

The Weddington Golf and Tennis Club is located at 4141 Whitsett Avenue, at the southwest corner of Whitsett and Valley Spring Lane. The triangular site is 16.1 acres with a flood control channel forming the diagonal southwestern boundary, Valley Spring Drive the northern boundary, and Whitsett Avenue the eastern boundary. A short length of Bellaire Ave. forms the western boundary. The southernmost section of the property extends into the public right-of-way for Valleyheart Drive and the Los Angeles River. The property's public entrance is oriented to the east toward Whitsett Avenue. An asphalt drive with flanking parking serves as entrance and exit. A putting green and clubhouse at the property's northeastern corner signal the property's use. The majority of the property maintains a park-like setting as a result of the landscaping and mature trees. The southeastern corner of the parcel is dedicated for tennis use and, most recently, a portion of that area has been given over to the City of Los Angeles for use as a fire station.

Cultural Landscape Elements

According to the current property manager, virtually all design elements of the property were explicitly outlined in a conditional use permit. The recreational property is composed of multiple contributing elements. Golf-related resources include: a one-story clubhouse; a 24-stand, 230-yard driving range; a 9-hole, par 3 golf course; and a putting green. Tennis-related resources include: a small club structure and 16 concrete courts located in staggered rows at the southeast portion of the property, adjacent to the fire station site. Other elements include: a maintenance structure east of the tennis courts at the southern property line.


Putting Green


Clubhouse Exterior


Clubhouse Entrance

Clubhouse Interior: Fireplace

Clubhouse Interior: Lunch Counter

Clubhouse Interior: Pro Shop

Clubhouse

The Weddington Golf and Tennis Club features a one-story clubhouse building near the southwest corner of Whitsett Avenue and Valley Spring Lane, on the northwest corner of the subject property. The building sits at an angle facing the corner. Its front lawn is a putting green, with a low, nonoriginal brick wall with weeping mortar bordering the street that replaced an earlier split rail fence. A walkway parallel to the front of the building approaches the entrance from the parking lot to the south.

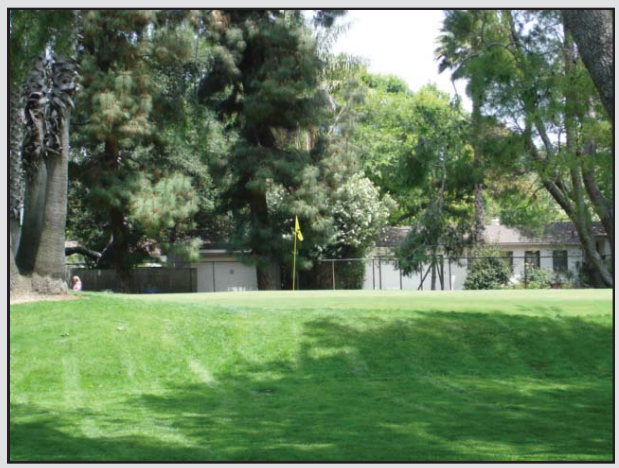
The clubhouse is wood frame construction on a concrete slab-on-grade foundation. It has a wood shingle-clad, side-gabled roof with deep eaves along the front and rear of the building to create generous overhangs. The front overhang is supported by square wood posts. The exterior cladding of the building is painted board and batten siding. The north side contains utility uses, with a shed-roofed garage (its roof parallel to the main gable) and a small shed (its roof perpendicular to the main gable, attached to the wall) and an exterior vestibule at the back of the pro shop enclosed with chain link fencing.

The recessed entrance is sheltered beneath the overhang, with the entrance and the glass wall of the front of the building recessed from the eave line. Large, low planters to the north and south of the entrance hold shrubs and small trees that pass upwards through rectangular cut-outs in the front slope of the roof. The entrance is on grade, with aluminum-frame glass doors and full-height plate glass windows to either side. It is not clear whether these expanses of glass are original or alterations. Inside the entrance, the main interior space is a reception room. The tile and carpet floor of the clubhouse is not original, nor is the wallpaper above the paneling or large mirror on the south wall, but most other features of the interior have changed very little, leaving the clubhouse with high interior integrity. Knotty pine paneling covers the walls up to a datum line set by the east (entrance) and west (rear) walls. The major feature of the reception room is a slab fireplace wall extending from floor to ceiling and clad in variegated brick. The rectangular cutout of the fireplace box is surrounded by two wrought iron, six-arm light fixtures that carry shaded hurricane lanterns. A matching four-arm fixture hangs near the pro shop desk. The reception space is flanked by offices to the north and restrooms to the south. The rear entrance to the greens is on axis with the front door, with an enclosed coffee shop to the south and a pro shop to the north.

The coffee shop or lunch counter is enclosed with wood-framed glass panels on the north side and at the entrance, directly north of the fireplace. The space has an open painted wood beamed ceiling with diagonal tongue and groove boards. The open kitchen on the south wall has a large copper hood, and an L-shaped laminate counter with built-in stools provides seating. Windows along the west wall look out to the greens side of the building, including a window for walk-up service.

The pro shop area, adjacent to the rear entrance, is marked by a high, L-shaped counter with wood paneling on the front similar to that seen in the rest of the interior. A small decorative corbelled shelf lines the opening. The rear patio of the clubhouse is partly shaded by the deep overhang of the roof. Extending from the south end of the rear patio of the clubhouse is a long open structure that serves as a shelter for golfers using the driving range. This structure has a shed roof that slopes upwards toward the west (i.e., toward the driving range). Its roof has a slight fan shape, with the beams converging toward the concave front of the structure. Each column bay has three berths for golfers using the driving range, separated with ground-mounted metal mesh dividers.

Clubhouse Rear Exterior



Second Hole Green

Third Hole Tee

Fourth Hole-View From Tee

Sixth Hole Green

Eighth Hole Green

Golf Course

The nine-hole, par three golf course is laid out along the property lines that abut Valley Spring Lane, Bellaire Avenue on the west, and the river channel on the south. The course loops around the property, partially encircling the driving range, and winds its way back to the clubhouse. Concrete pads mark tees on each of the holes.

Upon exiting the clubhouse's eastern door, the first tee of the golf course is located a few yards due west of the clubhouse exit, immediately adjacent to (north of) the driving range fence. The fairway extends roughly 105 yards west of the concrete tee. Mature trees line both sides of the fairway, visually separating the first hole from the driving range to the south and the ninth hole to the north.

The second hole runs along the northern property line with the tee located on a northeasterly diagonal from the first green. The second fairway extends 130 yards to the second green, which is located on a small rise close to the northwestern corner of the property. A row of mature eucalyptus trees buffers the second fairway from the property line to the north.

With a tee located at the northwest corner of the property, the third hole runs parallel to the western property line. The short, 75-yard fairway drops gently down to the green at the southwestern corner of the property, which is partially surrounded by a low decorative split rail fence. A row of mature Canary Island and Aleppo pine trees, with a few interspersed olive trees, lines the western edge of the third fairway, along Bellaire Avenue.

The fourth hole tees off just east of the third green and runs parallel to the river channel's path, roughly 105 yards. The fourth green is located at the approximate midpoint of the property's southern boundary along the edge of the river channel.

The fifth and sixth holes have been reconfigured from their original 1958 design. Originally, the fifth hole followed a dog-leg pattern with the tee located adjacent to a wider driving range. The fairway opened to a wide triangle, its base lined with mature eucalyptus trees that still stand and separate the property from Whitsett Avenue. Originally, the oval-shaped fifth green was located at the southeastern corner of the property. Following the addition of tennis courts and division of the driving range in the 1970s, the fifth hole now runs along the south fence of the driving range for approximately 115 yards. The sixth hole, originally positioned parallel to the river wash, now runs parallel to the fifth hole but in the opposite direction, with its green located at the edge of the property along the river. The sixth fairway measures 105 yards.

From the sixth green, a player reaches the seventh tee by walking a short northwesterly diagonal between the fourth green and the fifth tee. A tall row of mature Mexican fan palm trees separates the seventh fairway from the fourth immediately to the south. The seventh green sits atop a short hill, directly east of the third green near the property's southwest corner. The fairway extends 115 yards to the green, located on a short rise above and immediately east of the third green.

From the course's eastern end, the eighth and ninth holes direct the player back to the clubhouse and the property's northeastern corner. The eighth tee is adjacent to the third fairway, between the seventh and second greens. The fairway extends 135 yards, lined on both sides by a row of mature palms, culminating at the kidney-shaped green immediately adjacent to the driving range's northwestern corner.

The ninth tee is reached by traveling a short northeasterly diagonal between the second tee and the first green. The ninth tee has been moved slightly east from its original

Ninth Hole-Tee & Fairway

Driving Range Shelter

Light Standards


Tennis Clubhouse


Tennis Courts


Tennis Courts-Walkway view towards driving range

location (which is still visible), foreshortening the ninth fairway to just 90 yards. A row of mature eucalyptus trees and Mexican fan palms line the northern property line along the ninth fairway. The green is located atop a slight rise. The length of the hole parallels the property's northern property line, returning the player to the clubhouse entrance.

Driving Range

A 24-stand driving range is located between the clubhouse and the tennis area. A wood, shed-style canopy shelters the northern half of the stands. Temporary awnings provide shelter to the stands on the south end. Extending 230 yards, the driving range is located directly southwest of the golf clubhouse and is enclosed by a high fence.

Light Standards

Eight original light standards, designed in the form of a golf ball set atop a tee, line the fence along the Whitsett Avenue parking lot and provide light to the driving range. The parking lot has not changed in configuration from the original (see aerial photo, p. 21) and so presumably the light standards are in their original locations. According to the current property manager, one of the historic standards has been removed. These standards have been retrofitted with new 1000-watt stadium style lights that replaced 750-watt incandescent lights that are no longer manufactured.

Tennis House

The tennis office was constructed in 1974, when tennis courts were added to the facility. The style of the building was patterned after that of the main clubhouse. It has a front-gabled roof clad in wood shingles facing west toward the tennis courts. A separate flat canopy of open beams for a shade structure is attached to the front façade and supported on metal posts. The exterior siding is board and batten, and the fenestration, concentrated at the west end, consists of large, square aluminum-frame sliding windows. The front door, and a side door on the north side, have a large single light over an inset panel with a cross-timber detail. The tennis office and the adjoining courts were constructed outside of the period of significance for the site, and so are not considered historic features of the site.

Tennis Courts

Sixteen concrete tennis courts are situated, in a staggered pattern, at the southeastern corner of the property. Four courts of the original twenty were demolished as part of the construction of the fire station.

Maintenance Structure

A temporary maintenance building has been constructed at the southern end of the property, behind the tennis courts. A previous maintenance structure, constructed in 1966, was demolished as part of the fire station project. The current structure is essentially a fenced yard with a roof; chain link fence with a windscreen form the structure's "walls." This structure does not contribute the significance of the property.

Maintenance Green

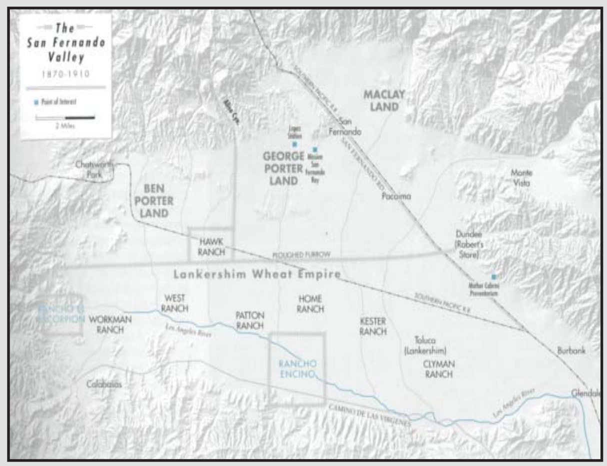
A small maintenance green, used to grow and harvest patch sod, is located at the southeastern corner of the tennis area, behind the fire station.

III. Historical Background and Context

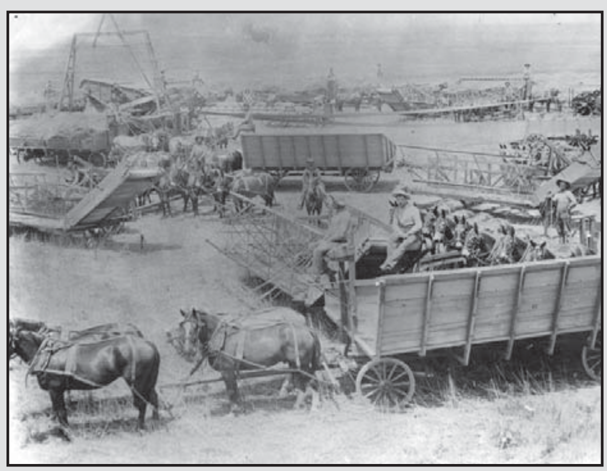
San Fernando Valley

The history of the San Fernando Valley is largely a story of its development. What was an undeveloped and arid valley of ranchos 150 years ago has been transformed into a dense urbanized "suburb" with a population of over 1.7 million (Roderick 2001, *v*). Through its short history, the San Fernando Valley has been home to some of the nation's largest agricultural

Pio Pico (L.A. Public Library)



San Fernando Valley 1870-1910 (Roderick 2001)



San Fernando Valley Farm 1890 (L.A. Public Library)

January 30, 2012

producers, the rise of the film industry, a central hub for the aviation and defense industry, and most importantly, a relentless real estate growth machine that subdivided the valley and sold its image of the good life to people throughout the United States and the world. Infrastructure investments have been vital to this development. The Southern Pacific Railroad made the Valley accessible, providing an essential link to a nation-wide consumer market for the Valley's agricultural products and a steady supply of new residents. The arrival of a reliable water source through the Los Angeles Aqueduct supported dramatic growth. The Pacific Electric streetcar system linked the Valley within the Los Angeles region, enabling further access to vacant land for development. Most famously, the advent of the automobile and the mass-produced housing industry spread the Valley's prototypical subdivisions across nearly all remaining open spaces.

Early Growth

The modern history of the San Fernando Valley began in 1869 when Pio Pico, the last Mexican governor of *Alta California*, sold his land to Isaac Lankershim, a farmer who had immigrated to California from Pennsylvania (Roderick 2001, 32). Pico's Valley holdings were vast, and he controlled nearly the whole southern half of the Valley. Previously, Pico had owned most of the land in the Valley, but was forced to sell half of it to raise funds for the unsuccessful war effort against the United States (Roderick 2001, 26). After the Lankershim sale, the heirs to the land that Pico sold to Eulogio de Celis, a Spanish businessman from Los Angeles, put their holdings up for sale. Railroad baron Leland Stanford, interested in expanding the market for the Southern Pacific, helped make a deal, convincing California State Senator Charles Maclay to purchase the de Celis land and build a new town. In return, Stanford would link the town to Los Angeles with the Southern Pacific Railroad (Roderick 2001, 34). Between Maclay and his two partners Ben and George Porter, the northern half of the Valley had been divided into three major parcels, and the first town, San Fernando, had been founded (Roderick 2001, 42).

The railroad arrived in San Fernando in 1874, and it proved to be an effective tool for growth, quickly sparking expansion in other areas of the Valley (Roderick 2001, 38). Maclay created a new 20,000-acre subdivision north of San Fernando, and George Porter sold off a large parcel of land south of the Mission. During the real estate boom of the 1880's, several new towns were formed in Southern California, including Pacoima and Glendale in the Valley (Roderick 2001, 43). While a real estate slowdown of the 1890's briefly stopped most growth, several valley towns, including Glendale, Burbank, and San Fernando, persisted (Roderick 2001, 44).

Initially, the Lankershim ranch remained an agricultural operation. It was first a sheep farm, but after a major drought in the 1870's killed most of the flock, Lankershim switched to wheat and became, at that time, the largest producer in the world (Roderick 2001, 44). The move towards real estate occurred in 1882 when Isaac Lankershim died, deeding half of his land to his son James Lankershim, and the other half to his son-in-law Isaac Van Nuys. While Van Nuys continued the wheat operation, James Lankershim entered the new town business, subdividing 12,000 acres of the family land east of Whittsett Avenue and founding the town of Toluca (now North Hollywood) (Roderick 2001, 45). Lankershim sold off the land in 40-acre ranches. The mild climate and fertile soils proved to be excellent conditions for growing fruit trees, a strong selling point for many local residents as well as those from across the country (Roderick 2001, 45).

End of Large Scale Agriculture

A key moment in the Valley's transition from agricultural production to residential enclave was announced in 1909, when Van Nuys sold the remaining Lankershim lands for development to Los Angeles interests (Roderick 2001, 48). The buyers, who subsequently formed the development company The Los Angeles Suburban Homes Co., were the elite of Los Angeles: Chandler, business manager of the Los Angeles Times; Otis, owner of the Times; Sherman, a streetcar baron; Brant, an insurance magnate; and Whitley, a real estate man who managed the Hollywood subdivision (Roderick 2001, 56). The deal essentially put half of the Valley into the possession of the company, but the firm did not gain water rights with the deal because of a vested system dating to when the region was under Spanish control (Roderick 2001, 56). Without a reliable water supply, development opportunities were limited, but a solution was soon to come: On November 5, 1913, the Los Angeles Aqueduct, designed by William Mulholland, delivered Owens Valley water to the Valley for the first time (Roderick 2001, 53-54). The arrival of water secured the Valley's future as a residential suburb, allowing it to dramatically expand in population beyond what could previously have been supported.

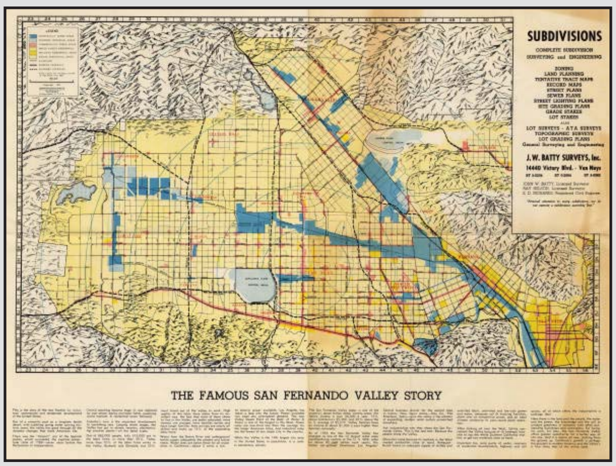
After the completion of the aqueduct, the Los Angeles Suburban Homes Co. submitted Tract Map 1000, the largest ever filed in Los Angeles County (Roderick 2001, 57). New towns of Van Nuys, Marion (now Reseda) and Owensmouth (now Canoga Park), were established, linked by Sherman Way, a paved roadway with a streetcar line (Roderick 2001, 57-58). The first electric trolleys came December 16, 1911, connecting Van Nuys to Lankershim and Hollywood through the Cahuenga Pass, enabling commuters to travel to jobs in Downtown Los Angeles from their


L.A. Aqueduct Opening, 1913 (CSUN Library)

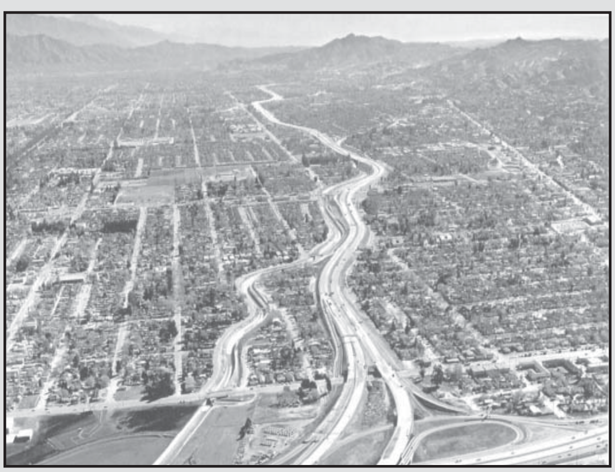

1st Red Car to North Hollywood, 1911 (CSUN Library)


Sherman Way East View, Circa 1930 (CSUN Library)

Lockhead Air Terminal Circa 1941 (CSUN Library)



San Fernando Valley Subdivsion Map, 1956 (CSUN Libraary)



Ventura Freeway in Encino, 1960 (Roderick 2001, 2)

residences in the Valley (Roderick 2001, 59). Though the Los Angeles Aqueduct provided a reliable water supply for Valley residents, water rights were controlled by the City of Los Angeles, which used its muscle to force most Valley communities to join the city. On March 29, 1915, with the exception of San Fernando, Burbank, Glendale, and Calabasas, most Valley communities agreed to be annexed by the city (Roderick 2001, 62).

Growth in Valley Industry

Soon after the birth of the film industry in Los Angeles, the Valley attracted film production because of its diversity of terrain and bright natural light. In 1912, Universal became the first film studio to operate out of the Valley, utilizing its ranch along the base of the Cahuenga Pass for filming (Roderick 2001, 86). The Universal ranch was simultaneously developed both as a back lot as well as a residential neighborhood for studio workers, opening under the name "Universal City" in 1915 (Roderick 2001, 86).

Like Universal City, Studio City was conceived as a combined studio, commercial development and residential subdivision. Begun in 1926 on what had been a lettuce farm located along Ventura Blvd., the 500-acre parcel eleven miles north of downtown Los Angeles included a production studio for Sennet Studios, commercial developments along Ventura Boulevard, and nearby residential subdivisions. The first subdivision of the Studio City development, Maxwell Terrace, opened at Ventura Boulevard and Laurel Canyon Boulevard. Sennet became Revolution Studios, home to some of the leading Hollywood stars of the era: Gene Autry, Roy Rogers, and John Wayne (Roderick 2001, 89; Pitt & Pitt 1997, 488).

The aviation and defense industry was also vital to the growth of the Valley, especially during the periods leading up to and following World War II.

By the end of the 1950's, nine of the ten biggest Valley manufacturers served defense contracts, the largest of which was Lockheed, which had moved to Burbank from Hollywood in 1938 (Roderick 2001, 133).

Postwar Suburban Expansion

After the War, the Valley entered a new phase in its development, with its suburban neighborhoods widely promoted to returning GI's and their families. Five years after the war, the population of the valley doubled to 402,538 residents. If considered separately from the city of Los Angeles, the Valley would have been the ninth largest urban area in the United States (Roderick 2001, 122). Migration was largely driven by a booming postwar economy, led by the defense industry that provided thousands of new jobs in aviation (Hise 1997, 8).

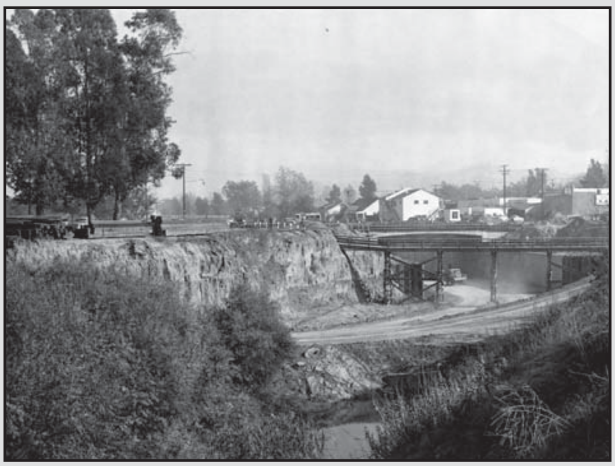
Considerable effort was given, both through government policy and private market efforts, to meet the demand for new housing that this massive workforce required (Hise 1997, 8). The goal was to provide ownership opportunities to all employed workers who had previously been unable to afford homes, though restrictive covenants in most new suburban subdivisions limited their availability to non-whites (Hise 1997, 7). This era marked the beginning of large-scale standardized practices now typical of suburban development, where developers would both subdivide as well as build homes, rather than sell lots to small scale builders (Hise, 1997, 136). Individual developers offered entire neighborhoods of small homes with just slight variations on floor plans and exterior treatments to conserve cost (Roderick 2001, 126). Federal mortgage guarantees through the Federal Housing Administration encouraged lenders to offer loans that made homeownership attainable to young middle-class—or approaching middle-class—families by dramatically lengthening repayment periods and decreasing required down payments (Hise 1997, 40).

Communities were designed and built to be complete neighborhoods, with schools, churches, shopping centers and parks located within a close drive of residential streets. Typically, subdivisions were also located near important industrial employment centers, such as the concentration of defense contractors in the Valley (Hise 1997, 187). Neighborhoods were promoted for their balance of work and recreation opportunities that had previously been unavailable to the average middle-class citizen. Homes, though small, were outfitted with appliances that provided the convenience of modern life at a reasonable price. Small backyards provided open space for children's play, barbeques, and other informal gatherings.

This era marked the crowning of the automobile as the primary means of transportation within the Los Angeles region. The Cahuenga Pass was upgraded to freeway status in 1947 and connected with the Ventura Freeway in 1960, completing a freeway spine through the valley. The San Diego freeway was finished in 1962, providing a link through the Sepulveda Pass to the West Side of the City of Los Angeles (Roderick 2001, 136). High capacity arterial roads lined with commercial development connected new residential subdivisions with the freeways. What had been a primary regional transportation link, the electric trolley, ceased operation in the Valley on December 29, 1952 (Roderick 2001, 123).

The more recent history of the Valley is one of continued urbanization, with extensive population

L.A. River Flood Damage, Vineland Ave., 1938
(CSUN Libraary)



L.A. River at Whittsett Ave, 1949 (L.A. Public Libraary)

L.A. River, Completed Channel, 1949
(L.A. Public Libraary)

growth, an increasingly diverse population, and a move towards an urban density in many neighborhoods including Studio City, North Hollywood, and Sherman Oaks. Single-family homes are being replaced with apartments and condominiums as population pressures fuel another real estate boom that continues to shape the landscape of the Valley.

Los Angeles River

In addition to the development of the Los Angeles Aqueduct and the freeway system, the flood control infrastructure on the Los Angeles River and its tributaries stands as a third essential component that shaped the development of the San Fernando Valley. The history of the river also holds particular relevance in the historic context of the Weddington Golf & Tennis Club because the river forms the southern boundary of the site.

Until the river was placed in a concrete channel, it was especially prone to flooding during the wet winter months. Because the Los Angeles was a seasonal river situated in a dry climate, the river never cut deep channels, so when the volume of water dramatically increased after a storm, fueled by runoff from the San Gabriel Mountains, the river would flood its banks. In the last half of the 19th century, the river flooded on average every 4 to 5 years (Gumprecht 1999, 144). When the San Fernando Valley was a remote agricultural region, the damage caused by flooding was offset by the benefits of the silt deposited by the river's floods that enriched the soils. After the arrival of the railroad, and subsequent development of the Valley, population pressures and real estate demand encroached on floodplains, progressively increasing the risk and damage caused by each flood (Gumprecht 1999, 150).

A devastating flood in 1914, fed by dramatic rainfall in the mountains that overflowed riverbanks and flooded much of the Valley and other areas in Los Angeles, became the catalyst that sparked calls for a flood control system (Gumprecht 1999, 167). Bonds were issued, and the plan called for the excavation of a channel through the San Fernando Valley (Gumprecht 1999, 181). However, most of the initial bond money was spent on a diversion for the mouth of the river away from the Port of Los Angeles, and for mountain dams. Due to pressure from San Fernando Valley interests, an additional bond was placed on the ballot, but because of controversy over the mishandling of a plan to construct the San Gabriel Dam, the public did not support the bond measure (Gumprecht 1999, 191-195).

Because the County of Los Angeles could not afford to complete the flood control system without bond funds, it turned to the federal government, which took over the project in the 1930's and managed it through the Army Corp of Engineers (Gumprecht 1999, 173). Since the river was unnavigable, the government did not automatically hold rights to the river, and so the right-of-way had to be purchased from individual owners (Gumprecht 1999, 182). The river portion of the Weddington parcel was likely purchased in 1927 and dedicated to the Municipal Improvement District #61. It was not until the 1940s that the channel was lined with concrete as it is in its current state.

Periodic real estate booms brought development to the river's edge, so the river channel was forced to be very narrow, which increased the speed of water flow and the potential for costly flooding. A 1938 flood, the largest in the San Fernando Valley, further proved that flood control was vital to the development of Los Angeles, but it also highlighted that the system performed best in places where the river flowed in a fully lined concrete channel (Gumprecht 1999, 200). Subsequently, between 1944-1958 nearly the entire length of the river, including the stretch through the San Fernando Valley


Weddington Family Portrait, 1889 (CSUN Library)


Weddington Family Home, 1893 (CSUN Library)

Weddington Brothers Store, 1905 (CSUN Library)

Weddington Brothers Store, Circa 1905 (CSUN Library)

Lankershim Viewed from Weddington Ranch, 1893 (CSUN Library)

Weddington Family Home, 1910 (CSUN Library)

that borders the Studio City site, was encased in concrete. This completed the transformation of the river to its current state (Gumprecht 1999, 220).

Weddington Family

The history of the Weddington Golf & Tennis Club parcel is a rarity in Los Angeles, for it has been owned by the same family continuously since the 1890s. The Weddingtons were originally from Iowa, but like many Iowans and other Midwesterners, the family moved to the Los Angeles region to try their hand at farming in the balmy climate of Southern California. Wilson Weddington, formerly a sheriff in Iowa, visited the region in 1890 with his wife Mary and two sons Fred and Guy. Soon after, he purchased his ranch in the newly formed town of Toluca for $60 per acre. Initially, Weddington operated a sheep farm, but then switched to wheat and then casaba melons before stopping agricultural operations as Studio City became developed. The Weddingtons were pillars of their community, operating the Toluca post office out of their home until it moved to the family's general store in 1894 ("Weddington House/Toluca Post Office," 1894). Other family businesses included the Bonner fruit cannery, which Guy bought out in 1907 ("Bonner Fruit Drying Co. Workers, circa 1900," n.d.). The Weddingtons were also influential in major developments in the Valley: Fred Weddington helped negotiate with Henry Huntington to bring the Pacific Electric Red Car to the Valley in 1911. Wilson Weddington was president of the area chamber of commerce between 1927-1929.

McCallister Family

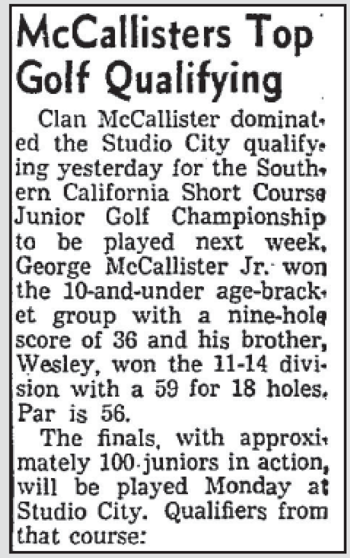
Golf is something of a calling in the McCallister family. The McCallisters owned and operated what was known as the Studio City Golf & Tennis Club (leasing the property from the Weddingtons) from the time that George McCallister, Sr. purchased the business from Joe Kirkwood, Jr. in 1958 until June of 2007. McCallister Sr. was an avid golfer and member of the Wilshire Country Club, and an investor in sporting goods and real estate. George McCallister Sr.'s brother invented the first golf glove, which he had initially designed for fighter pilots when he was stationed with the Air Force in Illinois. In addition to operating the course, McCallister Sr. provided a forum for people to learn the game, offering individual golf instruction, as well as group swing lessons where an instructor demonstrated from a dais. McCallister Sr. was influential in lobbying the Los Angeles city schools to incorporate his form of golf instruction into physical education programs. George McCallister Jr. started working at the course when he was twelve. His brother John later brought him on to refurbish the course. McCallister Jr. became manager in 1993, and his brother John left to become a golf course designer. The younger McCallister brothers also were partners in a live music club called Axiom in San Clemente (George McCallister, Jr., personal communication, 29 May 2007).

Recreation

Golf

Originally a Scottish game, golf came to the United States at the end of the 19th Century. Few Americans golfed in the early 1890s, but by 1930, the popularity of the sport had grown significantly, with 2.25 million Americans playing the game (Schackelford 1999, 2). The number of courses in the United States increased from 742 in 1896 to 5,691 by 1930, producing most of the nation's great courses between 1920-1930 (Schackelford 1999, 2-3).

Southern California was home to some of the first golf courses in the state. The first, on Catalina Island, was built in 1892, followed by courses in Pasadena and Riverside in 1894, Santa Monica in 1896, and Los Angeles in 1897 (Pitt & Pitt 1997, 177). The Valley's first grass golf club, The Hollywood Country Club, opened in 1922, located south of Ventura Blvd.



McCallisters Top Golf Qualifying

Clan McCallister dominated the Studio City qualifying yesterday for the Southern California Short Course Junior Golf Championship to be played next week. George McCallister Jr. won the 10-and-under age-bracket group with a nine-hole score of 36 and his brother, Wesley, won the 11-14 division with a 59 for 18 holes. Par is 56.

The finals, with approximately 100 juniors in action, will be played Monday at Studio City. Qualifiers from that course:

L.A. Times 8/19/1958, C6

Hollywood Country Club, Circa 1922
(CSUN Library)

Bob Hope Lakeside Golf Tournament, 1965
(L.A. Public Library)

at Coldwater Canyon. The course was the centerpiece in an upscale residential subdivision and was primarily used as an amenity to sell the development. The club eventually went defunct, and the course became the campus for the Harvard Boys Preparatory School.

For much of these founding years, golf was largely an elitist game, played by those able to afford memberships in expensive private country clubs. The sport was also an amateur game, as professional tournaments and tours had yet to become of primary importance to national golf organizations like the USGA (Barkow 2000, 55). The economic contraction during the Depression, and the rationing required during the war years of the 1940s, further limited golf's availability to those with lesser means. Golf remained an elite pastime, popular with Hollywood celebrities who frequented country clubs such as Lakeside in Toluca Lake (Roderick 2001, 97-98). However, two important changes altered this elite face of golf: rapid suburbanization with its attendant rise in middle-class home ownership in the post war era, and the televising of golf tournaments and the prominence of media-conscious players that greatly increased the sport's profile and audience.

The suburbanization of the middle class and the boom in affordable home and automobile ownership enabled larger populations to live near golf courses, and the car provided the necessary mobility to get them there. The economic expansion and corresponding optimism of the 1950s was a contrast to the dimmer Depression and war years, and golf, as a representative of "the good life" and upward mobility, likely attracted many in the middle-class who had been unable to play the game before (Barkow 2000, 82).

Perhaps even more important than the spread of home and automobile ownership was the solidification of television as the primary source for entertainment and information for most Americans. This provided a vehicle that enabled golf, a sport poorly suited for live viewing because of its slow pace and spread of action across a large course, to reach a wide audience (Barkow 2000, 82). While tournaments such as the Masters were well-respected in golf circles, the average American was not particularly engaged, but this changed after the first broadcast of the tournament in 1956 (Barkow, 2000, 90). Major golf tournaments became televised, and with network advertisement revenue increasing, both prize money for players and fees to golf organizations and clubs soared. The television market also enabled the promotion of mass-produced golf equipment, clothing, and accessories that further cemented the game as a middle-class pastime. The increasing presence of television in golf competition brought about a new type of golfer, best typified by Arnold Palmer: a dynamic, exciting player who, through his media savvy, became the sport's first superstar (Barkow, 2000, 128).

As the popularity of golf dramatically increased, the number of municipal courses and other courses open to the public (rather than member-only institutions) also increased to serve this growing demand.

Tennis

The popular history of tennis, like golf, is that of a sport with an elitist association that moved into the mainstream. What had been played at exclusive country clubs became available to many in municipal parks for nominal fees or for free. During the peak of the popularity of tennis in 1978, in reflection of the sport's democratization, the United States Tennis Association moved the location for the U.S. Open from the private West Side Tennis Club to a complex in the public Flushing Meadows Park in the New York City Borough of Queens ("Tennis," n.d.). Like golf, tennis has enjoyed increased popularity through the televising of major tournaments, and the cultivation of top players into high profile colorful media celebrities, such as Jimmy Connors and John McEnroe in the 1970s and 1980s.

Because the peak popularity of tennis falls under the 50-year threshold for significance, the history of tennis plays a smaller role in the historic context of the Weddington Golf and Tennis Club and therefore has been kept to a minimum in this analysis.

Property Typology of the Community Golf Course

The Weddington Golf Course is characteristic of the small courses that became popular nationwide in the 1950s. A book published by the National Golf Foundation, Inc. of Chicago is helpful in identifying the elements of such courses. Entitled *Municipal Golf Course Organizing and Operating Guide,* it was written for public courses. While Weddington Golf Course was and is a private facility, it shares many qualities with municipal courses in its public accessibility and community orientation.

The combination of greenery, open spaces, social outlets, and community recreation provided by golf courses were valued in the 1950s. While some courses were carved out of wooded areas and some, like Weddington Golf Course, were on "leftover" pieces of land in already-developed areas, golf courses were considered a valuable use of land that still allowed for the open spaces that were rapidly disappearing as urban and suburban landscapes developed. An 18-hole golf course needed to be three miles long and one hundred yards wide,

Ticket Booth, Sandy Hollow Course
(Wickham 1955, 72)

Pro Shop, Johnson Park Course
(Wickham 1955, 88)

Lunch Counter, Beechwood Golf Course
(Wickham 1955, 87)

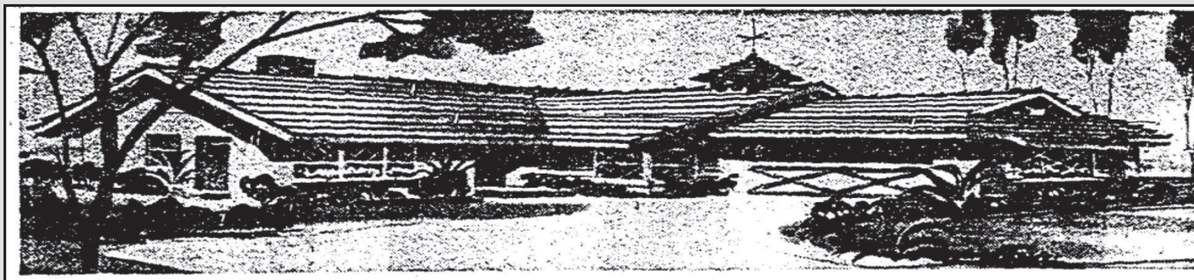
but “this ribbon of grass can be tied in bowknots, twisted into any desired shape, (or) laid in bits” (National Golf Foundation, Inc., 1955, 6). Golf was commonly combined with other recreational facilities such as swimming pools, or in the case of Studio City (though not until twenty years later), tennis.

Photographs of local golf courses in the *Guide* are easily recognizable as the same genre of facility as the Weddington Golf Course. The smaller clubhouses that are pictured show that these buildings, like that at Studio City, were often patterned on the residences in their suburban settings in both their scale and their style and materials. The L-shaped lunch counter and the knotty pine interior of the pro shops pictured show how this facility met the profile of a mid-1950s community golf center.

Aside from the course itself, the pro shop and the coffee shop or grill were important elements of a golf facility in the period. For the latter, the suburban location of the courses and the nature of the land use meant that patrons would stay at the facility for hours, and would need a place to eat on site. The pro shop was also essential to enabling people to learn to play and become equipped for the game. The *Municipal Golf Course* guide notes:

> Practically all municipal golf operators recognize the value of a good golf professional to their overall operations. They also recognize the value of a good cup of coffee or a good plate of food. Both of these special services are, in the mind of the golfer, yardsticks by which he will measure the entire facility. They build or tear down golfer relations.

The Weddington Golf Course represents the essential characteristics of this property type from the period. It has high associative value and very effectively communicates the character and feeling of



IN MONTEBELLO— One of the all-electric homes now on view at Brighton Hills in Montebello area.

MONTEBELLO HOMES AIR CONDITIONED

Refrigerated air conditioning is one of the features at Brighton Hills, a Medallion homes development in the Montebello hills, reports Jim Young, vice president of Brighton-Bilt Homes, builder-developer.

Priced from $29,950, the Brighton Hills homes are offered with veterans' 5%-down terms featuring 5¼%, 30-year loans. Also available is non - vets' 90%, 25-year financing at 6% interest.

On view are 7 model homes which incorporate 3 bedrooms and family room or 4 bedrooms and family room; 2 baths, and 2-car garages. Exterior stylings and floor plans are by Architect William Bray, AIA, while color harmonizing is by Mel Grau.

Brighton Hills includes all utilities, sewers, streetlights, sidewalks and streets, installed and paid for by Brighton-Bilt Homes. According to Dick Kurth, sales agent, volume has reached $5,730,000, with 191 purchases to date.

From Los Angeles Brighton Hills may be visited via San Bernardino Freeway to Garfield turnoff, right (south) to Pomona Blvd., left to Wilcox, right to Merle Drive, left to Gardner Drive, then left to model homes, open 9 a.m. to 9 p.m.

L.A. Times, 7/23/1961, 14

a local community golf course of the post-war era.

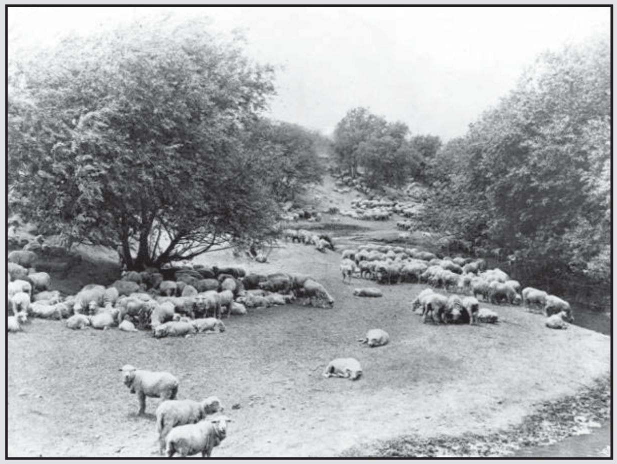
Clubhouse Architect William Bray, AIA

William M. Bray, AIA practiced architecture in Southern California for over sixty years, with an office located in Encino. Aspects of Bray's residential designs were periodically featured in the home décor columns in the Los Angeles Times throughout the 1950s and 1960s. Bray was responsible for two of the residential designs for the Aladowney Homes subdivision in Downey (1951) and Brighton Hills in Montebello (1961), where he employed the popular Ranch style. He also designed a retirement community in Palm Desert called "Palm City" (Los Angeles Times, 7/29/1951; 7/21/1961).

In 1994, Bray was awarded a lifetime achievement award from the San Fernando Valley chapter of the American Institute of Architects. His son and business partner, Roger W. Bray, AIA, continues the practice today as William M. Bray, AIA, Architect & Associates (WMBA).

Site History

This site formed part of the vast territory in the San Fernando Valley that Pio Pico sold to Isaac Lankershim in 1869. Because of the timing of the parcel's purchase by the Weddingtons in 1890, it may have been a portion of the lands subdivided by James Lankershim. Wilson Weddington operated a sheep farm on the site, but then switched to wheat and, later, casaba melons ("Sheep ranch, circa late 1800s," n.d.). The Toluca post office operated out of the Weddington home until it moved to the family's general store in 1894. In 1927 the river portion of the parcel was dedicated to Municipal Improvement District #61 for the



Weddington Ranch, Circa 1899 (CSUN Library)

Joe Kirkwood, Jr., 1951 (L.A. Public Library)

A 1972 aerial view illustrates the original breadth of the driving range and the greens that were displaced by the addition of the tennis courts to the southeast. (*www.historicaerials.com*)

development of a flood control system. The river was lined with concrete during the late 1940's.

In the 1950s, the Weddingtons agreed to enter into a 50-year lease agreement with Joe Kirkwood, Jr. to develop the site as a golf course. Kirkwood, famous for his role as the boxer Joe Palooka in eleven films and a television series, was also a professional on the PGA tour, along with his father, Joe Kirkwood, Sr., a famous trick-shot golfer (George McCallister, Jr., personal communication, 29 May 2007). Kirkwood modeled the course on par 3 holes from famous golf courses, including the 7th Hole from Pebble Beach, the 15th Hole from Cypress Point, and three holes from Augusta (Curtis, 1955). At the 9-hole course, Kirkwood also built a golf shop and clubhouse with a snack bar. Though the course would have appealed to golf history buffs, it proved too challenging for most average players, who also knew little about the history of the game. Because Kirkwood's Golf Center was essentially a neighborhood course, the difficulty of play limited its draw, and it went bankrupt (George McCallister, Jr., personal communication, 29 May 2007).

In 1957, Kirkwood, Jr. sold an option to the course to George McCallister, Sr., a golfer and investor in sporting goods and real estate, and his partner and fellow Wilshire Country Club member, Art Andersen, founder of Western Freight and an industrial real estate investor. Along with his groundskeeper Zeke Avila, McCallister Sr. redesigned the course to make play easier—filling in the water and sand traps, and rebuilding the greens—ensuring that the course would be more accessible to players from the neighborhood. McCallister Sr. also provided a forum for people to learn the game, offering individual golf lessons, as well as group swing classes where an instructor demonstrated from a stage. Golf lessons were promoted in local newspapers, and McCallister Sr. was influential in lobbying the Los Angeles city schools to incorporate his form of golf instruction into physical education programs. The Studio City Golf Course, as it was then called, was frequented by film studio workers who lived in the area. While most private clubs were prohibitively expensive for the middle class, the Studio City course, though private, was open to the public at a reasonable price, so was positioned to take advantage of the growing popularity of golf in the 1960s following the televising of the PGA Tour and the stardom of Arnold Palmer (George McCallister, Jr., personal communication, 29 May 2007).

In 1966, McCallister Sr. replaced the maintenance building with a larger structure and built an enclosure at the driving range, creating 10 sheltered tees. Construction on the tennis courts began in 1974 spurred on by the interest in tennis of McCallister's partner, Art Andersen. Andersen had built a court at his house which proved to be a popular amongst his friends and family.

Recognizing a market need, Andersen and McCallister Sr. shortened and slightly repositioned the 5th and 6th tees to accommodate the construction of five tennis courts. Later, the width of the driving range was reduced to make room for an additional fifteen courts. Four were recently dismantled to accommodate the new Los Angeles City fire station (George McCallister, Jr., personal communication, 29 May 2007).

The Weddington Golf Course has been operated by the McCallister family since 1958, initially by George McCallister Sr., and later by his sons John and then George Jr. when McCallister Sr. passed away in 1990. Having managed another family course in Pomona, and developed a remodeling business, George McCallister, Jr. was brought on by his brother John to refurbish the course. McCallister Jr. became manager in 1993, and his brother John left to become a golf course designer. Groundskeeping has also been passed to a new generation: Zeke Avila Jr. is the chief groundskeeper for the course (George McCallister, Jr., personal communication, 29 May 2007).

Most of the trees on site were planted during or following the development of the golf course, but a row of Eucalyptus trees along Valley Spring Lane predates the course. In the 1960's, the McCallisters entered the tree nursery business, planting small palm trees in pots with an eye towards future revenue streams. Eventually, rather than being sold, the palm trees were planted on the grounds of the course. Including the palms, there are over 400 trees of at least 30 years of age per a tree inventory conducted on the site.

Site Development Chronology

April 1955	Zoning variance filed by Joe Kirkwood, Jr. to permit use of property "as a privately operated recreations center consisting of a golf driving range and a nine-hole pitch-and-putt golf course. (LA Times April 4, 1955, 36.)
Jan. 1956	Driving range opened
May 1956	Joe Kirkwood, Jr. Golf Center officially opened with a celebrity gala hosted by Maurie Luxford.
Nov. 1957	George McCallister assumes operations and management of Studio City Golf Course (LA Times 11/16/1957; A4)
May 1973	Studio City Golf Course, Inc. signs lease with County of Los Angeles for use of 2.5 acres of flood control land just north of the Los Angeles River between Whitsett & Bellaire Avenues. (LA Times, May 20, 1973, SF_B4)
1974	Original four tennis courts constructed
2007	Los Angeles County Fire Station begins construction at southeast corner of site
2008	Name changed to Weddington Golf and Tennis Club

Building Permit History

1955:	8/8	Permit issued for a "Golf Shop and Club House," 86' 6" by 58' 6". Owner: Joe Kirkwood; architect: William M. Bray, AIA; contractor: Colonial Construction Co.; cost: $25,000; exterior materials: wood & stone
	9/12	Permit issued to move storage building, 16' x 20', on lot
	11/8	Permit issued to add a partition around the clubhouse snack bar
1956:	1/5	Permit issued to build golf course & parking lot (use of land). Owner: Joe Kirkwood; architect: William M. Bray, AIA; contractor: Colonial Construction Co.
1962:	9/4	Permit issued to construct food storage room addition to clubhouse, 7'6" x 10'6". Owner: Studio City Golf Course, Inc.; contractor: owner
1966:	9/21	Permit issued to demolish existing maintenance/storage building. Owner: Studio City Golf Course, Inc.; contractor: owner
	9/27	Permit issued to construct maintenance building, 38'x52'. Owner: George McCallister; architect, Miller & Miller Associates; engineer: E.F. Escalle, contractor: Mandavich Brothers; cost: $15,800; materials: wood siding, shake roof
	9/27	Permit issued to construct tee cover roof shelter, 26' x 80'. Owner George McCallister; architect, Miller & Miller Associates; engineer: E.F. Escalle, contractor: Mandavich Brothers; cost: $8,300
1973:	8/22	Permit issued to cut/fill tennis court sites, 400 cubic yards. Owner: Studio City Golf Course; contractor: Gregory J. Merante
	11/15	Permit issued to construct Tennis shop 20'x25'. Owner: Studio City Golf Course; engineer: Elliott L. Moscovitz; cost: $7,600; materials: wood
	11/15	Permit issued to install tennis court fencing, 12" high, 1600 lf. Owner: Studio City Golf Course; contractor: Gregory J. Merante; engineer: Elliott L. Moscovitz; materials: chain link
	12/20	Permit issued to revise parking lot layout Owner: Studio City Golf Course; engineer: Elliott L. Moscovitz
1974:	12/12	Permit issued to install tennis court fencing, 12" high, 1,080 lf. Owner: Studio City Golf Course; engineer: Elliott L. Moscovitz; location: southeastern portion of site between tennis shop & clubhouse; cost: $9,000; materials: chain link
1975:	4/18	Permit issued to install tennis court fencing, 12" high, 960 lf.

Owner: Studio City Golf Course; engineer: Elliott L. Moscovitz

1976: 10/10 Permit issued to install fencing with lights, 12" high, 800 lf.
Owner: Studio City Golf Course; engineer: Herman Goodman; cost $14,000

IV. Regulations and Criteria of Evaluation

CEQA

Pursuant to Section 15064.5 of the CEQA *Guidelines*, a historical resource is presumed significant if it is listed on the California Register of Historic Resources (CRHR) or has been determined to be eligible for listing by the State Historical Resources Commission (SHRC). A historical resource may also be considered significant if the lead agency determines, based on substantial evidence, that the resource meets the criteria for inclusion in the CRHR. CEQA also contains the following additional guidelines for defining a historical resource:

- California properties formally determined eligible for, or listed in the National Register of Historic Places (NRHP) (Section 5024.1.d.1);
- Those resources included in a local register of historical resources, as defined in Section 5020.1(k) of the *Public Resources Code*, or identified as significant in a historical resources survey meeting the requirements of Section 5024.1(g) of the *Public Resources Code*;
- Those resources that a lead agency determines to be historically significant (generally, if it meets criteria for listing on the CRHC), provided the determination is supported by substantial evidence; or
- Those resources a local agency believes are historical for more broadly defined reasons than identified in the preceding criteria.

National Register of Historic Places

The National Register of Historic Places (National Register) is the nation's master inventory of known historic resources. The National Register is administered by the National Park Service (NPS) and includes listings of buildings, structures, sites, objects, and districts that possess historic, architectural, engineering, archaeological, or cultural significance at the national, state or local level. The National Register criteria and associated definitions are outlined in *National Register Bulletin Number 15: How to Apply the National Register Criteria for Evaluation.* The following is a summary of *Bulletin 15*:

Resources (structures, sites, buildings, districts, and objects) over 50 years of age can be listed on the National Register. However, properties under 50 years of age that are of exceptional importance or are contributors to a district can also be included on the National Register. The following list of definitions is relevant to any discussion of the National Register:

- A ***structure*** is a work made up of interdependent and interrelated parts in a definite pattern of organization. Generally constructed by humans, it is often an engineering object large in scale.

- A ***site*** is defined as the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself maintains historical or archaeological value regardless of the value of any existing structure.

- *A* ***building*** *is* defined as a structure created to shelter human activity.

- A ***district*** is a geographically definable area—urban or rural, small or large—possessing a significant concentration, linkage, or continuity of sites, buildings, structures, and/or objects united by past events or aesthetically by plan or physical development. A district may also comprise individual elements separated geographically but linked by association or history.

- An ***object*** is a material thing of functional, aesthetic, cultural, historical, or scientific value that may be, by nature or design, moveable yet related to a specific setting or environment such as a historic vessel.

There are four criteria under which a structure, site, building, district, or object can be considered significant for listing on the National Register. These include resources that are one or more of the following:

- *Criterion A:* associated with events that have made a significant contribution to the broad patterns of history (such as a Civil War battlefield or a Naval Ship building Center);

- *Criterion B:* associated with the lives of persons significant in our past (such as Thomas Jefferson's Monticello or the Susan B. Anthony birthplace);

- *Criterion C:* embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction (such as Frank Lloyd Wright's Taliesin or the Midwestern Native American Indian Mounds) or;

- *Criterion D:* have yielded or may likely yield information important in prehistory or history (such as prehistoric ruins in Arizona or the archaeological sites of the first European settlements in St. Augustine, Florida or at the Presidio of San Francisco).

A resource can be considered significant in American history, architecture, archaeology, engineering, and culture. When nominating a resource to the National Register, one must evaluate and clearly state the significance of that resource. A resource can be individually eligible for listing on the National Register for any of the above four reasons. A resource can also be listed as contributing to a group of resources that are listed on the National Register. In other words, the resource is part of a historic district as defined above.

Districts are comprised of resources that are identified as contributing and non-contributing. Some resources within the boundaries of the district may not meet the criteria for contributing to the historic character of the district even though the resource is located within the district boundaries.

Contributing resources add to the historic association, historic architectural qualities, or archaeological values for which the district is significant because the resource was present during the period of significance, relates to the documented significant contexts, and possesses integrity.

Non-contributing resources do not add to the historic associations, historic architectural qualities, or archaeological values for which the district is significant because the resource was not present during the period of significance, does not relate to the documented significant contexts, or does not possess integrity.

Resources that meet the above criteria and have been determined eligible for the National Register are subject to Section 106 of the National Historic Preservation Act when a federal undertaking is involved. Section 106 of the National Historic Preservation Act does not generally apply to resources where private funding is used to alter or change those resources.

California Register of Historical Resources

The California Register of Historical Resources (CRHR) is a listing of State of California resources that are significant within the context of California's history. The California Register criteria are modeled after National Register criteria. However, the California Register focuses more closely on resources that have contributed to the development of California.

All resources listed in or formally determined eligible for the National Register are eligible for the California Register. In addition, properties designated under municipal or county ordinances are also eligible for listing in the California Register. The primary difference between the National Register and the California Register is that the latter allows a lower level of integrity. The property must be significant at the local, state, or national level under one or more of the following criteria:

- *Criterion 1:* it is associated with events or patterns of events that have made a significant contribution to the broad patterns of local or regional history and cultural heritage of California or the United States.

- *Criterion 2:* it is associated with the lives of persons important to the nation or to California's past.

- *Criterion 3:* it embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values.

- *Criterion 4:* it has yielded, or has the potential to yield, information important to the prehistory or history of the state or the nation.

The California Register criteria are linked to CEQA. Under CEQA, resources are considered historically significant "if the resource meets the criteria for listing on the California Register" [Title 14 California Code of Regulations 15064.5 (3)].

Resource Integrity

To be eligible for either the National or California Registers, a resource must not only be historically or architecturally significant, it must also retain integrity or the ability to convey its significance. Integrity is grounded in an understanding of a property's physical features and how they relate to its significance within one or more contexts. Integrity involves seven aspects: location, design, setting, materials, workmanship, feeling and association. These aspects closely relate to the resource's significance. For example, if the property is significant for architecture, the setting and association may not be as important as workmanship and materials. Integrity, particularly in the aspects important to the area of significance, must be primarily intact for National or California Register eligibility. Resources that have lost a great deal of their integrity are generally not eligible for the National Register. However, the California Register regulations have specific language regarding integrity, which note the following:

It is possible that historical resources may not retain sufficient integrity to meet the criteria for listing in the National Register, but they may still be eligible for listing in the California Register. A resource that has lost its historic character or appearance may still have sufficient integrity for the California Register [California Code of Regulations Title 15, 11.5 (c)].

V. Evaluation of Eligibility

For CEQA purposes, a historical resource is a resource listed in, or determined to be eligible for listing in, the California Register of Historical Resources (CRHR) or a qualified local register (for further explanation of qualifying local registers, see IV. Regulations and Criteria of Evaluation). California properties formally determined eligible for or listed on the National Register of Historic Places are automatically listed on the CRHR. Weddington Golf and Tennis Club has not been previously listed on or determined eligible for the CRHR or the NRHP, nor has it been designated as a City of Los Angeles Historic-Cultural Monument.

For the purposes of this report, the Weddington Golf and Tennis Club was evaluated against the criteria of the California Register of Historical Resources, as is required by CEQA. It was not evaluated for national (National Register) or local (Los Angeles Historic-Cultural Monument) landmark eligibility.

Significance Under the California Register

The Weddington Golf and Tennis Club appears to be eligible for the California Register of Historical Resources under the following criteria:

Criterion 1. It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.

The Weddington Golf & Tennis Club appears to be locally significant in the area of recreation and entertainment as a community recreation center. Specifically, the 9-hole golf course and driving range were constructed in the mid-1950s and developed over the next ten years to provide the growing Studio City community with a publicly-accessible facility where children and adults alike could learn and practice the sport. The clubhouse, course, and driving range were a community draw, particularly for many patrons at all levels of the entertainment industry. The course and driving range reflects the broad popularity of golf in the 1950s and 1960s, and how such recreational facilities were valuable amenities to serve the rapidly growing suburban population base in the San Fernando Valley during its most significant period of community development.

Criterion 3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values.

The Weddington Golf Course represents the essential characteristics of a local, community golf course in the mid-1950s. It has high associative value and it effectively communicates the features of such a facility. Its setting has high integrity, as do the component elements including the low-slung, Ranch style clubhouse (and its compatible, adjoining driving range shelter) that echo the preferred residential forms of the San Fernando Valley in that era, the golf course with its fairways lined in palm, eucalyptus, and pine trees, and associated features such as the golf ball-shaped light standards and putting green.

Integrity
The National Register Bulletin series provides guidance in regard to eligibility, integrity, period of significance and resource type. Essentially, for a property to qualify as an historic resource it must represent a significant part of the history, architecture, archeology, engineering, or culture of an area, and it must have the characteristics that make it a good representative of properties associated with that aspect of the past (National Park Service, National Register Bulletin 15, 2002).

Bulletin 15 notes that an historic property derives its importance from its association with an important historic context and its retention of historic integrity of those features necessary to convey its significance. Insensitive modifications to an historic property can have a negative impact on that building's integrity. The evaluation of integrity is sometimes a subjective judgment, but it must always be grounded in an understanding of a property's physical features and their relation to its significance.

Integrity is based on significance: why, where, and when a property is important. Only after significance is fully established can you proceed to the issue of integrity. The steps in assessing integrity are:

- Define the essential [or character-defining] physical features that must be present for a property to represent its significance

- Determine whether the essential physical features are visible enough to convey their significance
- Determine whether the property needs to be compared with similar properties
- Determine, based on the significance and essential physical features, which aspects of integrity are particularly vital to the property being nominated and if they are present

Character-Defining Features
All properties change over time. It is not necessary for a property to retain all its historic physical features or characteristics. The property must retain, however, the essential physical features that enable it to convey its historic identity. The essential physical features are those features that define both *why* a property is significant (Applicable Criteria and Areas of Significance) and *when* it was significant (Periods of Significance.)

The character-defining features of the Weddington Golf and Tennis Club include:

- 9-hole golf course, composed of fairways, greens, and tees (5th & 6th holes altered).
- Park-like setting on the property created by extensive trees and open space.
- Clubhouse: including board-and-batten siding, shake roof with rectangular cut-outs at planters, brick fireplace and chimney, knotty-pine interior paneling, and lunch counter.
- Driving range (altered) with shed-roof canopy with shake roof.
- Putting green in front of clubhouse.
- Golf ball light standards.

Evaluation
Within the concept of integrity, the National Register criteria recognize seven aspects or qualities that, in various combinations, define integrity. To retain historic integrity, a property must always possess several, and usually most, of the aspects: location, design, setting, materials, workmanship, feeling, and association. Ultimately, a property either does or does not have integrity. The following is a definition and analysis of each of the seven aspects of integrity in relation to this property.

Location: The place where the historic property was constructed or the place where the historic event occurred.

The historic property remains in its original location. The property retains this aspect of integrity.

Design: The combination of elements that create the form, plan, space, structure, and style of a property.

The Weddington Golf and Tennis Club has been partially altered in terms of design. The northern portion retains its 1958 design in terms of golf course layout, location and design of the putting green and clubhouse. Alterations completed in 1974 to accommodate tennis courts required the realignment of two holes and the reduction in size (by nearly half) of the driving range. However, the alterations reflect the evolution of the property as a community recreation center. These alterations have the potential of becoming significant and, therefore, do not substantially subtract *from the property's integrity of design.*

A 1966 maintenance building was demolished, but it was located in a part of the property that was removed from the clubhouse and starting and ending points of the course and did not contribute to the historic design.

The more recent construction of the fire station at the southeast corner of the site is not associated with the property's historic significance as a community recreation center. However, its siting at the southeast corner of the property minimizes the impact of the new construction on the property's integrity of design as the golf course layout remained unaffected.

Setting: The physical environment of a historic property.

Unlike location, setting refers to the character of the place in which the property played a historic role. It involves how, not just where, the property is situated, and its relationship to surrounding features and open space. Examples of features that create setting are: topographic features, vegetation, simple manmade features, and relationships between buildings and other features or open spaces.

Weddington Golf and Tennis Club largely retains its integrity of setting. Setting is a particularly important aspect of integrity for this property, and refers both to the property's surroundings and the setting created within the property by the arrangement and integrity of its component parts, combining buildings, outdoor spaces and hardscape, and landscaped areas, all with a particular purpose that contributes to the recognition of the property type and the associated use. The clubhouse is the nexus of all of the golf-related uses on the property, including the putting green, the starting and ending points of the golf course, and the driving range. The setting of the property is defined not just by the functional interrelationships of elements, but also by the sense of open space created by the design and location of the golf course. The site is buffered from Ventura Blvd. by its location along the Los Angeles River channel, and along each of the boundaries (as well as within the site), mature trees act as windbreaks, visual buffers, and markers of open space within the neighborhood and on the property.

The southeast corner of the property has been disrupted by the construction of a new fire station; however, it is oriented away from the significant areas of the historic property's. Furthermore, the station removed maintenance structures that were secondary to the significance of the property and only partially removed the tennis elements of the property. (The tennis courts are not considered contributing features.) Therefore, the overall impact of the new construction has been limited.

Materials: The physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property.

The site retains its integrity of materials. This aspect of integrity refers mainly to building materials and to whether the original materials from the period of significance continue to compose the significant structures, objects, and hardscape of the grounds. The substantially unaltered clubhouse retains the characteristic materials of the interior and exterior, such as the board and batten siding, *shingled roof, and knotty pine paneling. The concrete patios that lie between the driving range, clubhouse, and first and last holes also contribute to the setting and design of the property. The driving range shelter is also unaltered and composed of its original materials.*

Workmanship: The physical evidence of the crafts of a particular culture or people during any given period in history or prehistory.

Workmanship is not a significant aspect of integrity for this property. Most of the building materials of the structures were mass produced and did not reflect either traditional building crafts or significant new materials or methods. Workmanship for this property is best exhibited in the superior maintenance of the fairways and greens. In this respect, the skilled craft of golf course maintenance reflects the property's workmanship and the Weddington Golf and Tennis Club retains its integrity of workmanship.

Feeling: A property's expression of the aesthetic or historic sense of a particular period of time.

As a result of retaining all material aspects of integrity, in whole or in part, Weddington Golf and Tennis Club retains its integrity of feeling.

Association: The direct link between an important historic event or person and a historic property.

As a result of retaining all material aspects of integrity, in whole or in part, Weddington Golf and Tennis Club retain its integrity of association.

VI. Project Description

The following summary project description is excerpted from a more extensive project description provided by Planning Associates, Inc. (The complete description and proposed site plan are attached as Appendix A.)

The proposed project involves the partial development of the Weddington Golf and Tennis Club site to make way for a senior residential condominium campus. As proposed, the existing property will be split into two parcels: Lot 1, which will retain its use as a golf course and driving range, and Lot 2, which will accommodate the senior residential condominium campus.

Lot 1, which will measure approximately 504,764 square feet, will retain the existing nine-hole golf course, club house, driving range, and 22 surface parking spaces. All existing elements (buildings, landscape, site features) of Lot 1 will remain unaltered by the proposed project.

Lot 2, which will measure approximately 196,946 square feet, will be located at the southeast corner of the current lot. The proposed project involves the removal of the existing tennis courts from the site. The parcel will be developed with a senior residential condominium campus, comprising five rectangular and one polygonal-shaped four-story buildings. Also on the site will be approximately 109,176 square feet of landscape and hardscape, as well as subterranean parking spaces. These parking spaces will serve both the residential community and the golf club.

The proposed project leaves the existing clubhouse, putting green, and fairways intact. As shown on the attached site plan, the location of Building 4 of the proposed senior housing complex will encroach on the sixth tee, which will necessitate moving the tee a short distance to the west. The footprint of Building 2 encroaches on the south portion of the original parking lot, with its distinctive golf-ball-shaped light standards, which will necessitate the relocation of the affected light standards. To accommodate the lot subdivision and a proposed fire lane on Lot 2, the green for the fifth hole must be moved a short distance to the northeast. To accommodate the lot subdivision, the south driving range fence must be moved approximately twenty-one feet to the north, thus eliminating three driving range tees.

VII. Analysis of Project Impacts

Threshold of Significance

Section 15065 of the CEQA *Guidelines* mandates a finding of significance if a project would eliminate important examples of major periods of California history or prehistory. In addition, pursuant to Section 15064.5 of the CEQA *Guidelines*, a project could have a significant effect on the environment if it "may cause a substantial adverse change in the significance of an historical resource." A "substantial adverse change" means "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource is impaired." Material impairment means altering "in an adverse manner those characteristics of an historical resource that convey its historical significance and its eligibility for inclusion in the California Register of Historical Resources."

Impacts to historical resources not determined to be significant according to any of the significance criteria described above are not considered significant for the purposes of CEQA. Generally, under CEQA, a project that follows *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* or *The Secretary of Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Structures* is considered to have mitigated impacts to a historical resource to a less-than-significant level (CEQA *Guidelines* 15064.5).

Secretary of the Interior's Standard for Rehabilitation

The purpose of the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (*The Standards*) is to promote responsible preservation practices that help to protect irreplaceable cultural resources. *The Standards* are meant to provide philosophical consistency in the preservation component of a development project and to guide essential decisions about the treatments to these properties. The preamble to the Standards states that they "are to be applied to specific rehabilitation projects in a reasonable manner, taking into consideration economic and technical feasibility." Under CEQA Guidelines Section 15064.5(b)(3), conformity with *The Standards* in a development project is considered to mitigate impacts to historical resources to a less-than-significant-level.

Although compliance with *The Standards* is presumed to constitute a less-than-significant impact on historical resources, compliance with *The Standards* is not the sole criteria for determining whether a project would cause a substantial adverse change in the significance of an historic resource, and a failure to comply with *The Standards* may or may not constitute a significant impact or substantial adverse change under CEQA Guidelines.

There are four overriding treatments discussed in *The Standards*: preservation, rehabilitation, restoration, and reconstruction. For this project, ARG has looked to the rehabilitation standards for guidance. The *Rehabilitation Standards* are a set of 10 guidelines intended to guide the rehabilitation process of an historical resource. Rehabilitation is defined as "the process of returning a property to a state of utility, through repair or alteration, which makes possible an efficient contemporary use while preserving those portions and features of the property which are significant to its historic, architectural, and cultural values."

The compatibility of the new design as a whole has been reviewed with respect to *The Standards*. Each of *The Standards* is listed below, followed by discussion of any potential for impacts in *italicized* text.

Standard #1: A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces and spatial relationships.

The proposed project meets Standard #1. The majority of the property will be used as it was historically, which is a driving range and golf course (Lot 1). The portion of the lot that will be used for the senior residential complex currently accommodates the tennis courts (Lot 2), which were constructed outside of the period of significance of the site and are therefore not considered historic features.

Standard #2: The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize the property will be avoided.

The proposed project meets Standard #2. According to the project description, all character defining features of the property will be retained. Lot 1, which is the portion of the site that includes the golf course, clubhouse, driving range, putting green, and light standards, will be unaltered.

Should any of the golf ball light standards be removed in the process of removing part of the surface parking lot located at the eastern boundary of the property, they must be retained and relocated on site.

Standard #3: Each property will be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.

The proposed project meets Standard #3. The proposed plans do not suggest conjectural features *or elements from other historic properties.*

Standard #4: Changes to a property that have acquired historic significance in their own right will be retained and preserved.

The proposed project meets Standard #4. No changes that have acquired historic significance were identified.

Standard #5: Distinctive materials, features, finishes and construction techniques or examples of craftsmanship that characterize a property will be preserved.

The proposed project meets Standard #5. Those elements that were determined to be character defining features will be retained unaltered in Lot 1.

Standard #6: Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.

The proposed project meets Standard #6. It does not include the modification or replacement of elements that were determined to be character defining features.

Standard #7: Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

The proposed project meets Standard #7. Current project plans do not indicate chemical or physical treatments will be used. Any treatments that could cause damage to historic materials should require review by a qualified professional in order to ensure conformance with this Standard.

Standard #8: Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

The identification of archeological resources was not completed as part of this report.

Standard #9: New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.

The proposed project meets Standard #9. The proposed new senior housing development will occur apart from those features that have been determined to characterize the property. None of the buildings, landscape elements, or site features that were determined to be character-defining features will be destroyed by the proposed project. The lot subdivision, including the proposed siting of Building 4 and a necessary fire lane, necessitates the relocation of the sixth tee and *fifth hole, which will be moved approximately 90 feet and 25 feet, respectively, to the northwest along the property's south boundary. The fifth and sixth holes are not in their historic locations, owing to the 1970s reconfiguration of the southeastern portion of the course to make room for the construction of the tennis courts. No major landscape features (such as stands of trees) will be removed due to the development's encroachment.*

Because the new project is located to the southeast of the existing golf course and driving range on what will be a different parcel, it will appear separate from the adjacent historic features. The project description does not describe how the two parcels will be differentiated from one another. ARG recommends that appropriate landscaping be used to create a "buffer" between the two parcels, such as the placement of trees or shrubs at the parcel boundary to act as a natural screen between the two properties.

The proposed project also calls for the elimination of some of the surface parking spaces at the eastern edge of the property due to the siting of Building 2. The golf ball light standards, which are located at this parking lot and were determined to be character defining features, should be retained in place. If they must be moved, they must be retained and relocated to an unaffected portion of the parcel.

Standard #10: New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

The proposed project meets Standard #10. If in the future the senior residential condominium campus were to be removed, the adjacent driving range, golf course and associated buildings in Lot 1 would remain unimpaired.

VIII. Conclusion

Under CEQA, properties that meet the criteria for listing on the California Register and National Register of Historic Places are considered historic resources. The Weddington Golf and Tennis Club appears to be eligible for the California Register and is therefore a historic resource under CEQA. Weddington Golf and Tennis Club appears to be significant at the local level under California Register Criterion 1, as a privately-owned community recreation (golf) center built to serve the growing community of Studio City in the mid-1950s; and under Criterion 3, as a property that embodies the distinctive characteristics of a type as a typical example of a post-war community golf course. It was not evaluated for National Register or Los Angeles Historic-Cultural Monument eligibility.

Because the project as currently proposed meets the *Secretary of the Interior's Standards for Rehabilitation*, it will not result in a significant adverse effect under CEQA. Any future modifications to the design should be reviewed for compliance with *The Secretary of the Interior's Standards.*

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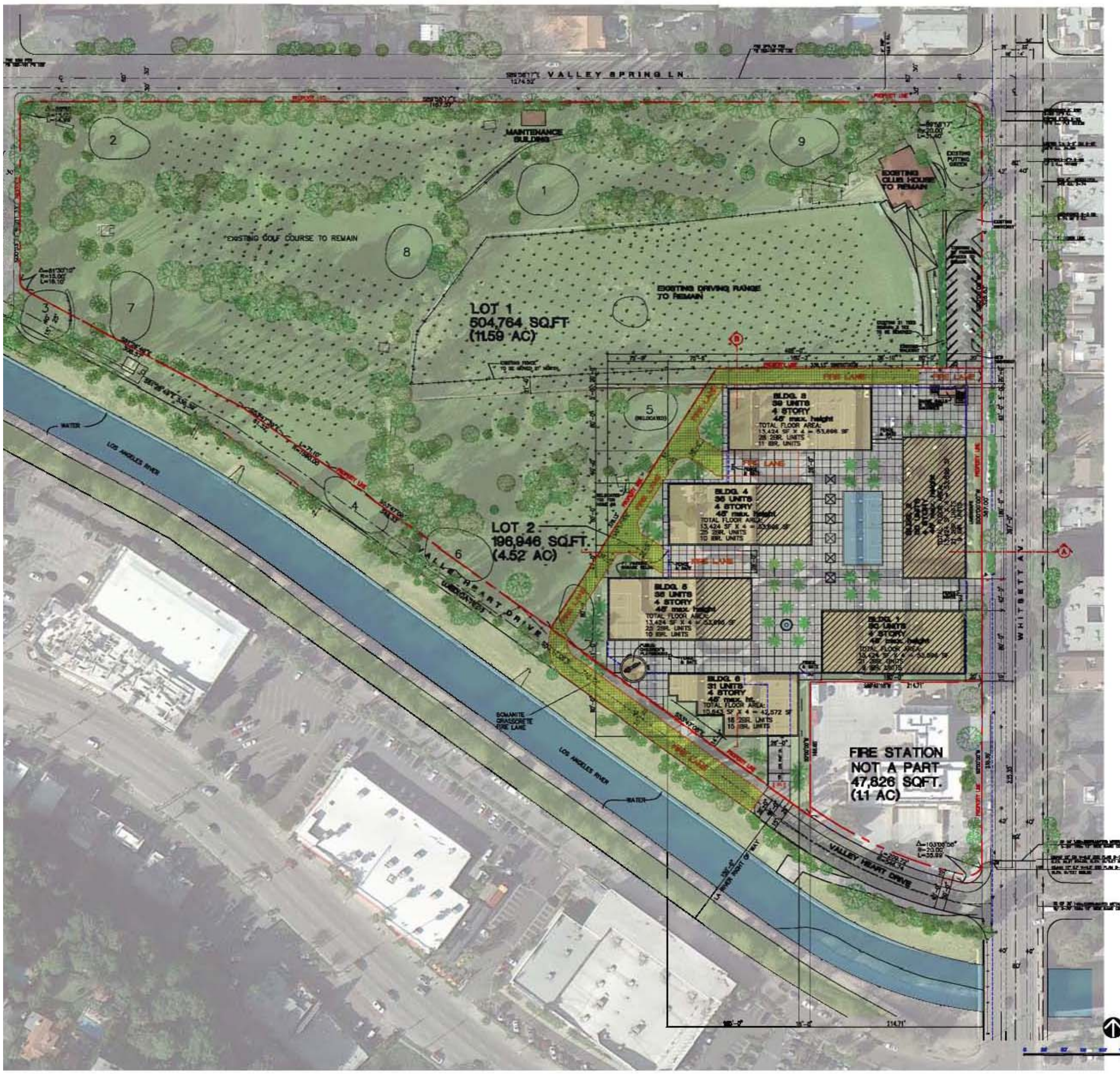
APPENDIX: Project overlay map, December 23, 2011.



APPENDIX F

HYDROLOGY & WATER QUALITY CIVIL NARRATIVE

CIVIL NARRATIVE

The primary objective of this report is to provide a description of the surface water hydrology and surface water quality at the Project Site and to analyze the projects potential significance related to the impact on surface water hydrology, surface water quality and provide recommendations for storm water mitigation. The existing and proposed site conditions are analyzed in Section 6 of this report. The mitigation measures and recommendations have been included in Section 7 of this report.

1.0 Project Description

The Weddington Golf and Tennis Club is located at 4141 Whitsett Avenue in the City of Los Angeles, California. It is bound by Valley Spring Lane to the north; Valleyheart Drive to the south; Bellaire Avenue to the west; and, Whitsett Avenue to the east. The site is also adjacent to the Los Angeles River.

The existing site consists of a nine-hole pitch and putt course, driving range, clubhouse, sixteen (16) tennis courts and a surface parking lot. Southeast of the project site is the Los Angeles Fire Station No. 78, which is constructed on a 1.1-acre parcel.

The existing site is proposed to be subdivided into two parcels, Lot 1 and Lot 2, with separate use for each lot i.e. the continuation of the recreational use at Golf Course Site, and the establishment of a new multi-family senior residential center. Lot 1 will be approximately 11.59 acres and will retain, with minor alterations to accommodate the lot subdivision, the nine-hole golf course, driving range, clubhouse and the surface parking lot. Lot 2 will be approximately 4.52 acres and will be developed with a 200-unit senior living residential campus and 613 subterranean parking spaces.

Per the scope of the proposed development, existing sixteen (16) tennis courts and a portion of the surface parking lot will be removed and replaced with six (6) senior residential buildings and community services and facilities. Approximately twenty-two (22) of the surface parking spaces will be retained to service the golf course, driving range and the clubhouse. The development site will be located at the southeasterly portion of the property. Note that the fire station is not a part of the project development. A fire access lane for emergency and LAFD access to the proposed development will be provided by extending the terminus of Valleyheart Drive.

The golf course (Lot 1) will continue the operation of the existing Weddington Golf Course and associated driving range and clubhouse facilities. Minor alterations to Lot 1 will consist of shortening the length of two (2) green/hole i.e. hole no. 5 and 6 and elimination of three (3) of the twenty-four (24) existing driving range tees to accommodate the new development and property subdivision.

It is the intention to create an aesthetically pleasing and integrated senior residential community, which will maintain existing site features such as the pitch-and-putt golf course, driving range and clubhouse. There will also be an emphasis on maintaining and beautifying the connection with the Los Angeles River flood channel.

2.0 Existing Flood Plain Description

FEMA (Federal Emergency Management Agency) Maps show the site lies in Flood Plain, Zone C. This indicates that the site falls under minimal flood hazard zone, which is basically an area outside the Special Flood Hazard Areas (SFHA) and higher than the elevation of the 0.2-percent-annual-chance flood.

3.0 Regulatory Framework

3.1 Surface Water Hydrology

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

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

3.2 Surface Water Quality

Clean Water Act
The Clean Water Act was first introduced in 1948 as the Water Pollution Control Act. The Clean Water Act authorizes Federal, state, and local entities to cooperatively create comprehensive programs for eliminating or reducing the pollution of state waters and tributaries. The primary goals of the Clean Water Act are to restore and maintain the chemical, physical, and biological integrity of the nation's waters and to make all surface waters fishable and swimmable. As such, the Clean Water Act forms the basic national framework for the management of water quality

1. Los Angeles County Department of Public Works Hydrology Manual, January 2006, http://ladpw.org/wrd/publication/index.cfm, accessed October 19, 2011.

and the control of pollutant discharges. The Clean Water Act also sets forth a number of objectives in order to achieve the above-mentioned goals. These objectives include regulating pollutant and toxic pollutant discharges; providing for water quality that protects and fosters the propagation of fish, shellfish and wildlife; developing waste treatment management plans; and developing and implementing programs for the control of non-point sources of pollution.[2]

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

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

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

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

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

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

waste discharge requirements, enforce action against stormwater discharge violators, and monitor water quality. [4]

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

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

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

California mandates requirements for all construction activities disturbing more than one acre of land to develop and implement Stormwater Pollution Prevention Plans (SWPPP). The SWPPP documents the selection and implementation of Best Management Practices for a specific construction project, charging Owners with stormwater quality management responsibilities. A construction site subject to the General Permit must prepare and implement a SWPPP that meets the requirements of the General Permit.[5, 6]

Los Angeles County Municipal Storm Water System (MS4) Permit
As described above, USEPA regulations require that MS4 permittees implement a program to monitor and control pollutants being discharged to the municipal system from both industrial and commercial projects that contribute a substantial pollutant load to the MS4.

On December 13, 2001, the LARWQCB adopted Order No. 01-182 under the CWA and the Porter-Cologne Act. This Order is the NPDES Permit or MS4 permit for municipal stormwater and urban runoff discharges within Los Angeles County. The requirements of this Order (the "Permit") cover 84 cities and most of the unincorporated areas of Los Angeles County. Under the Permit, the Los Angeles County Flood Control District (LACFCD) is designated as the Principal Permittee. The Permittees are the 84 Los Angeles County cities (including the City of Los Angeles) and Los Angeles County. Collectively, these are the "Co-Permittees". The Principal

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

[5] State Water Resources Control Board. State Water Resources Control Board. July 2011 http://www.swrcb.ca.gov/water_issues/programs/npdes/

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

Permittee helps to facilitate activities necessary to comply with the requirements outlined in the Permit but is not responsible for ensuring compliance of any of the Permittees.

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

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

Permittees are required to adopt the requirements set herein in their own SUSMP. Additional BMPs may be required by ordinance or code adopted by the Permittee and applied in a general way to all projects or on a case by case basis.

Low Impact Development (LID)
In October 2011, the City of Los Angeles passed an ordinance (Ordinance No. 181899) amending City of Los Angeles Municipal Code Chapter VI, Article 4.4, Sections 64.70.01 and 64.72 to expand the applicability of the existing Standard Urban Stormwater Mitigation Plan requirements by imposing rainwater Low Impact Development (LID) strategies on projects that require building permits.

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

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

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

Low Impact Development design has become a leading practice for stormwater pollution prevention. The Regional Water Quality Control Board (RWQCB), State Water Resources Control Board (SWRCB), United States Environmental Protection Agency (EPA) and City of Los Angeles have prioritized the use of LID as the preferred approach to stormwater management. Refer to Attachment B for the parameters that constitute the implementation of a Low Impact Development Plan or Standard Urban Stormwater Mitigation Plan (SUSMP).

The City of Los Angeles Bureau of Sanitation, Watershed Protection Division will adopt the Low Impact Development (LID) standards as issued by the LARWQCB and the City of Los Angeles Department of Public Works. The LID Ordinance will conform to the regulations outlined in the NPDES Permit and SUSMP.

River Improvement Overlay (RIO) District
As noted above in Section 1.0, the project site is adjacent to the Los Angeles River. As such, it is subject to the design guidelines established in the River Improvement Overlay (RIO) District. The RIO is a proposed special use district comprised of the following:

- Property Improvement Guidelines - projects must receive clearance from the Department of City Planning prior to obtaining a building permit by meeting a required threshold of twenty (20) points assigned in three (3) design categories: Watershed, Urban Design and Mobility.
  - In the Watershed category, points can be accrued for stormwater management, stream enhancement, landscaping, water conservation, hardscape, landscape/hardscape maintenance, and open space design.
  - In the Urban Design category, points can be accrued from vehicle parking, transparency, site lighting, and visual clutter design.
  - Lastly, in the Mobility category, points can be accrued from connectivity, pedestrian, transit, bicycle and vehicular design.
- Complete Green Street Standards - these standards apply to the area between the property line and the edge of the curb for all new projects. They include the implementation of pedestrian street lights, bicycle racks, trees and landscaping.
- Complete Green Street Guidelines - these guidelines serve as options to mitigate the environmental impact of a project, as well as guide the design of street improvements. They include pedestrian scale improvement; water conservation; street calming; bicycle lanes; and, transit amenity improvements.

The Los Angeles River Improvement Overlay District is established to implement the urban design goals and principles outlined in the Los Angeles River Revitalization Master

Plan (LARRMP) - for more information, visit www.lariver.org. It is intended to promote sustainability of the Los Angeles River and the Greenway; establish a positive between properties adjacent to the Greenway and the River Greenway; and, create active pedestrian streets that lead to the River.

4.0 Significance Threshold

4.1 Surface Water Hydrology

The City of Los Angeles CEQA Thresholds Guide states that a project would normally have a significant impact on surface water hydrology if it would:

- Cause flooding during the projected 50-year developed storm event, which would have the potential to harm people or damage property or sensitive biological resources;
- Substantially reduce or increase the amount of surface water in a water body; or
- Result in a permanent, adverse change to the movement of surface water sufficient to produce a substantial change in the current or direction of water flow

4.2 Surface Water Hydrology

The City of Los Angeles *CEQA Thresholds Guide* states that a project would normally have a significant impact on surface water quality if discharges associated with the project would create pollution, contamination or nuisance, as defined in Section 13050 of the California Water Code (CWC) or that cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or Water Quality Control Plan for the receiving water body. The CEQA Thresholds Guide and CWC include the following definitions:

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

"Contamination" means an impairment of the quality of the waters of the state by waste to a degree, which creates a hazard to the public health through poisoning or though the spread of disease. "Contamination" includes any equivalent effect resulting from the disposal of waste, whether or not waters of the state are affected.

"Nuisance" means anything which meets all of the following requirements: 1) is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property; 2) affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal; and 3) occurs during, or as a result of, the treatment or disposal of wastes.[7]

[7] City of Los Angeles. LA. CEQA Thresholds Guides. 2006 http://www.ci.la.ca.us/ead/programs/Thresholds/G-Water%20Resources.pdf

5.0 Methodology

5.1 Surface Water Hydrology

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

The analysis of the Project includes the 50-year storm event. The Modified Rational Method was used to calculate storm water runoff. The "peak" (maximum value) runoff for a drainage area is calculated using the formula, Q = CIA
Where,

Q = Volumetric flow rate (cfs)
C = Runoff coefficient (dimensionless)
I = Rainfall Intensity at a given point in time (in/hr)
A = Basin area (acres)

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

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

The Los Angeles County of Department of Public Works developed a time of concentration calculator, Tc Calculator, to automate time of concentration calculations as well as the peak runoff rates and volumes using the Modified Rational Method design criteria as outlined in the Hydrology Manual. The data input requirements include: sub-area size, soil type, land use, flow path length, flow path slope and rainfall isohyets. The Tc Calculator was used to calculate the storm water peak runoff flow rate for the Proposed Project conditions by evaluating an individual sub-area independent of all adjacent subareas. See Section 6 for Tc Calculator results.

5.2 Surface Water Quality

The Project is committed to meet or exceed the requirements of all applicable stormwater management requirements by the use of the SUSMP Method. The SUSMP Method is used to analyze the peak mitigated flow rate as well as the mitigated volume. The SUSMP Method requires that projects must select source control and, in most cases, treatment control BMPs from the list approved by the RWQCB. The BMPs must control peak flow discharge to provide stream channel and over bank flood protection, based on flow design criteria selected by the local agency. Further, the source and treatment control BMPs must be sufficiently designed and constructed to collectively treat, infiltrate, or filter stormwater runoff to meet or exceed the requirements of the City of Los Angeles, Watershed Protection Division.

Equations used to determine the peak mitigated flow rate ($Q_{pm)}$ and volume mitigated ($V_{m)}$ are as follows:

$A_{Total}=A_I + A_P + A_U$

Where,

A_I= Impervious Area

A_P= Pervious Area

A_U= Contributing Undeveloped Upstream Area

$C_D = (0.9* \text{Imp.})+[(1.0\text{-Imp.})*C_U]$, if $C_D<C_{U,}$ use $C_D=C_U$

$Q_{PM} = C_D*I_X*A_{Total}*(1 \text{ hour}/3600 \text{ seconds})*(1\text{ft}/12 \text{ inches})*(43{,}560\text{ft}^2/1 \text{ acre})$

$T_C = 10^{-0.507}*(C_{D*}I_X)^{-0.519}*\text{Length}^{0.483}*\text{Slope}^{-0.135}$

$V_M = (.75 \text{ inches})*[(A_I)(0.9)+(A_P+A_U)(C_U)]*(1\text{ft}/12 \text{ inches})*(43{,}560\text{ft}^2/1 \text{ acre})$

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

6.0 Project Settings: Existing and Proposed Topographical & Hydrological Conditions

Per the Van Nuys 50-year, 24-hour isohyet map (see Attachment A), the soil type for the project site is predominantly 016 (Yolo Loam).

Existing Site Condition

Topography of the site is shallow sloping with elevations ranging from an approximate 629 (north-west) at the site located on the Bellaire Avenue to 620 (south-east) at Valleyheart Drive. This calculates to a cross slope of approximately 1.2%.

Please refer to Attachment A for existing site topographical information as extracted from Google Earth®.

Existing Stormwater Conveyance: Based on existing topography information provided, it appears stormwater runoff sheet flows across the site to the low point located at the southeast corner of the site and then discharges to the Los Angeles River flood channel.

The result of the existing hydrology analysis is summarized in the table below.

Table 1: Existing Hydrological Data

Description	Area	% Impervious	Q_{25}	V_{25}	Q_{50}	V_{50}
Existing	16.11 Acres	0.25	**33.43 cfs**	**3.21 Acre -ft**	**41.15 cfs**	**3.74 Acre-ft**

Proposed Site Condition
Under the proposed conditions the site is split into two parcels. Lot 1, as described above remains majorly unchanged. Therefore, there is no net increase in the rate and quantity of stormwater runoff from existing to proposed conditions from Lot 1. The increase in runoff from existing to proposed conditions results from the development planned on Lot 2. The net increase from pre-developed to the post-development stage for a 50-year storm event is 9.97 cubic feet per second (cfs). The net increase from pre-developed to the post-development stage for a 25-year storm event is 9.16 cubic feet per second (cfs).

The result of the proposed hydrology analysis is tabulated below.

Table 2: proposed Hydrological Data

Description	Area	% Impervious	Q_{25}	V_{25}	Q_{50}	V_{50}
Lot 1	11.59 Acres	0.30	**28.51 cfs**	**2.51 Acre-ft**	**35.09 cfs**	**2.97 Acre-ft**
Lot 2	4.52 Acres	0.93	**14.08 cfs**	**2.0 Acre -ft**	**16.03 cfs**	**2.28 Acre-ft**

Q_{25} Total = 42.59 cfs
V_{25} Total = 4.51 acre-ft

Q_{50} Total = 51.12 cfs
V_{50} Total = 5.25 acre-ft

Tabulated below is a comparative summary of rate and quantity of stormwater runoff from pre-developed stage to the post-development stage.

Table 3: Existing vs. Proposed Hydrological Data

Existing Condition	Proposed Condition
Q_{25} = 33.43 cfs	Q_{25} = 42.59 cfs
V_{25} = 3.21 Acre-ft	V_{25} = 4.51 Acre-ft
Q_{50} = 41.15 cfs	Q_{50} = 51.12 cfs
V_{50} = 3.74 Acre-ft	V_{50} = 5.25 Acre-ft

The proposed drainage system will be designed utilizing sustainable methods. Specifically, proposed site development grading and drainage for The Studio City Senior Living Center will include the following:

- Storm water from the roofs will be reclaimed by conveying runoff through roof downspouts via an underground storm drain pipe network to a pre-treatment system to remove debris and sediment from runoff and then conveyed to an infiltration trench and/or drywell for infiltration purposes, if feasible. If infiltration is not feasible, the use of capture and reuse BMPs or biofiltration BMPs that will store, evaporate, detain, and/or treat runoff may be used.
- Various landscape areas will be developed along all sides of the building. Landscaped areas will be graded, where possible, to flow directly to an infiltration trench and/or drywell, for infiltration purposes if feasible, or intercepted by a series of planter drains, area drains, etc and conveyed to the selected infiltration system through a subsurface PVC storm drain pipe. An overflow pipe will be provided to discharge excess storm water that cannot be infiltrated during a heavy storm event. Overflow from the infiltration trench will be discharged to the Los Angeles River open channel. , if feasible. If infiltration is not feasible, the use of capture and reuse BMPs or biofiltration BMPs that will store, evaporate, detain, and/or treat runoff may be used.
- Hardscaped pedestrian walkways will be graded in coordination with existing topography to sheet flow storm runoff into landscaped areas, where possible, or to various catch basins and curb inlet catch basins with filter inserts to be treated prior to discharging into bio-retention basin. Series of cleanouts will be provided for the new subsurface pipe network at appropriate distances and/or bends.
- For reduction of storm water runoff, pedestrian paths may utilize permeable pavement and/or decomposed granite for infiltration purposes.

7.0 Project Design Features

7.1 Surface Water Hydrology

Standard Urban Stormwater Mitigation Plan (SUSMP)

The Project applicant will be required to implement a SUSMP, which will outline the stormwater treatment measures or post-construction Best Management Practices (BMPs) required to control pollutants associated with storm events up to the ¾" precipitation level. In accordance with the City of Los Angeles, Watershed Protection Division Infiltration

Requirements and Guidelines, the first priority for BMP selection related to stormwater treatment is infiltration systems, when feasible. Infiltration systems are preferred as they provide for percolation and infiltration of the stormwater into the ground, which not only reduces the volume of the stormwater runoff entering into the Municipal Separate Storm Sewer Systems (MS4), but in some cases, can contribute to groundwater recharge.

Infiltration may not be feasible due to sites having low permeability or impervious soils, site with groundwater within 10 feet of existing grade or sites with steep slopes. [8] The second priority for BMP selection is biotreatment and filtration. BMPs such as bioswales, bioretention cells, etc. are acceptable forms of treatment to meet this second tier treatment level.

Low Impact Development (LID)
The project will also comply with the Low Impact Development (LID) Standards which are intended to promote the use of natural infiltration systems, evapotranspiration, and the reuse of stormwater. The goal of these LID practices is to remove nutrients, bacteria, and metals from stormwater, while also reducing the quantity of stormwater flows. Through the use of various infiltration strategies, LID is aimed at minimizing impervious surface area. Where infiltration is not feasible, the use of capture and reuse BMPs or biofiltration BMPs that will store, evaporate, detain, and/or treat runoff may be used. [9]

- Infiltration refers to the physical process of percolation, or downward seepage, of water through a soil's pore space. As water infiltrates, the natural filtration, adsorption, and biological decomposition properties of soils, plant roots, and micro-organisms work to remove pollutants prior to the water recharging the underlying groundwater. Infiltration BMPs include infiltration basins, infiltration trenches, infiltration galleries, bioretention without an underdrain, dry wells, and permeable pavement. Infiltration can provide multiple benefits, including pollutant removal, peak flow control, groundwater recharge, and flood control. However, conditions that can limit the use of infiltration include soil properties, proximity to building foundations and other infrastructure, geotechnical hazards (e.g. liquefaction, landslides), and potential adverse impacts on groundwater quality (e.g. industrial pollutant source areas, contaminated soils, groundwater plumes). To ensure that infiltration would be physically feasible and desirable (i.e., not have adverse impacts), a categorical screening of site feasibility criteria must be completed prior to the use of infiltration BMPs.
- Capture and Use refers to a specific type of BMP that operates by capturing stormwater runoff and holding it for efficient use at a later time. On a commercial or industrial scale, capture and use BMPs are typically synonymous with cisterns, which can be implemented both above and below ground. Cisterns are sized to store a specified volume of water with no surface discharge until this volume is exceeded. The primary use of captured runoff is for subsurface drip irrigation purposes. The temporary storage of roof runoff reduces the runoff volume from a property and may reduce the peak runoff velocity for small, frequently occurring storms. In addition, by reducing the amount of stormwater runoff that flows overland into a stormwater conveyance system, fewer pollutants are transported through the conveyance system into local

[8] City of Los Angeles Watershed Protection Division. "City of Los Angeles Standard Urban Stormwater Mitigation Plan Infiltration Requirements & Guidelines." n.d.
[9] City of Los Angeles. "Low Impact Development Best Management Practices Handbook." June, 2011

streams and the ocean. The onsite use of the harvested water for non-potable domestic purposes conserves City-supplied potable water and, where directed to unpaved surfaces, can recharge groundwater in local aquifers.

- Biofiltration BMPs are landscaped facilities that capture and treat stormwater runoff through a variety of physical and biological treatment processes. Facilities normally consist of a ponding area, mulch layer, planting soils, plants, and in some cases, an underdrain. Runoff that passes through a biofiltration system is treated by the natural adsorption and filtration characteristics of the plants, soils, and microbes with which the water contacts. Biofiltration BMPs include vegetated swales, filter strips, planter boxes, high flow biotreatment units, bio-infiltration facilities, and bioretention facilities with underdrains. Biofiltration can provide multiple benefits, including pollutant removal, peak flow control, and low amounts of volume reduction through infiltration and evapotranspiration.

7.2 Surface Water Quality

The Project's stormwater management features will focus on meeting or exceeding the goals of the General Permit, as well as, SUSMP and LID.

The General Permit
Since proposed development on Parcel B accounts for 4.44 acres, this project has to implement a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP shall be designed to address the following objectives:

- All pollutants and their sources, including sources of sediment associated with construction, construction site erosion and all other activities associated with construction activity are controlled;
- Where not otherwise required to be under a Regional Water Quality Control Board (RWQCB) permit, all non-stormwater discharges are identified and either eliminated, controlled, or treated;
- Site Best Management Practices (BMPs) are effective and result in the reduction or elimination of pollutants in stormwater discharges and authorized non-stormwater discharges from construction activity to the Best Available Technology/Best Control Technology (BAT/BCT) standard;
- Calculations and design details as well as BMP controls for site run-on are complete and correct;
- Stabilization BMPs installed to reduce or eliminate pollutants after construction are completed;
- Identify post-construction BMPs, which are those measures to be installed during construction that are intended to reduce or eliminate pollutants after construction is completed (post-construction BMPs are required for all sites by Section XIII.B); and
- Identify and provide methods to implement BMP inspection, visual monitoring, Rain Event Action Plans (REAPs) and Construction Site Monitoring Program (CSMP) requirements to comply with the General Permit.

In order to implement a SWPPP, the sediment and receiving water risk factors must be calculated to determine the overall combined risk level for this project.

The sediment risk factor is calculated from the product of the Rainfall Erosivity Factor (R) by the Soil Erodibility Factor (K) by the hillslope-length/hillslope-gradient factor (LS). The R factor is based on the location of the project in latitude and longitude and the anticipated duration of construction. The K factor represents the susceptibility of soil or surface material to erosion; transportability of the sediment; and, the amount and rate of runoff given a particular rainfall input while the effect of topography on erosion is accounted for by the LS factor. A calculated risk factor of less than fifteen (15) equates to a low sediment risk while a calculation of fifteen (15) or greater equates to a medium or high sediment risk.

The receiving water risk is determined by whether the disturbed area discharges directly or indirectly into a 303-(d) listed water body impaired by sediment, or to a water body with designated beneficial uses of cold and spawn and migratory. If either or both of these criteria are met, the receiving water risk is deemed "high" however, if neither criterion is met, the receiving water risk is deemed "low".

Since this project is adjacent to the Los Angeles River, the combined risk level for this project can be hypothesized to be a minimum of Risk Level 2; it may also be determined to be a Risk Level 3 based on final calculations of the sediment risk factor.

As such, the following Risk Level 2 or 3 requirements must be met:

- Compliance with narrative effluent standards;
- Good site management "housekeeping";
- BMP implementation to control all non-stormwater discharges during construction;
- Erosion control BMP implementation;
- Sediment control BMP implementation;
- Effectively manage all run-on, runoff within the site and all runoff that discharges off the site;
- Ensure all inspection, maintenance, repair and sampling activities are performed or supervised by a Qualified SWPPP Practitioner (QSP) certified and trained by the California Stormwater Quality Association;
- Ensure the Qualified SWPPP Practitioner develops a Rain Event Action Plan (REAP) forty-eight (48) hours prior to any likely precipitation event;
- Develop and implement a Construction Site Monitoring Program (CSMP);
- Collect water quality samples or runoff that is discharged offsite;
- Prepare and electronically submit an Annual Report no later than September 1st of each year for the duration of construction.

Construction Stormwater Management Features

Provisions to manage construction stormwater run-off are based on BMP objectives outlined by the SWPPP that identify the category of BMP fit to meet each goal. The BMPs selected for each site depend on site conditions, construction activities, and cost considerations. All of the following BMPs will be included as part of the Project to manage construction stormwater run-off:

- Erosion Control BMPs protect the soil surface and prevents soil particles from detaching. Selection of the appropriate erosion control BMP shall be based on minimizing areas of disturbance, stabilizing disturbed areas, and protecting slopes/channels.
- Sediment Control BMPs are treatment controls that trap soil particles that have been detached by water or wind. Selection of the appropriate sediment control BMP shall be based on keeping sediments on site and controlling the site boundaries.
- Wind Erosion Control BMPs consists of applying water to prevent or minimize dust nuisance.
- Tracking Control BMPs consists of preventing or reducing the tracking of sediment off-site by vehicles leaving the construction area. These BMPs include street sweeping and vacuuming. All sites must have a stabilized construction entrance to prevent off-site tracking of sediment and debris.
- Non-Stormwater Management BMPs are also referred to as "good housekeeping practices," which involve keeping a clean, orderly construction site.
- Waste Management and Materials Pollution Control BMPs consist of implementing procedural and structural BMPs for handling, storing, and disposing of wastes generated by a construction project to prevent the release of waste materials into stormwater runoff or discharges through the proper management of construction waste.

Proper Handling and Disposal of Materials

The proper disposal, storage or use of hazardous materials such as cleaners, agents, solvents, or other construction or operations related activities would occur in accordance with regulatory requirements. Any non-stormwater discharge would be controlled and properly disposed of through either approved connections to the sanitary sewer system or transported to an approved processing facility to prevent the contamination of site soils or groundwater. In addition, loading docks and storage areas would be designed to provide spill containment and prevent contaminants from reaching the groundwater.

Post Construction Stormwater Management Features

The following BMPs will be included as part of the SUSMP for the Project to manage post-construction stormwater run-off:

- Promote evapotranspiration and infiltration by increasing the overall footprint of landscaped areas and promoting the use of native and/or drought tolerant plants.
- Provide storm drain system stenciling and signage to discourage illegal dumping.
- Design material storage areas and loading docks within structures or enclosures to prevent leaks or spills of pollutants from entering the storm drain system.
- Provide evidence of ongoing BMP maintenance as part of a legal agreement with the City of Los Angeles. Recorded covenant and agreements for BMP maintenance are part of standard building permit approval processing.
- Design post-construction structural or treatment control BMPs to either treat or infiltrate stormwater runoff. Storm water treatment facilities and systems shall be designed to meet the requirements of the SUSMP manual.
    - Volumetric Treatment Control BMPs shall be designed to capture the volume of runoff from a 0.75-inch storm event, prior to discharging to the public storm drain system.

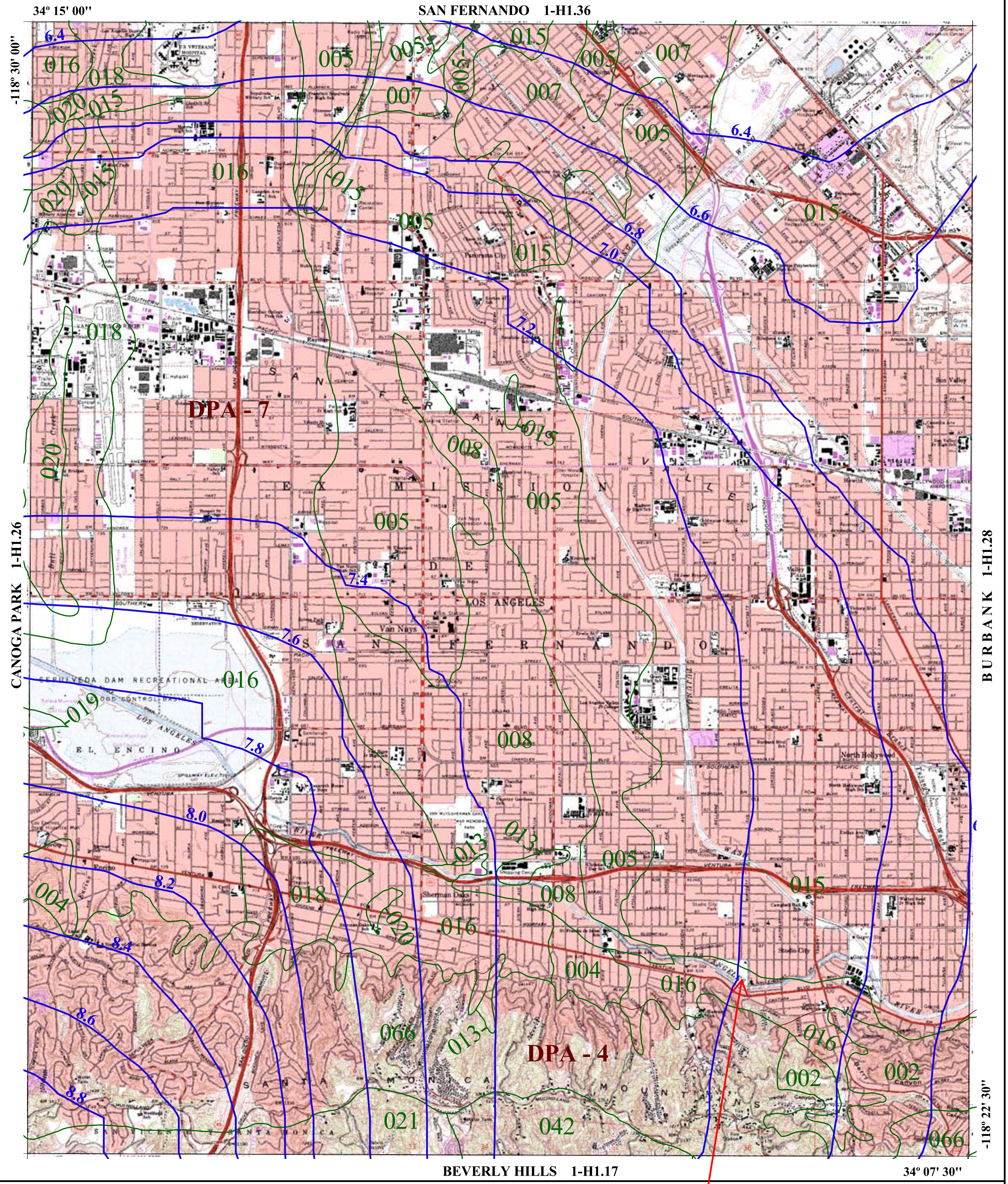
- Flow based Treatment Control BMPs shall be designed to the same standards as the volume-based control BMPs. The flow of runoff produced from the storm event shall be equal to or at least 0.2 inches per hour.
- Treatment devices shall be sized and designed to meet the above requirements outlined in the SUSMP manual.

In addition, the Project will also comply with the Low Impact Development Standards as mentioned above in Section 6.1. Refer to Attachment B for possible LID BMPs to be implemented by the Project.

The Project will be designed to comply with all local and State regulations regarding the control of pollutants of concern that may affect the quality of groundwater underlying the Project Site. Compliance with both the Construction General Permit and Los Angeles County SUSMP will require the implementation of both construction related and post-construction Best Management Practices (BMPs) for the safe handling and disposal of contaminants and pollutants of concern.

Attachment A

- **50-Year 24-Hour Isohyet Map (Van Nuys)**
- **Existing Site Topographical Map**



1 0 1 2 Miles

016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

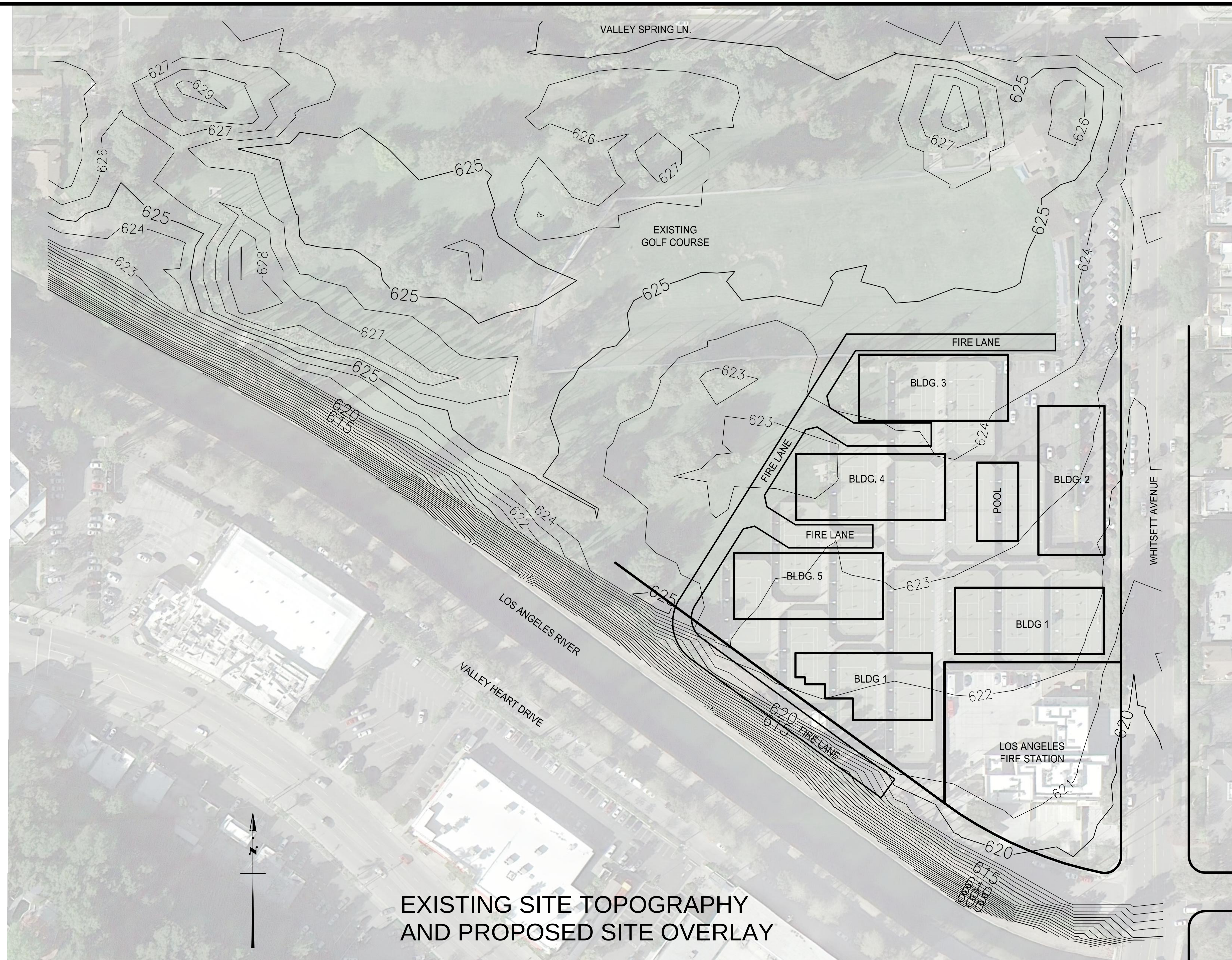
DPA - 6 DEBRIS POTENTIAL AREA

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

VAN NUYS
50-YEAR 24-HOUR ISOHYET

1-H1.27

LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

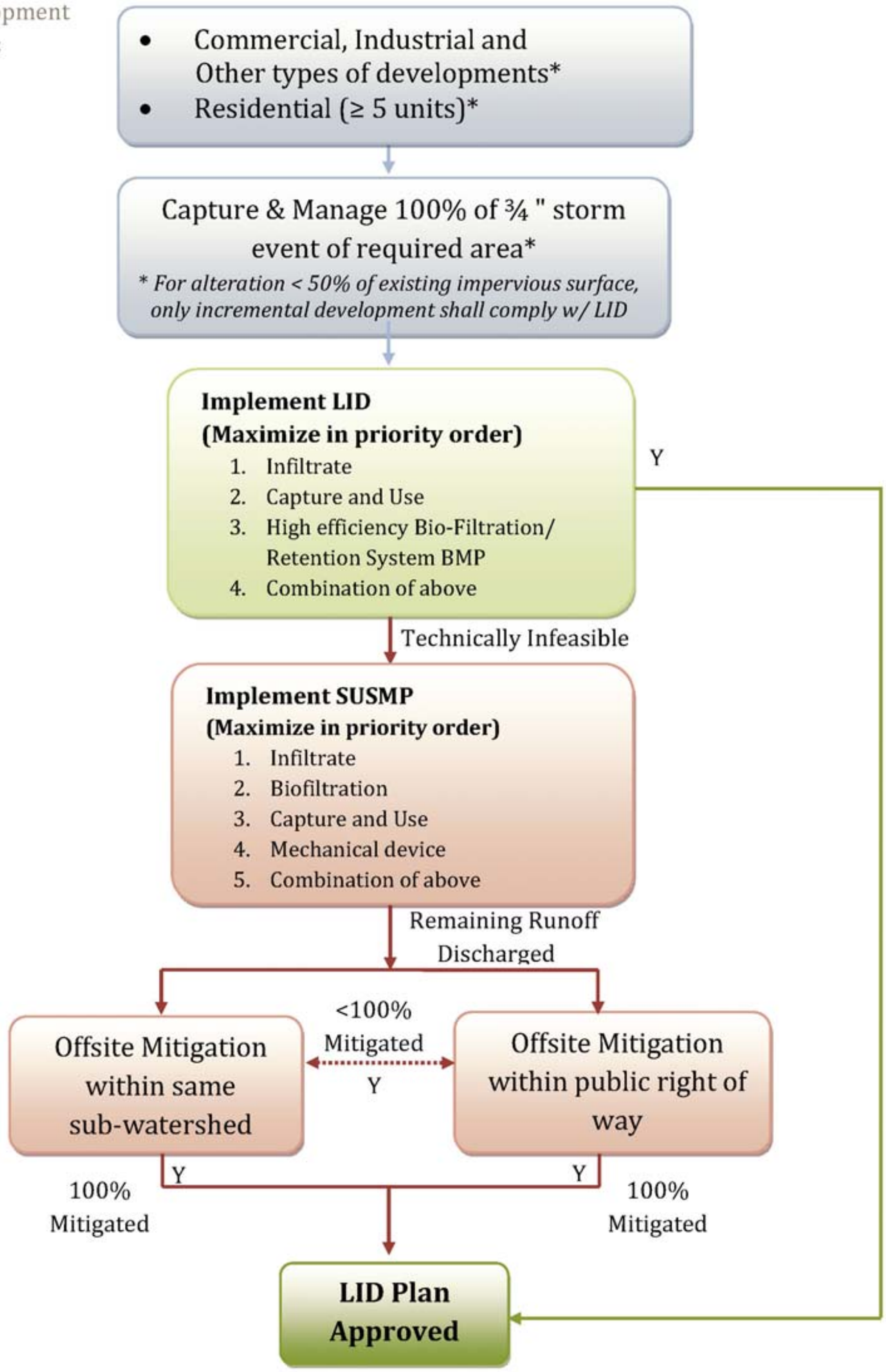


EXISTING SITE TOPOGRAPHY
AND PROPOSED SITE OVERLAY

Attachment B

- **Low Impact Development (LID) & Standard Urban Stormwater Mitigation Plan (SUSMP) Implementation Parameters**
- **Typical LID & SUSMP BMPs**

Low Impact Development
Plan Check Process

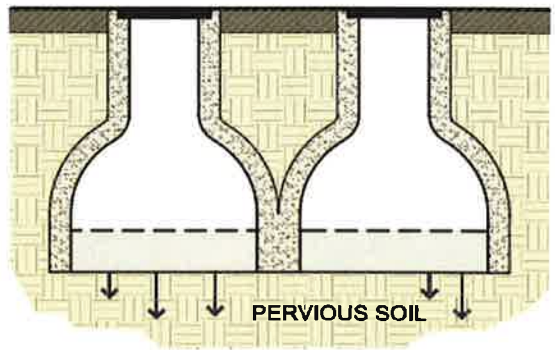


* New and Re-development < 500 ft² are exempt from the LID Ordinance

Figure 3.3 – Requirements for Residential Developments of 5 Units or More and All Other Development

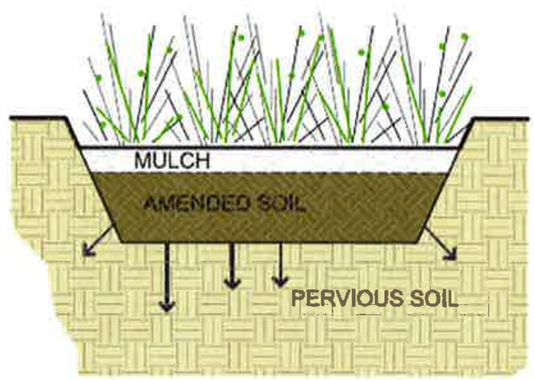
Infiltration Galleries

Infiltration galleries are open-bottom, subsurface vaults that store and infiltrate stormwater. A number of vendors offer prefabricated, modular infiltration galleries that provide subsurface storage and allow for infiltration. Infiltration galleries come in a variety of material types, shapes and sizes.



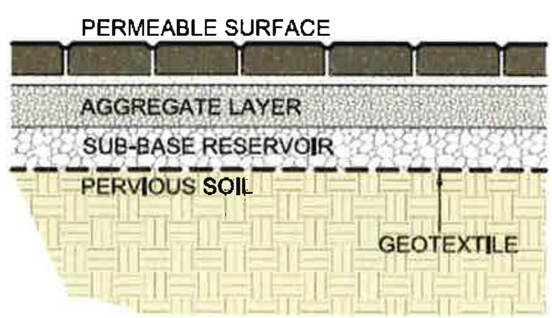
Bioretention

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

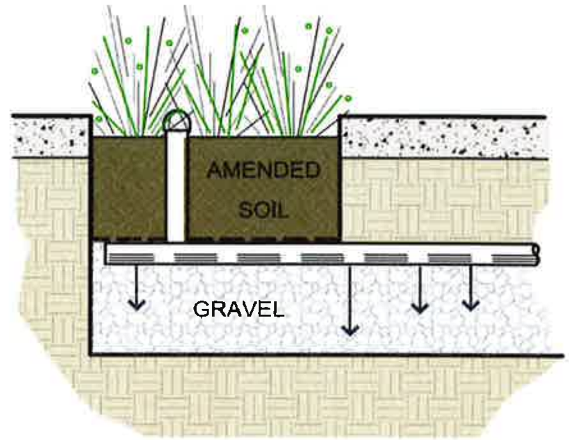


Permeable Pavements

Permeable (or pervious) pavements contain small voids that allow water to pass through to a stone base. They come in a variety of forms; they may be a modular paving system (concrete pavers, modular grass or gravel grids) or poured-in-place pavement (porous concrete, permeable asphalt). All permeable pavements with a stone reservoir base treat stormwater and remove sediments and metals to some degree by allowing stormwater to percolate through the pavement and enter the soil below.



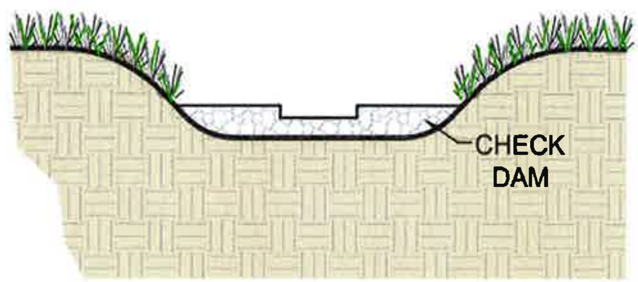
High-Flow Biotreatment with Raised Underdrain



High-flow biotreatment devices are proprietary treatment BMPs that incorporate plants, soil, and microbes engineered to provide treatment at higher flow rates and with smaller footprints than their non-proprietary counterparts. Like bioinfiltration devices, they should incorporate a raised underdrain above a gravel sump to facilitate incidental infiltration where feasible.They must be shown to have pollutant removal efficiencies equal to or greater than the removal efficiencies of their non-proprietary counterparts. Proof of this performance must be provided by adequate third party field testing.

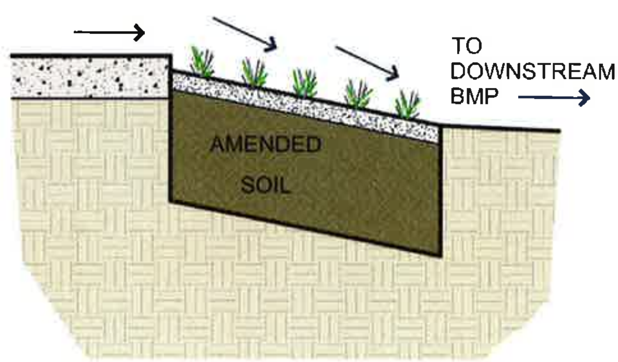
Vegetated Swales

Vegetated swales are open, shallow channels with dense, low-lying vegetation covering the side slopes and bottom that collect and slowly convey runoff to downstream discharge points. An effective vegetated swale achieves uniform sheet flow through the densely vegetated area for a period of several minutes. The vegetation in the swale can vary depending on its location and is the choice of the designer. Most swales are grass-lined.



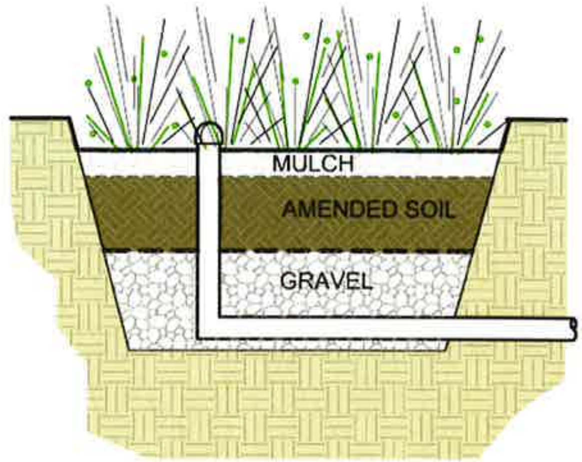
Filter Strips (to be used as part of a treatment train)

Filter strips are vegetated areas designed to treat sheet flow runoff from adjacent impervious surfaces such as parking lots and roadways, or intensive landscaped areas such as golf courses. While some assimilation of dissolved constituents may occur, filter strips are generally more effective in trapping sediment and particulate-bound metals, nutrients, and pesticides. Filter strips are more effective when the runoff passes through the vegetation and thatch layer in the form of shallow, uniform flow. Filter strips are primarily used to pretreat runoff before it flows to an infiltration BMP or another biofiltration BMP.



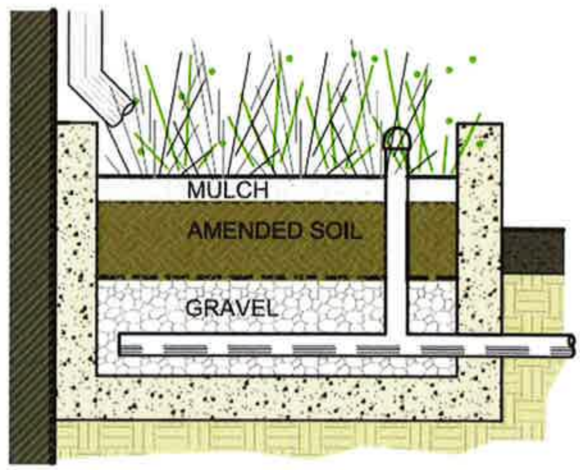
Bioretention with Underdrain

Bioretention facilities are landscaped shallow depressions that capture and filter stormwater runoff. As stormwater passes down through the planting soil, pollutants are filtered, adsorbed, and biodegraded by the soil and plants. Because they are not contained within an impermeable structure, they may allow for infiltration. For sites not passing the infiltration feasibility screening for reasons other than low infiltration rates (such as soil contamination, expansive soils, etc.), an impermable liner may be needed to prevent incidental infiltration.



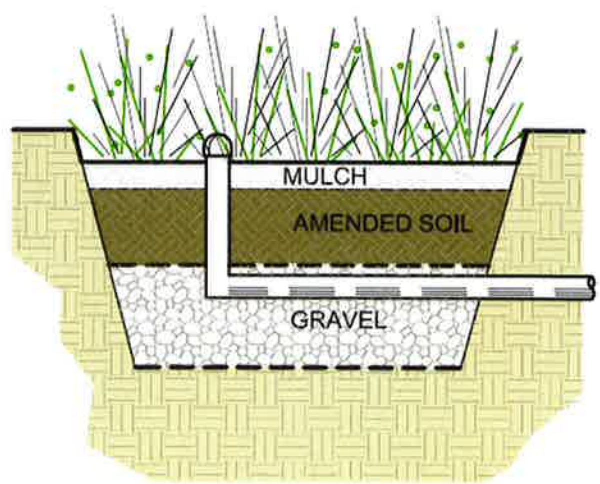
Planter Boxes

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



Bioinfiltration

Bioinfiltration facilities are designed for partial infiltration of runoff and partial biotreatment. These facilities are similar to bioretention devices with underdrains but they include a raised underdrain above a gravel sump designed to facilitate infiltration and nitrification/denitrification. These facilities can be used in areas where there are little to no hazards associated with infiltration, but infiltration screening does not allow for infiltration BMPs due to low infiltration rates or high depths of fill.

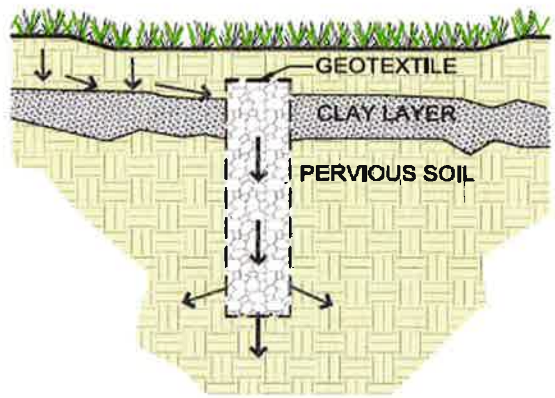


Multi-Directional Infiltration BMPs

These BMPs take advantage of the hydraulic conductivities (K_{sat}) of multiple soil strata and infiltration in multiple directions. They may be especially useful at locations where low K_{sat} values are present near the surface and soils with higher permeabilities exist beneath. A Multi-Directional Infiltration BMP may be implemented to infiltrate water at these lower soil layers, thus allowing infiltration to occur at sites that otherwise would be infeasible. These infiltration BMPs typically have smaller footprints and include, but are not limited to:

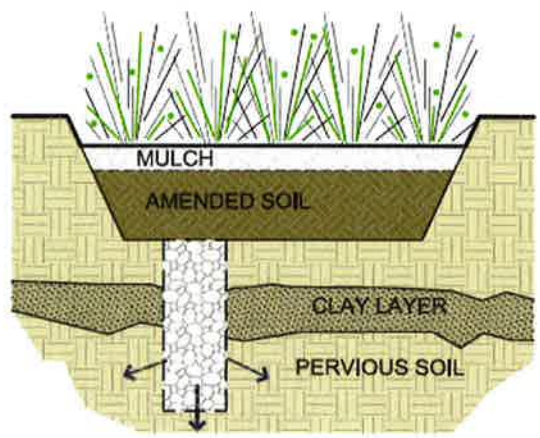
Dry Wells

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



Hybrid Bioretention/Dry Wells

A bioretention facility with dry wells is useful in areas with low surface-level hydraulic conductivities that would normally deem a bioretention BMP infeasible but have higher levels of permeability in deeper strata. By incorporating drywells underneath the bioretention facility, water is able to be infiltrated at deeper soil layers that are suitable for infiltration, if present. This hybrid BMP combines the aesthetic and filtration qualities of a bioretention facility with the enhanced infiltration capabilities of a dry well.

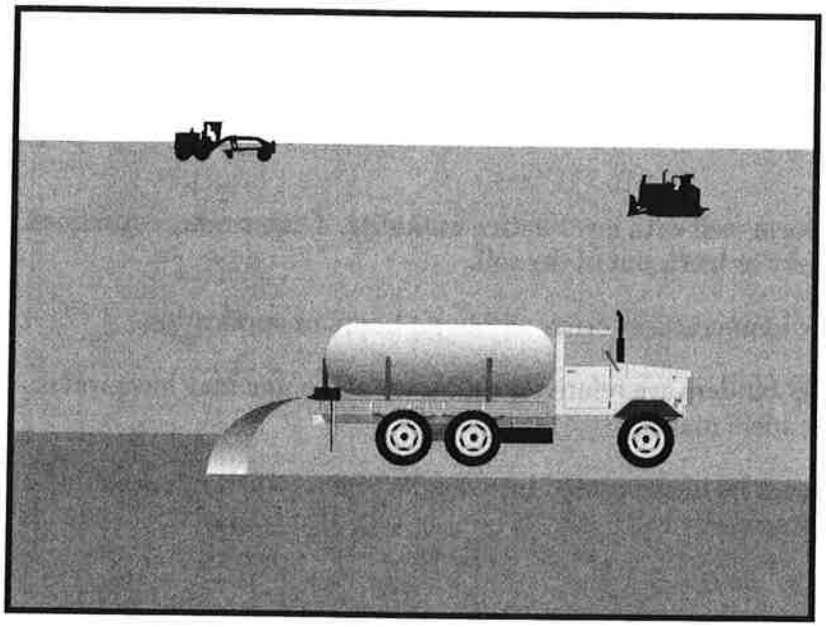


4.4.2 Siting Requirements and Opportunity Criteria

Drainage areas implementing infiltration BMPs must pass the Category 1 or Category 2 Screening in accordance with the siting requirements set forth in Table 4.1. This screening process must be approved by a site-specific geotechnical investigation report and/or hydrologic analysis conducted and certified by a State of California registered professional geotechnical engineer or geologist.

Attachment C

- **Typical SWPPP BMPs**



Objectives

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

Legend:

✓ **Primary Objective**

✓ **Secondary Objective**

Targeted Constituents

Sediment	✓
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

EC-3 Hydraulic Mulch

EC-4 Hydroseeding

EC-6 Straw Mulch

EC-7 Geotextiles and Mats

EC-8 Wood Mulching

Description and Purpose

Soil binders consist of applying and maintaining a soil stabilizer to exposed soil surfaces. Soil binders are materials applied to the soil surface to temporarily prevent water induced erosion of exposed soils on construction sites. Soil binders also prevent wind erosion.

Suitable Applications

Soil binders are typically applied to disturbed areas requiring short term temporary protection. Because soil binders can often be incorporated into the work, they are a good alternative to mulches in areas where grading activities will soon resume. Soil binders are also suitable for use on stockpiles.

Limitations

- Soil binders are temporary in nature and may need reapplication.
- Soil binders require a minimum curing time until fully effective, as prescribed by the manufacturer. Curing time may be 24 hours or longer. Soil binders may need reapplication after a storm event.
- Soil binders will generally experience spot failures during heavy rainfall events. If runoff penetrates the soil at the top of a slope treated with a soil binder, it is likely that the runoff will undercut the stabilized soil layer and discharge at a point further down slope.

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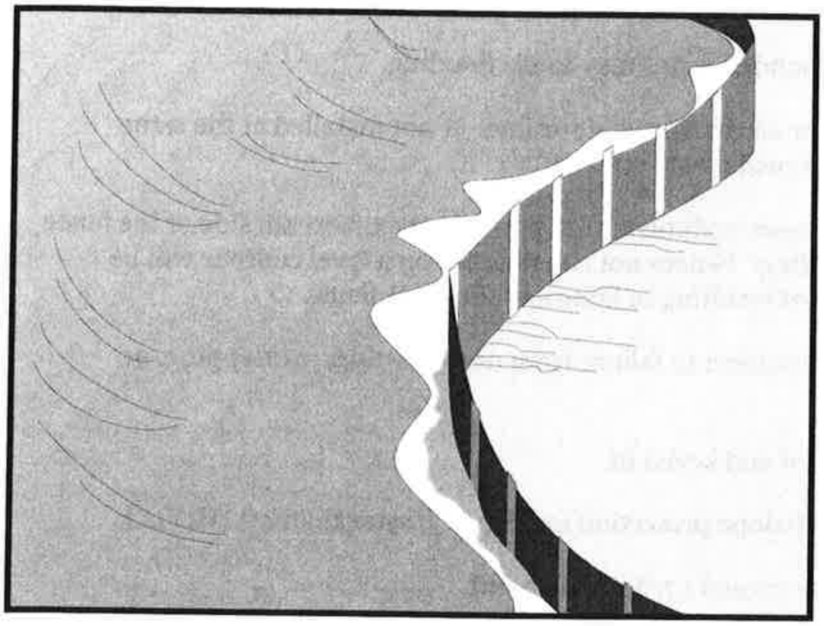

Objectives		
EC	Erosion Control	✓
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
✓ **Primary Objective**
✓ **Secondary Objective**

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

Potential Alternatives

SE-5 Fiber Rolls
SE-6 Gravel Bag Berm
SE-8 Sandbag Barrier
SE-9 Straw Bale Barrier

Description and Purpose

A silt fence is made of a filter fabric that has been entrenched, attached to supporting poles, and sometimes backed by a plastic or wire mesh for support. The silt fence detains sediment-laden water, promoting sedimentation behind the fence.

Suitable Applications

Silt fences are suitable for perimeter control, placed below areas where sheet flows discharge from the site. They should also be used as interior controls below disturbed areas where runoff may occur in the form of sheet and rill erosion. Silt fences are generally ineffective in locations where the flow is concentrated and are only applicable for sheet or overland flows. Silt fences are most effective when used in combination with erosion controls. Suitable applications include:

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

Limitations

- Do not use in streams, channels, drain inlets, or anywhere flow is concentrated.

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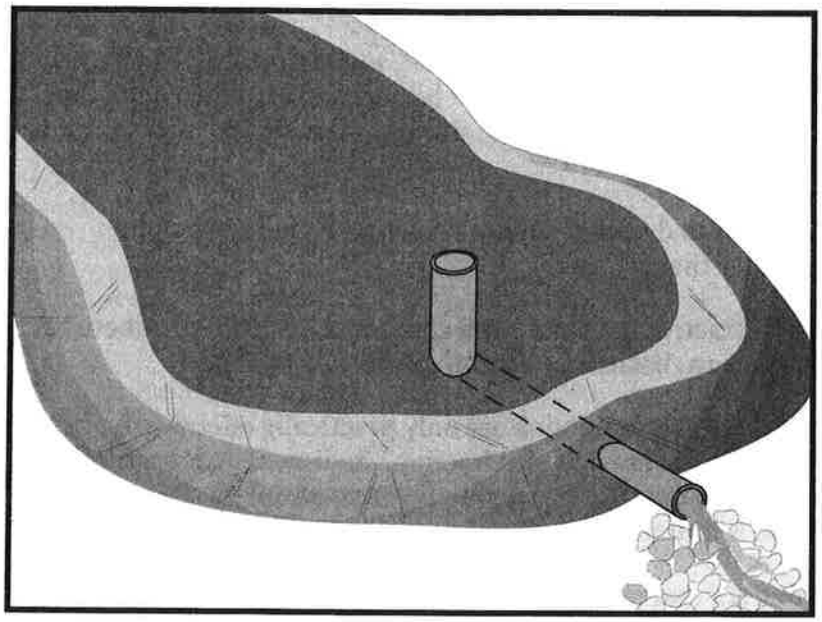

Objectives

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

Legend:

✔ **Primary Objective**

✓ **Secondary Objective**

Targeted Constituents

Sediment	✔
Nutrients	
Trash	✔
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-3 Sediment Trap (for smaller areas)

Description and Purpose

A sediment basin is a temporary basin formed by excavation or by constructing an embankment so that sediment-laden runoff is temporarily detained under quiescent conditions, allowing sediment to settle out before the runoff is discharged.

Suitable Applications

Sediment basins may be suitable for use on larger projects with sufficient space for constructing the basin. Sediment basins should be considered for use:

- Where sediment-laden water may enter the drainage system or watercourses
- On construction projects with disturbed areas during the rainy season
- At the outlet of disturbed watersheds between 5 acres and 75 acres
- At the outlet of large disturbed watersheds, as necessary
- Where post construction detention basins are required
- In association with dikes, temporary channels, and pipes used to convey runoff from disturbed areas

Limitations

Sediment basins must be installed only within the property limits and where failure of the structure will not result in loss of life, damage to homes or buildings, or interruption of use or service of

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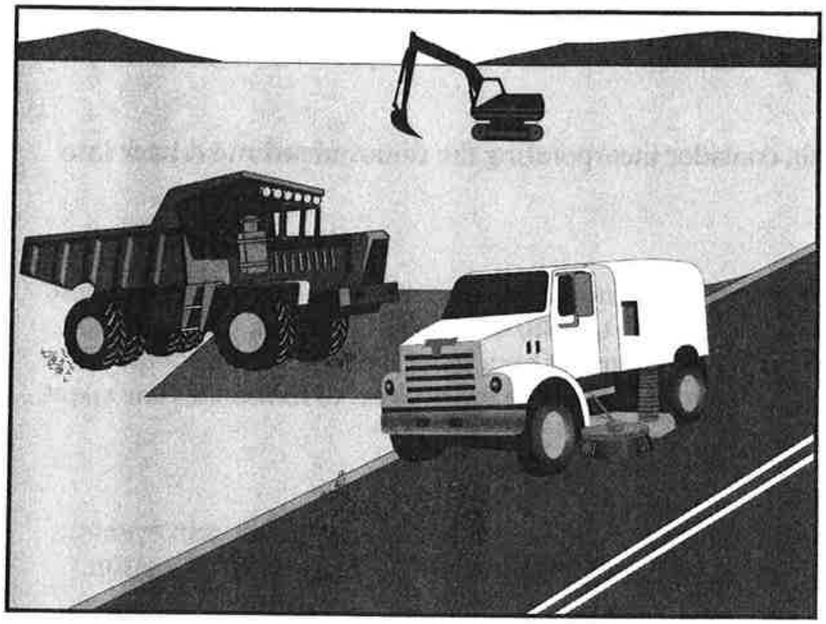
Street Sweeping and Vacuuming SE-7



Objectives

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

Legend:

✓ **Primary Objective**

✓ **Secondary Objective**

Targeted Constituents

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

Potential Alternatives

None

Description and Purpose

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

Suitable Applications

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

Limitations

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

Implementation

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

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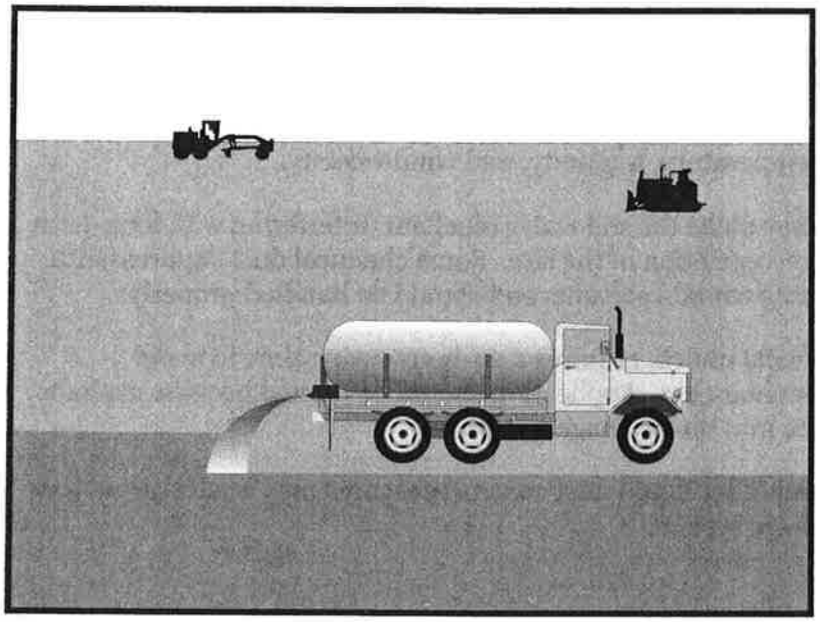

Objectives

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

Legend:

✓ **Primary Objective**

✓ **Secondary Objective**

Targeted Constituents

Sediment	✓
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

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

Suitable Applications

Wind erosion control BMPs are suitable during the following construction activities:

- Construction vehicle traffic on unpaved roads
- Drilling and blasting activities
- Sediment tracking onto paved roads
- Soils and debris storage piles
- Batch drop from front-end loaders
- Areas with unstabilized soil
- Final grading/site stabilization

Limitations

- Watering prevents dust only for a short period and should be applied daily (or more often) to be effective.
- Over watering may cause erosion.

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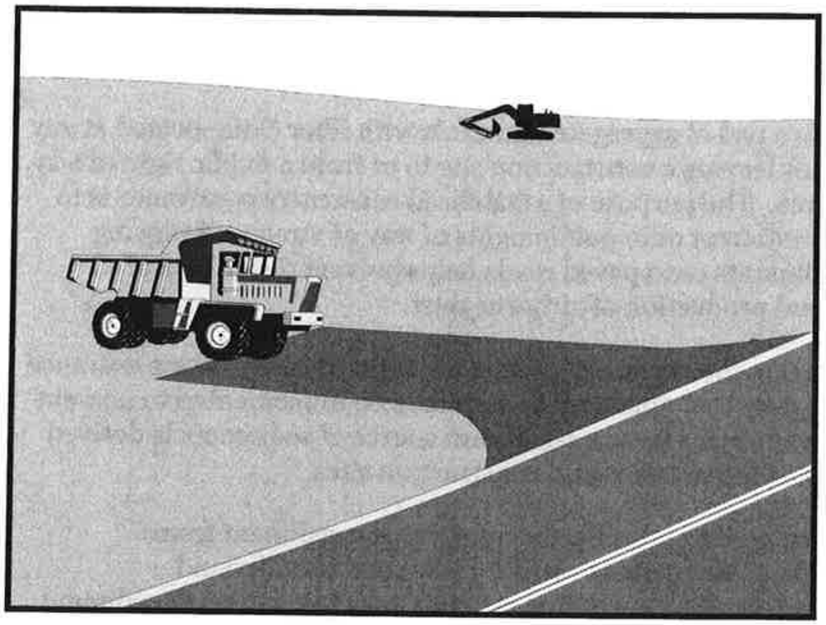

Objectives

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

Legend:

✓ **Primary Objective**

✓ **Secondary Objective**

Targeted Constituents

Sediment	✓
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

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Description and Purpose

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

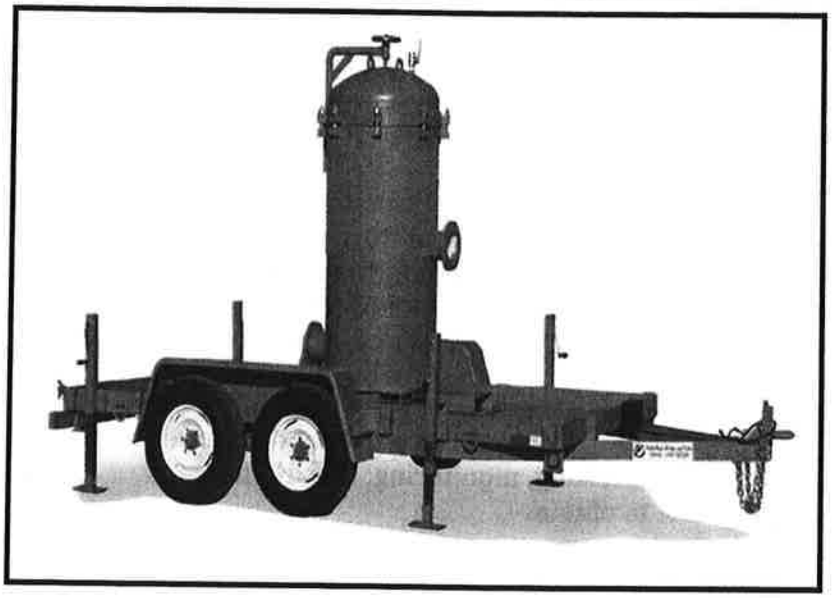
Suitable Applications

Use at construction sites:

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

Limitations

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



Objectives

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

Legend:

✔ **Primary Objective**

✓ **Secondary Objective**

Targeted Constituents

Sediment	✔
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	✔
Organics	

Potential Alternatives

SE-5: Fiber Roll

SE-6: Gravel Bag Berm

SE-9: Straw Bale Barrier

Description and Purpose

Dewatering operations are practices that manage the discharge of pollutants when non-stormwater and accumulated precipitation must be removed from a work location so that construction work may be accomplished.

Suitable Applications

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

Practices identified in this section are also appropriate for implementation when managing the removal of accumulated precipitation (stormwater) from depressed areas at a construction site.

Limitations

- Site conditions will dictate design and use of dewatering operations.
- The controls discussed in this best management practice (BMP) address sediment only.
- The controls detailed in this BMP only allow for minimal settling time for sediment particles. Use only when site conditions restrict the use of the other control methods.
- Dewatering operations will require, and must comply with, applicable local permits.

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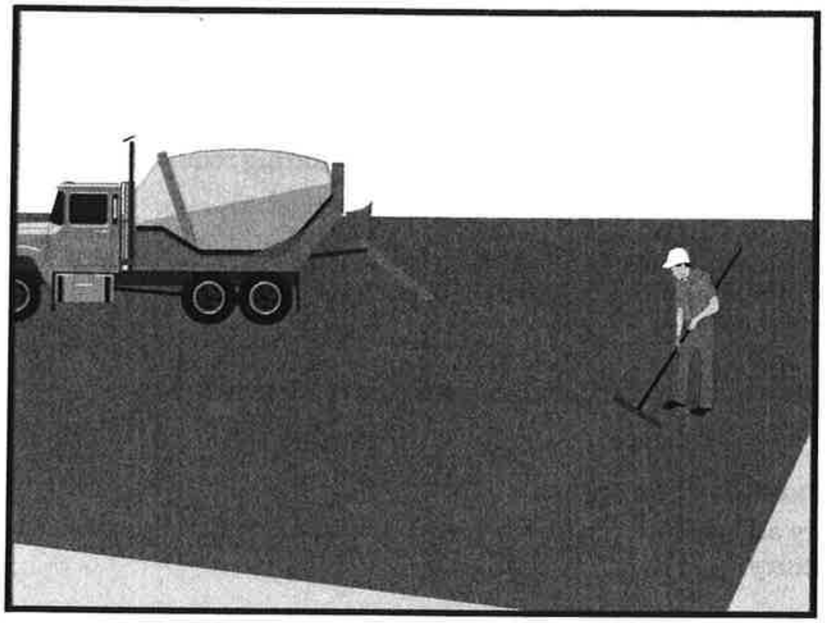
Paving and Grinding Operations NS-3



Objectives

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

Legend:

✔ **Primary Objective**

✓ **Secondary Objective**

Targeted Constituents

Sediment	✔
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	✔
Organics	

Potential Alternatives

None

Description and Purpose

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

Suitable Applications

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

Limitations

- Finer solids are not effectively removed by filtration systems.
- Paving opportunities may be limited during wet weather.

Implementation

General

- Avoid paving during the wet season when feasible.
- Reschedule paving and grinding activities if rain is in the forecast.
- Train employees and sub-contractors in pollution prevention and reduction.
- Store materials away from drainage courses to prevent stormwater runon (see WM-1, Material Delivery and Storage).

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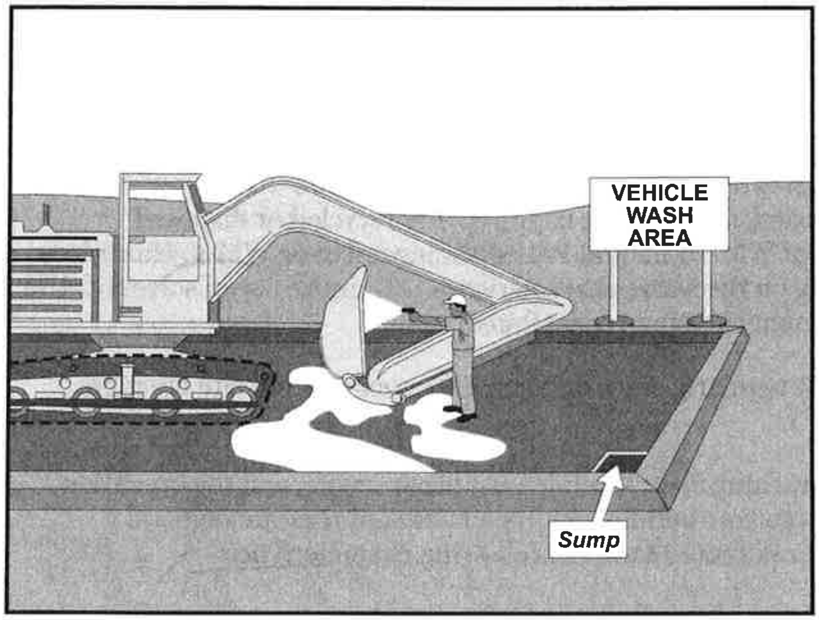
Vehicle and Equipment Cleaning NS-8



Description and Purpose

Vehicle and equipment cleaning procedures and practices prevent or reduce the discharge of pollutants to stormwater from vehicle and equipment cleaning by using offsite facilities; washing in designated, contained areas only; eliminating discharges to the storm drain by infiltrating the wash water; and training employees and subcontractors.

Suitable Applications

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

Limitations

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

Implementation

Use an offsite commercial washing business as much as possible. These businesses are better equipped to handle and dispose of the wash waters properly. Performing this work offsite can also be economical by eliminating the need for a separate washing operation onsite.

- Use phosphate-free, biodegradable soaps.
- Educate employees and subcontractors on pollution prevention measures.

Objectives

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

Legend:
✓ **Primary Objective**
✓ **Secondary Objective**

Targeted Constituents

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

Potential Alternatives

None

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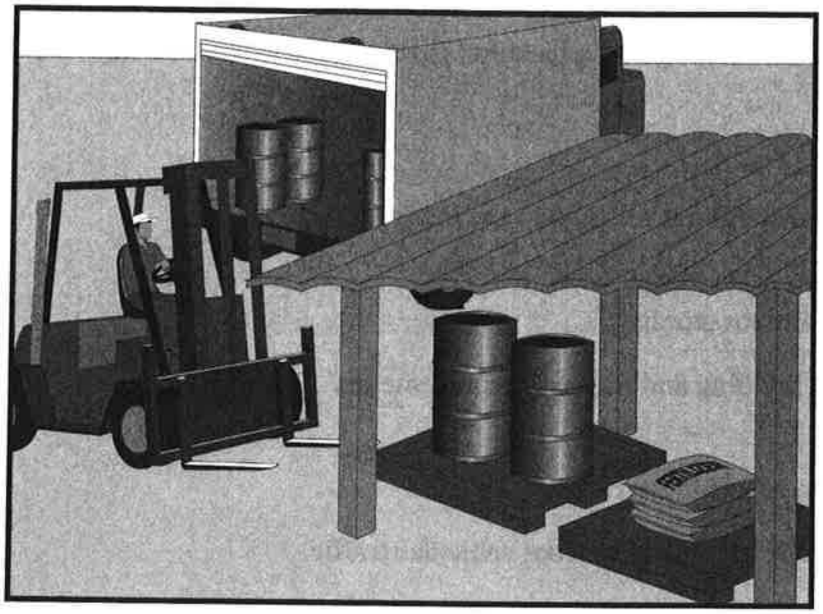
Material Delivery and Storage WM-1



Objectives

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

Legend:

✓ **Primary Objective**

✓ **Secondary Objective**

Targeted Constituents

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

Potential Alternatives

None

Description and Purpose

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

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

Suitable Applications

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

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

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Stockpile Management WM-3

Objectives

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

Legend:
✓ Primary Objective
✓ Secondary Objective

Targeted Constituents

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

Potential Alternatives

None

Description and Purpose

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

Suitable Applications

Implement in all projects that stockpile soil and other materials.

Limitations

None identified.

Implementation

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

- Locate stockpiles a minimum of 50 ft away from concentrated flows of stormwater, drainage courses, and inlets.
- Protect all stockpiles from stormwater runon using a temporary perimeter sediment barrier such as berms, dikes, fiber rolls, silt fences, sandbag, gravel bags, or straw bale barriers.

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Attachment D

- **Typical Post Construction BMPs**

Stormwater Management Goal	Description	Suggested BMPs
Peak Storm Water Runoff Discharge Rates	Reduce Post-development peak storm water runoff discharge rates to prevent downstream erosion.	Detention or Retention Systems such as Infiltration, Capture and Reuse, or Biofiltration.
Conserve Natural Areas	Maximize trees and other vegetation by planting additional vegetation, clustering trees areas, and promoting the use of native and/or drought tolerant plants.	Proposed landscaped areas and planters to reduce the footprint of impervious areas.
Minimize Storm Water Pollutants of Concern	Stormwater runoff from a site has the potential to contribute oils, greases, solids, pesticides, etc. to the storm drain system. New developments shall be designed in order to minimize the introduction of pollutants of concern which could result in impacts to the storm drain system. Pollutants of concern consist of any pollutants that exhibit one or more of the following characteristics: current loadings or historic deposits of the pollutant are impacting the beneficial use of a receiving water body, elevated levels of the pollutant are found in sediments of a receiving water body, or the inputs of the pollutant are at concentrations considered potentially toxic to humans and/or animals.	▪ Infiltration ▪ Capture and Reuse ▪ Biofiltration ▪ Structural Treatment BMPs
Protect Slopes and Channels	Project must implement BMPs in accordance with local codes and ordinance. Ways to decrease the potential for erosion in slopes or channels are: The Project Contractor will be required to implement a SWPPP at the time of construction indicating all BMPs that will be used to prevent erosion and runoff of any silt and debris off –site that could potentially impact storm drain conveyance systems.	▪ Convey runoff safely from tops of slopes and stabilize disturbed slopes ▪ Reduce flow to natural drainage systems to the maximum extent practicable ▪ Vegetate slopes with native or drought tolerant vegetation ▪ Install energy dissipaters including riprap at the outlets to new storm drains, culverts, conduits, or channels.

Provide Storm Drain System Stenciling and Signage	Project plans must include BMPs consistent with local codes and ordinances and the SUSMP to decrease potential for slopes and/or channels to erode and impact storm water runoff. The Project Contractor is responsible for protecting all catch basin and storm drain inlets within the site area during construction.	▪ Storm drain inlets and catch basins must be stenciled with "NO DUMPING – DRAINS TO OCEAN" ▪ Signs and/or graphical icons prohibiting legal dumping must be posted publicly along channels and creeks within the project area. ▪ Stencils and signs must be legible
Properly Design Outdoor Material Storage Areas	Outdoor material storage areas are facilities used for storage of materials. Improper storage of materials outdoors can cause pollutants to enter the storm drain system.	▪ Materials that can potentially contaminate storm water must be (1) placed in an enclosure, (2) protected by containment structures including berms, dikes, or curbs ▪ Storage area must be paved to prevent any leaks and spills ▪ Storage area must have a roof to minimize amount of storm water runoff
Provide Proof of Ongoing BMP Maintenance	Improper maintenance of BMP devices can lead to failure of the system or maintenance problems. It is important to consider who will perform the BMP maintenance as well as what equipment is required to maintain the BMP. Project applicant is required to provide verification of maintenance provisions through such means as may be appropriate, including, but not limited to legal agreements, covenants, CEQA mitigation, and/or Conditional Use Permits.	If Structural or Treatment control BMPs are located within a public area proposed for transfer, they will be the responsibility of the developer until they are accepted for transfer by the County or other public agency. Structural or Treatment Control BMPs must meet design standards adopted by the public agency for the BMP installed and shall be approved by the public reviewing agency prior to installation.

Design Standards for Structural or Treatment Control BMPs	Structural or Treatment control BMPs selected for use at any of the planning development categories shall meet the design standards of the SUSMP manual unless specifically exempted. Post-construction Structural or Treatment Control BMPs shall be designed to mitigate (infiltrate or treat) storm water runoff from either: ▪ Volumetric treatment control BMP ▪ Flow based treatment control BMP And control peak flow discharge rates to provide stream channel and over bank flood protection, based on design standards enforced by the local agency.	Storm water treatment facilities and systems shall be designed to meet the requirements of the SUSMP manual. Volumetric Treatment Control BMPs shall be designed to capture the volume of runoff from a 0.75-inch storm event, prior to discharging to the public storm drain system. Flow based Treatment Control BMPs shall be designed to the same standards as the volume-based control BMPs. The flow of runoff produced from the storm event shall be equal to or at least 0.2 inches per hour. Treatment devices shall be sized and designed to meet the above requirements outlined in the SUSMP manual. The Project engineer will be responsible for selecting a BMP for the project based on a hydrology study of the area.

APPENDIX G

PEDESTRIAN STUDY

MEMORANDUM

To:	Ms. Durre Shamsi City of Los Angeles Department of Transportation, Valley Development Review	Date:	May 31, 2012
From:	David S. Shender, P.E. Chin S. Taing, PTP Linscott, Law & Greenspan, Engineers	LLG Ref:	1-11-3948-1
Subject:	**Pedestrian Safety Study - 4141 Whitsett Avenue, City of Los Angeles**		

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This memorandum has been prepared by Linscott, Law & Greenspan, Engineers (LLG) to summarize our review of pedestrian safety in conjunction with the Studio City Senior Living Center project located at 4141 Whitsett Avenue, in the City of Los Angeles. Pursuant to our coordination with you and Ms. Pauline Chan with the Department of Transportation Pedestrian and School Safety section, we understand that the preparation of a pedestrian safety study is required as outlined in the City of Los Angeles Department of Transportation (LADOT) assessment letter[1], dated May 2, 2012. The pedestrian safety study documents existing pedestrian amenities near the project site as well as recommends measures for consideration to improve pedestrian connections and enhance walkability and mobility for seniors. This pedestrian safety study has been prepared based on field observations of existing pedestrian conditions in the study area, and supplemented by existing morning and afternoon peak hour pedestrian traffic counts conducted at site adjacent intersections along Whitsett Avenue.

Project Site Pedestrian Amenities

The proposed project consists of the development of a 200-unit senior residential condominium campus while retaining the existing nine-hole golf course, club house, driving range, and surface parking lot. The senior residential housing will be age-restricted for seniors aged 55 and older. The project site has been designed to encourage pedestrian activity and walking as a transportation mode.[2] The underlying principle is that pedestrians should not be delayed, diverted, or placed in danger. A review of the project site plan and pedestrian walkway network indicates that the five primary characteristics (i.e., connectivity, convivial, conspicuous, comfortable, and convenient) are accommodated as part of the proposed project. The project site is adjacent to and accessible from nearby commercial uses (e.g., retail, restaurant, etc.) and other amenities along the Ventura Boulevard corridor, as well as adjacent public

[1] City of Los Angeles Department of Transportation Inter-Departmental Correspondence, Traffic Assessment for the Proposed Studio City Senior Living Center Project Located at 4141 Whitsett Avenue, DOT Case No. SFV-011-088, dated May 2, 2012.
[2] For example, refer to http://www.walkscore.com/, which generates a walkability score of approximately 82 (Very Walkable – most errands can be accomplished on foot) out of 100 for the project site.

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bus transit stops. The pedestrian walkways within the site and the adjacent sidewalks will be appropriately landscaped and designed to provide a friendly walking environment. Additionally, the walkways will be well lit and include appropriate wayfinding signage.

The interior of the project is planned to provide a combination of landscape and hardscape that facilitates internal accessibility as well as connectivity to a broad range of uses beyond its boundaries. The project will include pedestrian gates on all sides, which will allow residents access to the golf course and driving range, the sidewalk along the Los Angeles River, and the sidewalk along Whitsett Avenue. Once outside the project, residents will be able walk to a myriad of nearby destinations, including grocery stores, restaurants, coffee houses, bars, retail shops, movie theaters, schools, parks, libraries, and fitness establishments. The existing pedestrian conditions surrounding the project site are discussed in detail below.

Review of Existing Pedestrian Conditions

Existing pedestrian amenities in the project study area are provided along Whitsett Avenue adjacent to the project site. Specifically, the following pedestrian amenities are provided near the project site:

- Standard marked pedestrian crosswalks exist at all four approaches to the Whitsett Avenue/Ventura Boulevard intersection (i.e., 15 feet in width and painted white)

- Pedestrian movement push buttons are provided for walk movements across Ventura Boulevard at the Whitsett Avenue/Ventura Boulevard intersection

- Americans With Disabilities Act (ADA) ramps are provided at four corners of the Whitsett Avenue/Ventura Boulevard intersection

- Sidewalks and combination sidewalks/parkways are provided along the project site property frontages as listed below:

    - Whitsett Avenue – combination 10.5-foot sidewalk/parkway (5 feet/5.5 feet) on the west side; combination 15-foot sidewalk/parkway (4.5 feet/10.5 feet) on the east side.

    - Valleyheart Drive – combination 10.5-foot sidewalk/parkway (5 feet/5.5 feet) on the north side west of Whitsett Avenue.

    - Ventura Boulevard – 15-foot sidewalk on both sides.

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The widths of the sidewalks and crosswalks, as well as the location of bus stops and shelters, traffic signal pedestrian push buttons, etc., are shown in ***Figure 1***. Photographs of the sidewalks/parkways along Whitsett Avenue adjacent to the proposed residential project are displayed in ***Figure 2***.

Existing Peak Period Pedestrian Traffic Volumes

Pedestrian traffic counts were conducted in conjunction with the weekday AM and PM peak period vehicle traffic counts conducted at the study intersections as analyzed in the Traffic Study.[3] Specifically, the pedestrian traffic counts were conducted during the weekday AM peak period (7:00 AM to 10:00 AM) and PM peak period (3:00 PM to 6:00 PM) in November 2011. The existing weekday AM and PM peak hour pedestrian traffic volumes crossing each leg of the study locations near the site are presented in ***Figure 3***.

As presented in *Figure 3*, a moderate level of pedestrian activity currently occurs at the Whitsett Avenue/Valley Spring Lane and Whitsett Avenue/Valleyheart Drive intersections along the easterly property frontages. The total AM and PM peak hour pedestrian volumes observed at the three site adjacent intersections along Whitsett Avenue are as follows:

- Whitsett Avenue/Valley Spring Lane: AM peak hour - 18 pedestrians; PM peak hour - 26 pedestrians.

- Whitsett Avenue/Valleyheart Drive: AM peak hour - 47 pedestrians; PM peak hour - 45 pedestrians.

- Whitsett Avenue/Ventura Boulevard: AM peak hour - 67 pedestrians; PM peak hour - 90 pedestrians.

The moderate level of pedestrian activity along the west side of Whitsett Avenue adjacent to the proposed residential complex (i.e., on average one pedestrian every two to three minutes during the peak commute periods) indicates that future pedestrians related to the project will "blend in" and enhance overall pedestrian safety based on the "safety in numbers" phenomenon documented in prior pedestrian safety studies.[4]

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[3] Traffic Impact Study for Studio City Senior Living Center Project, City of Los Angeles, prepared by LLG Engineers, February 2, 2012.
[4] Peter L. Jacobsen, "Safety in Numbers: More Walkers and Bicyclists, Safer Walking and Bicycling," Injury Prevention, September 1, 2003.

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Potential Measures to Enhance Walkability

Based on review of the existing pedestrian conditions adjacent to the project site, the following measures are recommended for consideration to improve pedestrian connections and enhance walkability near the project site (with the focus being on the separation of pedestrians from vehicles and measures that increase the visibility of pedestrians). It should be noted that such recommendations made should be used for planning purposes only and would require further engineering design and City staff input prior to implementation.

- Improve the existing sidewalk along the Whitsett Avenue property frontage as portions of the sidewalks are cracked and uneven and in poor conditions for pedestrians. The sidewalks will need to be well-lit, even, and wide enough to accommodate seniors in walkers or wheelchairs.

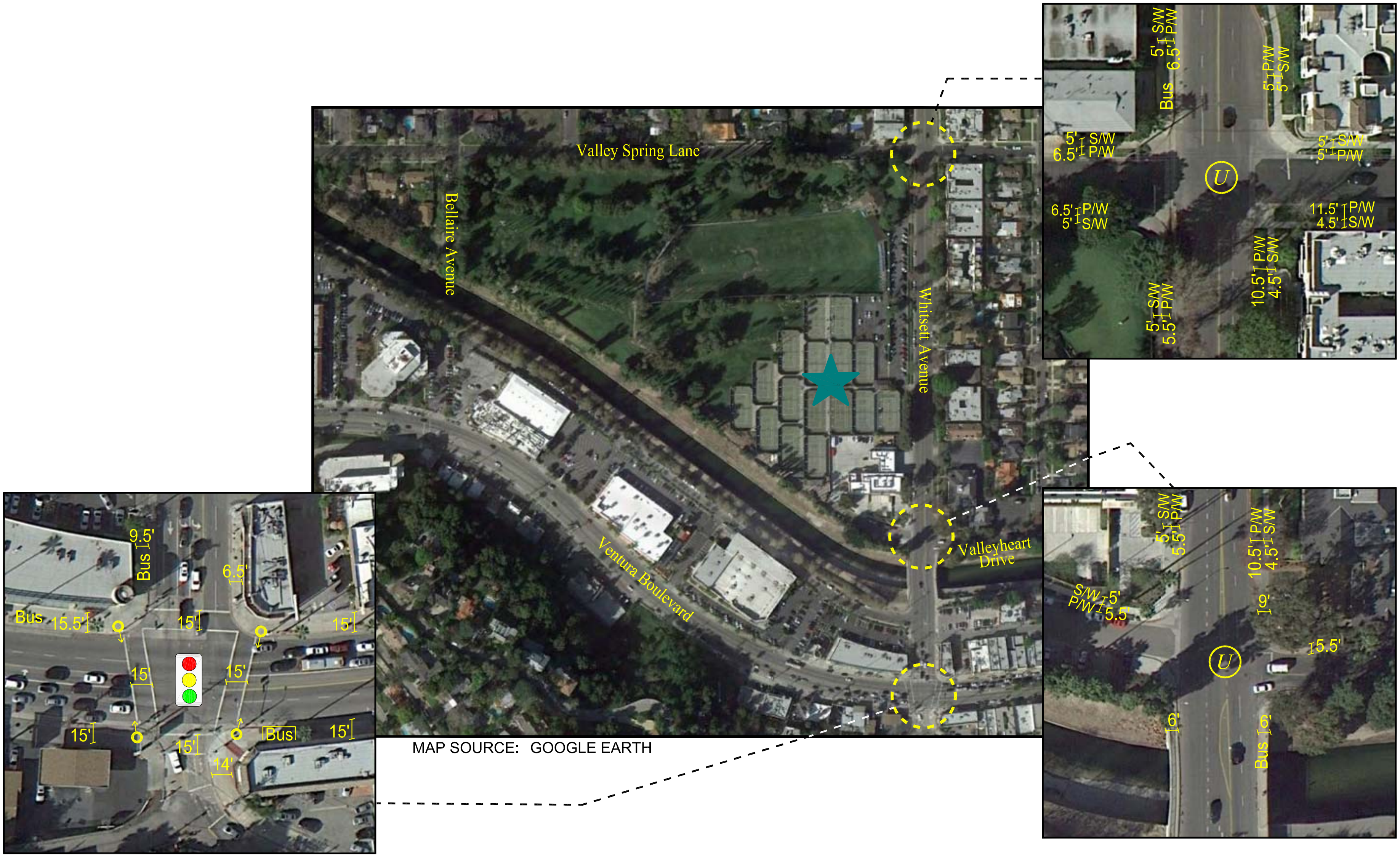
- Review (by LADOT) existing traffic signal timing at the Whitsett Avenue/Ventura Boulevard intersection to ensure that pedestrians, in particular senior walkers, have adequate time to safely cross Whitsett Avenue and Ventura Boulevard during allocated pedestrian walk phases.

- Install a high visibility crosswalk with appropriate signage at the west leg of the Whitsett Avenue/Valleyheart Drive intersection (i.e., across Valleyheart Drive) to provide access to nearby transit stops.

- Install a high visibility crosswalk with appropriate signage across the west leg of the Whitsett Avenue/Valley Spring Lane intersection (i.e., across Valley Spring Lane) to provide access to nearby transit stops.

Please contact us should you have any questions regarding this pedestrian safety review conducted for the proposed Studio City Senior Living Center project.

cc: File



NOTES:

PROJECT SITE

Bus BUS STOP

BUS SHELTER

PEDESTRIAN PUSH BUTTON

SIGNALIZED INTERSECTION

UNSIGNALIZED INTERSECTION

S/W SIDEWALK

P/W PARKWAY

NOT TO SCALE

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FIGURE 1
EXISTING PEDESTRIAN CONDITIONS

STUDIO CITY SENIOR LIVING CENTER PROJECT

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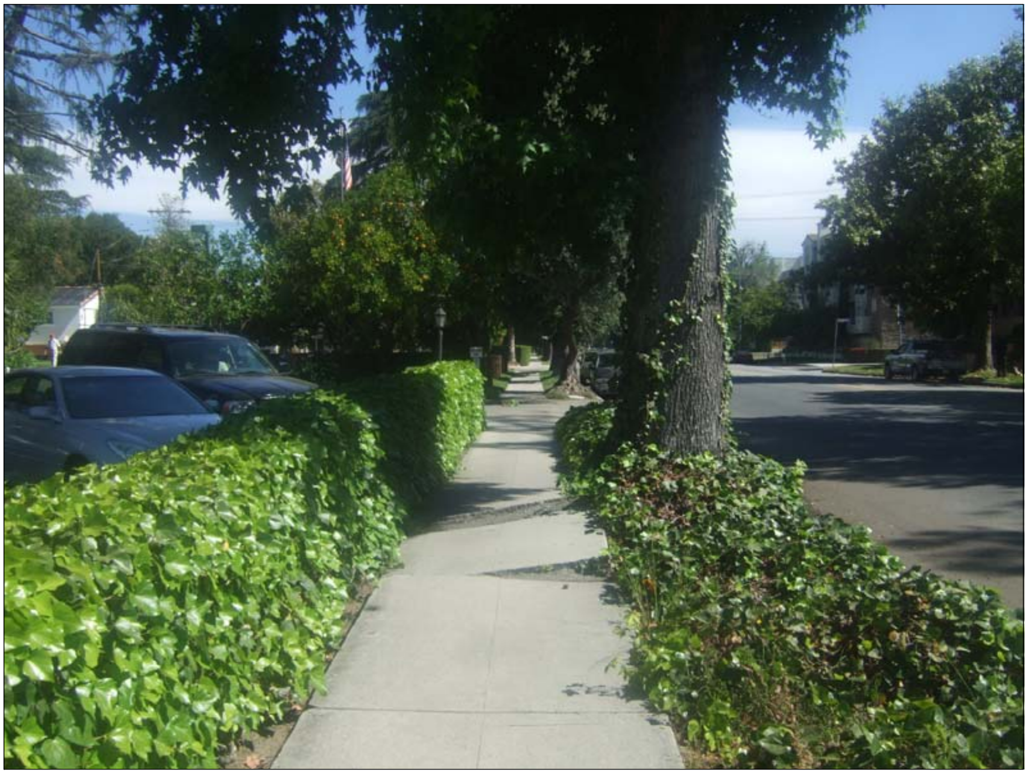

West side of Whitsett Ave. Adjacent to Site - Looking North

West side of Whitsett Ave. Adjacent to Site - Looking South

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FIGURE 2
PHOTOGRAPHS OF ADJACENT SIDEWALKS OF WHITSETT AVENUE

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STUDIO CITY SENIOR LIVING CENTER PROJECT

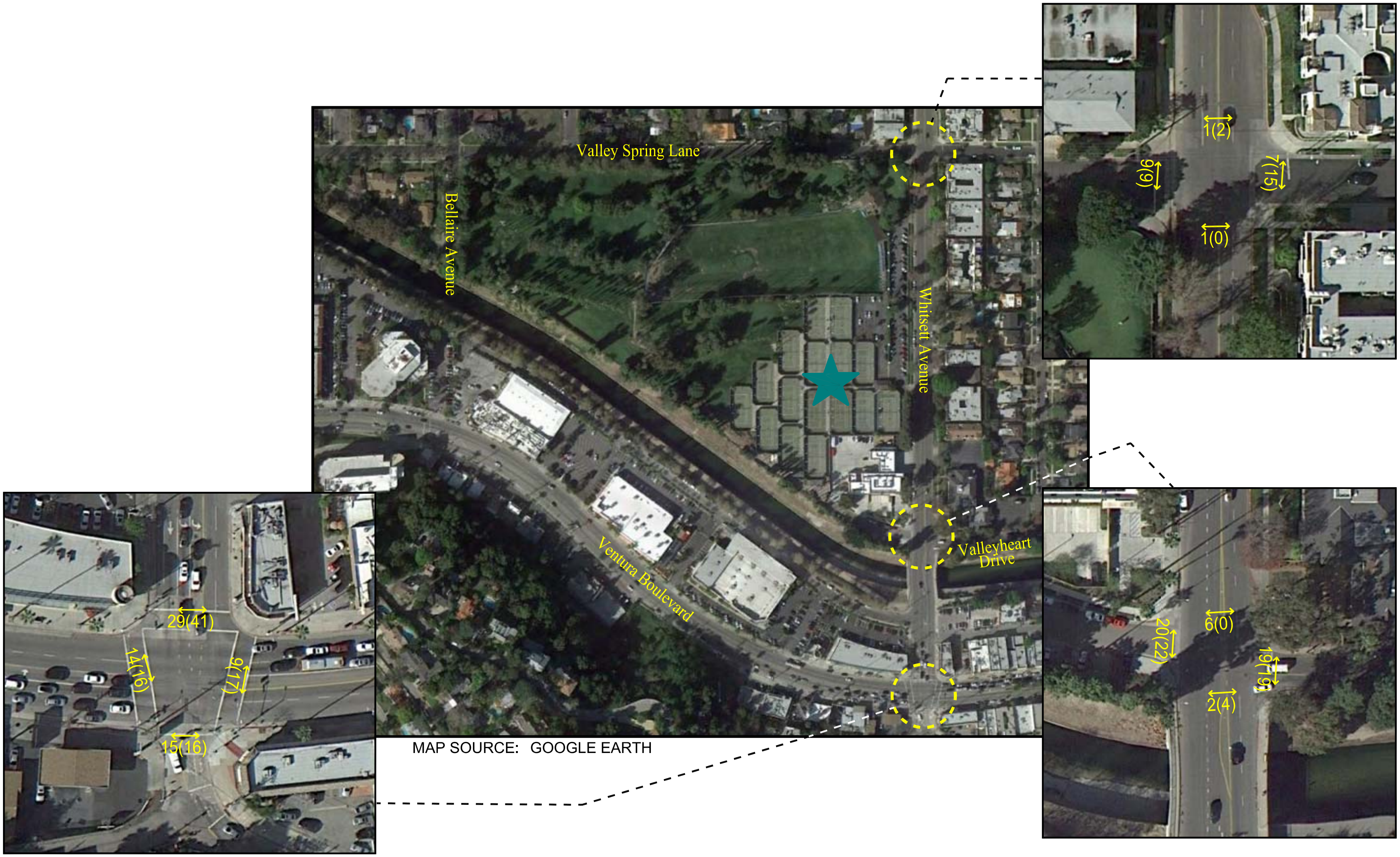

FIGURE 3
EXISTING PEAK HOUR PEDESTRIAN VOLUMES

STUDIO CITY SENIOR LIVING CENTER PROJECT

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APPENDIX H

RIO CHECKLIST

Photo courtesy of Los Angeles Public Library

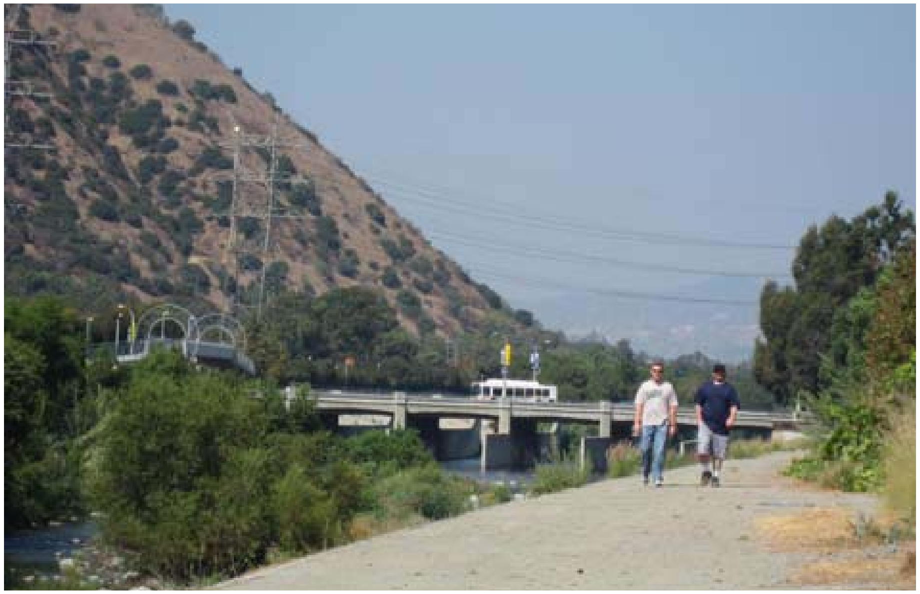
Section 5 **Property Improvement Guidelines**

Section: 5.0 **PROPERTY IMPROVEMENT GUIDELINES**

Prior to obtaining a building permit from the Department of Building and Safety, all Projects shall be referred to City Planning for sign off from the LA-RIO clearance item. In order to obtain a sign off, the applicant shall provide a completed copy of this Section (5) signed by the owner and architect of record, as well as supporting documentation (drawings and specifications) that demonstrate the project has complied with the Property Improvement Guidelines described below.

Projects are required to comply with the identified prerequisites, denoted with a "P", as well as achieve the minimum numbers of points per category. It may be possible to earn points from several categories by using one strategy. This practice is accepted and encouraged by the Department of City Planning.

Single family home projects must achieve a minimum of 10 points and are required to obtain points from the Watershed category only. All other projects are required to achieve a combined total of 20 points from the Watershed, Urban Design and Mobility categories.



	Single Family	Multi-Family	Commercial	Manufacturing	Public Facilities
Total Points Needed	**10**	**20**	**20**	**20**	**20**
The categories and their corresponding point requirements are as follows:					
Watershed	**10**	**10**	**10**	**10**	**10**
Urban Design		**5**	**5**	**5**	**5**
Mobility		**5**	**5**	**5**	**5**

Case No(s):

Project Address:

Project Description:

Owner(s):

Architect:

Landscape Architect:

	Single Family	Multi-Family	Commercial	Manufacturing	Public Facilities
Total Points Needed	**10**	**20**	**20**	**20**	**20**
10 points needed for Watershed		15			
5 points needed for Urban Design		12			
5 points needed for Mobility		5			
Project Total Points		**32**			

Section: 5.1 **Watershed**

Section: 5.1.1 **Watershed: Stormwater Management**

The following point options do not substitute for SUSMP or Landscape Ordinance requirements that a project may be subject to. However, the same strategies that satisfy the LA-RIO may also apply towards the requirements of SUSMP or the Landscape Ordinance. To find out if a project is subject to SUSMP, please visit www.lastormwater.org.

In order to maintain flood protection and assess the optimum best management practices for a particular site and soil conditions, applicants should meet with the Bureau of Sanitation for guidance as early as possible. Projects subject to SUSMP can be assisted at the Bureau of Sanitation, Watershed Protection Division's Public Counter, located on the 3rd floor of 201 N. Figueroa (213-482-7066). If the project is not subject to SUSMP, applicants may visit the 10th floor of 1249 S. Broadway (213-485-3996) for guidance. Both offices require appointments.

	Single Family	Multi-Family	Commercial	Manufacturing	Public Facilities
Total Points Needed	**10**	**20**	**20**	**20**	**20**
Points 10					
Divert at least 75% of roof runoff into rain gardens, french drains, bioretention ponds, swales, cisterns or other on-site practices that would prevent flows from exiting the site.	3	3	3	3	3
Design hardscape spaces, including driveways and parking areas, to incorporate the detention, retention and/or filtration of runoff using a bioswale, cistern, french drain, and/or other water collection system that will prevent at least 75% of runoff from leaving the site.	3	3	3	3	3
Design and install a green roof that is partially or completely covered with drought tolerant vegetation and soil, or a growing medium, planted over a waterproofing membrane. The roof area dedicated as a green roof shall cover no less than 50% of the roof area.	3	3	3	3	3
Please consult with the Bureau of Sanitation's Watershed Division for guidance with the point options below. These options are only feasible if flood protection is maintained.					
Daylight the portion of a stream that flows through the property.	5	5	5	5	5
Remove the concrete from sides and/or bottom of a stream that flows through the property.	5	5	5	5	5

Section: 5.1.2 **Watershed: Landscaping**

Assess soils, topography, hydrology and microclimate in order to develop the planting patterns for each site.

	Single Family	Multi-Family	Commercial	Manufacturing	Public Facilities
Total Points Needed	**10**	**20**	**20**	**20**	**20**
Select plants identified as California Friendly by the Metropolitan Water District's Be Water Wise program. Please visit: www.bewaterwise.com	1	1	1	1	1
Select indigenous native plants per the County's Los Angeles River Master Plan Landscaping Guidelines and Plant Palettes. Please consult pages 28-29 of the Guidelines for a "Short List" of Los Angeles River Plants. The listed indigenous native species can be combined with a limited number of other California species, cultivars and hybrids of natives to achieve greater visual impact. The Landscaping Guidelines can be found at http://ladpw.org/wmd/watershed/LA/LAR_Planting_guidelines_webversion.pdf	3	3	3	3	3
Contract with a licensed landscape architect to design and install a landscape of native plants arranged into naturalized patterns that reflect their cultural needs, adaptations, and companion species.	2	2	2	2	2
Contract with a garden designer to design and install a landscape of native plants arranged into naturalized patterns that reflect their cultural needs, adaptations, and companion species.	1				
Remove existing exotic weedy plants such as identified by the California Invasive Plant Council (CAL-IPC). Examples include the Mexican fan palm (Washingtonia robusta) and fountain grass (Pennisetum setaceum). Please visit www.cal-ipc.org for additional information on invasive plant species and management techniques.	2	2	2	2	2
Complete a class related to native plant gardening at a local nursery or college.	1	1	1	1	1

	Single Family	Multi-Family	Commercial	Manufacturing	Public Facilities
Total Points Needed	**10**	**20**	**20**	**20**	**20**

Section: 5.1.3 **Watershed: Water Conservation**

	Single Family	Multi-Family	Commercial	Manufacturing	Public Facilities
Develop and implement a strategy to establish native and/or other drought tolerant species that do not require regular irrigation. This may require a temporary irrigation system.	2	2	2	2	2
Install a high-efficiency "smart" irrigation system.	1	1	1	1	1
Utilize graywater or recycled stormwater for at least 50% of irrigation needs.	2	2	2	2	2
Utilize graywater or recycled stormwater for 100% of irrigation needs.	3	3	3	3	3

Section: 5.1.4 **Watershed: Hardscape**

	Single Family	Multi-Family	Commercial	Manufacturing	Public Facilities
Use hardscape materials (impervious or pervious) on no more than 50% of the site area exclusive of building footprint. The balance of the area shall be planted with native and/or drought tolerant species.	2	2	2	2	2
Use porous paving instead of traditional impervious materials for at least 75% of all hardscape areas.		2	2	2	2
Select hardscape materials as defined and recommended by the LARMP Landscaping Guidelines (http://ladpw.org/wmd/watershed/LA/LAR_Planting_guidelines_webversion.pdf) on pages 40-41 of Part II-LAR Planting Guidelines. River rock and decomposed granite are especially recommended.	1	1	1	1	1

Section: 5.1.5 **Watershed: Landscape/Hardscape Maintenance**

	Single Family	Multi-Family	Commercial	Manufacturing	Public Facilities
Total Points Needed	**10**	**20**	**20**	**20**	**20**
Prepare and implement a maintenance manual and/or program that follows the Landscaping Maintenance Guidelines defined on page 48, Part II-LAR Planting Guidelines of the LARMP Design Guidelines. This includes information about supplemental irrigation, extended maintenance, pruning, weeding and supplemental mulch.		**1**	**1**	**1**	**1**
Prepare a maintenace manual and/or program for parking lots and structures that establishes regular and ongoing procedures to maintain the surfaces free of chemical residues and debris.		**1**	**1**	**1**	**1**
Prepare and implement a maintenance manual and/or program that uses best management practices to provide sustainable organic horticulture, making chemical fertilizers and herbicides unnecessary.		**2**	**2**	**2**	**2**

Section: 5.1.6 **Watershed: Open Space**

	Single Family	Multi-Family	Commercial	Manufacturing	Public Facilities
Provide a rear-and/or side-yard easement adjacent to the River. The easement area shall be used to maximize open space for native landscaping, create active plazas or courtyards and/or provide additional pedestrian amenities visible and accessible from the River. One point will be accrued for every 1% of easement relative to the overall lot square footage.	**1 per each 1%**	**1 per each 1%**	**1 per each 1%**	**1 per each 1%**	**1 per each 1%**

10 points needed for: Watershed

Section: 5.2 **Urban Design**

Section: 5.2.1 **Urban Design: Connectivity**

	Single Family	Multi-Family	Commercial	Manufacturing	Public Facilities
Total Points Needed		**20**	**20**	**20**	**20**
Points 20					
Provide an entrance for employees, visitors, customers and/or clients that fronts on and is visible from the street and is open and easily accessible during business hours.		P	P	P	P
Configure the entrance to be fully accessible per the American Disabilities Act (ADA), such that the auxiliary entrance (such as a ramp next to the main path to the primary entry) for persons with mobility limitations would not be necessary.		P	P	P	P
Provide an entrance for employees, visitors, customers and/or clients that fronts on and is visible from the greenway and is open and easily accessible during business hours.		1	1	1	1
Design, build, and provide for the on-going maintenance of a permanent pedestrian easement (paseo) to the Greenway that is publicly accessible during daylight hours and is open to the sky. Easement should be a minimum 7' in width and provide visible connections between the street and the River.		3	3	3	3
Design the paseo to include amenities such as: outdoor dining and seating areas; tables for board and card games; sun and shade; landscaping; sculptures and fountains.		1	1	1	1
Create convenient access between the River and the property that is available for public and/or private use, where a property line is coterminous with the River.		2	2	2	2

	Single Family	Multi-Family	Commercial	Manufacturing	Public Facilities
Total Points Needed		**20**	**20**	**20**	**20**

Section: 5.2.2 **Urban Design: Vehicle Parking**

	Single Family	Multi-Family	Commercial	Manufacturing	Public Facilities
Site parking such that no parking is located between the building(s) and the street.		P	P	P	P
Screen surface parking that is visible from the Greenway and/or street with a landscaped barrier and/or green screen.		P	P	P	P
Site parking such that no parking is located between the building(s) and the River.		2	2	2	2
Screen ground floor parking behind active uses/services that are accessible from the street and/or Greenway.		2	2	2	2

Section: 5.2.3 **Urban Design: Continuous Street Frontage**

	Single Family	Multi-Family	Commercial	Manufacturing	Public Facilities
Site buildings no further from the street than required by the prevailing code. If there is no setback requirement, site building between 0' and 5' from street.		P	P	P	P
Provide vehicular access to and from the site with as few driveways as possible. Where feasible, utilize side streets and/or alleys for vehicular access.		1	1	1	1
Design the width of each driveway to meet and not exceed the standard width identified as necessary to accommodate vehicles.		1	1	1	1

	Single Family	Multi-Family	Commercial	Manufacturing	Public Facilities
Total Points Needed		**20**	**20**	**20**	**20**

Section: 5.2.4 **Urban Design: Scale and Character**

	Single Family	Multi-Family	Commercial	Manufacturing	Public Facilities
Design the building such that the roofline within 10′ of the building edge does not exceed the height of any building on an abutting property by more than 10′.		1	1	1	1
Design the building so that it does not exceed the height of any building on an abutting property by more than 10′.		2	2	2	2
Adaptively reuse an existing building.		2	2	2	2
Design any fence or screen in the setback area(s) adjacent to the Greenway to be no greater than 42 inches in height.		1	1	1	1

Section: 5.2.5 **Urban Design: Transparency**

Design facades visible from the Greenway and/or street such that a percentage of surface area incorporates transparent features. Consider the use of awnings and roof overhangs on south-and/or west-facing facades to balance the benefits of transparency without compromising the energy efficiency requirements of Title 24. Points can be obtained by meeting the requisite amount of transparency for each building type and/or use noted below.

	Single Family	Multi-Family	Commercial	Manufacturing	Public Facilities
Ground level retail: at least 50%			2		2
Ground level offices and other commercial uses: at least 35%			2		2
Multi-family residential, industrial and public facility uses: at least 25%		2			2
Upper floors: at least 20%		1	1	1	1

	Single Family	Multi-Family	Commercial	Manufacturing	Public Facilities
Total Points Needed		**20**	**20**	**20**	**20**

Section: 5.2.6 **Urban Design: Visibility**

	Single Family	Multi-Family	Commercial	Manufacturing	Public Facilities
Locate and design the building to protect views of surrounding urban landmarks and natural features to and from the Greenway and/or street.		1	1	1	1
Design landscape, signage and architectural elements so that they do not obstruct pedestrian movement or views from the Greenway and/or street.		1	1	1	1

Section: 5.2.7 **Urban Design: Site Lighting**

	Single Family	Multi-Family	Commercial	Manufacturing	Public Facilities
Include permanent attachments to site lighting so that the light sources are not visible from a public right of way and any off-site glare is prevented.		P	P	P	P
Provide site lighting that distributes light evenly and avoids harsh shadows and glare.		1	1	1	1
Provide site lighting that is integrated into the architecture.		1	1	1	1

Section: 5.2.8 **Urban Design: Visual Clutter**

	Single Family	Multi-Family	Commercial	Manufacturing	Public Facilities
Total Points Needed		**20**	**20**	**20**	**20**
Design trash/recycling enclosures so that dumpsters and trash bins are not visible to the general public from either the Greenway or the street.		**P**	**P**	**P**	**P**
Screen from public view all exterior rooftop and ground-level mechanical equipment, which includes HVAC equipment, exhaust fans, wireless telecommunication facility equipment cabinet enclosures and antennas, and satellite dishes.		**P**	**P**	**P**	**P**
Limit building or site signage to address identification, business and operational identification, and the name of the building.		**1**	**1**	**1**	**1**
Design security features that deter criminal activity but maintain a positive image for the community. Design security grills so that they are recessed completely into pockets that conceal the grill when they are retracted. Design the pockets so that they are integrated into the design of the building.		**1**	**1**	**1**	**1**
Underground the utility lines leading to the project site. One point will be accrued for every 100 feet of lines that are undergrounded.		**1 per 100′**	**1 per 100′**	**1 per 100′**	**1 per 100′**
20 points needed for: Urban Design					

Section: 5.3 **Mobility**

Section: 5.3.1 **Mobility: Alternatives**

	Single Family	Multi-Family	Commercial	Manufacturing	Public Facilities
Total Points Needed		**20**	**20**	**20**	**20**
Points 5					
Provide transit passes for residents and/or employees for the first year of the building's operation.		1	1	1	1
Allocate a permanent location, accessible and visible to the users of the building for local transit and para transit information (times, routes, rates) on bulletin boards, kiosks and/or sign boards. The information provided shall be maintained as current and up to date.		1	1	1	1
Provide facilities for securing bicycles for at least 5% of the regular building occupants. For each additional 5% accommodated, an additional point will be rewarded, for a maximum of 3 points.		1	1	1	
Provide facilities for securing bicycles for at least 15% of building occupants.		2			
Provide on-site locker facilities for bicyclists.		1	1	1	1
Provide on-site changing/shower facilities for employees.			1	1	1
Allocate at least 2% of parking spaces on-site for a third party shared car program.		1	1	1	1
Organize and provide a van and/or carpool service for employees.			1	1	1
5 points needed for: Mobility Alternatives					

APPENDIX I

TRAFFIC IMPACT STUDY

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engineers

TRAFFIC IMPACT STUDY

STUDIO CITY SENIOR LIVING CENTER PROJECT

City of Los Angeles, California
February 2, 2012

Prepared for:

Planning Associates, Inc.
4040 Vineland Avenue, Suite 108
Studio City, California 91604

LLG Ref. 1-11-3948-1

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APPENDICES

APPENDIX

STUDIO CITY SENIOR LIVING CENTER PROJECT

City of Los Angeles, California
February 2, 2012

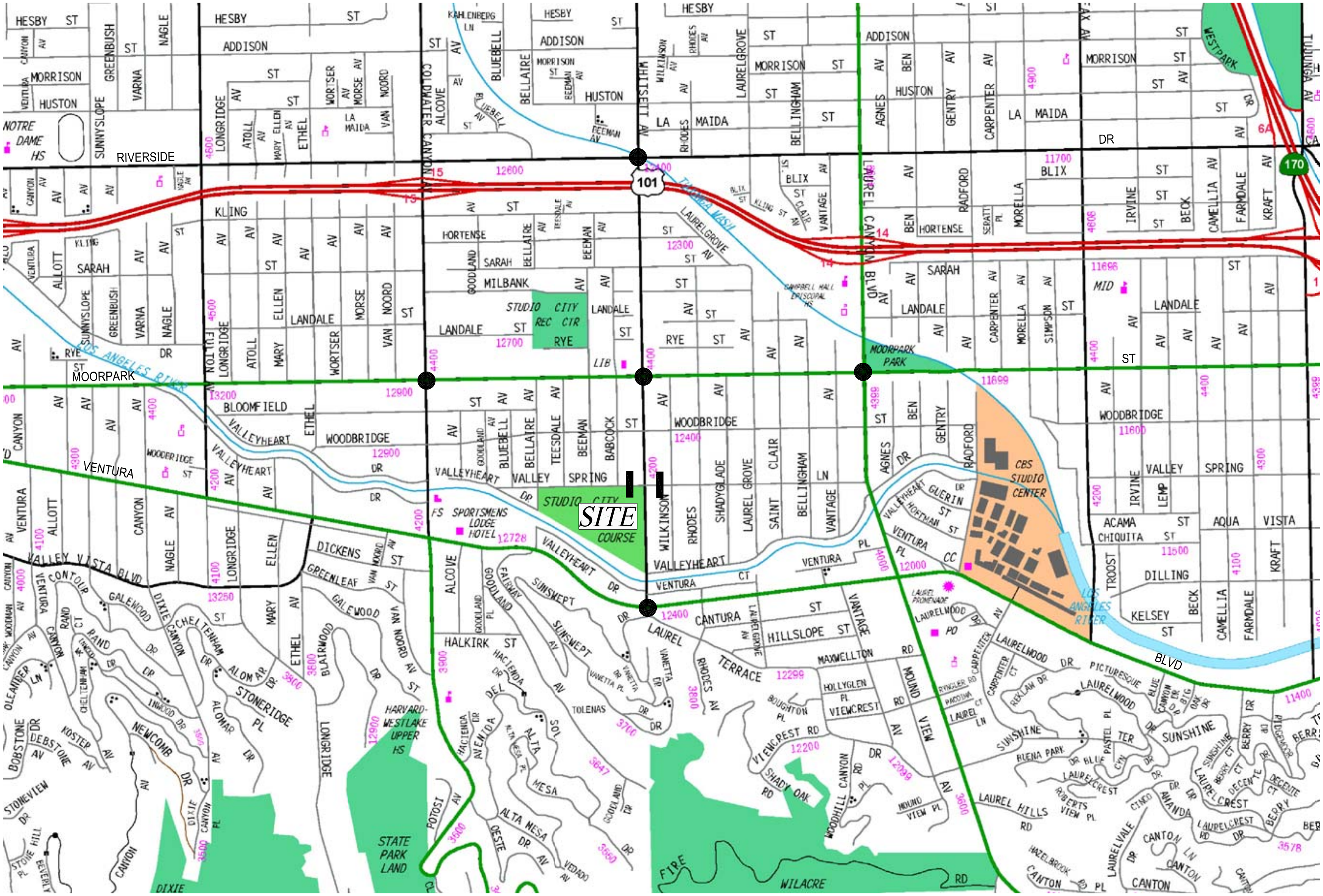
1.0 INTRODUCTION

This traffic analysis has been conducted to identify and evaluate the potential traffic impacts of the proposed Studio City Senior Living Center project (proposed project). The project applicant seeks to obtain entitlements to construct a senior residential community at 4141 Whitsett Avenue in the Studio City area of the City of Los Angeles, California. The proposed project is located in the Sherman Oaks-Studio City-Toluca Lake-Cahuenga Pass Community Plan area of the City of Los Angeles. The project site, which is situated at the southwest corner of the Valley Spring Lane/Whitsett Avenue intersection, is bounded by Valley Spring Lane to the north, Bellaire Avenue to the west, Valleyheart Drive North and the Los Angeles River to the south, and Whitsett Avenue to the east. The proposed project site and general vicinity are shown in ***Figure 1–1***.

The traffic analysis follows City of Los Angeles traffic study guidelines[1] and is consistent with traffic impact assessment guidelines set forth in the Los Angeles County Congestion Management Program[2]. This traffic analysis evaluates potential project-related impacts at five key intersections and two key study street segments in the vicinity of the project site. The study locations were determined in consultation with City of Los Angeles Department of Transportation (LADOT) staff. The Critical Movement Analysis method was used to determine Volume-to-Capacity ratios and corresponding Levels of Service for the five study intersections. A review also was conducted of Los Angeles County Metropolitan Transportation Authority freeway and intersection monitoring stations to determine if a Congestion Management Program transportation impact assessment analysis is required for the proposed project.

This study (i) presents existing traffic volumes, (ii) includes existing traffic volumes with the forecast net new traffic volumes from the proposed project, (iii) recommends mitigation measures, where necessary, (iv) forecasts future cumulative pre-project traffic volumes, (v) forecasts future traffic volumes with the proposed project, (vi) determines future forecast with project-related impacts, and (vii) recommends mitigation measures, where necessary.

[1] *Traffic Study Policies and Procedures*, City of Los Angeles Department of Transportation, August 2011.
[2] *2010 Congestion Management Program for Los Angeles County*, Los Angeles County Metropolitan Transportation Authority, 2010.



MAP SOURCE: RAND MCNALLY & COMPANY

● STUDY INTERSECTION

▬ STUDY STREET SEGMENT

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FIGURE 1-1
VICINITY MAP

STUDIO CITY SENIOR LIVING CENTER PROJECT

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1.1 Study Area

Upon coordination with LADOT staff, a total of seven locations, including five study intersections and two street segments, have been identified for evaluation. These study locations provide local access to the study area and define the extent of the boundaries for this traffic impact analysis. Further discussion of the existing street system and study area is provided in Section 5.0.

The general location of the project in relation to the study locations and surrounding street system is presented in *Figure 1–1*. The traffic analysis study area is generally comprised of those locations which have the greatest potential to experience significant traffic impacts due to the proposed project as defined by the Lead Agency. In the traffic engineering practice, the study area generally includes those intersections that are:

a. Immediately adjacent or in close proximity to the project site;

b. In the vicinity of the project site that are documented to have current or projected future adverse operational issues; and

c. In the vicinity of the project site that are forecast to experience a relatively greater percentage of project-related vehicular turning movements (e.g., at freeway ramp intersections).

The locations selected for analysis were based on the above criteria, proposed Studio City Senior Living Center project peak hour vehicle trip generation, the anticipated distribution of project vehicular trips and existing intersection/corridor operations.

2.0 PROJECT DESCRIPTION

2.1 Site Location

The proposed Studio City Senior Living Center project is located at 4141 Whitsett Avenue in the Studio City area of the City of Los Angeles, California. The proposed project is located in the Sherman Oaks-Studio City-Toluca Lake-Cahuenga Pass Community Plan area of the City of Los Angeles. The project site, which is situated at the southwest corner of the Valley Spring Lane/Whitsett Avenue intersection, is bounded by Valley Spring Lane to the north, Bellaire Avenue to the west, Valleyheart Drive North and the Los Angeles River to the south, and Whitsett Avenue to the east. The proposed project site and general vicinity are shown in *Figure 1–1*.

2.2 Existing Project Site

The existing triangular shaped project site totals approximately 16.1 acres and is currently occupied by a pitch and putt golf course, driving range, club houses and tennis courts. The existing Studio City Golf Course occupies roughly 10.2 acres on the northerly portion of the project site. The pitch and putt golf course is a nine hole, par three course located primarily along Valley Spring Lane and Bellaire Avenue. The golf course also includes a club house, snack bar type restaurant, and driving range. The driving range is located in the central area of the site and includes 24 stations. The tennis courts occupy roughly 5.9 acres on the southerly portion of the project site. A total of 16 tennis courts are currently provided on the site along with a small club house. It should be noted that the existing tennis courts will be removed to accommodate the proposed project. Additionally, the southeastern 1.1-acre parcel of land, which is occupied by Los Angeles Fire Station No. 78, is not under the ownership of the project applicant and will not be part of the proposed project.

The primary parking areas for the existing site are located along Whitsett Avenue and between the driving range and tennis courts. Access to the existing golf and tennis facility's parking areas is provided via two driveways (one inbound, one outbound) along the Whitsett Avenue property frontage. A small service driveway is also provided on Valley Spring Lane, immediately west of Whitsett Avenue.

2.3 Proposed Project Description

The project applicant proposes to subdivide the subject property into two parcels, Lots 1 and 2. Lot 1 will be approximately 504,764 square feet (11.59 acres) and will retain, with minor alterations to accommodate the lot split, the existing nine-hole golf course, club house, driving range, and 22 surface parking spaces. Lot 2 will be approximately 196,946 square feet (4.52 acres) and will be developed with an approximately 336,000 square-foot, 200-unit senior residential condominium campus. The approximate 1.1 acre site located at the northwesterly corner of the Whitsett Avenue/Valleyheart Drive intersection, which is occupied by Los Angeles Fire Station No. 78, is not a part of the proposed project.

The proposed project development site will be approximately 4.52 acres at the southeasterly portion of the property and will be developed with senior housing units. The housing will consist of six, 45-foot high, four-story buildings. The ground floor of four buildings will provide common areas for senior activities. The six buildings will house a total of 200 senior condominium units and 40,000 square feet of common area. Of the 200 units, 136 will be two-bedroom units and 64 will be one-bedroom units. The total building area is expected to be approximately 336,000 square feet. The senior residential housing will be age-restricted for seniors aged 55 and older.

A total of approximately 613 subterranean parking spaces will be provided underneath the senior housing community. The 613 parking spaces will exceed the 500 parking spaces required by the LAMC for the senior housing project by 113 spaces. Access to the proposed project will be provided via the westerly extension of Valleyheart Drive, which will be constructed as part of the proposed project. Further discussion of the proposed project site access and circulation scheme is provided in Section 3.0.

The golf course site will consist of the remaining approximately 11.59 acres on the north and west portion of the property currently occupied by the 9-hole pitch-and-putt golf course, driving range, and clubhouse facilities. Modifications to the existing facilities (the driving range and the golf course portions adjacent to Lot 2) are necessary to accommodate the lot split and Project development. The modifications include the reduction of driving range stations from 24 to 21. Approximately 22 of the surface parking spaces within the existing parking lot along Whitsett Avenue will be retained to service the golf course, driving range, and clubhouse. The remainder of the existing parking lot will be removed to accommodate the senior housing development. In addition, the golf course will have a shared parking arrangement to utilize the excess 113 parking spaces within the subterranean parking structure associated with the senior housing development on Lot 2.

In summary, the project consists of the following elements:

- Subdivision of Property into Lot 1 (11.59 acres) and Lot 2 (4.52 acres);
- Retention of the existing golf course and related facilities, inclusive of minor configuration modifications;
- Demolition of the 16 tennis courts; and
- Construction of a senior living center, inclusive of 200 residential condominium units and common areas and 613 subterranean parking spaces.

Occupancy of the proposed project is planned in year 2016. The site plan for the proposed Studio City Senior Living Center project is illustrated in ***Figure 2-1***.

NOT TO SCALE

SOURCE: FRANCO & ASSOCIATES INC.

LINSCOTT, LAW & GREENSPAN, engineers

FIGURE 2-1
PROJECT SITE PLAN

STUDIO CITY SENIOR LIVING CENTER PROJECT

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3.0 SITE ACCESS AND CIRCULATION

The proposed site access scheme for the Studio City Senior Living Center project is displayed in *Figure 2-1*. A description of the proposed site access and circulation scheme is provided in the following subsections.

3.1 Vehicular Project Site Access

Access to the proposed project will be provided via the westerly extension of Valleyheart Drive, which will be constructed as part of the proposed project. Additionally, two driveways (one inbound and one outbound) will be provided on Whitsett Avenue to access the planned 22-space surface parking lot (modified version of the existing parking lot). A description of the proposed site access and circulation scheme is provided in the following paragraphs.

- *Valleyheart Drive*

  Access to the proposed project will be provided from the proposed Valleyheart Drive roadway extension, which will extend westerly from Whitsett Avenue adjacent to the Los Angeles fire station site and the southerly property frontage. The extension of Valleyheart Drive will form the west leg of the Whitsett Avenue/Valleyheart Drive intersection. The Valleyheart Drive extension will be constructed to City of Los Angeles roadway design standards.

- *Project Driveway No. 1: Subterranean Parking Access*

  This project driveway will be located on the north side of Valleyheart Drive, along the southerly property frontage, at the southeast corner of the project site. The proposed project site driveway will be located approximately 230 feet west of Whitsett Avenue. This driveway will provide access to an internal ramp, which extends to the subterranean parking garage situated beneath the senior housing buildings. The planned project site driveway will be constructed to City of Los Angeles design standards.

- *Project Access No. 2: Whitsett Avenue Inbound/Outbound Driveways*

  Additional project access will be provided via inbound and outbound driveways to be provided along the west side of Whitsett Avenue, south of Valley Spring Lane. These driveways will provide access to and from the planned 22-space surface parking lot. The existing Whitsett Avenue inbound driveway is situated immediately south of Valley Spring Lane and will be retained. The Whitsett Avenue outbound driveway will be relocated approximately mid-way along the project's Whitsett Avenue property frontage. The planned project site driveways on Whitsett Avenue will be constructed to City of Los Angeles design standards.

In addition to the above vehicular access points, fire lanes will be located along the northerly, westerly and southwesterly boundaries of the Senior Living Center complex, as well as through the courtyard of the complex. In accordance with the City of Los Angeles Fire Department requirements, all through fire-lanes will be 20 feet in width and all fire lanes providing access to buildings will be 28 feet in width.

3.2 Pedestrian Access

The proposed project site has been designed to encourage pedestrian activity and walking as a transportation mode[3]. Walkability is a term for the extent to which walking is readily available as a safe, connected, accessible and pleasant mode of transport.[4] There are five basic requirements that are widely accepted as key aspects of the walkability of urban areas that should be satisfied. The underlying principle is that pedestrians should not be delayed, diverted, or placed in danger. The five primary characteristics of walkability are as follows:

- Connectivity: People can walk from one place to another without encountering major obstacles, obstructions, or loss of connectivity.
- Convivial: Pedestrian routes are friendly and attractive, and are perceived as such by pedestrians.
- Conspicuous: Suitable levels of lighting, visibility and surveillance over its entire length, with high quality delineation and signage.
- Comfortable: High quality and well-maintained footpaths of suitable widths, attractive landscaping and architecture, shelter and rest spaces, and a suitable allocation of roadspace to pedestrians.
- Convenient: Walking is a realistic travel choice, partly because of the impact of the other criteria set forth above, but also because walking routes are of a suitable length as a result of land use planning with minimal delays.

A review of the project site plan and pedestrian walkway network indicates that these five primary characteristics are accommodated as part of the proposed project. The project site is adjacent to and accessible from nearby commercial uses (e.g., retail, restaurant, etc.) and other amenities along the Ventura Boulevard corridor, as well as adjacent public bus transit stops. The pedestrian walkways within the site and the adjacent sidewalks will be appropriately landscaped and designed to provide a friendly walking environment. Additionally, the walkways will be well lit and include appropriate wayfinding signage.

The interior of the project is planned to provide a combination of landscape and hardscape that facilitates internal accessibility as well as connectivity to a broad range of uses beyond its boundaries. The project will include pedestrian gates on all sides, which will allow residents

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[3] For example, refer to http://www.walkscore.com/, which generates a walkability score of approximately 82 (Very Walkable – most errands can be accomplished on foot) out of 100 for the project site. Walk Score calculates the walkability of an address by locating nearby stores, restaurants, schools, parks, etc. Walk Score measures how easy it is to live a car-lite lifestyle—not how pretty the area is for walking.

[4] Chapter 4 of the *Pedestrian Network Planning and Facilities Design Guide*, Government of New Zealand, from the www.ltsa.govt.nz website.

access to the golf course and driving range, the sidewalk along the Los Angeles River, and the sidewalk along Whitsett Avenue. Parking for golfers, both below and above-grade, will connect to the course and range by way of a walkway along the westerly side of the surface parking spaces. Once outside the project, residents will be able walk to a myriad of nearby destinations, including grocery stores, restaurants, coffee houses, bars, retail shops, movie theaters, schools, parks, libraries, and fitness establishments.

3.3 Bicycle Access

Bicycle access to the project site is facilitated by the City of Los Angeles bicycle roadway network.[5] A total of three existing bicycle facilities (e.g., Class I Bicycle Path, Class II Bicycle Lanes, Class III Bicycle Routes, Proposed Bicycle Routes, Bicycle Friendly Streets, etc.) in the City's bicycle network are located within the vicinity of the project site. The following bicycle facilities are located in the vicinity of the Studio City Senior Living Center project site:

- <u>North-South Route(s)</u>
  - Colfax Avenue: Class II Bicycle Lane
- <u>East-West Route(s)</u>
  - Riverside Drive: Class II Bicycle Lane
  - Chandler Boulevard: Class II Bicycle Lane

The Federal and State transportation system recognizes three primary bikeway facilities: Bicycle Paths (Class I), Bicycle Lanes (Class II), and Bicycle Routes (Class III). Bicycle Paths (Class I) are exclusive car free facilities that are typically not located within a roadway area. Bicycle Lanes (Class II) are part of the street design that is dedicated only for bicycles and identified by a striped lane separating vehicle lanes from bicycle lanes. Bicycle Routes (Class III) are preferably located on collector and lower volume arterial streets.

[5] Source: City of Los Angeles Bicycle Plan, Chapter 9 of the Transportation Element of the General Plan (Adopted March 1, 2011); http://planning.lacity.org/cwd/gnlpln/transelt/NewBikePlan/TOC_BicyclePlan.htm.

4.0 PROJECT PARKING

This section summarizes the review of the project's parking requirements according to the City of Los Angeles Municipal Code requirements and of the planned project parking supply. Please note that Code parking for any development project is ultimately determined by the City of Los Angeles Department of Building and Safety at the time that a project applicant submits building plans to the Department. It is anticipated that the proposed project will provide Code required parking as determined by the City of Los Angeles Department of Building and Safety prior to issuance of a building permit for the project.

4.1 City of Los Angeles Code Parking Requirement

In accordance with City of Los Angeles Planning Department Deputy Advisory Agency residential parking requirements, a total of 500 parking spaces is required for the Studio City Senior Living Center project. The City of Los Angeles Planning Department requirements for condominium and condominium conversion dwelling units is set forth in Residential Parking Policy for Division of Land No. AA 2000-1. The Residential Parking Policy sets forth the following parking requirements as applied to the proposed Studio City Senior Living Center project:

- For projects with six units or more:

  1. 2.0 spaces per dwelling unit
  2. 0.25 guest space per dwelling unit in non-parking congested areas[6]

     0.50 guest space per dwelling unit in congested areas
  3. For side-by-side parking in private garages with direct entries into the units, 0.25 guest space per unit will be permitted in parking congested areas.

Based on these parking requirements, the required parking is 500 spaces for the proposed project based on the following calculation:

- 200 Dwelling Units × 2.50 = 500 required spaces

[6] "Determinations on required parking by the Advisory Agency are not intended to supersede more restrictive requirements contained in other adopted City ordinances such as adopted specific plans and "Q" conditions. Further, additional guest parking will be considered in special areas of the City which are either subject to unusual public access demands (such as the beach areas) or areas where on-street parking is highly restricted (Major Highways, such as Barham Boulevard)."

4.2 Proposed Parking Supply

A total of 635 parking spaces is planned to be provided within the project site, including 613 spaces in the subterranean parking garage and 22 spaces in the surface parking lot to be located adjacent to the driving range. Of the 635 parking spaces, a total of 500 spaces will be allocated for residents and guests of the proposed project and a total of 135 spaces will be allocated for employee parking and parking for patrons of the golf course and driving range.

As previously discussed, the spaces will be available as a combination of the existing 22 surface parking stalls and two new levels of 613 subterranean parking spaces. Parking level P1 will contain 370 spaces for the exclusive use by residents and their guests. Residents and their guests will also have access to 130 of the 243 spaces on parking level P2. The remaining 113 spaces on parking level P2 plus the existing 22 surface parking spaces will provide the 135 parking spaces to be designated and reserved for the golf course and driving range.

As part of the parking supply, the project must also provide a minimum of 13 handicap accessible spaces. This complies with the American With Disabilities Act requirement of a minimum of two percent (2.0%) of the on-site parking supply as handicap spaces for parking facilities with 501 to 1,000 spaces, with one in every eight handicap spaces being van accessible.

5.0 EXISTING STREET SYSTEM

5.1 Regional Highway System

Regional access to the project site is provided by U.S. 101 (Ventura) Freeway, as shown in *Figure 1-1*. Northbound and southbound ramps are provided on U.S. 101 Freeway at Coldwater Canyon Avenue and Laurel Canyon Boulevard in the project vicinity. A brief description of the U.S. 101 Freeway is provided in the following paragraph.

U.S. 101 (Ventura) Freeway is a major north-south freeway that extends across northern and southern California. In the project vicinity, five mainline travel lanes are provided in each direction on U.S. 101 Freeway. Both northbound and southbound ramps are provided on U.S. 101 Freeway at Coldwater Canyon Avenue, which is located approximately one mile northwest of the project site. Northbound and southbound ramps are also provided on U.S. 101 Freeway at Laurel Canyon Boulevard, which is located approximately one mile northeast of the project site.

5.2 Study Intersections

Immediate access to the project site is provided via Whitsett Avenue. The following five study intersections were selected for analysis by LADOT staff in order to determine potential impacts related to the proposed project:

1. Coldwater Canyon Avenue/Moorpark Street.
2. Whitsett Avenue/Riverside Drive.
3. Whitsett Avenue/Moorpark Street.
4. Whitsett Avenue/Ventura Boulevard.
5. Laurel Canyon Boulevard/Moorpark Street.

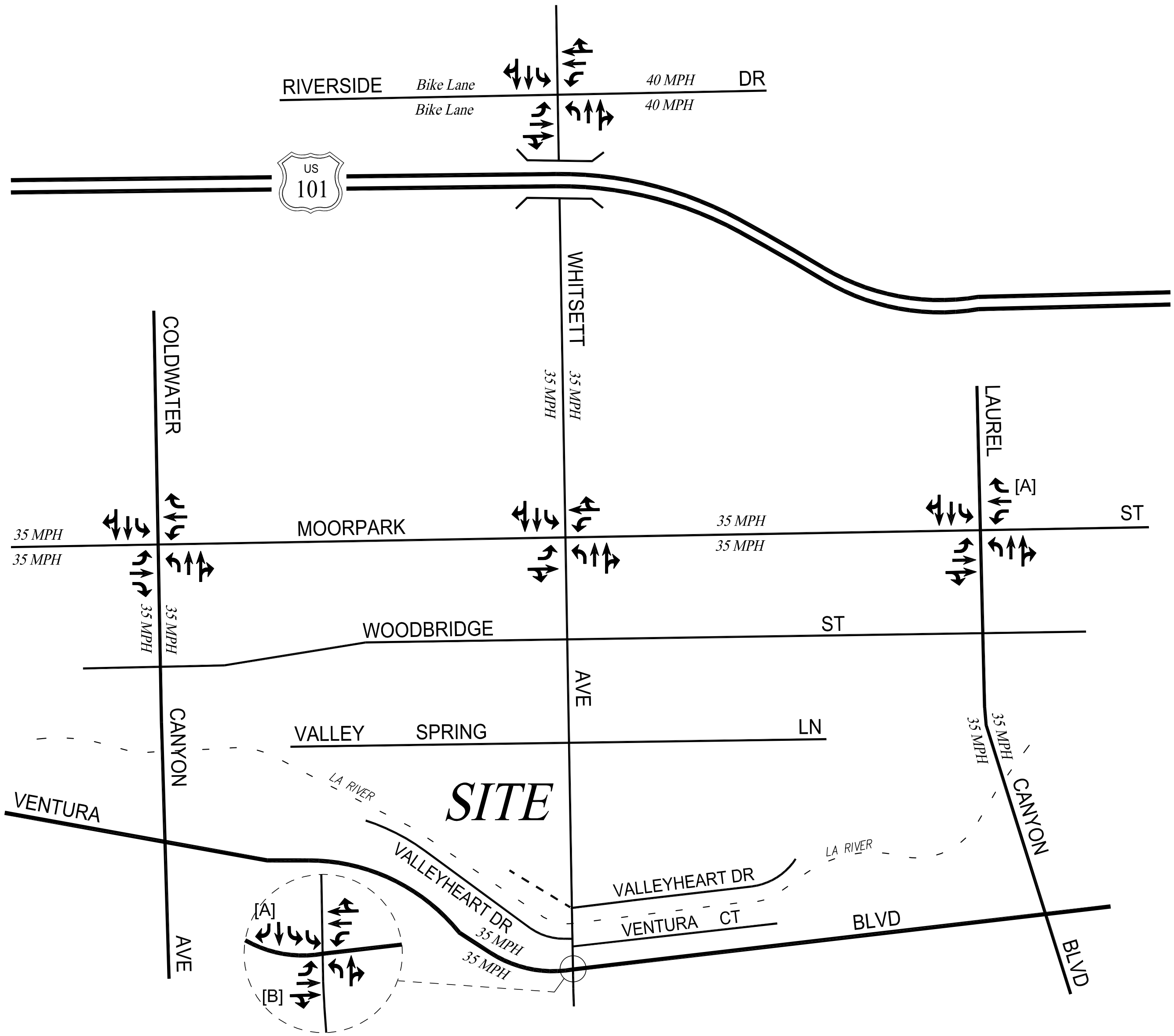
All of the study intersections are presently controlled by traffic signals. The existing lane configurations at the study intersections are displayed in ***Figure 5-1***.

5.3 Study Street Segments

The following two study street segment locations were identified for analysis by LADOT staff for inclusion in the neighborhood residential street segment analysis:

1. Valley Spring Lane between Babcock Avenue and Whitsett Avenue.
2. Valley Spring Lane between Whitsett Avenue and Wilkinson Avenue.

The existing travel lanes and posted speed limits on the study street segments also are shown in *Figure 5-1*.



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NOTES:

- - - - PROPOSED DRIVEWAY

[A] OVERLAPPING PHASE

[B] NO RIGHT-TURN ON RED 7A-9A

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FIGURE 5-1
EXISTING LANE CONFIGURATIONS

STUDIO CITY SENIOR LIVING CENTER PROJECT

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5.4 Roadway Descriptions

Brief descriptions of the important roadways in the project site vicinity are provided in the following paragraphs.

Coldwater Canyon Avenue is a north-south oriented roadway that is located west of the project site. Coldwater Canyon Avenue is designated as a Secondary Highway in the City of Los Angeles Transportation Element of the General Plan in the project vicinity. Two through travel lanes are provided in each direction on Coldwater Canyon Avenue in the project vicinity. Coldwater Canyon Avenue is posted for a 35 miles per hour speed limit near the project site.

Whitsett Avenue is a north-south oriented roadway that borders the project site to the east, and terminates just south of Ventura Boulevard. Whitsett Avenue is designated as a Secondary Highway in the City of Los Angeles Transportation Element of the General Plan in the project vicinity. One through northbound lane and two through southbound lanes are provided on the roadway in the project vicinity. Separate left-turn lanes are provided in both directions on Whitsett Avenue at the study intersections, except at the southbound approach to the Ventura Boulevard intersection where dual left-turn lanes are provided on the roadway. Whitsett Avenue is posted for a 35 miles per hour speed limit in the project vicinity.

Laurel Canyon Boulevard is a north-south oriented roadway that is located east of the project site. Laurel Canyon Boulevard is designated as a Major Highway Class II and Secondary Highway north and south of Ventura Boulevard, respectively, in the City of Los Angeles Transportation Element of the General Plan in the project vicinity. Two through travel lanes are provided in each direction on Laurel Canyon Boulevard in the project vicinity. Laurel Canyon Boulevard is posted for a 35 miles per hour speed limit near the project site.

Moorpark Street is an east-west oriented roadway that is located north of the project site. Moorpark Street is designated as a Secondary Highway in the City of Los Angeles Transportation Element of the General Plan in the project vicinity. One through travel lane is provided in each direction on Moorpark Street in the project vicinity. Moorpark Street is posted for a 35 miles per hour speed limit near the project site.

Valley Spring Lane is an east-west oriented local roadway that borders the project site to the north. Valley Spring Lane is designated as a Local street by the City of Los Angeles. One through travel lane is provided in each direction on Valley Spring Lane in the project vicinity. There is no posted speed limit on Valley Spring Lane in the project vicinity, thus it is assumed to be a prima facie speed limit of 25 miles per hour.

Ventura Boulevard is an east-west oriented roadway that is located south of the project site. Ventura Boulevard is designated as a Major Highway Class II in the City of Los Angeles Transportation Element of the General Plan in the project vicinity. Two through travel lanes are provided in each direction on Ventura Boulevard near the project site. Separate left-turn lanes are provided in both directions on Ventura Boulevard at the Whitsett Avenue intersection. Ventura Boulevard is posted for a 35 miles per hour speed limit near the project site.

5.5 Public Bus Transit Services

Public bus transit service within the project study area is currently provided by Los Angeles County Metropolitan Transportation Authority (Metro) and LADOT. A summary of the existing transit service, including the transit route, destinations and peak hour headways is presented in ***Table 5–1***. The existing public transit routes in the Studio City Senior Living Center project site vicinity are illustrated in ***Figure 5–2***.

Table 5-1
EXISTING TRANSIT ROUTES [1]

ROUTE	DESTINATIONS	ROADWAY(S) NEAR SITE	NO. OF BUSES/TRAINS DURING PEAK HOUR		
			DIR	AM	PM
Metro Route 150/240	Univeral City to Canoga Park	Ventura Boulevard, Whitsett Avenue, Laurel Canyon Boulevard, Coldwater Canyon Avenue	EB WB	4 5	6 5
Metro Route 155	Sherman Oaks to Burbank	Riverside Drive, Whitsett Avenue, Laurel Canyon Boulevard, Coldwater Canyon Avenue	EB WB	2 2	2 2
Metro Route 167	Chatsworth to Studio City	Moorpark Street, Whitsett Avenue, Ventura Boulevard	NB SB	2 2	2 2
Metro Route 218	Cedars-Sinai Medical Center to Studio City	Laurel Canyon Boulevard, Ventura Boulevard	NB SB	2 2	2 2
Metro Route 230	Sylmar to Studio City	Laurel Canyon Boulevard, Ventura Boulevard, Moorpark Street, Riverside Drive	NB SB	3 3	3 3
Metro Rapid 750	Universal City Station to Warner City Transit Hub	Ventura Boulevard, Coldwater Canyon Avenue	EB WB	5 10	5 5
Dash Van Nuys/ Studio City (LDVAN)	Van Nuys to Studio City	Moorpark Street, Whitsett Avenue, Ventura Boulevard, Coldwater Canyon Avenue, Laurel Canyon Boulevard, Riverside Drive	NB SB	2 2	2 1
			Total	46	42

[1] Sources: Los Angeles County Metropolitan Transportation Authority (Metro), Los Angeles Department of Transportation (LADOT) websites, 2012.

MAP SOURCE: METROPOLITAN TRANSPORTATION AUTHORITY (METRO) WEBSITE

★ PROJECT SITE

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FIGURE 5-2
EXISTING PUBLIC TRANSIT ROUTES

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STUDIO CITY SENIOR LIVING CENTER PROJECT

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6.0 TRAFFIC COUNTS

6.1 Intersection Manual Traffic Counts

Manual traffic counts of vehicular turning movements were conducted at each of the study intersections during the weekday morning and afternoon commuter periods to determine the peak hour traffic volumes. The manual traffic counts at the study intersections were conducted by a traffic count subconsultant from 7:00 AM to 10:00 AM to determine the AM peak commuter hour and from 3:00 PM to 6:00 PM to determine the PM peak commuter hours. Traffic volumes at the study intersections show the typical peak periods from 7:00 AM to 10:00 AM and 3:00 PM to 6:00 PM generally associated with the peak morning and afternoon commuter time periods. Additionally, the existing traffic volumes for the two study intersections conducted in year 2011 were increased at an annual rate of two percent (2.0%) to reflect year 2012 existing conditions.

The weekday AM and PM peak period manual counts of vehicle movements at the study intersections are summarized in ***Table 6–1***. The existing traffic volumes at the study intersections during the weekday AM and PM peak hours are shown in ***Figures 6–1*** and ***6–2***, respectively. Summary data worksheets of the manual traffic counts at the study intersections are contained in ***Appendix A***.

6.2 Neighborhood Street Segment Automatic 24-Hour Machine Traffic Counts

Automatic 24-hour machine traffic counts of the two study street segments were conducted by a traffic subconsultant. Copies of the current 24-hour machine traffic counts for the study street segment locations also are contained in *Appendix A*. Additionally, the existing ADT traffic volumes for the two study street segments were increased at an annual rate of two percent (2.0%) to reflect year 2012 existing conditions.

Table 6-1
EXISTING TRAFFIC VOLUMES

NO.	INTERSECTION	DATE	DIR	AM PEAK HOUR		PM PEAK HOUR	
				BEGAN	VOLUME	BEGAN	VOLUME
1	Coldwater Canyon Avenue/ Moorpark Street [1]	01/19/2012	NB	8:15	704	5:00	971
			SB		714		998
			EB		1,012		787
			WB		553		796
2	Whitsett Avenue/ Riverside Drive [1]	01/19/2012	NB	7:45	520	3:15	868
			SB		1,385		582
			EB		1,333		1,150
			WB		987		1,185
3	Whitsett Avenue/ Moorpark Street [2]	11/17/2011	NB	8:00	377	4:00	912
			SB		1,179		547
			EB		988		679
			WB		556		740
4	Whitsett Avenue/ Ventura Boulevard [2]	11/17/2011	NB	8:00	165	5:00	294
			SB		1,320		566
			EB		1,158		1,363
			WB		900		1,435
5	Laurel Canyon Boulevard Moorpark Street [1]	01/19/2012	NB	7:00	1,201	3:15	1,609
			SB		1,462		1,643
			EB		1,058		766
			WB		642		741

[1] Counts conducted by City Traffic Counters.
[2] Counts conducted by The Traffic Solution.

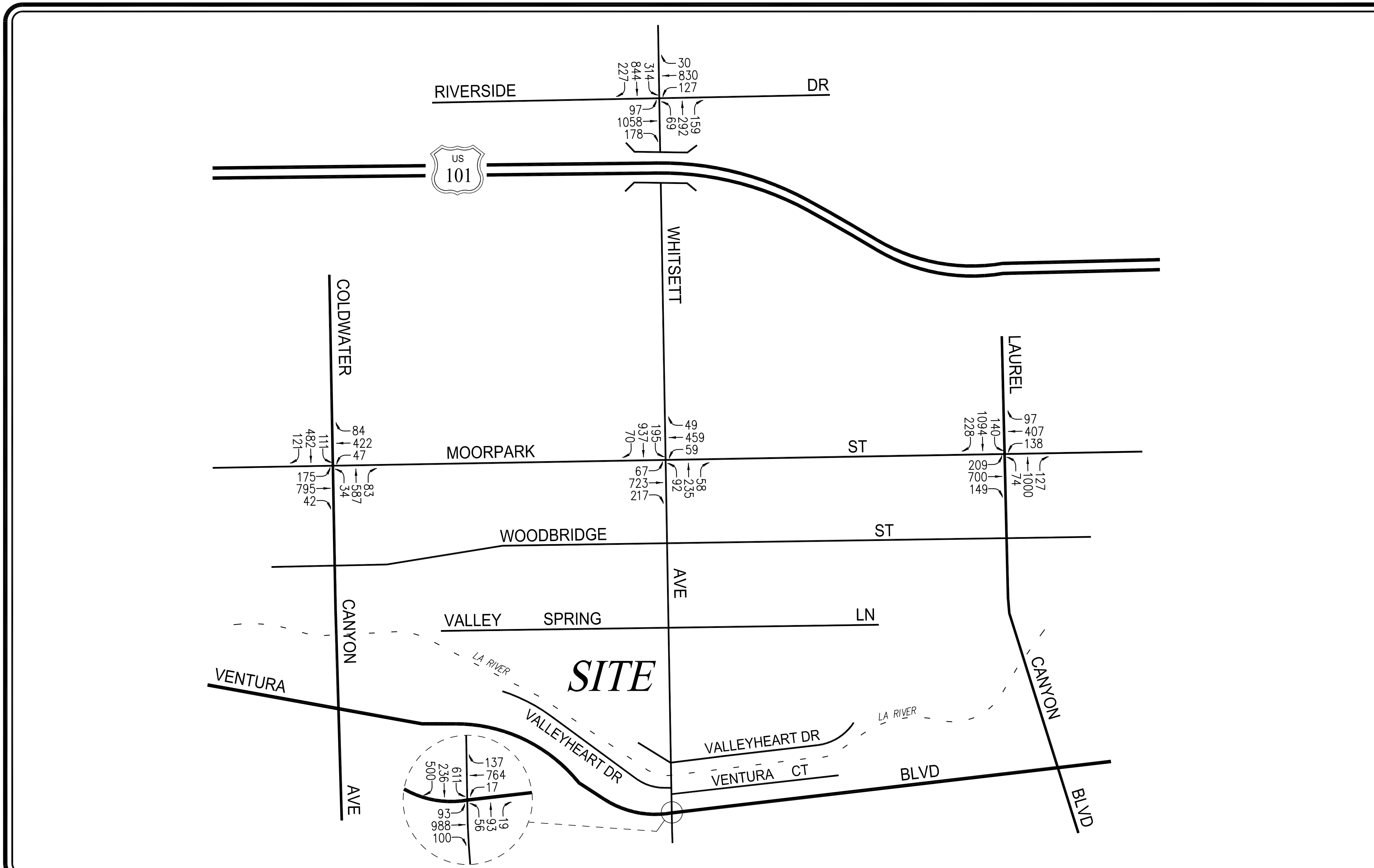

FIGURE 6-1
EXISTING TRAFFIC VOLUMES

WEEKDAY AM PEAK HOUR

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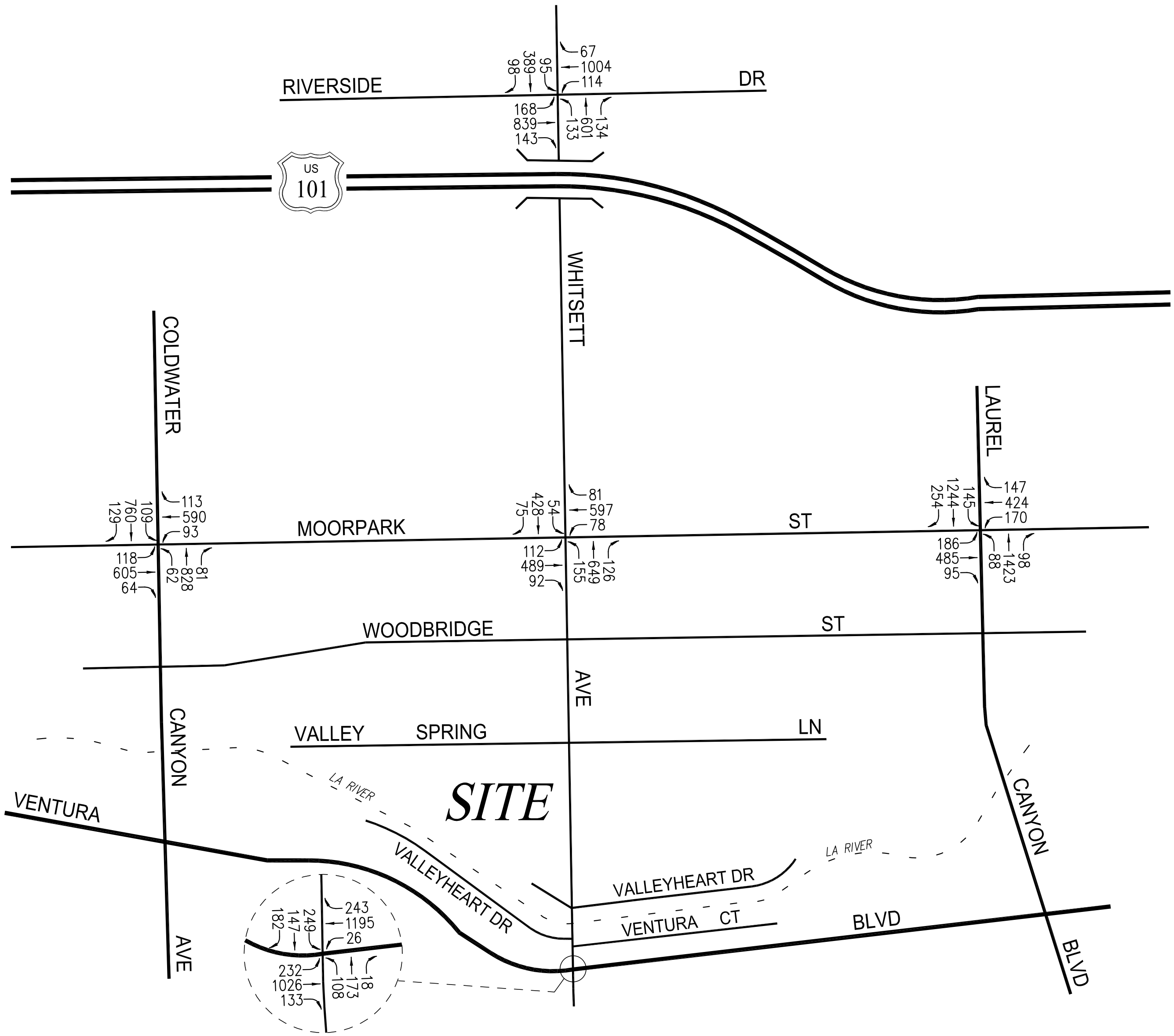

NOT TO SCALE

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FIGURE 6-2
EXISTING TRAFFIC VOLUMES

WEEKDAY PM PEAK HOUR

STUDIO CITY SENIOR LIVING CENTER PROJECT

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7.0 CUMULATIVE DEVELOPMENT PROJECTS

The forecast of future pre-project conditions was prepared in accordance to procedures outlined in Section 15130 of the CEQA Guidelines. Specifically, the CEQA Guidelines provide two options for developing the future traffic volume forecast:

> "(A) A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the [lead] agency, or
>
> (B) A summary of projections contained in an adopted local, regional or statewide plan, or related planning document, that describes or evaluates conditions contributing to the cumulative effect. Such plans may include: a general plan, regional transportation plan, or plans for the reduction of greenhouse gas emissions. A summary of projections may also be contained in an adopted or certified prior environmental document for such a plan. Such projections may be supplemented with additional information such as a regional modeling program. Any such document shall be referenced and made available to the public at a location specified by the lead agency."

Accordingly, the traffic analysis provides a highly conservative estimate of future pre-project traffic volumes as it incorporates both the "A" and "B" options outlined in CEQA Guidelines for purposes of developing the forecast.

7.1 Related Projects

A forecast of on-street traffic conditions prior to occupancy of the proposed project was prepared by incorporating the potential trips associated with other known development projects (related projects) in the area. With this information, the potential impact of the proposed project can be evaluated within the context of the cumulative impact of all ongoing development. The related projects research was based on information on file at the City of Los Angeles Departments of Transportation and Planning. The list of related projects in the project site area is presented in ***Table 7–1***. The location of the related projects is shown in ***Figure 7–1***.

Traffic volumes expected to be generated by the related projects were calculated using rates provided in the Institute of Transportation Engineers' (ITE) *Trip Generation* manual[7]. The related projects' respective traffic generation for the weekday AM and PM peak hours, as well as on a daily basis for a typical weekday, is summarized in *Table 7-1*. The distribution of the related projects traffic volumes to the study intersections during the weekday AM and PM peak hours are displayed in ***Figures 7–2*** and ***7–3***, respectively.

[7] Institute of Transportation Engineers *Trip Generation* manual, 8th Edition, Washington, D.C., 2008.

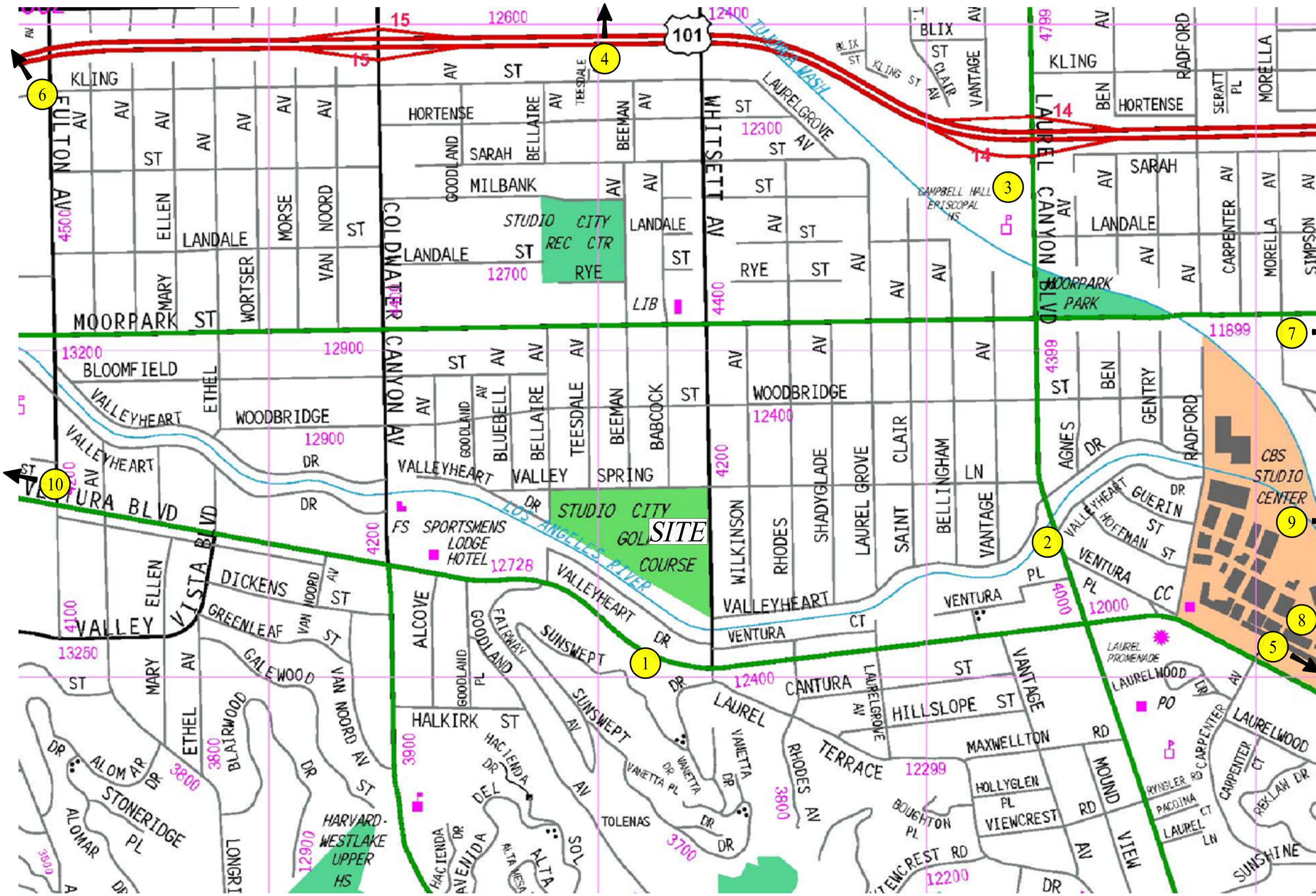
Table 7-1
RELATED PROJECTS LIST AND TRIP GENERATION [1]

MAP NO.	PROJECT STATUS	PROJECT NAME/NUMBER ADDRESS/LOCATION	LAND USE DATA: LAND-USE	LAND USE DATA: SIZE	DAILY TRIP ENDS [2] VOLUMES	AM PEAK HOUR VOLUMES [2]: IN	AM OUT	AM TOTAL	PM PEAK HOUR VOLUMES [2]: IN	PM OUT	PM TOTAL
1	Proposed	VEN-2010-020	Apartment	62 DU	412	6	26	32	25	13	38
		12548 Ventura Boulevard	Retail	10,747 GLSF	476	8	6	14	13	16	29
			Existing Retail	(3,000) GLSF	(133)	(2)	(2)	(4)	(4)	(4)	(8)
			Other	1,925 GSF	245	11	11	22	12	9	21
2	Proposed	Credit Union	Walk-In Bank	1,467 GSF	230	4	2	6	20	29	49
		VEN-2008-080									
		4061 Laurel Canyon Boulevard									
3	Under Construction	Campbell Hall School	Private School (K-12)	400 Students	992	193	123	316	90	130	220
		SFV-2004-294	Existing Senior Housing	(54) DU	(174)	(2)	(2)	(4)	(3)	(3)	(6)
		4533 Laurel Canyon Boulevard	Existing Apartment	(22) DU	(148)	(2)	(9)	(11)	(9)	(6)	(15)
4	Approved	Sherman Village	Condominium	270 DU	1,850	28	112	140	111	60	171
		SFV-2006-130	TV programme production		(230)	(44)	(8)	(52)	(18)	(24)	(42)
		12629 Riverside Drive									
5	Inactive	VEN-2004-008	Apartment	391 DU	2,628	40	159	199	157	85	242
		11617 Ventura Boulevard	Existing Office	(7,793) GSF	(86)	(11)	(1)	(12)	(2)	(10)	(12)
			Coffee House	1,000 GSF	(465)	7	11	18	(19)	(13)	(32)
			Existing Retail	(5,598) GSF							
			Existing Car Service	(4,065) GSF							
			Existing Restaurant	(4,000) GSF							
6	Approved	Merdinian Evangelical School	Private High School	383 Students	856	191	100	291	11	17	28
		SFV-2006-044									
		13330 Riverside Drive									
7	Proposed	SFV-2011-025	Restaurant	124 Seats	355	2	2	4	21	11	32
		11422 W. Moorpark Street									
8	Proposed	VEN-2006-018	Condominium	62 DU	428	6	29	35	27	14	41
		11331 Ventura Boulevard	Office	(21,694) GSF	(239)	(30)	(4)	(34)	(5)	(27)	(32)
9	Under Construction	Aqua Vista Condos	Condominium [3]	122 DU	709	15	39	54	32	28	60
		SFV-2007-032									
		11163 Aqua Vista Street									

Table 7-1 (Continued)
RELATED PROJECTS LIST AND TRIP GENERATION [1]

MAP NO.	PROJECT STATUS	PROJECT STATUS	LAND USE DATA: LAND-USE	LAND USE DATA: SIZE	DAILY TRIP ENDS [2] VOLUMES	AM PEAK HOUR VOLUMES [2] IN	AM PEAK HOUR VOLUMES [2] OUT	AM PEAK HOUR VOLUMES [2] TOTAL	PM PEAK HOUR VOLUMES [2] IN	PM PEAK HOUR VOLUMES [2] OUT	PM PEAK HOUR VOLUMES [2] TOTAL
10	Approved	Ralphs Supermarket VEN-2009-014 14049 Ventura Boulevard	Supermarket Expansion [4]	27,389 GSF	2,800	54	35	89	146	140	286
TOTAL					10,506	474	629	1,103	605	465	1,070

[1] Source: City of Los Angeles Department of Transportation Related Projects List, except as noted below. Trip generation for the related projects are based on ITE "Trip Generation", 8th Edition, 2008.
[2] Trips are one-way traffic movements, entering or leaving.
[3] Daily trip ends based on ITE Land Use Code 230 (Residential Condominium/Townhouse) trip generation average rates.
[4] Daily trip ends based on ITE Land Use Code 850 (Supermarket) trip generation average rates.



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MAP SOURCE: RAND MCNALLY & COMPANY

FIGURE 7-1
LOCATION OF RELATED PROJECTS

LINSCOTT, LAW & GREENSPAN, engineers

STUDIO CITY SENIOR LIVING CENTER PROJECT

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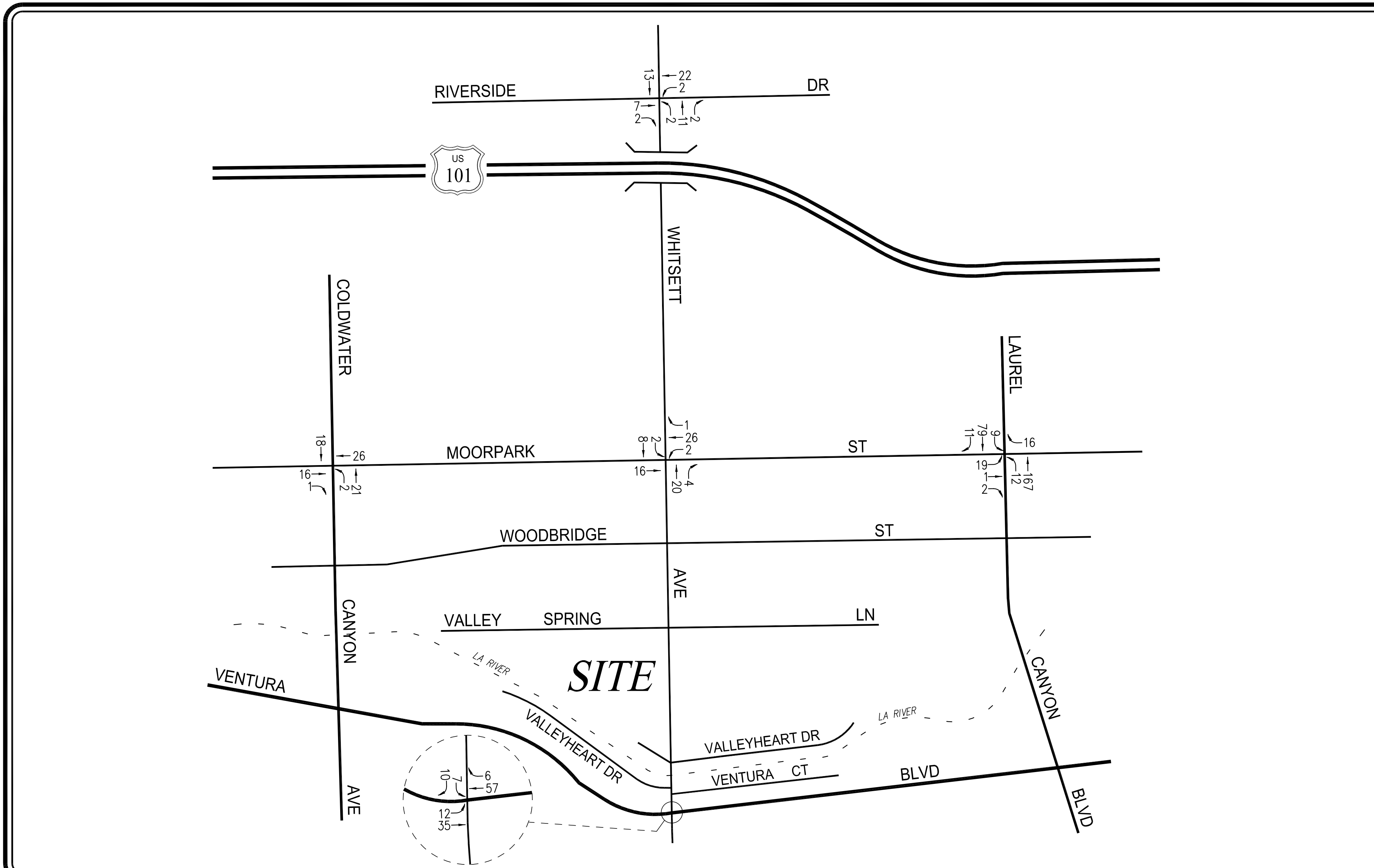

FIGURE 7-2
RELATED PROJECTS TRAFFIC VOLUMES

WEEKDAY AM PEAK HOUR

STUDIO CITY SENIOR LIVING CENTER PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

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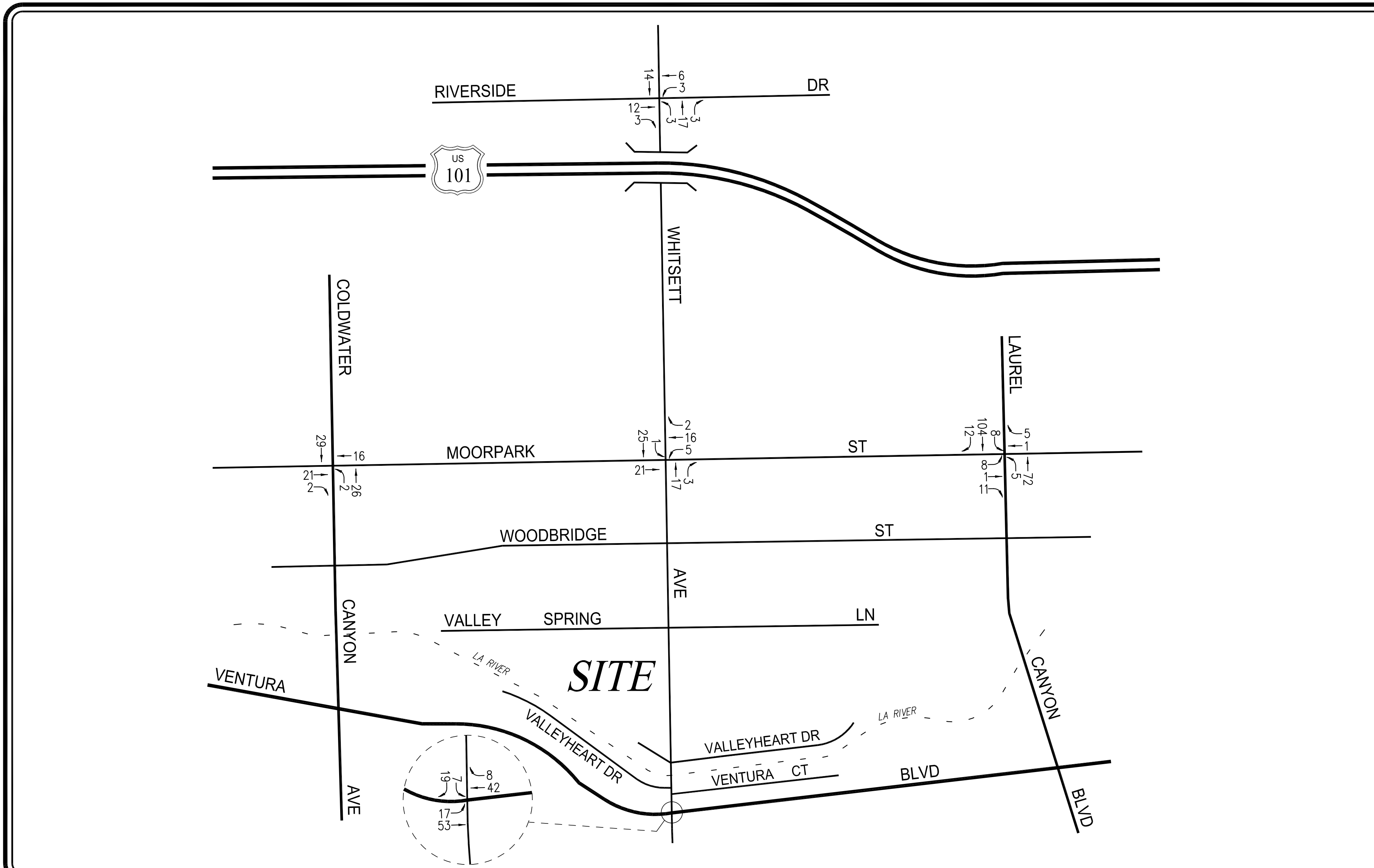

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FIGURE 7-3
RELATED PROJECTS TRAFFIC VOLUMES
WEEKDAY PM PEAK HOUR

STUDIO CITY SENIOR LIVING CENTER PROJECT

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7.2 Ambient Traffic Growth Factor

In order to account for unknown related projects not included in this analysis, the existing traffic volumes were increased at an annual rate of 2.0 percent (2.0%) per year to the year 2016 (i.e., the anticipated year of project build-out). The ambient growth factor was based on general traffic growth factors provided in the *2010 Congestion Management Program for Los Angeles County* (the "CMP manual") and determined in consultation with LADOT staff. It is noted that based on review of the general traffic growth factors provided in the CMP manual for the San Fernando Valley area, it is anticipated that the existing traffic volumes are expected to increase at an annual rate of less than 1.0% per year between the years 2010 and 2020. Thus, application of this annual growth factor allows for a conservative, worst case forecast of future traffic volumes in the area. Further, it is noted that the CMP manual's traffic growth rate is intended to anticipate future traffic generated by development projects in the project vicinity. Therefore, the inclusion in this traffic analysis of both a forecast of traffic generated by known related projects plus the use of an ambient growth traffic factor based on CMP traffic model data results in a conservative estimate of future traffic volumes at the study intersections.

8.0 TRAFFIC FORECASTING METHODOLOGY

In order to estimate the traffic impact characteristics of the Studio City Senior Living Center project, a multi-step process has been utilized. The first step is trip generation, which estimates the total arriving and departing traffic volumes on a peak hour and daily basis. The traffic generation potential is forecast by applying the appropriate vehicle trip generation equations or rates to the project development tabulation.

The second step of the forecasting process is trip distribution, which identifies the origins and destinations of inbound and outbound project traffic volumes. These origins and destinations are typically based on demographics and existing/anticipated travel patterns in the study area.

The third step is traffic assignment, which involves the allocation of project traffic to study area streets and intersections. Traffic assignment is typically based on minimization of travel time, which may or may not involve the shortest route, depending on prevailing operating conditions and travel speeds. Traffic distribution patterns are indicated by general percentage orientation, while traffic assignment allocates specific volume forecasts to individual roadway links and intersection turning movements throughout the study area.

With the forecasting process complete and project traffic assignments developed, the impact of the proposed project is isolated by comparing operational (i.e., Levels of Service) conditions at the selected key intersections using existing and expected future traffic volumes without and with forecast project traffic. The need for site-specific and/or cumulative local area traffic improvements can then be evaluated and the significance of the project's impacts identified.

8.1 Project Traffic Generation

Traffic generation is expressed in vehicle trip ends, defined as one-way vehicular movements, either entering or exiting the generating land use. Generation equations and/or rates provided in the ITE *Trip Generation*, 8th Edition publication were utilized to forecast project traffic generation for the proposed project. Traffic volumes expected to be generated by the proposed project were based upon rates per number of dwelling units planned for the project. The following ITE land use trip generation average rates were used to forecast the traffic volumes expected to be generated by the project's land use components:

- Senior Housing: ITE Land Use Code 230 Residential Condominium/Townhouse
- Golf Driving Range: ITE Land Use Code 432 Golf Driving Range
- Golf Course: ITE Land Use Code 430 Golf Course

The ITE manual contains trip rates for a variety of land uses (including office buildings, shopping centers, condominiums, etc.), which have been derived based on traffic counts conducted at existing sites. However, the traffic count data submitted to ITE is for free-standing sites generally located in suburban locations, which likely do not reflect the trip generation characteristics for projects located in urban areas such as the Studio City area of the City of Los Angeles. Thus, the trip rates provided in the ITE *Trip Generation* manual (derived from traffic counts at suburban projects) would be expected to overstate the trip generation potential for projects located in the City of Los Angeles, including the proposed Studio City Senior Living Center project.

As stated on page 1 of the ITE *Trip Generation, 8th Edition, User's Guide*: "Data were primarily collected at suburban locations having little or no transit service, nearby pedestrian amenities, or travel demand management (TDM) programs. At specific sites, the user may wish to modify trip generation rates presented in this document to reflect the presence of public transportation service, ridesharing, or other TDM measures; enhanced pedestrian and bicycle trip-making opportunities; or other special characteristics of the site or surrounding area. When practical, the user is encouraged to supplement the data in this document with local data that have been collected at similar sites." As previously documented, the area adjacent to the project site provides public transportation service, as well as enhanced pedestrian and bicycle trip-making opportunities. However, to provide a conservative, worst-case analysis, no adjustments were made to the ITE trip generation rates to account for a reduction in vehicle trips based on trips that may be made, for example, by biking or walking.

In order to further provide a conservative project trip generation forecast project-related trips, ITE Land Use Code 230 (Condominium/Townhouse) trip generation average rates were used to forecast the traffic volumes expected to be generated by the senior housing land use component, even though ITE senior housing-related trip rates may be more applicable to the proposed project. For example, the description provided in the *Trip Generation* manual for ITE Land Use Code 252 (Senior Adult Housing – Attached) is as follows: "These facilities are similar to those described in Land Use Code 251[8], except they contain apartment-like residential units. Attached senior adult housing may include limited social or recreational services, but typically lacks centralized dining or medical facilities. Residents in these communities live independently, are typically active (requiring little to no medical supervision) and may or may not be retired." It should be noted that the ITE trip rates for condominiums/townhouses are considerably higher than senior housing trip rates (e.g., the ITE Land Use Code 230 AM peak hour trip rate is 0.52 per dwelling unit as compared to the ITE Land Use Code 252 AM peak hour trip rate of 0.11 per dwelling unit). As such, the traffic forecasts for the proposed project can be considered a conservative, worst case analysis based on its use of the generic condominium trip rate.

The trip generation rates and forecast of the vehicular trips anticipated to be generated by the proposed project are presented in ***Table 8-1***. The project trip generation forecast was submitted for review and approval by LADOT staff. As summarized in *Table 8-1*, the proposed project is expected to generate no change for inbound trips and 59 net new outbound trips during the AM peak hour. During the PM peak hour, the proposed project is expected to generate 37 net new

8 The applicable portions of ITE Land Use Code 251 (Senior Adult Housing-Detached) are as follows: "Senior adult housing consists of detached independent living developments, including retirement communities, age-restricted housing and active adult communities. These developments may include amenities such as golf courses, swimming pools, 24-hour security, transportation and common recreational facilities. However, they generally lack centralized dining and on-site health facilities. Detached senior adult housing communities may or may not be gated. Residents in these communities are typically active (requiring little to no medical supervision). The percentage of retired residents varies by development."

Table 8-1
PROJECT TRIP GENERATION [1]

LAND USE	SIZE	DAILY TRIP ENDS [2] VOLUMES	AM PEAK HOUR VOLUMES [2]			PM PEAK HOUR VOLUMES [2]		
			IN	OUT	TOTAL	IN	OUT	TOTAL
Proposed Project								
Senior Housing [3]	200 DU	1,162	15	73	88	70	34	104
Golf Driving Range [4]	21 Tees	287	5	3	8	12	14	26
Golf Course [5]	9 Holes	322	16	4	20	11	14	25
Subtotal Proposed Project		1,771	36	80	116	93	62	155
Existing Site Uses								
Golf Driving Range [4]	(24) Tees	(328)	(6)	(4)	(10)	(14)	(16)	(30)
Golf Course [5]	(9) Holes	(322)	(16)	(4)	(20)	(11)	(14)	(25)
Tennis Courts [6]	(16) Courts	(497)	(14)	(13)	(27)	(31)	(31)	(62)
Subtotal Existing		(1,147)	(36)	(21)	(57)	(56)	(61)	(117)
NET INCREASE		**624**	**0**	**59**	**59**	**37**	**1**	**38**

[1] Source: ITE "Trip Generation", 8th Edition, 2008.
[2] Trips are one-way traffic movements, entering or leaving.
[3] ITE Land Use Code 230 (Residential Condominium/Townhouse) trip generation average rates.
- Daily Trip Rate: 5.81 trips/Dwelling Units (DU); 50% inbound/50% outbound
- AM Peak Hour Trip Rate: 0.44 trips/DU; 17% inbound/83% outbound
- PM Peak Hour Trip Rate: 0.52 trips/DU; 67% inbound/33% outbound

[4] ITE Land Use Code 432 (Golf Driving Range) trip generation average rates.
- Daily Trip Rate: 13.65 trips/Tee; 50% inbound/50% outbound
- AM Peak Hour Trip Rate: 0.40 trips/Tee; 61% inbound/39% outbound
- PM Peak Hour Trip Rate: 1.25 trips/Tee; 45% inbound/55% outbound

[5] ITE Land Use Code 430 (Golf Course) trip generation average rates.
- Daily Trip Rate: 35.74 trips/Hole; 50% inbound/50% outbound
- AM Peak Hour Trip Rate: 2.23 trips/Hole; 79% inbound/21% outbound
- PM Peak Hour Trip Rate: 2.78 trips/Hole; 45% inbound/55% outbound

[6] ITE Land Use Code 490 (Tennis Courts) trip generation average rates.
- Daily Trip Rate: 31.04 trips/Tennis Court; 50% inbound/50% outbound
- AM Peak Hour Trip Rate: 1.67 trips/court; 50% inbound/50% outbound
- PM Peak Hour Trip Rate: 3.88 trips/court; 50% inbound/50% outbound

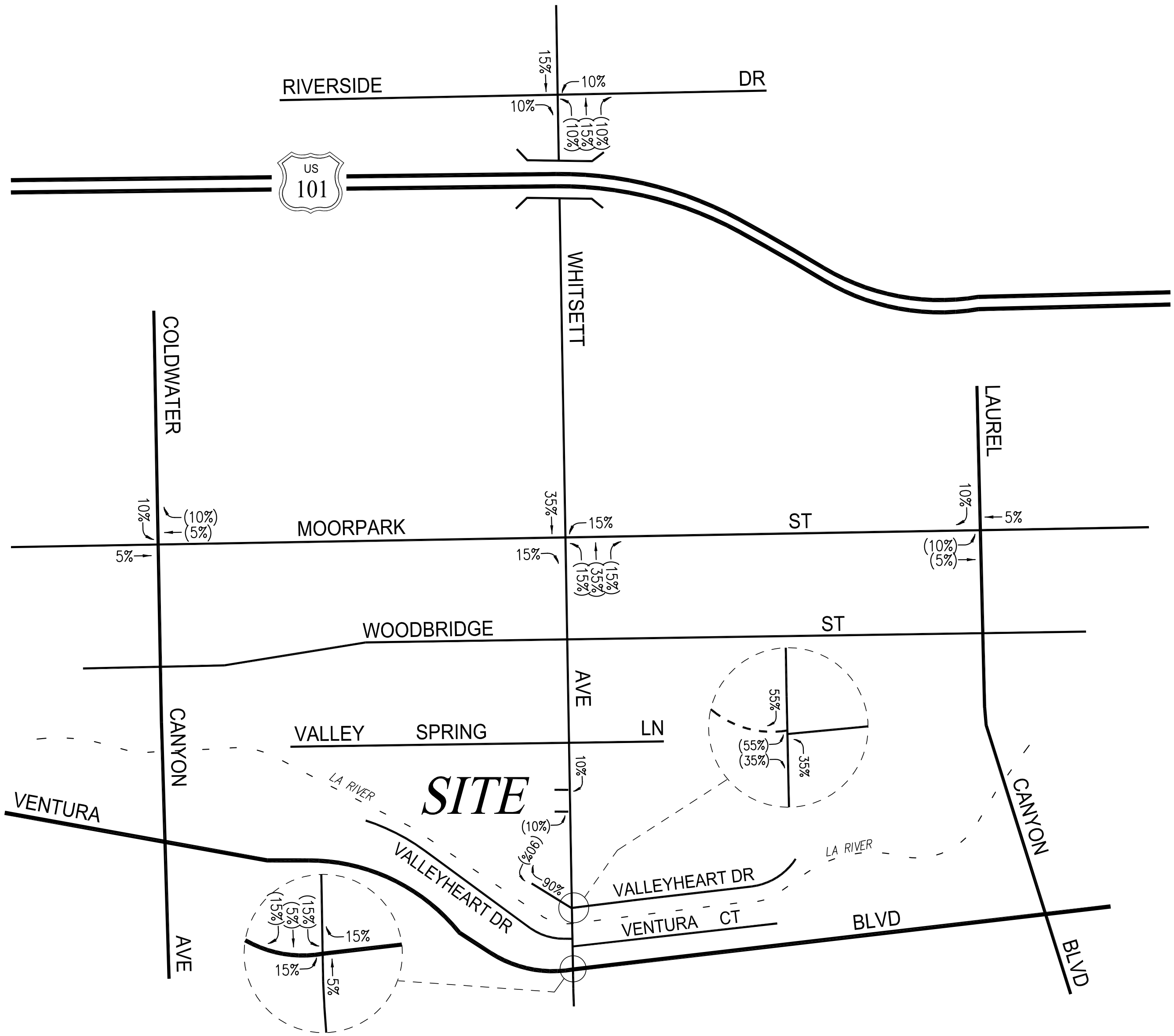
inbound trips and 1 net new outbound trip. Over a 24-hour period, the proposed project is forecast to generate 312 net new inbound trips and 312 net new outbound trips during a typical weekday.

8.2 Project Traffic Distribution and Assignment

Project traffic was assigned to the local roadway system based on a traffic distribution pattern developed in consultation with LADOT staff. The traffic distribution pattern reflects the proposed project land use, the proposed project site access scheme, existing traffic movements, characteristics of the surrounding roadway system, proximity to downtown Los Angeles, and nearby employment and residential areas. Project traffic volumes both entering and exiting the site have been distributed and assigned to the adjacent street system based on the following considerations:

- The site's proximity to major traffic corridors (i.e., U.S. 101 Freeway, Coldwater Canyon Avenue, Whitsett Avenue, Laurel Canyon Boulevard, Moorpark Street, and Ventura Boulevard);
- Expected localized traffic flow patterns based on adjacent roadway channelization and presence of traffic signals;
- Existing intersection traffic volumes;
- Ingress/egress availability at the project site;
- The location of existing and proposed parking areas;
- Assuming the driving range land use component will be served by the planned Whitsett Avenue driveways (i.e., the existing site trip distribution pattern); and
- Input from LADOT staff.

The general, directional traffic distribution patterns for the proposed project are presented in ***Figure 8-1***. The forecast net new weekday AM and PM peak hour project traffic volumes at the study intersections associated with the proposed project are presented in ***Figures 8-2*** and ***8-3***, respectively. The traffic volume assignments presented in *Figures 8-2* and *8-3* reflect the traffic distribution characteristics shown in *Figure 8-1* and the project traffic generation forecast presented in *Table 8-1*. Additionally, it should be noted that the existing site trip distribution pattern is provided in ***Appendix B*** (refer to Appendix Figure B-1).



XX = INBOUND PERCENTAGES
(XX) = OUTBOUND PERCENTAGES

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FIGURE 8-1
PROJECT TRIP DISTRIBUTION

STUDIO CITY SENIOR LIVING CENTER PROJECT

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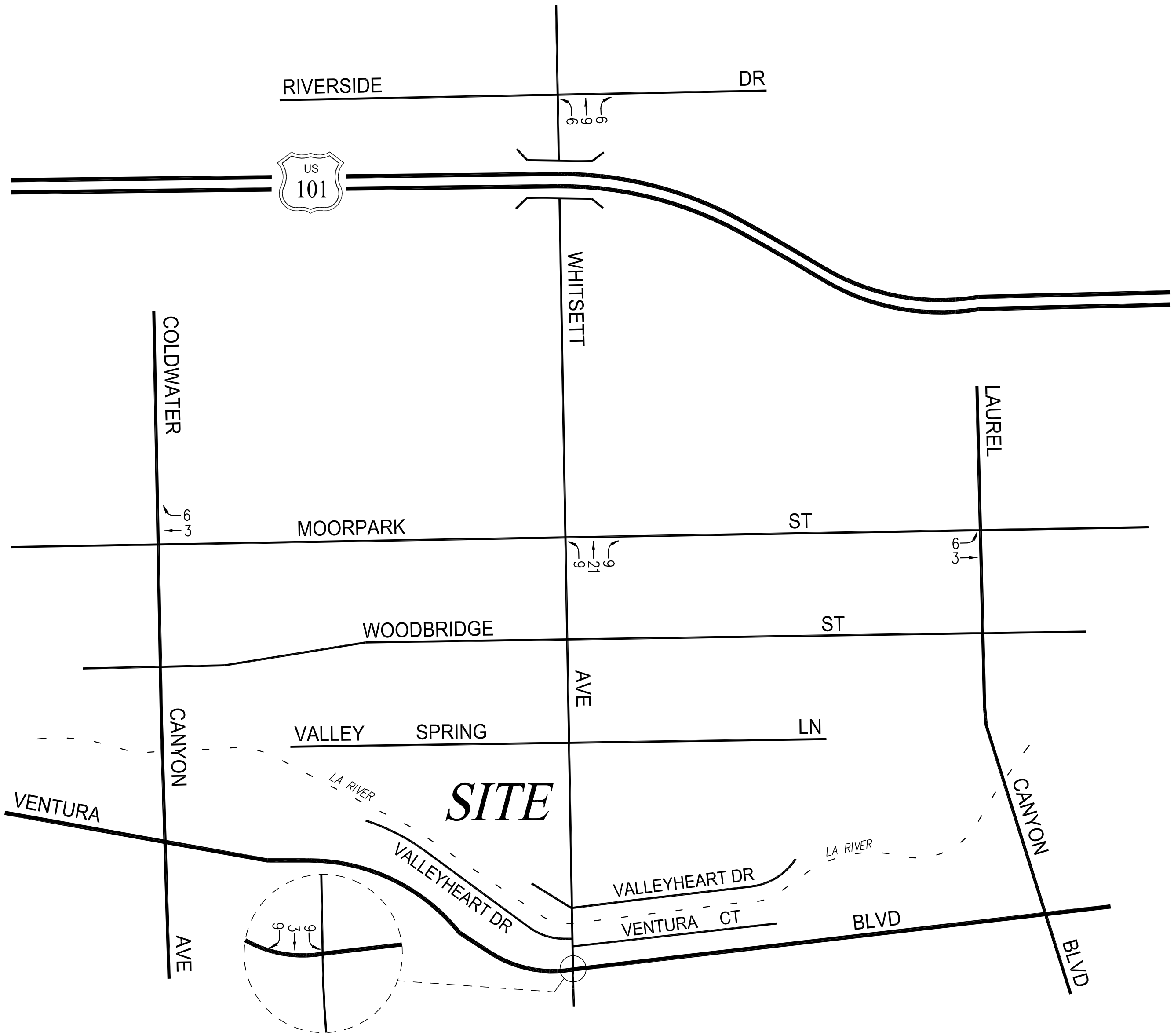

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FIGURE 8-2
NET NEW PROJECT TRAFFIC VOLUMES
WEEKDAY AM PEAK HOUR
STUDIO CITY SENIOR LIVING CENTER PROJECT

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FIGURE 8-3
NET NEW PROJECT TRAFFIC VOLUMES
WEEKDAY PM PEAK HOUR
STUDIO CITY SENIOR LIVING CENTER PROJECT

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9.0 TRAFFIC IMPACT ANALYSIS METHODOLOGY

9.1 Study Intersections

The study intersections were evaluated using the Critical Movement Analysis (CMA) method of analysis that determines Volume-to-Capacity (*v/c*) ratios on a critical lane basis. The overall intersection *v/c* ratio is subsequently assigned a Level of Service (LOS) value to describe intersection operations. Level of Service varies from LOS A (free flow) to LOS F (jammed condition). A description of the CMA method and corresponding Level of Service is provided in ***Appendix C***.

9.1.1 *Impact Criteria and Thresholds*

The relative impact of the added project traffic volumes to be generated by the proposed project during the AM and PM peak hours was evaluated based on analysis of future operating conditions at the study intersections, without and with the proposed project. The previously discussed capacity analysis procedures were utilized to evaluate the future *v/c* relationships and service level characteristics at each study intersection.

The significance of the potential impacts of project generated traffic was identified using the traffic impact criteria set forth in LADOT's *Traffic Study Policies and Procedures*, August, 2011. According to the City's published traffic study guidelines, the impact is considered significant if the project-related increase in the *v/c* ratio equals or exceeds the thresholds presented in ***Table 9–1***.

Table 9-1
CITY OF LOS ANGELES
INTERSECTION IMPACT THRESHOLD CRITERIA

Final *v/c*	**Level of Service**	**Project Related Increase in *v/c***
> 0.700 - 0.800	C	equal to or greater than 0.040
> 0.800 - 0.900	D	equal to or greater than 0.020
> 0.900	E or F	equal to or greater than 0.010

The City's Sliding Scale Method requires mitigation of project traffic impacts whenever traffic generated by the proposed development causes an increase of the analyzed intersection *v/c* ratio by an amount equal to or greater than the values shown above.

9.1.2 *Traffic Impact Analysis Scenarios*

Pursuant to LADOT's traffic study, Level of Service calculations have been prepared for the following scenarios for the study intersections:

(a) Existing (2012) conditions.

(b) Condition (a) with completion and occupancy of the project.

(c) Condition (b) with implementation of project mitigation measures where necessary.

(d) Condition (a) plus two percent (2.0%) annual ambient traffic growth through year 2016 and with completion and occupancy of the related projects (i.e., future cumulative pre-project)

(e) Condition (d) with completion and occupancy of the project.

(f) Condition (e) with implementation of project mitigation measures where necessary.

The traffic volumes for each new condition were added to the volumes in the prior condition to determine the change in capacity utilization at the study intersections.

9.1.3 *LADOT ATSAC/ATCS*

The City of Los Angeles Automated Traffic Surveillance and Control (ATSAC) and Adaptive Traffic Control System (ATCS) provides computer control of traffic signals allowing automatic adjustment of signal timing plans to reflect changing traffic conditions, identification of unusual traffic conditions caused by accidents, the ability to centrally implement special purpose short term traffic timing changes in response to incidents, and the ability to quickly identify signal equipment malfunctions. ATCS provides real time control of traffic signals and includes additional loop detectors, closed-circuit television, an upgrade in the communications links and a new generation of traffic control software. LADOT estimates that the ATSAC system reduces the critical *v/c* ratios by seven percent (0.07). The ATCS system upgrade further reduces the critical *v/c* ratios by three percent (0.03) for a total of 10 percent (0.10). ATSAC/ATCS system upgrades for all five study intersections have been implemented as part of the LADOT Victory ATSAC/ATCS system (System No. 6). Accordingly, the Level of Service calculations reflect a 0.10 adjustment for all analysis scenarios evaluated.

9.2 Neighborhood Street Segment Impact Criteria and Thresholds

In order to address the issue of regional through traffic using local streets in neighborhoods adjacent to the proposed project site, two local residential street segments located near the project site have been analyzed for potential significant impacts associated with the proposed project. The significance of the potential impacts of project generated traffic at the study street segments were identified using criteria set forth in the LADOT's *Traffic Study Policies and Procedures,* August, 2011. According to the City's published traffic study guidelines, a transportation impact on a local residential street shall be deemed significant based on an increase in the project Average Daily Traffic (ADT) volumes as shown in ***Table 9-2***.

Table 9-2 CITY OF LOS ANGELES LOCAL RESIDENTIAL STREET SEGMENT IMPACT THRESHOLD CRITERIA	
Projected Average Daily Traffic With Project (Final ADT)	**Project-Related Increase in ADT**
0 to 999	16 percent or more of final ADT
1,000 or more	12 percent or more of final ADT
2,000 or more	10 percent or more of final ADT
3,000 or more	8 percent or more of final ADT

Potential project-related traffic impacts at the two neighborhood street segments were analyzed for the following conditions:

(a) Existing conditions.

(b) Condition (a) with completion and occupancy of the proposed project.

(c) Condition (a) plus 2.0 percent (2.0%) ambient traffic growth through year 2016.

(d) Condition (c) with completion and occupancy of the proposed project.

As noted above, the future pre-project conditions were forecast using a 2.0 percent (2.0%) annual ambient growth factor to derive year 2016 conditions. Application of this ambient growth factor allows for a conservative forecast of future traffic volumes in that the analyzed street segments are situated within well established, built-out residential neighborhoods which for the most part do not offer direct cut-through opportunities. For purposes of estimating the potential contribution of project-related traffic, it should be noted that one percent (1.0%) has been utilized as a default distribution percentage for the study street segments where no project-related traffic is expected or forecast in the traffic impact study. As nearly all project-related traffic is anticipated to travel along the key arterials providing direct access to the proposed project site, the use of this default factor is intended to account for potential trips associated with motorists unfamiliar with the area who inadvertently travel on a neighborhood street segment.

10.0 Traffic Analysis

The traffic impact analysis prepared for the study intersections using the CMA methodology and application of the City of Los Angeles significant traffic impact criteria is summarized in ***Table 10–1***. The CMA data worksheets for the analyzed intersections are contained in *Appendix C*.

10.1 Study Intersections

10.1.1 *Existing Conditions*

As indicated in column [1] of *Table 10–1*, three of the five study intersections are presently operating at LOS D or better during the weekday AM and PM peak hours under existing conditions. The remaining study intersections are currently operating at LOS E or F during the peak hour as shown below under existing conditions:

- No. 3: Whitsett Avenue/Moorpark Street AM Peak Hour: *v/c*=0.963, LOS E
- No.5: Laurel Canyon Boulevard/Moorpark Street PM Peak Hour: *v/c*=1.003, LOS F

The existing traffic volumes at the study intersections during the weekday AM and PM peak hours are displayed in *Figures 6–1* and *6–2*, respectively.

10.1.2 *Existing With Project Conditions*

As shown in column [2] of *Table 10–1*, application of the City's threshold criteria to the "Existing With Project" scenario indicates that the proposed project is not expected to create significant impacts at any of the five study intersections. Incremental, but not significant, impacts are noted at the study intersections. Because there are no significant impacts, no traffic mitigation measures are required or recommended for the study intersections under the "Existing With Project" conditions. The existing with project traffic volumes at the study intersections during the weekday AM and PM peak hours are illustrated in ***Figures 10–1*** and ***10–2***, respectively.

10.1.3 *Future Cumulative Pre-Project Conditions*

The future cumulative pre-project conditions were forecast based on the addition of traffic generated by the completion and occupancy of related projects, as well as the growth in traffic due to the combined effects of continuing development, intensification of existing developments and other factors (i.e., ambient growth). The *v/c* ratios at all of the study intersections are incrementally increased with the addition of ambient traffic and traffic generated by the related projects listed in *Table 7–1*. As presented in column [3] of *Table 10–1*, two of the five study intersections are expected to continue operating at LOS D or better during the weekday AM and PM peak hours with the addition of growth in ambient traffic and related project traffic under the future cumulative pre-project conditions. The remaining study intersections are expected to operate at LOS E or F during the peak hour shown below with the addition of growth in ambient traffic and related project traffic:

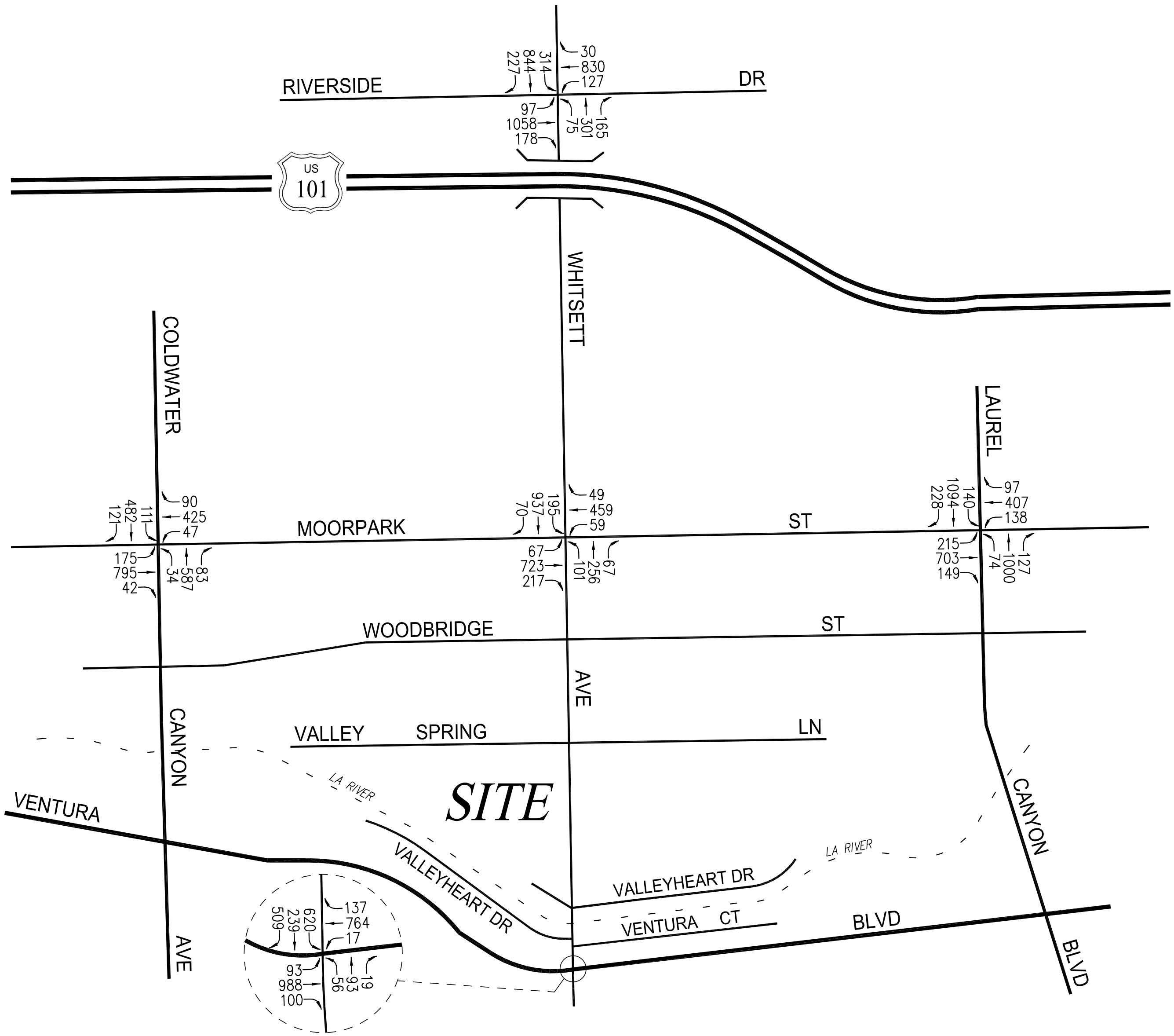
- No. 3: Whitsett Avenue/Moorpark Street AM Peak Hour: *v/c*=1.066, LOS F

Table 10-1
SUMMARY OF VOLUME TO CAPACITY RATIOS
AND LEVELS OF SERVICE
AM AND PM PEAK HOURS

NO.	INTERSECTION	PEAK HOUR	[1] YEAR 2012 EXISTING V/C	[1] LOS	[2] YEAR 2012 EXISTING W/ PROJECT V/C	[2] LOS	[2] CHANGE V/C [(2)-(1)]	[2] SIGNIF. IMPACT	[3] YEAR 2016 FUTURE PRE-PROJECT V/C	[3] LOS	[4] YEAR 2016 FUTURE WITH PROJECT V/C	[4] LOS	[4] CHANGE V/C [(4)-(3)]	[4] SIGNIF. IMPACT
1	Coldwater Canyon Avenue/	AM	0.759	C	0.759	C	0.000	NO	0.847	D	0.847	D	0.000	NO
	Moorpark Street	PM	0.748	C	0.750	C	0.002	NO	0.837	D	0.839	D	0.002	NO
2	Whitsett Avenue/	AM	0.800	C	0.804	D	0.004	NO	0.885	D	0.889	D	0.004	NO
	Riverside Drive	PM	0.678	B	0.678	B	0.000	NO	0.751	C	0.751	C	0.000	NO
3	Whitsett Avenue/	AM	0.963	E	0.969	E	0.006	NO	1.066	F	1.072	F	0.006	NO
	Moorpark Street	PM	0.721	C	0.721	C	0.000	NO	0.807	D	0.808	D	0.001	NO
4	Whitsett Avenue/	AM	0.645	B	0.651	B	0.006	NO	0.723	C	0.729	C	0.006	NO
	Ventura Boulevard	PM	0.830	D	0.838	D	0.008	NO	0.940	E	0.948	E	0.008	NO
5	Laurel Canyon Boulevard/	AM	0.883	D	0.887	D	0.004	NO	1.020	F	1.024	F	0.004	NO
	Moorpark Street	PM	1.003	F	1.004	F	0.001	NO	1.131	F	1.133	F	0.002	NO

(A) According to LADOT's "Traffic Study Policies and Procedures, " August 2011, a transportation impact on an intersection shall be deemed significant in accordance with the following table:

Final v/c	LOS	Project Related Increase in v/c
> 0.700 - 0.800	C	equal to or greater than 0.040
> 0.800 - 0.900	D	equal to or greater than 0.020
> 0.900	E,F	equal to or greater than 0.010



NOT TO SCALE

LINSCOTT, LAW & GREENSPAN, engineers

FIGURE 10-1
EXISTING WITH PROJECT TRAFFIC VOLUMES

WEEKDAY AM PEAK HOUR

STUDIO CITY SENIOR LIVING CENTER PROJECT

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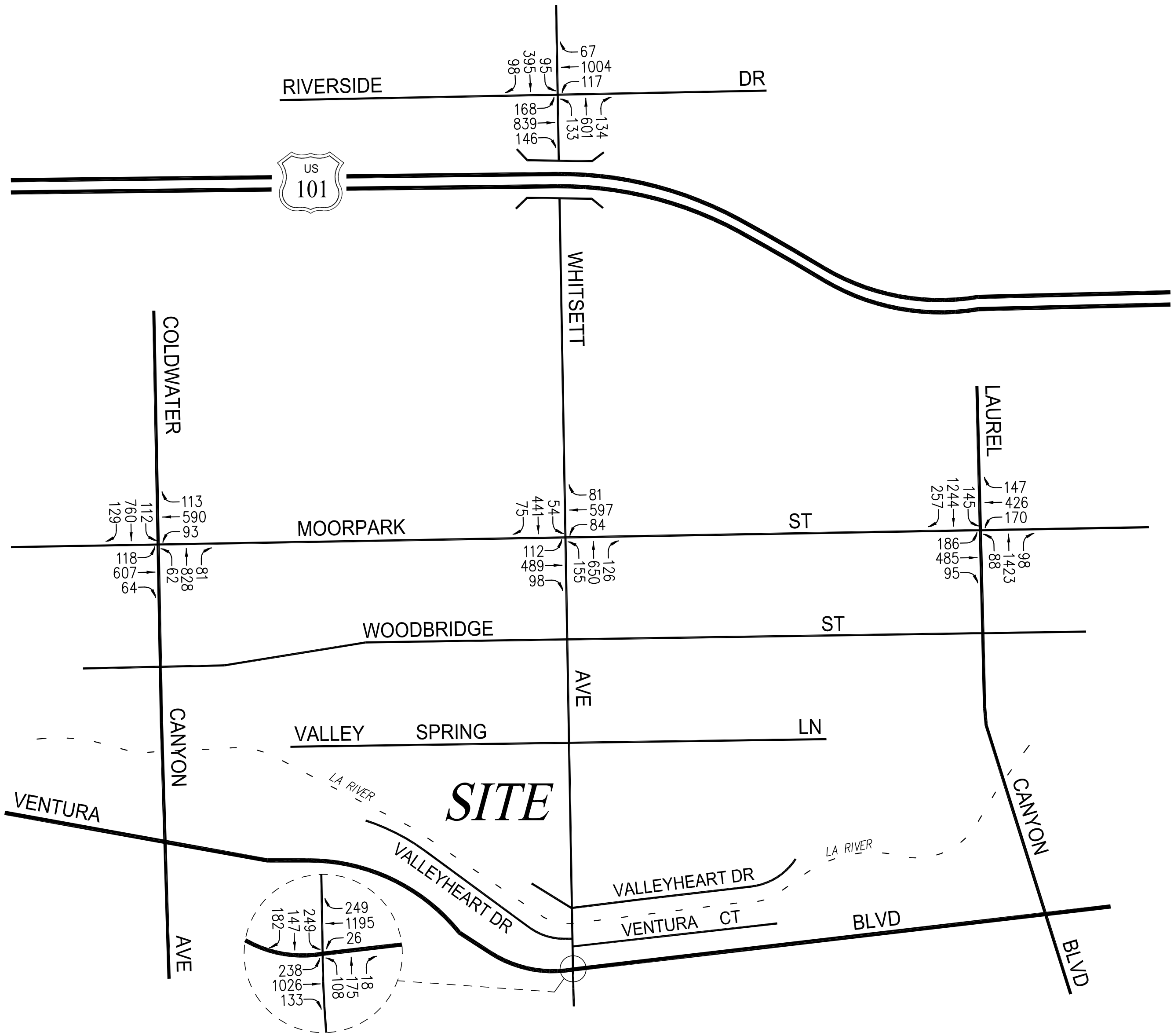

FIGURE 10-2
EXISTING WITH PROJECT TRAFFIC VOLUMES
WEEKDAY PM PEAK HOUR
STUDIO CITY SENIOR LIVING CENTER PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

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- No. 4: Whitsett Avenue/Ventura Boulevard PM Peak Hour: *v/c*=0.940, LOS E

- No.5: Laurel Canyon Boulevard/Moorpark Street AM Peak Hour: *v/c*=1.020, LOS F
  PM Peak Hour: *v/c*=1.131, LOS F

The future cumulative pre-project (existing, ambient growth and related projects) traffic volumes at the study intersections during the weekday AM and PM peak hours are presented in ***Figures 10–3*** and ***10–4***, respectively.

10.1.4 *Future Cumulative With Project Conditions*

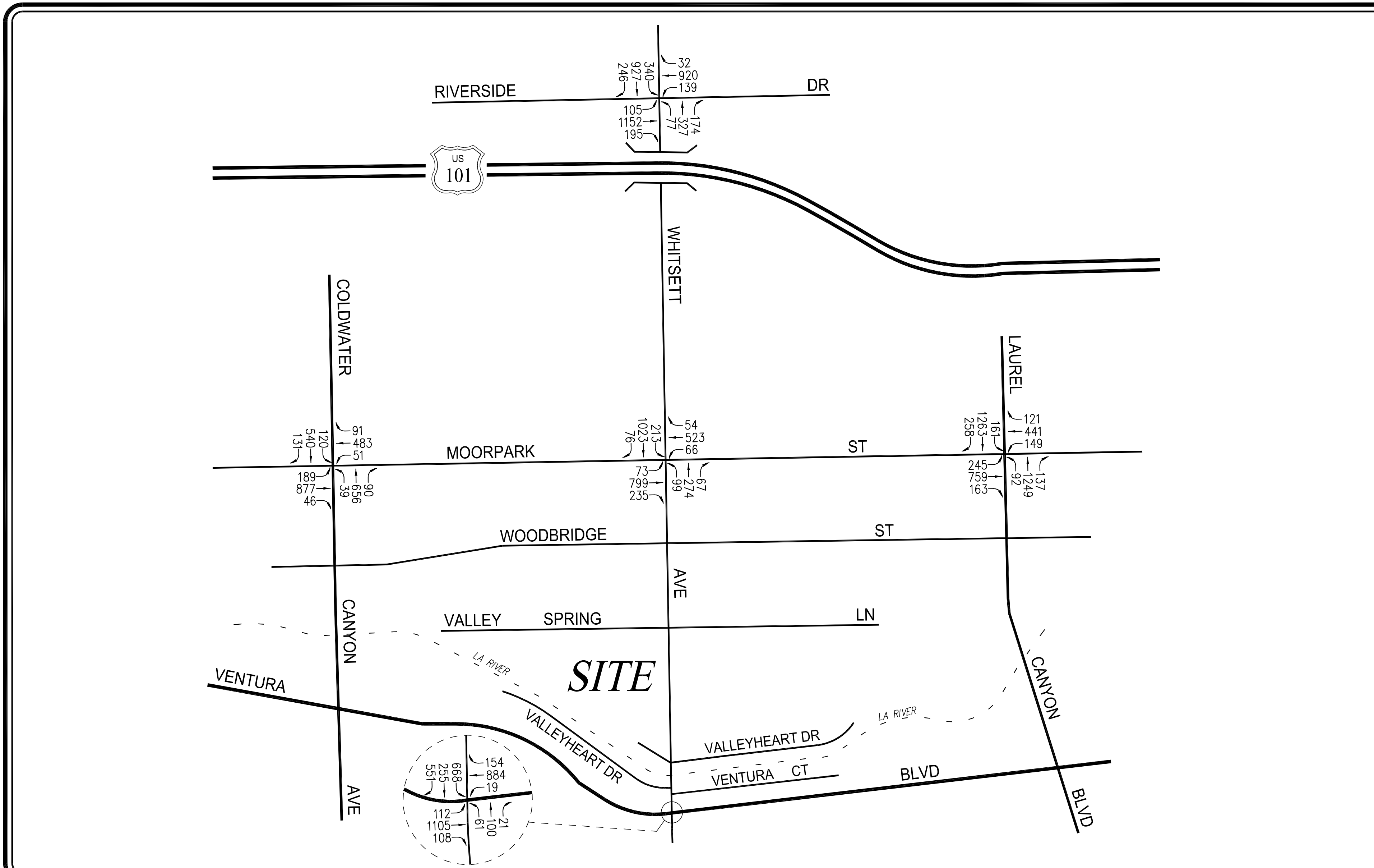
As shown in column [4] of *Table 10–1,* application of the City's threshold criteria to the "With Proposed Project" scenario indicates that the proposed project is not expected to create significant impacts at the five study intersections. Incremental, but not significant, impacts are noted at the study intersections and two of the five study intersections are expected to continue operating at LOS D or better during the weekday AM and PM peak hours with the addition of growth in ambient traffic, related project traffic, and project traffic, as presented in *Table 10–1*.

The future cumulative with project (existing, ambient growth, related projects and project) traffic volumes at the study intersections during the weekday AM and PM peak hours are illustrated in ***Figures 10–5*** and ***10–6***, respectively.

10.2 Neighborhood Study Street Segment Analysis

The forecast traffic conditions at the analyzed street segments for existing, existing with project, future cumulative pre-project and future with proposed project scenarios are summarized in ***Table 10-2***. The year 2012 24-hour traffic count data were utilized to evaluate the existing conditions. As indicated in Column [6] of *Table 10-2*, for purposes of estimating future pre-project traffic volume, a two percent (2.0%) annual growth rate through the year 2016 was conservatively added to the existing ADT volume to account for traffic generated by the related projects, as well as increases in general ambient traffic, to forecast the future cumulative pre-project traffic volumes.

As presented in Columns [5] and [9] of *Table 10-2*, the proposed project daily trips will incrementally affect traffic volumes on the analyzed street segments for the existing with project and future with project conditions, respectively. As shown in *Table 10-2*, application of LADOT's threshold criteria for local residential street segment analysis indicates that the proposed project is not anticipated to significantly impact either of the analyzed street segments.



NOT TO SCALE

LINSCOTT, LAW & GREENSPAN, engineers

FIGURE 10-3
FUTURE PRE-PROJECT TRAFFIC VOLUMES
WEEKDAY AM PEAK HOUR
STUDIO CITY SENIOR LIVING CENTER PROJECT

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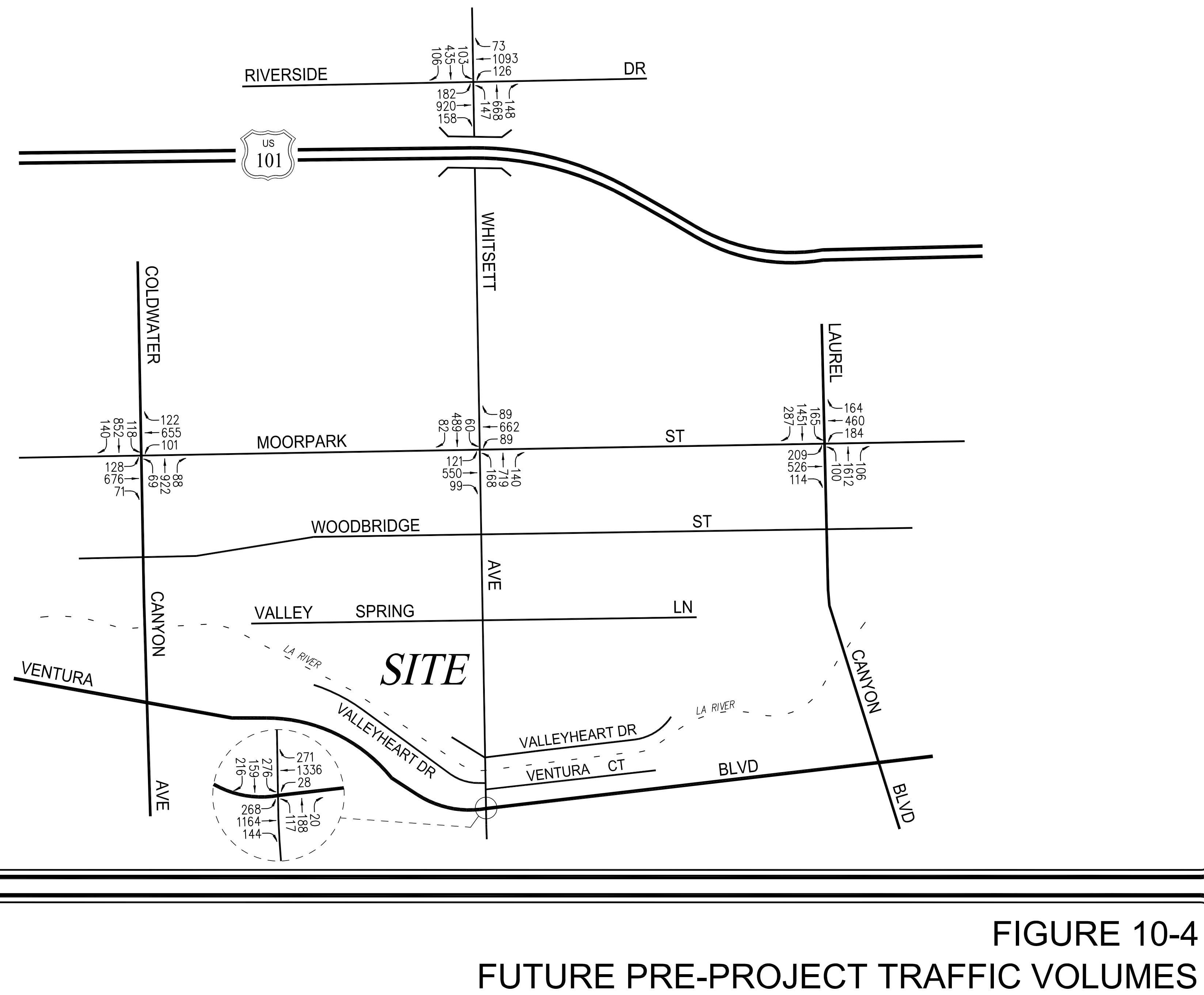

FIGURE 10-4
FUTURE PRE-PROJECT TRAFFIC VOLUMES

WEEKDAY PM PEAK HOUR

STUDIO CITY SENIOR LIVING CENTER PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

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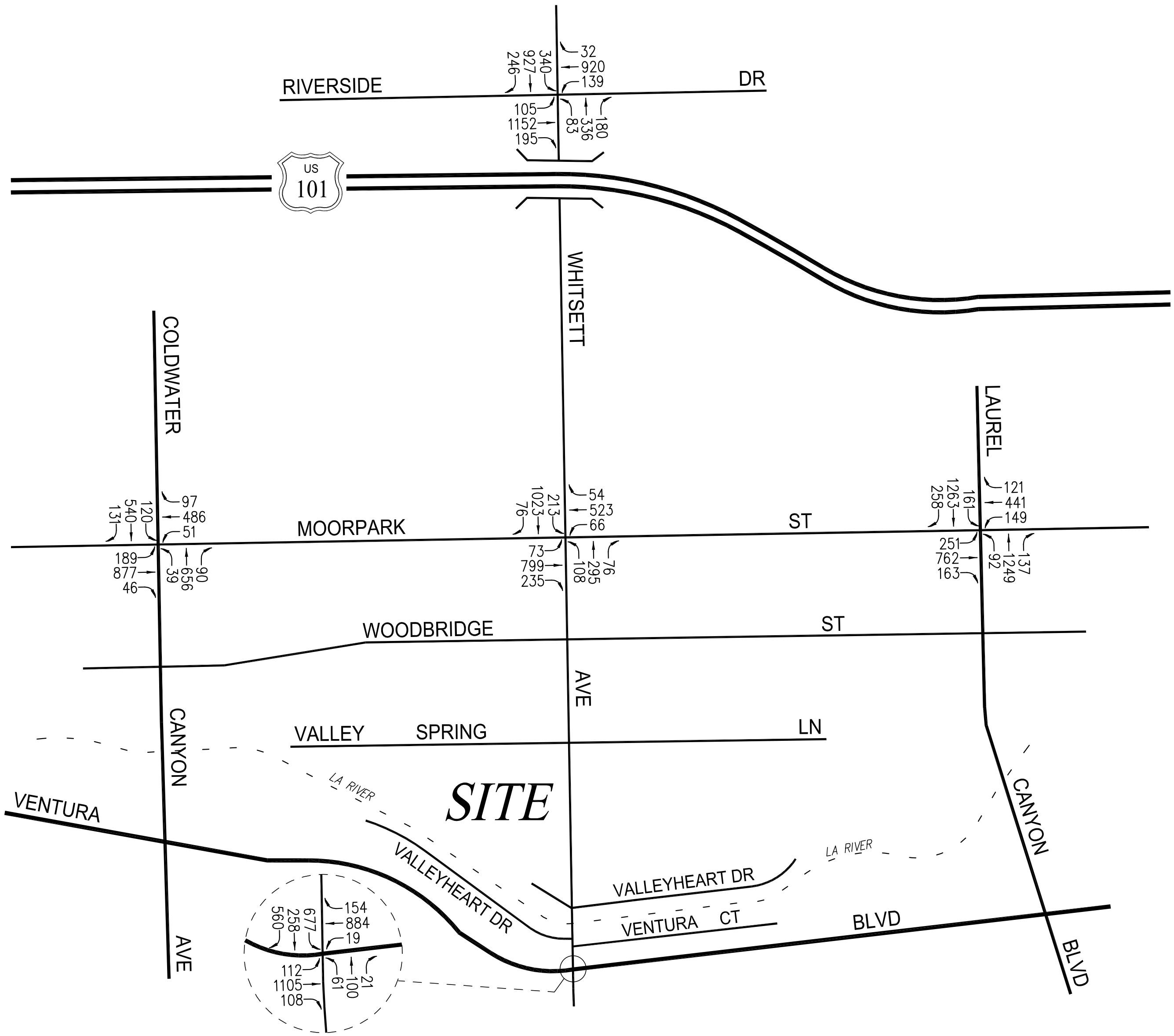

NOT TO SCALE

LINSCOTT, LAW & GREENSPAN, engineers

FIGURE 10-5
FUTURE CUMULATIVE WITH PROJECT TRAFFIC VOLUMES

WEEKDAY AM PEAK HOUR

STUDIO CITY SENIOR LIVING CENTER PROJECT

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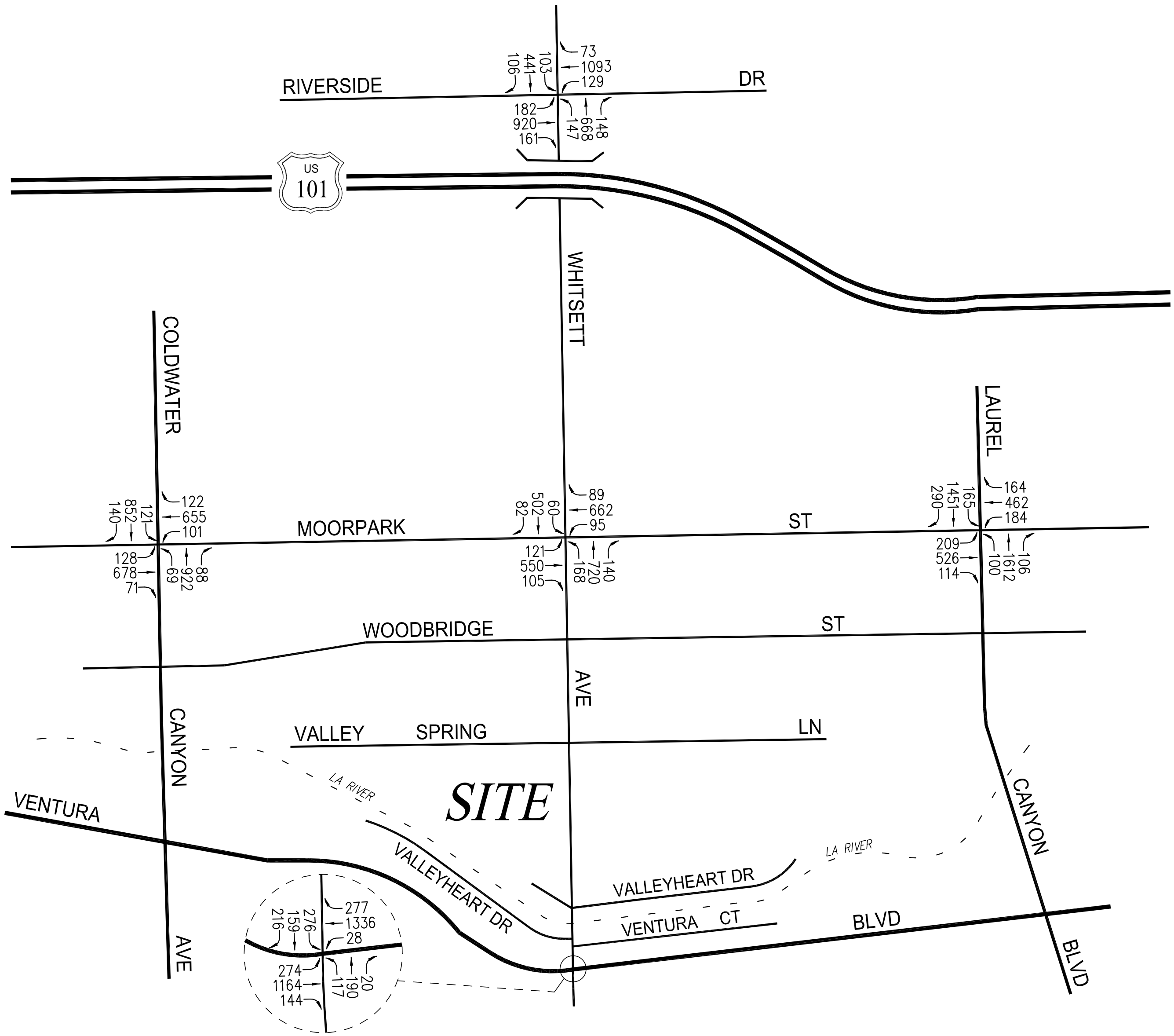

FIGURE 10-6
FUTURE CUMULATIVE WITH PROJECT TRAFFIC VOLUMES

WEEKDAY PM PEAK HOUR

STUDIO CITY SENIOR LIVING CENTER PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

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Table 10-2
NEIGHBORHOOD STREET SEGMENT ANALYSIS SUMMARY

NO.	STREET SEGMENT	[1] YEAR 2012 EXISTING 24-HOUR VOLUME	[2] DAILY PROJECT BUILD-OUT TRIP ENDS	[3] YEAR 2012 EXISTING WITH PROJECT [(1)+(2)]	[4] % ADT INCREASE WITH PROJECT [(2)/(3)]	[5] EXISTING WITH PROJECT SEGMENT IMPACT	[6] YEAR 2016 FUTURE PRE-PROJECT VOLUME	[7] YEAR 2016 FUTURE WITH PROJECT [(2)+(6)]	[8] % ADT INCREASE WITH PROJECT [(2)/(7)]	[9] FUTURE WITH PROJECT SEGMENT IMPACT
1	Valley Spring Lane between Babcock Ave. & Whitsett Ave.	868	6	874	0.7%	NO	894	900	0.7%	NO
2	Valley Spring Lane between Whitsett Ave. & Wilkinson Ave.	1,073	6	1,079	0.6%	NO	1,105	1,111	0.5%	NO

[1] The existing average daily traffic (ADT) volumes were determined based on counts conducted by The Traffic Solution. Copies of the ADT count summary data worksheets are provided in Appendix A. The year 2011 ADT volume data were adjusted by two percent (2.0%) to reflect year 2012 existing conditions.

[2] Net project build-out daily trip ends include inbound and outbound trips based on the project trip generation forecasts provided in Table 8-1. Please note that one percent (1.0%) has been utilized as a default distribution percentage for the neighborhood study street segments where no project-related traffic is expected or forecast in the traffic study. As all project-related traffic is anticipated to travel along the key arterials providing direct access to the project site, the use of this default factor is intended to account for potential trips associated with motorists who unexpectedly or inadvertently travel on a neighborhood street segment.

[3] Total of columns [1] and [2].

[4] Percent project-related increase based on column [2] divided by column [3].

[5]/[9] According to LADOT's "Traffic Study Policies & Procedures," August 2011: "A local residential street shall be deemed significantly impacted based on an increase in the projected average daily traffic (ADT) volumes."

Projected Average Daily Traffic with Project (Final ADT)	Project-Related Increase in ADT
0 to 999	16% or more of final ADT
1,000 or more	12% or more of final ADT
2,000 or more	10% or more of final ADT
3,000 or more	8% or more of final ADT

[6] An ambient growth rate of two percent (2.0%) per year was assumed to derive the year 2016 future pre-project traffic volumes.

[7] Total of columns [2] and [6].

[8] Percent project-related increase based on column [2] divided by column [7].

11.0 CONGESTION MANAGEMENT PROGRAM TRAFFIC IMPACT ASSESSMENT

The Congestion Management Program (CMP) is a state-mandated program that was enacted by the California State Legislature with the passage of Proposition 111 in 1990. The program is intended to address the impact of local growth on the regional transportation system.

As required by the 2010 Congestion Management Program for Los Angeles County, a Traffic Impact Assessment (TIA) has been prepared to determine the potential impacts on designated monitoring locations on the CMP highway system. The analysis has been prepared in accordance with procedures outlined in the *2010 Congestion Management Program for Los Angeles County*, County of Los Angeles Metropolitan Transportation Authority, 2010.

According to Section D.9.1 (Appendix D, page D-6) of the 2010 CMP manual, the criteria for determining a significant transportation impact is listed below:

> "A significant transportation impact occurs when the proposed project increases traffic demand on a CMP facility by 2% of capacity (V/C $\geq$ 0.02), causing or worsening LOS F (V/C > 1.00)."

The CMP impact criteria apply for analysis of both intersection and freeway monitoring locations.

11.1 Intersections

The following CMP intersection monitoring locations in the project vicinity have been identified:

- <u>CMP Station</u> <u>Intersection</u>

CMP Station	Intersection
No. 74	Ventura Boulevard/Laurel Canyon Boulevard
No. 76	Ventura Boulevard/Sepulveda Boulevard
No. 78	Ventura Boulevard/Woodman Avenue

The CMP TIA guidelines require that intersection monitoring locations must be examined if the proposed project will add 50 or more trips during either the AM or PM weekday peak hours. The proposed project will not add 50 or more trips during either the AM or PM weekday peak hours (i.e., of adjacent street traffic) at the three CMP monitoring intersections in the project vicinity, which is stated in the CMP manual as the threshold criteria for a traffic impact assessment. Therefore, no further review of potential impacts to intersection monitoring locations that are part of the CMP highway system is required.

11.2 Freeways

The following CMP freeway monitoring locations have been identified in the project vicinity:

CMP Station	Location
No. 1038	101 Freeway at Coldwater Canyon Avenue
No. 1057	170 Freeway south of Sherman Way

The CMP TIA guidelines require that freeway monitoring locations must be examined if the proposed project will add 150 or more trips (in either direction) during either the AM or PM weekday peak hours. The proposed project will not add 150 or more trips (in either direction) during either the AM or PM weekday peak hours to CMP freeway monitoring locations which is the threshold for preparing a traffic impact assessment, as stated in the CMP manual. Therefore, no further review of potential impacts to freeway monitoring locations that are part of the CMP highway system is required.

11.3 Transit Impact Review

As required by the *2010 Congestion Management Program for Los Angeles County*, a review has been made of the potential impacts of the project on transit service. As discussed in Subsection 5.5 herein, existing transit service is provided in the vicinity of the proposed Studio City Senior Living Center project.

The project trip generation for only the senior housing land use component, as shown in *Table 8–1*, was adjusted by values set forth in the CMP (i.e., person trips equal 1.4 times vehicle trips, and transit trips equal 3.5 percent of the total person trips) to estimate transit trip generation. Pursuant to the CMP guidelines, the proposed project is forecast to generate demand for four transit trips during the AM peak hour and five transit trips during the PM peak hour. Over a 24-hour period, the proposed project is forecast to generate demand for 57 daily transit trips. The transit trip calculations are as follows:

- AM Peak Hour = 88 × 1.4 × 0.035 = 4 Transit Trips
- PM Peak Hour = 104 × 1.4 × 0.035 = 5 Transit Trips
- Daily Trips = 1,162 × 1.4 × 0.035 = 57 Transit Trips

As shown in *Table 5–1,* seven bus transit lines and routes are provided adjacent to or in close proximity the project site. As outlined in *Table 5–1*, under the "No. of Buses During Peak Hour" column, these seven transit lines provide services for an average of (i.e., average of the directional number of buses during the peak hours) generally 46 buses during the AM peak hour and roughly 42 buses during the PM peak hour. Therefore, based on the above calculated AM and PM peak hour trips, this would correspond to less than one additional transit rider per bus. It is anticipated that the existing transit service in the project area will adequately accommodate the increase of project-generated transit trips. Thus, given the low number of project-generated transit trips per bus, no project impacts on existing or future transit services in the project area are expected to occur as a result of the proposed project.

12.0 Conclusions

This traffic impact analysis has been prepared to evaluate the potential impacts to the local street system due to the Studio City Senior Living Center project. Five intersections and two neighborhood street segments were identified and analyzed in order to determine changes in operations following construction and occupancy of the proposed project. Application of the impact threshold criteria from the City of Los Angeles indicates that none of the five study intersections and two study street segments would be significantly impacted by the forecast project traffic. Incremental but not significant impacts are noted at the study locations evaluated in this analysis. As no significant impacts are expected due to the proposed project, no traffic mitigation measures are required or recommended for the study locations.

APPENDIX A

TRAFFIC COUNT DATA

- MANUAL PEAK HOUR INTERSECTION TRAFFIC COUNT DATA
- 24-HOUR MACHINE STREET SEGMENT TRAFFIC COUNT DATA

City Traffic Counters, LLC.
626-256-4171

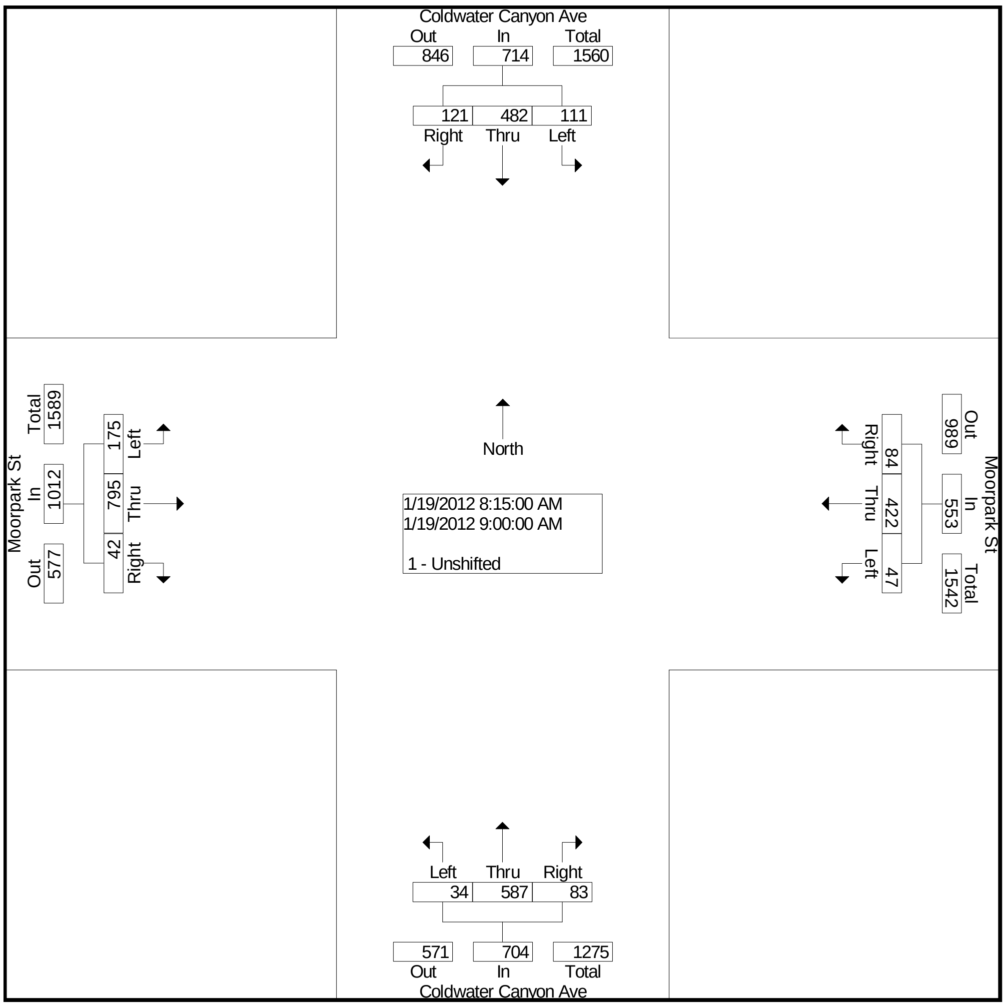
File Name : CCMoorpark
Site Code : 00000000
Start Date : 1/19/2012
Page No : 1

Groups Printed- 1 - Unshifted

	Coldwater Canyon Ave Southbound			Moorpark St Westbound			Coldwater Canyon Ave Northbound			Moorpark St Eastbound			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
07:00 AM	14	141	16	13	53	13	5	91	3	33	48	4	434
07:15 AM	25	117	22	10	76	12	7	91	9	25	81	4	479
07:30 AM	35	98	34	4	105	21	10	113	15	25	140	4	604
07:45 AM	21	95	43	9	140	14	6	128	6	47	186	5	700
Total	95	451	115	36	374	60	28	423	33	130	455	17	2217
08:00 AM	17	131	30	9	104	25	12	141	8	52	169	13	711
08:15 AM	21	103	30	10	126	21	9	132	17	67	201	7	744
08:30 AM	26	88	31	11	92	26	7	165	31	36	210	11	734
08:45 AM	32	131	28	13	117	20	15	142	17	35	212	13	775
Total	96	453	119	43	439	92	43	580	73	190	792	44	2964
09:00 AM	32	160	32	13	87	17	3	148	18	37	172	11	730
09:15 AM	25	168	22	7	76	12	8	131	14	35	143	16	657
09:30 AM	45	182	23	18	98	25	12	127	15	36	105	27	713
09:45 AM	53	227	19	17	79	11	6	149	16	24	110	13	724
Total	155	737	96	55	340	65	29	555	63	132	530	67	2824
03:00 PM	21	171	26	19	105	25	23	225	21	37	119	18	810
03:15 PM	27	155	22	21	114	26	14	185	13	33	130	8	748
03:30 PM	31	167	26	17	125	16	30	194	17	24	138	20	805
03:45 PM	23	204	20	21	111	38	16	187	19	30	169	25	863
Total	102	697	94	78	455	105	83	791	70	124	556	71	3226
04:00 PM	23	181	22	31	133	25	13	185	25	34	116	23	811
04:15 PM	20	177	28	23	128	24	11	260	29	39	142	8	889
04:30 PM	26	199	36	14	123	33	12	187	25	38	126	12	831
04:45 PM	25	183	25	24	116	26	18	184	24	29	143	14	811
Total	94	740	111	92	500	108	54	816	103	140	527	57	3342
05:00 PM	24	179	33	17	134	28	12	216	21	36	154	14	868
05:15 PM	30	207	27	22	150	27	17	199	18	25	158	21	901
05:30 PM	25	183	35	25	157	27	17	226	17	31	134	8	885
05:45 PM	30	191	34	29	149	31	16	187	25	26	159	21	898
Total	109	760	129	93	590	113	62	828	81	118	605	64	3552
Grand Total	651	3838	664	397	2698	543	299	3993	423	834	3465	320	18125
Apprch %	12.6	74.5	12.9	10.9	74.2	14.9	6.3	84.7	9.0	18.1	75.0	6.9	
Total %	3.6	21.2	3.7	2.2	14.9	3.0	1.6	22.0	2.3	4.6	19.1	1.8	

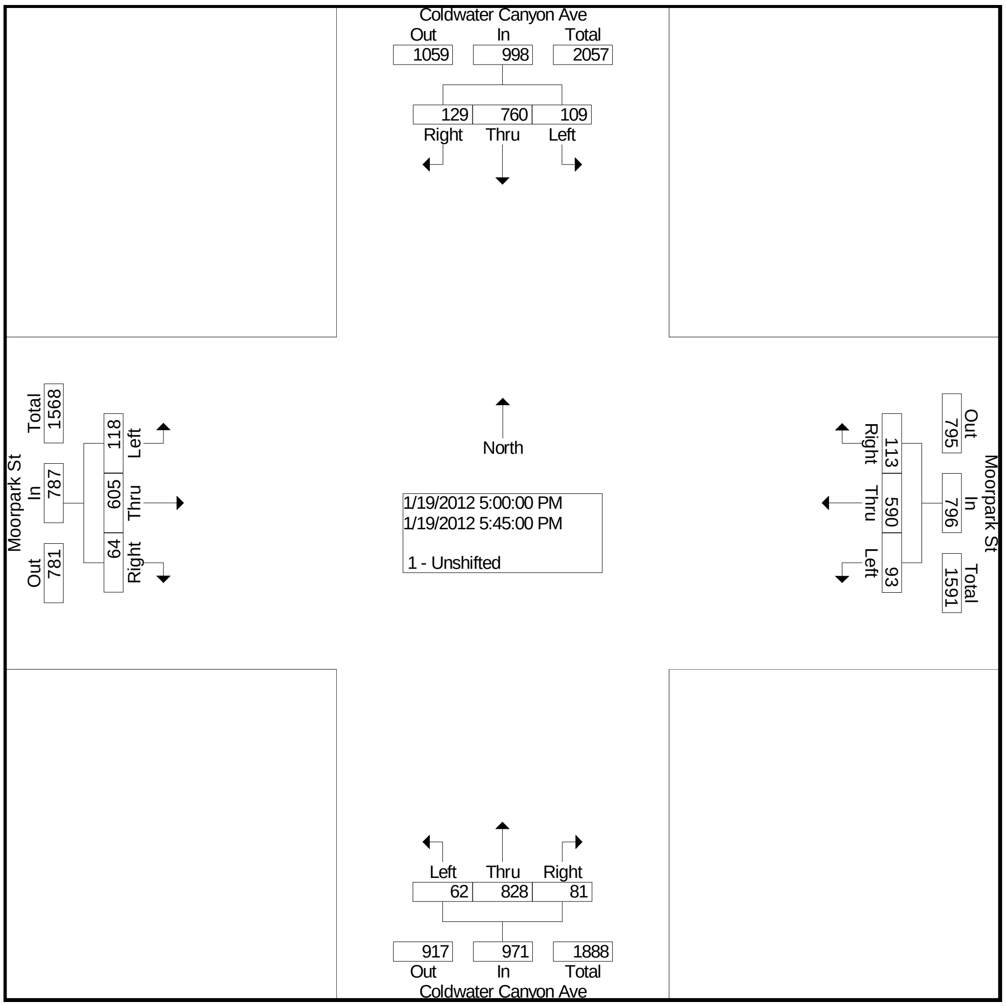
File Name : CCMoorpark
Site Code : 00000000
Start Date : 1/19/2012
Page No : 2

	Coldwater Canyon Ave Southbound				Moorpark St Westbound				Coldwater Canyon Ave Northbound				Moorpark St Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Intersection	08:15 AM																
Volume	111	482	121	714	47	422	84	553	34	587	83	704	175	795	42	1012	2983
Percent	15.5	67.5	16.9		8.5	76.3	15.2		4.8	83.4	11.8		17.3	78.6	4.2		
08:45 Volume	32	131	28	191	13	117	20	150	15	142	17	174	35	212	13	260	775
Peak Factor																	0.962
High Int.	09:00 AM				08:15 AM				08:30 AM				08:15 AM				
Volume	32	160	32	224	10	126	21	157	7	165	31	203	67	201	7	275	
Peak Factor				0.797				0.881				0.867				0.920	



File Name : CCMoorpark
Site Code : 00000000
Start Date : 1/19/2012
Page No : 3

	Coldwater Canyon Ave Southbound				Moorpark St Westbound				Coldwater Canyon Ave Northbound				Moorpark St Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Intersection	05:00 PM																
Volume	109	760	129	998	93	590	113	796	62	828	81	971	118	605	64	787	3552
Percent	10.9	76.2	12.9		11.7	74.1	14.2		6.4	85.3	8.3		15.0	76.9	8.1		
05:15 Volume	30	207	27	264	22	150	27	199	17	199	18	234	25	158	21	204	901
Peak Factor																	0.986
High Int.	05:15 PM				05:30 PM				05:30 PM				05:45 PM				
Volume	30	207	27	264	25	157	27	209	17	226	17	260	26	159	21	206	
Peak Factor				0.945				0.952				0.934				0.955	



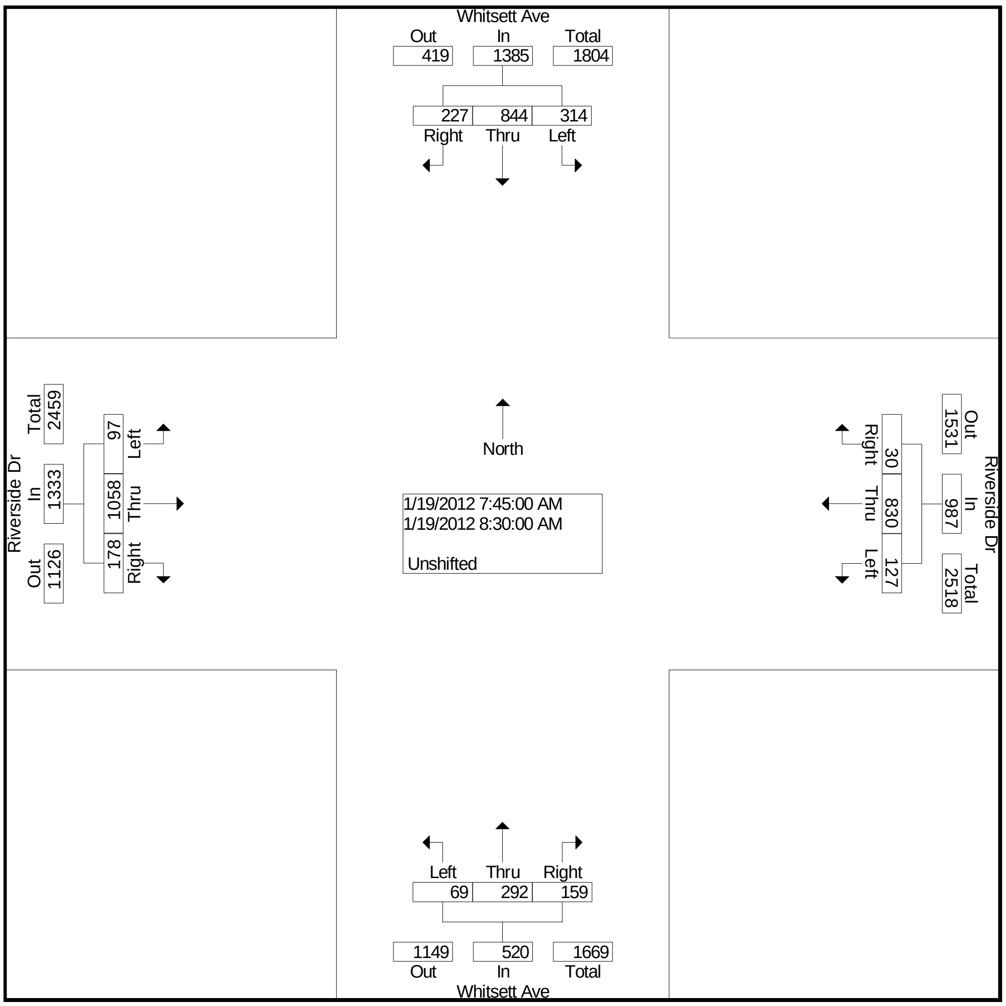
City Traffic Counters, LLC.
626-256-4171

File Name : WhittRiverside
Site Code : 00000000
Start Date : 1/19/2012
Page No : 1

Groups Printed- Unshifted

	Whitsett Ave Southbound			Riverside Dr Westbound			Whitsett Ave Northbound			Riverside Dr Eastbound			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
07:00 AM	28	140	20	11	78	8	11	18	7	9	64	9	403
07:15 AM	73	173	44	13	162	9	12	39	14	11	100	15	665
07:30 AM	83	189	56	23	184	22	32	52	19	19	229	34	942
07:45 AM	79	203	87	22	258	8	28	99	35	28	271	45	1163
Total	263	705	207	69	682	47	83	208	75	67	664	103	3173
08:00 AM	109	227	55	30	187	5	17	66	32	35	273	49	1085
08:15 AM	64	209	51	31	214	7	11	54	42	21	252	43	999
08:30 AM	62	205	34	44	171	10	13	73	50	13	262	41	978
08:45 AM	49	210	50	33	157	8	23	72	28	21	277	39	967
Total	284	851	190	138	729	30	64	265	152	90	1064	172	4029
09:00 AM	39	152	41	33	134	17	18	60	38	12	240	27	811
09:15 AM	53	157	37	39	150	13	13	49	34	11	192	36	784
09:30 AM	28	117	29	26	115	12	20	57	29	19	222	33	707
09:45 AM	31	118	32	17	122	8	17	58	24	24	223	26	700
Total	151	544	139	115	521	50	68	224	125	66	877	122	3002
03:00 PM	21	92	16	31	252	22	34	133	34	40	188	31	894
03:15 PM	22	89	33	25	269	26	38	152	37	43	215	34	983
03:30 PM	27	101	23	24	269	16	31	146	37	33	191	36	934
03:45 PM	20	111	25	32	234	15	29	149	35	49	206	41	946
Total	90	393	97	112	1024	79	132	580	143	165	800	142	3757
04:00 PM	26	88	17	33	232	10	35	154	25	43	227	32	922
04:15 PM	29	89	24	23	180	12	36	174	24	39	213	22	865
04:30 PM	23	98	14	31	202	11	26	148	27	44	202	23	849
04:45 PM	20	117	17	19	186	20	30	145	19	38	194	27	832
Total	98	392	72	106	800	53	127	621	95	164	836	104	3468
05:00 PM	31	95	24	22	216	18	39	177	20	40	187	23	892
05:15 PM	25	102	18	27	256	25	34	175	18	38	178	22	918
05:30 PM	24	91	25	35	247	19	25	187	20	38	175	24	910
05:45 PM	23	92	23	27	264	26	20	169	17	35	164	16	876
Total	103	380	90	111	983	88	118	708	75	151	704	85	3596
Grand Total	989	3265	795	651	4739	347	592	2606	665	703	4945	728	21025
Apprch %	19.6	64.7	15.7	11.3	82.6	6.0	15.3	67.5	17.2	11.0	77.6	11.4	
Total %	4.7	15.5	3.8	3.1	22.5	1.7	2.8	12.4	3.2	3.3	23.5	3.5	

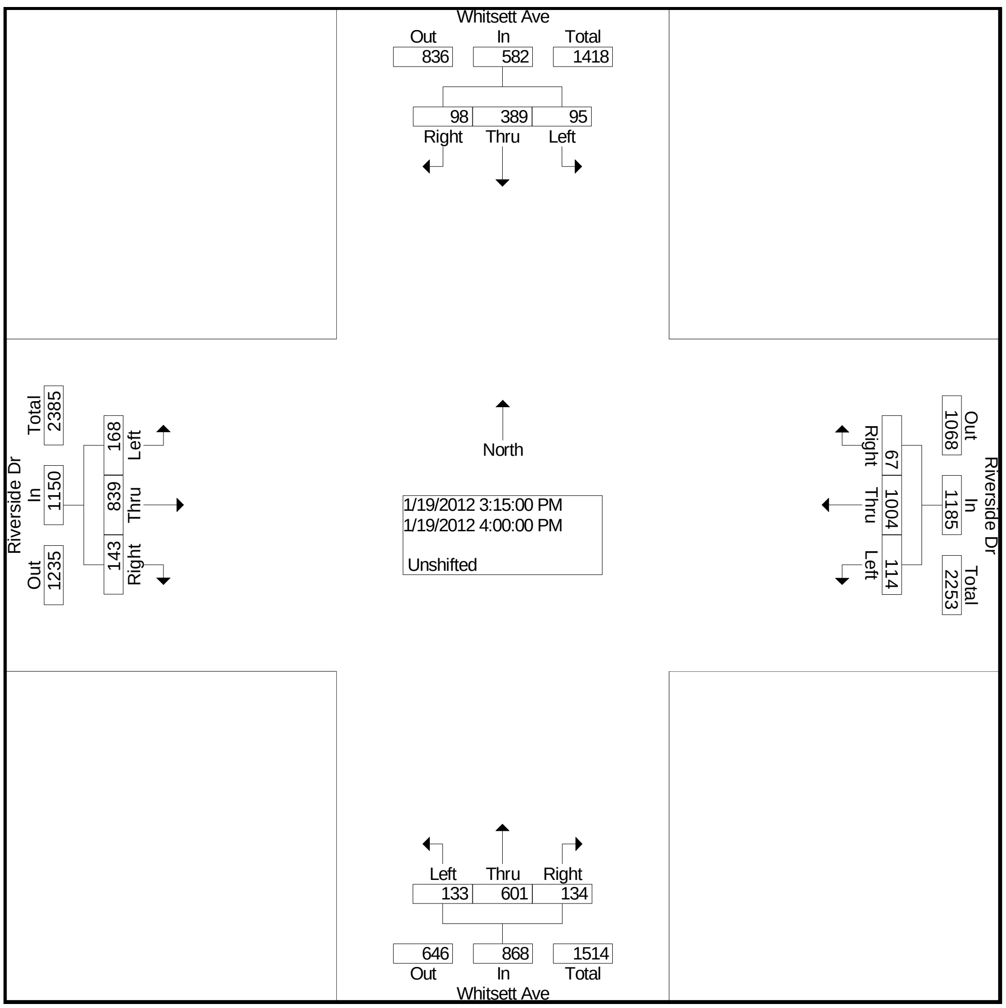
	Whitsett Ave Southbound				Riverside Dr Westbound				Whitsett Ave Northbound				Riverside Dr Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Intersection	07:45 AM																
Volume	314	844	227	1385	127	830	30	987	69	292	159	520	97	1058	178	1333	4225
Percent	22.7	60.9	16.4		12.9	84.1	3.0		13.3	56.2	30.6		7.3	79.4	13.4		
07:45 Volume	79	203	87	369	22	258	8	288	28	99	35	162	28	271	45	344	1163
Peak Factor																	0.908
High Int.	08:00 AM				07:45 AM				07:45 AM				08:00 AM				
Volume	109	227	55	391	22	258	8	288	28	99	35	162	35	273	49	357	
Peak Factor				0.886				0.857				0.802				0.933	



City Traffic Counters, LLC.
626-256-4171

File Name : WhittRiverside
Site Code : 00000000
Start Date : 1/19/2012
Page No : 3

	Whitsett Ave Southbound				Riverside Dr Westbound				Whitsett Ave Northbound				Riverside Dr Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Intersection	03:15 PM																
Volume	95	389	98	582	114	1004	67	1185	133	601	134	868	168	839	143	1150	3785
Percent	16.3	66.8	16.8		9.6	84.7	5.7		15.3	69.2	15.4		14.6	73.0	12.4		
03:15 Volume	22	89	33	144	25	269	26	320	38	152	37	227	43	215	34	292	983
Peak Factor																	0.963
High Int.	03:45 PM				03:15 PM				03:15 PM				04:00 PM				
Volume	20	111	25	156	25	269	26	320	38	152	37	227	43	227	32	302	
Peak Factor				0.933				0.926				0.956				0.952	



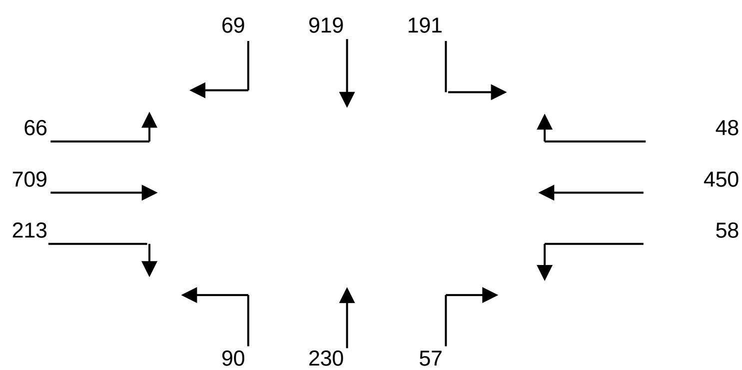
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT:		LLG - PASADENA
PROJECT:		STUDIO CITY
DATE:		THURSDAY, NOVEMBER 17, 2011
PERIOD:		07:00 AM TO 10:00 AM
INTERSECTION	N/S	WHITSETT AVENUE
	E/W	MOORPARK STREET
FILE NUMBER:		1-AM

15 MINUTE	1	2	3	4	5	6	7	8	9	10	11	12
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT
0700-0715	8	166	10	5	62	7	11	23	6	31	63	7
0715-0730	12	187	24	8	84	15	12	33	8	42	107	12
0730-0745	19	192	23	14	112	15	15	44	12	42	139	26
0745-0800	16	209	44	15	121	15	10	59	14	53	143	23
0800-0815	25	238	44	11	118	12	9	65	26	55	162	21
0815-0830	15	251	54	10	100	17	15	51	22	59	180	19
0830-0845	19	203	40	12	113	13	19	58	21	50	190	12
0845-0900	10	227	53	15	119	16	14	56	21	49	177	14
0900-0915	14	213	37	8	83	23	14	71	20	49	163	11
0915-0930	17	176	37	11	68	22	16	57	12	43	134	13
0930-0945	19	163	28	16	63	21	15	42	14	41	139	19
0945-1000	14	150	21	9	67	18	22	63	23	34	101	14

1 HOUR	1	2	3	4	5	6	7	8	9	10	11	12	
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTALS
0700-0800	55	754	101	42	379	52	48	159	40	168	452	68	2318
0715-0815	72	826	135	48	435	57	46	201	60	192	551	82	2705
0730-0830	75	890	165	50	451	59	49	219	74	209	624	89	2954
0745-0845	75	901	182	48	452	57	53	233	83	217	675	75	3051
0800-0900	69	919	191	48	450	58	57	230	90	213	709	66	3100
0815-0915	58	894	184	45	415	69	62	236	84	207	710	56	3020
0830-0930	60	819	167	46	383	74	63	242	74	191	664	50	2833
0845-0945	60	779	155	50	333	82	59	226	67	182	613	57	2663
0900-1000	64	702	123	44	281	84	67	233	69	167	537	57	2428

A.M. PEAK HOUR
0800-0900



MOORPARK STREET

WHITSETT AVENUE

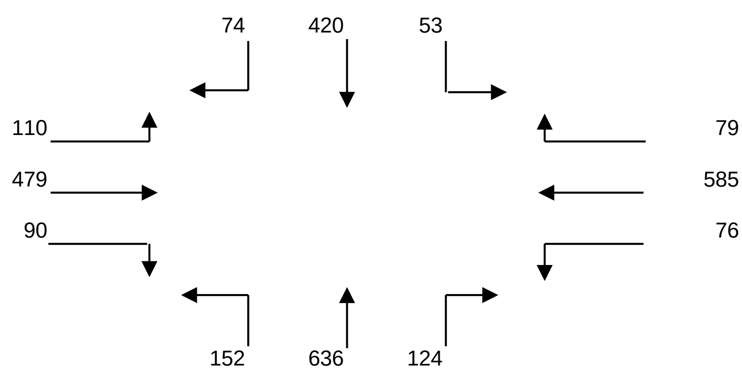
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT:		LLG - PASADENA
PROJECT:		STUDIO CITY
DATE:		THURSDAY, NOVEMBER 17, 2011
PERIOD:		03:00 PM TO 06:00 PM
INTERSECTION	N/S	WHITSETT AVENUE
	E/W	MOORPARK STREET
FILE NUMBER:		1-PM

15 MINUTE	1	2	3	4	5	6	7	8	9	10	11	12
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT
0300-0315	14	71	11	13	108	17	22	132	33	27	119	25
0315-0330	20	107	18	18	135	19	26	142	27	26	115	24
0330-0345	30	95	19	12	116	17	28	148	27	20	143	23
0345-0400	30	104	17	22	145	19	31	147	34	15	102	31
0400-0415	21	83	14	20	157	25	36	160	36	23	120	22
0415-0430	20	121	14	20	164	16	23	132	34	25	100	20
0430-0445	22	101	11	20	127	14	31	166	37	20	111	32
0445-0500	11	115	14	19	137	21	34	178	45	22	148	36
0500-0515	15	94	11	12	134	20	26	157	40	20	117	22
0515-0530	16	109	7	13	128	18	28	167	42	21	114	24
0530-0545	17	107	11	15	134	18	29	129	41	16	134	30
0545-0600	12	105	17	10	154	25	21	146	52	22	146	24

1 HOUR	1	2	3	4	5	6	7	8	9	10	11	12	
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTALS
0300-0400	94	377	65	65	504	72	107	569	121	88	479	103	2644
0315-0415	101	389	68	72	553	80	121	597	124	84	480	100	2769
0330-0430	101	403	64	74	582	77	118	587	131	83	465	96	2781
0345-0445	93	409	56	82	593	74	121	605	141	83	433	105	2795
0400-0500	74	420	53	79	585	76	124	636	152	90	479	110	2878
0415-0515	68	431	50	71	562	71	114	633	156	87	476	110	2829
0430-0530	64	419	43	64	526	73	119	668	164	83	490	114	2827
0445-0545	59	425	43	59	533	77	117	631	168	79	513	112	2816
0500-0600	60	415	46	50	550	81	104	599	175	79	511	100	2770

P.M. PEAK HOUR
0400-0500



MOORPARK STREET

WHITSETT AVENUE

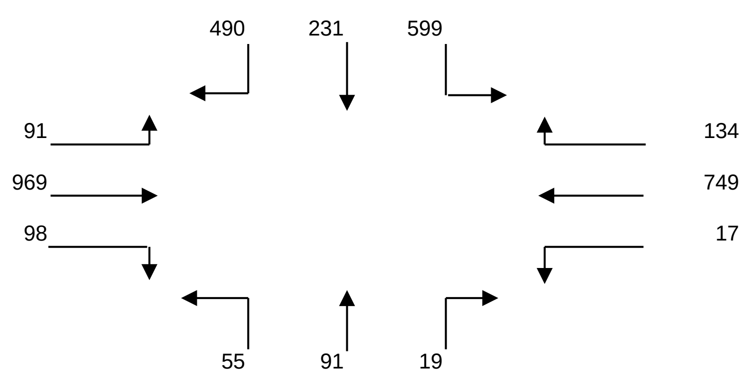
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT:		LLG - PASADENA
PROJECT:		STUDIO CITY
DATE:		THURSDAY, NOVEMBER 17, 2011
PERIOD:		07:00 AM TO 10:00 AM
INTERSECTION	N/S	WHITSETT AVENUE
	E/W	VENTURA BOULEVARD
FILE NUMBER:		4-AM

15 MINUTE	1	2	3	4	5	6	7	8	9	10	11	12
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT
0700-0715	89	32	99	13	124	0	2	5	8	11	100	6
0715-0730	96	41	115	15	122	2	1	11	10	17	182	11
0730-0745	99	44	136	21	143	4	2	18	13	18	217	17
0745-0800	105	60	154	28	195	6	3	21	16	25	204	21
0800-0815	118	58	158	42	170	3	5	28	15	22	216	27
0815-0830	128	57	150	30	172	5	5	21	10	20	218	20
0830-0845	125	54	157	29	199	4	5	23	13	29	262	21
0845-0900	119	62	134	33	208	5	4	19	17	27	273	23
0900-0915	97	44	115	29	164	5	8	12	14	26	228	24
0915-0930	88	48	105	27	161	5	4	14	16	21	228	22
0930-0945	82	47	99	34	171	7	6	16	17	31	217	20
0945-1000	70	41	85	27	186	5	5	12	21	20	262	20

1 HOUR	1	2	3	4	5	6	7	8	9	10	11	12	
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTALS
0700-0800	389	177	504	77	584	12	8	55	47	71	703	55	2682
0715-0815	418	203	563	106	630	15	11	78	54	82	819	76	3055
0730-0830	450	219	598	121	680	18	15	88	54	85	855	85	3268
0745-0845	476	229	619	129	736	18	18	93	54	96	900	89	3457
0800-0900	490	231	599	134	749	17	19	91	55	98	969	91	3543
0815-0915	469	217	556	121	743	19	22	75	54	102	981	88	3447
0830-0930	429	208	511	118	732	19	21	68	60	103	991	90	3350
0845-0945	386	201	453	123	704	22	22	61	64	105	946	89	3176
0900-1000	337	180	404	117	682	22	23	54	68	98	935	86	3006

A.M. PEAK HOUR
0800-0900



VENTURA BOULEVARD

WHITSETT AVENUE

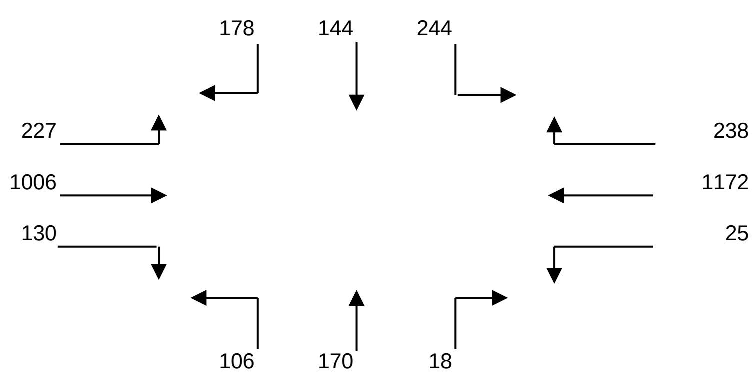
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: LLG - PASADENA
PROJECT: STUDIO CITY
DATE: THURSDAY, NOVEMBER 17, 2011
PERIOD: 03:00 PM TO 06:00 PM
INTERSECTION N/S WHITSETT AVENUE
E/W VENTURA BOULEVARD
FILE NUMBER: 4-PM

15 MINUTE TOTALS	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT
0300-0315	51	15	43	51	235	8	5	39	33	31	247	41
0315-0330	47	33	59	62	253	11	3	34	28	38	239	47
0330-0345	51	26	70	70	322	9	5	48	33	31	234	43
0345-0400	55	31	66	73	218	6	3	36	30	44	242	56
0400-0415	47	30	55	66	271	5	7	40	30	47	227	47
0415-0430	40	28	52	50	250	5	5	41	22	49	229	63
0430-0445	46	28	56	68	287	7	6	40	27	44	264	69
0445-0500	48	35	60	65	270	13	8	50	28	31	220	52
0500-0515	40	40	74	64	270	6	5	43	21	28	233	51
0515-0530	37	37	51	50	290	5	3	47	30	32	279	66
0530-0545	50	31	53	63	298	5	5	41	28	38	244	55
0545-0600	51	36	66	61	314	9	5	39	27	32	250	55

1 HOUR TOTALS	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTALS
0300-0400	204	105	238	256	1028	34	16	157	124	144	962	187	3455
0315-0415	200	120	250	271	1064	31	18	158	121	160	942	193	3528
0330-0430	193	115	243	259	1061	25	20	165	115	171	932	209	3508
0345-0445	188	117	229	257	1026	23	21	157	109	184	962	235	3508
0400-0500	181	121	223	249	1078	30	26	171	107	171	940	231	3528
0415-0515	174	131	242	247	1077	31	24	174	98	152	946	235	3531
0430-0530	171	140	241	247	1117	31	22	180	106	135	996	238	3624
0445-0545	175	143	238	242	1128	29	21	181	107	129	976	224	3593
0500-0600	178	144	244	238	1172	25	18	170	106	130	1006	227	3658

P.M. PEAK HOUR
0500-0600



VENTURA BOULEVARD

WHITSETT AVENUE

City Traffic Counters, LLC.
626-256-4171

File Name : LCMoorpark
Site Code : 00000000
Start Date : 1/19/2012
Page No : 1

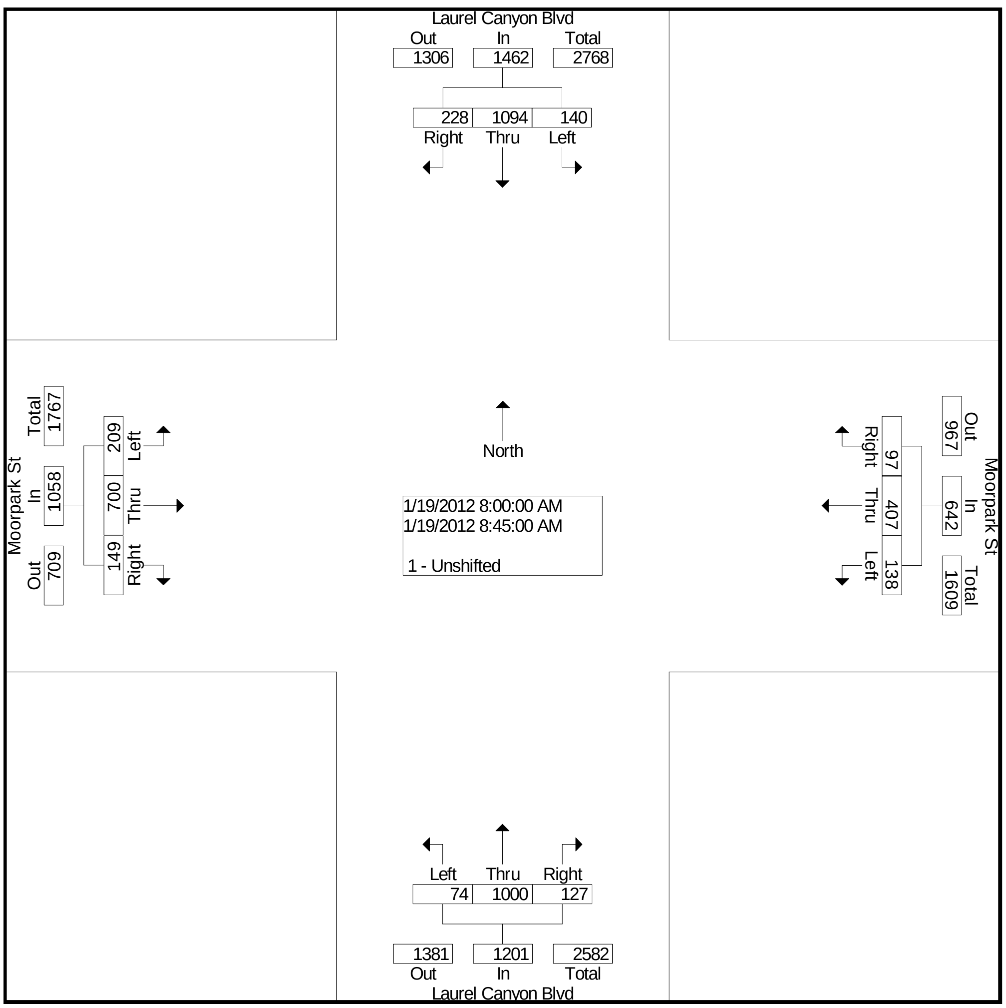
Groups Printed- 1 - Unshifted

	Laurel Canyon Blvd Southbound			Moorpark St Westbound			Laurel Canyon Blvd Northbound			Moorpark St Eastbound			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
07:00 AM	21	384	25	20	31	8	8	139	24	32	41	10	743
07:15 AM	25	339	20	28	65	21	8	180	21	42	92	26	867
07:30 AM	27	342	18	31	100	45	12	206	33	54	174	22	1064
07:45 AM	22	279	33	35	107	27	10	227	39	56	143	35	1013
Total	95	1344	96	114	303	101	38	752	117	184	450	93	3687
08:00 AM	40	257	51	38	89	34	17	299	33	41	144	26	1069
08:15 AM	25	263	50	39	89	16	28	198	28	55	175	45	1011
08:30 AM	42	291	68	31	97	27	15	261	37	58	177	38	1142
08:45 AM	33	283	59	30	132	20	14	242	29	55	204	40	1141
Total	140	1094	228	138	407	97	74	1000	127	209	700	149	4363
09:00 AM	16	269	24	40	79	27	14	257	30	55	146	42	999
09:15 AM	15	320	33	36	78	22	11	255	26	42	145	46	1029
09:30 AM	32	351	26	39	51	15	16	275	29	43	118	30	1025
09:45 AM	24	274	15	31	68	22	11	259	23	45	99	49	920
Total	87	1214	98	146	276	86	52	1046	108	185	508	167	3973
03:00 PM	43	300	49	48	98	63	15	343	24	54	116	19	1172
03:15 PM	37	283	51	59	135	51	16	325	22	43	123	25	1170
03:30 PM	37	318	46	44	91	31	29	388	24	37	101	24	1170
03:45 PM	44	313	93	40	99	28	26	333	30	54	157	26	1243
Total	161	1214	239	191	423	173	86	1389	100	188	497	94	4755
04:00 PM	27	330	64	27	99	37	17	377	22	52	104	20	1176
04:15 PM	28	273	64	34	110	40	17	297	34	53	125	24	1099
04:30 PM	22	312	57	41	92	34	23	378	21	31	116	28	1155
04:45 PM	33	284	58	34	104	23	26	305	24	58	154	34	1137
Total	110	1199	243	136	405	134	83	1357	101	194	499	106	4567
05:00 PM	26	327	51	30	101	25	19	354	37	38	132	26	1166
05:15 PM	35	275	42	38	128	34	31	296	19	58	145	30	1131
05:30 PM	28	297	50	30	130	29	30	365	30	37	123	23	1172
05:45 PM	28	297	59	38	147	23	22	330	31	45	150	31	1201
Total	117	1196	202	136	506	111	102	1345	117	178	550	110	4670
Grand Total	710	7261	1106	861	2320	702	435	6889	670	1138	3204	719	26015
Apprch %	7.8	80.0	12.2	22.2	59.7	18.1	5.4	86.2	8.4	22.5	63.3	14.2	
Total %	2.7	27.9	4.3	3.3	8.9	2.7	1.7	26.5	2.6	4.4	12.3	2.8	

City Traffic Counters, LLC.
626-256-4171

File Name : LCMoorpark
Site Code : 00000000
Start Date : 1/19/2012
Page No : 2

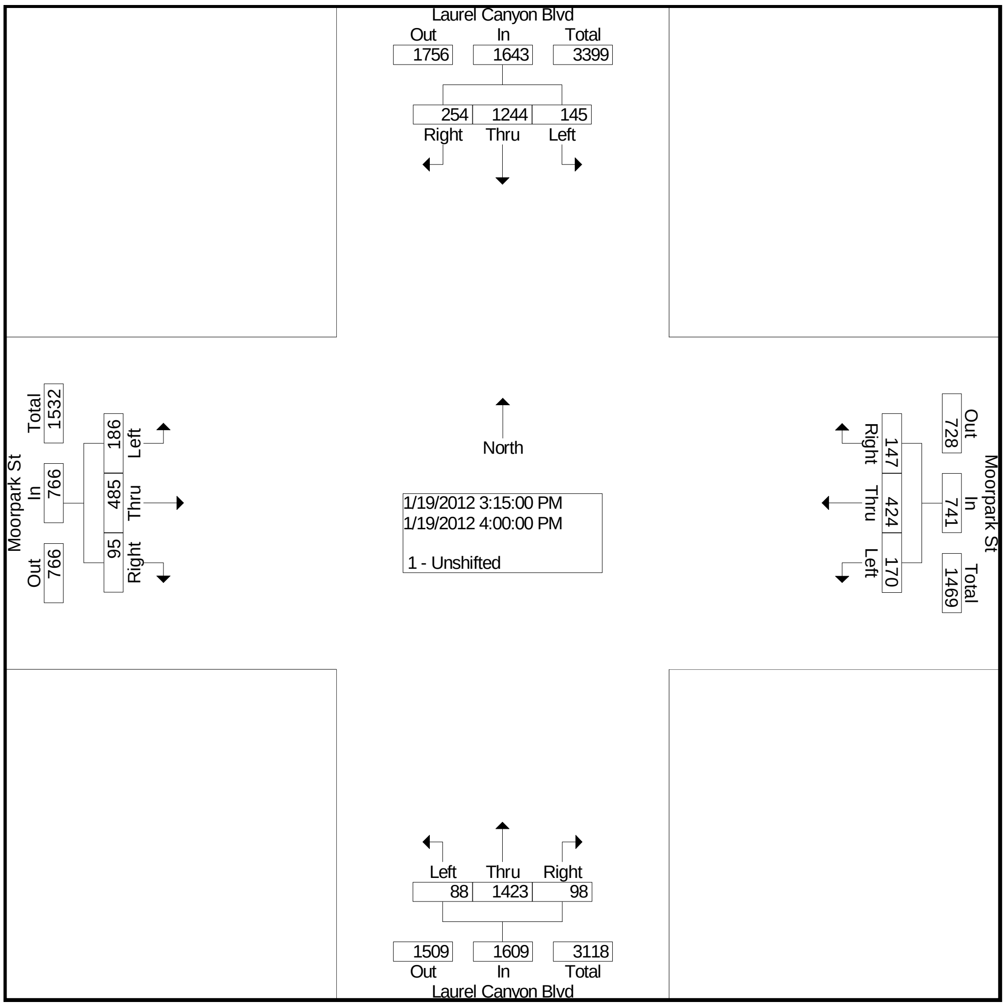
	Laurel Canyon Blvd Southbound				Moorpark St Westbound				Laurel Canyon Blvd Northbound				Moorpark St Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Intersection	08:00 AM																
Volume	140	1094	228	1462	138	407	97	642	74	1000	127	1201	209	700	149	1058	4363
Percent	9.6	74.8	15.6		21.5	63.4	15.1		6.2	83.3	10.6		19.8	66.2	14.1		
08:30 Volume	42	291	68	401	31	97	27	155	15	261	37	313	58	177	38	273	1142
Peak Factor																	0.955
High Int.	08:30 AM				08:45 AM				08:00 AM				08:45 AM				
Volume	42	291	68	401	30	132	20	182	17	299	33	349	55	204	40	299	
Peak Factor				0.911				0.882				0.860				0.885	



City Traffic Counters, LLC.
626-256-4171

File Name : LCMoorpark
Site Code : 00000000
Start Date : 1/19/2012
Page No : 3

	Laurel Canyon Blvd Southbound				Moorpark St Westbound				Laurel Canyon Blvd Northbound				Moorpark St Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Intersection	03:15 PM																
Volume	145	1244	254	1643	170	424	147	741	88	1423	98	1609	186	485	95	766	4759
Percent	8.8	75.7	15.5		22.9	57.2	19.8		5.5	88.4	6.1		24.3	63.3	12.4		
03:45 Volume	44	313	93	450	40	99	28	167	26	333	30	389	54	157	26	237	1243
Peak Factor																	0.957
High Int.	03:45 PM				03:15 PM				03:30 PM				03:45 PM				
Volume	44	313	93	450	59	135	51	245	29	388	24	441	54	157	26	237	
Peak Factor				0.913				0.756				0.912				0.808	



THE TRAFFIC SOLUTION - ADT WORKSHEET

CLIENT: LLG - ENGINEERS
PROJECT: STUDIO CITY
LOCATION: VALLEY SPRING LANE W/O WHITSETT AVENUE
DATE: THURSDAY, NOVEMBER 17, 2011
FILE NO: A-3

DIRECTION:	WESTBOUND				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
00:00	0	0	0	0	0
01:00	0	0	0	1	1
02:00	2	0	0	0	2
03:00	0	0	2	0	2
04:00	1	0	0	2	3
05:00	0	0	0	1	1
06:00	0	2	1	3	6
07:00	3	2	2	2	9
08:00	5	7	5	6	23
09:00	5	2	6	7	20
10:00	6	4	4	6	20
11:00	5	4	6	6	21
12:00	7	5	9	6	27
13:00	9	10	8	9	36
14:00	11	7	13	9	40
15:00	9	10	12	11	42
16:00	11	8	13	8	40
17:00	14	8	7	10	39
18:00	8	8	13	15	44
19:00	8	5	6	4	23
20:00	2	3	8	5	18
21:00	4	6	2	0	12
22:00	1	4	1	4	10
23:00	0	1	3	0	4
				TOTAL	443
AM PEAK HOUR		08:00-09:00			
VOLUME		23			
PM PEAK HOUR		15:45-16:45			
VOLUME		44			

DIRECTION:	EASTBOUND				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
00:00	0	0	0	0	0
01:00	0	0	0	0	0
02:00	0	0	0	0	0
03:00	0	0	0	0	0
04:00	0	0	0	0	0
05:00	0	0	0	0	0
06:00	0	2	4	6	12
07:00	7	4	5	7	23
08:00	7	13	11	14	45
09:00	19	13	10	5	47
10:00	5	6	7	5	23
11:00	8	7	7	5	27
12:00	9	6	8	5	28
13:00	5	7	8	5	25
14:00	6	9	5	4	24
15:00	8	6	10	6	30
16:00	7	6	9	12	34
17:00	6	6	7	11	30
18:00	9	7	10	5	31
19:00	5	6	4	3	18
20:00	3	3	2	0	8
21:00	1	0	0	1	2
22:00	0	0	0	0	0
23:00	0	1	0	0	1
				TOTAL	408
AM PEAK HOUR			08:15-09:15		
VOLUME			57		
PM PEAK HOUR			16:00-17:00		
VOLUME			34		

TOTAL DIRECTIONAL VOLUME	851

THE TRAFFIC SOLUTION - ADT WORKSHEET

CLIENT: LLG - ENGINEERS
PROJECT: STUDIO CITY
LOCATION: VALLEY SPRING LANE E/O WHITSETT AVENUE
DATE: THURSDAY, NOVEMBER 17, 2011
FILE NO: A-4

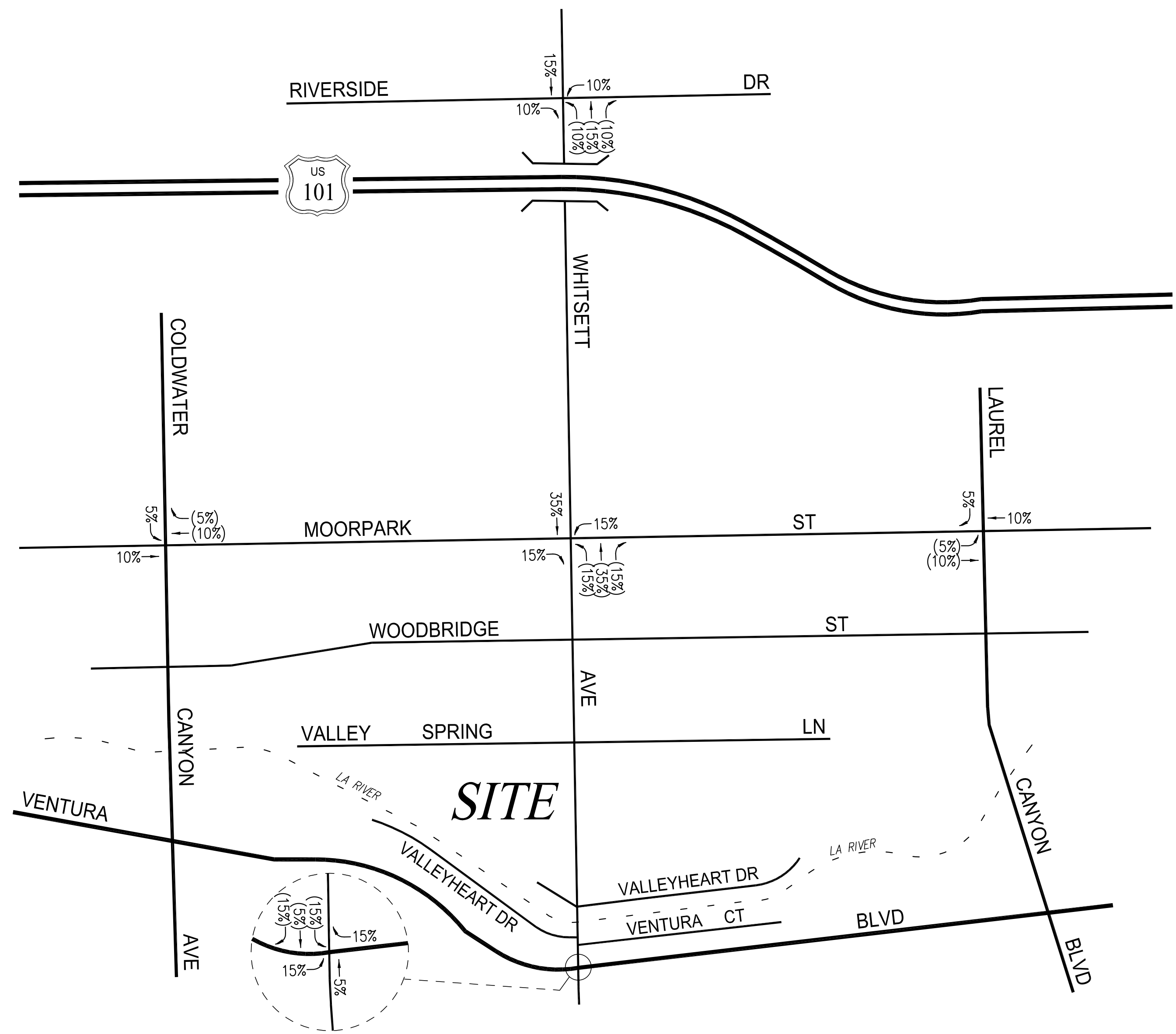
DIRECTION:	WESTBOUND				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
00:00	0	0	0	0	0
01:00	0	0	0	0	0
02:00	0	0	0	0	0
03:00	0	0	0	0	0
04:00	0	0	1	0	1
05:00	0	0	0	1	1
06:00	1	2	3	4	10
07:00	5	8	8	15	36
08:00	11	7	6	10	34
09:00	11	11	6	10	38
10:00	9	7	8	5	29
11:00	6	5	6	7	24
12:00	6	8	5	8	27
13:00	7	15	12	5	39
14:00	11	9	7	12	39
15:00	12	18	19	18	67
16:00	21	16	17	23	77
17:00	18	13	16	15	62
18:00	11	10	8	9	38
19:00	6	5	3	6	20
20:00	2	3	3	2	10
21:00	1	3	2	2	8
22:00	0	2	2	1	5
23:00	1	1	0	1	3
				TOTAL	568
AM PEAK HOUR		07:15-08:15			
VOLUME		42			
PM PEAK HOUR		16:00-17:00			
VOLUME		77			

DIRECTION:	EASTBOUND				
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
00:00	0	1	0	0	1
01:00	1	0	0	0	1
02:00	0	0	0	0	0
03:00	0	0	0	0	0
04:00	0	0	2	0	2
05:00	0	0	1	0	1
06:00	0	1	2	1	4
07:00	2	3	4	9	18
08:00	12	15	7	6	40
09:00	5	5	7	5	22
10:00	6	3	6	5	20
11:00	8	7	6	6	27
12:00	8	5	7	8	28
13:00	9	5	7	9	30
14:00	10	12	10	11	43
15:00	11	16	13	10	50
16:00	9	11	14	10	44
17:00	9	8	9	14	40
18:00	9	10	11	6	36
19:00	8	7	5	9	29
20:00	6	3	2	6	17
21:00	7	3	1	6	17
22:00	4	3	2	2	11
23:00	1	1	0	1	3
				TOTAL	484
AM PEAK HOUR		07:45-08:45			
VOLUME		43			
PM PEAK HOUR		15:00-16:00			
VOLUME		50			

TOTAL DIRECTIONAL VOLUME	1052

APPENDIX B

EXISTING SITE TRIP DISTRIBUTION



XX = INBOUND PERCENTAGES
(XX) = OUTBOUND PERCENTAGES

NOT TO SCALE

LINSCOTT, LAW & GREENSPAN, engineers

APPENDIX FIGURE B-1
EXISTING TRIP DISTRIBUTION

STUDIO CITY SENIOR LIVING CENTER PROJECT

o:\job_file\3948\dwg\appdx f-b1.dwg LDP 11:03:38 01/23/2012 rodriquez

APPENDIX C

CMA AND LEVELS OF SERVICE EXPLANATION
CMA DATA WORKSHEETS – WEEKDAY AM AND PM PEAK HOURS

CRITICAL MOVEMENT ANALYSIS (CMA) DESCRIPTION

Level of Service is a term used to describe prevailing conditions and their effect on traffic. Broadly interpreted, the Level of Service concept denotes any one of a number of differing combinations of operating conditions which may take place as a roadway is accommodating various traffic volumes. Level of Service is a qualitative measure of the effect of such factors as travel speed, travel time, interruptions, freedom to maneuver, safety, driving comfort and convenience.

Six Levels of Service, A through F, have been defined in the 1965 *Highway Capacity Manual*. Level of Service A describes a condition of free flow, with low traffic volumes and relatively high speeds, while Level of Service F describes forced traffic flow at low speeds with jammed conditions and queues which cannot clear during the green phases.

Critical Movement Analysis (CMA) is a procedure which provides a capacity and level of service geometry and traffic signal operation and results in a level of service determination for the intersection as a whole operating unit.

The per lane volume for each movement in the intersection is determined and the per lane intersection capacity based on the Transportation Research Board (TRB) Report 212 (*Interim Materials on Highway Capacity*). The resulting CMA represents the ratio of the intersection's cumulative volume over its respective capacity (V/C ratio). Critical Movement Analysis takes into account lane widths, bus and truck operations, pedestrian activity and parking activity, as well as number of lanes and geometrics.

The Level of Service (abbreviated from the *Highway Capacity Manual*) are listed here with their corresponding CMA and Load Factor equivalents. Load Factor is that proportion of the signal cycles during the peak hour which are fully loaded; i.e. when all of the vehicles waiting at the beginning of green are not able to clear on that green phase.

Critical Movement Analysis Characteristics

Level of Service	Load Factor	Equivalent CMA
A (free flow)	0.0	0.00 - 0.60
B (rural design)	0.0 - 0.1	0.61 - 0.70
C (urban design)	0.1 - 0.3	0.71 - 0.80
D (maximum urban design)	0.3 - 0.7	0.81 - 0.90
E (capacity)	0.7 - 1.0	0.91 - 1.00
F (force flow)	Not Applicable	Not Applicable

SERVICE LEVEL A
There are no loaded cycles and few are even close to loaded at this service level. No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication.

SERVICE LEVEL B
This level represents stable operation where an occasional approach phase is fully utilized and a substantial number are approaching full use. Many drivers begin to feel restricted within platoons of vehicles.

SERVICE LEVEL C
At this level stable operation continues. Loading is still intermittent but more frequent than at Level B. Occasionally drivers may have to wait through more one red signal indication and backups may develop behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so.

SERVICE LEVEL D
This level encompasses a zone of increasing restriction approaching instability at the intersection. Delays to approaching vehicles may be substantial during short peaks within the peak hour, but enough cycles with lower demand occur to permit periodic clearance of queues, thus preventing excessive backups. Drivers frequently have to wait through more than one red signal. This level is the lower limit of acceptable operation to most drivers.

SERVICE LEVEL E
This represents near capacity and capacity operation. At capacity (CMA = 1.0) it represents the most vehicles that the particular intersection can accommodate. However, full utilization of every signal cycle is seldom attained no matter how great the demand. At this level all drivers wait through more than one red signal, and frequently through several.

SERVICE LEVEL F
Jammed conditions. Traffic backed up from a downstream location on one of the street restricts or prevents movement of traffic through the intersection under consideration.

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Coldwater Canyon Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	City Trafic Counters	Date:	1/24/2012
CMA1	East-West Street:	Moorpark Street	Projection Year:	2016	Peak Hour:	AM	Reviewed by:		Project:	Studio City Senior Living Center P

	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?				2				2				2				2				2
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	34	1	34	0	34	34	2	39	1	39	0	39	1	39	0	39	1	39
	Left-Through		0							0				0				0	
	Through	587	1	335	0	587	335	21	656	1	373	0	656	1	373	0	656	1	373
	Through-Right		1							1				1				1	
	Right	83	0	83	0	83	83	0	90	0	90	0	90	0	90	0	90	0	90
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	111	1	111	0	111	111	0	120	1	120	0	120	1	120	0	120	1	120
	Left-Through		0							0				0				0	
	Through	482	1	302	0	482	302	18	540	1	336	0	540	1	336	0	540	1	336
	Through-Right		1							1				1				1	
	Right	121	0	121	0	121	121	0	131	0	131	0	131	0	131	0	131	0	131
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	175	1	175	0	175	175	0	189	1	189	0	189	1	189	0	189	1	189
	Left-Through		0							0				0				0	
	Through	795	1	795	0	795	795	16	877	1	877	0	877	1	877	0	877	1	877
	Through-Right		0							0				0				0	
	Right	42	1	25	0	42	25	1	46	1	27	0	46	1	27	0	46	1	27
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	47	1	47	0	47	47	0	51	1	51	0	51	1	51	0	51	1	51
	Left-Through		0							0				0				0	
	Through	422	1	422	3	425	425	26	483	1	483	3	486	1	486	0	486	1	486
	Through-Right		0							0				0				0	
	Right	84	1	29	6	90	35	0	91	1	31	6	97	1	37	0	97	1	37
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
CRITICAL VOLUMES			North-South:	446		North-South:	446			North-South:	493			North-South:	493			North-South:	493
			East-West:	842		East-West:	842			East-West:	928			East-West:	928			East-West:	928
			SUM:	1288		SUM:	1288			SUM:	1421			SUM:	1421			SUM:	1421
VOLUME/CAPACITY (V/C) RATIO:				0.859			0.859				0.947				0.947				0.947
V/C LESS ATSAC/ATCS ADJUSTMENT:				0.759			0.759				0.847				0.847				0.847
LEVEL OF SERVICE (LOS):				C			C				D				D				D

REMARKS:

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in v/c due to project:	0.000	Δv/c after mitigation:	0.000
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Coldwater Canyon Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	City Trafic Counters	Date:	1/24/2012
CMA1	East-West Street:	Moorpark Street	Projection Year:	2016	Peak Hour:	PM	Reviewed by:		Project:	Studio City Senior Living Center P

	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?	2	2	2	2	2
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	62	1	62	0	62	62	2	69	1	69	0	69	1	69	0	69	1	69
	Left-Through		0							0				0				0	
	Through	828	1	**455**	0	828	**455**	26	922	1	**505**	0	922	1	**505**	0	922	1	**505**
	Through-Right		1							1				1				1	
	Right	81	0	81	0	81	81	0	88	0	88	0	88	0	88	0	88	0	88
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	109	1	**109**	3	112	**112**	0	118	1	**118**	3	121	1	**121**	0	121	1	**121**
	Left-Through		0							0				0				0	
	Through	760	1	445	0	760	445	29	852	1	496	0	852	1	496	0	852	1	496
	Through-Right		1							1				1				1	
	Right	129	0	129	0	129	129	0	140	0	140	0	140	0	140	0	140	0	140
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	118	1	**118**	0	118	**118**	0	128	1	**128**	0	128	1	**128**	0	128	1	**128**
	Left-Through		0							0				0				0	
	Through	605	1	605	2	607	607	21	676	1	676	2	678	1	678	0	678	1	678
	Through-Right		0							0				0				0	
	Right	64	1	33	0	64	33	2	71	1	37	0	71	1	37	0	71	1	37
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	93	1	93	0	93	93	0	101	1	101	0	101	1	101	0	101	1	101
	Left-Through		0							0				0				0	
	Through	590	1	**590**	0	590	**590**	16	655	1	**655**	0	655	1	**655**	0	655	1	**655**
	Through-Right		0							0				0				0	
	Right	113	1	59	0	113	57	0	122	1	63	0	122	1	62	0	122	1	62
	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:*	564	567	623	626	626
East-West:	708	708	783	783	783
SUM:	1272	1275	1406	1409	1409
VOLUME/CAPACITY *(V/C)* RATIO:	0.848	0.850	0.937	0.939	0.939
V/C LESS ATSAC/ATCS ADJUSTMENT:	0.748	0.750	0.837	0.839	0.839
LEVEL OF SERVICE (LOS):	C	C	D	D	D

REMARKS:

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project:	0.002	Δ*v/c* after mitigation:	0.002
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Workheet

(Circular 212 Method)

I/S #: CMA2	North-South Street: Whitsett Avenue	Year of Count: 2012	Ambient Growth: (%): 2.0	Conducted by: City Trafic Counters	Date: 1/24/2012
	East-West Street: Riverside Drive	Projection Year: 2016	Peak Hour: AM	Reviewed by:	Project: Studio City Senior Living Center P

	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?	2	2	2	2	2
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	69	1	**69**	6	75	**75**	2	77	1	**77**	6	83	1	**83**	0	83	1	**83**
	Left-Through		0							0				0				0	
	Through	292	1	226	9	301	233	11	327	1	251	9	336	1	258	0	336	1	258
	Through-Right		1							1				1				1	
	Right	159	0	159	6	165	165	2	174	0	174	6	180	0	180	0	180	0	180
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	314	1	314	0	314	314	0	340	1	340	0	340	1	340	0	340	1	340
	Left-Through		0							0				0				0	
	Through	844	1	**536**	0	844	**536**	13	927	1	**587**	0	927	1	**587**	0	927	1	**587**
	Through-Right		1							1				1				1	
	Right	227	0	227	0	227	227	0	246	0	246	0	246	0	246	0	246	0	246
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	97	1	97	0	97	97	0	105	1	105	0	105	1	105	0	105	1	105
	Left-Through		0							0				0				0	
	Through	1058	1	**618**	0	1058	**618**	7	1152	1	**674**	0	1152	1	**674**	0	1152	1	**674**
	Through-Right		1							1				1				1	
	Right	178	0	178	0	178	178	2	195	0	195	0	195	0	195	0	195	0	195
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	127	1	**127**	0	127	**127**	2	139	1	**139**	0	139	1	**139**	0	139	1	**139**
	Left-Through		0							0				0				0	
	Through	830	1	430	0	830	430	22	920	1	476	0	920	1	476	0	920	1	476
	Through-Right		1							1				1				1	
	Right	30	0	30	0	30	30	0	32	0	32	0	32	0	32	0	32	0	32
	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:*	605	611	664	670	670
East-West:	745	745	813	813	813
SUM:	1350	1356	1477	1483	1483
VOLUME/CAPACITY *(V/C)* RATIO:	0.900	0.904	0.985	0.989	0.989
V/C LESS ATSAC/ATCS ADJUSTMENT:	0.800	0.804	0.885	0.889	0.889
LEVEL OF SERVICE (LOS):	C	D	D	D	D

REMARKS:

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project: 0.004 — Δ*v/c* after mitigation: 0.004

Significant impacted? NO — Fully mitigated? N/A

LADOT Moving LA Forward

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Whitsett Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	City Trafic Counters	Date:	1/24/2012
CMA2	East-West Street:	Riverside Drive	Projection Year:	2016	Peak Hour:	PM	Reviewed by:		Project:	Studio City Senior Living Center P

	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?	2	2	2	2	2
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	133	1	133	0	133	133	3	147	1	147	0	147	1	147	0	147	1	147
	Left-Through		0							0				0				0	
	Through	601	1	**368**	0	601	**368**	17	668	1	**408**	0	668	1	**408**	0	668	1	**408**
	Through-Right		1							1				1				1	
	Right	134	0	134	0	134	134	3	148	0	148	0	148	0	148	0	148	0	148
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	95	1	**95**	0	95	**95**	0	103	1	**103**	0	103	1	**103**	0	103	1	**103**
	Left-Through		0							0				0				0	
	Through	389	1	244	6	395	247	14	435	1	271	6	441	1	274	0	441	1	274
	Through-Right		1							1				1				1	
	Right	98	0	98	0	98	98	0	106	0	106	0	106	0	106	0	106	0	106
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	168	1	**168**	0	168	**168**	0	182	1	**182**	0	182	1	**182**	0	182	1	**182**
	Left-Through		0							0				0				0	
	Through	839	1	491	0	839	493	12	920	1	539	0	920	1	541	0	920	1	541
	Through-Right		1							1				1				1	
	Right	143	0	143	3	146	146	3	158	0	158	3	161	0	161	0	161	0	161
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	114	1	114	3	117	117	3	126	1	126	3	129	1	129	0	129	1	129
	Left-Through		0							0				0				0	
	Through	1004	1	**536**	0	1004	**536**	6	1093	1	**583**	0	1093	1	**583**	0	1093	1	**583**
	Through-Right		1							1				1				1	
	Right	67	0	67	0	67	67	0	73	0	73	0	73	0	73	0	73	0	73
	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:*	463	463	511	511	511
East-West:	704	704	765	765	765
SUM:	1167	1167	1276	1276	1276
VOLUME/CAPACITY (*V/C*) RATIO:	0.778	0.778	0.851	0.851	0.851
V/C LESS ATSAC/ATCS ADJUSTMENT:	0.678	0.678	0.751	0.751	0.751
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	Δ*v/c* after mitigation:	0.000
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Worksheet
(Circular 212 Method)

I/S #:	North-South Street:	Whitsett Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	The Traffic Solution	Date:	1/24/2012
CMA3	East-West Street:	Moorpark Street	Projection Year:	2016	Peak Hour:	AM	Reviewed by:		Project:	Studio City Senior Living Center P

	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?					2					2					2					2					2
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	92	1	**92**	9	101	**101**	0	100	1	**100**	9	109	1	**109**	0	109	1	**109**
	Left-Through		0							0				0				0	
	Through	235	1	147	21	256	162	20	274	1	171	21	295	1	186	0	295	1	186
	Through-Right		1							1				1				1	
	Right	58	0	58	9	67	67	4	67	0	67	9	76	0	76	0	76	0	76
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	195	1	195	0	195	195	2	213	1	213	0	213	1	213	0	213	1	213
	Left-Through		0							0				0				0	
	Through	937	1	**504**	0	937	**504**	8	1022	1	**549**	0	1022	1	**549**	0	1022	1	**549**
	Through-Right		1							1				1				1	
	Right	70	0	70	0	70	70	0	76	0	76	0	76	0	76	0	76	0	76
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	67	1	67	0	67	67	0	73	1	73	0	73	1	73	0	73	1	73
	Left-Through		0							0				0				0	
	Through	723	0	**940**	0	723	**940**	16	799	0	**1034**	0	799	0	**1034**	0	799	0	**1034**
	Through-Right		1							1				1				1	
	Right	217	0	0	0	217	0	0	235	0	0	0	235	0	0	0	235	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	59	1	**59**	0	59	**59**	2	66	1	**66**	0	66	1	**66**	0	66	1	**66**
	Left-Through		0							0				0				0	
	Through	459	0	508	0	459	508	26	523	0	577	0	523	0	577	0	523	0	577
	Through-Right		1							1				1				1	
	Right	49	0	0	0	49	0	1	54	0	0	0	54	0	0	0	54	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
CRITICAL VOLUMES			*North-South:*	596		*North-South:*	605			*North-South:*	649			*North-South:*	658			*North-South:*	658
			East-West:	999		*East-West:*	999			*East-West:*	1100			*East-West:*	1100			*East-West:*	1100
			SUM:	1595		*SUM:*	1604			*SUM:*	1749			*SUM:*	1758			*SUM:*	1758
VOLUME/CAPACITY *(V/C)* RATIO:				1.063			1.069				1.166				1.172				1.172
V/C LESS ATSAC/ATCS ADJUSTMENT:				0.963			0.969				1.066				1.072				1.072
LEVEL OF SERVICE (LOS):				E			E				F				F				F

REMARKS:

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project:	0.006	Δ*v/c* after mitigation:	0.006
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Workheet
(Circular 212 Method)

I/S #: CMA3	North-South Street:	Whitsett Avenue	Year of Count: 2012	Ambient Growth: (%): 2.0	Conducted by: The Traffic Solution	Date: 1/24/2012
	East-West Street:	Moorpark Street	Projection Year: 2016	Peak Hour: PM	Reviewed by:	Project: Studio City Senior Living Center P

	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?	2	2	2	2	2
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	155	1	155	0	155	155	0	168	1	168	0	168	1	168	0	168	1	168
	Left-Through		0							0				0				0	
	Through	649	1	**388**	1	650	**388**	17	719	1	**429**	1	720	1	**430**	0	720	1	**430**
	Through-Right		1							1				1				1	
	Right	126	0	126	0	126	126	3	139	0	139	0	139	0	139	0	139	0	139
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	54	1	**54**	0	54	**54**	1	59	1	**59**	0	59	1	**59**	0	59	1	**59**
	Left-Through		0							0				0				0	
	Through	428	1	252	13	441	258	25	488	1	285	13	501	1	291	0	501	1	291
	Through-Right		1							1				1				1	
	Right	75	0	75	0	75	75	0	81	0	81	0	81	0	81	0	81	0	81
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	112	1	**112**	0	112	**112**	0	121	1	**121**	0	121	1	**121**	0	121	1	**121**
	Left-Through		0							0				0				0	
	Through	489	0	581	0	489	587	21	550	0	650	0	550	0	656	0	550	0	656
	Through-Right		1							1				1				1	
	Right	92	0	0	6	98	0	0	100	0	0	6	106	0	0	0	106	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	78	1	78	6	84	84	5	89	1	89	6	95	1	95	0	95	1	95
	Left-Through		0							0				0				0	
	Through	597	0	**678**	0	597	**678**	16	662	0	**752**	0	662	0	**752**	0	662	0	**752**
	Through-Right		1							1				1				1	
	Right	81	0	0	0	81	0	2	90	0	0	0	90	0	0	0	90	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:*	442	442	488	489	489
East-West:	790	790	873	873	873
SUM:	1232	1232	1361	1362	1362
VOLUME/CAPACITY *(V/C)* RATIO:	0.821	0.821	0.907	0.908	0.908
V/C LESS ATSAC/ATCS ADJUSTMENT:	0.721	0.721	0.807	0.808	0.808
LEVEL OF SERVICE (LOS):	C	C	D	D	D

REMARKS:

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project:	0.001	Δ*v/c* after mitigation:	0.001
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Workheet
(Circular 212 Method)

I/S #: CMA4	North-South Street:	Whitsett Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	The Traffic Solution	Date: 1/24/2012
	East-West Street:	Ventura Boulevard	Projection Year:	2016	Peak Hour:	AM	Reviewed by:		Project: Studio City Senior Living Center P

	Existing Condition	Existing Plus Project	Future Condition W/O Project	Future Condition W/ Project	Future W/ Project W/ Mitigation
No. of Phases	4	4	4	4	4
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-- 3	NB-- 0 SB-- 3	NB-- 0 SB-- 3	NB-- 0 SB-- 3	NB-- 0 SB-- 3
	EB-- 2 WB-- 0	EB-- 2 WB-- 0	EB-- 2 WB-- 0	EB-- 2 WB-- 0	EB-- 2 WB-- 0
ATSAC-1 or ATSAC+ATCS-2?	2	2	2	2	2
Override Capacity	0	0	0	0	0

		EXISTING CONDITION			EXISTING PLUS PROJECT			FUTURE CONDITION W/O PROJECT				FUTURE CONDITION W/ PROJECT				FUTURE W/ PROJECT W/ MITIGATION			
	MOVEMENT	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	56	1	56	0	56	56	0	61	1	61	0	61	1	61	0	61	1	61
	Left-Through		0							0				0				0	
	Through	93	0	112	0	93	112	0	101	0	122	0	101	0	122	0	101	0	122
	Through-Right		1							1				1				1	
	Right	19	0	0	0	19	0	0	21	0	0	0	21	0	0	0	21	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	611	2	336	9	620	341	7	668	2	367	9	677	2	372	0	677	2	372
	Left-Through		0							0				0				0	
	Through	236	1	236	3	239	239	0	255	1	255	3	258	1	258	0	258	1	258
	Through-Right		0							0				0				0	
	Right	500	1	407	9	509	416	10	551	1	438	9	560	1	447	0	560	1	447
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	93	1	93	0	93	93	12	113	1	113	0	113	1	113	0	113	1	113
	Left-Through		0							0				0				0	
	Through	988	1	544	0	988	544	35	1104	1	606	0	1104	1	606	0	1104	1	606
	Through-Right		1							1				1				1	
	Right	100	0	100	0	100	100	0	108	0	108	0	108	0	108	0	108	0	108
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	17	1	17	0	17	17	0	18	1	18	0	18	1	18	0	18	1	18
	Left-Through		0							0				0				0	
	Through	764	1	451	0	764	451	57	884	1	519	0	884	1	519	0	884	1	519
	Through-Right		1							1				1				1	
	Right	137	0	137	0	137	137	6	154	0	154	0	154	0	154	0	154	0	154
	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:*	463	472	499	508	508
East-West:	561	561	632	632	632
SUM:	1024	1033	1131	1140	1140
VOLUME/CAPACITY *(V/C)* RATIO:	0.745	0.751	0.823	0.829	0.829
V/C LESS ATSAC/ATCS ADJUSTMENT:	0.645	0.651	0.723	0.729	0.729
LEVEL OF SERVICE (LOS):	B	B	C	C	C

REMARKS: No right-turn on red 7:00 AM - 9:00 A

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project:	0.006	Δ*v/c* after mitigation:	0.006
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Whitsett Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	The Traffic Solution	Date:	1/24/2012
CMA4	East-West Street:	Ventura Boulevard	Projection Year:	2016	Peak Hour:	PM	Reviewed by:		Project:	Studio City Senior Living Center P

	Existing Condition	Existing Plus Project	Future Condition W/O Project	Future Condition W/ Project	Future W/ Project W/ Mitigation
No. of Phases	4	4	4	4	4
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-- 3 EB-- 0 WB-- 0	NB-- 0 SB-- 3 EB-- 0 WB-- 0	NB-- 0 SB-- 3 EB-- 0 WB-- 0	NB-- 0 SB-- 3 EB-- 0 WB-- 0	NB-- 0 SB-- 3 EB-- 0 WB-- 0
ATSAC-1 or ATSAC+ATCS-2?	2	2	2	2	2
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	108	1	108	0	108	108	0	117	1	117	0	117	1	117	0	117	1	117
	Left-Through		0							0				0				0	
	Through	173	0	191	2	175	193	0	187	0	206	2	189	0	208	0	189	0	208
	Through-Right		1							1				1				1	
	Right	18	0	0	0	18	0	0	19	0	0	0	19	0	0	0	19	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	249	2	137	0	249	137	7	277	2	152	0	277	2	152	0	277	2	152
	Left-Through		0							0				0				0	
	Through	147	1	147	0	147	147	0	159	1	159	0	159	1	159	0	159	1	159
	Through-Right		0							0				0				0	
	Right	182	1	0	0	182	0	19	216	1	0	0	216	1	0	0	216	1	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	232	1	232	6	238	238	17	268	1	268	6	274	1	274	0	274	1	274
	Left-Through		0							0				0				0	
	Through	1026	1	580	0	1026	580	53	1164	1	654	0	1164	1	654	0	1164	1	654
	Through-Right		1							1				1				1	
	Right	133	0	133	0	133	133	0	144	0	144	0	144	0	144	0	144	0	144
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	26	1	26	0	26	26	0	28	1	28	0	28	1	28	0	28	1	28
	Left-Through		0							0				0				0	
	Through	1195	1	719	0	1195	722	42	1336	1	804	0	1336	1	807	0	1336	1	807
	Through-Right		1							1				1				1	
	Right	243	0	243	6	249	249	8	271	0	271	6	277	0	277	0	277	0	277
	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:*	328	330	358	360	360
	East-West:	951	960	1072	1081	1081
	SUM:	1279	1290	1430	1441	1441
VOLUME/CAPACITY *(V/C)* RATIO:		0.930	0.938	1.040	1.048	1.048
V/C LESS ATSAC/ATCS ADJUSTMENT:		0.830	0.838	0.940	0.948	0.948
LEVEL OF SERVICE (LOS):		D	D	E	E	E

REMARKS:

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project:	0.008	Δ*v/c* after mitigation:	0.008
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Laurel Canyon Boulevard	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	City Trafic Counters	Date:	1/24/2012
CMA5	East-West Street:	Moorpark Street	Projection Year:	2016	Peak Hour:	AM	Reviewed by:		Project:	Studio City Senior Living Center P

	Existing Condition	Existing Plus Project	Future Condition W/O Project	Future Condition W/ Project	Future W/ Project W/ Mitigation
No. of Phases	4	4	4	4	4
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-- 3	NB-- 0 SB-- 0 EB-- 0 WB-- 3	NB-- 0 SB-- 0 EB-- 0 WB-- 3	NB-- 0 SB-- 0 EB-- 0 WB-- 3	NB-- 0 SB-- 0 EB-- 0 WB-- 3
ATSAC-1 or ATSAC+ATCS-2?	2	2	2	2	2
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	74	1	74	0	74	74	12	92	1	92	0	92	1	92	0	92	1	92
	Left-Through		0							0				0				0	
	Through	1000	1	564	0	1000	564	167	1249	1	693	0	1249	1	693	0	1249	1	693
	Through-Right		1							1				1				1	
	Right	127	0	127	0	127	127	0	137	0	137	0	137	0	137	0	137	0	137
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	140	1	140	0	140	140	9	161	1	161	0	161	1	161	0	161	1	161
	Left-Through		0							0				0				0	
	Through	1094	1	661	0	1094	661	79	1263	1	761	0	1263	1	761	0	1263	1	761
	Through-Right		1							1				1				1	
	Right	228	0	228	0	228	228	11	258	0	258	0	258	0	258	0	258	0	258
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	209	1	209	6	215	215	19	245	1	245	6	251	1	251	0	251	1	251
	Left-Through		0							0				0				0	
	Through	700	1	425	3	703	426	1	759	1	461	3	762	1	463	0	762	1	463
	Through-Right		1							1				1				1	
	Right	149	0	149	0	149	149	2	163	0	163	0	163	0	163	0	163	0	163
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	138	1	138	0	138	138	0	149	1	149	0	149	1	149	0	149	1	149
	Left-Through		0							0				0				0	
	Through	407	1	407	0	407	407	0	441	1	441	0	441	1	441	0	441	1	441
	Through-Right		0							0				0				0	
	Right	97	1	0	0	97	0	16	121	1	0	0	121	1	0	0	121	1	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:	735	735	854	854	854
East-West:	616	622	686	692	692
SUM:	1351	1357	1540	1546	1546
VOLUME/CAPACITY *(V/C)* RATIO:	0.983	0.987	1.120	1.124	1.124
V/C LESS ATSAC/ATCS ADJUSTMENT:	0.883	0.887	1.020	1.024	1.024
LEVEL OF SERVICE (LOS):	D	D	F	F	F

REMARKS: Westbound overlap phase.

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project:	0.004	Δ*v/c* after mitigation:	0.004
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Laurel Canyon Boulevard	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	City Trafic Counters	Date:	1/24/2012
CMA5	East-West Street:	Moorpark Street	Projection Year:	2016	Peak Hour:	PM	Reviewed by:		Project:	Studio City Senior Living Center P

	EXISTING CONDITION	EXISTING PLUS PROJECT	FUTURE CONDITION W/O PROJECT	FUTURE CONDITION W/ PROJECT	FUTURE W/ PROJECT W/ MITIGATION
No. of Phases	4	4	4	4	4
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-- 3	EB-- 0 WB-- 3	EB-- 0 WB-- 3	EB-- 0 WB-- 3	EB-- 0 WB-- 3
ATSAC-1 or ATSAC+ATCS-2?	2	2	2	2	2
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	88	1	88	0	88	88	5	100	1	100	0	100	1	100	0	100	1	100
	Left-Through		0							0				0				0	
	Through	1423	1	**761**	0	1423	**761**	72	1612	1	**859**	0	1612	1	**859**	0	1612	1	**859**
	Through-Right		1							1				1				1	
	Right	98	0	98	0	98	98	0	106	0	106	0	106	0	106	0	106	0	106
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	145	1	**145**	0	145	**145**	8	165	1	**165**	0	165	1	**165**	0	165	1	**165**
	Left-Through		0							0				0				0	
	Through	1244	1	749	0	1244	751	104	1451	1	869	0	1451	1	871	0	1451	1	871
	Through-Right		1							1				1				1	
	Right	254	0	254	3	257	257	12	287	0	287	3	290	0	290	0	290	0	290
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	186	1	**186**	0	186	**186**	8	209	1	**209**	0	209	1	**209**	0	209	1	**209**
	Left-Through		0							0				0				0	
	Through	485	1	290	0	485	290	1	526	1	320	0	526	1	320	0	526	1	320
	Through-Right		1							1				1				1	
	Right	95	0	95	0	95	95	11	114	0	114	0	114	0	114	0	114	0	114
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	170	1	170	0	170	170	0	184	1	184	0	184	1	184	0	184	1	184
	Left-Through		0							0				0				0	
	Through	424	1	**424**	2	426	**426**	1	460	1	**460**	2	462	1	**462**	0	462	1	**462**
	Through-Right		0							0				0				0	
	Right	147	1	2	0	147	2	5	164	1	0	0	164	1	0	0	164	1	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:*	906	906	1024	1024	1024
East-West:	610	612	669	671	671
SUM:	1516	1518	1693	1695	1695
VOLUME/CAPACITY *(V/C)* RATIO:	1.103	1.104	1.231	1.233	1.233
V/C LESS ATSAC/ATCS ADJUSTMENT:	1.003	1.004	1.131	1.133	1.133
LEVEL OF SERVICE (LOS):	F	F	F	F	F

REMARKS:

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project:	0.002	Δ*v/c* after mitigation:	0.002
Significant impacted?	NO	Fully mitigated?	N/A

APPENDIX J

TREE REPORT

HORTICULTURAL TREE REPORT

Studio City Senior Living Center
4141 Whitsett Ave.
Studio City, Ca 91604

for

Planning Associates, Inc.
4040 Vineland Ave., Ste. 108
Studio City, Ca 91604

by

TREES, etc.
[a division of RDI & Associates, Inc.]
P.O. Box 4583
Thousand Oaks, Ca 91359
E-Mail: treesetc.richard@gmail.com
Phone: 805-558-TREE (8733)
Fax: 805-832-6398

RDI Project No. 242-3-11
Original Date: July 2, 2002
1st Revision Date: December 6, 2011

<u>Revised HORTICULTURAL TREE REPORT</u>

Studio City Senior Living Center

RDI Project No. 242-3-11

The following are our field observations (of April 5-6, 2001, June 27, 2002 and December 2, 2011) & recommendations pertinent to 47 trees on that portion of the total site proposed for development. The remainder of the site including the golf course, driving range, putting green, and clubhouse are no longer proposed to be developed and all existing trees on that remaining portion of the site are to be are to be preserved. This proposed residential project is located at the address of 4141 Whitsett Ave. in the Studio City area of Los Angeles, Ca ["The Thomas Guide 2010 (13th Edition) – Los Angeles & Ventura Counties street guide" page 562 // section F-5].

This report is prepared in accordance with Ordinance 177404, effective April 23, 20006 (Subdivision 12, Section 5, R.4a.) of the City of Los Angeles' Municipal Code relating to the "Tree Preservation Guidelines". It shall be the policy of the City of Los Angeles to require the preservation of indigenous, native to California, trees [which measure 4" or more in cumulative diameter at 4½' above natural grade] including: Oak (<u>Quercus</u> species), except for Scrub Oak (<u>Quercus dumosa</u>); Southern California Black Walnut (<u>Juglans californica</u>); Western Sycamore (<u>Platanus racemosa</u>); and/or California Bay Laurel (<u>Umbellularia californica</u>) unless compelling reasons justify the removal of such trees. The above noted trees shall not include any tree grown or held for sale by a licensed nursery, or trees planted or grown as a part of a tree-planting program.

"Of-sized" ornamental trees that measure at least 8" or more in cumulative diameter(s) at 4½' above existing grade will also be inventoried.

Included within this report are the following: five (5) **TREE PHOTOGRAPHS** sheets [printed on both sides], five (5) **TREE EVALUATIONS** sheets, and one (1) **TREE LOCATION MAP** (derived from the '50 scale' "Proposed Site Plan", as produced by Franco & Associates, Inc., dated November 22, 2011). It should be noted, that the trees on the enclosed **TREE LOCATION MAP** are only approximated as to their field locations.

<u>Plan Review</u>

1. **<u>On the dates of our field review we found no California "native" Bay, Oak, Sycamore and/or Walnut trees at this site</u>**, although we did find the following "of-size" 47 trees on site:

Tree Qty.	Tag/Map Numbers	Common Name	Botanical Name
1	441	Orange	*Citrus* species
14	11, 12, 23-33, 131	Blue Gum	*Eucalyptus globulus*
1	440	Benjamin Fig	*Ficus benjamina*
1	41	Montebello Ash	*Fraxinus velutina coriacea*
3	36, 38, 442	American Sweet Gum	*Liquidambar styraciflua*
2	39, 40	Aleppo Pine	*Pinus halepensis*
1	439	Queensland Umbrella Tree	*Schefflera actinophylla*
24	7, 9, 10, 42-60, 106, 437	Mexican Fan Palm	*Washingtonia robusta*

2. Pursuant to the enclosed **TREE LOCATION MAP**, the following is proposed:

Tree No(s).	Disposition//Requested Encroachment
7, 9-12, 23-26	**SAVES** = this portion of the site has been acquired by the city of Los Angeles for a Fire Station, which has been completed. These trees are no longer affected by this project (3 [#7, #9, #10] Mexican Fan Palms & 6 [#11, #12, #23 to #26] Blue Gums).

Tree No(s).	Disposition//Requested Encroachment
27-33	**SAVES** = it is this project's intention to save these 7 Blue Gums.
36 & 38	**SAVES** = it is this project's intention to save these 2 'off-property' American Sweet Gums.
39-43	Removals = these 5 trees (2 [#39, #40] Aleppo Pines, 1 [#41] Montebello Ash & 2 [#42, #43] Mexican Fan Palms) will require removal of this project's proposed construction.
44-60	**SAVES** = it is this project's intention to save these 17 Mexican Fan Palms.
106	Remove = this Mexican Fan Palm will require removal for this project's construction.
131	**SAVE** = this portion of the site has been acquired by the city of Los Angeles for a Fire Station, which has been completed. This Blue Gum is no longer affected by this project.
437	**SAVE** = it is this project's intention to save this Mexican Fan Palm.
439-441	Removals = these 3 trees (1 [#439] Queensland Umbrella Tree, 1 [#440] Benjamin Fig & 1 [#441] Orange) will require removal of this project's proposed construction.
442	**SAVE** = it is this project's intention to save this American Gum.

Total quantity of tree that were inventoried =	47
SAVES =	38
Removals =	9

Field Observations

1. It is the intention of the present property owner to preserve all of the trees on the adjacent golf course.

2. The trees are inventoried as to their specie, health & aesthetic considerations. This inventory was reviewed in accordance with presently accepted industry procedures, which are of macro-visual observations only. No extensive microbiological, soil-root excavations, upper crown examination, nor internal tree investigations were conducted.

3. This project's on-property trees were tagged with rectangular (¾"x3") metal tags with numbers written in black on them.

4. An "of-sized" ornamental tree measures at least 8" in diameter at 4½' above existing grade. It should be noted that these dimensions might change in the next growing season(s) following our initial field measurements.

5. The field inventory was completed by 'independent consultant' Gary Ovrid (The Tree Guy; ISA #WC-7760-A).

Specific & Overall Recommendations

1. All work, to this project's saved trees, shall be in accordance with city of Los Angeles' preservation tree policies.

2. Prior to the completion of this project, ***RDI & Associates, Inc.*** (dba ***TREES, etc.***) shall certify in a 'letter of compliance', that all concerned tree policies have been adhered to.

Tree Replacement Program

1. This project should consider planting 15-gallon, 24" box, 36" box specimen trees as mitigation "replacements" for each approved removal (on a 1:1 ratio).

2. The above noted trees shall be planted in the "landscape" areas of this project. See the project's Landscape [Architectural] plans for the approximate locations of these mitigation trees.

Tree Mitigation Program

1. It is recommended by Cal-IPC (California Invasive Plant Council – www.cal-ipc.org) that the following trees **should not be** planted in California, especially as mitigation trees for the proposed removals on this project & also in areas of this project that border up to natural open-space lands: Tree-of-Heaven (*Ailanthus altissima*), Single Seed Hawthorn (*Crataegus monogyna*), Russian Olive (*Elaeagnus angustifolia*), Blue Gum (*Eucalyptus globulus*), Myoporum (*Myoporum laetum*), Black Locust (*Robinia pseudoacacia*), Chinese Tallow Tree (*Sapium sebiferum*), Brazilian Pepper Tree (*Schinus terebinthifolius*), Scarlet Wisteria (*Sesbania punicea*) & Salt Cedar (*Tamarix* sp.).

2. It is also recommended by Cal-IPC that the following trees may not be wise decision to be planted in California, especially as mitigation trees for the proposed removals on this project & also in areas of this project that border up to natural open-space lands: Acacia (*Acacia dealbata, A. decurrens,* & *A. melanoxylon*), Edible Fig (*Ficus carica*), Mayten (*Maytenus boaria*), Olive (*Olea europaea*), Canary Island Date Palm (*Phoenix canariensis*), California Pepper Tree (*Schinus californica*) & Mexican Fan Palm (*Washington robusta*).

3. The following trees may be good planting alternatives to using those listed above: Strawberry Tree (*Arbutus* sp.), Eastern Redbud (*Cercis canadensis*), Chinese Fringe Tree (*Chionanthus retusus*), Japanese Blueberry Tree (*Elaeocarpus decipiens*), Bronze Loquat (*Eriobotrya deflexa*), Nichol's Willow-Leafed Peppermint (*Eucalyptus nicholii*), Crape Myrtle (*Lagerstroemia* sp.), Tulip Tree (*Liriodendron tulipifera*), Dawn Redwood (*Metasequoia glyptostroboides*), Sweet Michelia (*Michelia doltsopa*), Tupelo (*Nyssa sylvatica*), Burr Oak (*Quercus macrocarpa*), Southern Live Oak (*Quercus virginiana*), Japanese Snowdrop Tree (*Styrax japonicus*), Bald Cypress (*Taxodium distichum*) & Water Gum (*Tristania laurina*).

If you have any further questions, please do not hesitate to call ***RDI & Associates, Inc.* (dba *TREES, etc.*)**.

Sincerely,
RDI & Associates, Inc.
dba ***TREES, etc.***

Richard Ibarra

Richard Ibarra, President
CONSULTING ARBORIST

242htr-3[a]

TREE PHOTOGRAPHS

[printed on both sides of sheets]

Trees 7, 9 & 10 (Mexican Fan Palms)

Trees 11 & 12 (Blue Gums)

Trees 23 to 29 (Blue Gums)

Trees 30 to 33 (Blue Gums)

Tree 36 (American Sweetgum)

Tree 38 (American Sweetgum)

Trees 39 & 40 (Aleppo Pines)

Tree 41 (Montebello Ash)

Trees 43 & 42 (Mexican Fan Palms)

Tree 44 (Mexican Fan Palm)

Trees 49 to 45 (Mexican Fan Palms)

Trees 52, 51, 60 to 53, 50 (Mexican Fan Palms)

Tree 106 (Mexican Fan Palm)

Tree 131 (Blue Gum)

Tree 437 (Mexican Fan Palm)

Trees 439 (Queensland Umbrella Tree) **& 440** (Benjamin Fig)

Tree 441 (Orange)

Tree 442 (American Sweetgum)

TREE EVALUATIONS

The inventory Health & Aesthetic Ratings of the trees are explained in the following:

The Health of the trees was visually determined from the following macroscopic inspection of signs and symptoms of disease.

A. Excellent (31 to 35 points) - This tree is a healthy & vigorous tree characteristic of its species and free of any visible signs of disease or pest infestation.
B. Good (26 to 30 points) - This tree is a healthy & vigorous tree. However, there are minor visible signs of disease and pest infestation.
C. Fair (16 to 25 points) - This tree is healthy in overall appearance, but there is a normal amount of disease and/or pest infestation.
D. Poor* (11 to 15 points) - This tree is characterized by exhibiting a greater degree of disease and/or pest infestation or structural instability than normal and appears to be in a state of decline.
E. Very Poor* (6 to 10 points) - This tree exhibits extensive signs of dieback.
F. Dead* (0 points) - This tree exhibits no signs of life at the time of field evaluation.

* A tree rating of "D" and lower is in low vigor and naturally a meaningful level of recovery is doubtful. Removal should be considered if it is within the proposed development.

The Aesthetic quality of the trees was visually determined from the following overall inspection of appearance.

A. Excellent - This tree is visually symmetrical, having the ideal form and appearance for the species.
B. Good to Fair - This tree, though non-symmetrical, has an appealing form for the species with very little dieback of foliage or twigs/branches.
C. Poor - This tree is non-symmetrical for the species with an unappealing form and/or has much dieback of foliage and twigs/branches.
D. Very Poor - This tree has few, if any, positive characteristics and may detract from the beauty of the landscape.

TREE EVALUATIONS

Inspection Date (Project No.) 4/5/01 & 12/2/11 (242-3-11)

TOTAL POINTS	CLASS	GRADE
31 to 35	Excellent	A
26 to 30	Good	B
16 to 25	Fair	C
11 to 15	Poor	D
6 to 10	Very Poor	E
0	Dead	F

TREE NUMBER		7	9	10	11	12	23	24	25	26	27
FACTORS	**POINTS**										
CROWN DEVELOPMENT											
Well Balanced	5 points	X	X	X							
Lacking Natural Symmetry	3 points				X	X	X	X	X	X	X
Lacking a Full Crown	1 point										
TRUNK CONDITION											
Sound & Solid (no external defects)	5 points	X	X		X	X	X	X	X	X	X
Mechanical Damage	4 points										
Buried	3 points			X							
Exudations	2 points										
Decay	1 points										
Stump with Re-growth	0 points										
BRANCH STRUCTURE											
No Defects	5 points	X	X	X							
Dieback / Dead Wood	4 points				X	X	X	X	X	X	X
Weak Structure	3 points										
Many Structurally Dead or Broken Branches	1 point										
TWIG GROWTH											
Typical for Species & Age	5 points	X	X	X	X	X	X	X	X	X	X
Less Than ½ Normal	3 points										
Growth Greatly Reduced	1 point										
FOLIAGE											
Normal Size & Color	5 points				X	X	X	X	X	X	X
Minor Deficiency Symptoms	3 points	X	X	X							
Major Deficiency Symptoms	1 point										
INSECTS & DISEASES											
No Insects or Diseases Apparent	5 points										
Few Controllable Insects/Diseases Apparent	3 points	X	X	X	X	X	X	X	X	X	X
Severe Infestation	1 point										
ROOTS											
No Root Problems Apparent	5 points										
Minor Root Problems	3 points	X	X	X	X	X	X	X	X	X	X
Severe Root Problems	1 point										
TOTAL POINTS		29	29	27	28	28	28	28	28	28	28
Aesthetic Grade		B	B	B	C	B	B	B	B	B	B
ADDITIONAL COMMENTS		WR: 20" x 70' (BT)	WR: 18" x 70' (BT)	WR: 20" x 70' (BT)	EG: 25" x 35'	EG: 38" x 35'	EG: 24", 26" x 35'	EG: 16" x 35'	EG: 26" x 35'	EG: 14" x 25'	EG: 34" x 35'

WR = Mexican Fan Palm
EG = Blue Gum
(BT) → brown trunk height

TREE EVALUATIONS

Inspection Date (Project No.) 4/5/01 & 12/2/11 (242-3-11)

TOTAL POINTS	CLASS	GRADE
31 to 35	Excellent	A
26 to 30	Good	B
16 to 25	Fair	C
11 to 15	Poor	D
6 to 10	Very Poor	E
0	Dead	F

	TREE NUMBER	28	29	30	31	32	33	36	38	39	40
FACTORS	**POINTS**										
CROWN DEVELOPMENT											
Well Balanced	5 points							X	X		X
Lacking Natural Symmetry	3 points	X	X	X	X	X	X				
Lacking a Full Crown	1 point									X	
TRUNK CONDITION											
Sound & Solid (no external defects)	5 points	X	X	X	X	X	X	X	X		X
Mechanical Damage	4 points										
Buried	3 points										
Exudations	2 points										
Decay	1 points									X	
Stump with Re-growth	0 points										
BRANCH STRUCTURE											
No Defects	5 points										
Dieback / Dead Wood	4 points	X	X	X	X	X	X	X	X		X
Weak Structure	3 points									X	
Many Structurally Dead or Broken Branches	1 point										
TWIG GROWTH											
Typical for Species & Age	5 points	X	X	X	X	X	X	X	X	X	X
Less Than ½ Normal	3 points										
Growth Greatly Reduced	1 point										
FOLIAGE											
Normal Size & Color	5 points	X	X	X	X	X	X	X	X		
Minor Deficiency Symptoms	3 points									X	X
Major Deficiency Symptoms	1 point										
INSECTS & DISEASES											
No Insects or Diseases Apparent	5 points										
Few Controllable Insects/Diseases Apparent	3 points	X	X	X	X	X	X	X	X	X	X
Severe Infestation	1 point										
ROOTS											
No Root Problems Apparent	5 points										
Minor Root Problems	3 points	X	X	X	X	X	X	X	X		X
Severe Root Problems	1 point									X	
	TOTAL POINTS	28	28	28	28	28	28	30	30	17	28
	Aesthetic Grade	B	B	B	B	B	B	B	B	D	B
ADDITIONAL COMMENTS		EG: 14", 16" x 30'	EG: 19" x 30'	EG: 13", 33" x 35'	EG: 13", 24" x 35'	EG: 29" x 35'	EG: 18", 19" x 35'	LS: 21" x 40'	LS: 18" x 35'	PH: 12" x 10'	PH: 38" x 35'

EG = Blue Gum
LS = American Sweet Gum
PH = Aleppo Pine

TREE EVALUATIONS

Inspection Date (Project No.) 4/5/01 : 12/2/11 (242-3-11)

Page 3

TOTAL POINTS	CLASS	GRADE
31 to 35	Excellent	A
26 to 30	Good	B
16 to 25	Fair	C
11 to 15	Poor	D
6 to 10	Very Poor	E
0	Dead	F

FACTORS	POINTS	41	42	43	44	45	46	47	48	49	50
CROWN DEVELOPMENT											
Well Balanced	5 points		x	x	x	x	x	x	x	x	x
Lacking Natural Symmetry	3 points										
Lacking a Full Crown	1 point	x									
TRUNK CONDITION											
Sound & Solid (no external defects)	5 points		x	x	x	x	x	x	x	x	x
Mechanical Damage	4 points										
Buried	3 points										
Exudations	2 points										
Decay	1 points	x									
Stump with Re-growth	0 points										
BRANCH STRUCTURE											
No Defects	5 points		x	x	x	x	x	x	x	x	x
Dieback / Dead Wood	4 points	x									
Weak Structure	3 points										
Many Structurally Dead or Broken Branches	1 point										
TWIG GROWTH											
Typical for Species & Age	5 points	x	x	x	x	x	x	x	x	x	x
Less Than ½ Normal	3 points										
Growth Greatly Reduced	1 point										
FOLIAGE											
Normal Size & Color	5 points										
Minor Deficiency Symptoms	3 points	x	x	x	x	x	x	x	x	x	x
Major Deficiency Symptoms	1 point										
INSECTS & DISEASES											
No Insects or Diseases Apparent	5 points										
Few Controllable Insects/Diseases Apparent	3 points	x	x	x	x	x	x	x	x	x	x
Severe Infestation	1 point										
ROOTS											
No Root Problems Apparent	5 points										
Minor Root Problems	3 points	x	x	x	x	x	x	x	x	x	x
Severe Root Problems	1 point										
TOTAL POINTS		20	29	29	29	29	29	29	29	29	29
Aesthetic Grade		D	B	B	B	B	B	B	B	B	B
Notes		FVC: 38"x45'	WR: 27"x 70'(BT)	WR: 20"x 70'(BT)	WR: 20"x 65'(BT)	WR: 17"x 65'(BT)	WR: 17"x 65'(BT)	WR: 19"x 65'(BT)	WR: 14"x 65'(BT)	WR: 16"x 65'(BT)	WR: 19"x 70'(BT)

ADDITIONAL COMMENTS

FVC = Montebello Ash
WR = Mexican Fan Palm
(BT) ⇒ brown trunk height

TREE EVALUATIONS

Inspection Date (Project No.) 4/5/01 & 12/2/11 (242-3-11) Page 4

TOTAL POINTS	CLASS	GRADE
31 to 35	Excellent	A
26 to 30	Good	B
16 to 25	Fair	C
11 to 15	Poor	D
6 to 10	Very Poor	E
0	Dead	F

FACTORS	POINTS	51	52	53	54	55	56	57	58	59	60
TREE NUMBER		51	52	53	54	55	56	57	58	59	60
CROWN DEVELOPMENT											
Well Balanced	5 points	x	x	x	x	x	x	x	x	x	x
Lacking Natural Symmetry	3 points										
Lacking a Full Crown	1 point										
TRUNK CONDITION											
Sound & Solid (no external defects)	5 points	x	x	x	x	x	x	x	x	x	x
Mechanical Damage	4 points										
Buried	3 points										
Exudations	2 points										
Decay	1 points										
Stump with Re-growth	0 points										
BRANCH STRUCTURE											
No Defects	5 points	x	x	x	x	x	x	x	x	x	x
Dieback / Dead Wood	4 points										
Weak Structure	3 points										
Many Structurally Dead or Broken Branches	1 point										
TWIG GROWTH											
Typical for Species & Age	5 points	x	x	x	x	x	x	x	x	x	x
Less Than ½ Normal	3 points										
Growth Greatly Reduced	1 point										
FOLIAGE											
Normal Size & Color	5 points										
Minor Deficiency Symptoms	3 points	x	x	x	x	x	x	x	x	x	x
Major Deficiency Symptoms	1 point										
INSECTS & DISEASES											
No Insects or Diseases Apparent	5 points										
Few Controllable Insects/Diseases Apparent	3 points	x	x	x	x	x	x	x	x	x	x
Severe Infestation	1 point										
ROOTS											
No Root Problems Apparent	5 points										
Minor Root Problems	3 points	x	x	x	x	x	x	x	x	x	x
Severe Root Problems	1 point										
TOTAL POINTS		29	29	29	29	29	29	29	29	29	29
Aesthetic Grade		B	B	B	B	B	B	B	B	B	B
ADDITIONAL COMMENTS		WR: 17"x65'(BT)	WR: 17"x65'(BT)	WR: 17"x6[illegible]'(BT)	WR: 19"x60'(BT)	WR: 17"x60'(BT)	WR: 16"x60'(BT)	WR: 16" x 60'(BT)	WR: 18" x 60'(BT)	WR: 15" x 60'(BT)	WR: 19" x 60'(BT)

WR = Mexican Fan Palm

(BT) → brown trunk height

TREE EVALUATIONS

Inspection Date (Project No.) 4/6/01; 6/27/02 & 12/2/11 (24-3-11)

TOTAL POINTS	CLASS	GRADE
31 to 35	Excellent	A
26 to 30	Good	B
16 to 25	Fair	C
11 to 15	Poor	D
6 to 10	Very Poor	E
0	Dead	F

	TREE NUMBER	106	131	437	439	440	441	442	—	—	—
FACTORS	**POINTS**										
CROWN DEVELOPMENT											
Well Balanced	5 points	x	x	x		x	x	x			
Lacking Natural Symmetry	3 points				x						
Lacking a Full Crown	1 point										
TRUNK CONDITION											
Sound & Solid (no external defects)	5 points	x	x	x	x	x	x	x			
Mechanical Damage	4 points										
Buried	3 points										
Exudations	2 points										
Decay	1 points										
Stump with Re-growth	0 points										
BRANCH STRUCTURE											
No Defects	5 points	x	x	x	x	x	x	x			
Dieback / Dead Wood	4 points										
Weak Structure	3 points										
Many Structurally Dead or Broken Branches	1 point										
TWIG GROWTH											
Typical for Species & Age	5 points	x	x	x	x	x	x	x			
Less Than ½ Normal	3 points										
Growth Greatly Reduced	1 point										
FOLIAGE											
Normal Size & Color	5 points										
Minor Deficiency Symptoms	3 points	x	x	x	x	x	x	x			
Major Deficiency Symptoms	1 point										
INSECTS & DISEASES											
No Insects or Diseases Apparent	5 points										
Few Controllable Insects/Diseases Apparent	3 points	x	x	x	x	x	x	x			
Severe Infestation	1 point										
ROOTS											
No Root Problems Apparent	5 points										
Minor Root Problems	3 points	x	x	x	x	x	x	x			
Severe Root Problems	1 point										
	TOTAL POINTS	29	29	29	27	29	29	29			
	Aesthetic Grade	B	B	B	B	B	A	B			
ADDITIONAL COMMENTS		WR: 16" x 50' (BT)	EG: 36" x 40'	WR: 18" x 70' (BT)	SA: 7', 2x8" x 15'	FB: 7', 9" x 10'	C: 2x4', 2x5', 8" x 15'	LS: 8" x 25'			

WR = Mexican Fan Palm
(BT) → brown trunk height
EG = Blue Gum
SA = Queensland Umbrella Tree
FB = Benjamin Fig
C = Orange
LS = American Sweet Gum

TREE
LOCATION MAP

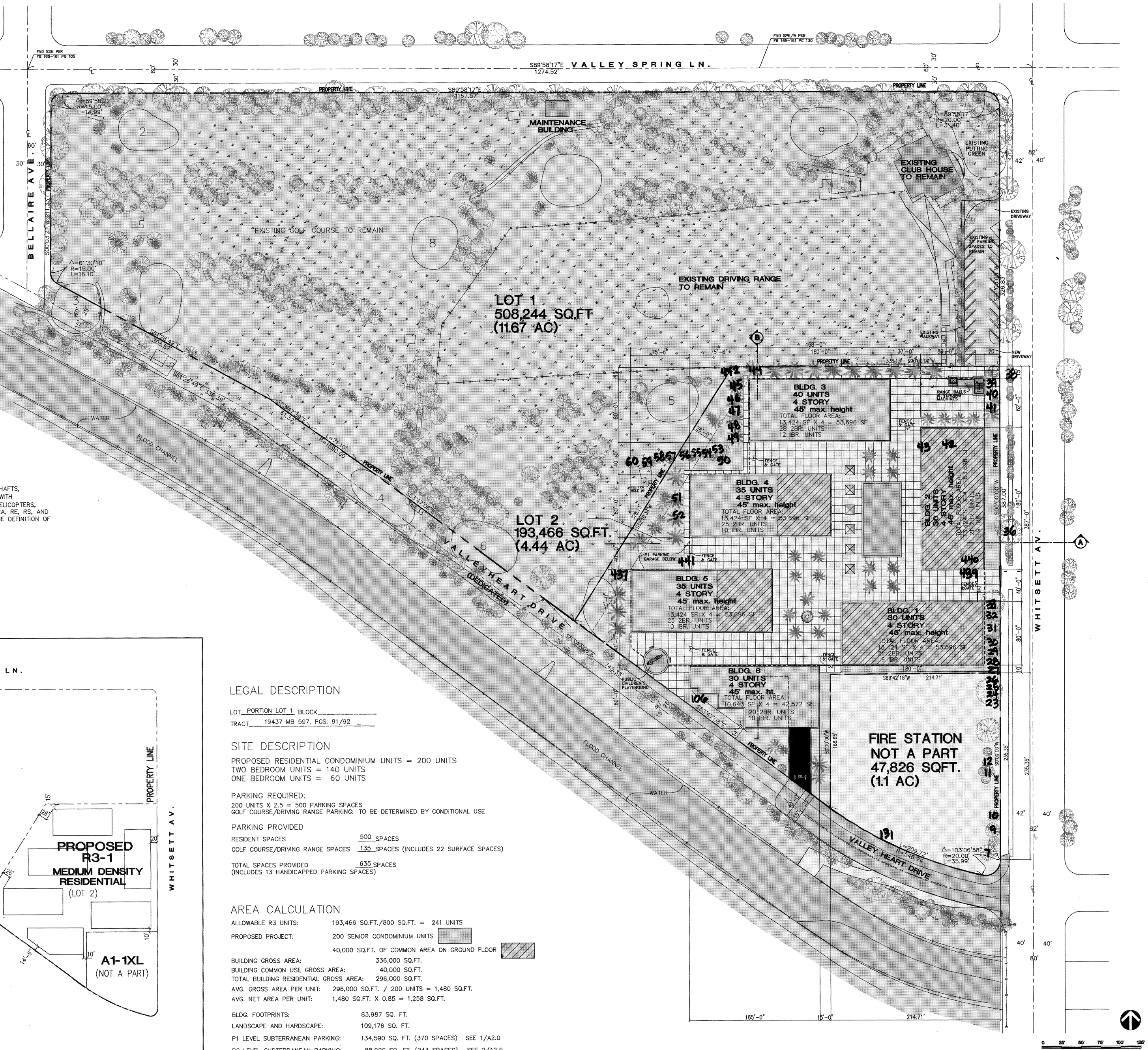
Franco & Associates Inc.
12345 Ventura Blvd. H
Studio City, CA 91604
Tel 818 754-2030
Fax 818 754-2032
Architecture

VALLEYHEART SENIOR COMMUNITY PROPOSED HOUSING PROJECT

4141 WHITSETT AVE., STUDIO CITY, CA 91604

PROPOSED SITE PLAN

REV	BY	DESCRIPTION	DATE



FLOOR AREA DEFINITION
(PER LOS ANGELES ZONING CODE)

THE AREA IN SQUARE FEET CONFINED WITHIN THE EXTERIOR WALLS OF A BUILDING, BUT NOT INCLUDING THE AREA OF THE FOLLOWING: EXTERIOR WALLS, STAIRWAYS, SHAFTS, ROOMS HOUSING BUILDING-OPERATING EQUIPMENT OR MACHINERY, PARKING AREAS WITH ASSOCIATED DRIVEWAYS AND RAMPS, SPACE FOR THE LANDING AND STORAGE OF HELICOPTERS, AND BASEMENT STORAGE AREAS. EXCEPT THAT BUILDINGS ON PROPERTIES ZONED RA, RE, RS, AND R1, AND NOT LOCATED IN A HILLSIDE AREA OR COASTAL ZONE ARE SUBJECT TO THE DEFINITION OF RESIDENTIAL FLOOR AREA. (AMENDED BY ORD. NO. 179,883, EFF. 6/29/08)

FLOOR AREA CALCULATION

TOTAL FLOOR AREA: 53,696 SF X 5 + 42,572 SF = 311,052 SF

LEGAL DESCRIPTION

LOT PORTION LOT 1 BLOCK

TRACT 19437 MB 597, PGS. 91/92

SITE DESCRIPTION

PROPOSED RESIDENTIAL CONDOMINIUM UNITS = 200 UNITS
TWO BEDROOM UNITS = 140 UNITS
ONE BEDROOM UNITS = 60 UNITS

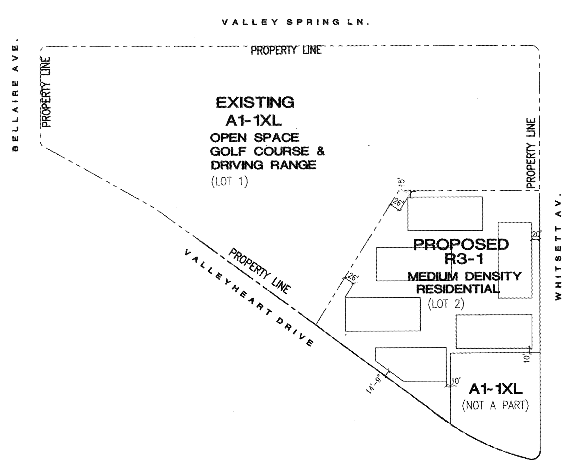
PARKING REQUIRED:
200 UNITS X 2.5 = 500 PARKING SPACES
GOLF COURSE/DRIVING RANGE PARKING: TO BE DETERMINED BY CONDITIONAL USE

PARKING PROVIDED
RESIDENT SPACES 500 SPACES
GOLF COURSE/DRIVING RANGE SPACES 135 SPACES (INCLUDES 22 SURFACE SPACES)

TOTAL SPACES PROVIDED 635 SPACES
(INCLUDES 13 HANDICAPPED PARKING SPACES)

AREA CALCULATION

ALLOWABLE R3 UNITS:	193,466 SQ.FT./800 SQ.FT. = 241 UNITS
PROPOSED PROJECT:	200 SENIOR CONDOMINIUM UNITS
	40,000 SQ.FT. OF COMMON AREA ON GROUND FLOOR
BUILDING GROSS AREA:	336,000 SQ.FT.
BUILDING COMMON USE GROSS AREA:	40,000 SQ.FT.
TOTAL BUILDING RESIDENTIAL GROSS AREA:	296,000 SQ.FT.
AVG. GROSS AREA PER UNIT:	296,000 SQ.FT. / 200 UNITS = 1,480 SQ.FT.
AVG. NET AREA PER UNIT:	1,480 SQ.FT. X 0.85 = 1,258 SQ.FT.
BLDG. FOOTPRINTS:	83,987 SQ. FT.
LANDSCAPE AND HARDSCAPE:	109,176 SQ. FT.
P1 LEVEL SUBTERRANEAN PARKING:	134,590 SQ. FT. (370 SPACES) SEE 1/A2.0
P2 LEVEL SUBTERRANEAN PARKING:	88,920 SQ. FT. (243 SPACES) SEE 2/A2.0



2 KEY SITE PLAN
SCALE: 1" = 100'

1 SITE PLAN
SCALE: 1" = 50'

PROJECT: VALLEYHEART SENIOR COMMUNITY PROPOSED HOUSING PROJECT

PROJECT ADDRESS: 4141 WHITSETT AVE., STUDIO CITY, CA 91604

DRAWING TITLE: PROPOSED SITE PLAN

APPLICANT INFORMATION: VALLEYHEART SENIOR COMMUNITY INC.
1135 CAMINO DEL MAR
DEL MAR, CA 92014

DRAWING PREPARER INFORMATION: FRANCO & ASSOCIATES, INC.
12345 VENTURA BLVD., STE. H
STUDIO CITY, CA 91604
RAY FRANCO (818) 754-2030

ISSUE DATE: 11/22/2011

DRAWING SCALE: 1=50'-0"

A1.0

APPENDIX K

LEED CHECKLIST

LEED 2009 for New Construction and Major Renovations

Project Checklist

Studio City Senior Living Center, 4141 Whitsett Ave., Studio City, CA91604

12/23/2011

Sustainable Sites — Possible Points: 26

Y	?	N			
23		3		**Sustainable Sites**	26
Y			Prereq 1	Construction Activity Pollution Prevention	
		1	Credit 1	Site Selection	1
5			Credit 2	Development Density and Community Connectivity	5
		1	Credit 3	Brownfield Redevelopment	1
6			Credit 4.1	Alternative Transportation—Public Transportation Access	6
1			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
3			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
2			Credit 4.4	Alternative Transportation—Parking Capacity	2
		1	Credit 5.1	Site Development—Protect or Restore Habitat	1
1			Credit 5.2	Site Development—Maximize Open Space	1
1			Credit 6.1	Stormwater Design—Quantity Control	1
1			Credit 6.2	Stormwater Design—Quality Control	1
1			Credit 7.1	Heat Island Effect—Non-roof	1
1			Credit 7.2	Heat Island Effect—Roof	1
1			Credit 8	Light Pollution Reduction	1

Water Efficiency — Possible Points: 10

Y	?	N			
4		1		**Water Efficiency**	10
Y			Prereq 1	Water Use Reduction—20% Reduction	
		1	Credit 1	Water Efficient Landscaping	2 to 4
2			Credit 2	Innovative Wastewater Technologies	2
2			Credit 3	Water Use Reduction	2 to 4

Energy and Atmosphere — Possible Points: 35

Y	?	N			
17		7		**Energy and Atmosphere**	35
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
8			Credit 1	Optimize Energy Performance	1 to 19
7			Credit 2	On-Site Renewable Energy	1 to 7
		2	Credit 3	Enhanced Commissioning	2
2			Credit 4	Enhanced Refrigerant Management	2
		3	Credit 5	Measurement and Verification	3
		2	Credit 6	Green Power	2

Materials and Resources — Possible Points: 14

Y	?	N			
4		5		**Materials and Resources**	14
Y			Prereq 1	Storage and Collection of Recyclables	
		1	Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
		1	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
1			Credit 2	Construction Waste Management	1 to 2
		1	Credit 3	Materials Reuse	1 to 2

Materials and Resources, Continued

Y	?	N			
2			Credit 4	Recycled Content	1 to 2
1			Credit 5	Regional Materials	1 to 2
		1	Credit 6	Rapidly Renewable Materials	1
		1	Credit 7	Certified Wood	1

Indoor Environmental Quality — Possible Points: 15

Y	?	N			
12		3		**Indoor Environmental Quality**	15
Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
1			Credit 1	Outdoor Air Delivery Monitoring	1
1			Credit 2	Increased Ventilation	1
		1	Credit 3.1	Construction IAQ Management Plan—During Construction	1
		1	Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
1			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
1			Credit 5	Indoor Chemical and Pollutant Source Control	1
1			Credit 6.1	Controllability of Systems—Lighting	1
1			Credit 6.2	Controllability of Systems—Thermal Comfort	1
1			Credit 7.1	Thermal Comfort—Design	1
		1	Credit 7.2	Thermal Comfort—Verification	1
1			Credit 8.1	Daylight and Views—Daylight	1
1			Credit 8.2	Daylight and Views—Views	1

Innovation and Design Process — Possible Points: 6

Y	?	N			
1		5		**Innovation and Design Process**	6
		1	Credit 1.1	Innovation in Design: Specific Title	1
		1	Credit 1.2	Innovation in Design: Specific Title	1
		1	Credit 1.3	Innovation in Design: Specific Title	1
		1	Credit 1.4	Innovation in Design: Specific Title	1
		1	Credit 1.5	Innovation in Design: Specific Title	1
1			Credit 2	LEED Accredited Professional	1

Regional Priority Credits — Possible Points: 4

Y	?	N			
1				**Regional Priority Credits**	4
1			Credit 1.1	Regional Priority: Specific Credit	1
			Credit 1.2	Regional Priority: Specific Credit	1
			Credit 1.3	Regional Priority: Specific Credit	1
			Credit 1.4	Regional Priority: Specific Credit	1

Total — Possible Points: 110

Y	?	N		Possible Points
62		24	**Total**	110

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

APPENDIX L

ALTERNATIVES TRAFFIC ANALYSES

PROJECT ALTERNATIVES

A range of alternatives has been determined by the project's environmental consultant in consultation with the City of Los Angeles Department of Planning. The following subsections provide discussions on the analyzed alternatives to the proposed project.

Project Alternative A: No Project (No Construction)

The Project Alternative A description represents a no project, no development alternative. Project Alternative A involves continued operation of the site (i.e., existing conditions). Thus, the future operating conditions at the study intersections which reflect the no project, no development alternative scenario is the same as those reported for the Future Pre-Project analysis conditions.

Project Alternative B: Higher Density and Recreation

Project Alternative B consists of the subdivision of the property into two lots, with Lot 1 used to maintain the recreational use and Lot 2 for residential use to allow for development of 250 apartment dwelling units. The existing tennis courts, golf course, and driving range uses will be relocated and reconfigured. Vehicular access for Project Alternative B would be provided via Valleyheart Drive.

Traffic generation for the proposed Project Alternative B was estimated based on trip rates provided in the ITE *Trip Generation* manual. A summary of the trip generation forecast for Project Alternative B is presented in ***Appendix X*** (refer to Appendix Table X-1). As shown in *Appendix X*, Project Alternative B is expected to generate 123 net new vehicle trips (23 inbound trips and 100 outbound trips) during the AM peak hour. During the PM peak hour, Project Alternative B is expected to generate 142 net new vehicle trips (95 inbound trips and 47 outbound trips). Over a 24-hour period, Project Alternative B is forecast to generate 1,564 net new daily trip ends during a typical weekday (782 inbound trips and 782 outbound trips).

Summaries of the *v/c* ratios and LOS values during the AM and PM peak hours are provided in *Appendix X* (refer to Appendix Table X-4 for the study intersections). As presented in *Appendix X* (refer to columns [2] and [4] of Appendix Table X-4), Project Alternative B is expected to create significant impacts at the following two locations according to the City of Los Angeles' impact criteria for existing with project (existing traffic and Project Alternative B related traffic) as well as future with project conditions (with the addition of ambient growth, related projects traffic, and Project Alternative B related traffic):

- <u>Int. No. 3: Whitsett Avenue/Moorpark Street</u>
  AM peak hour *v/c* ratio increase of 0.018 [to 1.084 (LOS F) from 1.066 (LOS F)]

- Int. No. 4: Whitsett Avenue/Ventura Boulevard
  PM peak hour *v/c* ratio increase of 0.023 [to 0.963 (LOS E) from 0.940 (LOS E)]

The recommended mitigation measure for Intersection No. 3, Whitsett Avenue/Moorpark Street, consists of restriping the west leg of the intersection to provide an exclusive right-turn only lane, resulting in one left-turn lane, one through lane, and one right-turn only lane for the eastbound approach. As summarized in *Appendix X*, the recommended mitigation measure is anticipated to reduce the forecast Project Alternative B related traffic impact at the Whitsett Avenue/Moorpark Street intersection during the AM peak hour to less than significant levels, to 0.925 (LOS E) from 1.084 (LOS F).

The mitigation measure for Intersection No. 4, Whitsett Avenue/Ventura Boulevard, consists of restriping the east leg of the intersection to provide an exclusive right-turn only lane, resulting in one left-turn lane, two through lanes, and one right-turn only lane for the westbound approach. The improvement is expected to improve operations to 0.859 (LOS D) from 0.963 (LOS E) using the CMA methodology during the PM peak hour.

Additionally, as shown in Appendix Table X-7, the Project Alternative B daily trips will not result in any significant impacts at the two study street segment locations. The Project Alternative B daily trips will only incrementally affect traffic volumes on the two street segments for the existing with project and future with project conditions, respectively.

Project Alternative C: Original Zoning Alternative

Project Alternative C consists of the re-zoning and re-designation of the land uses to allow for development of 95 market-rate condominiums and 83 single family homes on the site. The existing golf course, driving range, golf clubhouse, tennis courts, tennis clubhouse, and surface parking lot on the project site will be removed to accommodate this alternative. Vehicular access for Project Alternative C would be provided via an alley parallel to Whitsett Avenue and further roadway street extensions on Babcock Avenue and Beeman Avenue south of Valley Spring Lane.

Traffic generation for the proposed Project Alternative C was estimated based on trip rates provided in the ITE *Trip Generation* manual. A summary of the trip generation forecast for Project Alternative C is presented in *Appendix X* (refer to Appendix Table X-2). As shown in *Appendix X*, Project Alternative C is expected to generate 47 net new vehicle trips (-13 inbound trips and 60 outbound trips) during the AM peak hour. During the PM peak hour, Project Alternative C is expected to generate 16 net new vehicle trips (30 inbound trips and -14 outbound trips). Over a 24-hour period, Project Alternative C is forecast to generate 200 net new daily trip ends during a typical weekday (100 inbound trips and 100 outbound trips).

Summaries of the *v/c* ratios and LOS values during the AM and PM peak hours are provided in *Appendix X* (refer to Appendix Table X-5 for the study intersections). As presented in *Appendix X* (refer to columns [2] and [4] of Appendix Table X-5), no significant impacts would result under this alternative for existing and future with project conditions, similar to that for the proposed project. As no significant impacts are expected due to Project Alternative C, no traffic mitigation measures are required or recommended for the study intersections.

Additionally, as shown in Appendix Table X-8, the Project Alternative C is anticipated to result in a significant impact at Valley Spring Lane between Babcock Avenue and Whitsett Avenue. In order to mitigate this impact, it is recommended that the project applicant contribute funds to the Neighborhood Traffic Management Program. The funds will be used to implement traffic management measures to protect neighborhoods potentially influenced by Project Alternative C's traffic on Valley Spring Lane. The Project Alternative C daily trips will only incrementally affect traffic volumes on the other street segment for the existing with project and future with project conditions, respectively.

Project Alternative D: Los Angeles River Natural Park Alternative

Project Alternative D consists of a water quality treatment component and a recreational component. The water quality treatment component will consist of the creation of wetlands habitat water treatment complex and provide passive recreational and open space facilities for the community including increased public access to the Los Angeles River and trail/bicycle network. Project Alternative D would require the removal of the golf course use on the site. The existing driving range and tennis courts will be reconfigured and reconstructed. Approximately 391 parking spaces will be provided in a public parking garage located roughly 500 yards east of the project site on the north side of Ventura Boulevard. The public parking garage will be improved to be visible from both Ventura Boulevard and the Los Angeles River. It is anticipated that a new pedestrian bridge crossing the Los Angeles River from the site will connect the site to Ventura Boulevard.

Traffic generation forecasts for Project Alternative D were estimated based on trip rates provided in the ITE *Trip Generation* manual. A summary of the trip generation forecast for Project Alternative D is presented in *Appendix X* (refer to Appendix Table X-3). As shown in *Appendix X*, Project Alternative D is expected to generate four net new vehicle trips (-4 inbound trips and 8 outbound trips) during the AM peak hour. During the PM peak hour, Project Alternative D is expected to generate 52 net new vehicle trips (28 inbound trips and 24 outbound trips). Over a 24-hour period, Project Alternative D is forecast to generate 1,000 net new daily trip ends during a typical weekday (500 inbound trips and 500 outbound trips).

Summaries of the *v/c* ratios and LOS values during the AM and PM peak hours are provided in *Appendix X* (refer to Appendix Table X-6 for the study intersections). As presented in *Appendix X* (refer to columns [2] and [4] of Appendix Table X-6), Project Alternative D is expected to create a significant impact at the following location according to the City of Los Angeles' impact criteria for existing with project (existing traffic and Project Alternative D related traffic) as well as future with project conditions (with the addition of ambient growth, related projects traffic, and Project Alternative D related traffic):

- <u>Int. No. 4: Whitsett Avenue/Ventura Boulevard</u>
  PM peak hour *v/c* ratio increase of 0.026 [to 0.966 (LOS E) from 0.940 (LOS E)]

The recommended mitigation measure for Intersection No. 4, Whitsett Avenue/Ventura Boulevard, consists of restriping the east leg of the intersection to provide an exclusive right-turn only lane, resulting in one left-turn lane, two through lanes, and one right-turn only lane for the westbound approach. As summarized in *Appendix X*, the recommended mitigation measure is anticipated to reduce the forecast Project Alternative D related traffic impact at the subject study intersection during the PM peak hour to less than significant levels, to 0.855 (LOS D) from 0.966 (LOS E).

Additionally, as shown in Appendix Table X-9, the Project Alternative D daily trips will not result in any significant impacts at the two study street segment locations. The Project Alternative D daily trips will only incrementally affect traffic volumes on the two street segments for the existing with project and future with project conditions, respectively.

Appendix Table X-1
PROJECT ALTERNATIVE B TRIP GENERATION [1]
Alternative B: Higher Density and Recreation Alternative

LAND USE	SIZE	DAILY TRIP ENDS [2] VOLUMES	AM PEAK HOUR VOLUMES [2] IN	AM OUT	AM TOTAL	PM PEAK HOUR VOLUMES [2] IN	PM OUT	PM TOTAL
Project Alt B								
Apartment [3]	250 DU	1,662	26	102	128	101	54	155
Golf Driving Range [4]	21 Tees	286	5	3	8	12	14	26
Golf Course [5]	10 Holes	358	17	5	22	13	15	28
Tennis Courts [6]	13 Courts	404	11	11	22	25	25	50
Subtotal Project Alt B		2,710	59	121	180	151	108	259
Existing Site Uses								
Golf Driving Range [4]	(24) Tees	(328)	(6)	(4)	(10)	(14)	(16)	(30)
Golf Course [5]	(9) Holes	(322)	(16)	(4)	(20)	(11)	(14)	(25)
Tennis Courts [6]	(16) Courts	(496)	(14)	(13)	(27)	(31)	(31)	(62)
Subtotal Existing		(1,146)	(36)	(21)	(57)	(56)	(61)	(117)
NET INCREASE		**1,564**	**23**	**100**	**123**	**95**	**47**	**142**

[1] Source: ITE "Trip Generation", 8th Edition, 2008
[2] Trips are one-way traffic movements, entering or leaving
[3] ITE Land Use Code 220 (Apartment) trip generation average rates
- Daily Trip Rate: 6.65 trips/Dwelling Units (DU); 50% inbound/50% outbound
- AM Peak Hour Trip Rate: 0.51 trips/DU; 20% inbound/80% outbound
- PM Peak Hour Trip Rate: 0.62 trips/DU; 65% inbound/35% outbound

[4] ITE Land Use Code 432 (Golf Driving Range) trip generation average rates
- Daily Trip Rate: 13.65 trips/Tee; 50% inbound/50% outbound
- AM Peak Hour Trip Rate: 0.40 trips/Tee; 61% inbound/39% outbound
- PM Peak Hour Trip Rate: 1.25 trips/Tee; 45% inbound/55% outbound

[5] ITE Land Use Code 430 (Golf Course) trip generation average rates
- Daily Trip Rate: 35.74 trips/Hole; 50% inbound/50% outbound
- AM Peak Hour Trip Rate: 2.23 trips/Hole; 79% inbound/21% outbound
- PM Peak Hour Trip Rate: 2.78 trips/Hole; 45% inbound/55% outbound

[6] ITE Land Use Code 490 (Tennis Courts) trip generation average rates
- Daily Trip Rate: 31.04 trips/court; 50% inbound/50% outbound
- AM Peak Hour Trip Rate: 1.67 trips/court; 50% inbound/50% outbound
- PM Peak Hour Trip Rate: 3.88 trips/court; 50% inbound/50% outbound

Appendix Table X-2
PROJECT ALTERNATIVE C TRIP GENERATION [1]
Alternative C: Original Zoning Alternative

LAND USE	SIZE	DAILY TRIP ENDS [2] VOLUMES	AM PEAK HOUR VOLUMES [2] IN	OUT	TOTAL	PM PEAK HOUR VOLUMES [2] IN	OUT	TOTAL
Project Alt C								
Condominium [3]	95 DU	552	7	35	42	33	16	49
Single-Family Residential [4]	83 DU	794	16	46	62	53	31	84
Subtotal Project Alt C		1,346	23	81	104	86	47	133
Existing Site Uses								
Golf Driving Range [5]	(24) Tees	(328)	(6)	(4)	(10)	(14)	(16)	(30)
Golf Course [6]	(9) Holes	(322)	(16)	(4)	(20)	(11)	(14)	(25)
Tennis Courts [7]	(16) Courts	(496)	(14)	(13)	(27)	(31)	(31)	(62)
Subtotal Existing		(1,146)	(36)	(21)	(57)	(56)	(61)	(117)
NET INCREASE		**200**	**(13)**	**60**	**47**	**30**	**(14)**	**16**

[1] Source: ITE "Trip Generation", 8th Edition, 2008.
[2] Trips are one-way traffic movements, entering or leaving.
[3] ITE Land Use Code 230 (Residential Condominium/Townhouse) trip generation average rates.
- Daily Trip Rate: 5.81 trips/Dwelling Units (DU); 50% inbound/50% outbound
- AM Peak Hour Trip Rate: 0.44 trips/DU; 17% inbound/83% outbound
- PM Peak Hour Trip Rate: 0.52 trips/DU; 67% inbound/33% outbound

[4] ITE Land Use Code 210 (Single-Family Detached Housing) trip generation average rates.
- Daily Trip Rate: 9.57 trips/Dwelling Units (DU); 50% inbound/50% outbound
- AM Peak Hour Trip Rate: 0.75 trips/DU; 25% inbound/75% outbound
- PM Peak Hour Trip Rate: 1.01 trips/DU; 63% inbound/37% outbound

[5] ITE Land Use Code 432 (Golf Driving Range) trip generation average rates.
- Daily Trip Rate: 13.65 trips/Tee; 50% inbound/50% outbound
- AM Peak Hour Trip Rate: 0.40 trips/Tee; 61% inbound/39% outbound
- PM Peak Hour Trip Rate: 1.25 trips/Tee; 45% inbound/55% outbound

[6] ITE Land Use Code 430 (Golf Course) trip generation average rates.
- Daily Trip Rate: 35.74 trips/Hole; 50% inbound/50% outbound
- AM Peak Hour Trip Rate: 2.23 trips/Hole; 79% inbound/21% outbound
- PM Peak Hour Trip Rate: 2.78 trips/Hole; 45% inbound/55% outbound

[7] ITE Land Use Code 490 (Tennis Courts) trip generation average rates.
- Daily Trip Rate: 31.04 trips/court; 50% inbound/50% outbound
- AM Peak Hour Trip Rate: 1.67 trips/court; 50% inbound/50% outbound
- PM Peak Hour Trip Rate: 3.88 trips/court; 50% inbound/50% outbound

Appendix Table X-3
PROJECT ALTERNATIVE D TRIP GENERATION [1]
Alternative D: Los Angeles River Natural Park Alternative

LAND USE	SIZE	DAILY TRIP ENDS [2] VOLUMES	AM PEAK HOUR VOLUMES [2] IN	OUT	TOTAL	PM PEAK HOUR VOLUMES [2] IN	OUT	TOTAL
Project Alt D								
Los Angeles River Natural Park [3]	16 Acres	1,446	16	15	31	46	46	92
Golf Driving Range [4]	24 Tees	328	6	4	10	14	16	30
Tennis Courts [5]	12 Courts	372	10	10	20	24	23	47
Subtotal Project Alt D		2,146	32	29	61	84	85	169
Existing Site Uses								
Golf Driving Range [4]	(24) Tees	(328)	(6)	(4)	(10)	(14)	(16)	(30)
Golf Course [6]	(9) Holes	(322)	(16)	(4)	(20)	(11)	(14)	(25)
Tennis Courts [5]	(16) Courts	(496)	(14)	(13)	(27)	(31)	(31)	(62)
Subtotal Existing		(1,146)	(36)	(21)	(57)	(56)	(61)	(117)
NET INCREASE		**1,000**	**(4)**	**8**	**4**	**28**	**24**	**52**

[1] Source: ITE "Trip Generation", 8th Edition, 2008.
[2] Trips are one-way traffic movements, entering or leaving.
[3] ITE Land Use Code 435 (Multipurpose Recreational Facility) trip generation average rates.
- Daily Trip Rate: 90.38 trips/Acre; 50% inbound/50% outbound
- AM Peak Hour Trip Rate: 1.92 trips/Acre; 50% inbound/50% outbound
- PM Peak Hour Trip Rate: 5.77 trips/Acre; 50% inbound/50% outbound

[4] ITE Land Use Code 432 (Golf Driving Range) trip generation average rates.
- Daily Trip Rate: 13.65 trips/Tee; 50% inbound/50% outbound
- AM Peak Hour Trip Rate: 0.40 trips/Tee; 61% inbound/39% outbound
- PM Peak Hour Trip Rate: 1.25 trips/Tee; 45% inbound/55% outbound

[5] ITE Land Use Code 490 (Tennis Courts) trip generation average rates.
- Daily Trip Rate: 31.04 trips/court; 50% inbound/50% outbound
- AM Peak Hour Trip Rate: 1.67 trips/court; 50% inbound/50% outbound
- PM Peak Hour Trip Rate: 3.88 trips/court; 50% inbound/50% outbound

[6] ITE Land Use Code 430 (Golf Course) trip generation average rates.
- Daily Trip Rate: 35.74 trips/Hole; 50% inbound/50% outbound
- AM Peak Hour Trip Rate: 2.23 trips/Hole; 79% inbound/21% outbound
- PM Peak Hour Trip Rate: 2.78 trips/Hole; 45% inbound/55% outbound

Appendix Table X-4
SUMMARY OF VOLUME TO CAPACITY RATIOS
AND LEVELS OF SERVICE
AM AND PM PEAK HOURS
Project Alternative B: Higher Density and Recreation

NO.	INTERSECTION	PEAK HOUR	[1] YEAR 2012 EXISTING V/C	LOS	[2] YEAR 2012 EXISTING W/ PROJ. ALT B V/C	LOS	CHANGE V/C [(2)-(1)]	SIGNIF. IMPACT	[3] YEAR 2016 FUTURE PRE-PROJECT V/C	LOS	[4] YEAR 2016 FUTURE WITH PROJ. ALT B V/C	LOS	CHANGE V/C [(4)-(3)]	SIGNIF. IMPACT	[5] YEAR 2016 W/ PROJECT MITIGATION V/C	LOS	CHANGE V/C [(5)-(3)]	MITI-GATED
1	Coldwater Canyon Avenue/ Moorpark Street	AM PM	0.759 0.748	C C	0.761 0.755	C C	0.002 0.007	NO NO	0.847 0.837	D D	0.849 0.845	D D	0.002 0.008	NO NO	0.849 0.845	D D	0.002 0.008	--- ---
2	Whitsett Avenue/ Riverside Drive	AM PM	0.800 0.678	C B	0.810 0.682	D B	0.010 0.004	NO NO	0.885 0.751	D C	0.895 0.755	D C	0.010 0.004	NO NO	0.895 0.755	D C	0.010 0.004	--- ---
3	Whitsett Avenue/ Moorpark Street	AM PM	0.963 0.721	E C	0.981 0.729	E C	0.018 0.008	YES NO	1.066 0.807	F D	1.084 0.815	F D	0.018 0.008	YES NO	0.925 0.815	E D	-0.141 0.008	YES ---
4	Whitsett Avenue/ Ventura Boulevard	AM PM	0.645 0.830	B D	0.653 0.853	B D	0.008 0.023	NO YES	0.723 0.940	C E	0.735 0.963	C E	0.012 0.023	NO YES	0.725 0.859	C D	0.002 -0.081	--- YES
5	Laurel Canyon Boulevard/ Moorpark Street	AM PM	0.883 1.003	D F	0.891 1.010	D F	0.008 0.007	NO NO	1.020 1.131	F F	1.028 1.139	F F	0.008 0.008	NO NO	1.028 1.139	F F	0.008 0.008	--- ---

(A) According to LADOT's "Traffic Study Policies and Procedures, " August 2011, a transportation impact on an intersection shall be deemed significant in accordance with the following tabl

Final v/c	LOS	Project Related Increase in v/c
> 0.700 - 0.800	C	equal to or greater than 0.040
> 0.800 - 0.900	D	equal to or greater than 0.020
> 0.900	E,F	equal to or greater than 0.010

Appendix Table X-5
SUMMARY OF VOLUME TO CAPACITY RATIOS
AND LEVELS OF SERVICE
AM AND PM PEAK HOURS
Project Alternative C: Original Zoning

NO.	INTERSECTION	PEAK HOUR	[1] YEAR 2012 EXISTING V/C	[1] LOS	[2] YEAR 2012 EXISTING W/ PROJ. ALT C V/C	[2] LOS	[2] CHANGE V/C [(2)-(1)]	[2] SIGNIF. IMPACT	[3] YEAR 2016 FUTURE PRE-PROJECT V/C	[3] LOS	[4] YEAR 2016 FUTURE WITH W/ PROJ. ALT C V/C	[4] LOS	[4] CHANGE V/C [(4)-(3)]	[4] SIGNIF. IMPACT	[5] YEAR 2016 W/ PROJECT MITIGATION V/C	[5] LOS	[5] CHANGE V/C [(5)-(3)]	[5] MITI-GATED
1	Coldwater Canyon Avenue/	AM	0.759	C	0.757	C	-0.002	NO	0.847	D	0.845	D	-0.002	NO	0.845	D	-0.002	---
	Moorpark Street	PM	0.748	C	0.749	C	0.001	NO	0.837	D	0.839	D	0.002	NO	0.839	D	0.002	---
2	Whitsett Avenue/	AM	0.800	C	0.801	D	0.001	NO	0.885	D	0.886	D	0.001	NO	0.886	D	0.001	---
	Riverside Drive	PM	0.678	B	0.677	B	-0.001	NO	0.751	C	0.750	C	-0.001	NO	0.750	C	-0.001	---
3	Whitsett Avenue/	AM	0.963	E	0.959	E	-0.004	NO	1.066	F	1.062	F	-0.004	NO	1.062	F	-0.004	---
	Moorpark Street	PM	0.721	C	0.725	C	0.004	NO	0.807	D	0.811	D	0.004	NO	0.811	D	0.004	---
4	Whitsett Avenue/	AM	0.645	B	0.653	B	0.008	NO	0.723	C	0.728	C	0.005	NO	0.728	C	0.005	---
	Ventura Boulevard	PM	0.830	D	0.836	D	0.006	NO	0.940	E	0.945	E	0.005	NO	0.945	E	0.005	---
5	Laurel Canyon Boulevard/	AM	0.883	D	0.885	D	0.002	NO	1.020	F	1.024	F	0.004	NO	1.024	F	0.004	---
	Moorpark Street	PM	1.003	F	1.003	F	0.000	NO	1.131	F	1.131	F	0.000	NO	1.131	F	0.000	---

(A) According to LADOT's "Traffic Study Policies and Procedures, " August 2011, a transportation impact on an intersection shall be deemed significant in accordance with the following table:

Final v/c	LOS	Project Related Increase in v/c
> 0.700 - 0.800	C	equal to or greater than 0.040
> 0.800 - 0.900	D	equal to or greater than 0.020
> 0.900	E,F	equal to or greater than 0.010

Appendix Table X-6
SUMMARY OF VOLUME TO CAPACITY RATIOS
AND LEVELS OF SERVICE
AM AND PM PEAK HOURS
Project Alternative D: Los Angeles River Natural Park

NO.	INTERSECTION	PEAK HOUR	[1] YEAR 2012 EXISTING V/C	[1] LOS	[2] YEAR 2012 EXISTING W/ PROJ. ALT D V/C	[2] LOS	[2] CHANGE V/C [(2)-(1)]	[2] SIGNIF. IMPACT	[3] YEAR 2016 FUTURE PRE-PROJECT V/C	[3] LOS	[4] YEAR 2016 FUTURE WITH W/ PROJ. ALT D V/C	[4] LOS	[4] CHANGE V/C [(4)-(3)]	[4] SIGNIF. IMPACT	[5] YEAR 2016 W/ PROJECT MITIGATION V/C	[5] LOS	[5] CHANGE V/C [(5)-(3)]	[5] MITI-GATED
1	Coldwater Canyon Avenue/	AM	0.759	C	0.758	C	-0.001	NO	0.847	D	0.847	D	0.000	NO	0.847	D	0.000	---
	Moorpark Street	PM	0.748	C	0.750	C	0.002	NO	0.837	D	0.839	D	0.002	NO	0.839	D	0.002	---
2	Whitsett Avenue/	AM	0.800	C	0.800	C	0.000	NO	0.885	D	0.884	D	-0.001	NO	0.884	D	-0.001	---
	Riverside Drive	PM	0.678	B	0.680	B	0.002	NO	0.751	C	0.753	C	0.002	NO	0.753	C	0.002	---
3	Whitsett Avenue/	AM	0.963	E	0.960	E	-0.003	NO	1.066	F	1.063	F	-0.003	NO	1.063	F	-0.003	---
	Moorpark Street	PM	0.721	C	0.721	C	0.000	NO	0.807	D	0.807	D	0.000	NO	0.807	D	0.000	---
4	Whitsett Avenue/	AM	0.645	B	0.649	B	0.004	NO	0.723	C	0.725	C	0.002	NO	0.721	C	-0.002	---
	Ventura Boulevard	PM	0.830	D	0.856	D	0.026	YES	0.940	E	0.966	E	0.026	YES	0.855	D	-0.085	YES
5	Laurel Canyon Boulevard/	AM	0.883	D	0.880	D	-0.003	NO	1.020	F	1.019	F	-0.001	NO	1.019	F	-0.001	---
	Moorpark Street	PM	1.003	F	1.000	E	-0.003	NO	1.131	F	1.130	F	-0.001	NO	1.130	F	-0.001	---

(A) According to LADOT's "Traffic Study Policies and Procedures, " August 2011, a transportation impact on an intersection shall be deemed significant in accordance with the following table:

Final v/c	LOS	Project Related Increase in v/c
> 0.700 - 0.800	C	equal to or greater than 0.040
> 0.800 - 0.900	D	equal to or greater than 0.020
> 0.900	E,F	equal to or greater than 0.010

Appendix Table X-7
NEIGHBORHOOD STREET SEGMENT ANALYSIS SUMMARY
PROJECT ALTERNATIVE B: HIGHER DENSITY AND RECREATION

NO.	STREET SEGMENT	[1] YEAR 2012 EXISTING 24-HOUR VOLUME	[2] DAILY PROJ. ALT B BUILD-OUT TRIP ENDS	[3] YEAR 2012 EXISTING WITH PROJ. ALT B [(1)+(2)]	[4] % ADT INCREASE WITH PROJ. ALT B [(2)/(3)]	[5] EXISTING WITH PROJ. ALT B SEGMENT IMPACT	[6] YEAR 2016 FUTURE PRE-PROJECT VOLUME	[7] YEAR 2016 FUTURE WITH PROJ. ALT B [(2)+(6)]	[8] % ADT INCREASE WITH PROJ. ALT B [(2)/(7)]	[9] FUTURE WITH PROJ. ALT B SEGMENT IMPACT
1	Valley Spring Lane between Babcock Ave. & Whitsett Ave.	868	16	884	1.8%	NO	894	910	1.8%	NO
2	Valley Spring Lane between Whitsett Ave. & Wilkinson Ave.	1,073	16	1,089	1.5%	NO	1,105	1,121	1.4%	NO

[1] The existing average daily traffic (ADT) volumes were determined based on counts conducted by The Traffic Solution. Copies of the ADT count summary data worksheets are provided in Appendix A. The year 2011 ADT volume data were adjusted by two percent (2.0%) to reflect year 2012 existing conditions.

[2] Net Project Alternative B build-out daily trip ends include inbound and outbound trips based on the Project Alternative B trip generation forecasts provided in Appendix Table X-1. Please note that one percent (1.0%) has been utilized as a default distribution percentage for the neighborhood study street segments where no project-related traffic is expected or forecast in the traffic study. As all Project Alternative B-related traffic is anticipated to travel along the key arterials providing direct access to the project site, the use of this default factor is intended to account for potential trips associated with motorists who unexpectedly or inadvertently travel on a neighborhood street segment.

[3] Total of columns [1] and [2].

[4] Percent Project Alternative B-related increase based on column [2] divided by column [3].

[5]/[9] According to LADOT's "Traffic Study Policies & Procedures," August 2011: "A local residential street shall be deemed significantly impacted based on an increase in the projected average daily traffic (ADT) volumes."

Projected Average Daily Traffic with Project (Final ADT)	Project-Related Increase in ADT
0 to 999	16% or more of final ADT
1,000 or more	12% or more of final ADT
2,000 or more	10% or more of final ADT
3,000 or more	8% or more of final ADT

[6] An ambient growth rate of two percent (2.0%) per year was assumed to derive the year 2016 future pre-project traffic volumes.

[7] Total of columns [2] and [6].

[8] Percent Project Alternative B-related increase based on column [2] divided by column [7].

Appendix Table X-8
NEIGHBORHOOD STREET SEGMENT ANALYSIS SUMMARY
PROJECT ALTERNATIVE C: ORIGINAL ZONING

NO.	STREET SEGMENT	[1] YEAR 2012 EXISTING 24-HOUR VOLUME	[2] DAILY PROJ. ALT C BUILD-OUT TRIP ENDS	[3] YEAR 2012 EXISTING WITH PROJ. ALT C [(1)+(2)]	[4] % ADT INCREASE WITH PROJ. ALT C [(2)/(3)]	[5] EXISTING WITH PROJ. ALT C SEGMENT IMPACT	[6] YEAR 2016 FUTURE PRE-PROJECT VOLUME	[7] YEAR 2016 FUTURE WITH PROJ. ALT C [(2)+(6)]	[8] % ADT INCREASE WITH PROJ. ALT C [(2)/(7)]	[9] FUTURE WITH PROJ. ALT C SEGMENT IMPACT
1	Valley Spring Lane between Babcock Ave. & Whitsett Ave.	868	324	1,192	27.2%	YES	894	1,218	26.6%	YES
2	Valley Spring Lane between Whitsett Ave. & Wilkinson Ave.	1,073	2	1,075	0.2%	NO	1,105	1,107	0.2%	NO

[1] The existing average daily traffic (ADT) volumes were determined based on counts conducted by The Traffic Solution. Copies of the ADT count summary data worksheets are provided in Appendix A. The year 2011 ADT volume data were adjusted by two percent (2.0%) to reflect year 2012 existing conditions.

[2] Net Project Alternative C build-out daily trip ends include inbound and outbound trips based on the Project Alternative C trip generation forecasts provided in Appendix Table X-2. Please note that one percent (1.0%) has been utilized as a default distribution percentage for the neighborhood study street segment where no project-related traffic is expected or forecast in the traffic study. As all project-related traffic is anticipated to travel along the key arterials providing direct access to the project site, the use of this default factor is intended to account for potential trips associated with motorists who unexpectedly or inadvertently travel on a neighborhood street segment.

[3] Total of columns [1] and [2].

[4] Percent Project Alternative C-related increase based on column [2] divided by column [3].

[5]/[9] According to LADOT's "Traffic Study Policies & Procedures," August 2011: "A local residential street shall be deemed significantly impacted based on an increase in the projected average daily traffic (ADT) volumes."

Projected Average Daily Traffic with Project (Final ADT)	Project-Related Increase in ADT
0 to 999	16% or more of final ADT
1,000 or more	12% or more of final ADT
2,000 or more	10% or more of final ADT
3,000 or more	8% or more of final ADT

[6] An ambient growth rate of two percent (2.0%) per year was assumed to derive the year 2016 future pre-project traffic volumes.

[7] Total of columns [2] and [6].

[8] Percent Project Alternative C-related increase based on column [2] divided by column [7].

Appendix Table X-9
NEIGHBORHOOD STREET SEGMENT ANALYSIS SUMMARY
PROJECT ALTERNATIVE D: LOS ANGELES RIVER NATURAL PARK

NO.	STREET SEGMENT	[1] YEAR 2012 EXISTING 24-HOUR VOLUME	[2] DAILY PROJ. ALT D BUILD-OUT TRIP ENDS	[3] YEAR 2012 EXISTING WITH PROJ. ALT D [(1)+(2)]	[4] % ADT INCREASE WITH PROJ. ALT D [(2)/(3)]	[5] EXISTING WITH PROJ. ALT D SEGMENT IMPACT	[6] YEAR 2016 FUTURE PRE-PROJECT VOLUME	[7] YEAR 2016 FUTURE WITH PROJ. ALT D [(2)+(6)]	[8] % ADT INCREASE WITH PROJ. ALT D [(2)/(7)]	[9] FUTURE WITH PROJ. ALT D SEGMENT IMPACT
1	Valley Spring Lane between Babcock Ave. & Whitsett Ave.	868	10	878	1.1%	NO	894	904	1.1%	NO
2	Valley Spring Lane between Whitsett Ave. & Wilkinson Ave.	1,073	10	1,083	0.9%	NO	1,105	1,115	0.9%	NO

[1] The existing average daily traffic (ADT) volumes were determined based on counts conducted by The Traffic Solution. Copies of the ADT count summary data worksheets are provided in Appendix A. The year 2011 ADT volume data were adjusted by two percent (2.0%) to reflect year 2012 existing conditions.

[2] Net Project Alternative D build-out daily trip ends include inbound and outbound trips based on the Project Alternative D trip generation forecasts provided in Appendix Table X-3. Please note that one percent (1.0%) has been utilized as a default distribution percentage for the neighborhood study street segment where no project-related traffic is expected or forecast in the traffic study. As all project-related traffic is anticipated to travel along the key arterials providing direct access to the project site, the use of this default factor is intended to account for potential trips associated with motorists who unexpectedly or inadvertently travel on a neighborhood street segment.

[3] Total of columns [1] and [2].

[4] Percent Project Alternative D-related increase based on column [2] divided by column [3].

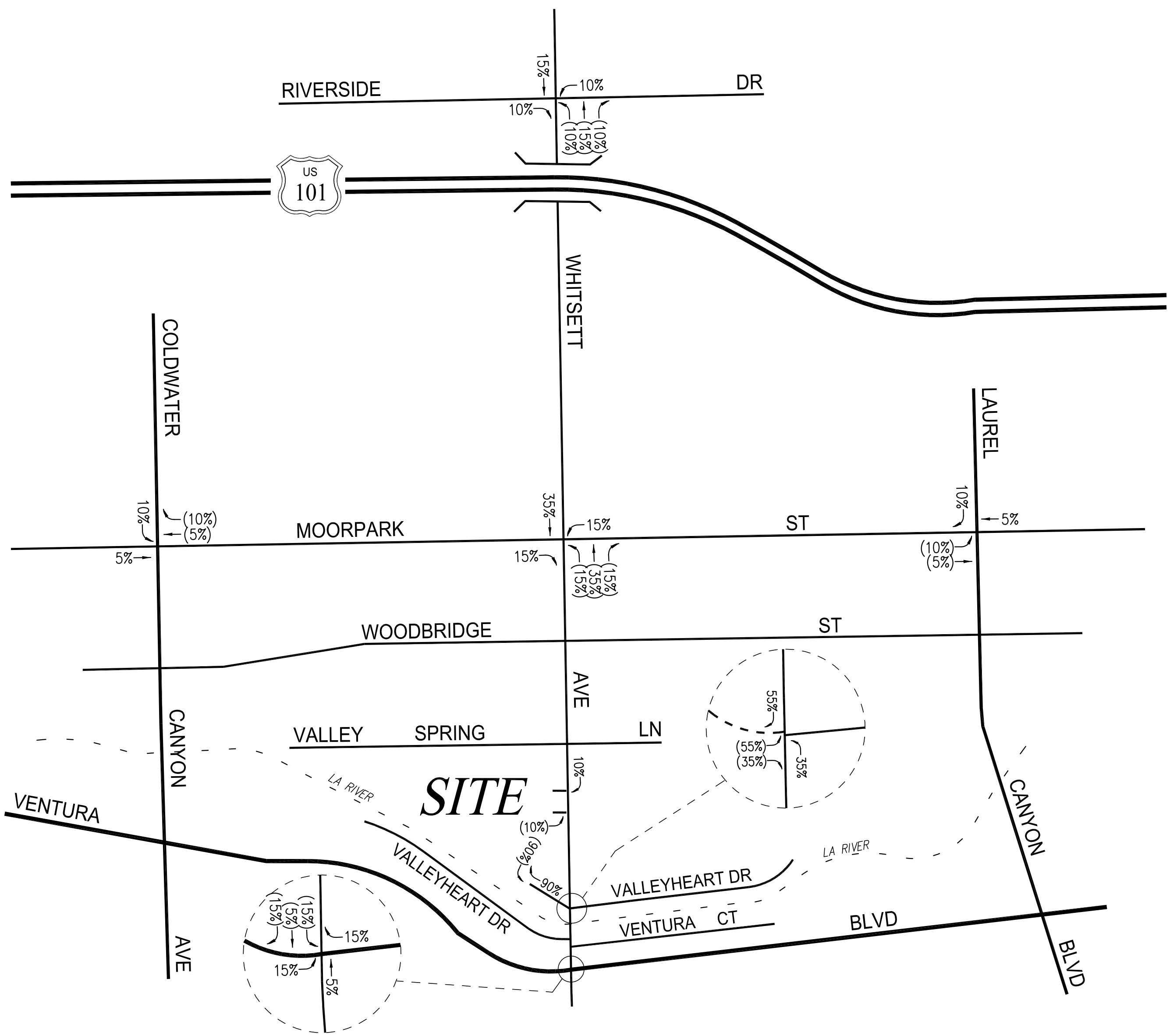
[5]/[9] According to LADOT's "Traffic Study Policies & Procedures," August 2011: "A local residential street shall be deemed significantly impacted based on an increase in the projected average daily traffic (ADT) volumes."

Projected Average Daily Traffic with Project (Final ADT)	Project-Related Increase in ADT
0 to 999	16% or more of final ADT
1,000 or more	12% or more of final ADT
2,000 or more	10% or more of final ADT
3,000 or more	8% or more of final ADT

[6] An ambient growth rate of two percent (2.0%) per year was assumed to derive the year 2016 future pre-project traffic volumes.

[7] Total of columns [2] and [6].

[8] Percent Project Alternative D-related increase based on column [2] divided by column [7].



APPENDIX FIGURE X-1

PROJECT ALTERNATIVE B TRIP DISTRIBUTION

ALTERNATIVE B: HIGHER DENSITY AND RECREATION

STUDIO CITY SENIOR LIVING CENTER PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

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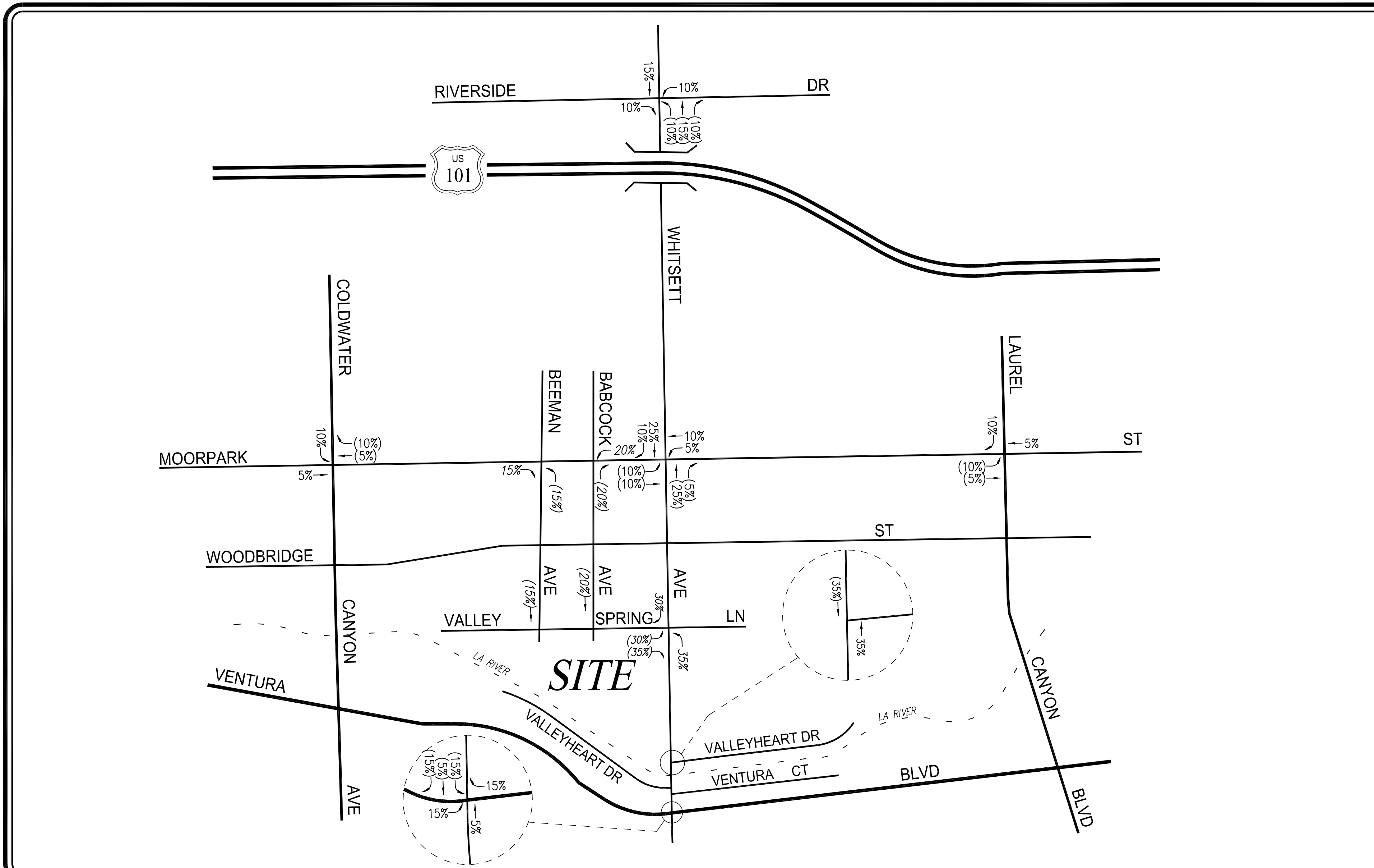

XX = INBOUND PERCENTAGES
(XX) = OUTBOUND PERCENTAGES

NOT TO SCALE

LINSCOTT, LAW & GREENSPAN, engineers

APPENDIX FIGURE X-2
PROJECT ALTERNATIVE C TRIP DISTRIBUTION
ALTERNATIVE C: ORIGINAL ZONING
STUDIO CITY SENIOR LIVING CENTER PROJECT

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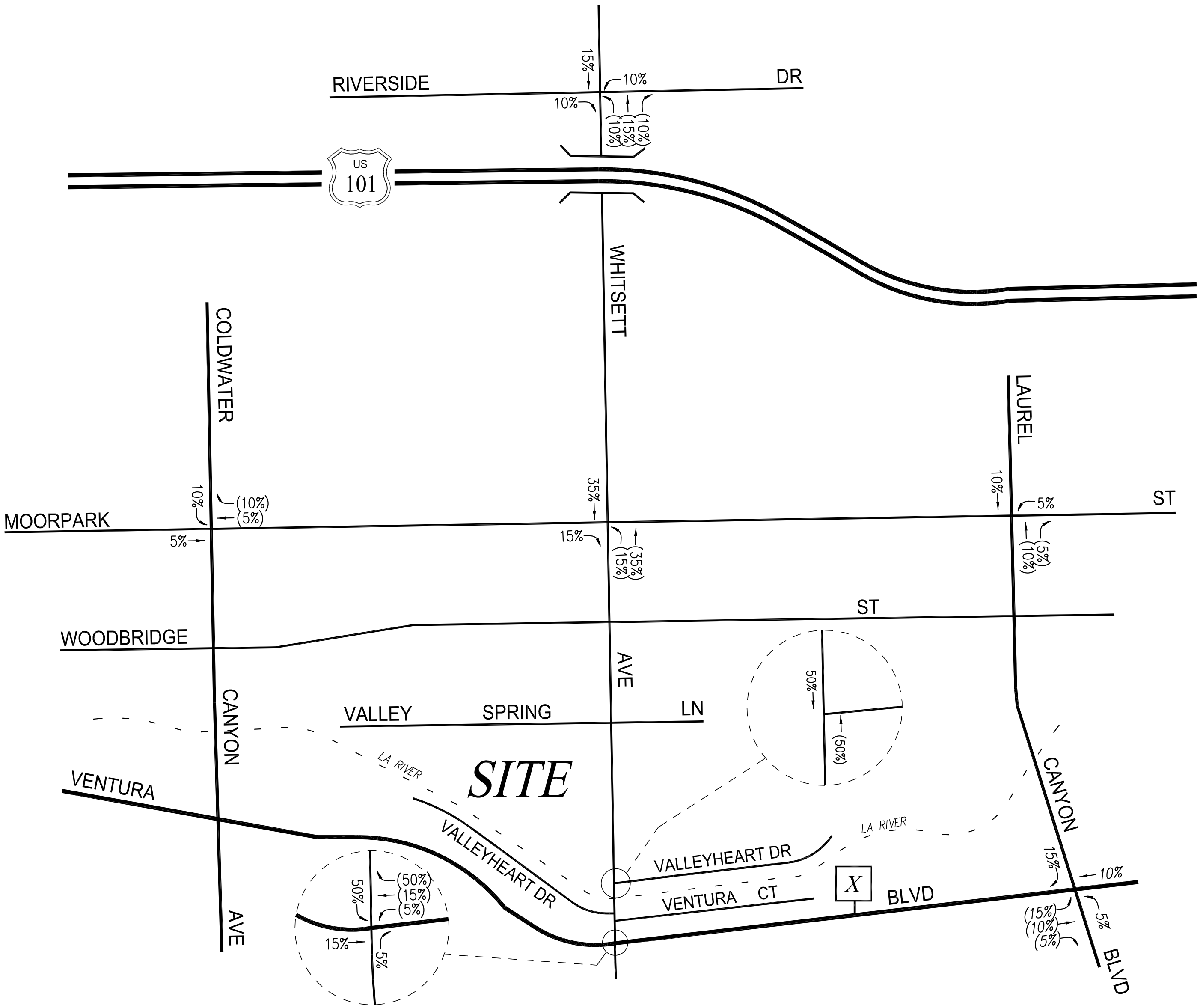

XX = INBOUND PERCENTAGES
(XX) = OUTBOUND PERCENTAGES
X = OFF-SITE PARKING

N
NOT TO SCALE

LINSCOTT, LAW & GREENSPAN, engineers

APPENDIX FIGURE X-3
PROJECT ALTERNATIVE D TRIP DISTRIBUTION
ALTERNATIVE D: LOS ANGELES RIVER NATURAL PARK
STUDIO CITY SENIOR LIVING CENTER PROJECT

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APPENDIX X-1

PROJECT ALTERNATIVE B
CMA DATA WORKSHEETS
WEEKDAY AM AND PM PEAK HOURS

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Coldwater Canyon Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	City Trafic Counters	Date:	5/30/2012
CMA1	East-West Street:	Moorpark Street	Projection Year:	2016	Peak Hour:	AM	Reviewed by:		Project:	Studio City Senior Living Center P

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?					2					2					2					2				2
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	34	1	34	0	34	34	2	39	1	39	0	39	1	39	0	39	1	39
	Left-Through		0							0				0				0	
	Through	587	1	**335**	0	587	**335**	21	656	1	**373**	0	656	1	**373**	0	656	1	**373**
	Through-Right		1							1				1				1	
	Right	83	0	83	0	83	83	0	90	0	90	0	90	0	90	0	90	0	90
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	111	1	**111**	2	113	**113**	0	120	1	**120**	2	122	1	**122**	0	122	1	**122**
	Left-Through		0							0				0				0	
	Through	482	1	302	0	482	302	18	540	1	336	0	540	1	336	0	540	1	336
	Through-Right		1							1				1				1	
	Right	121	0	121	0	121	121	0	131	0	131	0	131	0	131	0	131	0	131
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	175	1	175	0	175	175	0	189	1	189	0	189	1	189	0	189	1	189
	Left-Through		0							0				0				0	
	Through	795	1	**795**	1	796	**796**	16	877	1	**877**	1	878	1	**878**	0	878	1	**878**
	Through-Right		0							0				0				0	
	Right	42	1	25	0	42	25	1	46	1	27	0	46	1	27	0	46	1	27
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	47	1	**47**	0	47	**47**	0	51	1	**51**	0	51	1	**51**	0	51	1	**51**
	Left-Through		0							0				0				0	
	Through	422	1	422	5	427	427	26	483	1	483	5	488	1	488	0	488	1	488
	Through-Right		0							0				0				0	
	Right	84	1	29	10	94	38	0	91	1	31	10	101	1	40	0	101	1	40
	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:*	446	*North-South:*	448	*North-South:*	493	*North-South:*	495	*North-South:*	495
	East-West:	842	*East-West:*	843	*East-West:*	928	*East-West:*	929	*East-West:*	929
	SUM:	1288	*SUM:*	1291	*SUM:*	1421	*SUM:*	1424	*SUM:*	1424
VOLUME/CAPACITY *(V/C)* RATIO:		0.859		0.861		0.947		0.949		0.949
V/C LESS ATSAC/ATCS ADJUSTMENT:		0.759		0.761		0.847		0.849		0.849
LEVEL OF SERVICE (LOS):		C		C		D		D		D

REMARKS: ALT-B

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project:	0.002	Δ*v/c* after mitigation:	0.002
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Coldwater Canyon Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	City Trafic Counters	Date:	5/30/2012
CMA1	East-West Street:	Moorpark Street	Projection Year:	2016	Peak Hour:	PM	Reviewed by:		Project:	Studio City Senior Living Center P

	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?	2	2	2	2	2
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	62	1	62	0	62	62	2	69	1	69	0	69	1	69	0	69	1	69
	Left-Through		0							0				0				0	
	Through	828	1	**455**	0	828	**455**	26	922	1	**505**	0	922	1	**505**	0	922	1	**505**
	Through-Right		1							1				1				1	
	Right	81	0	81	0	81	81	0	88	0	88	0	88	0	88	0	88	0	88
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	109	1	**109**	9	118	**118**	0	118	1	**118**	9	127	1	**127**	0	127	1	**127**
	Left-Through		0							0				0				0	
	Through	760	1	445	0	760	445	29	852	1	496	0	852	1	496	0	852	1	496
	Through-Right		1							1				1				1	
	Right	129	0	129	0	129	129	0	140	0	140	0	140	0	140	0	140	0	140
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	118	1	**118**	0	118	**118**	0	128	1	**128**	0	128	1	**128**	0	128	1	**128**
	Left-Through		0							0				0				0	
	Through	605	1	605	5	610	610	21	676	1	676	5	681	1	681	0	681	1	681
	Through-Right		0							0				0				0	
	Right	64	1	33	0	64	33	2	71	1	37	0	71	1	37	0	71	1	37
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	93	1	93	0	93	93	0	101	1	101	0	101	1	101	0	101	1	101
	Left-Through		0							0				0				0	
	Through	590	1	**590**	2	592	**592**	16	655	1	**655**	2	657	1	**657**	0	657	1	**657**
	Through-Right		0							0				0				0	
	Right	113	1	59	5	118	59	0	122	1	63	5	127	1	64	0	127	1	64
	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:*	564	573	623	632	632
East-West:	708	710	783	785	785
SUM:	1272	1283	1406	1417	1417
VOLUME/CAPACITY *(V/C)* RATIO:	0.848	0.855	0.937	0.945	0.945
V/C LESS ATSAC/ATCS ADJUSTMENT:	0.748	0.755	0.837	0.845	0.845
LEVEL OF SERVICE (LOS):	C	C	D	D	D

REMARKS: ALT-B

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project:	0.008	Δ*v/c* after mitigation:	0.008
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Whitsett Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	City Trafic Counters	Date:	5/30/2012
CMA2	East-West Street:	Riverside Drive	Projection Year:	2016	Peak Hour:	AM	Reviewed by:		Project:	Studio City Senior Living Center P

	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?	2	2	2	2	2
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	69	1	69	10	79	79	2	77	1	77	10	87	1	87	0	87	1	87
	Left-Through		0							0				0				0	
	Through	292	1	226	15	307	238	11	327	1	251	15	342	1	263	0	342	1	263
	Through-Right		1							1				1				1	
	Right	159	0	159	10	169	169	2	174	0	174	10	184	0	184	0	184	0	184
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	314	1	314	0	314	314	0	340	1	340	0	340	1	340	0	340	1	340
	Left-Through		0							0				0				0	
	Through	844	1	536	4	848	538	13	927	1	587	4	931	1	589	0	931	1	589
	Through-Right		1							1				1				1	
	Right	227	0	227	0	227	227	0	246	0	246	0	246	0	246	0	246	0	246
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	97	1	97	0	97	97	0	105	1	105	0	105	1	105	0	105	1	105
	Left-Through		0							0				0				0	
	Through	1058	1	618	0	1058	619	7	1152	1	674	0	1152	1	675	0	1152	1	675
	Through-Right		1							1				1				1	
	Right	178	0	178	2	180	180	2	195	0	195	2	197	0	197	0	197	0	197
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	127	1	127	2	129	129	2	139	1	139	2	141	1	141	0	141	1	141
	Left-Through		0							0				0				0	
	Through	830	1	430	0	830	430	22	920	1	476	0	920	1	476	0	920	1	476
	Through-Right		1							1				1				1	
	Right	30	0	30	0	30	30	0	32	0	32	0	32	0	32	0	32	0	32
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	

CRITICAL VOLUMES	EXISTING CONDITION	EXISTING PLUS PROJECT	FUTURE CONDITION W/O PROJECT	FUTURE CONDITION W/ PROJECT	FUTURE W/ PROJECT W/ MITIGATION
North-South:	605	617	664	676	676
East-West:	745	748	813	816	816
SUM:	1350	1365	1477	1492	1492
VOLUME/CAPACITY *(V/C)* RATIO:	0.900	0.910	0.985	0.995	0.995
V/C LESS ATSAC/ATCS ADJUSTMENT:	0.800	0.810	0.885	0.895	0.895
LEVEL OF SERVICE (LOS):	C	D	D	D	D

REMARKS: ALT-B

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project:	0.010	Δ*v/c* after mitigation:	0.010
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Whitsett Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	City Trafic Counters	Date:	5/30/2012
CMA2	East-West Street:	Riverside Drive	Projection Year:	2016	Peak Hour:	PM	Reviewed by:		Project:	Studio City Senior Living Center P

	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?	2	2	2	2	2
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	133	1	133	5	138	138	3	147	1	147	5	152	1	152	0	152	1	152
	Left-Through		0							0				0				0	
	Through	601	1	368	7	608	374	17	668	1	408	7	675	1	414	0	675	1	414
	Through-Right		1							1				1				1	
	Right	134	0	134	5	139	139	3	148	0	148	5	153	0	153	0	153	0	153
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	95	1	95	0	95	95	0	103	1	103	0	103	1	103	0	103	1	103
	Left-Through		0							0				0				0	
	Through	389	1	244	15	404	251	14	435	1	271	15	450	1	278	0	450	1	278
	Through-Right		1							1				1				1	
	Right	98	0	98	0	98	98	0	106	0	106	0	106	0	106	0	106	0	106
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	168	1	168	0	168	168	0	182	1	182	0	182	1	182	0	182	1	182
	Left-Through		0							0				0				0	
	Through	839	1	491	0	839	496	12	920	1	539	0	920	1	544	0	920	1	544
	Through-Right		1							1				1				1	
	Right	143	0	143	9	152	152	3	158	0	158	9	167	0	167	0	167	0	167
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	114	1	114	9	123	123	3	126	1	126	9	135	1	135	0	135	1	135
	Left-Through		0							0				0				0	
	Through	1004	1	536	0	1004	536	6	1093	1	583	0	1093	1	583	0	1093	1	583
	Through-Right		1							1				1				1	
	Right	67	0	67	0	67	67	0	73	0	73	0	73	0	73	0	73	0	73
	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:	463	469	511	517	517
	East-West:	704	704	765	765	765
	SUM:	1167	1173	1276	1282	1282
VOLUME/CAPACITY (V/C) RATIO:		0.778	0.782	0.851	0.855	0.855
V/C LESS ATSAC/ATCS ADJUSTMENT:		0.678	0.682	0.751	0.755	0.755
LEVEL OF SERVICE (LOS):		B	B	C	C	C

REMARKS: ALT-B

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project:	0.004	Δ*v/c* after mitigation:	0.004
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Whitsett Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	The Traffic Solution	Date:	5/30/2012
CMA3	East-West Street:	Moorpark Street	Projection Year:	2016	Peak Hour:	AM	Reviewed by:		Project:	Studio City Senior Living Center P

	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?	2	2	2	2	2
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	92	1	**92**	15	107	**107**	0	100	1	**100**	15	115	1	**115**	0	115	1	**115**
	Left-Through		0							0				0				0	
	Through	235	1	147	35	270	172	20	274	1	171	35	309	1	196	0	309	1	196
	Through-Right		1							1				1				1	
	Right	58	0	58	15	73	73	4	67	0	67	15	82	0	82	0	82	0	82
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	195	1	195	0	195	195	2	213	1	213	0	213	1	213	0	213	1	213
	Left-Through		0							0				0				0	
	Through	937	1	**504**	8	945	**508**	8	1022	1	**549**	8	1030	1	**553**	0	1030	1	**553**
	Through-Right		1							1				1				1	
	Right	70	0	70	0	70	70	0	76	0	76	0	76	0	76	0	76	0	76
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	67	1	67	0	67	67	0	73	1	73	0	73	1	73	0	73	1	73
	Left-Through		0							0				0				0	
	Through	723	0	**940**	0	723	**944**	16	799	0	**1034**	0	799	0	**1038**	0	799	1	**799**
	Through-Right		1							1				1				0	
	Right	217	0	0	4	221	0	0	235	0	0	4	239	0	0	0	239	1	182
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	59	1	**59**	4	63	**63**	2	66	1	**66**	4	70	1	**70**	0	70	1	**70**
	Left-Through		0							0				0				0	
	Through	459	0	508	0	459	508	26	523	0	577	0	523	0	577	0	523	0	577
	Through-Right		1							1				1				1	
	Right	49	0	0	0	49	0	1	54	0	0	0	54	0	0	0	54	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:*	596	615	649	668	668
	East-West:	999	1007	1100	1108	869
	SUM:	1595	1622	1749	1776	1537
VOLUME/CAPACITY *(V/C)* RATIO:		1.063	1.081	1.166	1.184	1.025
V/C LESS ATSAC/ATCS ADJUSTMENT:		0.963	0.981	1.066	1.084	0.925
LEVEL OF SERVICE (LOS):		E	E	F	F	E

REMARKS: ALT-B

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project:	0.018	Δ*v/c* after mitigation:	-0.141
Significant impacted?	YES	Fully mitigated?	YES

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Whitsett Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	The Traffic Solution	Date:	5/30/2012
CMA3	East-West Street:	Moorpark Street	Projection Year:	2016	Peak Hour:	PM	Reviewed by:		Project:	Studio City Senior Living Center P

	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?	2	2	2	2	2
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	155	1	155	7	162	162	0	168	1	168	7	175	1	175	0	175	1	175
	Left-Through		0							0				0				0	
	Through	649	1	**388**	17	666	**400**	17	719	1	**429**	17	736	1	**441**	0	736	1	**441**
	Through-Right		1							1				1				1	
	Right	126	0	126	7	133	133	3	139	0	139	7	146	0	146	0	146	0	146
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	54	1	**54**	0	54	**54**	1	59	1	**59**	0	59	1	**59**	0	59	1	**59**
	Left-Through		0							0				0				0	
	Through	428	1	252	33	461	268	25	488	1	285	33	521	1	301	0	521	1	301
	Through-Right		1							1				1				1	
	Right	75	0	75	0	75	75	0	81	0	81	0	81	0	81	0	81	0	81
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	112	1	**112**	0	112	**112**	0	121	1	**121**	0	121	1	**121**	0	121	1	**121**
	Left-Through		0							0				0				0	
	Through	489	0	581	0	489	596	21	550	0	650	0	550	0	665	0	550	1	550
	Through-Right		1							1				1				0	
	Right	92	0	0	15	107	0	0	100	0	0	15	115	0	0	0	115	1	28
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	78	1	78	15	93	93	5	89	1	89	15	104	1	104	0	104	1	104
	Left-Through		0							0				0				0	
	Through	597	0	**678**	0	597	**678**	16	662	0	**752**	0	662	0	**752**	0	662	0	**752**
	Through-Right		1							1				1				1	
	Right	81	0	0	0	81	0	2	90	0	0	0	90	0	0	0	90	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:	442	454	488	500	500
East-West:	790	790	873	873	873
SUM:	1232	1244	1361	1373	1373
VOLUME/CAPACITY (V/C) RATIO:	0.821	0.829	0.907	0.915	0.915
V/C LESS ATSAC/ATCS ADJUSTMENT:	0.721	0.729	0.807	0.815	0.815
LEVEL OF SERVICE (LOS):	C	C	D	D	D

REMARKS: ALT-B

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project:	0.008	Δ*v/c* after mitigation:	0.008
Significant impacted?	NO	Fully mitigated?	N/A

LADOT Moving LA Forward

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Whitsett Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	The Traffic Solution	Date:	5/30/2012
CMA4	East-West Street:	Ventura Boulevard	Projection Year:	2016	Peak Hour:	AM	Reviewed by:		Project:	Studio City Senior Living Center P

	EXISTING CONDITION	EXISTING PLUS PROJECT	FUTURE CONDITION W/O PROJECT	FUTURE CONDITION W/ PROJECT	FUTURE W/ PROJECT W/ MITIGATION
No. of Phases	4	4	4	4	4
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-- 3 EB-- 2 WB-- 0	NB-- 0 SB-- 3 EB-- 2 WB-- 0	NB-- 0 SB-- 3 EB-- 2 WB-- 0	NB-- 0 SB-- 3 EB-- 2 WB-- 0	NB-- 0 SB-- 3 EB-- 2 WB-- 0
ATSAC-1 or ATSAC+ATCS-2?	2	2	2	2	2
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	56	1	**56**	0	56	**56**	0	61	1	**61**	0	61	1	**61**	0	61	1	**61**
	Left-Through		0							0				0				0	
	Through	93	0	112	1	94	113	0	101	0	122	1	102	0	123	0	102	0	123
	Through-Right		1							1				1				1	
	Right	19	0	0	0	19	0	0	21	0	0	0	21	0	0	0	21	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	611	2	336	15	626	344	7	668	2	367	15	683	2	376	0	683	2	376
	Left-Through		0							0				0				0	
	Through	236	1	236	5	241	241	0	255	1	255	5	260	1	260	0	260	1	260
	Through-Right		0							0				0				0	
	Right	500	1	**407**	15	515	**418**	10	551	1	**438**	15	566	1	**449**	0	566	1	**449**
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	93	1	93	4	97	97	12	113	1	**113**	4	117	1	**117**	0	117	1	117
	Left-Through		0							0				0				0	
	Through	988	1	**544**	0	988	**544**	35	1104	1	606	0	1104	1	606	0	1104	1	**606**
	Through-Right		1							1				1				1	
	Right	100	0	100	0	100	100	0	108	0	108	0	108	0	108	0	108	0	108
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	17	1	**17**	0	17	**17**	0	18	1	18	0	18	1	18	0	18	1	**18**
	Left-Through		0							0				0				0	
	Through	764	1	451	0	764	453	57	884	1	**519**	0	884	1	**521**	0	884	2	442
	Through-Right		1							1				1				0	
	Right	137	0	137	4	141	141	6	154	0	154	4	158	0	158	0	158	1	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:*	463	474	499	510	510
East-West:	561	561	632	638	624
SUM:	1024	1035	1131	1148	1134
VOLUME/CAPACITY *(V/C)* RATIO:	0.745	0.753	0.823	0.835	0.825
V/C LESS ATSAC/ATCS ADJUSTMENT:	0.645	0.653	0.723	0.735	0.725
LEVEL OF SERVICE (LOS):	B	B	C	C	C

REMARKS: No right-turn on red 7:00 AM - 9:00 A

Version: 1i Beta; 8/4/2011 ALT-B

PROJECT IMPACT

Change in *v/c* due to project:	0.012	Δ*v/c* after mitigation:	0.002
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Whitsett Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	The Traffic Solution	Date:	5/30/2012
CMA4	East-West Street:	Ventura Boulevard	Projection Year:	2016	Peak Hour:	PM	Reviewed by:		Project:	Studio City Senior Living Center P

	Existing Condition	Existing Plus Project	Future Condition W/O Project	Future Condition W/ Project	Future W/ Project W/ Mitigation
No. of Phases	4	4	4	4	4
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-- 3	NB-- 0 SB-- 3	NB-- 0 SB-- 3	NB-- 0 SB-- 3	NB-- 0 SB-- 3
	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?	2	2	2	2	2
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	108	1	108	0	108	108	0	117	1	117	0	117	1	117	0	117	1	117
	Left-Through		0							0				0				0	
	Through	173	0	**191**	5	178	**196**	0	187	0	**206**	5	192	0	**211**	0	192	0	**211**
	Through-Right		1							1				1				1	
	Right	18	0	0	0	18	0	0	19	0	0	0	19	0	0	0	19	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	249	2	**137**	7	256	**141**	7	277	2	**152**	7	284	2	**156**	0	284	2	**156**
	Left-Through		0							0				0				0	
	Through	147	1	147	2	149	149	0	159	1	159	2	161	1	161	0	161	1	161
	Through-Right		0							0				0				0	
	Right	182	1	0	7	189	0	19	216	1	0	7	223	1	0	0	223	1	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	232	1	**232**	15	247	**247**	17	268	1	**268**	15	283	1	**283**	0	283	1	**283**
	Left-Through		0							0				0				0	
	Through	1026	1	580	0	1026	580	53	1164	1	654	0	1164	1	654	0	1164	1	654
	Through-Right		1							1				1				1	
	Right	133	0	133	0	133	133	0	144	0	144	0	144	0	144	0	144	0	144
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	26	1	26	0	26	26	0	28	1	28	0	28	1	28	0	28	1	28
	Left-Through		0							0				0				0	
	Through	1195	1	**719**	0	1195	**727**	42	1336	1	**804**	0	1336	1	**811**	0	1336	2	**668**
	Through-Right		1							1				1				0	
	Right	243	0	243	15	258	258	8	271	0	271	15	286	0	286	0	286	1	208
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
CRITICAL VOLUMES			*North-South:*	328		*North-South:*	337			*North-South:*	358			*North-South:*	367			*North-South:*	367
			East-West:	951		*East-West:*	974			*East-West:*	1072			*East-West:*	1094			*East-West:*	951
			SUM:	1279		*SUM:*	1311			*SUM:*	1430			*SUM:*	1461			*SUM:*	1318
VOLUME/CAPACITY *(V/C)* RATIO:				0.930			0.953				1.040				1.063				0.959
V/C LESS ATSAC/ATCS ADJUSTMENT:				0.830			0.853				0.940				0.963				0.859
LEVEL OF SERVICE (LOS):				D			D				E				E				D

REMARKS: ALT-B

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project:	0.023	Δ*v/c* after mitigation:	-0.081
Significant impacted?	YES	Fully mitigated?	YES

Level of Service Worksheet
(Circular 212 Method)

I/S #:	North-South Street:	Laurel Canyon Boulevard	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	City Trafic Counters	Date:	5/30/2012
CMA5	East-West Street:	Moorpark Street	Projection Year:	2016	Peak Hour:	AM	Reviewed by:		Project:	Studio City Senior Living Center P

	EXISTING CONDITION				EXISTING PLUS PROJECT				FUTURE CONDITION W/O PROJECT				FUTURE CONDITION W/ PROJECT				FUTURE W/ PROJECT W/ MITIGATION			
No. of Phases				4				4				4				4				4
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--	3	EB--	0	WB--	3	EB--	0	WB--	3	EB--	0	WB--	3	EB--	0	WB--	3
ATSAC-1 or ATSAC+ATCS-2?				2				2				2				2				2
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	74	1	74	0	74	74	12	92	1	92	0	92	1	92	0	92	1	92
	Left-Through		0							0				0				0	
	Through	1000	1	564	0	1000	564	167	1249	1	693	0	1249	1	693	0	1249	1	693
	Through-Right		1							1				1				1	
	Right	127	0	127	0	127	127	0	137	0	137	0	137	0	137	0	137	0	137
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	140	1	140	0	140	140	9	161	1	161	0	161	1	161	0	161	1	161
	Left-Through		0							0				0				0	
	Through	1094	1	661	0	1094	662	79	1263	1	761	0	1263	1	762	0	1263	1	762
	Through-Right		1							1				1				1	
	Right	228	0	228	2	230	230	11	258	0	258	2	260	0	260	0	260	0	260
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	209	1	209	10	219	219	19	245	1	245	10	255	1	255	0	255	1	255
	Left-Through		0							0				0				0	
	Through	700	1	425	5	705	427	1	759	1	461	5	764	1	464	0	764	1	464
	Through-Right		1							1				1				1	
	Right	149	0	149	0	149	149	2	163	0	163	0	163	0	163	0	163	0	163
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	138	1	138	0	138	138	0	149	1	149	0	149	1	149	0	149	1	149
	Left-Through		0							0				0				0	
	Through	407	1	407	1	408	408	0	441	1	441	1	442	1	442	0	442	1	442
	Through-Right		0							0				0				0	
	Right	97	1	0	0	97	0	16	121	1	0	0	121	1	0	0	121	1	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
CRITICAL VOLUMES			North-South:	735		North-South:	736			North-South:	854			North-South:	854			North-South:	854
			East-West:	616		East-West:	627			East-West:	686			East-West:	697			East-West:	697
			SUM:	1351		SUM:	1363			SUM:	1540			SUM:	1551			SUM:	1551
VOLUME/CAPACITY (V/C) RATIO:				0.983			0.991				1.120				1.128				1.128
V/C LESS ATSAC/ATCS ADJUSTMENT:				0.883			0.891				1.020				1.028				1.028
LEVEL OF SERVICE (LOS):				D			D				F				F				F

REMARKS: Westbound overlap phase.

Version: 1i Beta; 8/4/2011 ALT-B

PROJECT IMPACT

Change in v/c due to project:	0.008	Δv/c after mitigation:	0.008
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Laurel Canyon Boulevard	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	City Trafic Counters	Date:	5/30/2012
CMA5	East-West Street:	Moorpark Street	Projection Year:	2016	Peak Hour:	PM	Reviewed by:		Project:	Studio City Senior Living Center P

	Existing Condition	Existing Plus Project	Future Condition w/o Project	Future Condition w/ Project	Future w/ Project w/ Mitigation
No. of Phases	4	4	4	4	4
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-- 3	NB-- 0 SB-- 0 EB-- 0 WB-- 3	NB-- 0 SB-- 0 EB-- 0 WB-- 3	NB-- 0 SB-- 0 EB-- 0 WB-- 3	NB-- 0 SB-- 0 EB-- 0 WB-- 3
ATSAC-1 or ATSAC+ATCS-2?	2	2	2	2	2
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	88	1	88	0	88	88	5	100	1	100	0	100	1	100	0	100	1	100
	Left-Through		0							0				0				0	
	Through	1423	1	761	0	1423	761	72	1612	1	859	0	1612	1	859	0	1612	1	859
	Through-Right		1							1				1				1	
	Right	98	0	98	0	98	98	0	106	0	106	0	106	0	106	0	106	0	106
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	145	1	145	0	145	145	8	165	1	165	0	165	1	165	0	165	1	165
	Left-Through		0							0				0				0	
	Through	1244	1	749	0	1244	754	104	1451	1	869	0	1451	1	874	0	1451	1	874
	Through-Right		1							1				1				1	
	Right	254	0	254	9	263	263	12	287	0	287	9	296	0	296	0	296	0	296
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	186	1	186	5	191	191	8	209	1	209	5	214	1	214	0	214	1	214
	Left-Through		0							0				0				0	
	Through	485	1	290	2	487	291	1	526	1	320	2	528	1	321	0	528	1	321
	Through-Right		1							1				1				1	
	Right	95	0	95	0	95	95	11	114	0	114	0	114	0	114	0	114	0	114
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	170	1	170	0	170	170	0	184	1	184	0	184	1	184	0	184	1	184
	Left-Through		0							0				0				0	
	Through	424	1	424	5	429	429	1	460	1	460	5	465	1	465	0	465	1	465
	Through-Right		0							0				0				0	
	Right	147	1	2	0	147	2	5	164	1	0	0	164	1	0	0	164	1	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:*	906	906	1024	1024	1024
East-West:	610	620	669	679	679
SUM:	1516	1526	1693	1703	1703
VOLUME/CAPACITY *(V/C)* RATIO:	1.103	1.110	1.231	1.239	1.239
V/C LESS ATSAC/ATCS ADJUSTMENT:	1.003	1.010	1.131	1.139	1.139
LEVEL OF SERVICE (LOS):	F	F	F	F	F

REMARKS: Westbound overlap phase.

Version: 1i Beta; 8/4/2011 ALT-B

PROJECT IMPACT

Change in *v/c* due to project:	0.008	Δ*v/c* after mitigation:	0.008
Significant impacted?	NO	Fully mitigated?	N/A

APPENDIX X-2

PROJECT ALTERNATIVE C
CMA DATA WORKSHEETS
WEEKDAY AM AND PM PEAK HOURS

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Coldwater Canyon Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	City Trafic Counters	Date:	5/30/2012
CMA1	East-West Street:	Moorpark Street	Projection Year:	2016	Peak Hour:	AM	Reviewed by:		Project:	Studio City Senior Living Center P

	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?		2		2		2		2		2
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	34	1	34	0	34	34	2	39	1	39	0	39	1	39	0	39	1	39
	Left-Through		0							0				0				0	
	Through	587	1	335	0	587	335	21	656	1	373	0	656	1	373	0	656	1	373
	Through-Right		1							1				1				1	
	Right	83	0	83	0	83	83	0	90	0	90	0	90	0	90	0	90	0	90
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	111	1	111	-2	109	109	0	120	1	120	-2	118	1	118	0	118	1	118
	Left-Through		0							0				0				0	
	Through	482	1	302	0	482	302	18	540	1	336	0	540	1	336	0	540	1	336
	Through-Right		1							1				1				1	
	Right	121	0	121	0	121	121	0	131	0	131	0	131	0	131	0	131	0	131
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	175	1	175	0	175	175	0	189	1	189	0	189	1	189	0	189	1	189
	Left-Through		0							0				0				0	
	Through	795	1	795	-1	794	794	16	877	1	877	-1	876	1	876	0	876	1	876
	Through-Right		0							0				0				0	
	Right	42	1	25	0	42	25	1	46	1	27	0	46	1	27	0	46	1	27
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	47	1	47	0	47	47	0	51	1	51	0	51	1	51	0	51	1	51
	Left-Through		0							0				0				0	
	Through	422	1	422	3	425	425	26	483	1	483	3	486	1	486	0	486	1	486
	Through-Right		0							0				0				0	
	Right	84	1	29	6	90	36	0	91	1	31	6	97	1	38	0	97	1	38
	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:	446	444	493	491	491
	East-West:	842	841	928	927	927
	SUM:	1288	1285	1421	1418	1418
VOLUME/CAPACITY (V/C) RATIO:		0.859	0.857	0.947	0.945	0.945
V/C LESS ATSAC/ATCS ADJUSTMENT:		0.759	0.757	0.847	0.845	0.845
LEVEL OF SERVICE (LOS):		C	C	D	D	D

REMARKS: ALT-C

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project:	-0.002	Δ*v/c* after mitigation:	-0.002
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Coldwater Canyon Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	City Trafic Counters	Date:	5/30/2012
CMA1	East-West Street:	Moorpark Street	Projection Year:	2016	Peak Hour:	PM	Reviewed by:		Project:	Studio City Senior Living Center P

	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?	2	2	2	2	2
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	62	1	62	0	62	62	2	69	1	69	0	69	1	69	0	69	1	69
	Left-Through		0							0				0				0	
	Through	828	1	**455**	0	828	**455**	26	922	1	**505**	0	922	1	**505**	0	922	1	**505**
	Through-Right		1							1				1				1	
	Right	81	0	81	0	81	81	0	88	0	88	0	88	0	88	0	88	0	88
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	109	1	**109**	3	112	**112**	0	118	1	**118**	3	121	1	**121**	0	121	1	**121**
	Left-Through		0							0				0				0	
	Through	760	1	445	0	760	445	29	852	1	496	0	852	1	496	0	852	1	496
	Through-Right		1							1				1				1	
	Right	129	0	129	0	129	129	0	140	0	140	0	140	0	140	0	140	0	140
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	118	1	**118**	0	118	**118**	0	128	1	**128**	0	128	1	**128**	0	128	1	**128**
	Left-Through		0							0				0				0	
	Through	605	1	605	1	606	606	21	676	1	676	1	677	1	677	0	677	1	677
	Through-Right		0							0				0				0	
	Right	64	1	33	0	64	33	2	71	1	37	0	71	1	37	0	71	1	37
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	93	1	93	0	93	93	0	101	1	101	0	101	1	101	0	101	1	101
	Left-Through		0							0				0				0	
	Through	590	1	**590**	-1	589	**589**	16	655	1	**655**	-1	654	1	**654**	0	654	1	**654**
	Through-Right		0							0				0				0	
	Right	113	1	59	-1	112	56	0	122	1	63	-1	121	1	61	0	121	1	61
	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:*	564	567	623	626	626
East-West:	708	707	783	782	782
SUM:	1272	1274	1406	1408	1408
VOLUME/CAPACITY *(V/C)* RATIO:	0.848	0.849	0.937	0.939	0.939
V/C LESS ATSAC/ATCS ADJUSTMENT:	0.748	0.749	0.837	0.839	0.839
LEVEL OF SERVICE (LOS):	**C**	**C**	**D**	**D**	**D**

REMARKS: ALT-C

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project:	0.002	Δ*v/c* after mitigation:	0.002
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Whitsett Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	City Trafic Counters	Date: 5/30/2012
CMA2	East-West Street:	Riverside Drive	Projection Year:	2016	Peak Hour:	AM	Reviewed by:		Project: Studio City Senior Living Center P

	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?	2	2	2	2	2
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	69	1	**69**	6	75	**75**	2	77	1	**77**	6	83	1	**83**	0	83	1	**83**
	Left-Through		0							0				0				0	
	Through	292	1	226	9	301	233	11	327	1	251	9	336	1	258	0	336	1	258
	Through-Right		1							1				1				1	
	Right	159	0	159	6	165	165	2	174	0	174	6	180	0	180	0	180	0	180
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	314	1	314	0	314	314	0	340	1	340	0	340	1	340	0	340	1	340
	Left-Through		0							0				0				0	
	Through	844	1	**536**	-2	842	**535**	13	927	1	**587**	-2	925	1	**586**	0	925	1	**586**
	Through-Right		1							1				1				1	
	Right	227	0	227	0	227	227	0	246	0	246	0	246	0	246	0	246	0	246
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	97	1	97	0	97	97	0	105	1	105	0	105	1	105	0	105	1	105
	Left-Through		0							0				0				0	
	Through	1058	1	**618**	0	1058	**617**	7	1152	1	**674**	0	1152	1	**673**	0	1152	1	**673**
	Through-Right		1							1				1				1	
	Right	178	0	178	-2	176	176	2	195	0	195	-2	193	0	193	0	193	0	193
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	127	1	**127**	-2	125	**125**	2	139	1	**139**	-2	137	1	**137**	0	137	1	**137**
	Left-Through		0							0				0				0	
	Through	830	1	430	0	830	430	22	920	1	476	0	920	1	476	0	920	1	476
	Through-Right		1							1				1				1	
	Right	30	0	30	0	30	30	0	32	0	32	0	32	0	32	0	32	0	32
	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:*	605	610	664	669	669
	East-West:	745	742	813	810	810
	SUM:	1350	1352	1477	1479	1479
VOLUME/CAPACITY *(V/C)* RATIO:		0.900	0.901	0.985	0.986	0.986
V/C LESS ATSAC/ATCS ADJUSTMENT:		0.800	0.801	0.885	0.886	0.886
LEVEL OF SERVICE (LOS):		C	D	D	D	D

REMARKS: ALT-C

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project:	0.001	Δ*v/c* after mitigation:	0.001
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Whitsett Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	City Trafic Counters	Date:	5/30/2012
CMA2	East-West Street:	Riverside Drive	Projection Year:	2016	Peak Hour:	PM	Reviewed by:		Project:	Studio City Senior Living Center P

	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?	2	2	2	2	2
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	133	1	133	-1	132	132	3	147	1	147	-1	146	1	146	0	146	1	146
	Left-Through		0							0				0				0	
	Through	601	1	368	-2	599	366	17	668	1	408	-2	666	1	407	0	666	1	407
	Through-Right		1							1				1				1	
	Right	134	0	134	-1	133	133	3	148	0	148	-1	147	0	147	0	147	0	147
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	95	1	95	0	95	95	0	103	1	103	0	103	1	103	0	103	1	103
	Left-Through		0							0				0				0	
	Through	389	1	244	5	394	246	14	435	1	271	5	440	1	273	0	440	1	273
	Through-Right		1							1				1				1	
	Right	98	0	98	0	98	98	0	106	0	106	0	106	0	106	0	106	0	106
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	168	1	168	0	168	168	0	182	1	182	0	182	1	182	0	182	1	182
	Left-Through		0							0				0				0	
	Through	839	1	491	0	839	493	12	920	1	539	0	920	1	541	0	920	1	541
	Through-Right		1							1				1				1	
	Right	143	0	143	3	146	146	3	158	0	158	3	161	0	161	0	161	0	161
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	114	1	114	3	117	117	3	126	1	126	3	129	1	129	0	129	1	129
	Left-Through		0							0				0				0	
	Through	1004	1	536	0	1004	536	6	1093	1	583	0	1093	1	583	0	1093	1	583
	Through-Right		1							1				1				1	
	Right	67	0	67	0	67	67	0	73	0	73	0	73	0	73	0	73	0	73
	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:*	463	461	511	510	510
East-West:	704	704	765	765	765
SUM:	1167	1165	1276	1275	1275
VOLUME/CAPACITY *(V/C)* RATIO:	0.778	0.777	0.851	0.850	0.850
V/C LESS ATSAC/ATCS ADJUSTMENT:	0.678	0.677	0.751	0.750	0.750
LEVEL OF SERVICE (LOS):	B	B	C	C	C

REMARKS: ALT-C

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project:	-0.001	Δ*v/c* after mitigation:	-0.001
Significant impacted?	NO	Fully mitigated?	N/A

LADOT Moving LA Forward

Level of Service Workheet
(Circular 212 Method)

CITY OF LOS ANGELES FOUNDED 1781

I/S #: CMA3	North-South Street: Whitsett Avenue	Year of Count: 2012	Ambient Growth: (%): 2.0	Conducted by: The Traffic Solution	Date: 5/30/2012
	East-West Street: Moorpark Street	Projection Year: 2016	Peak Hour: AM	Reviewed by:	Project: Studio City Senior Living Center P

	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?	2	2	2	2	2
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	92	1	**92**	-3	89	**89**	0	100	1	**100**	-3	97	1	**97**	0	97	1	**97**
	Left-Through		0							0				0				0	
	Through	235	1	147	13	248	154	20	274	1	171	13	287	1	178	0	287	1	178
	Through-Right		1							1				1				1	
	Right	58	0	58	1	59	59	4	67	0	67	1	68	0	68	0	68	0	68
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	195	1	195	0	195	195	2	213	1	213	0	213	1	213	0	213	1	213
	Left-Through		0							0				0				0	
	Through	937	1	**504**	-7	930	**501**	8	1022	1	**549**	-7	1015	1	**547**	0	1015	1	**547**
	Through-Right		1							1				1				1	
	Right	70	0	70	2	72	72	0	76	0	76	2	78	0	78	0	78	0	78
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	67	1	67	8	75	75	0	73	1	73	8	81	1	81	0	81	1	81
	Left-Through		0							0				0				0	
	Through	723	0	**940**	8	731	**943**	16	799	0	**1034**	8	807	0	**1037**	0	807	0	**1037**
	Through-Right		1							1				1				1	
	Right	217	0	0	-5	212	0	0	235	0	0	-5	230	0	0	0	230	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	59	1	**59**	-4	55	**55**	2	66	1	**66**	-4	62	1	**62**	0	62	1	**62**
	Left-Through		0							0				0				0	
	Through	459	0	508	2	461	510	26	523	0	577	2	525	0	579	0	525	0	579
	Through-Right		1							1				1				1	
	Right	49	0	0	0	49	0	1	54	0	0	0	54	0	0	0	54	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	

CRITICAL VOLUMES	EXISTING CONDITION	EXISTING PLUS PROJECT	FUTURE CONDITION W/O PROJECT	FUTURE CONDITION W/ PROJECT	FUTURE W/ PROJECT W/ MITIGATION
North-South:	596	590	649	644	644
East-West:	999	998	1100	1099	1099
SUM:	1595	1588	1749	1743	1743
VOLUME/CAPACITY *(V/C)* RATIO:	1.063	1.059	1.166	1.162	1.162
V/C LESS ATSAC/ATCS ADJUSTMENT:	0.963	0.959	1.066	1.062	1.062
LEVEL OF SERVICE (LOS):	E	E	F	F	F

REMARKS: ALT-C

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project: -0.004   Δ*v/c* after mitigation: -0.004

Significant impacted? NO   Fully mitigated? N/A

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Whitsett Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	The Traffic Solution	Date:	5/30/2012
CMA3	East-West Street:	Moorpark Street	Projection Year:	2016	Peak Hour:	PM	Reviewed by:		Project:	Studio City Senior Living Center P

	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?	2	2	2	2	2
Override Capacity	0	0	0	0	0

	EXISTING CONDITION			EXISTING PLUS PROJECT			FUTURE CONDITION W/O PROJECT				FUTURE CONDITION W/ PROJECT				FUTURE W/ PROJECT W/ MITIGATION			
MOVEMENT	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	155	1	155	-9	146	146	0	168	1	168	-9	159	1	159	0	159	1	159
Left-Through		0							0				0				0	
Through	649	1	388	-9	640	380	17	719	1	429	-9	710	1	421	0	710	1	421
Through-Right		1							1				1				1	
Right	126	0	126	-7	119	119	3	139	0	139	-7	132	0	132	0	132	0	132
Left-Through-Right		0							0				0				0	
Left-Right		0							0				0				0	
SOUTHBOUND Left	54	1	54	0	54	54	1	59	1	59	0	59	1	59	0	59	1	59
Left-Through		0							0				0				0	
Through	428	1	252	2	430	257	25	488	1	285	2	490	1	290	0	490	1	290
Through-Right		1							1				1				1	
Right	75	0	75	9	84	84	0	81	0	81	9	90	0	90	0	90	0	90
Left-Through-Right		0							0				0				0	
Left-Right		0							0				0				0	
EASTBOUND Left	112	1	112	5	117	117	0	121	1	121	5	126	1	126	0	126	1	126
Left-Through		0							0				0				0	
Through	489	0	581	5	494	578	21	550	0	650	5	555	0	647	0	555	0	647
Through-Right		1							1				1				1	
Right	92	0	0	-8	84	0	0	100	0	0	-8	92	0	0	0	92	0	0
Left-Through-Right		0							0				0				0	
Left-Right		0							0				0				0	
WESTBOUND Left	78	1	78	-4	74	74	5	89	1	89	-4	85	1	85	0	85	1	85
Left-Through		0							0				0				0	
Through	597	0	678	9	606	687	16	662	0	752	9	671	0	761	0	671	0	761
Through-Right		1							1				1				1	
Right	81	0	0	0	81	0	2	90	0	0	0	90	0	0	0	90	0	0
Left-Through-Right		0							0				0				0	
Left-Right		0							0				0				0	
CRITICAL VOLUMES North-South:			442			434				488				480				480
East-West:			790			804				873				887				887
SUM:			1232			1238				1361				1367				1367
VOLUME/CAPACITY (V/C) RATIO:			0.821			0.825				0.907				0.911				0.911
V/C LESS ATSAC/ATCS ADJUSTMENT:			0.721			0.725				0.807				0.811				0.811
LEVEL OF SERVICE (LOS):			C			C				D				D				D

REMARKS: ALT-C

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in v/c due to project:	0.004	Δv/c after mitigation:	0.004
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Workheet
(Circular 212 Method)

I/S #: CMA4					
North-South Street:	Whitsett Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0
East-West Street:	Ventura Boulevard	Projection Year:	2016	Peak Hour:	AM
Conducted by:	The Traffic Solution	Date:	5/30/2012		
Reviewed by:		Project:	Studio City Senior Living Center P		

	Existing Condition	Existing Plus Project	Future Condition W/O Project	Future Condition W/ Project	Future W/ Project W/ Mitigation
No. of Phases	4	4	4	4	4
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-- 3 EB-- 2 WB-- 0	NB-- 0 SB-- 3 EB-- 2 WB-- 0	NB-- 0 SB-- 3 EB-- 2 WB-- 0	NB-- 0 SB-- 3 EB-- 2 WB-- 0	NB-- 0 SB-- 3 EB-- 2 WB-- 0
ATSAC-1 or ATSAC+ATCS-2?	2	2	2	2	2
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	56	1	56	0	56	56	0	61	1	61	0	61	1	61	0	61	1	61
	Left-Through		0							0				0				0	
	Through	93	0	112	-1	92	111	0	101	0	122	-1	100	0	121	0	100	0	121
	Through-Right		1							1				1				1	
	Right	19	0	0	0	19	0	0	21	0	0	0	21	0	0	0	21	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	611	2	336	9	620	341	7	668	2	367	9	677	2	372	0	677	2	372
	Left-Through		0							0				0				0	
	Through	236	1	236	3	239	239	0	255	1	255	3	258	1	258	0	258	1	258
	Through-Right		0							0				0				0	
	Right	500	1	407	9	509	418	10	551	1	438	9	560	1	449	0	560	1	449
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	93	1	93	-2	91	91	12	113	1	113	-2	111	1	111	0	111	1	111
	Left-Through		0							0				0				0	
	Through	988	1	544	0	988	544	35	1104	1	606	0	1104	1	606	0	1104	1	606
	Through-Right		1							1				1				1	
	Right	100	0	100	0	100	100	0	108	0	108	0	108	0	108	0	108	0	108
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	17	1	17	0	17	17	0	18	1	18	0	18	1	18	0	18	1	18
	Left-Through		0							0				0				0	
	Through	764	1	451	0	764	450	57	884	1	519	0	884	1	518	0	884	1	518
	Through-Right		1							1				1				1	
	Right	137	0	137	-2	135	135	6	154	0	154	-2	152	0	152	0	152	0	152
	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:	463	474	499	510	510
East-West:	561	561	632	629	629
SUM:	1024	1035	1131	1139	1139
VOLUME/CAPACITY (V/C) RATIO:	0.745	0.753	0.823	0.828	0.828
V/C LESS ATSAC/ATCS ADJUSTMENT:	0.645	0.653	0.723	0.728	0.728
LEVEL OF SERVICE (LOS):	B	B	C	C	C

REMARKS: No right-turn on red 7:00 AM - 9:00 A

Version: 1i Beta; 8/4/2011 ALT-C

PROJECT IMPACT

Change in *v/c* due to project:	0.005	Δ*v/c* after mitigation:	0.005
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Whitsett Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	The Traffic Solution	Date:	5/30/2012
CMA4	East-West Street:	Ventura Boulevard	Projection Year:	2016	Peak Hour:	PM	Reviewed by:		Project:	Studio City Senior Living Center P

	Existing Condition	Existing Plus Project	Future Condition W/O Project	Future Condition W/ Project	Future W/ Project W/ Mitigation
No. of Phases	4	4	4	4	4
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-- 3 EB-- 0 WB-- 0	NB-- 0 SB-- 3 EB-- 0 WB-- 0	NB-- 0 SB-- 3 EB-- 0 WB-- 0	NB-- 0 SB-- 3 EB-- 0 WB-- 0	NB-- 0 SB-- 3 EB-- 0 WB-- 0
ATSAC-1 or ATSAC+ATCS-2?	2	2	2	2	2
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	108	1	108	0	108	108	0	117	1	117	0	117	1	117	0	117	1	117
	Left-Through		0							0				0				0	
	Through	173	0	191	1	174	192	0	187	0	206	1	188	0	207	0	188	0	207
	Through-Right		1							1				1				1	
	Right	18	0	0	0	18	0	0	19	0	0	0	19	0	0	0	19	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	249	2	137	-2	247	136	7	277	2	152	-2	275	2	151	0	275	2	151
	Left-Through		0							0				0				0	
	Through	147	1	147	-1	146	146	0	159	1	159	-1	158	1	158	0	158	1	158
	Through-Right		0							0				0				0	
	Right	182	1	0	-2	180	0	19	216	1	0	-2	214	1	0	0	214	1	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	232	1	232	5	237	237	17	268	1	268	5	273	1	273	0	273	1	273
	Left-Through		0							0				0				0	
	Through	1026	1	580	0	1026	580	53	1164	1	654	0	1164	1	654	0	1164	1	654
	Through-Right		1							1				1				1	
	Right	133	0	133	0	133	133	0	144	0	144	0	144	0	144	0	144	0	144
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	26	1	26	0	26	26	0	28	1	28	0	28	1	28	0	28	1	28
	Left-Through		0							0				0				0	
	Through	1195	1	719	0	1195	722	42	1336	1	804	0	1336	1	806	0	1336	1	806
	Through-Right		1							1				1				1	
	Right	243	0	243	5	248	248	8	271	0	271	5	276	0	276	0	276	0	276
	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:*	328	328	358	358	358
East-West:	951	959	1072	1079	1079
SUM:	1279	1287	1430	1437	1437
VOLUME/CAPACITY *(V/C)* RATIO:	0.930	0.936	1.040	1.045	1.045
V/C LESS ATSAC/ATCS ADJUSTMENT:	0.830	0.836	0.940	0.945	0.945
LEVEL OF SERVICE (LOS):	D	D	E	E	E

REMARKS: ALT-C

Version: 1i Beta; 8/4/2011 ALT-C

PROJECT IMPACT

Change in *v/c* due to project:	0.005	Δ*v/c* after mitigation:	0.005
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Worksheet
(Circular 212 Method)

LADOT Moving LA Forward

I/S #:	North-South Street:	Laurel Canyon Boulevard	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	City Trafic Counters	Date:	5/30/2012
CMA5	East-West Street:	Moorpark Street	Projection Year:	2016	Peak Hour:	AM	Reviewed by:		Project:	Studio City Senior Living Center P

	Existing Condition				Existing Plus Project				Future Condition W/O Project				Future Condition W/ Project				Future W/ Project W/ Mitigation			
No. of Phases				4				4				4				4				4
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--	3	EB--	0	WB--	3	EB--	0	WB--	3	EB--	0	WB--	3	EB--	0	WB--	3
ATSAC-1 or ATSAC+ATCS-2?				2				2				2				2				2
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	74	1	74	0	74	74	12	92	1	92	0	92	1	92	0	92	1	92
	Left-Through		0							0				0				0	
	Through	1000	1	564	0	1000	564	167	1249	1	693	0	1249	1	693	0	1249	1	693
	Through-Right		1							1				1				1	
	Right	127	0	127	0	127	127	0	137	0	137	0	137	0	137	0	137	0	137
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	140	1	140	0	140	140	9	161	1	161	0	161	1	161	0	161	1	161
	Left-Through		0							0				0				0	
	Through	1094	1	661	0	1094	660	79	1263	1	761	0	1263	1	760	0	1263	1	760
	Through-Right		1							1				1				1	
	Right	228	0	228	-2	226	226	11	258	0	258	-2	256	0	256	0	256	0	256
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	209	1	209	6	215	215	19	245	1	245	6	251	1	251	0	251	1	251
	Left-Through		0							0				0				0	
	Through	700	1	425	3	703	426	1	759	1	461	3	762	1	463	0	762	1	463
	Through-Right		1							1				1				1	
	Right	149	0	149	0	149	149	2	163	0	163	0	163	0	163	0	163	0	163
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	138	1	138	0	138	138	0	149	1	149	0	149	1	149	0	149	1	149
	Left-Through		0							0				0				0	
	Through	407	1	407	-1	406	406	0	441	1	441	-1	440	1	440	0	440	1	440
	Through-Right		0							0				0				0	
	Right	97	1	0	0	97	0	16	121	1	0	0	121	1	0	0	121	1	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
CRITICAL VOLUMES			North-South:	735		North-South:	734			North-South:	854			North-South:	854			North-South:	854
			East-West:	616		East-West:	621			East-West:	686			East-West:	691			East-West:	691
			SUM:	1351		SUM:	1355			SUM:	1540			SUM:	1545			SUM:	1545
VOLUME/CAPACITY (V/C) RATIO:				0.983			0.985				1.120				1.124				1.124
V/C LESS ATSAC/ATCS ADJUSTMENT:				0.883			0.885				1.020				1.024				1.024
LEVEL OF SERVICE (LOS):				D			D				F				F				F

REMARKS: Westbound overlap phase.

Version: 1i Beta; 8/4/2011 ALT-C

PROJECT IMPACT

Change in *v/c* due to project:	0.004	Δ*v/c* after mitigation:	0.004
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Laurel Canyon Boulevard	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	City Trafic Counters	Date:	5/30/2012
CMA5	East-West Street:	Moorpark Street	Projection Year:	2016	Peak Hour:	PM	Reviewed by:		Project:	Studio City Senior Living Center P

	Existing Condition	Existing Plus Project	Future Condition W/O Project	Future Condition W/ Project	Future W/ Project W/ Mitigation
No. of Phases	4	4	4	4	4
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-- 3	NB-- 0 SB-- 0 / EB-- 0 WB-- 3	NB-- 0 SB-- 0 / EB-- 0 WB-- 3	NB-- 0 SB-- 0 / EB-- 0 WB-- 3	NB-- 0 SB-- 0 / EB-- 0 WB-- 3
ATSAC-1 or ATSAC+ATCS-2?	2	2	2	2	2
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	88	1	88	0	88	88	5	100	1	100	0	100	1	100	0	100	1	100
	Left-Through		0							0				0				0	
	Through	1423	1	761	0	1423	761	72	1612	1	859	0	1612	1	859	0	1612	1	859
	Through-Right		1							1				1				1	
	Right	98	0	98	0	98	98	0	106	0	106	0	106	0	106	0	106	0	106
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	145	1	145	0	145	145	8	165	1	165	0	165	1	165	0	165	1	165
	Left-Through		0							0				0				0	
	Through	1244	1	749	0	1244	751	104	1451	1	869	0	1451	1	871	0	1451	1	871
	Through-Right		1							1				1				1	
	Right	254	0	254	3	257	257	12	287	0	287	3	290	0	290	0	290	0	290
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	186	1	186	-1	185	185	8	209	1	209	-1	208	1	208	0	208	1	208
	Left-Through		0							0				0				0	
	Through	485	1	290	-1	484	290	1	526	1	320	-1	525	1	320	0	525	1	320
	Through-Right		1							1				1				1	
	Right	95	0	95	0	95	95	11	114	0	114	0	114	0	114	0	114	0	114
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	170	1	170	0	170	170	0	184	1	184	0	184	1	184	0	184	1	184
	Left-Through		0							0				0				0	
	Through	424	1	424	1	425	425	1	460	1	460	1	461	1	461	0	461	1	461
	Through-Right		0							0				0				0	
	Right	147	1	2	0	147	2	5	164	1	0	0	164	1	0	0	164	1	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:	906	906	1024	1024	1024
East-West:	610	610	669	669	669
SUM:	1516	1516	1693	1693	1693
VOLUME/CAPACITY (V/C) RATIO:	1.103	1.103	1.231	1.231	1.231
V/C LESS ATSAC/ATCS ADJUSTMENT:	1.003	1.003	1.131	1.131	1.131
LEVEL OF SERVICE (LOS):	F	F	F	F	F

REMARKS: Westbound overlap phase.

Version: 1i Beta; 8/4/2011 ALT-C

PROJECT IMPACT

Change in v/c due to project:	0.000	Δv/c after mitigation:	0.000
Significant impacted?	NO	Fully mitigated?	N/A

APPENDIX X-3

PROJECT ALTERNATIVE D
CMA DATA WORKSHEETS
WEEKDAY AM AND PM PEAK HOURS

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Coldwater Canyon Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	City Trafic Counters	Date:	5/30/2012
CMA1	East-West Street:	Moorpark Street	Projection Year:	2016	Peak Hour:	AM	Reviewed by:		Project:	Studio City Senior Living Center P

	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?	2	2	2	2	2
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	34	1	34	0	34	34	2	39	1	39	0	39	1	39	0	39	1	39
	Left-Through		0							0				0				0	
	Through	587	1	**335**	0	587	**335**	21	656	1	**373**	0	656	1	**373**	0	656	1	**373**
	Through-Right		1							1				1				1	
	Right	83	0	83	0	83	83	0	90	0	90	0	90	0	90	0	90	0	90
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	111	1	**111**	-1	110	**110**	0	120	1	**120**	-1	119	1	**119**	0	119	1	**119**
	Left-Through		0							0				0				0	
	Through	482	1	302	0	482	302	18	540	1	336	0	540	1	336	0	540	1	336
	Through-Right		1							1				1				1	
	Right	121	0	121	0	121	121	0	131	0	131	0	131	0	131	0	131	0	131
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	175	1	175	0	175	175	0	189	1	189	0	189	1	189	0	189	1	189
	Left-Through		0							0				0				0	
	Through	795	1	**795**	0	795	**795**	16	877	1	**877**	0	877	1	**877**	0	877	1	**877**
	Through-Right		0							0				0				0	
	Right	42	1	25	0	42	25	1	46	1	27	0	46	1	27	0	46	1	27
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	47	1	**47**	0	47	**47**	0	51	1	**51**	0	51	1	**51**	0	51	1	**51**
	Left-Through		0							0				0				0	
	Through	422	1	422	0	422	422	26	483	1	483	0	483	1	483	0	483	1	483
	Through-Right		0							0				0				0	
	Right	84	1	29	1	85	30	0	91	1	31	1	92	1	33	0	92	1	33
	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:	446	North-South:	445	North-South:	493	North-South:	492	North-South:	492
	East-West:	842	East-West:	842	East-West:	928	East-West:	928	East-West:	928
	SUM:	1288	SUM:	1287	SUM:	1421	SUM:	1420	SUM:	1420
VOLUME/CAPACITY (V/C) RATIO:		0.859		0.858		0.947		0.947		0.947
V/C LESS ATSAC/ATCS ADJUSTMENT:		0.759		0.758		0.847		0.847		0.847
LEVEL OF SERVICE (LOS):		C		C		D		D		D

REMARKS: ALT-D

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in v/c due to project:	0.000	Δv/c after mitigation:	0.000
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Coldwater Canyon Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	City Trafic Counters	Date:	5/30/2012
CMA1	East-West Street:	Moorpark Street	Projection Year:	2016	Peak Hour:	PM	Reviewed by:		Project:	Studio City Senior Living Center P

	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?	2	2	2	2	2
Override Capacity	0	0	0	0	0

		EXISTING CONDITION			EXISTING PLUS PROJECT			FUTURE CONDITION W/O PROJECT				FUTURE CONDITION W/ PROJECT				FUTURE W/ PROJECT W/ MITIGATION			
	MOVEMENT	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	62	1	62	0	62	62	2	69	1	69	0	69	1	69	0	69	1	69
	Left-Through		0							0				0				0	
	Through	828	1	**455**	0	828	**455**	26	922	1	**505**	0	922	1	**505**	0	922	1	**505**
	Through-Right		1							1				1				1	
	Right	81	0	81	0	81	81	0	88	0	88	0	88	0	88	0	88	0	88
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	109	1	**109**	2	111	**111**	0	118	1	**118**	2	120	1	**120**	0	120	1	**120**
	Left-Through		0							0				0				0	
	Through	760	1	445	0	760	445	29	852	1	496	0	852	1	496	0	852	1	496
	Through-Right		1							1				1				1	
	Right	129	0	129	0	129	129	0	140	0	140	0	140	0	140	0	140	0	140
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	118	1	**118**	0	118	**118**	0	128	1	**128**	0	128	1	**128**	0	128	1	**128**
	Left-Through		0							0				0				0	
	Through	605	1	605	1	606	606	21	676	1	676	1	677	1	677	0	677	1	677
	Through-Right		0							0				0				0	
	Right	64	1	33	0	64	33	2	71	1	37	0	71	1	37	0	71	1	37
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	93	1	93	0	93	93	0	101	1	101	0	101	1	101	0	101	1	101
	Left-Through		0							0				0				0	
	Through	590	1	**590**	1	591	**591**	16	655	1	**655**	1	656	1	**656**	0	656	1	**656**
	Through-Right		0							0				0				0	
	Right	113	1	59	3	116	61	0	122	1	63	3	125	1	65	0	125	1	65
	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:*	564	566	623	625	625
East-West:	708	709	783	784	784
SUM:	1272	1275	1406	1409	1409
VOLUME/CAPACITY *(V/C)* RATIO:	0.848	0.850	0.937	0.939	0.939
V/C LESS ATSAC/ATCS ADJUSTMENT:	0.748	0.750	0.837	0.839	0.839
LEVEL OF SERVICE (LOS):	C	C	D	D	D

REMARKS: ALT-C

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project:	0.002	Δ*v/c* after mitigation:	0.002
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Whitsett Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	City Trafic Counters	Date:	5/30/2012
CMA2	East-West Street:	Riverside Drive	Projection Year:	2016	Peak Hour:	AM	Reviewed by:		Project:	Studio City Senior Living Center P

	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?	2	2	2	2	2
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	69	1	**69**	1	70	**70**	2	77	1	**77**	1	78	1	**78**	0	78	1	**78**
	Left-Through		0							0				0				0	
	Through	292	1	226	1	293	227	11	327	1	251	1	328	1	252	0	328	1	252
	Through-Right		1							1				1				1	
	Right	159	0	159	1	160	160	2	174	0	174	1	175	0	175	0	175	0	175
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	314	1	314	0	314	314	0	340	1	340	0	340	1	340	0	340	1	340
	Left-Through		0							0				0				0	
	Through	844	1	**536**	0	844	**536**	13	927	1	**587**	0	927	1	**587**	0	927	1	**587**
	Through-Right		1							1				1				1	
	Right	227	0	227	0	227	227	0	246	0	246	0	246	0	246	0	246	0	246
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	97	1	97	0	97	97	0	105	1	105	0	105	1	105	0	105	1	105
	Left-Through		0							0				0				0	
	Through	1058	1	**618**	0	1058	**618**	7	1152	1	**674**	0	1152	1	**673**	0	1152	1	**673**
	Through-Right		1							1				1				1	
	Right	178	0	178	-1	177	177	2	195	0	195	-1	194	0	194	0	194	0	194
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	127	1	**127**	-1	126	**126**	2	139	1	**139**	-1	138	1	**138**	0	138	1	**138**
	Left-Through		0							0				0				0	
	Through	830	1	430	0	830	430	22	920	1	476	0	920	1	476	0	920	1	476
	Through-Right		1							1				1				1	
	Right	30	0	30	0	30	30	0	32	0	32	0	32	0	32	0	32	0	32
	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:*	605	606	664	665	665
East-West:	745	744	813	811	811
SUM:	1350	1350	1477	1476	1476
VOLUME/CAPACITY *(V/C)* RATIO:	0.900	0.900	0.985	0.984	0.984
V/C LESS ATSAC/ATCS ADJUSTMENT:	0.800	0.800	0.885	0.884	0.884
LEVEL OF SERVICE (LOS):	C	C	D	D	D

REMARKS: ALT-D

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project:	-0.001	Δ*v/c* after mitigation:	-0.001
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Whitsett Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	City Trafic Counters	Date:	5/30/2012
CMA2	East-West Street:	Riverside Drive	Projection Year:	2016	Peak Hour:	PM	Reviewed by:		Project:	Studio City Senior Living Center P

	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?	2	2	2	2	2
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	133	1	133	3	136	136	3	147	1	147	3	150	1	150	0	150	1	150
	Left-Through		0							0				0				0	
	Through	601	1	**368**	4	605	**371**	17	668	1	**408**	4	672	1	**412**	0	672	1	**412**
	Through-Right		1							1				1				1	
	Right	134	0	134	3	137	137	3	148	0	148	3	151	0	151	0	151	0	151
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	95	1	**95**	0	95	**95**	0	103	1	**103**	0	103	1	**103**	0	103	1	**103**
	Left-Through		0							0				0				0	
	Through	389	1	244	5	394	246	14	435	1	271	5	440	1	273	0	440	1	273
	Through-Right		1							1				1				1	
	Right	98	0	98	0	98	98	0	106	0	106	0	106	0	106	0	106	0	106
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	168	1	**168**	0	168	**168**	0	182	1	**182**	0	182	1	**182**	0	182	1	**182**
	Left-Through		0							0				0				0	
	Through	839	1	491	0	839	492	12	920	1	539	0	920	1	540	0	920	1	540
	Through-Right		1							1				1				1	
	Right	143	0	143	2	145	145	3	158	0	158	2	160	0	160	0	160	0	160
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	114	1	114	2	116	116	3	126	1	126	2	128	1	128	0	128	1	128
	Left-Through		0							0				0				0	
	Through	1004	1	**536**	0	1004	**536**	6	1093	1	**583**	0	1093	1	**583**	0	1093	1	**583**
	Through-Right		1							1				1				1	
	Right	67	0	67	0	67	67	0	73	0	73	0	73	0	73	0	73	0	73
	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:*	463	466	511	515	515
	East-West:	704	704	765	765	765
	SUM:	1167	1170	1276	1280	1280
VOLUME/CAPACITY *(V/C)* RATIO:		0.778	0.780	0.851	0.853	0.853
V/C LESS ATSAC/ATCS ADJUSTMENT:		0.678	0.680	0.751	0.753	0.753
LEVEL OF SERVICE (LOS):		B	B	C	C	C

REMARKS: ALT-D

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project:	0.002	Δ*v/c* after mitigation:	0.002
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Whitsett Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	The Traffic Solution	Date:	5/30/2012
CMA3	East-West Street:	Moorpark Street	Projection Year:	2016	Peak Hour:	AM	Reviewed by:		Project:	Studio City Senior Living Center P

	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?				2				2				2				2				2
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	92	1	92	1	93	93	0	100	1	100	1	101	1	101	0	101	1	101
Left-Through		0							0				0				0	
Through	235	1	147	3	238	147	20	274	1	171	3	277	1	171	0	277	1	171
Through-Right		1							1				1				1	
Right	58	0	58	-3	55	55	4	67	0	67	-3	64	0	64	0	64	0	64
Left-Through-Right		0							0				0				0	
Left-Right		0							0				0				0	
SOUTHBOUND Left	195	1	195	0	195	195	2	213	1	213	0	213	1	213	0	213	1	213
Left-Through		0							0				0				0	
Through	937	1	504	-2	935	503	8	1022	1	549	-2	1020	1	548	0	1020	1	548
Through-Right		1							1				1				1	
Right	70	0	70	0	70	70	0	76	0	76	0	76	0	76	0	76	0	76
Left-Through-Right		0							0				0				0	
Left-Right		0							0				0				0	
EASTBOUND Left	67	1	67	0	67	67	0	73	1	73	0	73	1	73	0	73	1	73
Left-Through		0							0				0				0	
Through	723	0	940	0	723	940	16	799	0	1034	0	799	0	1034	0	799	0	1034
Through-Right		1							1				1				1	
Right	217	0	0	0	217	0	0	235	0	0	0	235	0	0	0	235	0	0
Left-Through-Right		0							0				0				0	
Left-Right		0							0				0				0	
WESTBOUND Left	59	1	59	-5	54	54	2	66	1	66	-5	61	1	61	0	61	1	61
Left-Through		0							0				0				0	
Through	459	0	508	0	459	508	26	523	0	577	0	523	0	577	0	523	0	577
Through-Right		1							1				1				1	
Right	49	0	0	0	49	0	1	54	0	0	0	54	0	0	0	54	0	0
Left-Through-Right		0							0				0				0	
Left-Right		0							0				0				0	
CRITICAL VOLUMES		*North-South:*	596		*North-South:*	596			*North-South:*	649			*North-South:*	649			*North-South:*	649
		East-West:	999		*East-West:*	994			*East-West:*	1100			*East-West:*	1095			*East-West:*	1095
		SUM:	1595		*SUM:*	1590			*SUM:*	1749			*SUM:*	1744			*SUM:*	1744
VOLUME/CAPACITY *(V/C)* RATIO:			1.063			1.060				1.166				1.163				1.163
V/C LESS ATSAC/ATCS ADJUSTMENT:			0.963			0.960				1.066				1.063				1.063
LEVEL OF SERVICE (LOS):			E			E				F				F				F

REMARKS: ALT-D

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project:	-0.003	Δ*v/c* after mitigation:	-0.003
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Worksheet
(Circular 212 Method)

I/S #:	North-South Street:	Whitsett Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	The Traffic Solution	Date:	5/30/2012
CMA3	East-West Street:	Moorpark Street	Projection Year:	2016	Peak Hour:	PM	Reviewed by:		Project:	Studio City Senior Living Center P

	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?	2	2	2	2	2
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	155	1	155	4	159	159	0	168	1	168	4	172	1	172	0	172	1	172
	Left-Through		0							0				0				0	
	Through	649	1	**388**	9	658	**388**	17	719	1	**429**	9	728	1	**429**	0	728	1	**429**
	Through-Right		1							1				1				1	
	Right	126	0	126	-9	117	117	3	139	0	139	-9	130	0	130	0	130	0	130
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	54	1	**54**	0	54	**54**	1	59	1	**59**	0	59	1	**59**	0	59	1	**59**
	Left-Through		0							0				0				0	
	Through	428	1	252	9	437	256	25	488	1	285	9	497	1	289	0	497	1	289
	Through-Right		1							1				1				1	
	Right	75	0	75	0	75	75	0	81	0	81	0	81	0	81	0	81	0	81
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	112	1	**112**	0	112	**112**	0	121	1	**121**	0	121	1	**121**	0	121	1	**121**
	Left-Through		0							0				0				0	
	Through	489	0	581	0	489	586	21	550	0	650	0	550	0	655	0	550	0	655
	Through-Right		1							1				1				1	
	Right	92	0	0	5	97	0	0	100	0	0	5	105	0	0	0	105	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	78	1	78	-8	70	70	5	89	1	89	-8	81	1	81	0	81	1	81
	Left-Through		0							0				0				0	
	Through	597	0	**678**	0	597	**678**	16	662	0	**752**	0	662	0	**752**	0	662	0	**752**
	Through-Right		1							1				1				1	
	Right	81	0	0	0	81	0	2	90	0	0	0	90	0	0	0	90	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:*	442	442	488	488	488
East-West:	790	790	873	873	873
SUM:	1232	1232	1361	1361	1361
VOLUME/CAPACITY *(V/C)* RATIO:	0.821	0.821	0.907	0.907	0.907
V/C LESS ATSAC/ATCS ADJUSTMENT:	0.721	0.721	0.807	0.807	0.807
LEVEL OF SERVICE (LOS):	C	C	D	D	D

REMARKS: ALT-D

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project:	0.000	Δ*v/c* after mitigation:	0.000
Significant impacted?	NO	Fully mitigated?	N/A

LADOT Moving LA Forward

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Whitsett Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	The Traffic Solution	Date:	5/30/2012
CMA4	East-West Street:	Ventura Boulevard	Projection Year:	2016	Peak Hour:	AM	Reviewed by:		Project:	Studio City Senior Living Center P

	Existing Condition					Existing Plus Project					Future Condition W/O Project					Future Condition W/ Project					Future W/ Project W/ Mitigation				
No. of Phases					4					4					4					4					4
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--		3	NB--	0	SB--		3	NB--	0	SB--		3	NB--	0	SB--		3	NB--	0	SB--		3
	EB--	2	WB--		0	EB--	2	WB--		0	EB--	2	WB--		0	EB--	2	WB--		0	EB--	2	WB--		0
ATSAC-1 or ATSAC+ATCS-2?					2					2					2					2					2
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	56	1	56	0	56	56	0	61	1	61	0	61	1	61	0	61	1	61
	Left-Through		0							0				0				0	
	Through	93	0	112	-2	91	112	0	101	0	122	-2	99	0	122	0	99	0	122
	Through-Right		1							1				1				1	
	Right	19	0	0	2	21	0	0	21	0	0	2	23	0	0	0	23	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	611	2	336	13	624	343	7	668	2	367	13	681	2	375	0	681	2	375
	Left-Through		0							0				0				0	
	Through	236	1	236	-1	235	235	0	255	1	255	-1	254	1	254	0	254	1	254
	Through-Right		0							0				0				0	
	Right	500	1	407	-3	497	409	10	551	1	438	-3	548	1	440	0	548	1	440
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	93	1	93	-5	88	88	12	113	1	113	-5	108	1	108	0	108	1	108
	Left-Through		0							0				0				0	
	Through	988	1	544	5	993	547	35	1104	1	606	5	1109	1	609	0	1109	1	609
	Through-Right		1							1				1				1	
	Right	100	0	100	0	100	100	0	108	0	108	0	108	0	108	0	108	0	108
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	17	1	17	1	18	18	0	18	1	18	1	19	1	19	0	19	1	19
	Left-Through		0							0				0				0	
	Through	764	1	451	4	768	458	57	884	1	519	4	888	1	526	0	888	2	444
	Through-Right		1							1				1				0	
	Right	137	0	137	10	147	147	6	154	0	154	10	164	0	164	0	164	1	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
CRITICAL VOLUMES			North-South:	463		North-South:	465			North-South:	499			North-South:	501			North-South:	501
			East-West:	561		East-West:	565			East-West:	632			East-West:	634			East-West:	628
			SUM:	1024		SUM:	1030			SUM:	1131			SUM:	1135			SUM:	1129
VOLUME/CAPACITY (V/C) RATIO:				0.745			0.749				0.823				0.825				0.821
V/C LESS ATSAC/ATCS ADJUSTMENT:				0.645			0.649				0.723				0.725				0.721
LEVEL OF SERVICE (LOS):				B			B				C				C				C

REMARKS: No right-turn on red 7:00 AM - 9:00 A

Version: 1i Beta; 8/4/2011 ALT-D

PROJECT IMPACT

Change in *v/c* due to project:	0.002	Δ*v/c* after mitigation:	-0.002
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Whitsett Avenue	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	The Traffic Solution	Date:	5/30/2012
CMA4	East-West Street:	Ventura Boulevard	Projection Year:	2016	Peak Hour:	PM	Reviewed by:		Project:	Studio City Senior Living Center P

No. of Phases		4	4	4	4	4
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--	3	NB-- 0 / SB-- 3	NB-- 0 / SB-- 3	NB-- 0 / SB-- 3	NB-- 0 / SB-- 3
	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?		2	2	2	2	2
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	108	1	108	0	108	108	0	117	1	117	0	117	1	117	0	117	1	117
	Left-Through		0							0				0				0	
	Through	173	0	191	-3	170	192	0	187	0	206	-3	184	0	207	0	184	0	207
	Through-Right		1							1				1				1	
	Right	18	0	0	4	22	0	0	19	0	0	4	23	0	0	0	23	0	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	249	2	137	33	282	155	7	277	2	152	33	310	2	171	0	310	2	171
	Left-Through		0							0				0				0	
	Through	147	1	147	-3	144	144	0	159	1	159	-3	156	1	156	0	156	1	156
	Through-Right		0							0				0				0	
	Right	182	1	0	-9	173	0	19	216	1	0	-9	207	1	0	0	207	1	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	232	1	232	-8	224	224	17	268	1	268	-8	260	1	260	0	260	1	260
	Left-Through		0							0				0				0	
	Through	1026	1	580	13	1039	586	53	1164	1	654	13	1177	1	661	0	1177	1	661
	Through-Right		1							1				1				1	
	Right	133	0	133	0	133	133	0	144	0	144	0	144	0	144	0	144	0	144
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	26	1	26	4	30	30	0	28	1	28	4	32	1	32	0	32	1	32
	Left-Through		0							0				0				0	
	Through	1195	1	719	13	1208	743	42	1336	1	804	13	1349	1	828	0	1349	2	675
	Through-Right		1							1				1				0	
	Right	243	0	243	35	278	278	8	271	0	271	35	306	0	306	0	306	1	221
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	

		Existing	Existing Plus Project	Future w/o Project	Future w/ Project	Future w/ Project w/ Mitigation
CRITICAL VOLUMES	*North-South:*	328	347	358	378	378
	East-West:	951	967	1072	1088	935
	SUM:	1279	1314	1430	1466	1313
VOLUME/CAPACITY *(V/C)* RATIO:		0.930	0.956	1.040	1.066	0.955
V/C LESS ATSAC/ATCS ADJUSTMENT:		0.830	0.856	0.940	0.966	0.855
LEVEL OF SERVICE (LOS):		D	D	E	E	D

REMARKS: ALT-D

Version: 1i Beta; 8/4/2011

PROJECT IMPACT

Change in *v/c* due to project:	0.026	Δ*v/c* after mitigation:	-0.085
Significant impacted?	YES	Fully mitigated?	YES

Level of Service Workheet
(Circular 212 Method)

I/S #:	North-South Street:	Laurel Canyon Boulevard	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	City Trafic Counters	Date:	5/30/2012
CMA5	East-West Street:	Moorpark Street	Projection Year:	2016	Peak Hour:	AM	Reviewed by:		Project:	Studio City Senior Living Center P

	Existing Condition				Existing Plus Project				Future Condition W/O Project				Future Condition W/ Project				Future W/ Project W/ Mitigation			
No. of Phases				4				4				4				4				4
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--	3	EB--	0	WB--	3	EB--	0	WB--	3	EB--	0	WB--	3	EB--	0	WB--	3
ATSAC-1 or ATSAC+ATCS-2?				2				2				2				2				2
Override Capacity				0				0				0				0				0

		EXISTING CONDITION			EXISTING PLUS PROJECT			FUTURE CONDITION W/O PROJECT				FUTURE CONDITION W/ PROJECT				FUTURE W/ PROJECT W/ MITIGATION			
	MOVEMENT	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	74	1	74	0	74	74	12	92	1	92	0	92	1	92	0	92	1	92
	Left-Through		0							0				0				0	
	Through	1000	1	564	3	1003	566	167	1249	1	693	3	1252	1	695	0	1252	1	695
	Through-Right		1							1				1				1	
	Right	127	0	127	1	128	128	0	137	0	137	1	138	0	138	0	138	0	138
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	140	1	140	0	140	140	9	161	1	161	0	161	1	161	0	161	1	161
	Left-Through		0							0				0				0	
	Through	1094	1	661	3	1097	661	79	1263	1	761	3	1266	1	760	0	1266	1	760
	Through-Right		1							1				1				1	
	Right	228	0	228	-4	224	224	11	258	0	258	-4	254	0	254	0	254	0	254
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	209	1	209	-2	207	207	19	245	1	245	-2	243	1	243	0	243	1	243
	Left-Through		0							0				0				0	
	Through	700	1	425	-1	699	424	1	759	1	461	-1	758	1	461	0	758	1	461
	Through-Right		1							1				1				1	
	Right	149	0	149	0	149	149	2	163	0	163	0	163	0	163	0	163	0	163
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	138	1	138	2	140	140	0	149	1	149	2	151	1	151	0	151	1	151
	Left-Through		0							0				0				0	
	Through	407	1	407	-2	405	405	0	441	1	441	-2	439	1	439	0	439	1	439
	Through-Right		0							0				0				0	
	Right	97	1	0	0	97	0	16	121	1	0	0	121	1	0	0	121	1	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
CRITICAL VOLUMES			*North-South:*	735		*North-South:*	735			*North-South:*	854			*North-South:*	856			*North-South:*	856
			East-West:	616		*East-West:*	612			*East-West:*	686			*East-West:*	682			*East-West:*	682
			SUM:	1351		*SUM:*	1347			*SUM:*	1540			*SUM:*	1538			*SUM:*	1538
VOLUME/CAPACITY *(V/C)* RATIO:				0.983			0.980				1.120				1.119				1.119
V/C LESS ATSAC/ATCS ADJUSTMENT:				0.883			0.880				1.020				1.019				1.019
LEVEL OF SERVICE (LOS):				D			D				F				F				F

REMARKS: Westbound overlap phase.

Version: 1i Beta; 8/4/2011 ALT-D

PROJECT IMPACT

Change in *v/c* due to project:	-0.001	Δ*v/c* after mitigation:	-0.001
Significant impacted?	NO	Fully mitigated?	N/A

Level of Service Worksheet
(Circular 212 Method)

I/S #:	North-South Street:	Laurel Canyon Boulevard	Year of Count:	2012	Ambient Growth: (%):	2.0	Conducted by:	City Trafic Counters	Date:	5/30/2012
CMA5	East-West Street:	Moorpark Street	Projection Year:	2016	Peak Hour:	PM	Reviewed by:		Project:	Studio City Senior Living Center P

	Existing Condition			Existing Plus Project			Future Condition W/O Project			Future Condition W/ Project			Future W/ Project W/ Mitigation		
No. of Phases			4			4			4			4			4
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--	3	EB-- 0	WB--	3	EB-- 0	WB--	3	EB-- 0	WB--	3	EB-- 0	WB--	3
ATSAC-1 or ATSAC+ATCS-2?			2			2			2			2			2
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	88	1	88	0	88	88	5	100	1	100	0	100	1	100	0	100	1	100
	Left-Through		0							0				0				0	
	Through	1423	1	761	9	1432	767	72	1612	1	859	9	1621	1	866	0	1621	1	866
	Through-Right		1							1				1				1	
	Right	98	0	98	4	102	102	0	106	0	106	4	110	0	110	0	110	0	110
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
SOUTHBOUND	Left	145	1	145	0	145	145	8	165	1	165	0	165	1	165	0	165	1	165
	Left-Through		0							0				0				0	
	Through	1244	1	749	8	1252	750	104	1451	1	869	8	1459	1	870	0	1459	1	870
	Through-Right		1							1				1				1	
	Right	254	0	254	-6	248	248	12	287	0	287	-6	281	0	281	0	281	0	281
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
EASTBOUND	Left	186	1	186	-6	180	180	8	209	1	209	-6	203	1	203	0	203	1	203
	Left-Through		0							0				0				0	
	Through	485	1	290	-3	482	289	1	526	1	320	-3	523	1	319	0	523	1	319
	Through-Right		1							1				1				1	
	Right	95	0	95	0	95	95	11	114	0	114	0	114	0	114	0	114	0	114
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
WESTBOUND	Left	170	1	170	4	174	174	0	184	1	184	4	188	1	188	0	188	1	188
	Left-Through		0							0				0				0	
	Through	424	1	424	-3	421	421	1	460	1	460	-3	457	1	457	0	457	1	457
	Through-Right		0							0				0				0	
	Right	147	1	2	0	147	2	5	164	1	0	0	164	1	0	0	164	1	0
	Left-Through-Right		0							0				0				0	
	Left-Right		0							0				0				0	
CRITICAL VOLUMES			North-South:	906		North-South:	912			North-South:	1024			North-South:	1031			North-South:	1031
			East-West:	610		East-West:	601			East-West:	669			East-West:	660			East-West:	660
			SUM:	1516		SUM:	1513			SUM:	1693			SUM:	1691			SUM:	1691
VOLUME/CAPACITY (V/C) RATIO:				1.103			1.100				1.231				1.230				1.230
V/C LESS ATSAC/ATCS ADJUSTMENT:				1.003			1.000				1.131				1.130				1.130
LEVEL OF SERVICE (LOS):				F			F				F				F				F

REMARKS: Westbound overlap phase.

Version: 1i Beta; 8/4/2011 ALT-D

PROJECT IMPACT

Change in *v/c* due to project:	-0.001	Δ*v/c* after mitigation:	-0.001
Significant impacted?	NO	Fully mitigated?	N/A

APPENDIX M

HISTORICAL PLANNING CASES FOR THE PROJECT SITE

ZONING ADMINISTRATOR

DEPARTMENT OF CITY PLANNING

OFFICE OF THE ZONING ADMINISTRATOR

361 CITY HALL
LOS ANGELES 12
MICHIGAN 5211

NORRIS POULSON
MAYOR

May 9, 1955

Joe Kirkwood, Jr.
c/o S. W. Cunningham & Associates
3723 Wilshire Boulevard
Los Angeles 5, California

Re: Z. A. CASE NO. 13459
Southwesterly corner
Whitsett Avenue and
Valley Spring Lane
Studio City District

Department of Building and Safety

Greetings:

In the matter of the application of Joe Kirkwood, Jr., lessee, for Conditional Use approval and zone variance to permit the development and use of an approximately 19-acre parcel of land located in the R2 and R1 Zones westerly of Whitsett Avenue between Valleyheart Drive and Valley Spring Lane for a golf driving range and pitch-and-putt golf course with incidental automobile parking facilities, including construction and operation of a golf pro shop for limited sale of golfing supplies, and with a limited snack bar to serve patrons of the facility, and with modification, if necessary, of required front and side yard setbacks from bordering streets, please be advised that the Zoning Administrator has made the following finding of facts and determination and has conditionally granted the request for a term period of ten (10) years.

FINDING OF FACTS AND DETERMINATION

After thorough consideration of the statements contained in the application, the report of the Investigator thereon, the statements made at the public hearing before the Administrator on April 14, 1955, the individual communications and petition of protest submitted by surrounding property owners, and correspondence with the applicant and representatives of surrounding property owners concerning suggested tentative terms and conditions, which are by reference made a part hereof, as well as a personal inspection of the property and the surrounding district, I find that practical difficulties, unnecessary hardships or results inconsistent with the general purposes of the R2 and R1 Zones would result from a strict enforcement thereof, and that the four requirements and prerequisites for granting a variance, as enumerated in the City Charter and in Section 12.27-B, 1 of the Municipal Code and the requirements for authorizing a Conditional Use under the provisions of Section 12.24-C of the Municipal Code, have been established by the following facts:

1. The property in question constitutes an approximate 19-acre, trapezoidal-shaped parcel of land comprising an entire block

bounded on all sides by public streets. The property has frontage on a secondary highway and is located adjacent to and across the Los Angeles River channel from the commercial frontage along Ventura Boulevard and due to the size, undeveloped nature and location of the parcel in question constitutes one of the few vacant areas of sufficient size in the adjacent closely developed areas of North Hollywood and Studio City which could be developed and utilized for a publicly-operated recreational area such as that here proposed. The Comprehensive Zoning Ordinance would automatically permit development and use of the property for a public park or playground which could include the same type of recreational facilities as proposed for the area. Furthermore, the Master Plan recognizes that the public playgrounds and parks cannot serve all of the recreational needs of a residential community and that additional privately-operated recreational facilities must be provided and that due to the size of site needed for such facilities, proper areas or sites cannot be determined in advance and set aside on the Comprehensive Zoning Map but that such locations can best be considered and determined by the Conditional Use method as here involved. In view of these factors, permitting development and use of the property in question, subject to proper terms and conditions which will integrate the use into well developed adjacent residential community, would be in harmony with the intent and purpose of the Comprehensive Zoning Ordinance by providing an attractive, wholesome-type of recreational facility for convenience of persons residing in the general locality who desire this type of facility.

2. In view of the open land type of use proposed as contrasted with the construction of single or multiple dwellings as would be permitted on various portions of the property and the need for additional space to accommodate the off-street automobile parking facilities and recreational features of the development, some deviation in the front and side yard requirements and the provisions of the extant building line ordinance along Whitsett Avenue with respect to the location of the parking area and the height and nature of enclosing fixtures is necessary and justifiable to permit the reasonable development of this total property.

3. The subject property has never been included in a recorded subdivision map, making provision for dedication and improvement of the applicant's share of the bordering local streets which now constitute half width streets dedicated by adjoining residential subdivisions or for the widening and improvement of Whitsett Avenue to the designated width of a secondary highway as indicated on the Master Plan and as has been provided in the recorded subdivisions abutting other portions of Whitsett Avenue and granting the request without making provision for subdivision of the property and the dedication and improvement of the necessary land for the widening of the

Joe Kirkwood, Jr.

existing boundary streets would be detrimental to surrounding residential property in the same neighborhood and would be contrary to the Master Plan by interfering with the street pattern which has been developed and followed in adjacent subdivisions. Furthermore, granting the request to permit the proposed recreational development without strict control over the nature thereof, the hours of operation, the provision for ample offstreet automobile parking, and landscaping of the premises and without strict limitation of the accessory activities such as proposed snack bar in the clubhouse building or without providing a term period so that the use can be reviewed in light of changed conditions in the neighborhood would be detrimental to public welfare and injurious to the well developed and attractive single-family residential area which surrounds the acreage parcel on three sides and the church development across Whitsett Avenue near Valleyheart Drive. However, the granting of the request, under the detailed conditions imposed, will not involve the same objections, but will provide an attractive improvement for this parcel of land and will provide much needed recreational facilities and a landscaped open space for the benefit of the adjacent residential developments with the property well integrated into the surrounding residential community by completing the present narrow streets and with provision of ornamental street trees and landscaped setbacks. The ten-year term period will permit review of the use in light of any material change in conditions which might occur in the surrounding neighborhood.

Therefore, by virtue of Sections 12.24-C, 12.27-B, 1 and 14.02 of the Municipal Code, the use of that portion of Lot 214, Tract No. 1000, bounded by Whitsett Avenue, Valleyheart Drive, Bellaire Avenue and Valley Spring Lane, with address at 4141 Whitsett Avenue, Studio City district, for the development and operation of a privately-operated recreation center consisting only of a golf driving range, pitch-and-putt golf course and practice putting green, with incidental offstreet automobile parking facilities, and including construction and operation of an incidental headquarters clubhouse building containing, if desired, the incidental limited sale of golfing supplies and a limited snack bar to provide refreshments for patrons of the facility, is hereby authorized as a Conditional Use as far as zoning regulations are concerned; and a variance from the provisions of Article 2, Chapter 1 of said Code and Building Line Ordinance No. 86,514 is also granted on said property, but only insofar as said variance is necessary to permit the above described use and with the enclosing fixtures around the boundaries of the property, ~~after subdivision,~~ projecting into the building line space established by said ordinance and observing reduced setbacks from the existing or future boundary property lines or greater heights than would be permitted in a required yard space as hereinafter set forth in more detail, upon the following terms and conditions:

1. That the owners of the property shall immediately proceed to file and record a subdivision map of the subject property, which map shall provide for the dedication and improvement of the necessary land for the widening of Whitsett Avenue,

Valley Spring Lane and Bellaire Avenue to standard widths required by the Master Plan with said improvements meeting customary standards for such streets including, if found necessary and desirable by public authorities, the opening and improvement of Valleyheart Drive along the southwesterly portion of the property, all in a manner satisfactory to the City Planning Commission and City Council in approving the subdivision map. Furthermore, that the tentative subdivision map shall have been approved by the City Planning Commission before plans for the development are approved by the Zoning Administrator or any work is performed on the property in connection with the herein approved use, and that the grading and improvement work on the boundary streets shall be carried on concurrently with the development work on the property, and that the final subdivision be recorded and the required street improvement work completed before any portion of the property is actually used for the recreational purposes hereby authorized.

2. That the existing dwelling and accessory buildings located on the southeasterly portion of the property shall either be removed from the premises or the buildings shall be painted, improved, and surrounded with landscaping to conform more closely with those in the surrounding community.

3. That complete plans of the proposed buildings and all improvements including a detailed plot plan showing the exterior boundaries of the property involved, the location of all proposed buildings and other improvements, parking areas, driveways, tees, landscaped areas, enclosing fixtures, etc., be submitted to and approved by the Zoning Administrator prior to the issuance of any building permits or start of development work on the property, other than planting of lawn; said plot plan to conform substantially with the plot plan attached to the file and marked Exhibit "A", except as herein otherwise required or permitted, such as increased landscaped setback on boundary streets. Provided, however, the Zoning Administrator reserves the right to permit additional pitch-and-putt facilities on the southeast portion of the property.

4. That the proposed clubhouse building shall not exceed one story in height or exceed a size of approximately 35 ft. by 60 ft. in dimension, and shall be of residential design with a gabled roof, and include sanitary facilities for both sexes and shall be located near the northeasterly corner of the property but set back at least 50 ft. from the widened lines of both Whitsett Avenue and Valley Spring Lane, conforming substantially with the architect's perspective drawing submitted with the application and marked Exhibit "B". Furthermore, that any facilities in said clubhouse building for

See ZA Case 13586 for modified wording.

refreshments shall be limited to a snack bar or lunch counter type with provision for seating not more than ten (10) persons, and in no event shall there be a general restaurant or cafe established on the premises, but that the sandwiches and refreshments shall be primarily for the benefit and convenience of patrons of the recreational facilities on the premises. Furthermore, that in no event shall intoxicating liquors, wine or beer be sold or served on the premises, and no person shall be allowed to bring such beverages on the premises for consumption thereon, Any golf pro shop or sale of golf supplies shall be operated strictly as an incidental activity for the convenience of patrons of the golfing facilities on the premises and shall not be operated as a sporting goods store to attract patronage of the general public and the presence of such golf pro shop and supplies shall not be advertised by any methods.

5. That adequate offstreet automobile parking space shall be provided on the property for at least 75 automobiles, with ingress and egress to said parking area confined to Whitsett Avenue, with said parking area and enclosing fixtures observing a setback of at least 5 ft. from the required widened line of Whitsett Avenue and at least 120 ft. from the required widened line of Valley Spring Lane. Said parking area shall be enclosed along the setback lines, except across entrance and exit driveways, with an ornamental masonry wall at least 5 ft. in height, but not exceeding 6 ft. in height above the finished surface of the parking area, and shall be enclosed along the northerly and southerly ends with a similar type wall or with compact evergreen shrubbery to effectively screen the parking area from adjacent dwellings. Furthermore, that the parking area, except as herein specifically varied or required, shall be developed and maintained in strict compliance with the provisions of Section 12.21-A, 6 of the Municipal Code.

6. That the portions of the property devoted to the golf driving range and pitch-and-putt golf course shall be enclosed on all sides with either an ornamental masonry wall similar to that required above for the parking area or with a substantial chain-link wire fence having a height of approximately 6 ft. with said enclosing fixtures observing setbacks of at least 5 ft. from the required widened lines of Whitsett Avenue, Valley Spring Lane, and Bellaire Avenue. Furthermore, that at least the portion of the enclosing fence adjacent to the golf driving tee area shall either have a compact eugenia or other broadleaf evergreen hedge planted and maintained inside and adjacent thereto or shall have hardy ivy vines planted along the same and trained to grow upon the fence to form a screen around the driving tee area except for necessary means of ingress and egress from the clubhouse section. The enclosing fixtures along the Valleyheart Drive side of the property if as and when said driveway is improved for vehicular or pedestrian travel, shall be of fine mesh wire to prevent

golf balls from being driven or rolling onto Valleyheart Drive, and the Administrator reserves the right to require or permit the wire enclosing fixture along Valleyheart Drive to be increased in height a sufficient amount to prevent driven golf balls from leaving the premises and endangering persons utilizing Valleyheart Drive.) If the City Council does not require the improvement of Valleyheart Drive at this time in connection with processing the subdivision map as required in condition No. 1 and the applicant desires to use portions of Valleyheart Drive for the southerly end of the golf driving range as permitted by revocable Permit No. 63055 granted by the Board of Public Works on April 22, 1955, then the enclosing fixture along the southerly side of the development around such portions of the proposed use may be located on the southerly side of Valleyheart Drive and maintained until such time as said Drive is improved and open to public travel, after which the enclosing fixture as described above shall be then placed along the northerly side of Valleyheart Drive. The enclosing fixtures specified above need not enclose that portion of the property at the northeast corner between the clubhouse building and the adjoining property lines which, except for access walks to the clubhouse, shall be attractively landscaped but shall include enclosing fixtures between the golf driving tee area and the adjacent streets not otherwise enclosed by the clubhouse building.

7. That all portions of the property including the space between the property line and curbs, if any, along the existing or widened boundary streets, except those portions of the property used for buildings, parking area, driveways, sidewalks, sandtraps and other similar facilities, shall be planted with lawn, interspersed, if desired, with trees, shrubs, or flowers, and the entire grounds, structures, surfacing, landscaping, and other improvements on the property shall be maintained in a first-class condition at all times providing a park-like condition. Furthermore, that ornamental street trees of a broadleaf evergreen variety, approved by the Division of Forestry, Recreation and Parks Department, shall be planted and maintained in the public street space between the curbs and the sidewalk or property line, if no sidewalk is required, along the widened portion of Bellaire Avenue, Valley Spring Lane, and Whitsett Avenue; said trees to be planted not more than 50 ft. on center except where vehicular driveways into the parking area might dictate a different spacing.

8. That the driving tees for the golf driving range shall be arranged and directed in a manner substantially as shown on the plot plan attached to the file marked Exhibit "A" so that balls will be driven away from Valley Spring Lane and Whitsett Avenue and so that under normal play, balls will not be driven, hooked or sliced onto adjoining public streets or private property, and that the operator of the enterprise shall at all times maintain supervisors on the golf driving tee area who

shall be instructed to relocate towards the center of said area those practice golfers who have a tendency to drive an exceptionally long ball or hook or slice in such manner that the balls might leave the premises. Furthermore, the operator of the enterprise shall at all times carry fully paid-up public liability and property damage insurance in the sum of at least $50,000 covering bodily injury, including at any time death occurring thereafter and damage to and destruction of property of others, and that ~~prior to issuance of any permits, there shall~~ be filed with the Zoning Administrator a certificate of insurance to the above effect giving the name of the insurance carrier and its address and a sworn statement that such insurance will be maintained in full force and effect during use of the property for the purpose hereby authorized.

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golf course"

PITCH & PUTT GOLF COURSE

9. That in no event shall the ~~nine-hole golf course~~ be illuminated or used after dark. Furthermore, that no other portion of the enterprise shall be operated between the night hours of 11 p.m. and 7 a.m. of any day, and that any lights installed on the property be promptly turned off at or before 11 p.m. of each night. Any lights installed on the property in connection with the practice driving range, putting green or clubhouse shall be carefully designed, deflected and directed in such a manner as to cause no annoyance to present or future occupants of surrounding residential property. ~~Furthermore, that the plans showing any proposed lighting development of the property shall be first submitted to and approved by the Zoning Administrator before any installation is made on the property.~~

10. That the enterprise shall at all times be operated with due regard for the residential character of the surrounding property and in a quiet business-like manner with no rowdyism or excessively boisterous conduct permitted. Furthermore, that in no event shall there be any loudspeaker or public address system installed or operated on the premises and any radio or other device operated in the clubhouse shall be properly modulated so as not to be disturbing to occupants of adjacent residential improvements.

11. That any signs erected or placed on the premises shall be of a conservative identification or directional nature and, except for small directional signs on the golf course or parking lot, shall be located on the Whitsett Avenue side of the property, ~~and shall be first submitted to and approved by the Zoning Administrator prior to installation.~~ In no event shall any such sign be illuminated, except by indirect subdued means, nor shall there be any signs displayed on the outside of the clubhouse advertising the golf shop, refreshment stand or snack bar located therein or any products sold at such a facility.

12. That the Zoning Administrator reserves the right to require additional or corrective conditions concerning the development and use of the property if, in his opinion, such additional conditions are necessary in order to protect the welfare of adjacent residents or properties or persons using the adjacent public streets.

13. That in order to permit review of this use in light of any changed conditions in the surrounding neighborhood, this Conditional Use and variance shall be in force and effect for a period of ten (10) years and thereafter shall be null and void.

14. The use hereby authorized is conditional upon the privileges being utilized within one hundred-eighty (180) days after the effective date hereof, and if they are not utilized or construction work is not begun within said time, and carried on diligently to completion of at least one usable unit, this authorization shall become void, and any privilege or use granted hereby shall be deemed to have lapsed, unless the Zoning Administrator has granted an extension of the time limit, after sufficient evidence has been submitted that there was unavoidable delay in taking advantage of the grant. Once any portion of the privilege hereby granted is utilized, the other conditions thereof become immediately operative and must be strictly complied with. Furthermore, that this Conditional Use approval shall be subject to revocation in the same manner as provided under Section 12.27-B, 7 of the Municipal Code for revocation of zone variances, if the conditions herein contained are not strictly complied with.

The applicant's attention is called to the fact that this grant is not a permit or license, and that any permits and licenses required by law must be obtained from the proper public agency. Furthermore, that if any condition of this grant is violated, or if the same be not complied with in every respect, then the applicant or his successors in interest may be prosecuted for violating these conditions the same as for any violation of the requirements contained in the Municipal Code. In the event the property is to be sold, leased, rented, or occupied by any person or corporation other than yourself, it is incumbent that you advise them regarding the conditions of this grant. The Zoning Administrator's determination in this matter will become effective after an elapsed period of ten (10) days from the date of this communication, unless an appeal therefrom is filed with the Board of Zoning Appeals.

Very truly yours,

HUBER E. SMUTZ
Zoning Administrator

HES:fh

6/3

cc: Division of Forestry - Recreation & Parks Dept.
K. Outwater - Subdivision
Board of Public Works

H. E. Allport, Jr.
A. Fleming
R. E. Streit

OFFICE OF THE
ZONING ADMINISTRATOR

361 CITY HALL
LOS ANGELES 12
MICHIGAN 5211

NORRIS POULSON
MAYOR

January 3, 1956

Joe Kirkwood, Jr.
4141 Whitsett Avenue
North Hollywood, California

Department of Building and Safety

Re: Z. A. CASE NO. 13744
Southwesterly corner
Whitsett Avenue and Valley
Spring Lane
Studio City District

Greetings:

In the matter of the application of Joe Kirkwood, Jr., lessee, for modification of Conditions Nos. 5 and 6 of the extant variance and Conditional Use authorizing a golf driving range and pitch-and-putt course on approximately a 19-acre parcel of land located in the R2 and R1 Zones at the southwesterly corner of Whitsett Avenue and Valley Spring Lane as specified in Z. A. Case No. 13459 so that the enclosing wall around the required parking area may be 3½ ft. instead of 5 ft. in height and with the required enclosing fixtures to be located 3 ft. from the new curb line instead of 5 ft. from the new property lines along Whitsett Avenue, Valley Spring Lane, and Bellaire Avenue and to waive the required hedge or vines screening the golf driving tee area from the adjacent street areas, please be advised that the Zoning Administrator has made the following finding of facts and determination and has partially granted the request with respect to location of the enclosing fixtures along Valley Spring Lane and Bellaire Avenue, the height of the wall adjacent to the parking lot on Valley Spring Lane, and temporary waiver of the hedge or vine screen around the golf driving tee area but not as to modification of the required 5 ft. setback from the new property line along Whitsett Avenue.

FINDING OF FACTS AND DETERMINATION

After thorough consideration of the statements contained in the application, the report of the Investigator thereon, the statements made at the public hearing before the Administrator on December 29, 1955, the proceedings in connection with Z. A. Cases 13459 and 13586 which involve the original grant and a minor modification thereto, and the substantial petitions of surrounding property owners favoring the modifications requested, which are by reference made a part hereof, as well as a personal inspection of the property and the surrounding district, I find that practical difficulties, unnecessary hardships or results inconsistent with the general purposes of the R2 and R1 Zones would result from a strict enforcement thereof, and that the four requirements and prerequisites for granting a variance, as enumerated in the City Charter and in Section 12.27-B, 1 of the Municipal Code and the requirements for authorizing a Conditional Use under the provisions of Section 12.24-C of the Municipal Code, have been established by the following facts:

1. As recognized in extant Z. A. Case No. 13459, the 19-acre parcel in question, when ultimately completed as a golf driving range and pitch-and-putt course, will provide an attractive, wholesome type of recreation facility for the convenience of persons residing in the general locality who desire this type of facility. One of the conditions of approval of said use was the filing and recording of a subdivision map of the subject property including dedication, widening and improvement of all adjoining streets, with the improvements of the widened streets to meet customary standards for such streets, all as approved and required by the City Planning Commission and City Council in processing the required subdivision map. Other conditions involved setback of walls and fences from required widening lines, ornamental tree planting, parking lot improvement, clubhouse orientation, hours of operation, etc., and said conditions were carefully set forth affording maximum protection to adjoining property owners along Bellaire Avenue, Valley Spring Lane and particularly to those properties having frontage on Whitsett Avenue directly across the street from the greatest activity of the golf course and driving range. In drafting the protective conditions for this development, the Administrator anticipated that the Planning Commission and Council would require sidewalks in the improvement of the widened portions of the adjoining streets and specified a landscaped setback between these sidewalks and the enclosing fixtures. However, the City Council in approving the final subdivision map waived the necessity of installing sidewalks along Valley Spring Lane and Bellaire Avenue and temporarily waived installation of a sidewalk along Whitsett Avenue, and the applicant, for a number of reasons explained in the application, desires to now place the enclosing fixtures around the parking area within 3 ft. of the curb line instead of observing the required 5 ft. setback from the property line which would have been the inside of the sidewalk. We are advised that the Board of Public Works has given revocable permission to enclose portions of the soon to be dedicated widened streets within the enclosing fence around the golf course, with the fence placed within 3 ft. of the curb line. Inasmuch as no sidewalks are to be installed along the northerly and the westerly street, both the applicant and many of the home owners to the north and west are fearful that a wide space between the curb and fence enclosing the golf course area, particularly in view of the required ornamental trees to be planted thereon would serve as an attractive hazard to neighborhood children, using said strip as a play area and who might endeavor to climb the trees in an effort to cross the fence and get onto the golf course. Furthermore, in view of past difficulties with miscellaneous rubbish dumping in the area, it is felt that a wide landscaped space might serve as an invitation for further dumping of rubbish during late night hours in this space. The applicant and his advisers also believe that, due to the type of sprinklers to be installed, better maintenance of the landscaping, both in the street space

and on the golf course, can be obtained by placing the fence near the curb lines and installing one type of sprinkler on the fence and the additional space afforded inside the fence will reduce possible hazards from the fairways of the pitch-and-putt course adjoining said fence. Furthermore, the owners of the home along the easterly side of Whitsett Avenue who have observed the attractive manner in which the golf course and driving range is being laid out and landscaped are fearful that the 5 ft. wall required to enclose the parking area along Whitsett Avenue and the hedge or vine screen around the golf driving tee area will provide a less desirable outlook and interfere with what promises to be an attractive vista of the landscaped golf course.

2. The above related factors involve a rather material change in circumstances than those which were considered by the Zoning Administrator when the conditions attached to the extant authorization were drawn which justify some modification of the conditions, particularly as they apply to the location of the enclosing fence along Valley Spring Lane and Bellaire Avenue and to the height of the wall and landscaped screen enclosing, respectively, the automobile parking area and golf driving tee area along Whitsett Avenue. The change in circumstances, however, are in no way sufficient to justify any modification of the 5 ft. setback required for enclosing fixtures from the new property line along Whitsett Avenue. It is quite possible that a public sidewalk will be required along Whitsett Avenue by the City Council as reservation is included in the approval of the tentative subdivision map and bonds required to be posted thereunder, and irrespective of whether said sidewalk is or is not required along Whitsett Avenue in the future, said Avenue consists of a traffic thoroughfare which will increase in importance and along which the improvements and activity should observe a reasonable setback from the property line to complement the front yards observed by the homes fronting on the easterly side of said Avenue. Furthermore, the Administrator has already granted a variance from the provisions of Building Line Ordinance No. 86,514 in order to permit the enclosing fixtures along Whitsett Avenue within 5 ft. of the new street line which provides ample adjustment along said Avenue, considering the use in question.

3. Granting the request insofar as it involves elimination of the 5 ft. setback on the new property line along Whitsett Avenue or granting other portions of the request without reservations and conditions would be materially detrimental to surrounding property and improvements, contrary to the original intent and purpose of the conditions upon which authorization for use of this property were based and contrary to the objectives of the Master Plan. However, partially granting the request, under the conditions imposed, would not have the same objections but appears reasonable

and equitable under the circumstances and appears to coincide with the desires of the surrounding affected property owners and the reservations and the conditions will make it possible for the Administrator to require landscaped screens around the golf driving the area if it proves to be more objectionable to the adjacent home owners than anticipated and will permit requirement for relocating the fence around the local street borders of the property if found necessary for public welfare in the future.

Therefore, by virtue of authority contained in Section 12.24-C and 12.27-B, 1 of the Municipal Code, a modification of the terms of Conditions Nos. 5 and 6 of the Conditional Use and variance granted under Z. A. Case No. 13459 and which Conditional Use authorized development and use of a pitch-and-putt golf course and a golf driving range with incidental clubhouse and services on that portion of Lot 214, Tract 1000, bounded by Whitsett Avenue, Valley Heart Drive, Bellaire Avenue, and Valley Spring Lane, Studio City District (proposed Lot 1, Tract 19437), is hereby authorized as far as zoning regulations are concerned and a variance from the provisions of Article 2, Chapter 1 of said Code is also granted on said property, but only insofar as said variance and modification of the Conditional Use is necessary to modify said Conditions Nos. 5 and 6 of extant authorization under Z. A. Case No. 13459 so as to read as hereinafter set forth, upon the following terms and conditions:

1. That Condition No. 5 of said extant authorization under Z. A. Case No. 13459 is hereby modified and hereafter shall read as follows:

   "5. That adequate offstreet automobile parking space shall be provided on the property for at least 75 automobiles, with ingress and egress to said parking area confined to Whitsett Avenue, with said parking area and enclosing fixtures observing a setback of at least ~~5 ft. from the required widened line of Whitsett Avenue and at least~~ 120 ft. from the required widened line of Valley Spring Lane. Said parking area shall be enclosed along the setback lines, except across entrance and exit driveways, with an ornamental masonry wall at least 3½ ft. in height ~~but not exceeding 6 ft.~~ in height above the finished surface of the parking area, and shall be enclosed along the northerly and southerly ends with a similar type wall or with compact evergreen shrubbery to effectively screen the parking area from adjacent dwellings. Furthermore, that the parking area, except as herein specifically varied or required, shall be developed and maintained in strict compliance with the provisions of Section 12.21-A, 6 of the Municipal Code."

2. That Condition No. 6 of said extant authorization under Z. A. Case No. 13459 is hereby modified and hereafter shall read as follows:

"6. That the portions of the property devoted to the golf driving range and pitch-and-putt golf course shall be enclosed on all sides with either an ornamental masonry wall similar to that required above for the parking area or with a substantial chain-link wire fence having a height of approximately 6 ft., with said enclosing fixtures observing setbacks of at least 5 ft. from the required widened lines of Whitsett Avenue. If no sidewalks are required by the City Council along the northerly side of the property adjoining the southerly side of widened Valley Spring Lane or along the westerly side of the property adjoining the easterly side of widened Bellaire Avenue in the improvement requirements under the subdivision approval in connection with Condition No. 1 and if proper authorization on a revocable basis is obtained from the Board of Public Works to place fence enclosures in a dedicated public street space, then the chain-link wire fence enclosure along the Valley Spring Lane and Bellaire Avenue portions of the property may be placed within not less than 3 ft. of the curb along both the widened Valley Spring Lane and Bellaire Avenue. The enclosing fixtures along the Valley Heart Drive side of the property if, as and when said Drive is improved for vehicular or pedestrian travel, shall be of fine mesh wire to prevent golf balls from being driven or rolling onto Valley Heart Drive, and the Administrator reserves the right to require or permit the wire enclosing fixture along Valley Heart Drive to be increased in height a sufficient amount to prevent driven golf balls from leaving the premises and endangering persons utilizing Valley Heart Drive. If the City Council does not require the improvement of Valley Heart Drive at this time, in connection with processing the subdivision map as required in Condition No. 1 and the applicant desires to use portions of Valley Heart Drive for the southerly end of the golf driving range or golf course as permitted by revocable Permit No. 63055 granted by the Board of Public Works on April 22, 1955, then the enclosing fixture along the southerly side of the development around such portions of the proposed use may be located on the southerly side of Valley Heart Drive and maintained until such time as said Drive is improved and open to public travel, after which the enclosing fixture as described above shall be then placed along the northerly side of Valley Heart Drive and under the same circumstances and conditions specified for Valley Spring Lane and Bellaire Avenue may be placed within 3 ft. of the future curb line along the northerly side of Valley Heart Drive. The enclosing fixtures specified above need not enclose that portion of the property at the northeast corner between the clubhouse building and the adjoining property lines which, except for access walks to the clubhouse, shall be attractively landscaped but shall include enclosing fixtures between the golf driving tee area and the adjacent streets not otherwise enclosed by the clubhouse building. If any enclosing fixture is placed around the northeasterly corner of the property in front of the prolonged northwesterly and southeasterly walls of the clubhouse building, said enclosure shall not exceed 3½ ft. in height and furthermore, the enclosing fixture around the northwesterly corner of the property shall observe a diagonal cut corner of at least 30 ft. at said intersection measured along each fence line from their prolonged point of intersection or the fence enclosure in said 30 ft. diagonal cutoff shall not exceed 3½ ft. in height. Furthermore, if experience with the golf driving range activity, after the enterprise has been placed in operation, makes it appear desirable to screen the golf driving tee area from adjacent dwellings, then the Zoning Administrator reserves the right to require that at least the portion of the enclosing fence adjacent to the golf driving tee area shall either have a compact Eugenia or other broadleaf evergreen hedge planted inside and adjacent thereto or shall have hardy ivy vines planted along the same and trained to grow upon the fence to form such a screen except for necessary means of ingress and egress from the clubhouse section."

3. That any authorization contained herein to place the enclosing fixtures along the boundary local streets within 3 ft. of the curb line along said boundary streets shall, of course, be subject to obtaining proper authorization from the Board of Public Works, and the action of the Zoning Administrator in this respect shall in no way be considered as in any way prejudicing the action of the Board of Public Works in exercising its discretion on the merits of any request to place the enclosing fixtures in portions of the existing or soon to be dedicated public street area. Furthermore, the Zoning Administrator reserves the right to revoke any authorization hereby granted for placing such enclosing fixtures beyong the property lines soon to be shown upon recording of Subdivision Tract 19437 if, in the future, it is found desirable or necessary to public welfare to obtain sidewalks along said bordering streets. The above-referred to authorization in no way includes permission to place the enclosing fixtures in the widened street area along Whitsett Avenue, but the enclosing fixture shall observe the specified 5 ft. setback from the new westerly line of Whitsett Avenue.

4. That this Conditional Use approval and variance modifying provisions of said Conditions Nos. 5 and 6 shall in no way serve to modify other conditions of the original authorization under Z. A. Case No. 13459, as modified by Z. A. Case

No. 13586, and they shall remain in full force and effect, including Condition No. 7 requiring landscaping of the space between the property line and curbs. It is understood that the ornamental street trees required by Condition No. 7 along Valley Spring Lane and Bellaire Avenue shall be placed inside of and adjacent to any fence enclosure which is located closer than 5 ft. to the curb line along said streets.

The applicant's attention is called to the fact that this grant is not a permit or license, and that any permits and licenses required by law must be obtained from the proper public agency. Furthermore, that if any condition of this grant is violated, or if the same be not complied with in every respect, then the applicant or his successors in interest may be prosecuted for violating these conditions the same as for any violation of the requirements contained in the Municipal Code. In the event the property is to be sold, leased, rented, or occupied by any person or corporation other than yourself, it is incumbent that you advise them regarding the conditiong of this grant. The Zoning Administrator's determination in this matter will become effective after an elapsed period of ten (10) days from the date of this communication, unless an appeal therefrom is filed with the Board of Zoning Appeals.

Very truly yours,

HUBER E. SMUTZ
Zoning Administrator

HES:fh

cc: S. W. Cunningham & Associates
3723 Wilshire Boulevard
Los Angeles (5)

Board of Public Works
Room 153, City Hall

P. S. The applicant's attention is called to the fact that a revised plot plan showing any proposed new location of the enclosing fixtures and height of wall and any other changes in details of the layout must be submitted to and approved by the Zoning Administrator as required by Condition No. 3 of Z. A. Case No. 13459, since otherwise the layout development will not conform with the plot plan which was approved by the Zoning Administrator under date of July 27, 1955. Said plot plan must be approved by the Administrator before fences are located in any different position than those shown on the originally approved plot plan.

NORRIS POULSON
MAYOR

OFFICE OF THE
ZONING ADMINISTRATOR
361 CITY HALL
LOS ANGELES 12
MICHIGAN 5211

ZA 13744

June 1, 1956

Mr. Joe Kirkwood, Jr.
4141 Whitsett Avenue
North Hollywood, California

Department of Building and Safety

Re: MODIFICATION OF APPROVED PLOT PLAN
Z. A. Cases No. 13459 and No. 13586
Southwesterly corner Whitsett Avenue and Valley Spring Lane
Studio City District

Greetings:

Under date of July 27, 1955, the plot plan for development of the Golf Center on the property involved in the above-entitled cases was conditionally approved by the Zoning Administrator. Said plot plan indicated a 20 ft. in height wire mesh fence supported by poles separating the golf driving range area from the pitch-and-putt golf course. Since that time, some experience with operation of the golf driving range and the periodic strong gusty winds which affect the area has indicated the necessity of erecting a higher fence separating the two areas in order to provide more safety, and recently high poles and a wire fence has been erected. The applicant has requested the Administrator to approve a revision in the originally approved plot plan in order to eliminate any question concerning the greater height to this protective fence. He has promised to reduce the height of the supporting telephone poles to a height of approximately 30 ft. and plant trees adjacent to these poles to carry out the beautification of the course. The Administrator has personally inspected the fence and if the poles are reduced in height and trees planted as proposed, the change in the heretofore approved plan will not be objectionable or contrary to the original intent.

In view of these considerations, please be advised that the Administrator has approved a revision in the heretofore approved plot plan to indicate the fence separating the golf driving range from the pitch-and-putt golf course as having a height of 30 ft., upon the following conditions:

1. That the telephone poles supporting the fence be ~~reduced~~ in height to approximately 30 ft.

2. That the fine wire mesh fence utilized for the purpose be kept stretched in a taunt manner so as to eliminate middle sag between the poles and be maintained in good condition at all times.

3. That adjacent to each of the supporting telephone poles there be planted a tall growing type of broadleaf evergreen tree which will eventually largely obscure the telephone poles.

4. That in no event shall flags, banners, or other items which would further attract attention to this protective fence be located, placed, or permitted upon the fence or the supporting poles at any time.

The applicant is advised further that the above approval of plans is from a zoning standpoint only and any necessary building or other permits or certificate of occupancy must be obtained from the proper City departments and all other public regulations must be complied with.

Very truly yours,

HOMER E. SHATZ
Zoning Administrator

HES:fh

CITY OF LOS ANGELES
CALIFORNIA

HUBER E. SMUTZ
CHIEF ZONING ADMINISTRATOR

ASSOCIATE ZONING ADMINISTRATORS
CHARLES V. CADWALLADER
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MAYOR

DEPARTMENT OF
CITY PLANNING

OFFICE OF
ZONING ADMINISTRATION

400 CITY HALL
LOS ANGELES, CALIF. 90012
MADISON 4-5211

May 13, 1965

George McCallister,
Studio City Golf Course, Inc.
4141 Whitsett Avenue
North Hollywood, California

Re: Z. A. CASE NO. 17460
4141 Whitsett Avenue
Studio City District
D. M. No. 7347

Department of Building and Safety

Greetings:

In the matter of the application of George McCallister, lessee, for Conditional Use approval and zone variance to permit the continued use of an approximately 19-acre parcel of land located in the R3-1 and R1-1 Zones westerly of Whitsett Avenue between Valleyheart Drive and Valley Spring Lane for a golf driving range and pitch-and-putt golf course with incidental automobile parking facilities, including construction and operation of a golf pro shop for limited sale of golfing supplies, and with a limited snack bar to serve patrons of the facility, and with modification, if necessary, of required front and side yard setbacks from bordering streets, please be advised that the Associate Zoning Administrator has made the following finding of facts and determination and has conditionally granted the request for a term period of ten (10) years.

FINDING OF FACTS AND DETERMINATION

After thorough consideration of the statements contained in the application, the report of the City Planning Associate thereon, the statements made at the public hearing before the Associate Administrator on April 9, 1965, information contained in Z. A. Case No. 13459, 13586 and 13744 previously approving the use in question for a 10 year period of time and modifying certain of the terms and conditions in the original determination, which are by reference made a part hereof, as well as personal inspection of the property and the surrounding district, I find that practical difficulties, unnecessary hardships or results inconsistent with the general purposes of the R3 and R1 Zones would result from a strict enforcement thereof, and that the four requirements and prerequisites for granting a variance, as enumerated in the City Charter and in Section 12.27-B, 1 of the Municipal Code and the requirements for authorizing a Conditional Use under the provisions of Section 12.24-C of the Municipal Code, have been established by the following facts:

1. The property in question constitutes an approximate 19-acre, trapezoidal-shaped parcel of land comprising an entire block bounded on all sides by public streets. The property has frontage on a secondary highway and is located adjacent to and across the Los Angeles River channel from the commercial frontage along Ventura Boulevard and due to the size, undeveloped nature and location of the parcel in question constitutes one of the few vacant areas of sufficient size in the adjacent closely developed areas of North Hollywood and Studio City which could be developed and utilized for a publicly-operated recreational area such as that here proposed. As recognized in extant Z. A. Case No. 13459, the Comprehensive Zoning Ordinance would automatically permit development and use of the property for a public park or playground which could include the same type of recreational facilities as proposed for the area. Furthermore, the Master Plan recognizes that the public playgrounds and parks cannot serve all of the recreational needs of a residential community and that additional privately-operated recreational facilities must be provided and that due to the size of site needed for such facilities, proper areas or sites cannot be determined in advance and set aside on the Comprehensive Zoning Map but that such locations can best be considered and determined by the Conditional Use method as here involved. In view of these factors, permitting development and use of the property in question, subject to proper terms and conditions which will integrate the use into well developed adjacent residential community, would be in harmony with the intent and purpose of the Comprehensive Zoning Ordinance by providing an attractive, wholesome-type of recreational facility for convenience of persons residing in the general locality who desire this type of facility.

2. In view of the open land type of use proposed as contrasted with the construction of single or multiple dwellings as would be permitted on various portions of the property and the need for additional space to accommodate the off-street automobile parking facilities and recreational features of the development, some deviation in the front and side yard requirements and the provisions of the extant building line ordinance along Whitsett Avenue with respect to the location of the parking area and the height and nature of enclosing fixtures is necessary and justifiable to permit the reasonable development of this total property.

3. Granting the request to permit the proposed recreational development without strict control over the nature thereof, the hours of operation, the provision for ample offstreet automobile parking, and landscaping of the premises and without

strict limitation of the accessory activities such as proposed snack bar in the clubhouse building or without providing a term period so that the use can be reviewed in light of changed conditions in the neighborhood would be detrimental to public welfare and injurious to the well developed and attractive single-family residential area which surrounds the acreage parcel on three sides and the church development across Whitsett Avenue near Valleyheart Drive. However, the granting of the request, under the detailed conditions imposed, will not involve the same objections, but will provide an attractive improvement for this parcel of land and will provide much needed recreational facilities and a landscaped open space for the benefit of the adjacent residential developments with the property well integrated into the surrounding residential community by completing the present narrow streets and with provision of ornamental street trees and landscaped setbacks. The ten-year term period will permit review of the use in light of any material change in conditions which might occur in the surrounding neighborhood.

Therefore, by virtue of Sections 12.24-C, 12.27-B, 1 and 14.02 of the Municipal Code, the use of that portion of Lot 214, Tract No. 1000, bounded by Whitsett Avenue, Valleyheart Drive, Bellaire Avenue and Valley Spring Lane, with address of 4141 Whitsett Avenue, Studio City District, for the continued operation of a privately-operated recreation center consisting only of a golf driving range, pitch-and-putt golf course and practice putting green, with incidental offstreet automobile parking facilities and including construction and operation of an incidental headquarters clubhouse building containing, if desired, the incidental limited sale of golfing supplies and a limited snack bar to provide refreshments for patrons of the facility, is hereby <u>authorized</u> as a Conditional Use as far as zoning regulations are concerned; and a variance from the provisions of Article 2, Chapter 1 of said Code and Building Line Ordinance No. 86,514 is also <u>granted</u> on said property, but only insofar as said variance is necessary to permit the above described use and with the enclosing fixtures around the boundaries of the property projecting into the building line space established by said ordinance and observing reduced setbacks from the existing or future boundary property lines or greater heights than would be permitted in a required yard space as hereinafter set forth in more detail, upon the following terms and conditions:

1. That a more complete and accurate site development plan of the total development of the property, showing the exterior boundaries of the property, including the area to the curb line of the adjacent streets, as well as the correct location of all fences, walls, walks, driveways, parking areas, parking spacing, tees, fairways, major

landscaping features throughout the golf course, clubhouse location, putting green, flood lighting standards, etc., be submitted to and approved by the Zoning Administrator within 60 days of the effective date of this determination, said plan to also incorporate any additional improvements as may be required by the terms and conditions of the subject authorization.

2. That the proposed clubhouse building shall not exceed one-story in height, and shall be of residential design with a gabled roof, and include sanitary facilities for both sexes and shall be located near the northeasterly corner of the property but set back at least 50 ft. from the widened lines of both Whitsett Avenue and Valley Spring Lane, conforming substantially with the architect's revised elevation drawings and floor plan marked Exhibits "B-1" and "B-2" attached to the file in Z. A. Case No. 13586. Said clubhouse building shall have a net floor area within enclosing walls of not exceeding 2,400 sq. ft. including therein space for storage of power mowers, tools, other maintenance equipment, and various supplies needed on the premises, but may have additional covered but unenclosed porch areas of not exceeding a total of 1,225 sq. ft. Furthermore, that any facilities in said clubhouse building for refreshments shall be limited to a snack bar or lunch counter type with provision for seating not more than ten (10) persons, and in no event shall there be a general restaurant or cafe established on the premises, but that the sandwiches and refreshments shall be primarily for the benefit and convenience of patrons of the recreational facilities on the premises. Furthermore, that in no event shall intoxicating liquors, wine or beer be sold or served on the premises, and no person shall be allowed to bring such beverages on the premises for consumption thereon. Any golf pro shop or sale of golf supplies shall be operated strictly as an incidental activity for the convenience of patrons of the golfing facilities on the premises and shall not be operated as a sporting goods store to attract patronage of the general public and the presence of such golf pro shop and supplies shall not be advertised by any methods.

3. That adequate offstreet automobile parking space shall be provided on the property for at least 75 automobiles, with ingress and egress to said parking area confined to Whitsett Avenue, with said parking area and enclosing fixtures observing a setback of at least 120 ft. from the required widened line of Valley Spring Lane. Said parking area shall be enclosed along the setback lines, except across entrance and exit driveways, with an ornamental masonry wall at least 3 1/2 ft. in height above the

finished surface of the parking area, and shall be enclosed along the northerly and southerly ends with a similar type wall or with compact evergreen shrubbery to effectively screen the parking area from adjacent dwellings. Furthermore, that the parking area, except as herein specifically varied or required, shall be developed and maintained in strict compliance with the provisions of Section 12.21-A, 6 of the Municipal Code.

4. That the portions of the property devoted to the golf driving range and pitch-and-putt golf course shall be enclosed on all sides with either an ornamental masonry wall similar to that required above for the parking area or with a substantial chain-link wire fence having a height of approximately 6 ft., but not exceeding 7 ft., with said enclosing fixtures observing setbacks of at least 5 ft. from the required widened lines of Whitsett Avenue. If no sidewalks are required by the City Council along the northerly side of the property adjoining the southerly side of widened Valley Spring Lane or along the westerly side of the property adjoining the easterly side of widened Bellaire Avenue in the improvements requirements under the subdivision approval in connection with Condition No. 1 and if proper authorization on a revocable basis is obtained from the Board of Public Works to place fence enclosures in a dedicated public street space, then the chain-link wire fence enclosure along the Valley Spring Lane and Bellaire Avenue portions of the property may be placed adjacent to the curb along both the widened Valley Spring Lane and Bellaire Avenue. The enclosing fixtures along the Valley Heart Drive side of the property if, as and when said Drive is improved for vehicular or pedestrian travel, shall be of fine mesh wire to prevent golf balls from being driven or rolling onto Valley Heart Drive, and the Administrator reserves the right to require or permit the wire enclosing fixture along Valley Heart Drive to be increased in height a sufficient amount to prevent driven golf balls from leaving the premises and endangering persons utilizing Valley Heart Drive. If the City Council does not require the improvement of Valley Heart Drive at this time, in connection with processing the subdivision map as required in Condition No. 1 and the applicant desires to use portions of Valley Heart Drive for the southerly end of the golf driving range or golf course as permitted by revocable Permit No. 63055 granted by the Board of Public Works on April 22, 1955, then the enclosing fixture along the southerly side of the development around such portions of the proposed use may be located on the southerly side of Valley Heart Drive and maintained until such time as said

Drive is improved and open to public travel, after which the enclosing fixture as described above shall be then placed along the northerly side of Valley Heart Drive and under the same circumstances and conditions specified for Valley Spring Lane and Bellaire Avenue may be placed adjacent to future curb line along the northerly side of Valley Heart Drive. The enclosing fixtures specified above need not enclose that portion of the property at the northeast corner between the clubhouse building and the adjoining property lines which, except for access walks to the clubhouse, shall be attractively landscaped but shall include enclosing fixtures between the golf driving tee area and the adjacent streets not otherwise enclosed by the clubhouse building. If any enclosing fixture is placed around the northeasterly corner of the property in front of the prolonged northwesterly and southeasterly walls of the clubhouse building, said enclosure shall not exceed 3 1/2 ft. in height and furthermore, the enclosing fixture around the northwesterly corner of the property shall observe a diagonal cut corner of at least 30 ft. at said intersection measured along each fence line from their prolonged point of intersection or the fence enclosure in said 30 ft. diagonal cutoff shall not exceed 3 1/2 ft. in height. Furthermore, if experience with the golf driving range activity, after the enterprise has been placed in operation, makes it appear desirable to screen the golf driving tee area from adjacent dwellings, then the Zoning Administrator reserves the right to require that at least the portion of the enclosing fence adjacent to the golf driving tee area shall either have a compact Eugenia or other broad-leaf evergreen hedge planted inside and adjacent thereto or shall have hardy ivy vines planted along the same and trained to grow upon the fence to form such a screen except for necessary means of ingress and egress from the clubhouse section.

5. That any authorization contained herein to place the enclosing fixtures along the boundary local streets within 3 ft. of the curb line along said boundary streets shall, of course, be subject to obtaining proper authorization from the Board of Public Works, and the action of the Zoning Administrator in this respect shall in no way be considered as in any way prejudicing the action of the Board of Public Works in exercising its discretion on the merits of any request to place the enclosing fixtures in portions of the existing or soon to be dedicated public street area. Furthermore, the Zoning Administrator reserves the right to revoke any

authorization hereby granted for placing such enclosing fixtures beyond the property lines shown upon Tract No. 19437 if, in the future, it is found desirable or necessary to public welfare to obtain sidewlaks along said bordering streets. The above-referred to authorization in no way includes permission to place the enclosing fixtures in the widened street area along Whitsett Avenue.

6. That all portions of the property including the space between the property line and curbs, if any, along the existing or widened boundary streets, except those portions of the property used for buildings, parking area, driveways, sidewalks, sandtraps and other similar facilities, shall be planted with lawn, interspersed, if desired, with trees, shrubs, or flowers, and the entire grounds, structures, surfacing, landscaping, and other improvements on the property shall be maintained in a first-class condition at all times providing a park-like condition. Furthermore, that ornamental street trees of a broadleaf evergreen variety, approved by the Division of Forestry, Recreation and Parks Department, shall be planted and maintained in the public street space between the curbs and the sidewalk or property line, if no sidewalk is required, along the widened portion of Bellaire Avenue, Valley Spring Lane, and Whitsett Avenue; said trees to be planted not more than 50 ft. on center except where vehicular driveways into the parking area might dictate a different spacing, it being understood that the ornamental street trees required along Valley Spring Lane and Bellaire Avenue shall be placed inside of and adjacent to any fence enclosure which is located closer than 5 ft. to the curb line along said streets.

7. That the driving tees for the golf driving range shall be arranged and directed in a manner substantially as shown on the plot plan attached to the file and marked Exhibit "A" so that balls will be driven away from Valley Spring Lane and Whitsett Avenue and so that under normal play, balls will not be driven, hooked or sliced onto adjoining public streets or private property, and that the operator of the enterprise shall at all times maintain supervisors on the golf driving tee area who shall be instructed to relocate towards the center of said area those practice golfers who have a tendency to drive an exceptionally long ball or hook or slice in such manner that the balls might leave the premises. Furthermore, the operator of the enterprise shall at all times carry fully paid-up public liability and property damage insurance in the sum of at least $50,000

covering bodily injury, including at any time death occurring thereafter the damage to and destruction of property of others, and that the lessee shall immediately file with the Zoning Administrator a certificate of insurance to the above effect giving the name of the insurance carrier and its address and a sworn statement that such insurance will be maintained in full force and effect during use of the property for the purpose hereby authorized.

8. That in no event shall the pitch-and-putt golf course be illuminated or used after dark. Furthermore, that no other portion of the enterprise shall be operated between the night hours of 11 p.m. and 7 a.m. of any day, and that any lights installed on the property be promptly turned off at or before 11 p.m. of each night. Any lights installed on the property in connection with the practice driving range, putting green or clubhouse shall be carefully designed, deflected and directed in such a manner as to cause no annoyance to present or future occupants of surrounding residential property.

No! operated to 11 P.M. per letter [illegible]

9. That the telephone poles supporting the driving range fence be limited in height to approximately 30 ft.

10. That the fine wire mesh fence surrounding the driving range be kept stretched in a taut manner so as to eliminate middle sage between the poles and be maintained in good condition at all times.

11. That adjacent to each of the supporting telephone poles, there be planted a tall growing type of broadleaf evergreen tree which will eventually largely obscure the telephone poles.

12. That in no event shall flags, banners, or other items which would further attract attention to this protective fence be located, placed, or permitted upon the fence or the supporting poles at any time.

13. That the enterprise shall at all times be operated with due regard for the residential character of the surrounding property and in a quiet business-like manner with no rowdyism or excessively boisterous conduct permitted. Furthermore, that in no event shall there be any loudspeaker or public address system installed or operated on the premises and any radio or other device operated in the clubhouse shall be properly modulated so as not to

be disturbing to occupants of adjacent residential improvements.

14. That any signs erected or placed on the premises shall be of a conservative identification or directional nature and, except for small directional signs on the golf course or parking lot, shall be located on the Whitsett Avenue side of the property. In no event shall any such sign be illuminated, except by indirect subdued means, nor shall there be any signs displayed on the outside of the clubhouse advertising the golf shop, refreshment stand or snack bar located therein or any products sold at such a facility.

15. That the Zoning Administrator reserves the right to require additional or corrective conditions concerning the development and use of the property if, in his opinion, such additional conditions are necessary in order to protect the welfare of adjacent residents or properties or persons using the adjacent public streets.

16. That in order to permit review of this use in light of any changed conditions in the surrounding neighborhood, this Conditional Use and variance shall be in force and effect for a period of ten (10) years and thereafter shall be null and void.

17. That this determination shall in all respects supersede the previous authorization in Z. A. Case No. 13459 and its various modifications authorized in Z. A. Case No. 13586 and 13744, except that the previous details of the clubhouse plan approval, floodlighting approval and identification sign approval incorporated therein shall become a part of this case by reference.

The applicant's attention is called to the fact that this grant is not a permit or license, and that any permits and licenses required by law must be obtained from the proper public agency. Furthermore, that if any condition of this grant is violated, or if the same be not complied with in every respect, then the applicant or his successors in interest may be prosecuted for violating these conditions the same as for any violation of the requirements contained in the Municipal Code. In the event the property is to be sold, leased, rented, or occupied by any person or corporation other than yourself, it is incumbent that you advise them regarding the conditions of this grant. The Associate Zoning Administrator's determination in this matter will become effective after an elapsed period of ten (10) days from the date of this communication, unless an appeal therefrom is filed with the Board of Zoning Adjustment.

The applicant's attention is directed specifically to Condition No. 7 which required street trees to be located in the parkway adjacent to Whitsett Avenue. This was discussed with the applicant at the time of the public hearing and it is expected that the more detailed plot plan will clearly indicate the trees located therein and that such trees will be planted in the parkway as soon as possible.

Very truly yours,

Charles V. Cadwallader

CHARLES V. CADWALLADER
Associate Zoning Administrator

CVC:lln

cc: Director of Planning

Aetna Engineering Co.
5301 Laurel Canyon Blvd.
North Hollywood, Calif.

Mrs. William Bauer et al
4106 1/2 Whitsett Avenue
Studio City, California

Weddington Investment Co.
11222 Weddington
North Hollywood, California

CITY OF LOS ANGELES

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OFFICE OF
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DEPARTMENT OF
CITY PLANNING

600 CITY HALL
LOS ANGELES, CALIF. 90012
485-3851

[redacted]

MAYOR

TOM BRADLEY

September 3, 1975

Studio City Golf Course, Inc.
Attn: Mr. Arthur E. Anderson,
President
4141 Whitsett Avenue
North Hollywood, California 91604

Re: Z. A. CASE NO. 21786
4141 Whitsett Avenue
Sherman Oaks-Studio City
District
D. M. NO. 7347
ED-725-CUZ

Department of Building and Safety

Greetings:

In the matter of the amended and clarified application of Studio City Golf Course, Inc., for Conditional Use Approval upon a site located in the A1 Zone, please be advised that based upon the Findings of Fact hereinafter set forth and by virtue of authority contained in Section 98 of the City Charter and Section 12.24-C,1.5 of the Municipal Code, the Associate Zoning Administrator hereby authorizes as a Conditional Use, as far as the zoning regulations are concerned, for the modification and amplification of the Conditional Use terms of the extant Z. A. Case Nos. 21609, 21520 and 21195, which authorized the use of property described as Lot 1, Tract 19437 for the continuous maintenance of the Golf Recreation Center, Golf Pro Shop, limited snack bar with incidental parking, and the construction cumulatively of a total of twelve tennis courts, a tennis pro shop, and identification signs, all for a term period to May 1, 1985, and which also granted a Variance to permit over-in-height fence enclosure located in the required yard and within ordinance building lines so that now, in addition to the existing authority, the last phase portion of the proposed development, as shown on Exhibit "B" may be constructed to permit three new tennis courts in addition to the existing twelve tennis courts for a total of fifteen (15) tennis courts, and to require incidental thereto the maintenance of the existing 50 parking spaces on the site for tennis and golf patrons, all for a term period ending on May 1, 1985, on the following terms and conditions:

1. That the development shall conform substantially with the amended plot plan submitted with the application and marked Exhibit "B", except as specifically varied or required herein.

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2. That except as herein modified or varied to the extent necessary to give full force and effect to this authorization, all of the terms and conditions of extant Z. A. Case No. 21195 (a Variance and a Conditional Use approved on June 13, 1973) and Z. A. Case Nos. 21520 and 21609 (Conditional Uses approved on November 4, 1974 and March 14, 1975) shall be strictly complied with as if restated herein.

3. That the 50 existing offstreet parking spaces required by previous authorizations be continuously maintained in a first-class condition.

4. That the Chief Zoning Administrator reserves the right to require additional or corrective conditions concerning the development and use of the property if, in his opinion, such additional conditions are necessary in order to protect the welfare of persons using the subject recreational facilities and to protect adjacent and surrounding residences or property.

5. That this Conditional Use approval shall be subject to revocation in the same manner as provided in Section 12.27-B,5 of the Municipal Code for revocation of Zone Variances if the conditions herein are not strictly complied with.

6. That in order to permit review of this use and the uses authorized under extant Z. A. Case Nos. 21195, 21520 and 21609, in light of any changed condition in the surrounding neighborhood, this Conditional Use authorization, together with Z. A. Case Nos. 21195, 21520 and 21609, shall all be in force and in effect for a term period ending on May 1, 1985, and shall be null and void thereafter.

7. The use hereby authorized is conditional upon the privileges being utilized within one hundred eighty (180) days after the effective date hereof, and if they are not utilized or construction work is not begun within said time and carried on diligently to completion of at least one usable unit, this authorization shall become void and any privilege or use granted hereby shall be deemed to have lapsed unless a Zoning Administrator has granted an extension of the time limit, after sufficient evidence has been submitted that there was unavoidable delay in taking advantage of the grant. Once any portion of the privilege hereby granted is utilized, the other conditions thereof become immediately operative and must be strictly complied with. Furthermore,

that this Conditional Use approval shall be subject to revocation in the same manner as provided under Section 12.27-B,5 of the Municipal Code for revocation of Zone Variances, if the conditions herein contained are not strictly complied with.

The applicant's attention is called to the fact that this grant is not a permit or license and that any permits and licenses required by law must be obtained from the proper public agency. Furthermore, that if any condition of this grant is violated or if the same be not complied with in every respect, then the applicant or his successors in interest may be prosecuted for violating these conditions the same as for any violation of the requirements contained in the Municipal Code. In the event the property is to be sold, leased, rented or occupied by any person or corporation other than yourself, it is incumbent that you advise them regarding the conditions of this grant. The Associate Zoning Administrator's determination in this matter will become effective after an elapsed period of fifteen (15) days from the date of this communication unless an appeal therefrom is filed within said fifteen (15) day period with the Board of Zoning Appeals.

FINDINGS OF FACT

After thorough consideration of the statements, plans and documents contained in the application, the report and photographs of the City Planning Associate thereon, the statements made at the public hearing before the Associate Zoning Administrator on August 29, 1975, the information contained in the files of Z. A. Case No. 21195 which consolidated, in a comprehensive manner, all of the terms and conditions of former Z. A. Case Nos. 13459, 13586, 13744 and 17460. all of which involved previous grants on the subject property for the subject uses, and the most recent grants under Z. A. Case Nos. 21520 and 21609, all of which are by reference made a part hereof, as well as personal inspection of the property and surrounding district, I find that the requirements for authorizing a Conditional Use under the provisions of Section 12.24-C,1 of the Municipal Code have been established by the following facts:

1. The subject property consists of a roughly rectangular-shaped, 19 acre parcel of land with frontage of approximately 950 ft. on Whitsett Avenue, approximately 1,068 ft. on Valley Spring Lane, and approximately 211 ft. on Bel Air Avenue. To the south is the Los Angeles River Channel so that the land is completely buffered on all sides by streets or the river bed.

The property is now improved with 12 tennis courts, a golf course, pro shop, and 50 parking spaces. The previous grant covering this case, Z. A. Case No. 21609, required only 48 parking spaces. (Further information on the history of this case may be found in the file of Z. A. Case No. 21609.) The applicant now wishes to build three additional tennis courts to conclude the tennis complex, thereby providing a total of 15 tennis courts. In the amended application, the applicant points out that the three additional tennis courts, together with the existing 12 courts, have removed 15 golf range tees and therefore will reduce the need for golf parking spaces. Field inspection revealed that the three tennis courts have not yet been constructed. Also, the tennis patron parking area located to the southerly rear of the courts are rarely used due to the nature of the facility having no clubhouse or other building to encourage socializing on the premises.

In this case, since the applicant has provided two spaces more than that required by the previous Z. A. Case 21609, and since 15 golf driving tees have been eliminated by the tennis courts, the present request for three additional tennis courts should be granted without requiring additional parking. The parking lot does not appear at this time to be heavily used even during peak hours, and certainly the amenity of three more tennis courts is currently very much in demand.

The construction of the final three additional tennis courts without additional parking and redesign of the golf course would create a minimal impact on the open-space character of the total site and would cause the least amount of detriment to surrounding residential properties. Therefore, in view of these circumstances, the authorization of said final three additional tennis courts is proper in relation to adjacent uses, to the development of the community and to the various elements of the General Plan.

2. Under the conditions of approval herein, and under the comprehensive terms and conditions enumerated in extant Z. A. Case Nos. 21195, 21520 and 21609, it is further found that the herein authorized use will not be materially detrimental to the character of the development in the immediate neighborhood nor will it create a significant impact on the environment.

The Environmental Review Committee of the City Planning Department under ED-725-74-CUZ, determined that the project for fourteen courts will not have a significant effect on the environment. Under Article 8, Class 11(c), the amended request to construct three more courts for a total of 15 courts is determined to constitute a minor structure appurtenant to existing commercial golf and tennis facilities and thereby is categorically exempt from the California Environmental Quality Act of 1970. The re-examination of the existing facilities and the proposed facilities authorized on the subject property, after a period of time herein specified, assures its reasonable compatibility with a residential neighborhood and prevents any long term adverse affect upon the community.

Very truly yours,

Kei Uyeda

KEI UYEDA
Associate Zoning Administrator

KU:dc
cc: Director of Planning

County Assessor

Councilman Joel Wachs
2nd District

Lee Ambers
14401 Sylvan Street
Suite 106
Van Nuys, California 91401

CITY OF LOS ANGELES

CALIFORNIA

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OFFICE OF
ZONING ADMINISTRATION

DEPARTMENT OF
CITY PLANNING

600 CITY HALL
LOS ANGELES, CALIF. 90012
485-3851

October 22, 1976

Studio City Golf Course, Inc.
Attn: Arthur E. Anderson,
President
4141 Whitsett Avenue
Studio City, California 91604

Re: Z. A. CASE NO. 22004
4141 Whitsett Avenue
Sherman Oaks-Studio City
District
D. M. NO. 7347
(2202)

Department of Building and Safety

Greetings:

In the matter of the amended and clarified application of Studio City Golf Course, Inc. by Arthur E. Anderson, President, for Conditional Use Approval on a site located in the A1-1 Zone, please be advised that based upon the Findings of Fact hereinafter set forth and by virtue of authority contained in Section 98 of the City Charter and Section 12.24-C,1 of the Municipal Code, the Associate Zoning Administrator hereby authorizes as a Conditional Use, as far as the zoning regulations are concerned, the use of the property described as Lot 1, Tract No. 19437 and leased portions of the flood control channel, and located at 4141 Whitsett Avenue, Sherman Oaks-Studio City District, to permit:

> the modification and amplification of extant Z. A. Case No. 21786, which previously authorized continued maintenance of a golf course recreation center, including 15 tennis courts, so as to now allow an additional 5 tennis courts under the final phase of development and inferentially, to include an additional 23 automobile parking spaces for the total facility,

under the following terms and conditions:

1. That the use and development of the site shall conform substantially with the plot plans submitted with the amended and clarified application and marked Exhibits "A" and "A-1" Revised, except as herein specifically varied or required.

2. That except as herein modified or varied to the extent necessary to give full force and effect to this authorization, all of the terms and conditions of extant Z. A. Case Nos. 21195, 21520, 21609 and 21786 shall be strictly complied with as if restated herein.

3. That the herein approved additional 23 parking spaces shall be developed in full conformance with Section 12.21-A,5 and

6 of the Municipal Code. Further, that a total of 130 parking spaces shall be provided on-site for the total facility, as shown on Exhibit "A-1" Revised.

4. That the existing parkway along Whitsett Avenue shall be fully landscaped with green ground cover, interspersed if desired, with trees, shrubs or flowers. Further, an underground sprinkler system shall be installed prior to the issuance of any building permits for the herein approved development.

5. That prior to the issuance of any building permits for the herein authorized improvements, fully detailed plot and landscape plans shall be submitted to and approved by a Zoning Administrator. Further, said plans shall indicate size and location of buildings and other improvements, sprinkler systems, size and type of trees, shrubs, flowers, ground covers and all other details of the development, including fence type and heights, tennis court locations, lighting, parking details, etc. Said plans shall be in reasonable conformance with the plot plans submitted with the application and marked Exhibits "A" and "A-1" Revised.

Submitted & approved 2-17-77

6. That the existing north pedestrian entrances to the golf pro shop and putting green from Valley Spring Lane be completely closed off with an attractive decorative masonry wall in order to discourage onstreet parking by patrons on Valley Spring Lane.

7. That every effort be made to require all patrons to utilize the offstreet parking facilities provided on the site. Further, that only service vehicles be permitted to use the service entrance to the golf pro shop building located adjacent to Spring Valley Lane. Further, this service entrance shall be provided with a gate and be locked at all times it is not in use for deliveries or other service functions.

8. That all of the existing parking areas along the Whitsett Avenue frontage be restriped to provide parking stalls meeting current standards so that they will be more convenient and to encourage their greater usage by patrons.

9. That the two existing driveways to Whitsett Avenue from the parking area adjacent to Whitsett Avenue be widened to 30 ft. for easier access to the parking facilities on the site.

10. That in the event the use of the nine-hole golf course is discontinued or it is not maintained as a nine-hole golf course, substantially in its present configuration, all authority under this and previous grants relative to the use of the facilities for a tennis facility shall thereafter be null and void.

11. That the entire facility shall remain open to the public and not be operated as a private club.

12. That the existing golf clubhouse shall be retained for that purpose and in no event shall any additional clubhouse or other facility relating to tennis club use, other than the previously authorized office, shall be maintained on the premises unless and until specifically authorized by a separate request.

13. That the hours of operation of the entire facility shall not begin before 7:00 A. M. or continue after 11:00 P. M. of any evening.

14. That all lights on the proposed tennis courts shall be properly shielded in such a manner so that the light shall be directed onto the subject property and shall not transmit light more than one foot candle above the ambient on adjacent residential properties.

15. That in the event that Valleyheart Drive or Valley Spring Lane is widened or improved in such a manner as to eliminate or seriously affect the usability of the golf course, then the number of tennis courts shall be reduced on the total development sufficiently to provide an equivalent amount of space for the continuation of the nine-hole golf course. The number and location of the tennis courts to be removed in such instance shall be determined by a Zoning Administrator after discussion with the owner or lessee of the property, the Bureau of Engineering, Department of Traffic and other affected agencies.

16. That the herein authorized use shall be conducted at all times with due regard for the residential character of the surrounding district, and the right is reserved to the Chief Zoning Administrator to impose additional corrective conditions, if, in his opinion, such conditions are proven necessary for the protection of persons in the neighborhood or occupants of adjacent residential property.

17. That this Conditional Use approval shall be subject to revocation in the same manner as provided in Section 12.27-B,5 of the Municipal Code for revocation of Zone Variances, if the conditions herein are not strictly complied with.

18. That in order to permit a review of this use and the uses authorized under Z. A. Case Nos. 21195, 21520, 21609, and 21786 in the light of any changed condition of the surrounding neighborhood, this Conditional Use authorization, together with those cases previously mentioned, shall all be in full force and effect for a term period ending on May 1, 1985 and shall be null and void thereafter.

18. The use hereby authorized is conditional upon the privileges being utilized within one hundred eighty (180) days after the effective date hereof, and if they are not utilized or construction work is not begun within said time and carried on diligently to completion of at least one usable unit, this authorization shall become void and any privilege or use granted hereby shall be deemed to have lapsed unless a Zoning Administrator has granted an extension of the time limit, after sufficient evidence has been submitted that there was unavoidable delay in taking advantage of the grant. Once any portion of the privilege hereby granted is utilized, the other conditions thereof become immediately operative and must be strictly complied with. Furthermore, that this Conditional Use approval shall be subject to revocation in the same manner as provided under Section 12.27-B,5 of the Municipal Code for revocation of Zone Variances, if the conditions herein contained are not strictly complied with.

The applicant's attention is called to the fact that this grant is not a permit or license and that any permits and licenses required by law must be obtained from the proper public agency. Furthermore, that if any condition of this grant is violated or if the same be not complied with in every respect, then the applicant or his successors in interest may be prosecuted for violating these conditions the same as for any violation of the requirements contained in the Municipal Code. In the event the property is to be sold, leased, rented or occupied by any person or corporation other than yourself, it is incumbent that you advise them regarding the conditions of this grant. The Associate Zoning Administrator's determination in this matter will become effective after an elapsed period of fifteen (15) days from the date of this communication unless an appeal therefrom is filed within said fifteen (15) day period with the Board of Zoning Appeals.

FINDINGS OF FACT

After thorough consideration of the statements, plans, photographs and other documents contained in the amended and clarified application, the report and photographs of the City Planning Associate thereon, the petitions both in support and opposition as well as other communications relative to this matter, the statements made at the public hearing before the Associate Zoning Administrator on May 7, 1976, the information contained in the files of Z. A. Case Nos. 13459, 13586, 13744, 17460, 21195, 21520, 21609 and 21786, all of which are by reference made a part hereof, as well as personal inspection of the property and surrounding district, I find that the requirements for authorizing a Conditional Use under the provisions of Section 12.24-C,1 of the Municipal Code have been established by the following facts:

1. The subject property consists of a roughly rectangular shaped, 19 acre parcel of land with a frontage of approximately 950 ft. on Whitsett Avenue, approximately 1,068 ft. on Valley Spring Lane, 211.33 ft. on Bel Air Avenue,

and approximately 1,399 ft. on Valleyheart Drive (unimproved adjacent to the Los Angeles River Channel on the southwest).

The property is now improved with 15 tennis courts, an existing nine-hole pitch and putt golf course, approximately 105 parking spaces, tennis office, golf club house and pro shop, a 34-tee driving range and a maintenance building. The entire site is in the A1-1 Zone.

The subject property was originally authorized as a Conditional Use for a privately operated golf recreation center, including a driving range, pitch and putt golf course, and incidental offstreet parking under Z. A. Case No. 13459. This Conditional Use approval was subsequently modified by several Z. A. cases with authorization for successive construction of lighted tennis courts and additional parking facilities.

The applicant now proposes, as a final phase of development, to add 5 additional tennis courts on the interior of the site and which will result in displacement of 10 of the 34 tees on the golf driving range, and the addition of approximately 23 new parking spaces to serve the entire facility. The construction of the final phase of development with the 5 tennis courts will still maintain the open space character of the total site and because the interior location of the proposed improvements will create minimal detriment to surrounding residential properties. Further, the recreational nature and character of the entire facility will be unchanged except for the reduction of the size of the driving range to 24 tees. The existing pitch and putt golf course will be maintained in its entirety and in the event the widening of surrounding streets necessitates removal of any part of the golf course, the herein imposed conditions will assure the continuation of said facility.

There is a greatly increased demand throughout the City for public facilities for the playing of tennis, which has greatly increased in popularity in the last few years. There are very limited public facilities in parks and these are subject to heavy demand. Further, the site is well buffered from adjacent residential uses in that it is surrounded by public streets and the open nature of the use, landscaping and limited commercial nature all provide a recreational facility compatible with the neighborhood. Therefore, in view of these circumstances, the authorization of the final phase of the development of the tennis courts is proper in relation to adjacent uses, to the development of the community and the various elements and objectives of the General Plan.

2. In view of the limited nature of the herein involved modification of the existing facilities, the comprehensive terms and conditions of extant Z. A. Case Nos. 21195, 21520, 21609 and 21786 and the term nature of the grant which will permit reexamination in the light of any changed conditions, it is further determined that the proposed facility will be compatible with the residential neighborhood and prevent any long term adverse effect on the community or be materially detrimental to the character of the development of the neighborhood.

The Environmental Review Committee of the City Planning Department, under EIR No. ED-18-76-CUZ, determined that the project for additional tennis courts will not have a significant effect on the environment. After a thorough review of this file, the testimony at the public hearing, as well as review and analysis of all of the data in the file relative to the proposal, the Associate Zoning Administrator concurs in the Committee's conclusion.

Very truly yours,

Robert D. Wilson

ROBERT D. WILSON
Associate Zoning Administrator

RDW:dc

cc: Director of Planning

County Assessor

Councilman Joel Wachs
Second District

Lee Ambers
14401 Sylvan Street
Suite 106
Van Nuys, California 91401

December 12, 1994

Honorable Board of Zoning Appeals
200 North Spring Street
Los Angeles, CA 90012

CASE NOS. BZA 5055
and ZA 94-0530(CUZ)
SUPPLEMENTAL REPORT
4141 Whitsett Avenue
Sherman Oaks-Studio City-
Toluca Lake Planning Area
Zone : A1-1
D. M.: 165B161
C. D.: 5
CEQA : CE 94-0502
Fish & Game: Exempt
Legal Description: Lot 1,
Tract 19437

On October 20, 1994 I denied a conditional use permit in connection with the continued use and maintenance of an existing nine-hole pitch and putt golf course, golf driving range, 20 tennis courts, incidental parking, pro shop, snack bar and accessory uses a the above referenced location.

My denial was without prejudice and was based essentially on the legal issue involving the status of the applicant's tenancy at the location. The applicant is not the owner of the subject property and at the time of my determination the owner was suing to evict the applicant on the grounds that the applicant's leasehold interest in the property was no longer valid. The matter was in litigation and had not been resolved. It was my conclusion that it would not have been in the interest of the public welfare to approve the subject application at that time because the owner of the property had not joined in the application and was in opposition to its approval and to do so could expose the City to litigation.

Subsequently, on November 30, 1994 and December 7, 1994 the court took actions on the issue which are significant and which may affect the Board's action on the appeal before it. Attached are copies of two documents concerning the above referenced matter consisting of court orders dated November 30, 1994 and December 7, 1994, respectively. The first document grants a motion by the Studio City Golf Course for summary judgement regarding the status of the lease agreement between the involved parties, and denies a similar motion by the owner of the subject property, Weddington Investment. The second document is a denial of a motion for reconsideration in connection with the court's action of November 30, 1994. At this time I am unable to comment on the documents and if the issue regarding the applicant's status of tenancy at the location has been fully resolved and would therefore cause me to change my position on the conditional use application. A representative of the Office of the City Attorney has been requested to attend the meting of the Board on December 13, 1994 to comment on the legal issues involved.

In the event the Board acts to grant the appeal and approve the conditional use application, the following recommended conditions of approval are submitted:

1. That a revised, detailed plot plan showing with dimensions the exterior boundaries of the property involved, the adjoining streets, parking spaces, driveways, enclosing fixtures, bumper guards and wheel stops, type of surfacing, landscaping, sprinkler systems and other improvements be submitted to and approved by a Zoning Administrator prior to issuance of any building permits or certificate of occupancy for the use of the property for the purposes herein authorized.

2. The authorized use shall be conducted at all times with due regard for the character of the surrounding district, and the right is reserved to the Zoning Administrator to impose additional corrective conditions, if, in the Administrator's opinion, such conditions are proven necessary for the protection of persons in the neighborhood or occupants of adjacent property.

3. All graffiti on the site shall be removed or painted over within 24 hours of its occurrence.

4. All other use, height and area regulations of the Municipal Code and all other applicable government/regulatory agencies shall be strictly complied with in the development and use of the property, except as such regulations are herein specifically varied or required.

5. All of the terms and conditions of extant ZA Case No. 21786 shall remain in effect as if restated herein except for any modifications or amplifications as authorized herein.

6. Prior to the issuance of building permits in connection with the grant herein, plot plan approval shall be obtained from the Fire Department. Such approval shall consider, but not be limited to, the gasoline storage tank located on the subject property and its use and maintenance or abandonment pursuant to applicable provisions of the Municipal Code.

7. In order to provide for reexamination of the matter in the light of any changed conditions in the neighborhood, the authority herein granted shall be valid for a period of 10 years from the effective date hereof, and null and void thereafter.

Horace E. Tramel, Jr.

HORACE E. TRAMEL, JR.
Associate Zoning Administrator

HET:lmc

CITY OF LOS ANGELES
CALIFORNIA

ROBERT JANOVICI
CHIEF ZONING ADMINISTRATOR

ASSOCIATE ZONING ADMINISTRATORS
JAMES J. CRISP
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LOS ANGELES, CA 90012-4801
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October 20, 1994

BZA-5055

Art E. Anderson (A)
Studio City Golf Course, Inc.
4141 Whitsett Avenue
Studio City, CA 91604

Weddington Investment Co., Inc.
11222 Weddington Street
North Hollywood, CA 91601

Gary L. Morris (R)
6433 Topanga Canyon Boulevard, #138
Canoga Park, CA 91303

CASE NO. ZA 94-0530(CUZ)
LETTER OF CORRECTION
4141 Whitsett Avenue
Sherman Oaks-Studio City-
Toluca Lake Planning Area
Zone : A1-1
D. M.: 165B161
C. D.: 5
CEQA : CE 94-0502
Fish & Game: Exempt
Legal Description: Lot 1,
Tract 19437

Department of Building and Safety

On October 18, 1994, I denied without prejudice a conditional use permit to allow the continued use and maintenance of an existing nine-hole pitch and putt golf course, golf driving range, 20 tennis courts, incidental parking, pro shop, snack bar and accessory uses at the above referenced location. After further consideration I have decided that the letter of determination should be changed to provide a more accurate representation. Accordingly, the first full paragraph on Page 7 of the letter of determination is hereby corrected to read as follows:

> The applicant is not the owner of the subject property. The owner is suing to evict the applicant on the grounds that the applicant's leasehold interest is no longer valid. The matter is in litigation and has not been resolved. The City cannot impose conditions in connection with a grant unless there is reasonable assurance that such conditions can be carried out. In this instance there is no such assurance because the owner of the subject property has not joined in the application and is in opposition to its approval. Therefore, it would not be in the interest of the public welfare to approve the subject application under the existing circumstances and to do so could expose the City to litigation.

Horace E. Tramel, Jr.
HORACE E. TRAMEL, JR.
Associate Zoning Administrator

HET:lmc

cc: Councilman Zev Yaroslavsky
Fifth District

BZA-5055

October 18, 1994

Art E. Anderson (A)
Studio City Golf Course, Inc.
4141 Whitsett Avenue
Studio City, CA 91604

Weddington Investment Co., Inc.
11222 Weddington Street
North Hollywood, CA 91601

Gary L. Morris (R)
6433 Topanga Canyon Boulevard, #138
Canoga Park, CA 91303

Department of Building and Safety

CASE NO. ZA 94-0530(CUZ)
CONDITIONAL USE
4141 Whitsett Avenue
Sherman Oaks-Studio City-
Toluca Lake Planning Area
Zone : A1-1
D. M.: 165B161
C. D.: 5
CEQA : CE 94-0502
Fish & Game: Exempt
Legal Description: Lot 1,
Tract 19437

Pursuant to Los Angeles Municipal Code Section 12.24-C,9 and 12, I hereby DENY WITHOUT PREJUDICE:

> a conditional use permit to allow the continued use and maintenance of an existing nine-hole pitch and putt golf course, golf driving range, 20 tennis courts, incidental parking, pro-shop, snack bar and related accessory uses on a site in the A1-1 Zone, described as Lot 1, Tract 19437, located at 4141 Whitsett Avenue, Sherman Oaks-Studio City-Toluca Lake Planning Area.

FINDINGS OF FACT

After thorough consideration of the statements contained in the application, the report of the Zoning Analyst thereon, and the statements made at the public hearing before the Zoning Administrator on August 22, 1994, and the advice of the Office of the City Attorney, all of which are by reference made a part hereof, as well as knowledge of the property and the surrounding district, I find that the requirements for denying a conditional use permit under the provisions of Section 12.24-C of the Municipal Code have been established by the following facts:

BACKGROUND

The subject property consists of a very large parcel of land, approximately 17 acres in area, being generally triangular shaped, with a frontage of approximately 950 feet on the southerly side of Valley Spring Lane and with considerably lesser frontage of approximately 211 feet on Bel Air Avenue to the west. The southerly portion of the involved property adjoins the Los Angeles River Channel, so that the site is completely surrounded by streets and the river bed.

The property is in the A1 Zone and is developed with a large private recreational facility including 20 tennis courts, a golf course, tennis control building, driving range, pro shop and 131 paved parking spaces.

Surrounding properties are within the R3-1 and R1-1 Zones and are characterized by level topography and improved streets. The surrounding properties are developed with one- and two-story single-family dwellings and apartments.

Adjoining properties to the north of Valley Spring Lane are zoned R1-1 and are developed with one-story single-family dwellings.

Adjoining properties to the south of the subject site is zoned OS and is the Los Angeles County Flood Control Channel.

Adjoining properties to the east of Whitsett Avenue are zoned R3-1 and are developed with two-story apartments.

Adjoining properties to the west of Bellaire Avenue are zoned R1-1 and are developed with one-story single-family dwellings.

<u>Whitsett Avenue</u>, adjoining the subject property to the east, is a designated Secondary Highway dedicated a width of 28 feet and improved with curb, gutter and sidewalk.

<u>Valley Spring Lane</u>, adjoining the subject property to the north, is a local street dedicated a width of 60 feet and improved with curb, gutter and sidewalk.

Prior related actions on the site/in the area include:

Subject Property:

> <u>Case No. ZA 13459</u> - On May 9, 1955, the Zoning Administrator approved for 10 years a conditional use to establish and operate a privately owned recreational center, one gold pro shop in the R1 and R3 Zones.
>
> <u>Case No. ZA 13744</u> - On December 29, 1955, the Zoning Administrator modified conditions of approval for ZA 13459.
>
> <u>Case No. ZA 13586</u> - On July 18, 1955, the Zoning Administrator granted a conditional use to enlarge floor area over that permitted in Condition No. 4, ZA 13459, for proposed clubhouse building and also storage space or portion of 2,400 square feet involved in the R1-1 Zone.
>
> <u>Case No. ZA 17460</u> - On May 13, 1964, the Zoning Administrator approved for 10 years the continued u se of privately operated recreation center with golf pro shop, snack bar, with off-street parking with fencing, lighting and sign.

Case No. ZA 21520 - On November 4, 1974, the Zoning Administrator dismissed conditional use for a pitch and putt golf course and five tennis courts with related ancillary facilities.

Case No. ZA 21786 - On September 3, 1975, the Zoning Administrator approved a conditional use of golf driving range, pitch, a putt course and two additional tennis courts with parking and accessory facilities.

Case No. ZA 22004 - On October 22, 1976, the Zoning Administrator granted the continued use of pitch and putt golf course with driving range, tennis courts, and accessory facilities. BZA 2380 denied the protestant's appeal of the decision on December 28,1 976.

City Plan Case No. 23662 - On October 27, 1971, Ordinance No. 142,584 became effective for a change of zone from R1-1 and R3-1 to A1-1.

Permit No. 84VN79019 - Issued on October 28, 1984, to reroof tennis shop.

Permit No. 75VN29551 - Issued on October 10, 1975 for a 12-foot fence with lights.

Permit No. 75VN22150 - Issued on April 18, 1975, for a 12-foot tennis court fence.

Permit No. 75VN4337 - Issued on November 15, 1975 for a tennis shop.

Permit No. 75VN4338 - Issued on November 15, 1975, for a 12-foot tennis court fence.

Permit No. 73VN1709 - Issued on August 27, 1973, for cut and fill for tennis court sites.

Surrounding Properties:

No similar or relevant cases were found on surrounding properties in the immediate neighborhood.

At the public hearing conducted for the application approximately 150 people were in attendance and six people commented including the applicant's representative, a representative of the owner of the subject property, a representative of district Councilman Zev Yaroslavsky and a representative of the Studio City Residents Association. All of the speakers expressed support for the project with the exception of the representative of the owner of the subject property.

The applicant's representative indicated that the subject use is appropriate for the location and has been continuous for the past approximate 38 years. The site is the only significant green area in the community. It is widely used and is an asset to the community. There is wide support for approval of its continued operation from local residents including the Studio City Residents Association and other community groups. There is virtually no opposition. Approximately 2000 signatures in support have been submitted and an additional 700 names were submitted at the public hearing. It was indicated that the only opposition was from the owner of the subject property and that the opposition was based on the owners desire to sell or develop the land for a more profitable use.

Further, the applicant's representative addressed several issues raised in a letter to the file from the owners attorneys dated August 11, 1994, including defective notice of the public hearing for the subject application; that the applicant lacked standing to request the subject conditional use; that the environmental clearance issued for the application is not adequate; and that land use issues have not been properly addressed. With respect to the claim that the notice of the hearing was defective, it was indicated that a review of all public actions and approvals shows that the current notice is identical to those for past applications for use of the site. However, as a portion of the adjacent Valleyheart Drive is leased from the County of Los Angeles and is included in the project site, the leased area increased the size of the site and required an expanded notice area by 50 feet and an additional 12 properties which were not noticed by mail. In this regard the applicant's representative attempted to contact the owners of the 12 properties and was able to secure signatures in support from 10 of the owners, one owner was out of state and difficult to contact and the other property owner declined to sign in support but did not express opposition to the application.

With respect to the applicant's standing to request the subject conditional use, it was indicated that the applicant has been the operator of the subject facility at the location for the past 38 years. Further, that questions about this matter are legal issues to be resolved by the parties or in a court, not at a public hearing on the merits of a conditional use. However, the lease agreement between the parties does specify that the City must refuse to extend the lease in order for it to be invalid. Moreover, it was also indicated that the conditional use approved for the location expired in 1985 and the applicant failed to request a new conditional use because of erroneous information provided by a City employee in 1975 who said ,"to put the papers in a drawer and not worry about it unless there were a significant change in the operation or the community". Apparently that official assumed that the applicant knew he had to renew the conditional use in ten years. All prior requests to the City for use of the site were made by the leasee only. The applicant also assumed that changing the site's zoning from "R" to "A" made new requests unnecessary, as would be true for a regulation golf course.

With respect to the environmental clearance for the application, it was indicated that all prior applications and approvals were granted after adequate examination of potential impacts. Such approvals were granted when something new was proposed, either golf course or tennis courts and now the request is for the continuation of a use that has proven its merit and lack of impacts. There have been no complaints regarding the facility because there have been no problems. A gasoline storage tank located on the subject site is more than 100 feet from any buildings and poses no hazard.

With respect to land use issues, it was indicated that all land use issues have been addressed through prior approvals and the current request. It is not material that one of the buildings on the site is used for managers quarters and has been for the past 20 years, a clearly permitted use in the A1 Zone. Such use enhances rather than detracts from the level of service provided and security. The intrusion into the Los Angeles County Flood

Control leased land is immaterial and a change of legal description has been submitted to avoid confusion. At the close of his testimony the applicant's representative indicated that the subject application should be approved and that the required findings in support of approval had been made and included in the applicant's application for the subject conditional use.

The representative of district Councilman Zev Yaroslavsky expressed the councilman's support for the application indicating that the applicant's representative had clearly laid out the significant aspects of the project. The subject property is currently at its best and highest use and is a necessary and beneficial feature of the community providing valuable open space. Conditional use authorizations are often reviewed after a reasonable period of time. The applicant should have reapplied when the previous conditional use expired, but it is apparent that the use is proper for the location and should be allowed to continue even if another operator takes over the facility. The subject property was rezoned to the A1 Zone and the adopted district plan was amended to designate the site for Open Space. To institute a new use of the site would require additional hearings and environmental review and the site would likely remain vacant for a substantial period of time.
A representative of the Studio City Residents Association spoke in support of the application indicating that the golf course is a valuable asset to the community and that virtually all of the people in attendance at the public hearing were members of the organization he represents and were in support of approval. A letter from the Association was submitted at the hearing.

The representative of the owner of the subject property spoke in opposition to approval of the application indicating that the subject application was improperly filed and should not have been before the Zoning Administrator. The applicant had no standing to file the application because the lease had terminated under their agreement and the issue is in litigation. Moreover, the notice of the public hearing for the subject application did not include the entire property being put to golf course uses. The previous conditional use authorization expired in 1985 and because of this the contract between the owner and the leasee terminated. The applicant's tenancy terminated August 16, 1994. The Zoning Administrator has no authority to grant a new conditional use application over the subject property without the consent of the owner of the property. The notice of the public hearing was inadequate because the project was not properly described and the project site was not fully described. Moreover, the application was not properly signed in that it was signed by the applicant in a private capacity and not as an officer of the corporation. An underground gasoline storage tank may be located near a dwelling on the site and may cause exposure to hazardous substances. The Staff Report prepared for the application is inadequate in that much of the required parking is not being provided and this issue was not addressed. The other testimony at the hearing was in support of the project and correspondence received consists of numerous letters and petition signatures in support. The only correspondence opposition to approval came from the owner of the subject site.

BASIS FOR CONDITIONAL USE PERMITS

A particular type of development is subject to the conditional use process because it has been determined that such use of property should not be permitted by right in a particular zone. All uses requiring a conditional use permit from the Zoning Administrator are located within Section 12.24-C of the Los Angeles Municipal Code. In order for a particular request to be authorized, certain designated findings have to be made. In certain cases, there are specific conditional use categories which have additional or unique findings only applicable to that specific use in lieu of the four standard findings for other conditional use categories.

FINDINGS

In order for a conditional use permit for maintenance of a gold course to be approved the mandated findings delineated in Municipal Code Section 12.24-C must be made in the affirmative. Following (highlighted) is a delineation of the findings and the application of the relevant facts to same:

1. **The proposed location will be desirable to the public convenience but would not be in the interest of the public welfare.**

   The applicant has submitted the following in support of this required finding:

   > In the Studio City-North Hollywood area there are few recreational areas other than the subject site that are open to the general public. Thus, this site is desirable to the public as a golf and tennis facility. There is a long term proven public interest in these activities at this location as evidenced by the over 10,000 repeat patrons of these facilities and continued daily usage thereof. The surrounding area is largely residential and this site is harmonious with the overall land use pattern. It also creates a buffer between the commercial use on Ventura Boulevard and the residential uses to the north. This provides a tremendous amount of open space with lush landscaping to provide a visual benefit to the neighborhood and has recently been described by the President of the Studio City Residents Association as "One of the crown jewels of Studio City".

   The Zoning Administrator concurs with the above statements of the applicant and believes that the existing use of the site is appropriate and that such use if allowed to continue would be desirable to the public convenience. However, approval of the application at this time under the existing circumstances regarding the status of the tenancy of the applicant at the location would not be in the best interest of the public welfare and could expose the City to liability. Accordingly, Zoning Administrator must deny the application. The application is denied without prejudice.

   At the close of the public hearing conducted for the application on August 22, 1994 the Zoning Administrator took the application under advisement in order to assess the contention of the owner of the subject site that the applicant is a month-to-month tenant of the premises and has no authorization to request a conditional use of the site over the owner's objection. The owner of the property indicated among other issues that the lease agreement between the owner and the applicant had terminated, that the applicant had become a month-to month tenant and that a notice of termination had been issued with vacation of the premises to occur within 30 days from July 15, 1994. While the applicant was given an opportunity to, and did, respond to the owners contentions, the response was not sufficient with respect to the current status of the applicant's current and ongoing tenancy at the location and made no mention of the month-to-month tenancy or the notice to vacate the premises. The matter is currently under litigation and to date the matter has not been resolved.

The Zoning Administrator consulted the Office of the City Attorney for legal advice on the issues involved. It was the advice of the City Attorney that as the applicant is not the owner of the subject property, is considered a month-to-month tenant, an unlawful retainer is involved and that the matter is in litigation and has not been resolved, the City cannot impose conditions in connection with a grant unless there is reasonable assurance that such conditions can be carried out. In this instance there is no such assurance because the owner of the subject property has not joined in the application and is in opposition to its approval. Therefore, it would not be in the interest of the public welfare to approve the subject application under the existing circumstances and to do so could expose the City to litigation.

2. **The location is proper in relation to adjacent uses or the development of the community.**

The applicant has submitted the following in support of this required finding:

> The project was first approved in 1958 and has grown and matured with the community. In accordance with the Conditional Use Permit and Variance granted, the property has been developed with careful attention to its environment. The Clubhouse is of residential design with a gabled roof and thus blends with the neighboring development. The golf driving range, golf course and parking area are designed and landscaped so as to present as attractive an appearance as possible and thus to enhance the appearance of the overall area. Similarly, the tennis courts, as shown on the enclosed plot plan, are built and landscaped so as to blend with the general attractiveness of the entire recreational area.

The Zoning Administrator concurs with the above and also finds that the subject facility has been in operation at the location for many years and has become a focal point in the community. The site is adjoined on three sides by low density residential uses with commercial uses adjacent to the southwest. The property provides the only substantial green area in the local community and has existed and has been operated in a compatible manner with the uses on adjacent properties without apparent adverse impact to the those properties. Its continued use and maintenance would in no way affect the existing character of the neighborhood.

3. **The use will not be materially detrimental to the character of the development in the immediate neighborhood.**

The applicant has submitted the following in support of this required finding:

As has been stated above, the project has been a focal point of the community since its approval in 1958, at which time the City of Los Angeles found the project to be in harmony with the General Plan and a positive addition to the neighborhood. The project provides much needed open space in an increasingly urban and paved over environment. The location which is immediately adjacent to the flood control channel, on the south acts as a buffer to this and the commercial uses further south on Ventura Boulevard. The existing homes to the west, north and east all consider this to be their park and view it as a significant benefit to their neighborhood.

The Zoning Administrator concurs with the above and also finds that the continued use and maintenance of the subject facility would continue to provide valuable open space and recreational opportunities for residents of the area and for visitors from other parts of the city. The use is a beneficial aspect of the local environment and would continue to enhance the community consistent with the goals and objectives of the adopted district plan.

4. **The proposed location will be in harmony with the various elements and objectives of the General Plan.**

The adopted Sherman Oaks-Studio City-Toluca Lake District Plan designates the subject property for Public Open Space. The use of the site is consistent with this designation and it was intended that the subject use or a similar use be continued over the property. The Plan was amended to its current designation for the site partially in recognition of the existing uses at the location which have been continuous for more than 35 years. The continued operation of the existing facility would in no way compromise the Plan and its objective to provide valuable and desirable open space in the community coupled with recreational opportunities. The continued use of the site as proposed in the subject application is an appropriate use of the property under the Plan and is compatible with adjacent and surrounding uses.

ADDITIONAL MANDATORY FINDINGS

5. The subject property is not located in an area for which a flood insurance rate map has been prepared.

6. On July 15, 1994, the subject project was issued a Notice of Exemption (Article III, Section 3, City CEQA Guidelines), log reference CE 94-0502, for a Categorical Exemption, Class 1, Category 2. City CEQA Guidelines, Article VII, Section 1, State EIR Guidelines, Section 15100.

7. Fish and Game: The subject project, which is located in Los Angeles County, will not have an impact on fish or wildlife resources or habitat upon which fish and wildlife depend, as defined by California Fish and Game Code Section 711.2.

NOTICE

Congestion Management Program (CMP): The CMP is a program enacted by the State Legislature with the passage of Assembly Bill 471 (July 10, 1989), as amended by Assembly Bill 1791 (February 11, 1990). The CMP's intent is to coordinate land use, transportation and air quality decisions on the regional highway and roadway system as defined by the Congestion Management Agency (CMA). The owner of any project or structure which contributes to the degradation of this system, based on standards adopted by the CMA, due to unmitigated trips, may be subject to additional trip mitigation measures to be imposed by the CMA (LACTC).

APPEAL PERIOD - EFFECTIVE DATE

THE ZONING ADMINISTRATOR'S DETERMINATION IN THIS MATTER WILL BECOME EFFECTIVE AFTER NOVEMBER 2, 1994, UNLESS AN APPEAL THEREFROM IS FILED WITH THE BOARD OF ZONING APPEALS. IT IS STRONGLY ADVISED THAT APPEALS BE FILED EARLY DURING THE APPEAL PERIOD AND IN PERSON SO THAT IMPERFECTIONS/INCOMPLETENESS MAY BE CORRECTED BEFORE THE APPEAL PERIOD EXPIRES. ANY APPEAL MUST BE FILED ON THE PRESCRIBED FORMS, ACCOMPANIED BY THE REQUIRED FEE AND RECEIVED AND RECEIPTED AT A PUBLIC OFFICE OF THE DEPARTMENT OF CITY PLANNING ON OR BEFORE THE ABOVE DATE OR THE APPEAL WILL NOT BE ACCEPTED. SUCH OFFICES ARE LOCATED AT:

Los Angeles City Hall
200 North Spring Street
Room 460, Counter S
Los Angeles, CA 90012
(213) 485-7826

6251 Van Nuys Boulevard
First Floor
Van Nuys, CA 91401
(818) 756-8596

Horace E. Tramel, Jr.
HORACE E. TRAMEL, JR.
Associate Zoning Administrator

HET:lmc

cc: Councilman Zev Yaroslavsky
Fifth District
Adjoining Property Owners
County Assessor

Los Angeles City Board of Zoning Appeals

Room 504, City Hall, Los Angeles, Ca 90012-4801 (213) 485-2470

Mailing Date: January 3, 1995

BZA Case No. 5055
ZA Case No. 94-0530-CUZ
CEQA: CE 94-0502
Fish and Game: Exempt

Address: 4141 Whitsett Avenue
Community plan: Sherman Oaks-Studio City-Toluca Lake
Zone: A1-1
Council District: 5
D.M.: 165-B-161
Legal: Lot 1, Tract 19437

Applicant/Appellant: Studio City Golf Course (Gary L. Morris)

BOARD OF ZONING APPEALS DETERMINATION REPORT

Meeting Date: December 13, 1994

Summary of determination action:

Appeal granted
Conditions of approval imposed
Findings of Z.A. modified

Vote Summary:

Moved:	Mr. Weil
Seconded:	Mr. Gilbert
Aye(s):	Mr. Acevedo
	Ms. Kezios
	Mr. Silcott
No(es):	None
Absent:	None

Effective Date:

Effective January 19, 1995 unless appealed

Appeal Status:

Appealable on or before January 18, 1995

Peter M. Weil
Peter M. Weil, Chair

Edward Barr, City Planner

cc: The determination notice list attached to the case file.

DO NOT file appeals or requests for transfer of jurisdiction with the Board. File them in accordance with the information contained in this report. Attach a copy of this report to your appeal application.

BOARD OF ZONING APPEALS DETERMINATION REPORT

BACKGROUND AND APPEAL REQUEST:

1. On October 18, 1994, Zoning Administrator Horace Tramel denied:

   a conditional use permit to allow the continued use and maintenance of a nine hole pitch and putt golf course, golf driving range, 20 tennis courts, incidental parking, pro shop, snack bar and related accessory uses on a site approximately 17 acres in size in the A1-1 Zone.

2. The applicant appealed the entire action.

PROPERTY DESCRIPTION:

Site area: 17 acres (approximate).

Site description: generally a triangular, level parcel surround by three streets and the Los Angeles River.

Existing use of site: pitch and put golf course with accessory uses.

ACTION: BY VIRTUE OF THE AUTHORITY VESTED IN IT BY CHARTER SECTION 99 AND MUNICIPAL CODE SECTION 12.28, THE BOARD:

1. Pursuant to Board of Zoning Appeals Case No. 5055 and Zoning Administration Case No. 94-0530-CUZ, GRANTED the applicant appeal, subject to the attached, Exhibit B-1, Conditions of Approval.

2. GRANTED, subject to the attached, Exhibit No. B-1, Conditions of Approval, the conditional use permit.

SUMMARY OF THE HEARING:

1. The Zoning Administrator summarized the action, findings and facts set forth in the determination and report to the Board. In addition, the Administrator stated that as stated in his report, the applicant is not the owner of the property, and is in fact in the midst of litigation. For that reason, the Administrator was advised by the City Attorney's office that if he had approved the conditional use, it might have placed the City in a position of liability.

   However, there has now been a Superior Court ruling, apparently in the favor of the tenant, and the City Attorney is here to explain the situation.

2. The representative of the City Attorney's office addressed the Board. The judge of the court has ruled that the applicant in this case may be either the owner or the lessee, so the proper applicant is in front of the Board, and the Board is now free to make its determination based on the merits of the case and not the legal problems involved.

3. The attorney for the owner of the property addressed the Board, stating that it is not the intent of the owner of the property to shut down the golf course. Should the Board approve the conditional use, then his client will appeal, because the tenant had no right to file for the conditional use in the first place.

4. Another attorney for the owner addressed the Board, stating that it is his clients' intent to appeal the Superior Court ruling, and if the Board approves the conditional use, it will place the burden on the litigation proceedings. While these issues are pending in a court of law, the tenant has no right to apply for the conditional use, and the action of the Board may hinder the process.

   [Mr. Weil asked if there was anyone in the room who felt that there were any reasons not to grant the appeal, based on the merits of the case, not the legal issues.]

5. The first attorney addressed two issues, the underground gasoline storage tank and the change in parking requirements, stating that both these issues needed to be resolved before the conditional use is considered.

   [The Zoning Administrator stated that both the issues were addressed in a set of conditions contained on page 2 of a supplemental report to the Board dated December 12, 1994.]

6. The Board deliberated as follows:

   a. Mr. Weil moved to overturn the determination of the Zoning Administrator, to grant the appeal, to add the aforementioned conditions and to modify the findings of the Zoning Administrator as necessary.

   b. The remainder of the Board concurred.

<u>FINDINGS</u>:

1. Conditional use. Pursuant to Municipal Code Section 12.24-C. 9 and 12, the Board sustained the findings of the Zoning Administrator, except as stated in the subject findings.

   a. The proposed location will be desirable to the public convenience and will be in the interest of the public welfare inasmuch as the Board was advised by the City Attorney's office that a judge of the Superior Court has ruled that the tenant may file the application for conditional use. Therefore, the concern for the liability of the City expressed by the Zoning Administrator in his denial of the conditional use no longer exists.

2. The project has been restricted by the conditions imposed by this action. Such limitations are necessary to protect the best interests of and to assure a development more compatible with surrounding properties and/or to prevent or mitigate the potential adverse environmental effects of the subject

recommended action.

MANDATORY FINDINGS:

1. Environmental (CE). On July 15, 1994, the Environmental Review Section of the Planning Department determined that the City of Los Angeles Guidelines for the Implementation of the California Environmental Quality Act of 1970 designate the subject project as categorically exempt under Article VII, Section 1, Class 1, Category 2.

2. Fish and Game (CE). Pursuant to said exemption, the subject project, which is located in Los Angeles County, WILL NOT have an impact on fish or wildlife resources or habitat upon which fish and wildlife depend, as defined by the California Code of Regulations Title 14, Section 753.5(d).

3. The Board arrived at its determination based upon its review of available records and evidence contained in the subject and related files and upon testimony and evidence provided at the Board's hearing on the subject matter.

CONGESTION MANAGEMENT PROGRAM (CMP) COUNTY WIDE IMPACT FEE NOTICE: The CMP is a new program enacted by the State Legislature with the passage of Assembly Bill 471 (July 10, 1989), as amended by Assembly Bill 1791 (February 11, 1990). The CMP's intent is to coordinate land use, transportation and air quality decisions on the regional highway and roadway system as defined by the Congestion Management Agency which locally is the Metropolitan Transportation Authority (MTA). The owner of any project or structure which contributes to the degradation of this system, based on standards adopted by the CMA, due to unmitigated trips, may be subject to additional trip mitigation measures to be imposed by the CMA (MTA).

APPEAL RIGHTS:

1. Appealable. The determination in this matter is appealable. Said determination will become effective on the date indicated on the front page of this report unless an appeal therefrom is filed with the City Council.

2. Appeal filing requirements:

   a. Must be filed in person by the appellant or appellant's representative on the prescribed forms.

   b. Must be accompanied by the required fee payments.

   c. Applicant appeal applications must be accompanied by hearing notice labels or a receipt of payment for vendor mailing services, to the satisfaction of the public counter.

   d. Must be filed in person by the appellant or appellant's representative at any of the following public counters:

Planning Counter
City Hall Room 460-S
200 North Spring Street
Los Angeles, CA 90012
Hours: Monday thru Friday
7:30 a.m.-5:00 p.m.
(except holidays)

Planning Counter
First Floor,
6251 Van Nuys Boulevard
Van Nuys, CA 91411
Hours: Monday thru Friday
7:30 a.m.-5:00 p.m.
(except holidays)

e. Must be filed within the time period set forth on the front of this report.

f. No hearing notice posting is required for City Council appeals hearings.

EFFECTUATION OF THE ACTION:

1. Conditional Use:

a. Pursuant to Municipal Code Section 12.24-E, the subject authorization must be utilized within one year after the effective date of the grant.

b. If the subject authorization is not utilized, or if construction or installation of physical improvements has not begun and diligently been carried on to completion, within the one year period, this grant shall become void. Further, any privilege or use authorized by the subject grant shall be deemed to have lapsed.

2. Time Extension: A request for permit utilization time extension:

a. Must be filed at a public counter of the Planning Department, and

b. the extension application must be accepted prior to the expiration of the time to utilize the grant or other authorization.

c. The extension application must be accompanied by the appropriate fee payment and substantial evidence that unavoidable delay has prevented or will prevent the applicant from taking advantage of the grant or authorization within the specified time limits.

d. WARNING: IF more than one permit is involved, be sure you secure an extension of time for each separate permit, as may be required by law. Often permits have different time limits and extension allowances.

REVOCATION/PROSECUTION WARNING:

The applicant's attention is called to the fact that this grant is not a permit or license and that any permits and licenses required by law must be obtained from the proper public agency. Furthermore, if any condition of this grant is violated or not complied with, then the applicant or applicant's successor in interest may be prosecuted or the grant may be revoked. In the event the property is to be sold, leased, rented or occupied by any person or corporation other than yourself, it is incumbent that you advise such person or corporation regarding the conditions of this authorization. If any portion of the authorization is utilized, the other conditions and requirements of the grant will become operative and must be strictly observed.

REFERENCED EXHIBITS:

Exhibit No. B-1: Conditions of Approval (attached).

Exhibit No. A-1: Applicant's plot plan (reduced version attached) (file copy only).

CONDITIONS OF APPROVAL

1. That a revised, detailed plot plan showing with dimensions the exterior boundaries of the property involved, the adjoining streets, parking spaces, driveways, enclosing fixtures, bumper guards and wheel stops, types of surfacing, landscaping, sprinkler systems and other improvements be submitted to and approved by a Zoning Administrator prior to issuance of any building permits or certificate of occupancy for the use of the property herein authorized.

2. The authorized use shall be conducted at all times with due regard for the character of the surrounding district, and the right is reserved to the Zoning Administrator to impose additional corrective conditions, if in the Administrator's opinion, such conditions are proven necessary for the protection of persons in the neighborhood or occupants of adjacent property.

3. All graffiti on the site shall be removed or painted over within 24 hours of its occurrence.

4. All other use, height and area regulations of the Municipal Code and all other applicable government/regulatory agencies shall be strictly complied with in the development and use of the property, except as such regulations are herein specifically varied or required.

5. All of the terms and conditions of extant Z.A. Case No. 21786 shall remain in effect as if restated herein except for any modifications or amplifications as authorized herein.

6. Prior to the issuance of building permits in connection with the grant herein, plot plan approval shall be obtained from the Fire Department. Such approval shall consider, but not be limited to, the gasoline storage tank located on the subject property and its use and maintenance or abandonment pursuant to applicable provisions of the Municipal Code.

7. In order to provide for reexamination of the matter in the light of any changed conditions in the neighborhood, the authority herein granted shall be valid for a period of 10 years from the effective date hereof, and null and void thereafter.

APPENDIX N

CONSTRUCTION TRAFFIC ANALYSIS

Allen Concepcion

From: "Chin S. Taing" <taing@llgengineers.com>
To: "Allen Concepcion" <ajc@pai-la.com>
Cc: "David Shender" <shender@llgengineers.com>; "K.C. Jaeger" <jaeger@llgengineers.com>
Sent: Wednesday, February 22, 2012 6:05 PM
Attach: LLG Draft Construction Analysis (02.22.12).doc
Subject: RE: Studio City Senior Living Center Project - Construction Traffic Analysis

Hi Allen:

Attached is the updated construction traffic analysis summary based on your comments below. Also, do you have any information regarding the project alternatives?

Thanks,
Chin

Chin S. Taing
Transportation Planner III
taing@llgengineers.com

LINSCOTT LAW & GREENSPAN engineers

Linscott, Law & Greenspan, Engineers
236 N. Chester Ave., Suite 200
Pasadena, CA 91106
626.796.2322 T, Ext. 251
626.792.0941 F
www.llgengineers.com

Traffic isn't pretty, but for more than 45 years, we've made it work better.

From: Allen Concepcion [mailto:ajc@pai-la.com]
Sent: Wednesday, February 15, 2012 6:06 PM
To: Chin S. Taing
Cc: David Shender; K.C. Jaeger
Subject: Re: Studio City Senior Living Center Project - Construction Traffic Analysis

Chin,

Thanks. The construction hours are correct, 7-9 M-F and 8-6 on Sat. Can you please change the wording to say that construction hours are "restricted" to those hours as opposed to "envisioned"? The B&S Commissioners are fairly inconsistent with the haul route restriction hours they impose on haul route approvals. The last case I saw (Porter Ranch exporting 3,028 cy of earth) they required hauling operations to take place only between 9am and 3:30pm, Monday through Friday. No hauling allowed on weekends and on

STUDIO CITY SENIOR HOUSING PROJECT CONSTRUCTION TRAFFIC

Construction Assumptions

It is assumed that demolition and grading would occur on the project site during the first year of construction. It is also assumed that after completion of the initial phase of grading, final grading and structure construction would begin on the site and would extend over an approximate two-year period. It is estimated that the excavation would require the removal of approximately 82,000 cubic yards of material from the site. It is assumed that the equipment staging area during the initial phases of construction grading, as well as after the start of construction, would occur on and adjacent to the project site. Construction worker parking would occur within the project site as well as on Valleyheart Drive North adjacent to the project site. Construction hours will be restricted from 7:00 AM to 9:00 PM, Monday through Friday, and 8:00 AM to 6:00 PM on Saturday.

Construction Traffic Trip Generation – Demolition, Construction Grading and Material Export

It is assumed that heavy construction equipment would be located on-site during grading activities and would not travel to and from the project site on a daily basis. However, truck trips would be generated during the grading, and export period, so as to remove material (from grading) from the project site. Trucks are expected to carry the export material to a receptor site located within 20 miles of the project site. The project applicant anticipates that 18-wheel bottom dumping truck and trailer (assuming 20 cubic yards capacity per truck) would be used during the export period between the hours of 7:00 AM and 4:00 PM, Monday to Saturday with the exception of Sundays. Hauling will also not take place between 6:00 PM and 7:00 AM. These estimated restriction hours for hauling activities will be confirmed with the City of Los Angeles Department of Building and Safety. The export period is assumed to require approximately 20 workdays per month for approximately four months. During the peak, grading and export activities, up to 102 truck trips per day (i.e., 51 inbound trips and 51 outbound trips) are anticipated. Of the 102 daily truck trips, it is estimated that approximately ten trucks trips (five inbound trips and five outbound trips) would occur during each of the weekday AM peak hour and PM peak hour.

Construction Traffic Trip Generation – Final Grading and Structure Construction

Activities related to the final grading/structure construction period would generate a higher number of vehicle trips as compared to the grading and material export period. Thus, the greatest potential for impact on the adjacent street system would occur during the final grading/structure construction period.

During the final grading and structure construction period, it is assumed that a trip generation rate of 0.32 worker vehicle trips per 1,000 square feet of commercial development per day is used. Construction workers are expected to typically arrive at the project site before 7:00 AM and most will depart before 3:00 PM. Thus, these construction work trips generally would occur outside of the peak hour of traffic on the local street system. For example, as shown in the traffic study, the peak hour of traffic at the study intersections adjacent to the project site typically begins between 7:45 and 8:00 AM during the morning commuter period, and typically begins at 3:15 and 5:00PM during the afternoon commuter period.

It is anticipated that construction workers would remain on-site throughout the day. It is estimated that approximately 108 vehicle trips per day (i.e., 54 trips inbound and 54 trips outbound) would be generated by the construction workers during the peak construction phases at the project site. Of the peak daily trip generation of 108 daily trips, it is estimated that approximately 11 construction worker vehicle trips (i.e., ten percent of the daily construction worker inbound or outbound trips) would occur during each of the weekday AM peak hour and PM peak hour.

In addition to construction worker vehicles, additional trips may be generated by miscellaneous trucks traveling to and from the project site. These trucks may consist of larger vehicles delivering equipment and/or construction materials to the project site, or smaller pick-up trucks or four-wheel drive vehicles used by construction supervisors and/or City inspectors. During peak construction phases, it is estimated that approximately 50 trips per day (i.e., 25 trips inbound and 25 trips outbound) would be made by miscellaneous trucks. To conservatively estimate the equivalent number of vehicles associated with the trucks, a passenger car equivalency factor of 2.0 was utilized based on standard traffic engineering practice. Therefore, conservatively assuming 50 daily truck trips, it is estimated that the trucks would generate approximately 100 passenger car equivalent (PCE) vehicles trips (i.e., 50 trips inbound and 50 trips outbound) on a daily basis. It is estimated that approximately 10 PCE vehicle trips (five inbound trips and five outbound trips) would occur during each of the weekday AM peak hour and PM peak hour, assuming ten percent of the daily truck trips occur during the peak hours.

Taken together, the construction worker vehicles and miscellaneous trucks are forecast to generate 208 PCE vehicle trips per day (i.e., 104 inbound and 104 outbound) during peak final construction and structure construction phases at the site. During the weekday AM peak hour and PM peak hour, it is estimated that approximately 21 PCE vehicle trips would be generated during each of these peak hours. By comparison, it is noted in the traffic study that the removal of the existing tennis courts on the project site is forecast to result in a reduction of 27 AM peak hour trips and 62 PM peak hour trips.

Future With Construction Conditions

Based on the relatively low number of generated construction related trips, traffic impacts due to construction activities are forecast to be less than significant at the five study intersections during the weekday AM and PM peak hours.

Construction Management and Haul Route Approval

Approvals required by the City of Los Angeles for implementation of the proposed project include a Truck Haul Route program approved by LADOT. With regard to other construction traffic-related issues, construction equipment would be stored within the perimeter fence of the construction site. With the required haul route approval and other construction management practices described above, construction activity is considered to be less than significant. Impacts would be further reduced with the implementation of the following design features:

- Maintain existing access for the existing site uses and parking facilities;

- Limit any potential roadway lane closures to off-peak travel periods;

- Schedule receipt of construction materials to non-peak travel periods, to the extent possible;

- Coordinate deliveries to reduce the potential of trucks waiting to unload for protracted periods of times; and

- Prohibit parking by construction workers on adjacent streets and directing the construction workers to available parking within the project site.

APPENDIX O

PRIVATELY-OWNED GOLF AND TENNIS FACILITIES STUDY

CITY OF LOS ANGELES
CALIFORNIA

JAMES K. HAHN
MAYOR

DEPARTMENT OF
RECREATION AND PARKS
200 N. MAIN ST.
13TH FLOOR
LOS ANGELES, CA 90012

(213) 473-5888
FAX - (213) 473-6802

MANUEL A. MOLLINEDO
GENERAL MANAGER

July 9, 2002

RECEIVED
CITY CLERK'S OFFICE
2002 JUL 10 PM 4: 04
CITY CLERK
BY______DEPUTY

Honorable Jack Weiss, Chairperson
Arts, Health and Humanities Committee
c/o City Clerk
Room 360, City Hall

Attention: Lauraine Braithwaite, Legislative Assistant

PRIVATELY-OWNED GOLF AND TENNIS FACILITIES / STUDY - CF 02-0974

Council Motion CF 02-0974 (Weiss-Greuel) requested that the Department of Recreation and Parks conduct a study of all privately-owned golf and tennis facilities that are open to the public, in order to assess the impact that a proposed retirement community development at the Studio City Golf and Tennis Club site may have on recreational activities for the general public.

Planned Use of the Facility

The Studio City Golf and Tennis Club, a privately-owned recreational facility, has been in operation for nearly 50 years and has a long history of providing recreational opportunities for local schools, amateur leagues and the general public. With the closure of several tennis facilities, the Studio City Golf and Tennis Club has become one of the few remaining privately-owned facilities in the City that are open to the public for play. This 17.2 acre site is currently developed with a pitch and putt golf course, a driving range, a club house and 20 tennis courts.

Homeplace Retirement Communities of America is currently preparing an Environmental Impact Review in order to study the impacts of a proposal to develop a 240-unit senior housing center and a healthcare center with parking for 482 cars. The proposed development would reconfigure but retain the golf course, the driving range, the club house and 8 out of the 20 tennis courts.

ARTS HEALTH & HUMANITIES

JUL 12 2002

ARTS, HEALTH & HUMANITIES

MOTION

MAY 1 5 2002

The Studio City Golf and Tennis Club has been in operation for nearly 50 years and has a long history of providing recreational opportunities for local schools, amateur leagues and the general public. With the closure of several tennis facilities, the Studio City Golf and Tennis Club has become the fundamental tennis facility in the City. Homeplace Retirement Communities of America is currently preparing an Environmental Impact Review in order to study the impacts of a proposal to develop a 240 unit senior housing center and a healthcare center with parking for 482 cars. This 17.2 acre site is currently developed with a pitch and putt golf course, a driving range, a club house and 20 tennis courts. The proposed development would reconfigure but retain the golf course, the driving range, the club house and 8 out of the 20 tennis courts. In order to properly assess the impacts that the proposed development may have on recreational activities, the Department of Recreation and Parks should conduct a study of all privately-owned golf and tennis facilities that are open to the public.

I THEREFORE MOVE, that the City Council INSTRUCT the Department of Recreation and Parks to conduct a study of all privately-owned golf and tennis facilities that are open to the public. This study should consider factors such as size of facility, hours of operation, fees, number of tennis courts, number of holes in a golf course, percentage of users from outside a five mile radius, ability to "block-book" tennis courts, and the number of tennis and golf tournaments hosted per year.

I FURTHER MOVE, that the City Council INSTRUCT the Department of Recreation and Parks to report back to the Arts, Health and Humanities Committee in 30 days with the results of the study.

PRESENTED BY: Jack Weiss

JACK WEISS, Councilmember, 5th District

SECONDED BY: Wendy Greuel

AR

Survey of Golf and Tennis Facilities in the County of Los Angeles

Although there are many exclusive private golf and tennis facilities in the County of Los Angeles, there are a limited number of privately-owned facilities that are open to the public like the Studio City Golf and Tennis Club. Department staff conducted a telephone survey of 30 tennis facilities and 102 golf courses in the County of Los Angeles. Only seven tennis facilities and 18 golf courses met the conditions of private ownership with open public accessibility. (See Attachments A and B.)

Tennis - Impact on the General Public

The survey indicates that most of these seven facilities draw their customers from a radius of about ten miles. The Studio City facility attracts 50% of its customers from outside a ten mile radius. Decreasing the number of tennis courts may inconvenience the current clientele of the Studio City Tennis Club.

There are City-owned public pay tennis courts available within a ten mile radius of the Studio City facility. Fees at these City courts are less than those at any of the seven privately-owned facilities: $3 per hour on weekdays from 7:00 a.m. to 4:00 p.m., $6 per hour on weekdays from 5:00 p.m. until closing, and $6 per hour on weekends and holidays.

The eight pay tennis courts within a ten mile radius of Studio City are listed below with their addresses.

- **Balboa Pay Tennis Complex** (16 courts)
  16821 Burbank Blvd., Encino, CA 91436

- **Cheviot Hills Tennis Courts** (14 courts)
  2551 Motor Ave., Los Angeles, CA 90064

- **Griffith-Riverside Tennis Courts** (12 courts)
  3401 Riverside Drive, Los Angeles, CA 90027

- **Griffith-Vermont Tennis Courts** (12 courts)
  Vermont Entrance to Griffith Park, Los Angeles, CA 90027

- **Pacific Palisades Tennis Courts** (8 courts)
  851 Alma Real Drive, Pacific Palisades, CA 90272

- **Poinsettia Tennis Courts** (8 courts)
  7341 Willoughby Ave., Los Angeles, CA 90046

- **Van Nuys-Sherman Oaks Tennis Complex** (8 courts)
  14201 Huston St., Van Nuys, CA 91423

- **Westwood Tennis Complex** (8 courts)
  1350 Sepulveda Blvd., Los Angeles, CA 90024

In addition to these pay tennis courts, there are free tennis courts available at recreation center sites in many neighborhoods. These locations are listed at the Department's website at http://www.laparks.org/dos/tennis/tennis.htm .

Golf - Impact on the General Public

The Studio City Golf Club attracts 60 percent of its customers from outside of a five-mile radius. Although the closest similar golf course is about 18 miles away, the survey indicates that, on the average, 64 percent of golfers frequenting this type of venue are from outside a radius of ten miles. If a golfer is willing to drive a maximum of 50 miles to play a round of golf, as estimated by sources in the Department's Golf Operations Division, 15 of the 18 similar facilities in the County of Los Angeles are possible substitute facilities.

Green fees at the Studio City 9-hole course are $8 on weekdays and $9 on weekends. The survey indicates that the 9-hole green fees charged at other 9-hole courses are slightly higher with a median weekday rate of $11 and a median weekend rate of $12. Retention of a 9-hole course for play has minimal impact on golfers.

Golfers have access to at least 12 other City-owned courses within a 50-mile driving distance. These courses charge $11 on weekdays and $14 on weekends for 9-hole play and $21 on weekdays and $27 on weekends for 18-hole play. An annual card fee of $15 for residents, $35 for non-residents, and $15 for non-resident seniors is required to make reservations.

These City courses are located at the following addresses:

- **Woodley Lakes Golf Course** (18 holes), 6.67 miles driving distance
  6331 Woodley Ave., Van Nuys, CA 91406

- **Encino/Balboa Golf Courses** (18 holes), 6.8 miles driving distance
  16821 Burbank Blvd., Encino, CA 91436

- **Los Feliz Golf Course** (9 holes), 10.27 miles driving distance
  3207 Los Feliz Blvd, Los Angeles, CA 90039

- **Wilson/Harding Golf Courses** (18 holes), 11.22 miles driving distance
  4730 Crystal Springs Dr., Los Angeles, CA 90039

- **Hansen Dam Golf Course** (18 holes), 11.39 miles driving distance
  10400 Glenoaks Blvd., Pacoima, CA 91331

- **Roosevelt Golf Course** (9 holes), 11.42 miles driving distance
  2650 N. Vermont Ave., Los Angeles, CA 90027

- **Rancho Park Golf Courses** (18 holes, 9 holes), 15.1 miles driving distance
  10460 W. Pico Blvd., Los Angeles, CA 90064

- **Penmar Golf Course** (9 holes), 16.72 miles driving distance
  1233 Rose Ave., Venice, CA 90291

- **Harbor Park Golf Course** (9 holes), 32.5 miles driving distance
  1235 N. Figueroa, Wilmington, CA 90744

Sincerely,

MANUEL A. MOLLINEDO
General Manager

MAM:JJD/HWB/KTH

ATTACHMENT A

TENNIS FACILITIES

Following is a listing of the seven privately-owned tennis facilities that are open to the public and the factors for consideration:

Studio City Tennis Club:

Address:	4141 Whitsett, Studio City, CA 91604
Telephone:	818-769-5263
Number of Courts:	20
Operating Hours:	7:00 a.m. to 10:00 p.m. daily
Court Fees:	Weekdays: $7/hr before 5 p.m.;$12/hr after 5 p.m. Weekends: $14/hr 9 a.m.-12 p.m.; $12/hr 12 p.m.-5 p.m.; $7/hr after 5 p.m. One time refundable deposit of $28 subject to penalty fee deductions of $2/no show/court
% Users Outside Five Mile Radius:	50%
No. Tournaments Hosted Per Year:	12

Century City Tennis Club:

Driving Distance from Studio City:	8.8 miles
Address:	2040 Avenue of the Stars, Los Angeles, CA
Telephone:	310-282-0762
Number of Courts:	8
Operating Hours:	M-F 8:00 a.m. to 9:00 p.m.; Sat 7:00 a.m. to 7:00 p.m.; Sun 8:00 a.m. to 5:00 p.m.
Court Fees:	Per Court: $16/hr before 4 p.m.; $20/hr after 4 p.m.; $5 added per court for block booking
% Users Outside Five Mile Radius:	Most are from local area
No. Tournaments Hosted Per Year:	0

Pacific Tennis Club:

Driving Distance from Studio City:	26 miles
Address:	4700 Lakeview Canyon Rd., Westlake Village, CA 91361
Telephone:	818-889-2700
Number of Courts:	10
Operating Hours:	8:00 a.m. to 7:00 p.m. daily
Court Fees:	$16/hr for doubles (4 people); $12/hr for singles (2 people); block booking on occasion
% Users Outside Five Mile Radius:	Not sure
No. Tournaments Hosted Per Year:	Numerous

Whittier Narrows Tennis Club:

Driving Distance from Studio City:	28.1 miles
Address:	1201 N. Potrero Ave., South El Monte, CA 91733
Telephone:	626-442-7358
Number of Courts:	16
Operating Hours:	M-Th 9:00 a.m. to 10:00 p.m.; Fri 9:00 a.m. to 8:00 p.m.; Sat and Sun 8:00 a.m. to 6:00 p.m.
Court Fees:	Per Court: Weekdays: $4/hr before 4 p.m.; $8/hr after 4 p.m.; Weekends: $8/hr
% Users Outside Five Mile Radius:	Not sure
No. Tournaments Hosted Per Year:	Numerous

Palos Verdes Tennis Club:

Driving Distance from Studio City:	34.6 miles
Address:	3303 Via Campesina, Palos Verdes Estates, CA 90274
Telephone:	310-373-6326
Number of Courts:	12
Operating Hours:	7:30 a.m. to 10:00 p.m.
Court Fees:	Per person: $10/hr before 12 p.m.; $7/hr after 12 p.m.; $8/hr after12 p.m. for non-residents; Residents pay monthly fee of $55; non-residents pay initiation fee of $2000 and $70 monthly; has block booking
% Users Outside Five Mile Radius:	Most are from local area
No. Tournaments Hosted Per Year:	12

South Bay Tennis Center:

Driving Distance from Studio City:	35.76 miles
Address:	25924 Rolling Hills Rd., Torrance, CA
Telephone:	310-530-8212
Number of Courts:	8
Operating Hours:	M-Th 8:00 a.m. to 10:00 p.m.; Fri 8:00 a.m. to 8:00 p.m.; Sat and Sun 8:00 a.m. to 5:00 p.m.
Court Fees:	Per Court: Residents: $5/hr weekdays before 7 p.m.; $6/hr weekdays after 7 p.m. and weekends; $15/yr membership. Non-residents: $6/hr weekdays before 7 p.m.; $7/hr weekdays after 7 p.m. and weekends; $20/yr membership
% Users Outside Five Mile Radius:	Most are from local area
No. Tournaments Hosted Per Year:	2

Pacific Palms Conference Resort:

Driving Distance from Studio City:	37.2 miles
Address:	1 Industry Hills Pkwy, Industry, CA 91744
Telephone:	626-965-0861
Number of Courts:	17
Operating Hours:	M-Th 7:00 a.m. to 10:00 p.m.; Fri 7:00 a.m. to 9:00 p.m.; Sat and Sun 7:00 a.m. to 8:00 p.m.
Court Fees:	Per person: Weekdays: $8/2 hrs; Weekends $10/2 hrs
% Users Outside Five Mile Radius:	Most are from local area
No. Tournaments Hosted Per Year:	Numerous

ATTACHMENT B

GOLF COURSES

Following is a listing of the 18 privately-owned golf courses that are open to the public and the factors for consideration:

Studio City Golf Club:

Address:	4141 Whitsett, Studio City 91604
Telephone:	818-761-3250
Course Statistics:	9 holes, 1000 yards Par 27
Operating Hours:	7:00 a.m. to sundown
Green Fees:	Weekdays: \$8; Weekends: \$9
% Users Outside Five Mile Radius:	60%
No. Tournaments Hosted Per Year:	None, to avoid restrictions

Arroyo Seco Golf Course:

Driving Distance from Studio City:	18.7 miles
Address:	1055 Lohman Lane, South Pasadena 91030
Telephone:	323-255-1506
Course Statistics:	18 holes, 2220 yards Par 54
Operating Hours:	7:00 a.m. to 10:00 p.m.
Green Fees:	Before 6 p.m. \$10 (9 holes), \$12 (18 holes); After 6 p.m. \$11 (9 holes), \$14 (18 holes)
% Users Outside Five Mile Radius:	75%
No. Tournaments Hosted Per Year:	4

Verdugo Hills Golf Course:

Driving Distance from Studio City:	19.2 miles
Address:	6433 La Tuna Canyon Road, Tujunga 91042
Telephone:	818-352-3161
Course Statistics:	18 holes, 1805 yards Par 54
Operating Hours:	6:30 a.m. to 10:00 p.m.
Green Fees:	Daily: \$10 (9 holes), \$12 (18 holes); Seniors and Juniors \$4 off before 6:00 p.m.
% Users Outside Five Mile Radius:	80%
No. Tournaments Hosted Per Year:	20-30 hosted by outside clubs

Lake Lindero Country Club:

Driving Distance from Studio City:	24.5 miles
Address:	5719 Lake Lindero Drive, Agoura Hills 91301
Telephone:	818-889-1158
Course Statistics:	9 holes, 1626 yards Par 29 Rating 58.1, SR 94
Operating Hours:	7:00 a.m. to sunset; no play 7-10:30 a.m. Saturdays for Non-members
Green Fees:	Weekdays: \$11 (9 holes); Weekends: \$15 (18 holes)
% Users Outside Five Mile Radius:	60%
No. Tournaments Hosted Per Year:	Less than 5

Westlake Village Golf Course:

Driving Distance from Studio City:	26 miles
Address:	4812 Lakeview Canyon Rd, Westlake Village 91359
Telephone:	818-889-0770
Course Statistics:	18 holes, 5053 yards Par 67, Rating 63.4, SR 99
Operating Hours:	6:30 a.m. to 10:00 p.m.
Green Fees:	Weekdays: $22; Twilight $15 Weekends: $32; Twilight $20
% Users Outside Five Mile Radius:	Not sure
No. Tournaments Hosted Per Year:	Not sure

Dominguez Golf Course:

Driving Distance from Studio City:	28.1 miles
Address:	19800 S. Main Street, Carson 90745
Telephone:	310-719-1942
Course Statistics:	18 holes, 2083 yards, Par 54
Operating Hours:	Declined to answer
Green Fees:	Declined to answer
% Users Outside Five Mile Radius:	Declined to answer
No. Tournaments Hosted Per Year:	Declined to answer

Rancho Duarte Golf Course:

Driving Distance from Studio City:	29.2 miles
Address:	1000 Las Lomas Road, Duarte 91010
Telephone:	626-357-9981
Course Statistics:	9 holes, 1635 yards Par 31, Rating 53.8, SR 76
Operating Hours:	Declined to answer
Green Fees:	Weekdays: $18; Weekends: $23
% Users Outside Five Mile Radius:	Declined to answer
No. Tournaments Hosted Per Year:	Declined to answer

Azusa Greens Country Club:

Driving Distance from Studio City:	30.5 miles
Address:	919 W. Sierra Madre Avenue, Azusa 91702
Telephone:	626-969-1727
Course Statistics:	18 holes, 6220 yards Par 70, Rating 69.1, SR 112
Operating Hours:	5:00 a.m. to 9:00 p.m.
Green Fees:	Weekdays: $28; Weekends: $37
% Users Outside Five Mile Radius:	70%
No. Tournaments Hosted Per Year:	200 hosted by outside clubs

Palos Verdes Golf Course:

Driving Distance from Studio City:	34.6 miles
Address:	3301 Via Campesina, Palos Verdes Estates 90274
Telephone:	310-375-2759
Course Statistics:	18 holes, 6111 yards Par 71, Rating 70.1, SR 128
Operating Hours:	Non-member/Resident: M-10 a.m. (to sunset); Tu,Th-12 p.m.; W, F, Sat, Sun-2 pm.; Non-member/Non-resident: M-10 a.m.; Tu,Th-2 p.m.; W,F-3 p.m.
Green Fees:	Non-member/Resident: $65 Weekday, $75 Weekend Non-member/Non-resident: $205
% Users Outside Five Mile Radius:	32%
No. Tournaments Hosted Per Year:	9-11

Pacific Palms Conference Resort:

Driving Distance from Studio City:	37.2 miles
Address:	1 Industry Hills Parkway, Industry 91744
Telephone:	626-965-0861
Course Statistics:	Zaharias Course: 18 holes, 6600 yards Par 71, Rating 72.5, SR 134. Eisenhower Course: 18 holes, 6735 yards Par 72, Rating 72.9, SR 136. Site offers golf, tennis, aquatic, equestrian, hiking, health club, and conference facilities.
Operating Hours:	6:00 a.m. to 7:30 p.m.
Green Fees:	Non-member: Weekdays $59, Twilight $44; Weekends $89, Twilight $54.
% Users Outside Five Mile Radius:	Not sure
No. Tournaments Hosted Per Year:	Not sure

San Dimas Canyon Golf Course:

Driving Distance from Studio City:	39.3 miles
Address:	2100 Terrebonne Avenue, San Dimas 91773
Telephone:	909-599-2313
Course Statistics:	18 holes, 6320 yards Par 72, Rating 70.2, SR 118
Operating Hours:	Sunrise to sunset
Green Fees:	Weekdays: $25; Weekends: $35
% Users Outside Five Mile Radius:	50%
No. Tournaments Hosted Per Year:	Over 50

Bixby Village Golf Course:

Driving Distance from Studio City:	40.3 miles
Address:	6180 Bixby Village Drive, Long Beach 90803
Telephone:	562-498-7003
Course Statistics:	9 holes, 1567 yards Par 29, Rating 57.5, SR 86
Operating Hours:	6:00 a.m. to sundown
Green Fees:	Non-seniors: $8.50; Seniors: $6.25
% Users Outside Five Mile Radius:	Not sure
No. Tournaments Hosted Per Year:	Not sure

Los Angeles Royal Vista Golf Course:

Driving Distance from Studio City:	40.4 miles
Address:	20055 E. Colima Road, Walnut 91789
Telephone:	909-595-7441
Course Statistics:	East/North: 6211 yards Par 71, Rating 70.6, SR 121; North/South: 5940 yards Par 71, Rating 69.3, SR 119; South/East: 6161 yards Par 72, Rating 69.5, SR 120
Operating Hours:	Sunrise to sunset
Green Fees:	Weekdays: $25; Weekends: $36
% Users Outside Five Mile Radius:	Not sure
No. Tournaments Hosted Per Year:	Not sure

Ocean Trails Golf Club:

Driving Distance from Studio City:	41.5 miles
Address:	1 Ocean Trails Drive, Rancho Palos Verdes
Telephone:	310-303-3240
Course Statistics:	15 holes Par 59
Operating Hours:	6:00 a.m. to 5:00 p.m.
Green Fees:	Mon-Thur before 12: $99; after 12: $80; after 3: $60
% Users Outside Five Mile Radius:	70%
No. Tournaments Hosted Per Year:	150

Claremont Golf Course:

Driving Distance from Studio City:	41.8 miles
Address:	1550 N. Indian Hill Blvd., Claremont 91711
Telephone:	909-624-2748
Course Statistics:	9 holes, 3830 yards Par 64, Rating 57.4, SR 86
Operating Hours:	5:30 a.m. to 9:00 p.m.
Green Fees:	Weekdays: $11; Srs.-$7; Jrs. under 14-$6.50 Weekends: $13; Srs.-11; Jrs. under 14-$8.50
% Users Outside Five Mile Radius:	Not sure but customers come from all over
No. Tournaments Hosted Per Year:	15

Lake Elizabeth Golf and Ranch Club:

Driving Distance from Studio City:	49.7 miles
Address:	42505 Ranch Club Road, Lake Elizabeth 93532
Telephone:	661-724-1221
Course Statistics:	18 holes, 6037 yards Par 70, Rating 68.8, SR 118
Operating Hours:	6:00 a.m. to 6:00 p.m.
Green Fees:	Weekdays: $29; 2:00-4:00-$25; twilight-$20; Srs.-$22; Jrs.-$20. Weekends: $35; 2:00-4:00-$29; twilight-$20.
% Users Outside Five Mile Radius:	80%
No. Tournaments Hosted Per Year:	24

Rancho Vista Golf Course:

Driving Distance from Studio City:	56.3 miles
Address:	3905 Club Rancho Drive, Palmdale 93551
Telephone:	661-272-9903
Course Statistics:	18 holes, 6594 yards Par 72, Rating 71.9, SR 126
Operating Hours:	Dawn to Dusk
Green Fees:	Weekdays: \$28; after 3:00-\$20; Weekends: \$38
% Users Outside Five Mile Radius:	Not sure
No. Tournaments Hosted Per Year:	Not sure

Rancho Sierra Golf Course:

Driving Distance from Studio City:	69.2 miles
Address:	47205 N. 60th Street East, Lancaster 93535
Telephone:	661-946-1080
Course Statistics:	9 holes, 2600 yards Par 70, Rating 63.4, SR 100
Operating Hours:	6:00 a.m. to 6:00 p.m.
Green Fees:	Weekdays: \$11; Weekends: \$12; Replay \$6
% Users Outside Five Mile Radius:	Most from within 10 mile radius
No. Tournaments Hosted Per Year:	10

Tennis / Golf Report
July, 2002

Council Fi

Council File: 02-0974

Title

Coun

Title
PRIVATELY-OWNED GOLF AND TENNIS Facilities / STUDY

Subject
Motion - The Studio City Golf and Tennis Club has been in operation for nearly 50 years and has a long history of providing recreational opportunities for local schools, amateur leagues and the general public. With the closure of several tennis facilities, the Studio City Golf and Tennis Club has become the fundamental tennis facility in the City. Homeplace Retirement Communities of America is currently preparing an Environmental Impact Review in order to study the impacts of a proposal to develop a 240 unit senior housing center and a healthcare center with parking for 482 cars. This 17.2 acre site is currently developed with a pitch and putt golf course, a driving range, a club house and 20 tennis courts. The proposed development would reconfigure but retain the golf course, the driving range, the club house and 8 out of the 20 tennis courts. In order to properly assess the impacts that the proposed development may have on recreational activities, the Department of Recreation and Parks should conduct a study of all privately-owned golf and tennis facilities that are open to the public. THEREFORE MOVE, that the City Council INSTRUCT the Department of Recreation and Parks to conduct a study of all privately-owned golf and tennis facilities that are open to the public. This study should consider factors such as size of facility, hours of operation, fees, number of tennis courts, number of holes in a golf course, percentage of users from outside a five mile radius, ability to "block-book" tennis courts, and the number of tennis and golf tournaments hosted per year. FURTHER MOVE, that the City Council INSTRUCT the Department of Recreation and Parks to report back to the Arts, Health and Humanities Committee in 30 days with the results of the study.

Date Received / Introduced
05/15/2002

Status
CLOSED

Last Change Date
12/30/2005

Council District
5

MEMORANDUM TO FILE

DATE: December 28, 2005

COUNCIL FILE NO: 02-0974

RE: **EXPIRED COUNCIL FILE**

This memorandum notes the expiration of the accompanying Council file/contents; the file is deemed terminated (received and filed) and the subject matter contained herein is closed. No other action is forthcoming.

Pursuant to Council action of September 13, 2005, all Council files pending before the City Council, which have not been placed on a Council or Committee agenda for consideration for a period of two years or more, are deemed received and filed (CF 05-0553). City Clerk, Council File Index Section: 213.978.1044

Alan M. Alietti
Legislative Assistant

cc: Index Section

O:\Docs\Reports\expfiles

APPENDIX P

LOS ANGELES RIVER
NATURAL PARK PROPOSAL

LOS ANGELES RIVER NATURAL PARK

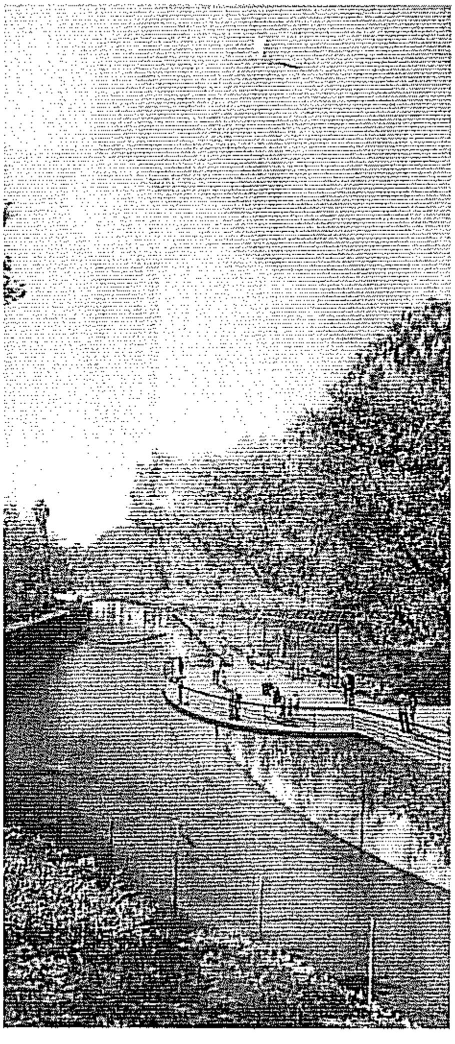
STUDIO CITY, SAN FERNANDO VALLEY

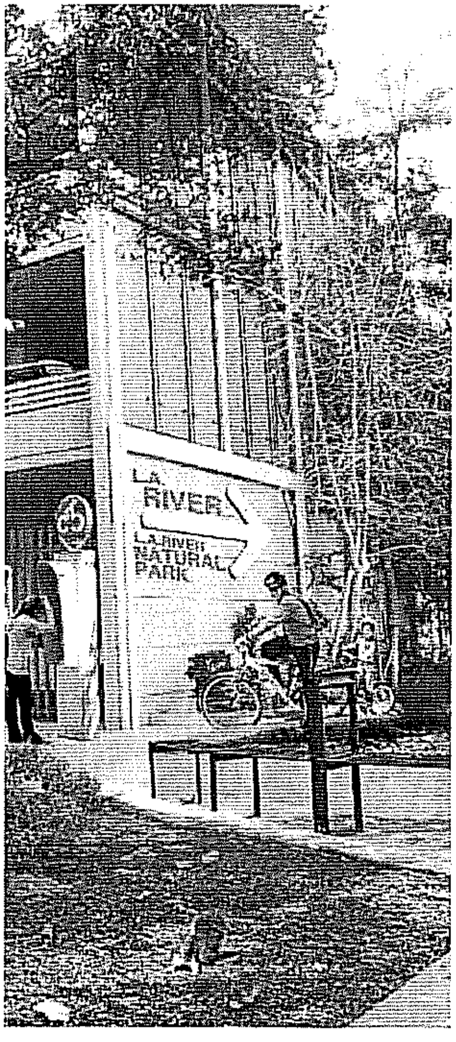
PSOMAS

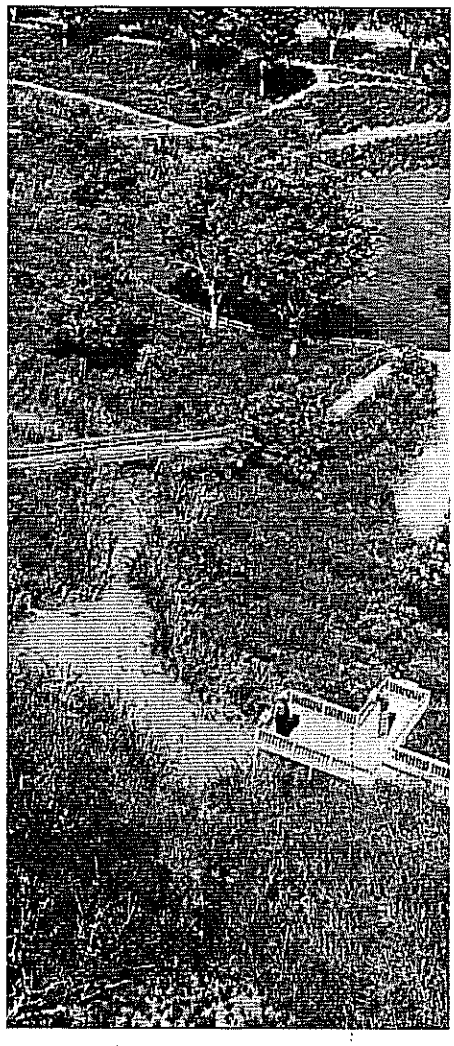
HYDROLOGY, HYDRAULICS & WATER QUALITY

MIA LEHRER + ASSOCIATES

L.A. RIVER REGIONAL PUBLIC ACCESS







TECHNICAL FEASIBILITY STUDIES

FUNDED BY:

SANTA MONICA MOUNTAINS CONSERVANCY & SAVE L.A. RIVER OPEN SPACE

ABOUT Community Conservation Solutions

COMMUNITY CONSERVATION SOLUTION'S MISSION is to tackle the most complex and challenging problems created when people and nature intersect. Community Conservation Solutions (CCS) does this by developing creative, practical and lasting solutions that unite diverse communities and interests and leverage investments of public funds. CCS has successfully crafted innovative solutions to serious environmental problems affecting California's natural and human communities by integrating the protection and restoration of natural lands and waters with compatible community uses, economic benefits and permanent public benefits.

Community Conservation Solutions works on diverse projects in urban and rural areas that help both natural habitats and people. Our projects range from parks and beaches to wilderness and watersheds, and from recreational sites to mixed-use developments. CCS is a 501(c)(3) non-profit, tax-exempt organization.

ABOUT The Los Angeles River Natural Park

THE LOS ANGELES RIVER NATURAL PARK is envisioned as a showcase "Green Solution" river-oriented park that will provide many public benefits. The 16-acre project site is the last remaining unprotected open space along 22 miles of the Los Angeles River in the San Fernando Valley. The L.A. River Natural Park presents a unique opportunity to help improve water quality in the L.A. River through creation of a wetlands habitat complex that will naturally capture and clean polluted runoff, while also providing people from throughout the region with easy, parking-friendly access to the L.A. River Trail. The Park will create an L.A. River Gateway and public access hub serving both pedestrians and bicyclists, and includes the public parking garage located 500 yards downstream, pedestrian bridges and improvements to the L.A. River Trail.

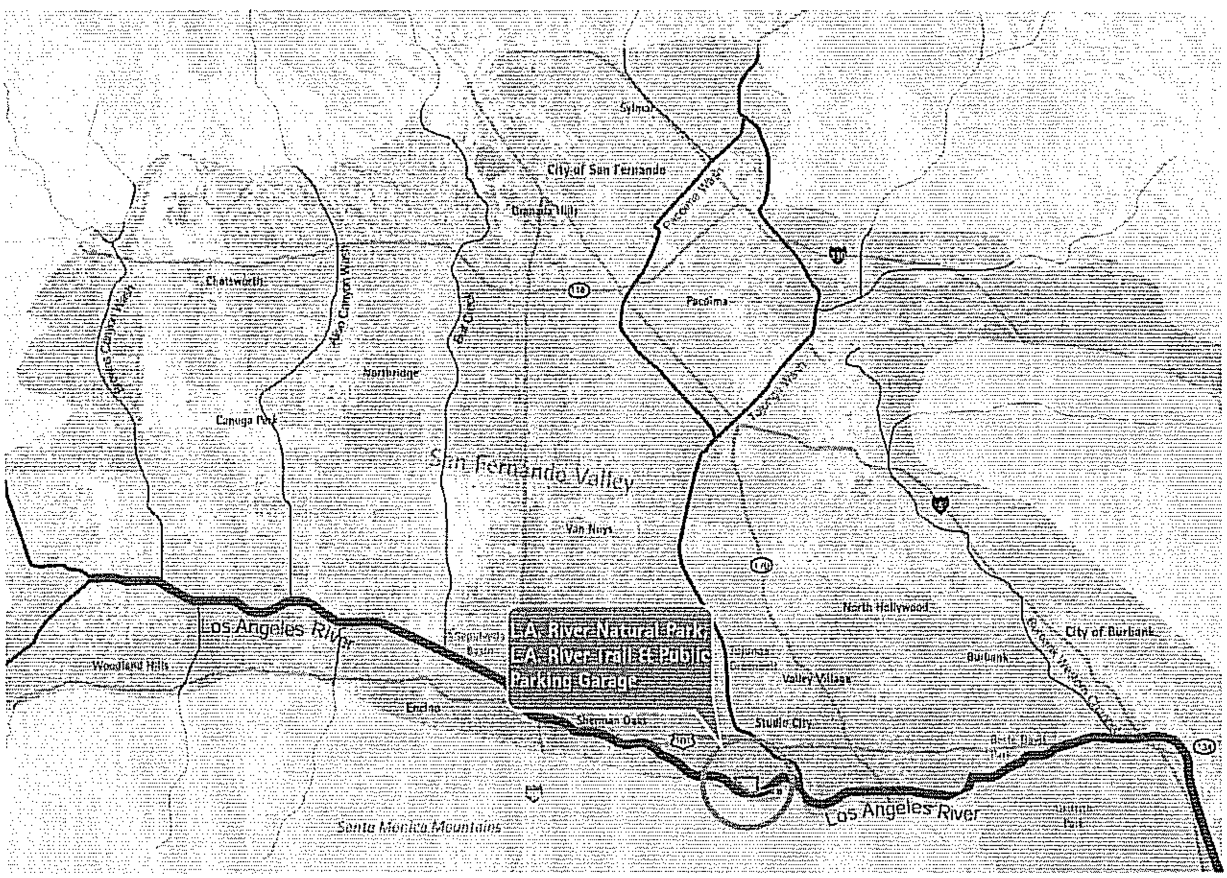
ABOUT The Project Team

CCS' PROJECT TEAM includes **PSOMAS** and **Mia Lehrer & Associates.** Psomas is a leading consulting engineering firm serving clients in the water/wastewater, transportation, public, institutional and private land development markets, and is committed to the advancement and implementation of sustainable stormwater solutions. Mia Lehrer + Associates is a full service, international landscape architecture practice. Under the leadership of Mia Lehrer, FASLA, the firm applies a comprehensive and intensely creative approach to all projects, and develops landscape design concepts that engender richly layered experiences, deploying the enduring qualities of natural and manmade elements as well as ephemeral characteristics of materials.

For a complete copy of this report, go to
www.conservationsolutions.org/larnp.html

For more information, contact us at:
2554 Lincoln Boulevard Suite 223 Los Angeles, CA 90291 (310) 398-8584

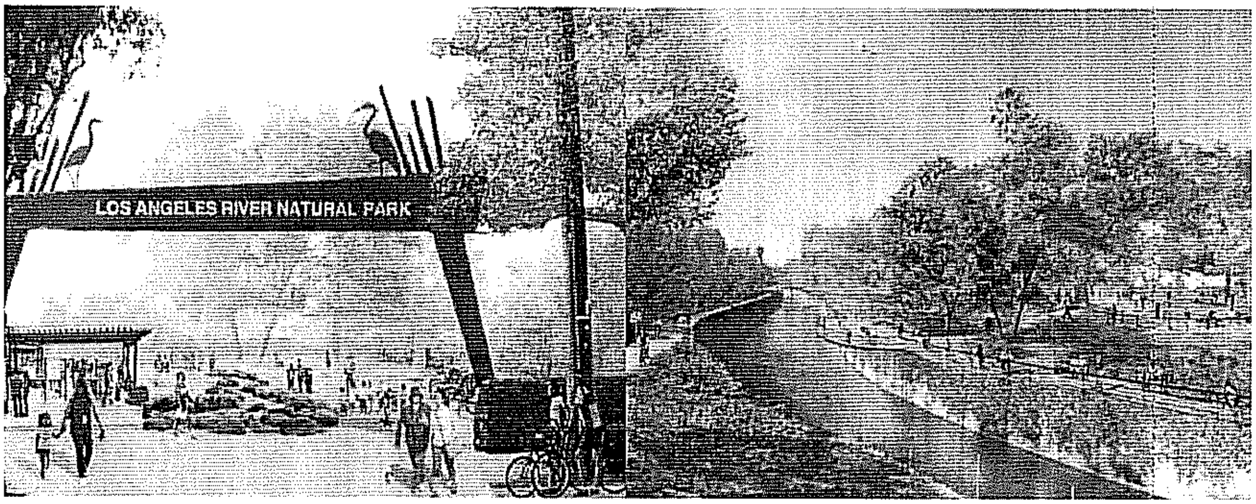
Printed on recycled paper



The 16-acre project site is the last remaining unprotected open space along 22 miles of the Los Angeles River in the San Fernando Valley. A 391-car public parking garage is located just downstream along the L.A. River Trail.

EXECUTIVE SUMMARY

Los Angeles River Natural Park: a showcase river project integrating natural water quality improvements with regional public access to the L.A. River



INTRODUCTION

Community Conservation Solutions is pleased to present these two technical feasibility studies for the Los Angeles River Natural Park: a Hydrology, Hydraulic & Water Quality Components Technical Memorandum, produced by **Psomas**, and a Los Angeles River Regional Public Access Feasibility Analysis, produced by **Mia Lehrer and Associates**. These studies were funded by the Santa Monica Mountains Conservancy and Save L.A. River Open Space.

The Los Angeles River Natural Park is envisioned as a showcase "Green Solution" river-oriented park that demonstrates how to naturally clean urban runoff and improve water quality, store and reuse runoff, preserve riverfront land and create native habitat, generate solar power, provide regional recreation amenities and establish an L.A. River Regional Public Access Hub and Trailhead for public access to the L.A. River in the San Fernando Valley.

The 16-acre project site is the last remaining unprotected open space along 22 miles of the Los Angeles River in the San Fernando Valley. The L.A. River Natural Park presents a unique opportunity to help improve water quality in the L.A. River through creation of a natural wetlands system, while also providing people from throughout the region with easy, parking-friendly access to the 51-mile L.A. River Trail and creating a central staging area for both pedestrians and bicyclists. The site's capacity to serve visitors is particularly significant because public access to the L.A. River is very limited elsewhere in the Valley.

The project includes a public parking garage 500 yards downstream and L.A. River trail improvements from the parking garage to Coldwater Canyon. The site links to existing and planned trails and greenways along the Tujunga Wash, Pacoima Wash and Arroyo Seco, as well as to public transit and regional bicycle transportation networks.

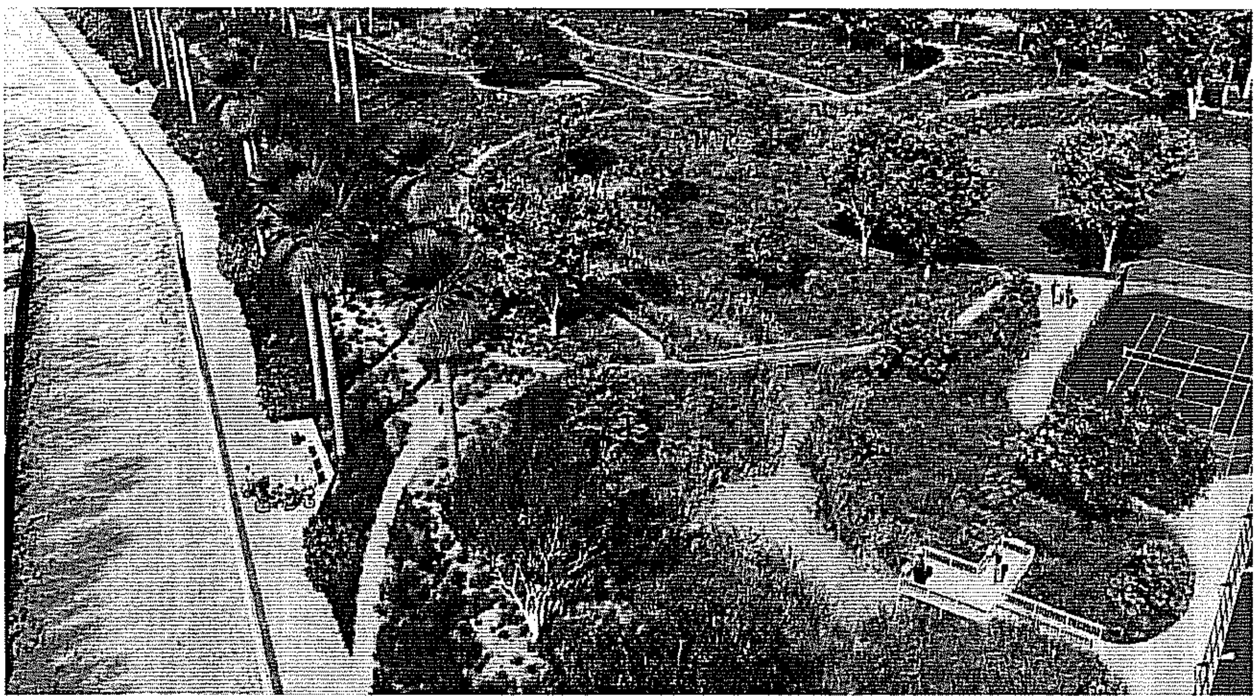
COMMUNITY CONSERVATION SOLUTIONS

The technical studies in this report were directed by Community Conservation Solutions (CCS) and funded by the Santa Monica Mountains Conservancy and Save L.A. River Open Space. The studies were based on the L.A. River Natural Park Vision and Concept Design developed by CCS and BlueGreen Consulting in 2008, with community input and technical assistance from Geosyntec. The feasibility studies provide preliminary analyses and estimated costs of the proposed urban and stormwater runoff management, water quality improvement, regional public access and bicycle hub elements of the Vision and Concept Design.

The L.A. River Natural Park would divert urban runoff from over 200 surrounding acres, providing a treatment volume of 11.4 acre feet and natural treatment of polluted runoff that otherwise flows directly to the L.A. River with no treatment of any kind. A "treatment train" would include vegetated swales, subsurface detention and retention, constructed wetlands and associated native habitat to capture and naturally clean all dry weather runoff and first flush storm events. Runoff would be stored under the driving range and would be re-used for irrigation, and solar power generated on site would offset normal site electricity usage.

This "Green Solution" approach to improving water quality in the L.A. River through creation of natural wetlands habitat would be integrated with a Los Angeles River Gateway providing bicycle-friendly, regional public access to the L.A. River that would serve people from throughout the entire San Fernando Valley and beyond. The L.A. River Natural Park would provide easily accessible linkages to ample public parking, adjacent public transit and regional bicycle networks, and connects to both the Metro Rail and Metro Bus systems.

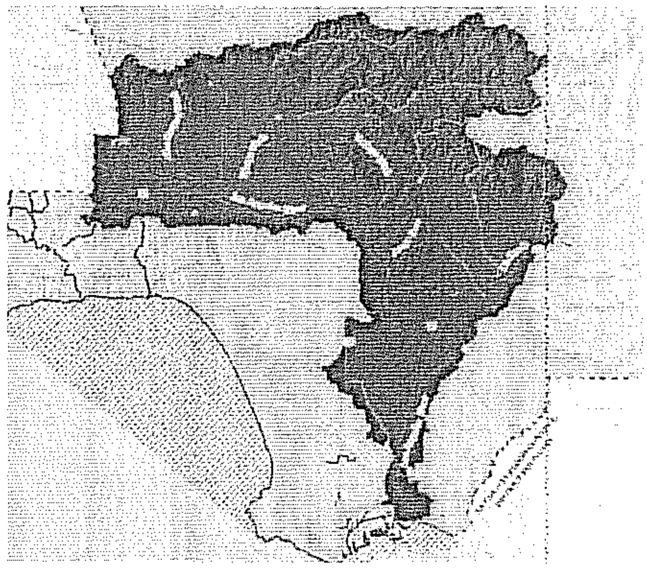
Other project benefits would include walking trails, extension of the L.A. River Trail to Coldwater Canyon and preservation of green open space in the densely-developed Valley. Links to public transit and creation of a bicycle-friendly hub and staging area would connect to miles of planned regional bicycle networks. Preservation of the regional tennis components, putting green and driving range would help provide economic support necessary to maintain the park. The project would further the goals of the City of Los Angeles L.A. River Revitalization Master Plan and the Los Angeles City 2010 Bicycle Plan, and would help the City meet state-mandated air quality improvement goals.



Naturally Improving Water Quality. *Using a system of wetland habitats, the L.A. River Natural Park would use a "Green Solution" approach to naturally capture and clean polluted runoff from the surrounding urban area.*

BACKGROUND

Why Water Quality Improvements are Important in the L.A. River



Polluted Waters of the L.A. River Watershed. *Polluted runoff from urban areas flows directly into the L.A. River and to the ocean, without treatment of any kind*

Polluted urban runoff is a serious problem in the heavily-paved San Fernando Valley. Additionally, the area around the project site has no storm drains, so dry weather runoff (from landscaping and other daily uses) and stormwater flow off these paved surfaces and directly into the LA. River. Polluted runoff contaminates all 51 miles of the Los Angeles River, most of its tributaries, San Pedro Bay, beaches north and south of the LA. River's mouth, and ocean waters.

All of the LA. River and most of its' contributing waters are in violation of the U.S. Clean Water Act, with pollutant loads above state and federal standards developed to protect human health and marine and aquatic life. Local governments are under increasing pressure from the LA. Regional Water Quality Control Board (Regional Board) to improve water quality in these water bodies. Pollutants in the LA. River in violation of the U.S. Clean Water Act include: fecal coliform bacteria, nutrients, toxic substances, trash and metals, including copper, lead and selenium. The Regional Board has established Total Maximum Daily Loads (TMDLs) for trash, nutrients and metals, and is in the process of developing additional TMDLs for other pollutants. The anticipated pollutants of concern from the tributary area that would be treated by the LA. River Natural Park include trash and debris, nutrients, oil and grease, suspended solids, heavy metals, and pesticides.

Why Regional Public Access to the L.A. River is Necessary

In the densely-developed San Fernando Valley, there are few places where the public can easily access the LA. River, and extremely limited opportunities to create a centralized gateway to the river that can serve communities throughout the Valley. In most of the Valley, buildings exist up to the river right-of-way for nearly its entire length, severely limiting opportunities for high-capacity public access. Existing public access to the LA. River in the Valley is largely along busy streets, with very limited parking and no improved crossings or other visitor-serving amenities that would encourage use of the LA. River Trail.

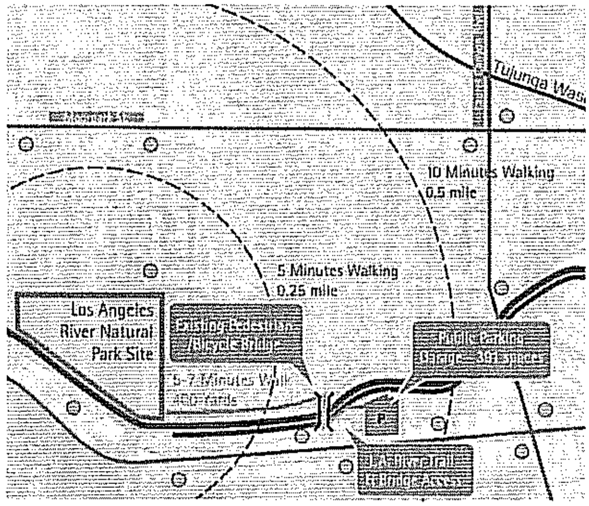
How the L.A. River Natural Park Contributes to Regional Bicycle Transportation Networks

To help ensure that planned regional bicycle transportation networks succeed, there is a need for a regional bicycle hub and staging area that provides easy access to the LA. River Trail, nearby visitor destinations and commercial areas, and safe connections to planned bicycle routes along surrounding streets. By providing bicycle-friendly parking, bicycle rental and related bicycle amenities at the public parking garage, the LA. River Natural Park would help encourage regional bicycle use and reduction of car trips. Extensions of the LA. River Trail would help create a contiguous, off-street bicycle path for riders of all ages.

ABOUT THE L.A. RIVER NATURAL PARK

The L.A. River Natural Park project site includes these three key components:

- 16 acres of L.A. riverfront land
- Adjacent 391-space public parking garage
- L.A. River Trail improvements



L.A. River Natural Park site, adjacent 391-car public parking garage, pedestrian/bicycle bridge and planned L.A. River Trail.

The site is located on the L.A. River in Studio City, and a county-owned and operated 20 to 40 foot right-of-way along the river is adjacent to the site. A 391-space public parking garage owned by the City of Los Angeles is located 500 yards downstream, and connects to the L.A. River Trail via an ADA-compliant ramp and pedestrian bridge. The garage connects to 1.5 miles of improved L.A. River Trail. The site is currently privately-owned and occupied by the Weddington Golf and Tennis facility. There is easy pedestrian access to many visitor-serving amenities along nearby Ventura Boulevard.

HYDROLOGY, HYDRAULIC & WATER QUALITY COMPONENTS

Tributary Area. *The L.A. River Natural park site can capture stormwater and dry weather runoff from over 200 acres of surrounding urban area.*

Using a "Green Solution" system of natural treatment, the L.A. River Natural Park could divert and treat 11.4 acre-feet (or 3.7 million gallons) of runoff from over 200 acres of its surrounding tributary area. There would be cumulative storage of 11.4 acre-feet, including underground storage, which would provide 8 acre-feet for reuse for irrigation. In addition, during the dry season the project would draw up to 5,000 gallons per day of water from the L.A. River to sustain the wetlands, providing filtration and cleaning before discharging the treated water back into the L.A. River.

Because no storm drains currently exist in the surrounding area between the project site and Moorpark Avenue, diversion of stormwater to the L.A. River Natural Park would help provide needed flood control improvements.

Water Quality Improvements

The Green Solution water treatment strategy would consist of a series of urban runoff Best Management Practices (BMPs) that use a system of natural habitats to treat urban runoff on the project site prior to infiltration, detention and/or release into the Los Angeles River. A wetlands habitat complex would be created to provide open water, marsh, riparian and upland habitats, which would remove sediment, trash, metals, bacteria, oil & grease and organics from runoff flowing through the system. Removal of these pollutants would provide a significant water quality improvement to the L.A. River.

The treatment components consist of the following four stages:

- Pre-Treatment
  Structural pre-treatment using separators and vegetated pre-treatment basin to remove trash, debris, sediments, oil and grease.
- Constructed Wetlands and Underground Storage
  A series of natural wetland habitats over much of the site to allow dry weather and stormwater runoff to spread out, providing infiltration, absorption, evapotranspiration and storage. A subsurface detention tank under the driving range and an overflow detention/retention basin would provide water storage.
- Conveyance
  Vegetated swales promote sedimentation, infiltration and absorption, and mitigate peak runoff during storm events.
- Polishing
  A wet pond provides final treatment and additional habitat before water is discharged to the L.A. River.

Solar Power Potential

The site would be grid-neutral by using on-site solar panels to generate electricity to offset the park's electrical needs. Rooftop panels, free-standing panels on the site and along the L.A. River Trail, and shade-structure panels over on-site parking could provide approximately 37,000 square feet of solar panel coverage. Installation of energy-saving lighting and other energy conservation measures could further reduce electrical demand.

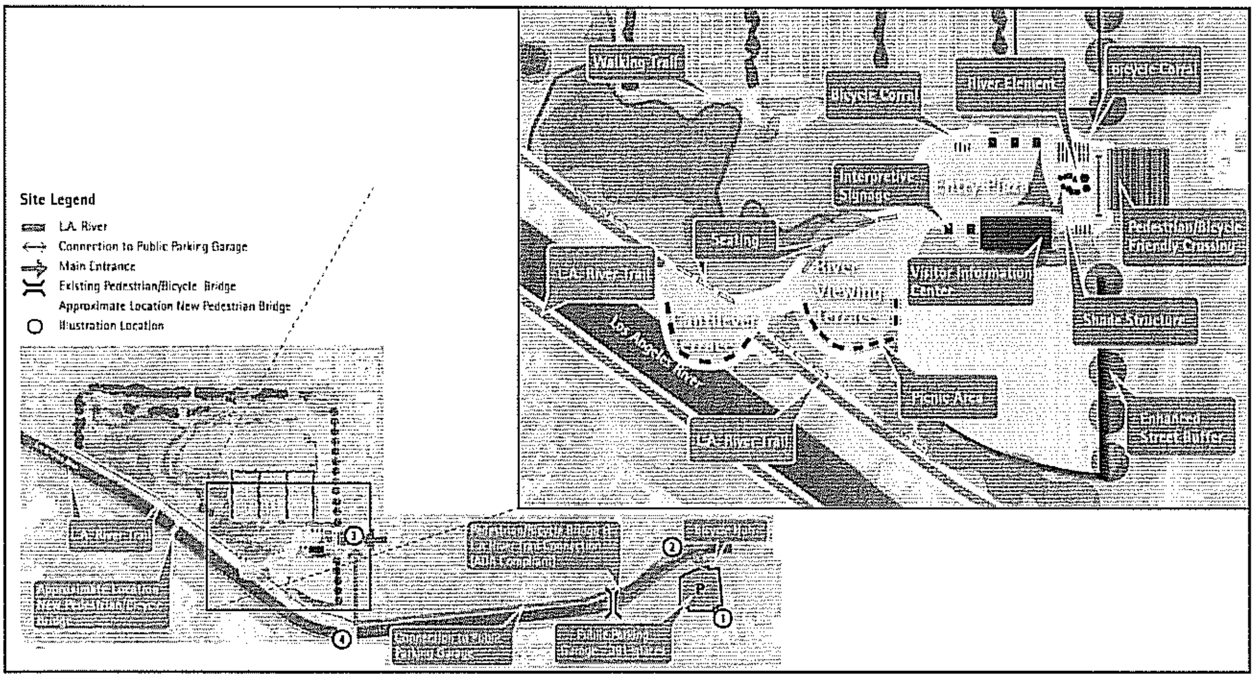
L.A. River Natural Park: Water Quality Improvement Components Concept Plan. Developed by PSOMAS

L.A. RIVER REGIONAL PUBLIC ACCESS COMPONENTS

With a combination of improvements to the site, the nearby public parking garage and the adjacent L.A. River Trail, the L.A. River Natural Park would provide centrally located regional public access to the L.A. River for people from throughout the region. With its unique riverfront location and connection via river trail to ample and easily accessible parking, the L.A. River Natural Park can become an exciting, user-friendly Gateway to the L.A. River in the San Fernando Valley, and can provide vital bicycle amenities that will link the site to regional bicycle networks.

The L.A. River Regional Public Access components include:

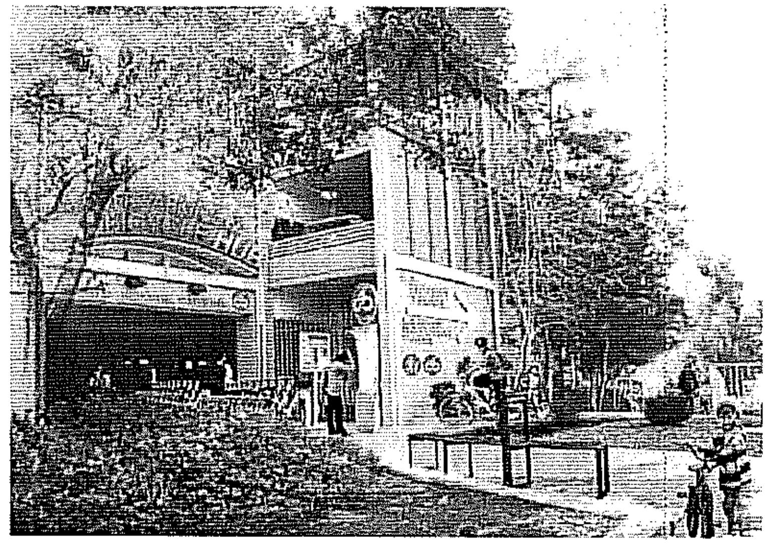
- **L.A. River Gateway**
  Entrance to L.A. River Natural Park linking to L.A. River Trail, with a public greeting area, information and interpretive kiosks, visitor information center, bicycle access, picnic areas, river observation decks, seating, walking paths and native landscaping.
- **L.A. River Public Parking Garage And Bicycle Hub**
  Off-site parking in the existing public garage on the L.A. River 500 yards downstream linked via the L.A. River Trail to the L.A. River Natural Park site; bicycle rental, repair, and parking/storage; a bicycle-friendly ramp and a pedestrian/bicycle bridge linking to the L.A. River Trail.
- **L.A. River Trail Improvements**
  Extension of the L.A. River Trail from the parking garage to Coldwater Canyon, native landscaping, and a new pedestrian/bicycle bridge across the river at the project site to connect to Ventura Boulevard.



L.A. River Natural Park: L.A. River Regional Public Access Components Concept Plan. Developed by Mia Lehrer + Associates

The project site offers all of the attributes needed to create a regional public access hub to the L.A. River and a key trailhead staging area, including:

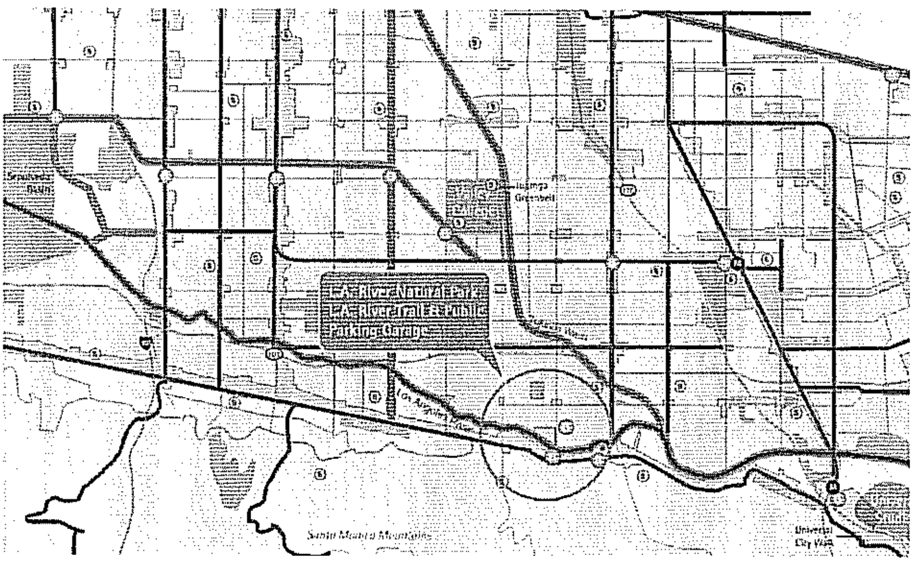
- Easy access to the L.A. River
- Centrally located
- Has ample parking readily available
- Bicycle-friendly and connects to a regional bikeway network
- Easily accessible by public transit
- Regional destination that can attract visitors
- Adjacent to visitor-serving infrastructure and amenities
- Potential for connection to other river trails
- Accessible via multiple modes of transportation, including mass transit, bicycle and walking



L.A. River Public Parking and Bicycle Hub. *Located on the L.A. River 500 yards downstream from the project site, the existing garage can provide off-site parking and bicycle amenities.*

Linking to Regional Bicycle Networks and Helping Improve Air Quality

The development of the L.A. River Natural Park as a regional access point to the L.A. River - and as a hub that links river trails, public transit, bicycle networks, commercial areas, schools and other visitor destinations to the L.A. River - will further local and state efforts to promote alternative forms of movement and build healthy communities. The L.A. River Natural Park will contribute to implementing the City of Los Angeles L.A. River Revitalization Master Plan, regional transportation alternative plans, and the Los Angeles City 2010 Bicycle Plan. By re-purposing the public garage as a regional bicycle hub and staging site, the project will encourage bicycle use and will help the City of Los Angeles meet state-mandated air quality improvement and sustainability goals.



Encouraging Bicycle Use: *The L.A. River Natural Park connects to existing and planned regional bicycle networks, and can provide easy access to commercial areas, parks, schools and other visitor destinations.*

ESTIMATED COSTS

A concept level engineer's estimate of probable construction costs for the water quality improvement components was prepared by Psomas based on projects of similar size and scope; the cost estimate for these components is $17.1 million. A landscape architect's opinion of probable cost was prepared by Mia Lehrer and Associates for the regional public access components; the cost estimate for these components is $9.5 million. These figures do not include costs for property acquisition. An additional $350,000-$600,000 is needed for project planning and design, community outreach and involvement, geotechnical and structural analyses, and environmental studies.

CONCLUSION

The L.A. River Natural Park can serve as a showcase Green Solution project on the L.A. River that sets a precedent for integrating the following important multiple benefits for both people and the environment:

Water Quality Improvements & Water Reuse
- Capture and treat polluted runoff from surrounding area
- Create wetland habitat and use soil and plants to naturally remove pollutants
- Store and reuse treated water for irrigation
- Use L.A. River water during dry season

L.A. River Regional Public Access
- Create a central "L.A. River Gateway" in the San Fernando Valley
- Provide easy visitor access to the L.A. River Trail
- Connect to high-capacity off-site public parking garage
- Build river observation decks, visitor center, walking paths and picnic areas
- Connect to other river trails, public transit and bicycle networks
- Install bicycle-friendly parking and links to bike paths

Habitat & Open Space
- Preserve unique L.A. riverfront land
- Create ecosystem complex of natural habitat types
- Preserve natural green space in heavily urbanized area

L.A. River Trail Improvements
- Extend L.A. River trail between garage and Coldwater Canyon
- Build new pedestrian bridge linking park site to Ventura Blvd.
- Create pedestrian and bicycle trails
- Integrate wayfinding signage
- Use native landscaping

Energy Efficiency
- Use solar power to be "grid-neutral"
- Install solar panels as shade structures along L.A. River Trail

Link to Regional Bicycle Transportation Networks

- Re-purpose parking garage to include bicycle hub
- Provide bicycle rental, storage and repair
- Link to regional bicycle paths and routes
- Connect to visitor destinations, commercial areas, parks and schools

Regional Recreation

- Integrate underground water storage with driving range
- Retain putting green and regional tennis facilities
- Preserve historic clubhouse

ABOUT The Project Team

COMMUNITY CONSERVATION SOLUTIONS

Community Conservation Solution's mission is to tackle the most complex and challenging problems created when people and nature intersect. CCS does this by developing creative, practical and lasting solutions that unite diverse communities and interests and leverage investments of public funds. CCS has successfully crafted innovative solutions to serious environmental problems affecting California's natural and human communities, by integrating the protection and restoration of natural lands and waters with compatible community uses, economic benefits and permanent public benefits.

CCS' successful project solutions include: the two-square mile Baldwin Hills Park in the heart of urban Los Angeles; wetland restoration in Upper Newport Bay; acquisition of the Spring Street Center for the Los Angeles Conservation Corps; the Los Angeles River Natural Park to naturally treat urban runoff while creating a regional river public access gateway; and developing new, quantified approaches to improving water quality through the Green Solution Project.

Community Conservation Solution works on diverse projects in urban and rural areas that help both natural habitats and people. Our projects range from parks and beaches to wilderness and watersheds, and from recreational sites to mixed-use developments. CCS is a non-profit, 501(c)(3) organization.

PSOMAS

Psomas is a leading consulting engineering firm serving clients in the water/wastewater; transportation; and public, institutional and private land development markets. Ranked as one of Engineering News Record (ENR) magazine's Top 100 Pure Design Firms in the United States, Psomas offers civil engineering, land surveying, planning and entitlements, program/construction management, natural resources, GIS consulting, and Special District Financing services to the public and private sector. Founded over 60 years ago, Psomas provides services from offices throughout California, Arizona, and Utah.

Psomas specializes in delivery of sustainable storm water management consulting and design solutions to municipalities, public and quasi-public organizations, and private sector clients. Psomas' projects range from studies to constructed solutions; challenging infill development to city and county-wide initiatives; and from integrated low impact development measures to purpose-built treatment wetland systems.

MIA LEHRER & ASSOCIATES

Mia Lehrer + Associates is a full service, international landscape architecture practice located in Los Angeles, California. Under the leadership of Mia Lehrer, FASLA, the firm has been responsible for the design and development of a diverse range of public and private projects. The firm applies a comprehensive and intensely creative approach to all projects, which vary in scale from large urban projects engaging community members and public agency stakeholders, to intimate gardens where collaboration and coordination of architecture and site are the primary objective.

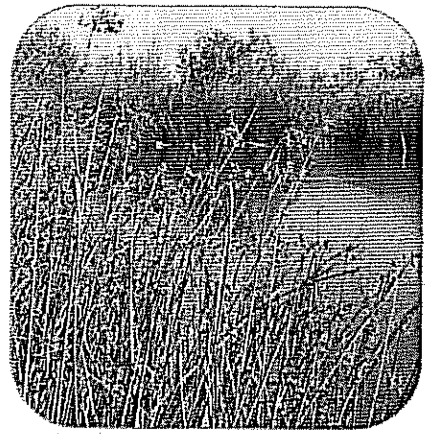
We work closely with local communities and public agencies to create parks, open spaces and streetscapes that meet the diverse needs of the people who will visit them. Our firm has been responsible for master planning and concept development for both large, regional and small pocket parks that have been developed with funding from grants, infrastructure programs and public private partnerships. Our experienced staff, with seven licensed landscape architects, includes world class designers and senior technical staff who deliver comprehensive construction documents and provide comprehensive construction administration services.

Mia Lehrer + Associates is a recognized leader in the field of sustainable design, and approach sustainable design as a tool to improve our environment and achieve higher and healthier levels of integration with natural systems. We believe that all projects, whether large parks or urban courtyards, deserve innovative design matched by intelligent, sustainable practices. Our primary focus is on envisioning and creating exceptional urban environments. We do not begin any of our projects with a preconceived notion; rather, we ask questions of ourselves, our client, and our team, which informs the design and development process. Regardless of scale or level of complexity, we remain committed to innovative design, quality service, the process of collaboration, and the belief that landscape has the power to enhance the livability of a city and heal the land.

PSOMAS

Los Angeles River Natural Park

Studio City – San Fernando Valley, CA



Technical Memorandum

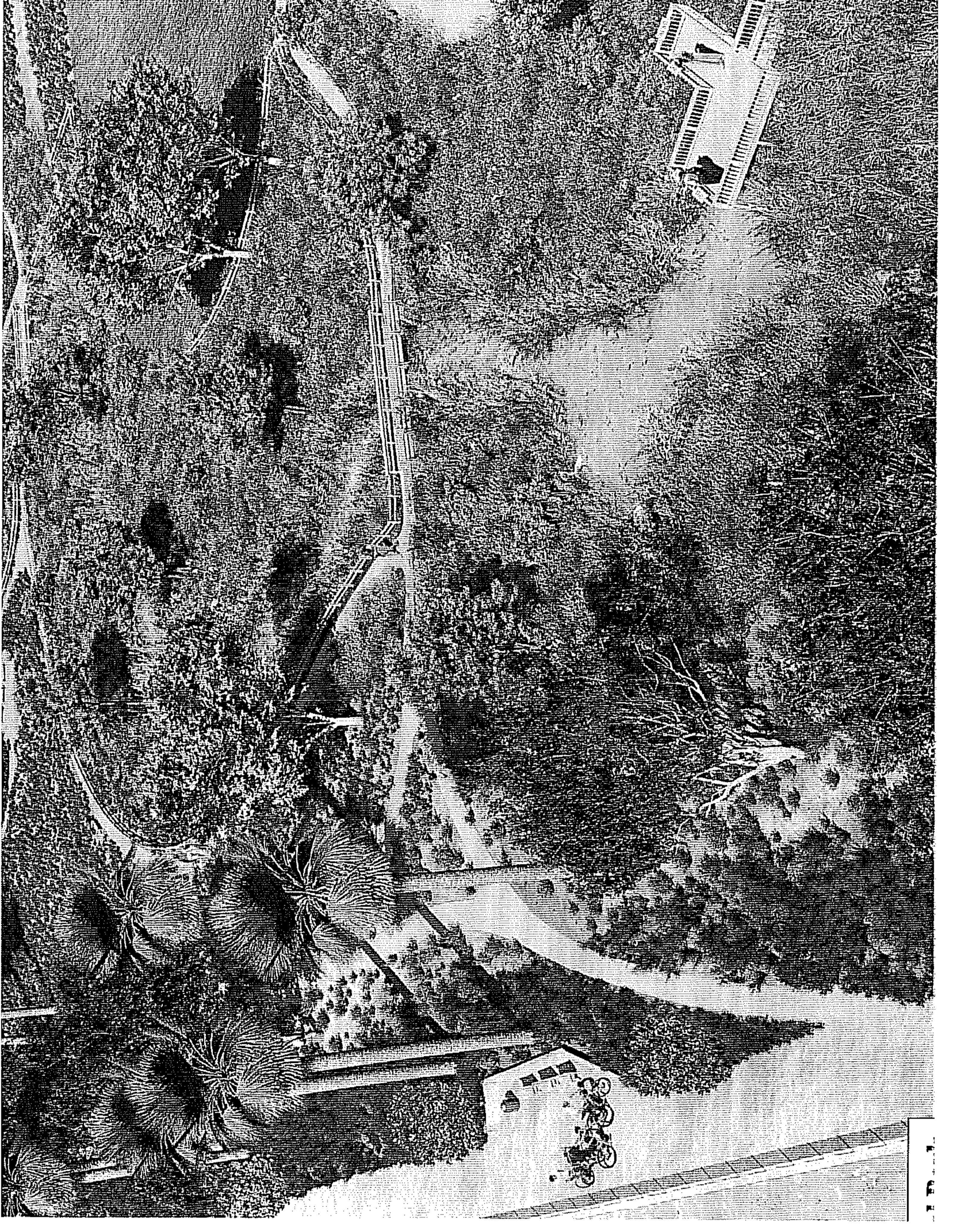
Prepared For:

COMMUNITY
CONSERVATION
SOLUTIONS

April 2010

Psomas Project No.
1CCI010102

Balancing the Natural and Built Environment



EXECUTIVE SUMMARY

The Los Angeles River Natural Park project proposes to improve water quality within and discharging to the Los Angeles River by creating native habitat and constructing multiple Best Management Practices (BMPs). The 16-acre project site would divert runoff (both dry and wet weather) from approximately 200 acres of the surrounding tributary area, bordered by Coldwater Canyon, Landale Street and Laurel Grove Avenue, and treat it through a series of BMPs, referred to as a "treatment train." This treatment train would include a vegetated pre-treatment basin, subsurface detention/retention facility, constructed wetland, vegetated swales, detention/retention tank and basin, and a wet pond. The detention/retention tank is also planned as storage for reuse water for irrigation purposes. The primary BMP would be the constructed wetland, which is effective at removing multiple pollutants and provides habitat for many species of native plants and birds. Diverted surface runoff would be treated and would be used to sustain the wetland areas and native habitats during the wet season. During the dry season normally untreated water would be drawn from the Los Angeles River for treatment via the constructed wetland prior to release back into the Los Angeles River. Based on the Los Angeles County Department of Public Works Manual for the Standard Urban Stormwater Management Plan the project would provide enough treatment volume to capture dry weather runoff and to treat the "first flush" (first 0.75" of a rainfall event) for +/-250 acres, which exceeds the 200 acres anticipated to be delivered to the site. The project also proposes to be grid neutral, in that, solar power generated on site would offset the normal site electricity usage. The project would integrate the runoff treatment capabilities of the site with habitat creation, open space and recreational uses. The project will include trails and pathways connecting to the Los Angeles River network of trails, walking paths, tennis courts and driving range. Overall, the Los Angeles River Natural Park would serve as a showcase multi-benefit project that demonstrates how to significantly improve the quality of urban runoff, reuse and recycle runoff, create native habitat, and provide regional recreational facilities and regional public access to the Los Angeles River.

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A. INTRODUCTION

This technical memorandum is focused on further developing the **hydrologic and water quality elements** to support the proposed Los Angeles River Natural Park in Studio City, California. The project as a whole has multiple objectives and sustainable features which will be touched on in this memorandum; however the focus of this memorandum is the hydrologic and hydraulic aspects, and the urban runoff treatment and water quality improvement potential of the park. The analysis included in this memorandum is limited to publicly available data. Opportunities and constraints of the conceptual site design are discussed, as is habitat creation potential. Estimates are presented for component sizes, potential water quality improvements, as well as a concept-level engineer's estimate of construction costs and preliminary investigations. Urban runoff as described in this report includes dry and wet weather flows.

B. SITE DESCRIPTION

The 16-acre project site is located in the Studio City area of Los Angeles, California between Whitsett Avenue and Bellaire Avenue. The site is bounded on the north by Valley Spring Lane and by the Los Angeles River on the south. It is currently occupied by the Weddington Golf and Tennis facility, including a nine-hole golf course, driving range, 16 tennis courts, clubhouse, and associated parking lots. The site is somewhat undulated due to the golf course grading but generally slopes to the south and has a 10 to 15 foot grade differential to the County access road adjacent to the Los Angeles River. The site contains mature trees as well as shrubs, ground cover, turf and hardscape.

C. PROJECT OVERVIEW

The vision and concept design prepared by Community Conservation Solutions and BlueGreen Consulting for the project indicated a desire to improve water quality by integrating natural treatment of urban runoff, creating native habitat, and meeting regional water quality improvement goals. The treatment strategy would include a series of urban runoff best management practices (BMPs) to improve the quality of runoff water diverted through the project site prior to infiltration or detention and/or release into the Los Angeles River. The anticipated pollutants of concern from the tributary area include trash and debris, oil and grease, suspended solids, heavy metals, and pesticides. More discussion on pollutants of concern can be found in Section H of this memorandum. BMPs that target these anticipated pollutants include: structural and vegetated pre-treatment; underground retention/detention; a storm water treatment wetland; and vegetated swales. As shown on Exhibit 3, the project includes a combination of these BMPs which could cumulatively provide a treatment volume of approximately 11.4 acre-feet. Wet weather and dry weather runoff would be collected and treated by the treatment train from the +/-200-acre tributary portion of the sub-watershed.

The 200-acre tributary area can be generally described as the area bounded by Coldwater Canyon on the west, Landale Street on the north, Laurel Grove Avenue on the east, and the Los Angeles River on the south. Please refer to Exhibit 1 for the Tributary Sub-Watershed exhibit.

Based on our experience with projects of this nature within the City of Los Angeles, diverted dry weather surface runoff from the tributary watershed would not on its own be sufficient to sustain the wetland habitat. In order to minimize potable water usage and promote water reuse and recycling, the project proposes to draw water from the Los Angeles River for treatment and to sustain the proposed habitat during normally dry periods. The diverted water would be pumped to the wetland area and travel through the BMP treatment train for filtration and treatment before being discharged again to the river.

D. SITE OPPORTUNITIES AND CONSTRAINTS

The site's location immediately adjacent to the Los Angeles River provides a unique opportunity to draw impaired water from the river, treat it, and then return the treated water to the river, while sustaining wetland and riparian habitat. This process can help address pollutant loading issues in the river. Furthermore, since the site is adjacent to the river, the tributary area intercepted can be maximized. Some of the site constraints include the existing recreational uses and the potential grading limitations caused by the presence of existing mature trees located throughout the site.

E. CONTRIBUTING DRAINAGE AREA

A concept-level analysis was completed to confirm the contributing drainage areas previously identified and to refine the area that could be feasibly intercepted and treated on the project site. During our analysis a potential, but inconclusive, contributing area north of Moorpark Avenue was identified for further investigation in a future phase. Exhibit 1 shows the tributary areas for the surrounding sub-watershed. Drainage Basins 1B and 1C could be collected and routed to the project site with the construction of a local storm drain collection system, as shown on Exhibit 2. Drainage Basins 2A and 2C surface flow by the site and could be collected via parkway drains and/or other surface types of drainage facilities. The project site itself is comprised of Drainage Basin 2B. Drainage Basins 3A, 3B, and 3C are not hyrdologically or hydraulically connected to the project site. Therefore, an extensive collection and distribution system including pumps would be required for collection and treatment of runoff from these areas. Existing collection systems at the end of Rhodes Avenue and Laurel Canyon Avenue should allow for diversion structures to be installed so that dry weather and first flush events could be pumped to the site for treatment from these sub-areas.

The project proposes to accept dry weather and first flush runoff from all of the tributary areas indicated in this report as well as accepting larger storm events from some tributary areas. Exhibit 2 shows that the project accepts runoff from Drainage Basins 1A, 1B, 1C, and the westerly portion of 2A through diversion structures. Similarly, Drainage Basins 3A, 3B, and 3C would utilize diversion structures but would also utilize pump facilities to deliver the diverted runoff to the wetland headworks. This configuration allows the "first flush" storm events to be diverted to the site while larger storm events continue to drain to the Los Angeles River as they do currently. Conversely, the middle and eastern portions of 2A, all of 2C and 2B do not use diversion structures. Rather the project site could accept larger portions of runoff from these basins at the indicated locations. This arrangement allows the project site to treat the "first flush" storm event, but it also allows it to detain, thereby treat, larger storm events before discharging to the Los Angeles River.

F. URBAN RUNOFF TREATMENT

Runoff that is currently un-treated from the tributary area can be treated on-site through a treatment train approach, which utilizes a series of BMPs. Since multiple BMPs will be implemented in series the treatment efficiency of each BMP is maximized. The train for this site would consist of four stages: pre-treatment, treatment, conveyance and polishing. Each stage can include a single BMP or multiple BMPs. See Exhibit 3 for a complete site schematic. The four stages are detailed below:

1. The initial **pre-treatment** stage includes two different BMPs proposed at different locations on the site. Structural pre-treatment via hydrodynamic separation or continuous deflective separation would be located in the southwesterly area of the site. The separator would remove trash, debris, sediments, oil and grease prior to runoff entering the subsurface detention facility. Detention allows fine particles to settle out of runoff as well as aid in attenuating peak runoff flow rates. Surface runoff entering the site in the northwesterly, northerly, and northeasterly areas would pass through a vegetated pre-treatment basin. The basin would also remove trash, debris and sediment, as well as provide a small amount of in-line detention. These initial BMPs efficiently remove sediment, trash & debris thereby reducing the potential for clogging in downstream BMPs.

2. The second **treatment** stage utilizes multiple BMPs to accomplish infiltration, absorption, evapotranspiration, and storage. By employing appropriate vegetation and necessary ponding depths, the constructed wetland can accomplish all of these goals. The wetland area spreads out in the northwesterly area of the site, and then becomes more linear as it passes through the site toward the wet pond located in the south-central area of the site. Additional storage would also be provided by a subsurface detention tank under the driving range as well as an overflow detention/retention basin adjacent to the wet pond.

3. The third stage, consisting of **conveyance**, utilizes vegetated swales to promote sedimentation, infiltration and absorption as well as mitigate peak runoff during storm events. The vegetated swales employed for the project would intercept runoff from the northeasterly and north-central areas of the site and carry runoff south toward the driving range detention tank and the wet pond.

4. The final stage, **polishing**, would be accomplished by the wet pond located in the south-central area of the site. The wet pond provides additional habitat and beneficial uses prior to discharging treated runoff to the Los Angeles River.

The project site as programmed consists of normally wet zones and normally dry zones. As shown on Exhibit 3, the areas indicated in blue, primarily on the western and southern portions of the site, would be kept wet year round to sustain the appropriate habitat areas. The riparian transitional habitat (light green) would be inundated by large storm events during the rainy season and might require supplemental irrigation water to sustain this habitat during the dry season. Ideally supplemental irrigation water would be drawn from the reuse tank located underneath the driving range. For more discussion regarding irrigation water see section L.

During the dry season diverted flow would be drawn from the Los Angeles River utilizing a sub-surface supply pump system, located adjacent to the subsurface detention facility on the western portion of the site. The system would be utilized to distribute water from the wet well to the headworks of the wetland.

The northern and eastern areas of the site indicated as dark green would be upland type habitats that are normally dry and drought-resistant. The mustard and brown colored areas are also normally dry areas and would be utilized as storage and conveyance facilities during the rainy season but would not be kept wet year round. Depending on the plant palette chosen for these areas, some supplemental irrigation may be required, particularly as this habitat type is becoming established. Supplemental water would be provided by diverted Los Angeles River water, as discussed above. See Section J for a discussion of proposed habitat creation.

The overall treatment volume necessary to handle the tributary area was determined using the Los Angeles County Department of Public Works (LADPW) Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP). The plan requires that the BMPs treat the volume of runoff produced from a 0.75-inch storm event. Exhibit 1 shows the tributary areas surrounding the project site. Based on the topography of the area, sub-area 1B and 1C can be intercepted by a storm drain system and directed to the subsurface detention facility. Sub-area 2A would enter the project site at 3 different locations and sub-area 2C would enter at the northeast corner of the site. The project site itself is identified as sub-area 2B. Tributary areas 3A, 3B and 3C would be intercepted by a storm drain system and the targeted treatment amount would be pumped to the project headwaters for treatment. Based on these tributary areas and the required rainfall depth the project must provide for approximately 8.8 ac-ft of treatment volume in order to satisfy the SUSMP requirements. However, the project proposes to exceed this minimum treatment volume by providing a cumulative storage volume of nearly 11.4 ac-ft. This additional storage volume would allow the site to treat the first 1-inch of rainfall versus the minimum of 0.75-inch required by the SUSMP. The treatment volume calculations can be found in Appendix A.

G. TREATMENT COMPONENTS

As shown on Exhibit 3, the project consists of the following six main treatment components:

1. Vegetated Pre-treatment Basin – Vegetated pre-treatment areas must be large enough to allow for maintenance and to dissipate energy from the surface inflow prior to discharging to the wetland or vegetated swale system. Where feasible a sub-drain system may be utilized underneath the pre-treatment basin.

2. Subsurface Detention Facility – A tank with approximate dimensions of 150'x 60' x 3' would provide about 27,000 ft^3 (0.62 ac-ft) of storage. This size tank would provide ample storage for dry season water drawn from the Los Angeles River as well as flow rate attenuation from sub-areas 1B and 1C, as shown on Exhibit 3, during the rainy season.

3. Constructed Wetland – The primary wetland as depicted can provide about 65,000 ft^3 (1.5 ac-ft) of storage. This wetland configuration provides an approximate length to width ratio of 3.4 which exceeds the recommended minimum of 1.5. As shown on Exhibit 3 after runoff passes through the primary treatment area the wetland takes on a more linear shape and provides 500-feet of additional length.

Based on the natural ecosystem characteristics of wetland, riparian and upland habitats of Southern California, the following habitat regions for the constructed wetland are proposed: Open Water Habitat, Marsh Habitat, Riparian Transitional Habitat, and Upland Habitat. Each habitat region is described below:

a) **Open Water Habitats** include the forebay and all channels and deep pools. Water depth should be up to 4 feet in channels and up to 6 feet in the forebay and pools. Water depths greater than 3 to 4 feet may be required to reduce the proliferation of emergent vegetation. A water depth greater than 5 feet in some Open Water habitat throughout the wetland system is important because deep water zones:

- Promote downstream flow by mixing and redistributing water flowing from marsh areas where short-circuiting may occur,
- Enhance wind-driven oxygenation of water,
- Limit the area in the wetland colonized by emergent vegetation,
- Provide a sump for particulate matter, and
- Create conditions that are less conducive for mosquito production (UC ANR 2003).

Wind disturbance at the water surface in Open Water areas can disrupt mosquito egg laying and can drown immature mosquitoes. Open Water zones also enhance predation by mosquito fish (*Gambusia affinis*) and other fauna on mosquito larvae and pupae (UC ANR 2003). Furthermore, deep water areas promote the development of anaerobic conditions in wetland sediments, which is essential for sequestration of heavy metals. Anaerobic areas are critical for denitrification (conversion of nitrate to nitrogen gas), which is the most important mechanism for the permanent removal of nitrogen (Reddy et al 1989).

b) **Marsh habitat** is permanently inundated with water at depths of approximately 0.5 to 3 feet. The marsh habitat is the primary region where the water column interacts with the sediments, biota (algae, macrophytes, bacteria, fungi), and the water/air interface. Mechanisms of water treatment in this habitat include settling and filtration of suspended matter, volatilization of compounds, adsorption and desorption of compounds from particles, biological uptake and transformation, and photolysis of pathogens.

c) **Riparian habitats** are transitional areas between terrestrial and aquatic ecosystems that have a high water table and are subject to periodic flooding (USEPA 2001, NRC 2002). Riparian habitat occurs around the perimeter of the proposed wetland.

d) The **Upland habitat** occurs above the riparian habitat and outside of the wetland footprint. Many of the characteristic vegetation species of upland habitat are trees that can grow to large sizes with correspondingly large root zones. The upland habitat areas will likely require some supplemental irrigation until established.

4. Vegetated Swales –A vegetated swale system with a bottom width of 10-feet, side slopes of 5:1, a longitudinal slope of 1%, and an assumed Manning's coefficient of 0.025 will provide conveyance and treatment. A swale that fits these design criteria should maintain velocities below 3 fps and depths below 5-inches which meet the CASQA recommendations. Vegetated swales are effective in reducing flow velocities, promoting infiltration, and allowing particulates to attach to vegetation or other suspended solids.

5. Sub-surface Detention/Retention Basin – It is yet to be determined if the basins located within the project will be detention basins, retention basins, or a combination. Retention/Infiltration basins are more effective BMPs than detention, but the infiltration potential of the site can not be determined at this time; therefore, we shall assume that they would be detention facilities. The detention facility underneath the driving range has an approximate footprint of 2.7-acres and a depth of 3-feet, providing +-350,000 ft^3 (8.0 acre-ft) of storage. The subsurface driving range detention facility will also allow the reuse of detained water for irrigation purposes. See Section L for further discussion

on water reuse. The second detention facility located adjacent to the wet pond could have an approximate footprint of 250' x 120' x 1', providing +-30,000 ft^3 (0.7 ac-ft) of storage.

6. Wet Pond – The permanent pond area could be of any configuration but should provide approximately 11,000 ft^2 of surface area with an additional 1-foot of storage, thus providing 11,000 ft^3 (0.25 ac-ft) of storage. The permanent pond depth should be at least 6-feet in order to provide adequate habitat that was discussed in previous sections. The wet pond located downstream of the constructed wetlands offers some of the same advantages listed under the Open Water habitat section of the Constructed Wetland.

All treatment areas will be separated from public viewing areas with fencing or appropriate planting in order to prevent contact with surface water as well as to prevent habitat degradation.

H. WATER QUALITY IMPROVEMENT ASSESSMENT

The treatment train approach proposed for the Natural Park will be effective in removing different types of pollutants. Efficiencies for each BMP will vary depending on its location within the treatment train. Efficiencies should not be added together in the treatment train; however some BMPs provide redundancy to improve the overall water quality. Below is a table of individual BMP's efficiencies.

Table 1 – BMP Efficiencies

	Targeted Pollutants						
	Sediment	Nutrients	Trash	Metals	Bacteria	Oil & Grease	Organics
BMP Type	Efficiency						
Constructed Wetlands	H	M	H	H	H	H	H
Extended Detention Basin	M	L	H	M	M	M	M
Infiltration Basin	H	H	H	H	H	H	H
Vegetated Swale	M	L	L	M	L	M	M

H = high, M = medium, L = low

The Pollutant Load Removal table below presents removal estimates as calculated by the City of Los Angeles BMP Planning Application for a wetland BMP with pre-treatment and summarizes anticipated pollutant removal efficiencies for the constructed wetland BMP. The removal rates utilized by the BMP Planning Application are from published values from the Caltrans BMP Retrofit Pilot Program, the U.S. EPA, and the Center for Watershed Protection, and the American Society of Civil Engineers. Most of the removal data were taken from the references used in the Planning Application. In the cases where the City's Planning Application did not provide a reference for percent removal of a pollutant, values were taken from the Ballona Freshwater Marsh Annual Monitoring Report – Year 4 (Section 8.4.2) based on its similarity in runoff quality and function. Removal in the table is in pounds (lbs) unless specified otherwise.

Table 2 - Pollutant Load Removal

Constituent	Influent Load (lbs)	Total Removed (lbs)	Effluent Total (lbs)	Percent Removal
Total Petroleum Hydrocarbons	0.15	0	0.15	0%
Total Coliforms*	399088	299317	99771	75%
Fecal Coliforms*	245756	184317	61439	75%
Fecal Enterococcus*	124970	93728	31242	75%
Total Suspended Solids	10318	9930	388	96%
Oil & Grease	153.33	153.33	0	100%[1]
Total Aluminum	164.42	65.77	98.65	40%
Total Cadmium	0.02	0.01	0.01	50%
Total Copper	2.49	1.25	1.24	50%
Total Lead	1.27	0.76	0.51	60%
Total Mercury	0.06 ug/L	0	0.03 ug/L	50%[2]
Total Nickel	0.53	0.21	0.32	40%
Total Zinc	21.1	10.55	10.55	50%
Dissolved Copper	1.23	0.43	0.80	35%[2]
Dissolved Lead	1.22 ug/L	0	0.52 ug/L	57%[2]
Dissolved Zinc	12.97	6.61	6.36	51%[2]
Nitrate as Nitrogen	71.2	29.19	42.01	41%[2]
Total Kjeldahl Nitrogen	291.2	34.94	256.26	12%[2]
Total Phosphorous	0.32 mg/L	0	0.21 mg/L	34%[2]

* = MPN
1 = Hydrodynamic separator unit
2 = Balbna Freshwater Marsh

Based on the expected removal efficiencies listed, a significant water quality improvement could be anticipated to the urban runoff being diverted to and treated at the site, as well as to the diverted flow from the Los Angeles River.

I. WATER BALANCE

Since the project includes a wetland system; pool and channel water depths must be sustained throughout the year. Therefore a concept-level analysis was completed to determine the annual balance of water in the system. The potential evapotranspiration rate is assumed to equal 85% of the pan evaporation rate. The pan evaporation rate data was estimated for the Los Angeles airport using a form of the Penman equation (Source:http://www.ocs.oregonstate.edu/page_links/comparative_climate/California/california.html). Assuming an average monthly pan evaporation rate during the dry season of 6.8-inches we arrive at an average monthly evapotranspiration of 5.8-inches. Approximately 80,000 gallons/month (2,700 gpd) during the dry season would need to be drawn from the Los Angeles River to replace water lost purely to evapotranspiration. More precise percolation tests along with other soil testing must be completed prior to design in order to confirm loss due to infiltration. For planning purposes it can be assumed that up to 4,000 – 5,000 gpd may need to be drawn from the Los Angeles River during the dry season to maintain the appropriate water requirements of the created habitat.

J. POTENTIAL HABITAT CREATION

During the design phase, Upland, Riparian and Wetland Planting Plans will be prepared that will address the specific species to be planted in each of the habitat areas of the project. Subsequent phases will require monitoring and possible replacement planting during the establishment period, as well as potential supplemental irrigation. The lists below provide a range of potential plant species that could be used. The targeted vegetation listed below has been compiled from similar types of projects in Southern California.

Table 3 - Targeted Vegetation

Species	Growth Form	Wetland Indicator
Open Water		
Water Cress *Rorippa nasturtium-aquaticum*	Perennial herb (aquatic)	OBL
Water Plantain *Alisma plantago-aquatica*	Perennial herb (aquatic)	OBL
Duckweed *Lemna minor*	Perennial herb	OBL
Marsh		
Santa Barbara Sedge *Carex barbarae*	Perennial herb	FACW
San Diego Sedge *Carex spissa*	Perennial herb	FAC
Common Rush *Juncus patens*	Perennial herb	FAC
Irisleaf Rush *Juncus xiphioides*	Perennial herb	OBL
Mexican Rush *Juncus mexicanus*	Perennial herb	FACW
California Tule *Scirpus californicus*	Perennial herb	OBL
Hardstem Bulrush *Scirpus acutus var. occidentalis*	Perennial herb	OBL
Big Bulrush *Scirpus robustus*	Perennial herb	OBL
Arrow Weed *Pluchea sericea*	Shrub	FACW
Smooth Flatsedge *Cyperus laevigatus*	Perennial herb	FACW+
Black Flatsedge *Cyperus niger*	Perennial herb	FACW+
Common Spikerush *Eleocharis macrostachya*	Perennial herb	OBL
California Sunflower *Helianthus californicus*	Perennial herb	OBL

Table 3 - Targeted Vegetation

Species	Growth Form	Wetland Indicator
Wild Mint *Mentha arvensis*	Perennial herb	FACW
Meadow Barley *Hordeus brachyantherum*	Perennial herb	FACW
Spike Bentgrass *Agrostis exarata*	Perennial herb	FACW
Water Foxtail *Alopecurus aequalis*	Perennial herb	OBL
Riparian		
Arroyo Willow *Salix lasiolepis*	Tree, Shrub	FACW
Sand Bar Willow *Salix exigua*	Tree, Shrub	FACW
Red Willow *Salix laevigata*	Tree, Shrub	FACW+
White Alder *Alnus rhombifolia*	Tree	FACW
Blue Elderberry *Sambucus mexicana*	Shrub	FACU
Red Twig Dogwood *Cornus sericea occidentalis*	Shrub	FACW
California Rose Rosa californica	Shrub	FAC+
California Blackberry Rubus ursinus	Vine, Shrub	FAC+
Mulefat Baccharis salicifolia	Shrub	FACW
Riparian Woodland		
California Sycamore *Platanus racemosa*	Tree	FACW
Velvet Ash *Fraxinus velutina*	Tree	FACW
Black Cottonwood *Populus balsamifera ssp. trichocarpa*	Tree	FACW
Box Elder *Acer negundo var. californicum*	Tree	FACW
Upland		
California Black *Walnut Juglans californica*	Tree	FAC
Fremont Cottonwood *Populus fremontii*	Tree	FAC+
Bigleaf Maple *Acer macrophyllum*	Tree	FAC
California Laurel *Umbellularia californica*	Tree	FAC
Spreading Gooseberry *Ribes divaricatum*	Shrub	FACW
Coast Live Oak *Quercus agrifolia*	Tree	NL
Interior Live Oak *Quercus wislizeni*	Tree	NL

Table 3 - Targeted Vegetation

Species	Growth Form	Wetland Indicator
Valley Oak *Quercus lobata*	Tree	FACU
Black Sage *Salivia mellifera*	Shrub	NL
Purple Sage *Salvia leucophylla*	Shrub	NL
Coyote Bush *Baccharis pilularis*	Shrub	NL
Blue Wildrye *Elymus glaucus*	Grass	FACU

Wetland Indicator:
OBL: Obligate Wetland - occurs almost always under natural wetland conditions.
FACW: Faculatative Wetland - usually occurs in wetlands, but occasionally found in non-wetlands.
FAC: Facultative - equally likely to occur in wetlands and non-wetlands.
FACU: Faculatative Upland - usually occurs in non-wetlands, but occasionally found in wetlands.
UPL: Obligate Wetland - occur in wetlands in another region, but occur almost always under natural conditions in non- wetlands in the region specified.
NL: Not Listed - always occurs in non-wetlands.

Dense planting of certain species relative to others, at certain locations, may be desirable in the final design and therefore affect cost. For example, strategic planting of California rose along pathways provides a spreading and dense thorny habitat that can provide a natural barrier to human intrusion in lieu of fences. Coyote bush, a species with lower water consumption requirements than California rose, could also provide such a natural barrier if kept pruned as a hedge to maintain public views of the wetlands and open water. Further detailed site and habitat planning and design, as well as soil and light analysis, is required to determine specific plant locations and combinations.

K. SOLAR POWER POTENTIAL

The project site proposes to strive toward a goal of grid neutrality, which means that throughout the entire year the site would use on-site solar panels to generate enough electricity and give it back to the grid to offset the site's annual power usage. Utilizing solar panel shade structures over parking stalls, conventional roof panels on top of the clubhouse and driving range tee area, and conventional solar panels placed along the slope adjacent to the river, the site could provide approximately 37,000 ft^2 of solar panel coverage. Assuming average sun exposure and generation rates the site could generate approximately 1500 kWh/day or 550 mWh/year. Due to weather patterns and the solar cycle solar generation is not constant throughout the year, which is why grid neutrality is evaluated on a yearly basis. The table below indicates the potential electricity generated by the site throughout the year as well as the electricity savings and/or costs associated with generating electricity for the grid.

Table 4 - Potential Solar Generation

*assumed electricity cost = $0.119/kWh			
	Solar Radiation (kWh/m^2/day)	AC Energy (kWh)	Energy Value
Jan	3.93	31,586	$3,804.24
Feb	4.60	33,992	$4,059.32
Mar	5.63	45,803	$5,469.79
Apr	6.38	49,477	$5,908.54
May	7.05	56,368	$6,731.47
Jun	7.19	54,710	$6,533.47
Jul	7.09	55,137	$6,584.46
Aug	6.94	53,596	$6,400.43
Sep	6.11	45,691	$5,456.42
Oct	4.96	39,121	$4,671.83
Nov	4.31	33,623	$4,015.26
Dec	3.66	29,529	$3,526.35
Yearly total	5.66	548,904	$63,161.72

The site proposes to use electricity for:

- driving range, tennis court and parking lot lighting
- clubhouse amenities
- multiple storm water pump stations for runoff delivery
- re-circulation and application of stored water
- site lighting and irrigation

Based on these typical uses we can estimate that the project site will need approximately 550 to 730 mWh/year of electricity. The programming for the site including the driving range and tennis courts hours of operation would have the largest effect on the electricity demands due to the necessary lighting. Future planning phases of the project would need to develop the site programming further in order to progress towards the project goal of grid neutrality. However, based on the estimates included in this memorandum it can be concluded that grid neutrality is possible. Installation of energy-saving lighting and other energy conservation measures can further reduce electrical demand.

L. URBAN RUNOFF REUSE POTENTIAL

The subsurface detention under the driving range proposes to detain approximately 2.6 MG of runoff. In order to advance toward the project's goal of potable irrigation water independence, a portion of the driving range detention could be set aside for storage and treatment of runoff for reuse as irrigation water. A more detailed analysis is required to determine the size of the reuse storage based on expected irrigation demands for the project. However, for planning purposes we can assume that the reuse storage would be half of the total driving range detention, 1.3 MG. Recirculation pumps would be required to circulate the stored water to enhance the quality and reduce the potential for stagnation and odor issues. The pump outputs would be directly related to the overall storage volume and should be sized to recirculate the entire volume in a 48-hour period. The recirculation system would also include a disinfection component that would lessen the chance of bacteria and virus problems as well as vector issues. The circulation pumps would generally operate continually unless the reuse tank is empty, in which case a low level signal could turn the pumps off.

The irrigation distribution system would be a packaged booster irrigation system with a hydro-pneumatic tank.

Storm water reuse for irrigation is relatively new to the Southern California area and all of the issues associated with this reuse have not been completely addressed yet. Some of the issues include:

- Determining whether the water should be treated to Title 22 standards[1]
- If not to Title 22 standards, what level of treatment is adequate?
- What water quality testing procedures are needed?
- How often should the influent and effluent be tested and monitored?

Under the current regulatory setting it is recommended that the reuse irrigation water only be applied in landscape areas using either drip irrigation systems or sub-surface distribution systems. Areas that need spray irrigation application may need to utilize potable water for irrigation until some of the issues associated with storm water reuse have been evaluated.

[1] Title 22 of the Official California Code of Regulations (also known as the Health and Safety Code)

M. COST ANALYSIS

A concept level engineer's estimate of probable construction costs was prepared based on projects of similar size and scope.

Table 5 – Cost Estimate

Description	Total
Site Demolition	$250,000
Earthwork	$1,600,000
Diversion, Collection & Pump Works	$2,380,000
Surface Inflow, Normal Dry Conveyance & Outfalls	$120,000
Subsurface Detention	$200,000
Sub-Surface Driving Range Detention [1]	$865,000
Wetland, Wet Pond & Habitat Creation	$770,000
Upland landscaping and park elements	$1,900,000
Re-use water treatment & irrigation	$350,000
Public Access & Off-site Trails	$50,000
Solar panels and equipment	$2,000,000
Sub-Total (1)	$10,485,000
Estimating Contingency - 30% of Subtotal (1)	$3,145,500
Subtotal (2)	$13,630,500
Mobilization - 7% of Subtotal (2)	$954,135
Permits - 2% of Subtotal (2)	$272,610
Allowances - 5% of Subtotal (2)	$681,525
Subtotal (3)	$15,538,770
Construction Contingency - 10% of Subtotal (3)	$1,553,877
Cost to Construct	**$17,092,647**

[1]Earthwork for tank included in separate line item

N. ADDITIONAL INVESTIGATION

A geotechnical analysis or investigation must be completed for the project site in order to identify the expected percolation rates, pH levels, corrosion potential, etc. of on-site soil, as well as overall performance expectations for a constructed wetland. Approximately $60,000 should be anticipated for preliminary geotechnical investigations and analysis. An historical environmental review of the area should be completed in order to identify appropriate habitats to be created in the natural park. Migratory bird patterns as well as existing nearby regional habitat connectivity should also be investigated. Comprehensive survey data also must be collected for the project site as well as potential tributary areas located upstream of the site. Further analysis of the area north of Moorpark Avenue could be completed with additional topographic information. Approximately $30,000 should be anticipated for these additional survey investigations. Depending on the outcome of such an analysis, additional runoff from this area could also potentially be captured and treated by the project site, providing additional water quality improvement benefits.

O. NEXT STEPS

A Preliminary Design Report (PDR) should be prepared for the project. The PDR would include detailed data collection such as site reconnaissance, boundary mapping and utility base mapping. Permit requirements will be reviewed and preliminary investigations regarding necessary environmental compliance would be completed. Further review, validation, and updates of the concepts set forth in this document would also be included. The PDR would include design and planning coordination for public day use, public access, recreational facilities, trail/path connections, solar capabilities, coordination with public agencies (Santa Monica Mountains Conservancy, City of Los Angles, County of Los Angles, U.S. Army Corps of Engineers, California Department of Fish & Game), regional community planning workshops, and public outreach. The PDR budget should range from $300,000 to $450,000 depending on the levels of detailed field investigation and outreach required.

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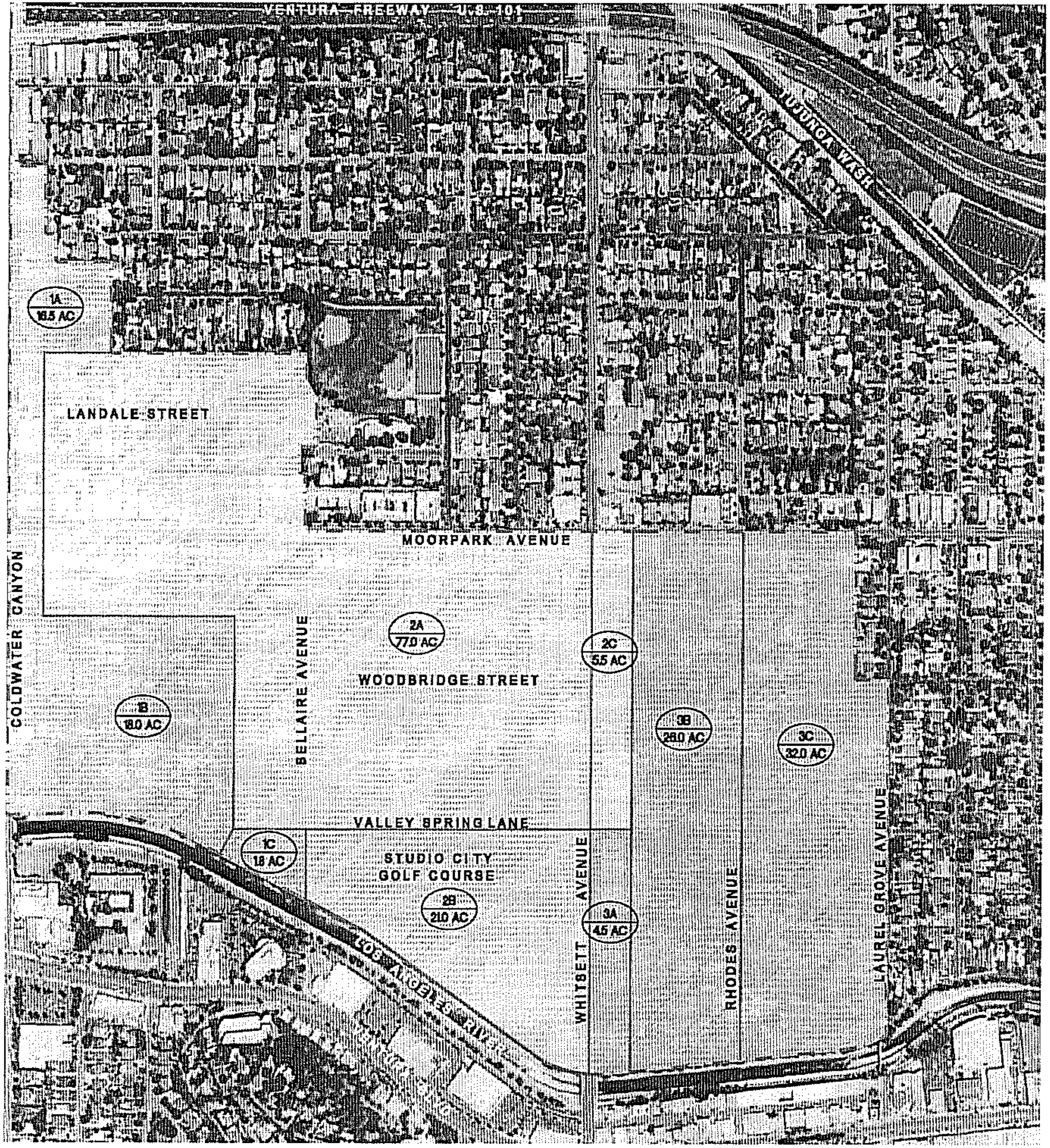

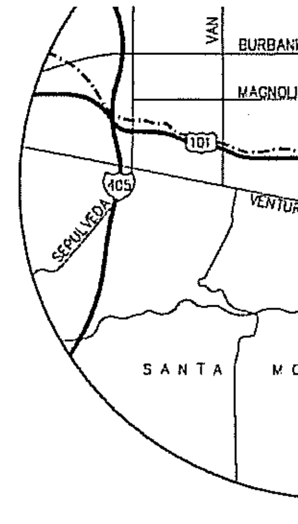

PROJ

LEGEND

- TRIBUTA
- EXISTIN
- SUB-AR
- SUB-AR
- INTERC VIA PUM
- INTERC
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Tributary
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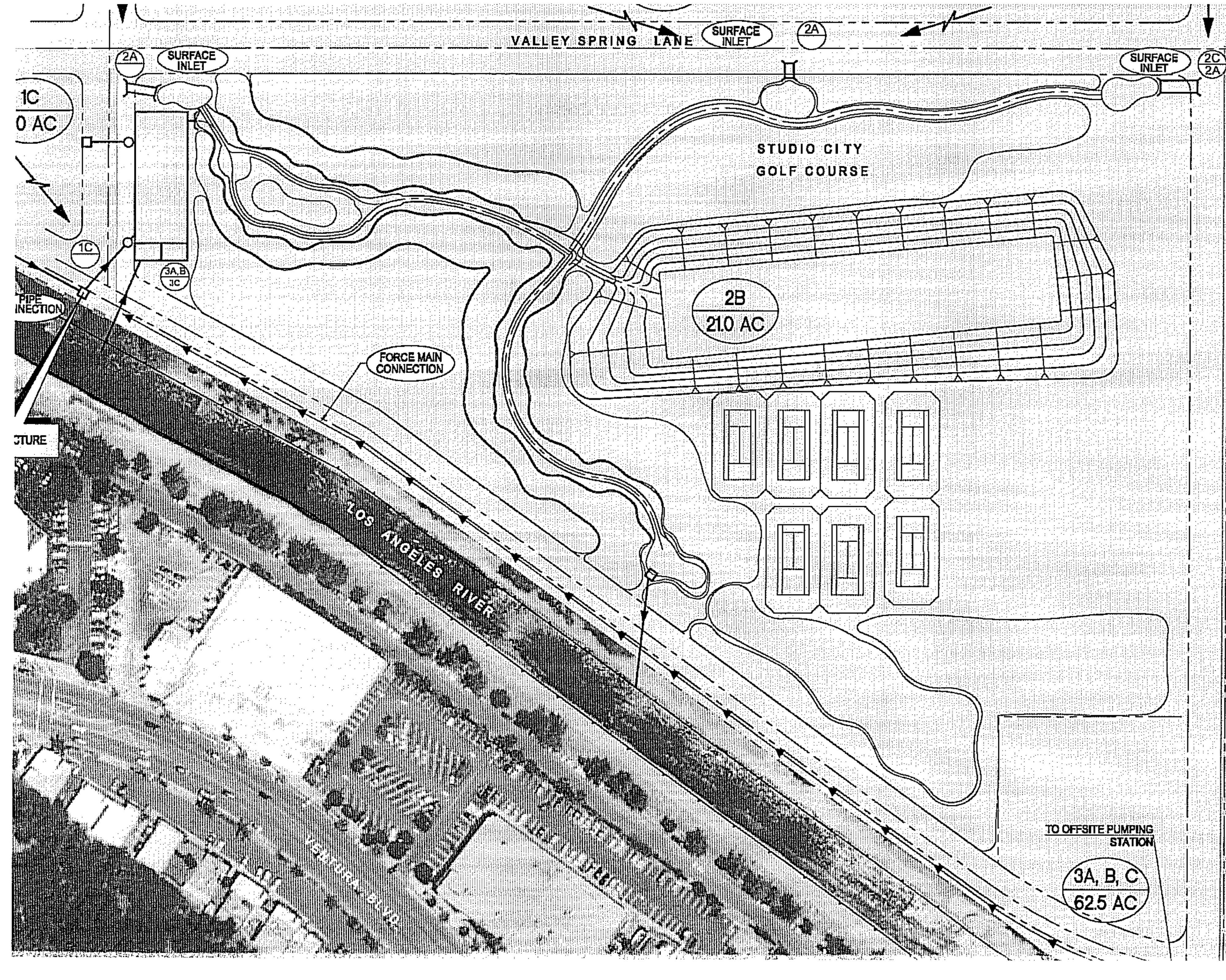
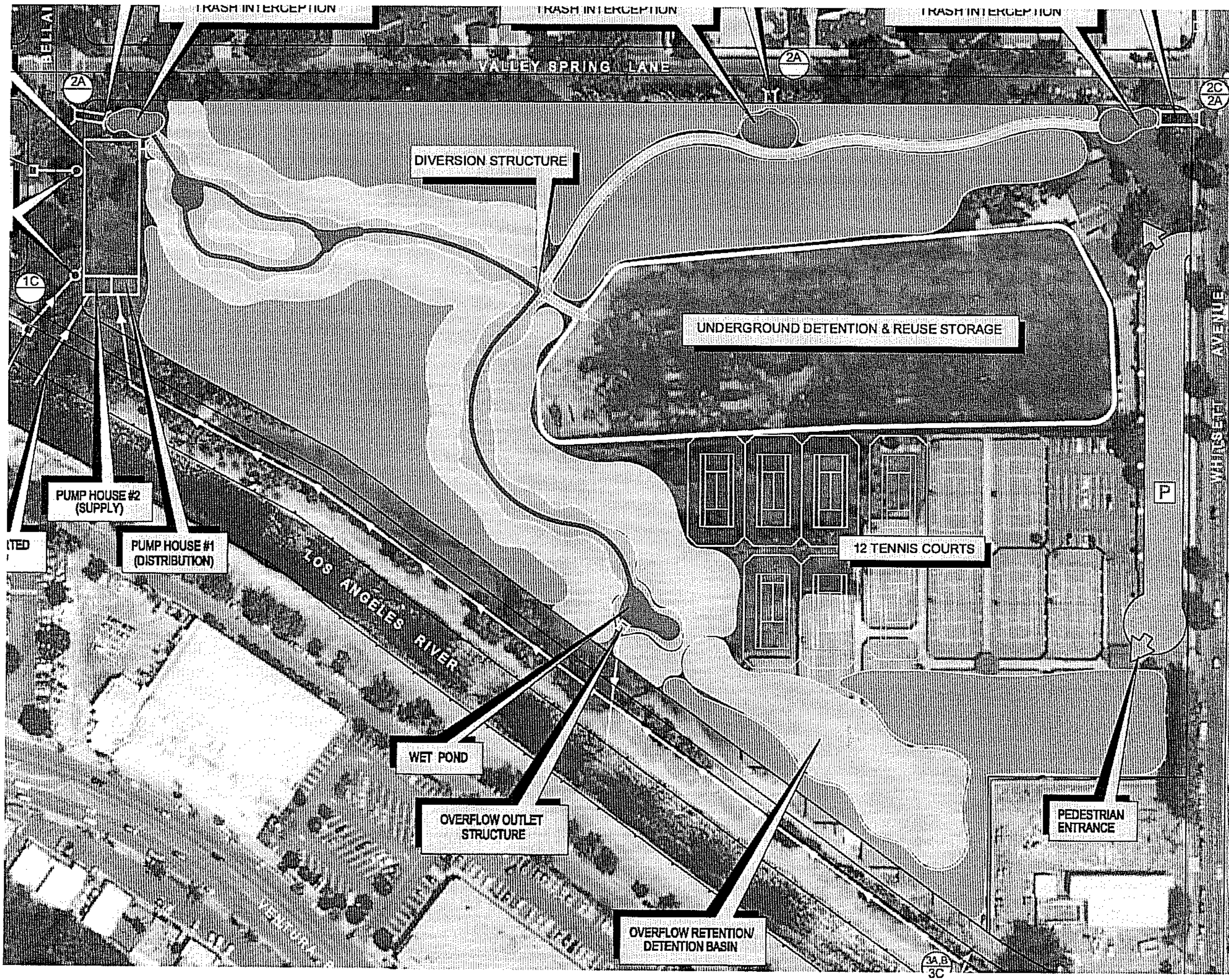

VALLEY SPRING LANE
SURFACE INLET
2A
SURFACE INLET
2A
SURFACE INLET
2C
2A
1C
0 AC
1C
3A,B
3C
PIPE
NECTION
CTURE
STUDIO CITY
GOLF COURSE
2B
21.0 AC
FORCE MAIN CONNECTION
LOS ANGELES RIVER
VENTURA BLVD.
TO OFFSITE PUMPING STATION
3A, B, C
62.5 AC



TRASH INTERCEPTION
TRASH INTERCEPTION
TRASH INTERCEPTION
VALLEY SPRING LANE
2A
2A
2C
2A
1C
DIVERSION STRUCTURE
UNDERGROUND DETENTION & REUSE STORAGE
WHITSETT AVENUE
P
12 TENNIS COURTS
PUMP HOUSE #2 (SUPPLY)
PUMP HOUSE #1 (DISTRIBUTION)
LOS ANGELES RIVER
WET POND
OVERFLOW OUTLET STRUCTURE
OVERFLOW RETENTION/ DETENTION BASIN
PEDESTRIAN ENTRANCE
3A,B
3C

Natu
S


MOORPARK AVENUE
WOODBRIDGE STREET
VALLEY SPRING LANE
BELLAIRE AVENUE
WHITSETT AVENUE
RHODES AVENUE
LAUREL GROVE AVENUE
LOS ANGELES RIVER
PUBLIC ACCESS: PEDESTRIAN ENTRANCE
REGIONAL RIVER PUBLIC ACCESS STAGING AREA
PUBLIC ACCESS: PEDESTRIAN ENTRANCE
EXISTING PEDESTRIAN BRIDGE
REGIONAL RIVER BICYCLE HUB AND PUBLIC PARKING
FUTURE PEDESTRIAN BRIDGE
P
P
N

BELLAIRE AVE
VALLEY SPRING LANE
WHITSETT AVENUE
RHODES AVENUE
LOS ANGELES RIVER
VENTURA BLVD
VEGETATED SWALE TO CAPTURE, CONVEY, AND INFILTRATE RUN-OFF
CATCH BASINS DIRECT RUN-OFF TO SITE
PUBLIC ACCESS: PEDESTRIAN ENTRANCE
UNDERGROUND DETENTION & REUSE STORAGE
(DRIVING RANGE)
SOLAR PANEL SHADE STRUCTURES OVER PARKING
P
12 TENNIS COURTS
REGIONAL RIVER PUBLIC ACCESS STAGING AREA
PUBLIC ACCESS: PEDESTRIAN ENTRANCE
PUMP HOUSES
SOLAR PANELS ALONG SLOPE BANK
RIVER VIEWING AREA
FUTURE PEDESTRIAN BRIDGE
OVERFLOW RETENTION/ DETENTION BASIN
TO REGIONAL RIVER BICYCLE HUB AND PUBLIC PARKING

APPENDIX A

Runoff-Area-Volume Calculations

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RUNOFF-AREA-VOLUME CALCULATIONS

1CCI010102
Studio City Golf Course / Los Angeles River Park
15-Oct-09 cmoran/dbeck
rev Feb 22, 2010

Hydrology Map	1-H1.27	
Soil Types	15	
	16	
Impervious Area	0.74	Assumed Mixed Multi Family Residential per Los Angeles County Hydrology Manual
Tc	30 Min	Assumed per Los Angeles County Hydrology Manual
Intensity (Ix)	0.193	Per Los Angeles County SUSMP
Cu	0.1	Per Los Angeles County Hydrology Manual

Vm = (0.75in)*[((At*impervious%)*0.9)+(At*pervious%)*Cu]*(1ft/12in)*(43560sf/1ac)

Sub Area	Area (Ac.)	Vm (ft^3)	Vm (Ac-ft)	Impervious Ia (Ac.)	Pervious Pa (Ac.)
1A	16.50	31085.51	0.71	12.21	4.29
1B	18.00	33911.46	0.78	13.32	4.68
1C	2.00	3767.94	0.09	1.48	0.52
	36.50				
2A	77.00	145065.69	3.33	56.98	20.02
2B	21.00	39563.37	0.91	15.54	5.46
2C	5.50	10361.84	0.24	4.07	1.43
	103.50				
3A	4.50	8477.87	0.19	3.33	1.17
3B	26.00	48983.22	1.12	19.24	6.76
3C	32.00	60287.04	1.38	23.68	8.32
	62.50				
			Min volume required		
Total Area (Ac.)	202.50	381503.93	8.76		

	Max. Treatable Area (Ac.)	Vm provided (ft^3)	Vm provided (Ac-ft)
treatment volume provided by project	263.00	495484.11	11.37

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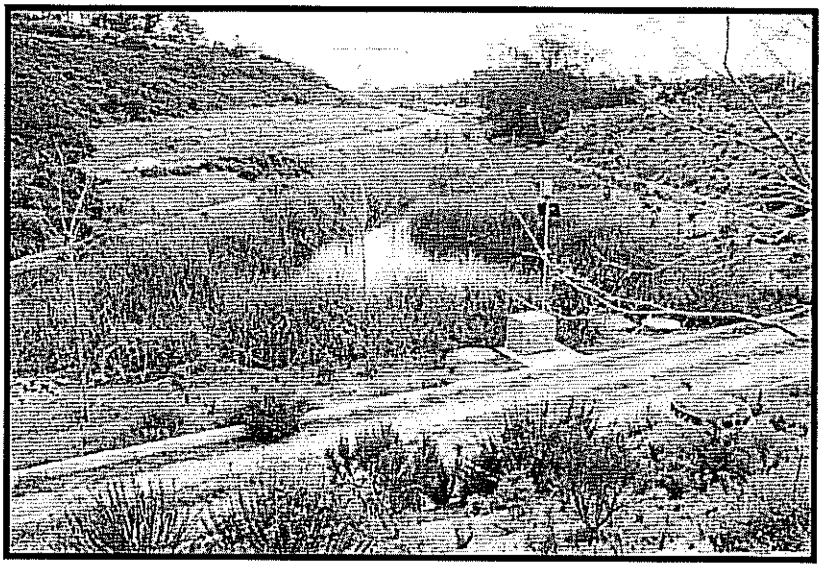
APPENDIX B

California Stormwater Quality Association Best Management Practices Reference

California Stormwater Quality Association (CASQA) Best Management Practices (BMPs) are techniques, measures or structural controls to manage and improve the quality of stormwater runoff.

Links to the CASQA BMPs referenced in this report are listed below:

Wet Ponds
 http://www.cabmphandbooks.com/Documents/Development/TC-20.pdf
Infiltration Basin
 http://www.cabmphandbooks.com/Documents/Development/TC-11.pdf
Extended Detention Basin
 http://www.cabmphandbooks.com/Documents/Development/TC-22.pdf
Vegetated Swale
 http://www.cabmphandbooks.com/Documents/Development/TC-30.pdf
Constructed Wetlands
 http://www.cabmphandbooks.com/Documents/Development/TC-21.pdf



Design Considerations

- Area Required
- Slope
- Water Availability
- Aesthetics
- Environmental Side-effects

Description

Wet ponds (a.k.a. stormwater ponds, retention ponds, wet extended detention ponds) are constructed basins that have a permanent pool of water throughout the year (or at least throughout the wet season) and differ from constructed wetlands primarily in having a greater average depth. Ponds treat incoming stormwater runoff by settling and biological uptake. The primary removal mechanism is settling as stormwater runoff resides in this pool, but pollutant uptake, particularly of nutrients, also occurs to some degree through biological activity in the pond. Wet ponds are among the most widely used stormwater practices. While there are several different versions of the wet pond design, the most common modification is the extended detention wet pond, where storage is provided above the permanent pool in order to detain stormwater runoff and promote settling. The schematic diagram is of an on-line pond that includes detention for larger events, but this is not required in all areas of the state.

Targeted Constituents

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

Legend *(Removal Effectiveness)*

● Low ■ High

▲ Medium

California Experience

Caltrans constructed a wet pond in northern San Diego County (I-5 and La Costa Blvd.). Largest issues at this site were related to vector control, vegetation management, and concern that endangered species would become resident and hinder maintenance activities.

Advantages

- If properly designed, constructed and maintained, wet basins can provide substantial aesthetic/recreational value and wildlife and wetlands habitat.
- Ponds are often viewed as a public amenity when integrated into a park setting.

- Due to the presence of the permanent wet pool, properly designed and maintained wet basins can provide significant water quality improvement across a relatively broad spectrum of constituents including dissolved nutrients.

- Widespread application with sufficient capture volume can provide significant control of channel erosion and enlargement caused by changes to flow frequency relationships resulting from the increase of impervious cover in a watershed.

Limitations

- Some concern about safety when constructed where there is public access.

- Mosquito and midge breeding is likely to occur in ponds.

- Cannot be placed on steep unstable slopes.

- Need for base flow or supplemental water if water level is to be maintained.

- Require a relatively large footprint

- Depending on volume and depth, pond designs may require approval from the State Division of Safety of Dams

Design and Sizing Guidelines

- Capture volume determined by local requirements or sized to treat 85% of the annual runoff volume.

- Use a draw down time of 48 hours in most areas of California. Draw down times in excess of 48 hours may result in vector breeding, and should be used only after coordination with local vector control authorities. Draw down times of less than 48 hours should be limited to BMP drainage areas with coarse soils that readily settle and to watersheds where warming may be detrimental to downstream fisheries.

- Permanent pool volume equal to twice the water quality volume.

- Water depth not to exceed about 8 feet.

- Wetland vegetation occupying no more than 25% of surface area.

- Include energy dissipation in the inlet design and a sediment forebay to reduce resuspension of accumulated sediment and facilitate maintenance.

- A maintenance ramp should be included in the design to facilitate access to the forebay for maintenance activities and for vector surveillance and control.

- To facilitate vector surveillance and control activities, road access should be provided along at least one side of BMPs that are seven meters or less in width. Those BMPs that have shoreline-to-shoreline distances in excess of seven meters should have perimeter road access on both sides or be designed such that no parcel of water is greater than seven meters from the road.

Construction/Inspection Considerations

- In areas with porous soils an impermeable liner may be required to maintain an adequate permanent pool level.
- Outlet structures and piping should be installed with collars to prevent water from seeping through the fill and causing structural failure.
- Inspect facility after first large storm to determine whether the desired residence time has been achieved.

Performance

The observed pollutant removal of a wet pond is highly dependent on two factors: the volume of the permanent pool relative to the amount of runoff from the typical event in the area and the quality of the base flow that sustains the permanent pool. A recent study (Caltrans, 2002) has documented that if the permanent pool is much larger than the volume of runoff from an average event, then displacement of the permanent pool by the wet weather flow is the primary process. A statistical comparison of the wet pond discharge quality during dry and wet weather shows that they are not significantly different. Consequently, there is a relatively constant discharge quality during storms that is the same as the concentrations observed in the pond during ambient (dry weather) conditions. Consequently, for most constituents the performance of the pond is better characterized by the average effluent concentration, rather than the "percent reduction," which has been the conventional measure of performance. Since the effluent quality is essentially constant, the percent reduction observed is mainly a function of the influent concentrations observed at a particular site.

The dry and wet weather discharge quality is, therefore, related to the quality of the base flow that sustains the permanent pool and of the transformations that occur to those constituents during their residence in the basin. One could potentially expect a wide range of effluent concentrations at different locations even if the wet ponds were designed according to the same guidelines, if the quality of the base flow differed significantly. This may explain the wide range of concentration reductions reported in various studies.

Concentrations of nutrients in base flow may be substantially higher than in urban stormwater runoff. Even though these concentrations may be substantially reduced during the residence time of the base flow in the pond, when this water is displaced by wet weather flows, concentrations may still be quite elevated compared to the levels that promote eutrophication in surface water systems. Consequently comparing influent and effluent nutrient concentrations during wet weather can make the performance seem highly variable.

Relatively small perennial flows may often substantially exceed the wet weather flow treated. Consequently, one should also consider the load reduction observed under ambient conditions when assessing the potential benefit to the receiving water.

Siting Criteria

Wet ponds are a widely applicable stormwater management practice and can be used over a broad range of storm frequencies and sizes, drainage areas and land use types. Although they have limited applicability in highly urbanized settings and in arid climates, they have few other restrictions. Wet basins may be constructed on- or off-line and can be sited at feasible locations along established drainage ways with consistent base flow. An off-line design is preferred. Wet basins are often utilized in smaller sub-watersheds and are particularly appropriate in areas with residential land uses or other areas where high nutrient loads are considered to be potential problems (e.g., golf courses).

Ponds do not consume a large area (typically 2–3 percent of the contributing drainage area); however, these facilities are generally large. Other practices, such as filters or swales, may be "squeezed" into relatively unusable land, but ponds need a relatively large continuous area. Wet basins are typically used in drainage basins of more than ten acres and less than one square mile (Schueler et al., 1992). Emphasis can be placed in siting wet basins in areas where the pond can also function as an aesthetic amenity or in conjunction with other stormwater management functions.

Wet basin application is appropriate in the following settings: (1) where there is a need to achieve a reasonably high level of dissolved contaminant removal and/or sediment capture; (2) in small to medium-sized regional tributary areas with available open space and drainage areas greater than about 10 ha (25 ac.); (3) where base flow rates or other channel flow sources are relatively consistent year-round; (4) in residential settings where aesthetic and wildlife habitat benefits can be appreciated and maintenance activities are likely to be consistently undertaken.

Traditional wet extended detention ponds can be applied in most regions of the United States, with the exception of arid climates. In arid regions, it is difficult to justify the supplemental water needed to maintain a permanent pool because of the scarcity of water. Even in semi-arid Austin, Texas, one study found that 2.6 acre-feet per year of supplemental water was needed to maintain a permanent pool of only 0.29 acre-feet (Saunders and Gilroy, 1997). Seasonal wet ponds (i.e., ponds that maintain a permanent pool only during the wet season) may prove effective in areas with distinct wet and dry seasons; however, this configuration has not been extensively evaluated.

Wet ponds may pose a risk to cold water systems because of their potential for stream warming. When water remains in the permanent pool, it is heated by the sun. A study in Prince George's County, Maryland, found that stormwater wet ponds heat stormwater by about 9°F from the inlet to the outlet (Galli, 1990).

Additional Design Guidelines

Specific designs may vary considerably, depending on site constraints or preferences of the designer or community. There are several variations of the wet pond design, including constructed wetlands, and wet extended detention ponds. Some of these design alternatives are intended to make the practice adaptable to various sites and to account for regional constraints and opportunities. In conventional wet ponds, the open water area comprises 50% or more of the total surface area of the pond. The permanent pool should be no deeper than 2.5 m (8 feet) and should average 1.2 – 2 m (4-6 feet) deep. The greater depth of this configuration helps limit the extent of the vegetation to an aquatic bench around the perimeter of the pond with a nominal depth of about 1 foot and variable width. This shallow bench also protects the banks from erosion, enhances habitat and aesthetic values, and reduces the drowning hazard.

The wet extended detention pond combines the treatment concepts of the dry extended detention pond and the wet pond. In this design, the water quality volume is detained above the permanent pool and released over 24 hours. In addition to increasing the residence time, which improves pollutant removal, this design also attenuates peak runoff rates. Consequently, this design alternative is recommended.

Pretreatment incorporates design features that help to settle out coarse sediment particles. By removing these particles from runoff before they reach the large permanent pool, the maintenance burden of the pond is reduced. In ponds, pretreatment is achieved with a sediment forebay. A sediment forebay is a small pool (typically about 10 percent of the volume of the permanent pool). Coarse particles remain trapped in the forebay, and maintenance is performed on this smaller pool, eliminating the need to dredge the entire pond.

There are a variety of sizing criteria for determining the volume of the permanent pool, mostly related to the water quality volume (i.e., the volume of water treated for pollutant removal) or the average storm size in a particular area. In addition, several theoretical approaches to determination of permanent pool volume have been developed. However, there is little empirical evidence to support these designs. Consequently, a simplified method (i.e., permanent pool volume equal to twice the water quality volume) is recommended.

Other design features do not increase the volume of a pond, but can increase the amount of time stormwater remains in the device and eliminate short-circuiting. Ponds should always be designed with a length-to-width ratio of at least 1.5:1, where feasible. In addition, the design should incorporate features to lengthen the flow path through the pond, such as underwater berms designed to create a longer route through the pond. Combining these two measures helps ensure that the entire pond volume is used to treat stormwater. Wet ponds with greater amounts of vegetation often have channels through the vegetated areas and contain dead areas where stormwater is restricted from mixing with the entire permanent pool, which can lead to less pollutant removal. Consequently, a pond with open water comprising about 75% of the surface area is preferred.

Design features are also incorporated to ease maintenance of both the forebay and the main pool of ponds. Ponds should be designed with a maintenance access to the forebay to ease this relatively routine (every 5–7 year) maintenance activity. In addition, ponds should generally have a drain to draw down the pond for vegetation harvesting or the more infrequent dredging of the main cell of the pond.

Cold climates present many challenges to designers of wet ponds. The spring snowmelt may have a high pollutant load and a large volume to be treated. In addition, cold winters may cause freezing of the permanent pool or freezing at inlets and outlets. Finally, high salt concentrations in runoff resulting from road salting, and sediment loads from road sanding, may impact pond vegetation as well as reduce the storage and treatment capacity of the pond.

One option to deal with high pollutant loads and runoff volumes during the spring snowmelt is the use of a seasonally operated pond to capture snowmelt during the winter and retain the permanent pool during warmer seasons. In this option, proposed by Oberts (1994), the pond has two water quality outlets, both equipped with gate valves. In the summer, the lower outlet is closed. During the fall and throughout the winter, the lower outlet is opened to draw down the permanent pool. As the spring melt begins, the lower outlet is closed to provide detention for the melt event. The manipulation of this system requires some labor and vigilance; a careful maintenance agreement should be confirmed.

Several other modifications may help to improve the performance of ponds in cold climates. Designers should consider planting the pond with salt-tolerant vegetation if the facility receives road runoff. In order to counteract the effects of freezing on inlet and outlet structures, the use of inlet and outlet structures that are resistant to frost, including weirs and larger diameter pipes, may be useful. Designing structures on-line, with a continuous flow of water through the pond, will also help prevent freezing of these structures. Finally, since freezing of the permanent pool can reduce the effectiveness of pond systems, it is important to incorporate extended detention into the design to retain usable treatment area above the permanent pool when it is frozen.

Summary of Design Recommendations

(1) Facility Sizing – The basin should be sized to hold the permanent pool as well as the required water quality volume. The volume of the permanent pool should equal twice the water quality volume.

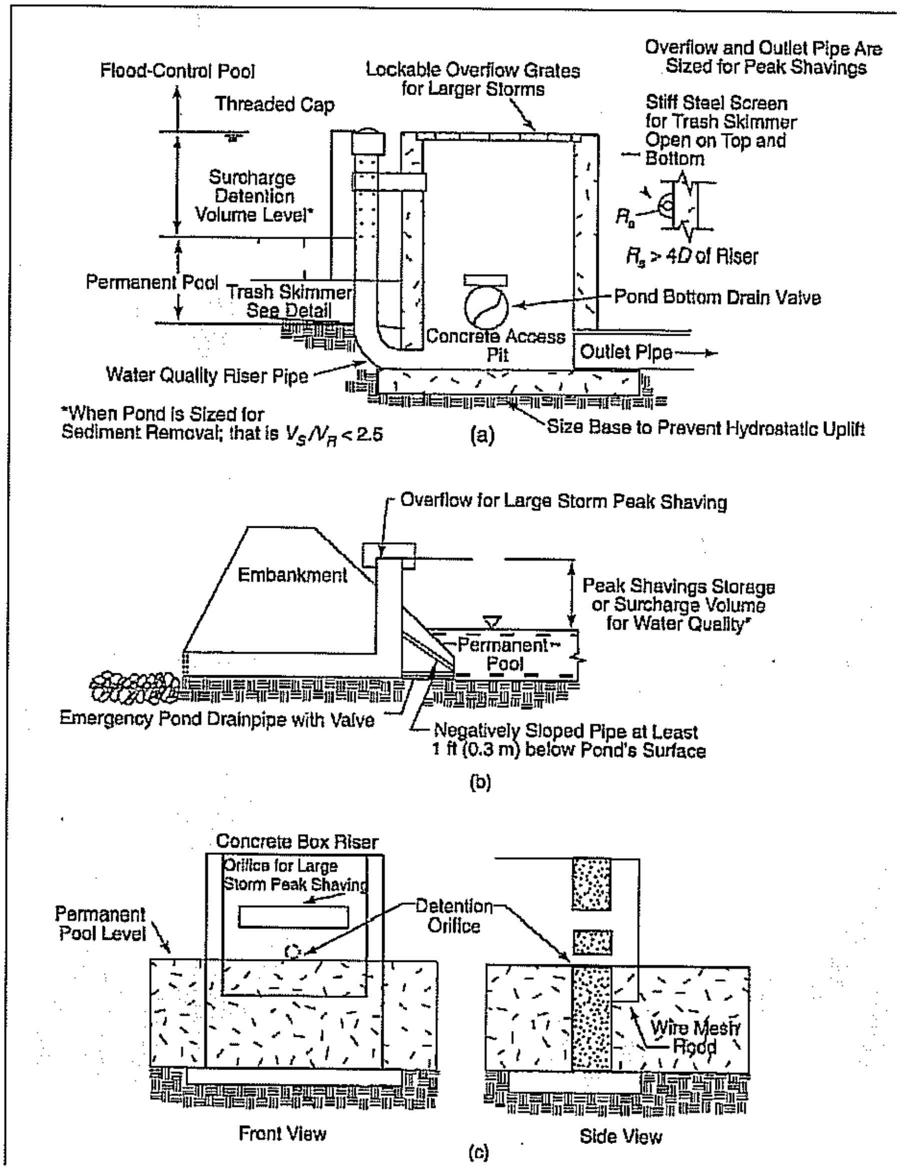
(2) Pond Configuration - The wet basin should be configured as a two stage facility with a sediment forebay and a main pool. The basins should be wedge-shaped, narrowest at the inlet and widest at the outlet. The minimum length to width ratio should be 1.5 where feasible. The perimeter of all permanent pool areas with depths of 4.0 feet or greater should be surrounded by an aquatic bench. This bench should extend inward 5-10 feet from the perimeter of the permanent pool and should be no more than 18 inches below normal depth. The area of the bench should not exceed about 25% of pond surface. The depth in the center of the basin should be 4 – 8 feet deep to prevent vegetation from encroaching on the pond open water surface.

(3) Pond Side Slopes - Side slopes of the basin should be 3:1 (H:V) or flatter for grass stabilized slopes. Slopes steeper than 3:1 should be stabilized with an appropriate slope stabilization practice.

(4) Sediment Forebay - A sediment forebay should be used to isolate gross sediments as they enter the facility and to simplify sediment removal. The sediment forebay should consist of a separate cell formed by an earthen berm, gabion, or loose riprap wall. The forebay should be sized to contain 15 to 25% of the permanent pool volume and should be at least 3 feet deep. Exit velocities from the forebay should not be erosive. Direct maintenance access should be provided to the forebay. The bottom of the forebay may be hardened (concrete) to make sediment removal easier. A fixed vertical sediment depth marker should be installed in the forebay to measure sediment accumulation.

(5) Outflow Structure - Figure 2 presents a schematic representation of suggested outflow structures. The outlet structure should be designed to drain the water quality volume over 24 hours with the orifice sized according to the equation presented in the Extended Detention Basin fact sheet. The facility should have a separate drain pipe with a manual valve that can completely or partially drain the pond for maintenance purposes. To allow for possible sediment accumulation, the submerged end of the pipe should be protected, and the drain pipe should be sized to drain the pond within 24 hours. The valve should be located at a point where it can be operated in a safe and convenient manner.

For on-line facilities, the principal and emergency spillways must be sized to provide 1.0 foot of freeboard during the 25-year event and to safely pass the 100-year flood. The embankment should be designed in accordance with all relevant specifications for small dams.



(6) Splitter Box - When the pond is designed as an off-line facility, a splitter structure is used to isolate the water quality volume. The splitter box, or other flow diverting approach, should be designed to convey the 25-year event while providing at least 1.0 foot of freeboard along pond side slopes.

(7) Vegetation - A plan should be prepared that indicates how aquatic and terrestrial areas will be vegetatively stabilized. Wetland vegetation elements should be placed along the aquatic bench or in the shallow portions of the permanent pool. The optimal elevation for planting of wetland vegetation is within 6 inches vertically of the normal pool elevation. A list of some wetland vegetation native to California is presented in Table 1.

Table 1 California Wetland Vegetation	
Botanical Name	**Common Name**
BACCHARIS SALICIFOLIA	MULE FAT
FRANKENIA GRANDIFOLIA	HEATH
SALIX GOODINGII	BLACK WILLOW
SALIX LASIOLEPIS	ARROYO WILLOW
SAMUCUS MEXICANUS	MEXICAN ELDERBERRY
HAPLOPAPPUS VENETUS	COAST GOLDENBRUSH
DISTICHIS SPICATA	SALT GRASS
LIMONIUM CALIFORNICUM	COASTAL STATICE
ATRIPLEX LENTIFORMIS	COASTAL QUAIL BUSH
BACCHARIS PILULARIS	CHAPARRAL BROOM
MIMULUS LONGIFLORUS	MONKEY FLOWER
SCIRPUS CALIFORNICUS	BULRUSH
SCIRPUS ROBUSTUS	BULRUSH
TYPHA LATIFOLIA	BROADLEAF CATTAIL
JUNCUS ACUTUS	RUSH

Maintenance

The amount of maintenance required for a wet pond is highly dependent on local regulatory agencies, particular health and vector control agencies. These agencies are often extremely concerned about the potential for mosquito breeding that may occur in the permanent pool. Even though mosquito fish (*Gambusia affinis*) were introduced into a wet pond constructed by Caltrans in the San Diego area, mosquito breeding was routinely observed during inspections. In addition, the vegetation at this site became sufficiently dense on the bench around the edge of the pool that mosquito fish were unable to enter this area to feed upon the mosquito larvae. The vegetation at this site was particularly vigorous because of the high nutrient concentrations in the perennial base flow (15.5 mg/L NO3-N) and the mild climate, which permitted growth year round. Consequently, the vector control agency required an annual harvest of vegetation to address this situation. This harvest can be very expensive.

On the other hand, routine harvesting may increase nutrient removal and prevent the export of these constituents from dead and dying plants falling in the water. A previous study (Faulkner and Richardson, 1991) documented dramatic reductions in nutrient removal after the first several years of operation and related it to the vegetation achieving a maximum density. That content then decreases through the growth season, as the total biomass increases. In effect, the total amount of nutrients/m2 of wetland remains essentially the same from June through September, when the plants start to put the P back into the rhizomes. Therefore harvesting should occur between June and September. Research also suggests that harvesting only the foliage is less effective, since a very small percentage of the removed nutrients is taken out with harvesting.

Since wet ponds are often selected for their aesthetic considerations as well as pollutant removal, they are often sited in areas of high visibility. Consequently, floating litter and debris are removed more frequently than would be required simply to support proper functioning of the pond and outlet. This is one of the primary maintenance activities performed at the Central Market Pond located in Austin, Texas. In this type of setting, vegetation management in the area surrounding the pond can also contribute substantially to the overall maintenance requirements.

One normally thinks of sediment removal as one of the typical activities performed at stormwater BMPs. This activity does not normally constitute one of the major activities on an annual basis. At the concentrations of TSS observed in urban runoff from stable watersheds, sediment removal may only be required every 20 years or so. Because this activity is performed so infrequently, accurate costs for this activity are lacking.

In addition to regular maintenance activities needed to maintain the function of wet ponds, some design features can be incorporated to ease the maintenance burden. In wet ponds, maintenance reduction features include techniques to reduce the amount of maintenance needed, as well as techniques to make regular maintenance activities easier.

One potential maintenance concern in wet ponds is clogging of the outlet. Ponds should be designed with a non-clogging outlet such as a reverse-slope pipe, or a weir outlet with a trash rack. A reverse-slope pipe draws from below the permanent pool extending in a reverse angle up to the riser and establishes the water elevation of the permanent pool. Because these outlets draw water from below the level of the permanent pool, they are less likely to be clogged by floating debris.

Typical maintenance activities and frequencies include:

- Schedule semiannual inspections for burrows, sediment accumulation, structural integrity of the outlet, and litter accumulation.

- Remove accumulated trash and debris in the basin at the middle and end of the wet season. The frequency of this activity may be altered to meet specific site conditions and aesthetic considerations.

- Where permitted by the Department of Fish and Game or other agency regulations, stock wet ponds/constructed wetlands regularly with mosquito fish (*Gambusia spp.*) to enhance natural mosquito and midge control.

- Introduce mosquito fish and maintain vegetation to assist their movements to control mosquitoes, as well as to provide access for vector inspectors. An annual vegetation harvest in summer appears to be optimum, in that it is after the bird breeding season, mosquito fish can provide the needed control until vegetation reaches late summer density, and there is time for re-growth for runoff treatment purposes before the wet season. In certain cases, more frequent plant harvesting may be required by local vector control agencies.

- Maintain emergent and perimeter shoreline vegetation as well as site and road access to facilitate vector surveillance and control activities.
- Remove accumulated sediment in the forebay and regrade about every 5-7 years or when the accumulated sediment volume exceeds 10 percent of the basin volume. Sediment removal may not be required in the main pool area for as long as 20 years.

Cost

Construction Cost

Wet ponds can be relatively inexpensive stormwater practices; however, the construction costs associated with these facilities vary considerably. Much of this variability can be attributed to the degree to which the existing topography will support a wet pond, the complexity and amount of concrete required for the outlet structure, and whether it is installed as part of new construction or implemented as a retrofit of existing storm drain system.

A recent study (Brown and Schueler, 1997) estimated the cost of a variety of stormwater management practices. The study resulted in the following cost equation, adjusting for inflation:

$$C = 24.5^{V0.705}$$

where:

C = Construction, design and permitting cost;

V = Volume in the pond to include the 10-year storm (ft^3).

Using this equation, typical construction costs are:

$45,700 for a 1 acre-foot facility

$232,000 for a 10 acre-foot facility

$1,170,000 for a 100 acre-foot facility

In contrast, Caltrans (2002) reported spending over $448,000 for a pond with a total permanent pool plus water quality volume of only 1036 m^3 (0.8 ac.-ft.), while the City of Austin spent $584,000 (including design) for a pond with a permanent pool volume of 3,100 m^3 (2.5 ac.-ft.). The large discrepancies between the costs of these actual facilities and the model developed by Brown and Schueler indicate that construction costs are highly site specific, depending on topography, soils, subsurface conditions, the local labor, rate and other considerations.

Maintenance Cost

For ponds, the annual cost of routine maintenance has typically been estimated at about 3 to 5 percent of the construction cost; however, the published literature is almost totally devoid of actual maintenance costs. Since ponds are long-lived facilities (typically longer than 20 years), major maintenance activities are unlikely to occur during a relatively short study.

Caltrans (2002) estimated annual maintenance costs of $17,000 based on three years of monitoring of a pond treating runoff from 1.7 ha. Almost all the activities are associated with the annual vegetation harvest for vector control. Total cost at this site falls within the 3-5% range reported above; however, the construction costs were much higher than those estimated by Brown and Schueler (1997). The City of Austin has been reimbursing a developer about $25,000/yr for wet pond maintenance at a site located at a very visible location. Maintenance costs are mainly the result of vegetation management and litter removal. On the other hand, King County estimates annual maintenance costs at about $3,000 per pond; however, this cost likely does not include annual extensive vegetation removal. Consequently, maintenance costs may vary considerably at sites in California depending on the aggressiveness of the vegetation management in that area and the frequency of litter removal.

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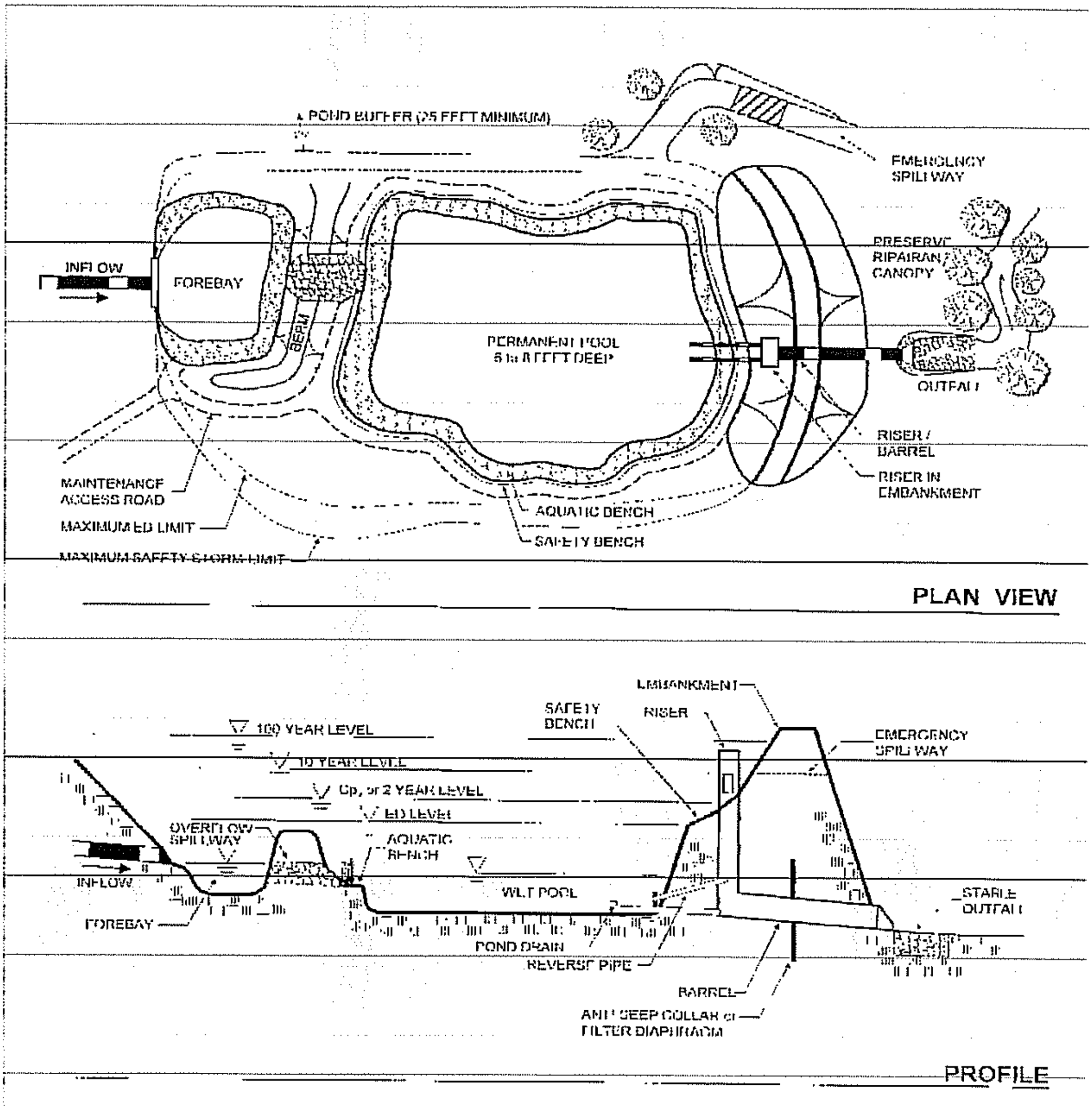
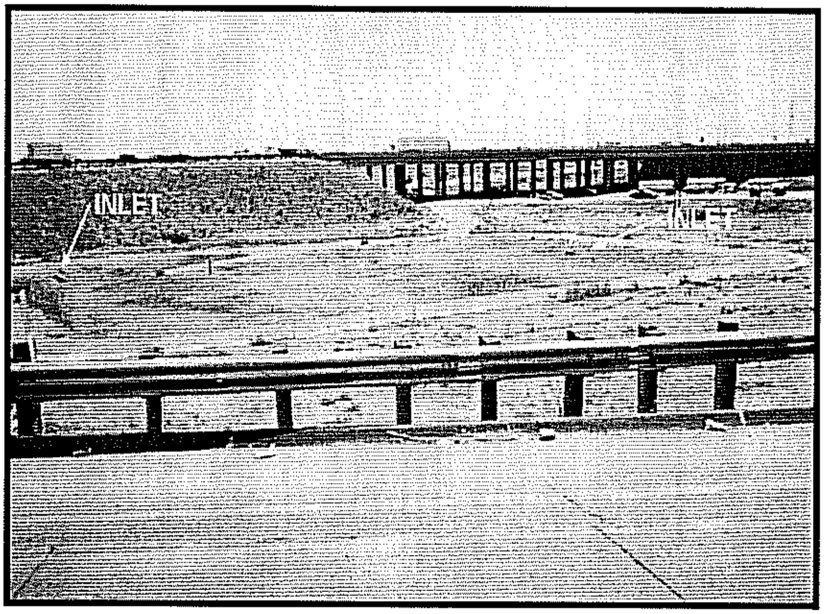


POND BUFFER (25 FEET MINIMUM)
EMERGENCY SPILLWAY
PRESERVE RIPAIRAN CANOPY
INFLOW
FOREBAY
BERM
PERMANENT POOL
OUTFALL
RISER / BARREL
RISER IN EMBANKMENT
MAINTENANCE ACCESS ROAD
MAXIMUM ED LIMIT
AQUATIC BENCH
SAFETY BENCH
PLAN VIEW
EMBANKMENT
SAFETY BENCH
RISER
100 YEAR LEVEL
EMERGENCY SPILLWAY
Cp, or 2 YEAR LEVEL
ED LEVEL
OVERFLOW SPILLWAY
AQUATIC BENCH
INFLOW
WET POOL
STABLE OUTFALL
FOREBAY
POND DRAIN
REVERSE PIPE
BARREL
FILTER DIAPHRAGM
PROFILE



Description

An infiltration basin is a shallow impoundment that is designed to infiltrate stormwater. Infiltration basins use the natural filtering ability of the soil to remove pollutants in stormwater runoff. Infiltration facilities store runoff until it gradually exfiltrates through the soil and eventually into the water table. This practice has high pollutant removal efficiency and can also help recharge groundwater, thus helping to maintain low flows in stream systems. Infiltration basins can be challenging to apply on many sites, however, because of soils requirements. In addition, some studies have shown relatively high failure rates compared with other management practices.

California Experience

Infiltration basins have a long history of use in California, especially in the Central Valley. Basins located in Fresno were among those initially evaluated in the National Urban Runoff Program and were found to be effective at reducing the volume of runoff, while posing little long-term threat to groundwater quality (EPA, 1983; Schroeder, 1995). Proper siting of these devices is crucial as underscored by the experience of Caltrans in siting two basins in Southern California. The basin with marginal separation from groundwater and soil permeability failed immediately and could never be rehabilitated.

Advantages

- Provides 100% reduction in the load discharged to surface waters.
- The principal benefit of infiltration basins is the approximation of pre-development hydrology during which a

Design Considerations

- Soil for Infiltration
- Slope
- Aesthetics

Targeted Constituents

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

Legend *(Removal Effectiveness)*

● Low ■ High

▲ Medium

CASQA

significant portion of the average annual rainfall runoff is infiltrated and evaporated rather than flushed directly to creeks.

- If the water quality volume is adequately sized, infiltration basins can be useful for providing control of channel forming (erosion) and high frequency (generally less than the 2-year) flood events.

Limitations

- May not be appropriate for industrial sites or locations where spills may occur.
- Infiltration basins require a minimum soil infiltration rate of 0.5 inches/hour, not appropriate at sites with Hydrologic Soil Types C and D.
- If infiltration rates exceed 2.4 inches/hour, then the runoff should be fully treated prior to infiltration to protect groundwater quality.
- Not suitable on fill sites or steep slopes.
- Risk of groundwater contamination in very coarse soils.
- Upstream drainage area must be completely stabilized before construction.
- Difficult to restore functioning of infiltration basins once clogged.

Design and Sizing Guidelines

- Water quality volume determined by local requirements or sized so that 85% of the annual runoff volume is captured.
- Basin sized so that the entire water quality volume is infiltrated within 48 hours.
- Vegetation establishment on the basin floor may help reduce the clogging rate.

Construction/Inspection Considerations

- Before construction begins, stabilize the entire area draining to the facility. If impossible, place a diversion berm around the perimeter of the infiltration site to prevent sediment entrance during construction or remove the top 2 inches of soil after the site is stabililized. Stabilize the entire contributing drainage area, including the side slopes, before allowing any runoff to enter once construction is complete.
- Place excavated material such that it can not be washed back into the basin if a storm occurs during construction of the facility.
- Build the basin without driving heavy equipment over the infiltration surface. Any equipment driven on the surface should have extra-wide ("low pressure") tires. Prior to any construction, rope off the infiltration area to stop entrance by unwanted equipment.
- After final grading, till the infiltration surface deeply.
- Use appropriate erosion control seed mix for the specific project and location.

Performance

As water migrates through porous soil and rock, pollutant attenuation mechanisms include precipitation, sorption, physical filtration, and bacterial degradation. If functioning properly, this approach is presumed to have high removal efficiencies for particulate pollutants and moderate removal of soluble pollutants. Actual pollutant removal in the subsurface would be expected to vary depending upon site-specific soil types. This technology eliminates discharge to surface waters except for the very largest storms; consequently, complete removal of all stormwater constituents can be assumed.

There remain some concerns about the potential for groundwater contamination despite the findings of the NURP and Nightingale (1975; 1987a,b,c; 1989). For instance, a report by Pitt et al. (1994) highlighted the potential for groundwater contamination from intentional and unintentional stormwater infiltration. That report recommends that infiltration facilities not be sited in areas where high concentrations are present or where there is a potential for spills of toxic material. Conversely, Schroeder (1995) reported that there was no evidence of groundwater impacts from an infiltration basin serving a large industrial catchment in Fresno, CA.

Siting Criteria

The key element in siting infiltration basins is identifying sites with appropriate soil and hydrogeologic properties, which is critical for long term performance. In one study conducted in Prince George's County, Maryland (Galli, 1992), all of the infiltration basins investigated clogged within 2 years. It is believed that these failures were for the most part due to allowing infiltration at sites with rates of less than 0.5 in/hr, basing siting on soil type rather than field infiltration tests, and poor construction practices that resulted in soil compaction of the basin invert.

A study of 23 infiltration basins in the Pacific Northwest showed better long-term performance in an area with highly permeable soils (Hilding, 1996). In this study, few of the infiltration basins had failed after 10 years. Consequently, the following guidelines for identifying appropriate soil and subsurface conditions should be rigorously adhered to.

- Determine soil type (consider RCS soil type 'A, B or C' only) from mapping and consult USDA soil survey tables to review other parameters such as the amount of silt and clay, presence of a restrictive layer or seasonal high water table, and estimated permeability. The soil should not have more than 30% clay or more than 40% of clay and silt combined. Eliminate sites that are clearly unsuitable for infiltration.

- Groundwater separation should be at least 3 m from the basin invert to the measured ground water elevation. There is concern at the state and regional levels of the impact on groundwater quality from infiltrated runoff, especially when the separation between groundwater and the surface is small.

- Location away from buildings, slopes and highway pavement (greater than 6 m) and wells and bridge structures (greater than 30 m). Sites constructed of fill, having a base flow or with a slope greater than 15% should not be considered.

- Ensure that adequate head is available to operate flow splitter structures (to allow the basin to be offline) without ponding in the splitter structure or creating backwater upstream of the splitter.

- Base flow should not be present in the tributary watershed.

Secondary Screening Based on Site Geotechnical Investigation

- At least three in-hole conductivity tests shall be performed using USBR 7300-89 or Bouwer-Rice procedures (the latter if groundwater is encountered within the boring), two tests at different locations within the proposed basin and the third down gradient by no more than approximately 10 m. The tests shall measure permeability in the side slopes and the bed within a depth of 3 m of the invert.

- The minimum acceptable hydraulic conductivity as measured in any of the three required test holes is 13 mm/hr. If any test hole shows less than the minimum value, the site should be disqualified from further consideration.

- Exclude from consideration sites constructed in fill or partially in fill unless no silts or clays are present in the soil boring. Fill tends to be compacted, with clays in a dispersed rather than flocculated state, greatly reducing permeability.

- The geotechnical investigation should be such that a good understanding is gained as to how the stormwater runoff will move in the soil (horizontally or vertically) and if there are any geological conditions that could inhibit the movement of water.

Additional Design Guidelines

(1) Basin Sizing - The required water quality volume is determined by local regulations or sufficient to capture 85% of the annual runoff.

(2) Provide pretreatment if sediment loading is a maintenance concern for the basin.

(3) Include energy dissipation in the inlet design for the basins. Avoid designs that include a permanent pool to reduce opportunity for standing water and associated vector problems.

(4) Basin invert area should be determined by the equation:

$$A = \frac{WQV}{kt}$$

where A = Basin invert area (m^2)

WQV = water quality volume (m^3)

k = 0.5 times the lowest field-measured hydraulic conductivity (m/hr)

t = drawdown time (48 hr)

(5) The use of vertical piping, either for distribution or infiltration enhancement shall not be allowed to avoid device classification as a Class V injection well per 40 CFR146.5(e)(4).

Maintenance

Regular maintenance is critical to the successful operation of infiltration basins. Recommended operation and maintenance guidelines include:

- Inspections and maintenance to ensure that water infiltrates into the subsurface completely (recommended infiltration rate of 72 hours or less) and that vegetation is carefully managed to prevent creating mosquito and other vector habitats.
- Observe drain time for the design storm after completion or modification of the facility to confirm that the desired drain time has been obtained.
- Schedule semiannual inspections for beginning and end of the wet season to identify potential problems such as erosion of the basin side slopes and invert, standing water, trash and debris, and sediment accumulation.
- Remove accumulated trash and debris in the basin at the start and end of the wet season.
- Inspect for standing water at the end of the wet season.
- Trim vegetation at the beginning and end of the wet season to prevent establishment of woody vegetation and for aesthetic and vector reasons.
- Remove accumulated sediment and regrade when the accumulated sediment volume exceeds 10% of the basin.
- If erosion is occurring within the basin, revegetate immediately and stabilize with an erosion control mulch or mat until vegetation cover is established.
- To avoid reversing soil development, scarification or other disturbance should only be performed when there are actual signs of clogging, rather than on a routine basis. Always remove deposited sediments before scarification, and use a hand-guided rotary tiller, if possible, or a disc harrow pulled by a very light tractor.

Cost

Infiltration basins are relatively cost-effective practices because little infrastructure is needed when constructing them. One study estimated the total construction cost at about $2 per ft (adjusted for inflation) of storage for a 0.25-acre basin (SWRPC, 1991). As with other BMPs, these published cost estimates may deviate greatly from what might be incurred at a specific site. For instance, Caltrans spent about $18/ft^3 for the two infiltration basins constructed in southern California, each of which had a water quality volume of about 0.34 ac.-ft. Much of the higher cost can be attributed to changes in the storm drain system necessary to route the runoff to the basin locations.

Infiltration basins typically consume about 2 to 3% of the site draining to them, which is relatively small. Additional space may be required for buffer, landscaping, access road, and fencing. Maintenance costs are estimated at 5 to 10% of construction costs.

One cost concern associated with infiltration practices is the maintenance burden and longevity. If improperly maintained, infiltration basins have a high failure rate. Thus, it may be necessary to replace the basin with a different technology after a relatively short period of time.

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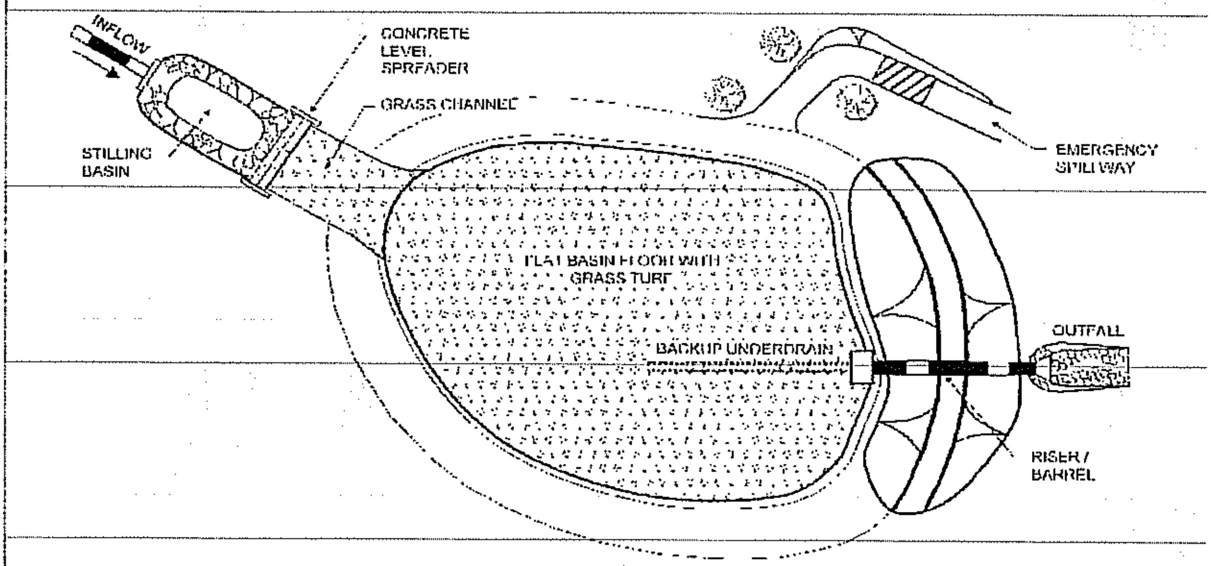
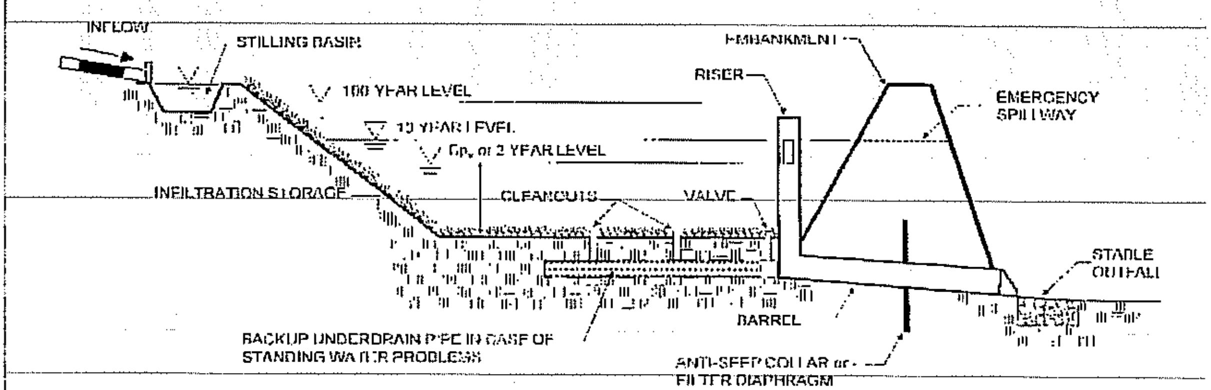
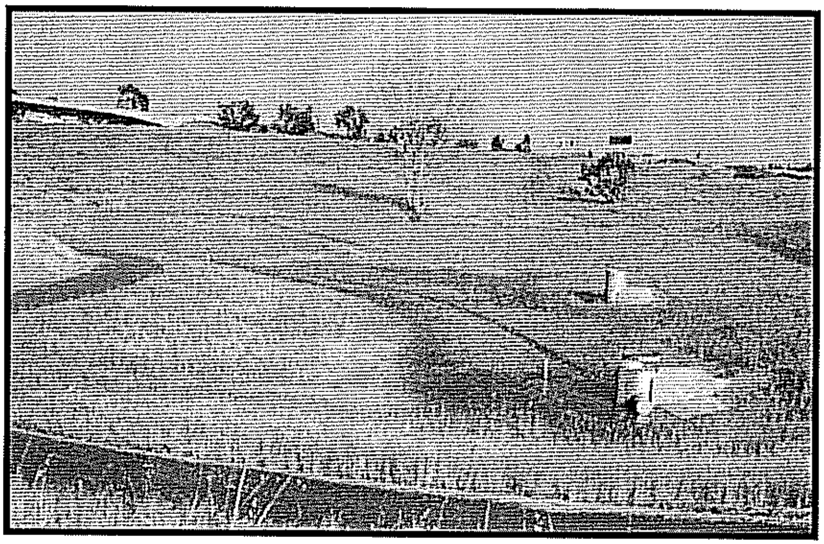


PLAN VIEW



PROFILE



Design Considerations

- Tributary Area
- Area Required
- Hydraulic Head

Description

Dry extended detention ponds (a.k.a. dry ponds, extended detention basins, detention ponds, extended detention ponds) are basins whose outlets have been designed to detain the stormwater runoff from a water quality design storm for some minimum time (e.g., 48 hours) to allow particles and associated pollutants to settle. Unlike wet ponds, these facilities do not have a large permanent pool. They can also be used to provide flood control by including additional flood detention storage.

California Experience

Caltrans constructed and monitored 5 extended detention basins in southern California with design drain times of 72 hours. Four of the basins were earthen, less costly and had substantially better load reduction because of infiltration that occurred, than the concrete basin. The Caltrans study reaffirmed the flexibility and performance of this conventional technology. The small headloss and few siting constraints suggest that these devices are one of the most applicable technologies for stormwater treatment.

Advantages

- Due to the simplicity of design, extended detention basins are relatively easy and inexpensive to construct and operate.
- Extended detention basins can provide substantial capture of sediment and the toxics fraction associated with particulates.
- Widespread application with sufficient capture volume can provide significant control of channel erosion and enlargement caused by changes to flow frequency

Targeted Constituents

☑	Sediment	▲
☑	Nutrients	●
☑	Trash	■
☑	Metals	▲
☑	Bacteria	▲
☑	Oil and Grease	▲
☑	Organics	▲

Legend *(Removal Effectiveness)*

● Low ■ High

▲ Medium

relationships resulting from the increase of impervious cover in a watershed.

Limitations

- Limitation of the diameter of the orifice may not allow use of extended detention in watersheds of less than 5 acres (would require an orifice with a diameter of less than 0.5 inches that would be prone to clogging).

- Dry extended detention ponds have only moderate pollutant removal when compared to some other structural stormwater practices, and they are relatively ineffective at removing soluble pollutants.

- Although wet ponds can increase property values, dry ponds can actually detract from the value of a home due to the adverse aesthetics of dry, bare areas and inlet and outlet structures.

Design and Sizing Guidelines

- Capture volume determined by local requirements or sized to treat 85% of the annual runoff volume.

- Outlet designed to discharge the capture volume over a period of hours.

- Length to width ratio of at least 1.5:1 where feasible.

- Basin depths optimally range from 2 to 5 feet.

- Include energy dissipation in the inlet design to reduce resuspension of accumulated sediment.

- A maintenance ramp and perimeter access should be included in the design to facilitate access to the basin for maintenance activities and for vector surveillance and control.

- Use a draw down time of 48 hours in most areas of California. Draw down times in excess of 48 hours may result in vector breeding, and should be used only after coordination with local vector control authorities. Draw down times of less than 48 hours should be limited to BMP drainage areas with coarse soils that readily settle and to watersheds where warming may be determined to downstream fisheries.

Construction/Inspection Considerations

- Inspect facility after first large to storm to determine whether the desired residence time has been achieved.

- When constructed with small tributary area, orifice sizing is critical and inspection should verify that flow through additional openings such as bolt holes does not occur.

Performance

One objective of stormwater management practices can be to reduce the flood hazard associated with large storm events by reducing the peak flow associated with these storms. Dry extended detention basins can easily be designed for flood control, and this is actually the primary purpose of most detention ponds.

Dry extended detention basins provide moderate pollutant removal, provided that the recommended design features are incorporated. Although they can be effective at removing some pollutants through settling, they are less effective at removing soluble pollutants because of the absence of a permanent pool. Several studies are available on the effectiveness of dry extended detention ponds including one recently concluded by Caltrans (2002).

The load reduction is greater than the concentration reduction because of the substantial infiltration that occurs. Although the infiltration of stormwater is clearly beneficial to surface receiving waters, there is the potential for groundwater contamination. Previous research on the effects of incidental infiltration on groundwater quality indicated that the risk of contamination is minimal.

There were substantial differences in the amount of infiltration that were observed in the earthen basins during the Caltrans study. On average, approximately 40 percent of the runoff entering the unlined basins infiltrated and was not discharged. The percentage ranged from a high of about 60 percent to a low of only about 8 percent for the different facilities. Climatic conditions and local water table elevation are likely the principal causes of this difference. The least infiltration occurred at a site located on the coast where humidity is higher and the basin invert is within a few meters of sea level. Conversely, the most infiltration occurred at a facility located well inland in Los Angeles County where the climate is much warmer and the humidity is less, resulting in lower soil moisture content in the basin floor at the beginning of storms.

Vegetated detention basins appear to have greater pollutant removal than concrete basins. In the Caltrans study, the concrete basin exported sediment and associated pollutants during a number of storms. Export was not as common in the earthen basins, where the vegetation appeared to help stabilize the retained sediment.

Siting Criteria

Dry extended detention ponds are among the most widely applicable stormwater management practices and are especially useful in retrofit situations where their low hydraulic head requirements allow them to be sited within the constraints of the existing storm drain system. In addition, many communities have detention basins designed for flood control. It is possible to modify these facilities to incorporate features that provide water quality treatment and/or channel protection. Although dry extended detention ponds can be applied rather broadly, designers need to ensure that they are feasible at the site in question. This section provides basic guidelines for siting dry extended detention ponds.

In general, dry extended detention ponds should be used on sites with a minimum area of 5 acres. With this size catchment area, the orifice size can be on the order of 0.5 inches. On smaller sites, it can be challenging to provide channel or water quality control because the orifice diameter at the outlet needed to control relatively small storms becomes very small and thus prone to clogging. In addition, it is generally more cost-effective to control larger drainage areas due to the economies of scale.

Extended detention basins can be used with almost all soils and geology, with minor design adjustments for regions of rapidly percolating soils such as sand. In these areas, extended detention ponds may need an impermeable liner to prevent ground water contamination.

The base of the extended detention facility should not intersect the water table. A permanently wet bottom may become a mosquito breeding ground. Research in Southwest Florida (Santana et al., 1994) demonstrated that intermittently flooded systems, such as dry extended detention ponds, produce more mosquitoes than other pond systems, particularly when the facilities remained wet for more than 3 days following heavy rainfall.

A study in Prince George's County, Maryland, found that stormwater management practices can increase stream temperatures (Galli, 1990). Overall, dry extended detention ponds increased temperature by about 5°F. In cold water streams, dry ponds should be designed to detain stormwater for a relatively short time (i.e., 24 hours) to minimize the amount of warming that occurs in the basin.

Additional Design Guidelines

In order to enhance the effectiveness of extended detention basins, the dimensions of the basin must be sized appropriately. Merely providing the required storage volume will not ensure maximum constituent removal. By effectively configuring the basin, the designer will create a long flow path, promote the establishment of low velocities, and avoid having stagnant areas of the basin. To promote settling and to attain an appealing environment, the design of the basin should consider the length to width ratio, cross-sectional areas, basin slopes and pond configuration, and aesthetics (Young et al., 1996).

Energy dissipation structures should be included for the basin inlet to prevent resuspension of accumulated sediment. The use of stilling basins for this purpose should be avoided because the standing water provides a breeding area for mosquitoes.

Extended detention facilities should be sized to completely capture the water quality volume. A micropool is often recommended for inclusion in the design and one is shown in the schematic diagram. These small permanent pools greatly increase the potential for mosquito breeding and complicate maintenance activities; consequently, they are not recommended for use in California.

A large aspect ratio may improve the performance of detention basins; consequently, the outlets should be placed to maximize the flowpath through the facility. The ratio of flowpath length to width from the inlet to the outlet should be at least 1.5:1 (L:W) where feasible. Basin depths optimally range from 2 to 5 feet.

The facility's drawdown time should be regulated by an orifice or weir. In general, the outflow structure should have a trash rack or other acceptable means of preventing clogging at the entrance to the outflow pipes. The outlet design implemented by Caltrans in the facilities constructed in San Diego County used an outlet riser with orifices

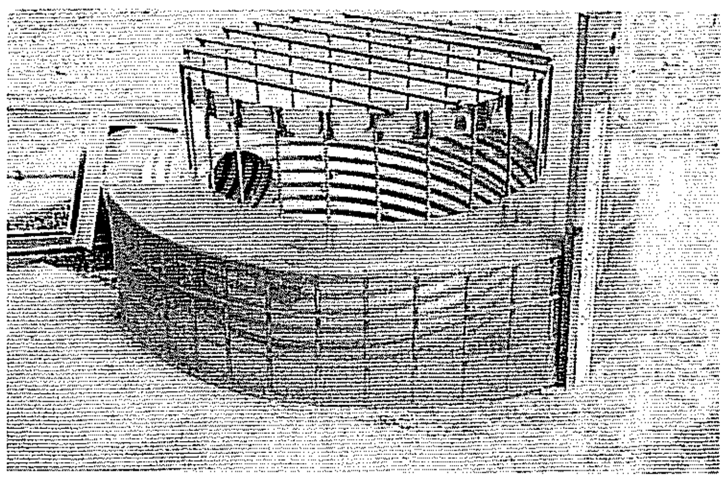


Figure 1
Example of Extended Detention Outlet Structure

sized to discharge the water quality volume, and the riser overflow height was set to the design storm elevation. A stainless steel screen was placed around the outlet riser to ensure that the orifices would not become clogged with debris. Sites either used a separate riser or broad crested weir for overflow of runoff for the 25 and greater year storms. A picture of a typical outlet is presented in Figure 1.

The outflow structure should be sized to allow for complete drawdown of the water quality volume in 72 hours. No more than 50% of the water quality volume should drain from the facility within the first 24 hours. The outflow structure can be fitted with a valve so that discharge from the basin can be halted in case of an accidental spill in the watershed.

Summary of Design Recommendations

(1) Facility Sizing - The required water quality volume is determined by local regulations or the basin should be sized to capture and treat 85% of the annual runoff volume. See Section 5.5.1 of the handbook for a discussion of volume-based design.

Basin Configuration – A high aspect ratio may improve the performance of detention basins; consequently, the outlets should be placed to maximize the flowpath through the facility. The ratio of flowpath length to width from the inlet to the outlet should be at least 1.5:1 (L:W). The flowpath length is defined as the distance from the inlet to the outlet as measured at the surface. The width is defined as the mean width of the basin. Basin depths optimally range from 2 to 5 feet. The basin may include a sediment forebay to provide the opportunity for larger particles to settle out.

A micropool should not be incorporated in the design because of vector concerns. For online facilities, the principal and emergency spillways must be sized to provide 1.0 foot of freeboard during the 25-year event and to safely pass the flow from 100-year storm.

(2) Pond Side Slopes - Side slopes of the pond should be 3:1 (H:V) or flatter for grass stabilized slopes. Slopes steeper than 3:1 (H:V) must be stabilized with an appropriate slope stabilization practice.

(3) Basin Lining – Basins must be constructed to prevent possible contamination of groundwater below the facility.

(4) Basin Inlet – Energy dissipation is required at the basin inlet to reduce resuspension of accumulated sediment and to reduce the tendency for short-circuiting.

(5) Outflow Structure - The facility's drawdown time should be regulated by a gate valve or orifice plate. In general, the outflow structure should have a trash rack or other acceptable means of preventing clogging at the entrance to the outflow pipes.

The outflow structure should be sized to allow for complete drawdown of the water quality volume in 72 hours. No more than 50% of the water quality volume should drain from the facility within the first 24 hours. The outflow structure should be fitted with a valve so that discharge from the basin can be halted in case of an accidental spill in the watershed. This same valve also can be used to regulate the rate of discharge from the basin.

The discharge through a control orifice is calculated from:

$Q = CA(2g(H-H_o))^{0.5}$

where:
Q = discharge (ft^3/s)
C = orifice coefficient
A = area of the orifice (ft^2)
g = gravitational constant (32.2)
H = water surface elevation (ft)
H_o= orifice elevation (ft)

Recommended values for C are 0.66 for thin materials and 0.80 when the material is thicker than the orifice diameter. This equation can be implemented in spreadsheet form with the pond stage/volume relationship to calculate drain time. To do this, use the initial height of the water above the orifice for the water quality volume. Calculate the discharge and assume that it remains constant for approximately 10 minutes. Based on that discharge, estimate the total discharge during that interval and the new elevation based on the stage volume relationship. Continue to iterate until H is approximately equal to H_o. When using multiple orifices the discharge from each is summed.

(6) Splitter Box - When the pond is designed as an offline facility, a splitter structure is used to isolate the water quality volume. The splitter box, or other flow diverting approach, should be designed to convey the 25-year storm event while providing at least 1.0 foot of freeboard along pond side slopes.

(7) Erosion Protection at the Outfall - For online facilities, special consideration should be given to the facility's outfall location. Flared pipe end sections that discharge at or near the stream invert are preferred. The channel immediately below the pond outfall should be modified to conform to natural dimensions, and lined with large stone riprap placed over filter cloth. Energy dissipation may be required to reduce flow velocities from the primary spillway to non-erosive velocities.

(8) Safety Considerations - Safety is provided either by fencing of the facility or by managing the contours of the pond to eliminate dropoffs and other hazards. Earthen side slopes should not exceed 3:1 (H:V) and should terminate on a flat safety bench area. Landscaping can be used to impede access to the facility. The primary spillway opening must not permit access by small children. Outfall pipes above 48 inches in diameter should be fenced.

Maintenance

Routine maintenance activity is often thought to consist mostly of sediment and trash and debris removal; however, these activities often constitute only a small fraction of the maintenance hours. During a recent study by Caltrans, 72 hours of maintenance was performed annually, but only a little over 7 hours was spent on sediment and trash removal. The largest recurring activity was vegetation management, routine mowing. The largest absolute number of hours was associated with vector control because of mosquito breeding that occurred in the stilling basins (example of standing water to be avoided) installed as energy dissipaters. In most cases, basic housekeeping practices such as removal of debris accumulations and vegetation management to ensure that the basin dewaters completely in 48-72 hours is sufficient to prevent creating mosquito and other vector habitats.

Consequently, maintenance costs should be estimated based primarily on the mowing frequency and the time required. Mowing should be done at least annually to avoid establishment of woody vegetation, but may need to be performed much more frequently if aesthetics are an important consideration.

Typical activities and frequencies include:

- Schedule semiannual inspection for the beginning and end of the wet season for standing water, slope stability, sediment accumulation, trash and debris, and presence of burrows.
- Remove accumulated trash and debris in the basin and around the riser pipe during the semiannual inspections. The frequency of this activity may be altered to meet specific site conditions.
- Trim vegetation at the beginning and end of the wet season and inspect monthly to prevent establishment of woody vegetation and for aesthetic and vector reasons.
- Remove accumulated sediment and re-grade about every 10 years or when the accumulated sediment volume exceeds 10 percent of the basin volume. Inspect the basin each year for accumulated sediment volume.

Cost

Construction Cost

The construction costs associated with extended detention basins vary considerably. One recent study evaluated the cost of all pond systems (Brown and Schueler, 1997). Adjusting for inflation, the cost of dry extended detention ponds can be estimated with the equation:

$$C = 12.4V^{0.760}$$

where: C = Construction, design, and permitting cost, and
V = Volume (ft^3).

Using this equation, typical construction costs are:

$ 41,600 for a 1 acre-foot pond

$ 239,000 for a 10 acre-foot pond

$ 1,380,000 for a 100 acre-foot pond

Interestingly, these costs are generally slightly higher than the predicted cost of wet ponds (according to Brown and Schueler, 1997) on a cost per total volume basis, which highlights the difficulty of developing reasonably accurate construction estimates. In addition, a typical facility constructed by Caltrans cost about $160,000 with a capture volume of only 0.3 ac-ft.

An economic concern associated with dry ponds is that they might detract slightly from the value of adjacent properties. One study found that dry ponds can actually detract from the perceived value of homes adjacent to a dry pond by between 3 and 10 percent (Emmerling-Dinovo, 1995).

Maintenance Cost

For ponds, the annual cost of routine maintenance is typically estimated at about 3 to 5 percent of the construction cost (EPA website). Alternatively, a community can estimate the cost of the maintenance activities outlined in the maintenance section. Table 1 presents the maintenance costs estimated by Caltrans based on their experience with five basins located in southern California. Again, it should be emphasized that the vast majority of hours are related to vegetation management (mowing).

Table 1 Estimated Average Annual Maintenance Effort

Activity	Labor Hours	Equipment & Material ($)	Cost
Inspections	4	7	183
Maintenance	49	126	2282
Vector Control	0	0	0
Administration	3	0	132
Materials	-	535	535
Total	**56**	**$668**	**$3,132**

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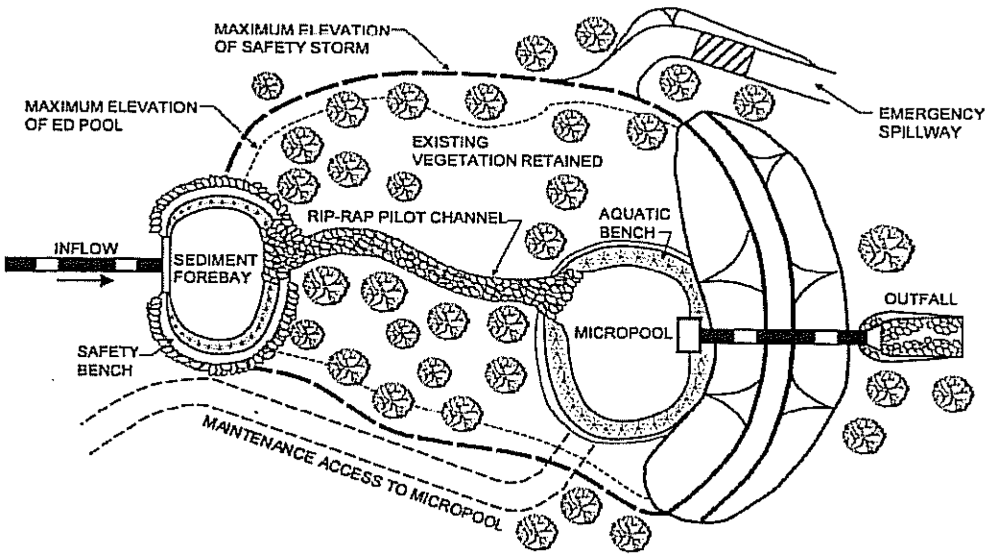
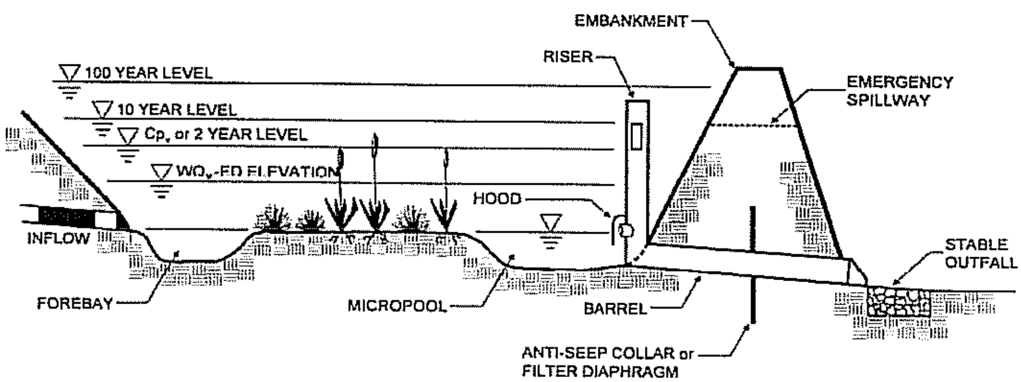


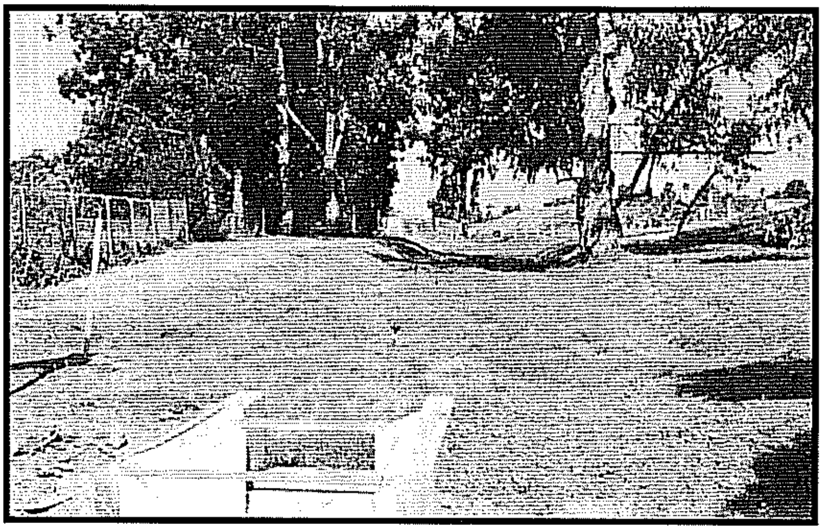
PLAN VIEW



PROFILE

Schematic of an Extended Detention Basin (MDE, 2000)

Vegetated Swale TC-30



Design Considerations

- Tributary Area
- Area Required
- Slope
- Water Availability

Description

Vegetated swales are open, shallow channels with vegetation covering the side slopes and bottom that collect and slowly convey runoff flow to downstream discharge points. They are designed to treat runoff through filtering by the vegetation in the channel, filtering through a subsoil matrix, and/or infiltration into the underlying soils. Swales can be natural or manmade. They trap particulate pollutants (suspended solids and trace metals), promote infiltration, and reduce the flow velocity of stormwater runoff. Vegetated swales can serve as part of a stormwater drainage system and can replace curbs, gutters and storm sewer systems.

Targeted Constituents

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

Legend *(Removal Effectiveness)*

● Low ■ High

▲ Medium

California Experience

Caltrans constructed and monitored six vegetated swales in southern California. These swales were generally effective in reducing the volume and mass of pollutants in runoff. Even in the areas where the annual rainfall was only about 10 inches/yr, the vegetation did not require additional irrigation. One factor that strongly affected performance was the presence of large numbers of gophers at most of the sites. The gophers created earthen mounds, destroyed vegetation, and generally reduced the effectiveness of the controls for TSS reduction.

Advantages

- If properly designed, vegetated, and operated, swales can serve as an aesthetic, potentially inexpensive urban development or roadway drainage conveyance measure with significant collateral water quality benefits.

- Roadside ditches should be regarded as significant potential swale/buffer strip sites and should be utilized for this purpose whenever possible.

Limitations

- Can be difficult to avoid channelization.
- May not be appropriate for industrial sites or locations where spills may occur
- Grassed swales cannot treat a very large drainage area. Large areas may be divided and treated using multiple swales.
- A thick vegetative cover is needed for these practices to function properly.
- They are impractical in areas with steep topography.
- They are not effective and may even erode when flow velocities are high, if the grass cover is not properly maintained.
- In some places, their use is restricted by law: many local municipalities require curb and gutter systems in residential areas.
- Swales are mores susceptible to failure if not properly maintained than other treatment BMPs.

Design and Sizing Guidelines

- Flow rate based design determined by local requirements or sized so that 85% of the annual runoff volume is discharged at less than the design rainfall intensity.
- Swale should be designed so that the water level does not exceed 2/3rds the height of the grass or 4 inches, which ever is less, at the design treatment rate.
- Longitudinal slopes should not exceed 2.5%
- Trapezoidal channels are normally recommended but other configurations, such as parabolic, can also provide substantial water quality improvement and may be easier to mow than designs with sharp breaks in slope.
- Swales constructed in cut are preferred, or in fill areas that are far enough from an adjacent slope to minimize the potential for gopher damage. Do not use side slopes constructed of fill, which are prone to structural damage by gophers and other burrowing animals.
- A diverse selection of low growing, plants that thrive under the specific site, climatic, and watering conditions should be specified. Vegetation whose growing season corresponds to the wet season are preferred. Drought tolerant vegetation should be considered especially for swales that are not part of a regularly irrigated landscaped area.
- The width of the swale should be determined using Manning's Equation using a value of 0.25 for Manning's n.

Construction/Inspection Considerations

- Include directions in the specifications for use of appropriate fertilizer and soil amendments based on soil properties determined through testing and compared to the needs of the vegetation requirements.
- Install swales at the time of the year when there is a reasonable chance of successful establishment without irrigation; however, it is recognized that rainfall in a given year may not be sufficient and temporary irrigation may be used.
- If sod tiles must be used, they should be placed so that there are no gaps between the tiles; stagger the ends of the tiles to prevent the formation of channels along the swale or strip.
- Use a roller on the sod to ensure that no air pockets form between the sod and the soil.
- Where seeds are used, erosion controls will be necessary to protect seeds for at least 75 days after the first rainfall of the season.

Performance

The literature suggests that vegetated swales represent a practical and potentially effective technique for controlling urban runoff quality. While limited quantitative performance data exists for vegetated swales, it is known that check dams, slight slopes, permeable soils, dense grass cover, increased contact time, and small storm events all contribute to successful pollutant removal by the swale system. Factors decreasing the effectiveness of swales include compacted soils, short runoff contact time, large storm events, frozen ground, short grass heights, steep slopes, and high runoff velocities and discharge rates.

Conventional vegetated swale designs have achieved mixed results in removing particulate pollutants. A study performed by the Nationwide Urban Runoff Program (NURP) monitored three grass swales in the Washington, D.C., area and found no significant improvement in urban runoff quality for the pollutants analyzed. However, the weak performance of these swales was attributed to the high flow velocities in the swales, soil compaction, steep slopes, and short grass height.

Another project in Durham, NC, monitored the performance of a carefully designed artificial swale that received runoff from a commercial parking lot. The project tracked 11 storms and concluded that particulate concentrations of heavy metals (Cu, Pb, Zn, and Cd) were reduced by approximately 50 percent. However, the swale proved largely ineffective for removing soluble nutrients.

The effectiveness of vegetated swales can be enhanced by adding check dams at approximately 17 meter (50 foot) increments along their length (See Figure 1). These dams maximize the retention time within the swale, decrease flow velocities, and promote particulate settling. Finally, the incorporation of vegetated filter strips parallel to the top of the channel banks can help to treat sheet flows entering the swale.

Only 9 studies have been conducted on all grassed channels designed for water quality (Table 1). The data suggest relatively high removal rates for some pollutants, but negative removals for some bacteria, and fair performance for phosphorus.

Table 1 Grassed swale pollutant removal efficiency data

Study	TSS	TP	TN	NO_3	Metals	Bacteria	Type
	Removal Efficiencies (% Removal)						
Caltrans 2002	77	8	67	66	83-90	-33	dry swales
Goldberg 1993	67.8	4.5	-	31.4	42–62	-100	grassed channel
Seattle Metro and Washington Department of Ecology 1992	60	45	-	-25	2–16	-25	grassed channel
Seattle Metro and Washington Department of Ecology, 1992	83	29	-	-25	46–73	-25	grassed channel
Wang et al., 1981	80	-	-	-	70–80	-	dry swale
Dorman et al., 1989	98	18	-	45	37–81	-	dry swale
Harper, 1988	87	83	84	80	88–90	-	dry swale
Kercher et al., 1983	99	99	99	99	99	-	dry swale
Harper, 1988.	81	17	40	52	37–69	-	wet swale
Koon, 1995	67	39	-	9	-35 to 6	-	wet swale

While it is difficult to distinguish between different designs based on the small amount of available data, grassed channels generally have poorer removal rates than wet and dry swales, although some swales appear to export soluble phosphorus (Harper, 1988; Koon, 1995). It is not clear why swales export bacteria. One explanation is that bacteria thrive in the warm swale soils.

Siting Criteria

The suitability of a swale at a site will depend on land use, size of the area serviced, soil type, slope, imperviousness of the contributing watershed, and dimensions and slope of the swale system (Schueler et al., 1992). In general, swales can be used to serve areas of less than 10 acres, with slopes no greater than 5 %. Use of natural topographic lows is encouraged and natural drainage courses should be regarded as significant local resources to be kept in use (Young et al., 1996).

Selection Criteria (NCTCOG, 1993)

- Comparable performance to wet basins
- Limited to treating a few acres
- Availability of water during dry periods to maintain vegetation
- Sufficient available land area

Research in the Austin area indicates that vegetated controls are effective at removing pollutants even when dormant. Therefore, irrigation is not required to maintain growth during dry periods, but may be necessary only to prevent the vegetation from dying.

The topography of the site should permit the design of a channel with appropriate slope and cross-sectional area. Site topography may also dictate a need for additional structural controls. Recommendations for longitudinal slopes range between 2 and 6 percent. Flatter slopes can be used, if sufficient to provide adequate conveyance. Steep slopes increase flow velocity, decrease detention time, and may require energy dissipating and grade check. Steep slopes also can be managed using a series of check dams to terrace the swale and reduce the slope to within acceptable limits. The use of check dams with swales also promotes infiltration.

Additional Design Guidelines

Most of the design guidelines adopted for swale design specify a minimum hydraulic residence time of 9 minutes. This criterion is based on the results of a single study conducted in Seattle, Washington (Seattle Metro and Washington Department of Ecology, 1992), and is not well supported. Analysis of the data collected in that study indicates that pollutant removal at a residence time of 5 minutes was not significantly different, although there is more variability in that data. Therefore, additional research in the design criteria for swales is needed. Substantial pollutant removal has also been observed for vegetated controls designed solely for conveyance (Barrett et al, 1998); consequently, some flexibility in the design is warranted.

Many design guidelines recommend that grass be frequently mowed to maintain dense coverage near the ground surface. Recent research (Colwell et al., 2000) has shown mowing frequency or grass height has little or no effect on pollutant removal.

Summary of Design Recommendations

1) The swale should have a length that provides a minimum hydraulic residence time of at least 10 minutes. The maximum bottom width should not exceed 10 feet unless a dividing berm is provided. The depth of flow should not exceed 2/3rds the height of the grass at the peak of the water quality design storm intensity. The channel slope should not exceed 2.5%.

2) A design grass height of 6 inches is recommended.

3) Regardless of the recommended detention time, the swale should be not less than 100 feet in length.

4) The width of the swale should be determined using Manning's Equation, at the peak of the design storm, using a Manning's n of 0.25.

5) The swale can be sized as both a treatment facility for the design storm and as a conveyance system to pass the peak hydraulic flows of the 100-year storm if it is located "on-line." The side slopes should be no steeper than 3:1 (H:V).

6) Roadside ditches should be regarded as significant potential swale/buffer strip sites and should be utilized for this purpose whenever possible. If flow is to be introduced through curb cuts, place pavement slightly above the elevation of the vegetated areas. Curb cuts should be at least 12 inches wide to prevent clogging.

7) Swales must be vegetated in order to provide adequate treatment of runoff. It is important to maximize water contact with vegetation and the soil surface. For general purposes, select fine, close-growing, water-resistant grasses. If possible, divert runoff (other than necessary irrigation) during the period of vegetation

establishment. Where runoff diversion is not possible, cover graded and seeded areas with suitable erosion control materials.

Maintenance

The useful life of a vegetated swale system is directly proportional to its maintenance frequency. If properly designed and regularly maintained, vegetated swales can last indefinitely. The maintenance objectives for vegetated swale systems include keeping up the hydraulic and removal efficiency of the channel and maintaining a dense, healthy grass cover.

Maintenance activities should include periodic mowing (with grass never cut shorter than the design flow depth), weed control, watering during drought conditions, reseeding of bare areas, and clearing of debris and blockages. Cuttings should be removed from the channel and disposed in a local composting facility. Accumulated sediment should also be removed manually to avoid concentrated flows in the swale. The application of fertilizers and pesticides should be minimal.

Another aspect of a good maintenance plan is repairing damaged areas within a channel. For example, if the channel develops ruts or holes, it should be repaired utilizing a suitable soil that is properly tamped and seeded. The grass cover should be thick; if it is not, reseed as necessary. Any standing water removed during the maintenance operation must be disposed to a sanitary sewer at an approved discharge location. Residuals (e.g., silt, grass cuttings) must be disposed in accordance with local or State requirements. Maintenance of grassed swales mostly involves maintenance of the grass or wetland plant cover. Typical maintenance activities are summarized below:

- Inspect swales at least twice annually for erosion, damage to vegetation, and sediment and debris accumulation preferably at the end of the wet season to schedule summer maintenance and before major fall runoff to be sure the swale is ready for winter. However, additional inspection after periods of heavy runoff is desirable. The swale should be checked for debris and litter, and areas of sediment accumulation.

- Grass height and mowing frequency may not have a large impact on pollutant removal. Consequently, mowing may only be necessary once or twice a year for safety or aesthetics or to suppress weeds and woody vegetation.

- Trash tends to accumulate in swale areas, particularly along highways. The need for litter removal is determined through periodic inspection, but litter should always be removed prior to mowing.

- Sediment accumulating near culverts and in channels should be removed when it builds up to 75 mm (3 in.) at any spot, or covers vegetation.

- Regularly inspect swales for pools of standing water. Swales can become a nuisance due to mosquito breeding in standing water if obstructions develop (e.g. debris accumulation, invasive vegetation) and/or if proper drainage slopes are not implemented and maintained.

Cost

Construction Cost

Little data is available to estimate the difference in cost between various swale designs. One study (SWRPC, 1991) estimated the construction cost of grassed channels at approximately \$0.25 per ft^2. This price does not include design costs or contingencies. Brown and Schueler (1997) estimate these costs at approximately 32 percent of construction costs for most stormwater management practices. For swales, however, these costs would probably be significantly higher since the construction costs are so low compared with other practices. A more realistic estimate would be a total cost of approximately \$0.50 per ft^2, which compares favorably with other stormwater management practices.

Table 2 Swale Cost Estimate (SEWRPC, 1991)

Component	Unit	Extent	Unit Cost			Total Cost		
			Low	Moderate	High	Low	Moderate	High
Mobilization / Demobilization-Light	Swale	1	$107	$274	$441	$107	$274	$441
Site Preparation								
Clearing[b]...............	Acre	0.5	$2,200	$3,800	$5,400	$1,100	$1,900	$2,700
Grubbing[c].............	Acre	0.25	$3,800	$5,200	$6,600	$950	$1,300	$1,650
General Excavation[d]...........	Yd^3	372	$2.10	$3.70	$5.30	$781	$1,376	$1,972
Level and Till[e]........	Yd^2	1,210	$0.20	$0.35	$0.50	$242	$424	$605
Sites Development								
Salvaged Topsoil Seed, and Mulch[f]..	Yd^2	1,210	$0.40	$1.00	$1.60	$484	$1,210	$1,936
Sod[g]....................	Yd^2	1,210	$1.20	$2.40	$3.60	$1,452	$2,904	$4,356
Subtotal	--	--	--	--	--	$5,116	$9,388	$13,660
Contingencies	Swale	1	25%	25%	25%	$1,279	$2,347	$3,415
Total	--	--	--	--	--	$6,395	$11,735	$17,075

Source: (SEWRPC, 1991)

Note: Mobilization/demobilization refers to the organization and planning involved in establishing a vegetative swale.

[a] Swale has a bottom width of 1.0 foot, a top width of 10 feet with 1:3 side slopes, and a 1,000-foot length.

[b] Area cleared = (top width + 10 feet) x swale length.

[c] Area grubbed = (top width x swale length).

[d] Volume excavated = (0.67 x top width x swale depth) x swale length (parabolic cross-section).

[e] Area tilled = $\left(\text{top width} + \frac{8(\text{swale depth}^2)}{3(\text{top width})}\right)$ x swale length (parabolic cross-section).

[f] Area seeded = area cleared x 0.5.

[g] Area sodded = area cleared x 0.5.

Table 3 Estimated Maintenance Costs (SEWRPC, 1991)

Component	Unit Cost	Swale Size (Depth and Top Width)		Comment
		1.5 Foot Depth, One-Foot Bottom Width, 10-Foot Top Width	3-Foot Depth, 3-Foot Bottom Width, 21-Foot Top Width	
Lawn Mowing	$0.85 / 1,000 ft^2/ mowing	$0.14 / linear foot	$0.21 / linear foot	Lawn maintenance area=(top width + 10 feet) x length. Mow eight times per year
General Lawn Care	$9.00 / 1,000 ft^2/ year	$0.18 / linear foot	$0.28 / linear foot	Lawn maintenance area = (top width + 10 feet) x length
Swale Debris and Litter Removal	$0.10 / linear foot / year	$0.10 / linear foot	$0.10 / linear foot	–
Grass Reseeding with Mulch and Fertilizer	$0.30 / yd^2	$0.01 / linear foot	$0.01 / linear foot	Area revegetated equals 1% of lawn maintenance area per year
Program Administration and Swale Inspection	$0.15 / linear foot / year, plus $25 / inspection	$0.15 / linear foot	$0.15 / linear foot	Inspect four times per year
Total	--	**$0.58 / linear foot**	**$ 0.75 / linear foot**	--

Maintenance Cost

Caltrans (2002) estimated the expected annual maintenance cost for a swale with a tributary area of approximately 2 ha at approximately $2,700. Since almost all maintenance consists of mowing, the cost is fundamentally a function of the mowing frequency. Unit costs developed by SEWRPC are shown in Table 3. In many cases vegetated channels would be used to convey runoff and would require periodic mowing as well, so there may be little additional cost for the water quality component. Since essentially all the activities are related to vegetation management, no special training is required for maintenance personnel.

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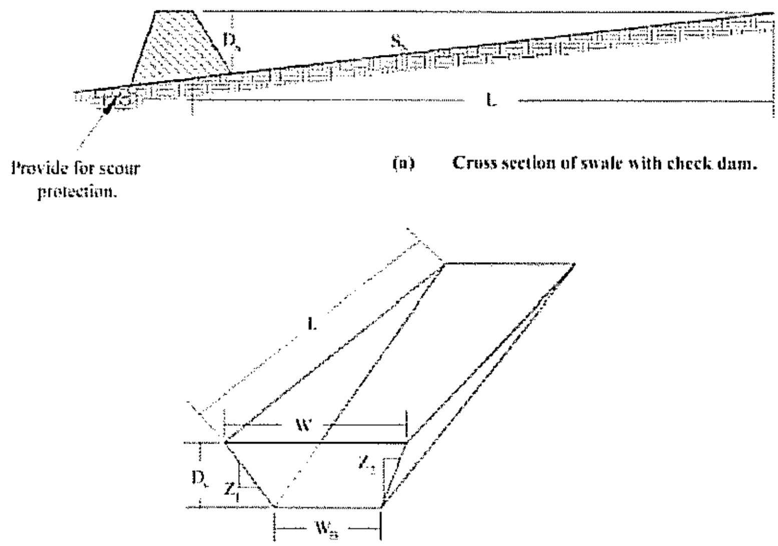


(a) Cross section of swale with check dam.

(b) Dimensional view of swale impoundment area.

Notation:

L = Length of swale impoundment area per check dam (ft)
D_s = Depth of check dam (ft)
S_s = Bottom slpe of swale (ft/ft)
W = Top width of check dam (ft)
W_B = Bottom width of check dam (ft)
$Z_{1\&2}$ = Ratio of horizontal to vertical change in swale side slope (ft/ft)

Multiple System Fact Sheet TC-60

Description
A multiple treatment system uses two or more BMPs in series. Some examples of multiple systems include: settling basin combined with a sand filter; settling basin or biofilter combined with an infiltration basin or trench; extended detention zone on a wet pond.

California Experience
The research wetlands at Fremont, California are a combination of wet ponds, wetlands, and vegetated controls.

Advantages
- BMPs that are less sensitive to high pollutant loadings, especially solids, can be used to pretreat runoff for sand filters and infiltration devices where the potential for clogging exists.
- BMPs which target different constituents can be combined to provide treatment for all constituents of concern.
- BMPs which use different removal processes (sedimentation, filtration, biological uptake) can be combined to improve the overall removal efficiency for a given constituent.
- BMPs in series can provide redundancy and reduce the likelihood of total system failure.

Limitations
- Capital costs of multiple systems are higher than for single devices.
- Space requirements are greater than that required for a single technology.

Design and Sizing Guidelines
Refer to individual treatment control BMP fact sheets.

Performance
- Be aware that placing multiple BMPs in series does not necessarily result in combined cumulative increased performance. This is because the first BMP may already achieve part of the gain normally achieved by the second BMP. On the other hand, picking the right combination can often help optimize performance of the second BMP since the influent to the second BMP is of more consistent water quality, and thus more consistent performance, thereby allowing the BMP to achieve its highest performance.

Design Considerations
- Area Required
- Slope
- Water Availability
- Hydraulic Head
- Environmental Side-effects

Targeted Constituents

☑	Sediment	■
☑	Nutrients	●
☑	Trash	■
☑	Metals	■
☑	Bacteria	▲
☑	Oil and Grease	■
☑	Organics	■

Legend *(Removal Effectiveness)*

● Low ■ High

▲ Medium

- When addressing multiple constituents through multiple BMPs, one BMP may optimize removal of a particular constituent, while another BMP optimizes removal of a different constituent or set of constituents. Therefore, selecting the right combination of BMPs can be very constructive in collectively removing multiple constituents.

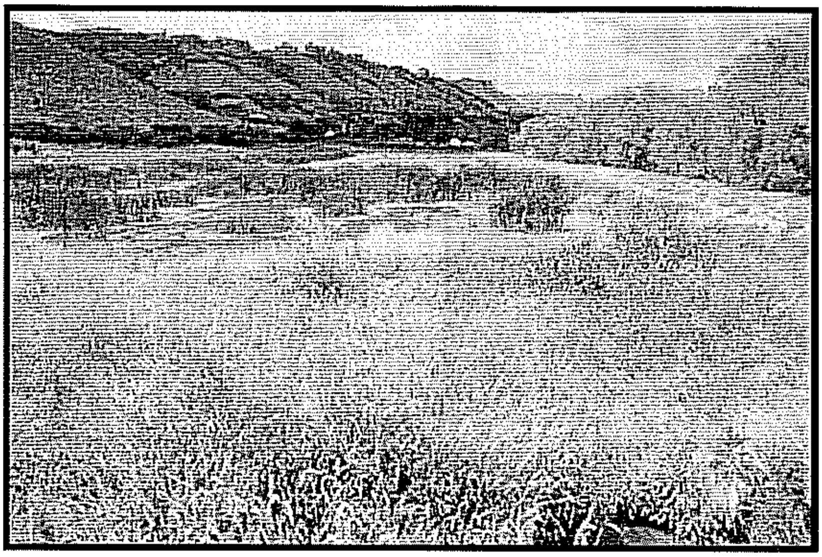
Siting Criteria
Refer to individual treatment control BMP fact sheets.

Additional Design Guidelines
- When using two or more BMPs in series, it may be possible to reduce the size of BMPs.
- Existing pretreatment requirements may be able to be avoided when using some BMP combinations.

Maintenance
Refer to individual treatment control BMP fact sheets.

Cost
Refer to individual treatment control BMP fact sheets.

Resources and Sources of Additional Information
Refer to individual treatment control BMP fact sheets.



Design Considerations

- Area Required
- Slope
- Water Availability
- Aesthetics
- Environmental Side-effects

Targeted Constituents

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

Legend *(Removal Effectiveness)*

● Low ■ High

▲ Medium

Description

Constructed wetlands are constructed basins that have a permanent pool of water throughout the year (or at least throughout the wet season) and differ from wet ponds primarily in being shallower and having greater vegetation coverage. The schematic diagram is of an on-line pond that includes detention for larger events, but this is not required in all areas of the state.

A distinction should be made between using a constructed wetland for storm water management and diverting storm water into a natural wetland. The latter practice is not recommended and in all circumstances, natural wetlands should be protected from the adverse effects of development, including impacts from increased storm water runoff. This is especially important because natural wetlands provide storm water and flood control benefits on a regional scale.

Wetlands are among the most effective stormwater practices in terms of pollutant removal and they also offer aesthetic value. As stormwater runoff flows through the wetland, pollutant removal is achieved through settling and biological uptake within the wetland. Flow through the root systems forces the vegetation to remove nutrients and dissolved pollutants from the stormwater.

California Experience

The City of Laguna Niguel in Orange County has constructed several wetlands, primarily to reduce bacteria concentrations in dry weather flows. The wetlands have been very successful in this regard. Even though there is not enough perennial flow to maintain the permanent pool at a constant elevation, the wetland vegetation has thrived.

CASQA

Advantages

- If properly designed, constructed and maintained, wet basins can provide substantial wildlife and wetlands habitat.
- Due to the presence of the permanent wet pool, properly designed and maintained wet basins can provide significant water quality improvement across a relatively broad spectrum of constituents including dissolved nutrients.
- Widespread application with sufficient capture volume can provide significant control of channel erosion and enlargement caused by changes to flow frequency relationships resulting from the increase of impervious cover in a watershed.

Limitations

- There may be some aesthetic concerns about a facility that looks swampy.
- Some concern about safety when constructed where there is public access.
- Mosquito and midge breeding is likely to occur in wetlands.
- Cannot be placed on steep unstable slopes.
- Need for base flow or supplemental water if water level is to be maintained.
- Require a relatively large footprint
- Depending on volume and depth, pond designs may require approval from the State Division of Safety of Dams

Design and Sizing Guidelines

- Capture volume determined by local requirements or sized to treat 85% of the annual runoff volume.
- Outlet designed to discharge the capture volume over a period of 24 hours.
- Permanent pool volume equal to twice the water quality volume.
- Water depth not to exceed about 4 feet.
- Wetland vegetation occupying no more than 50% of surface area.
- Include energy dissipation in the inlet design and a sediment forebay to reduce resuspension of accumulated sediment and facilitate maintenance.
- A maintenance ramp should be included in the design to facilitate access to the forebay for maintenance activities and for vector surveillance and control.
- To facilitate vector surveillance and control activities, road access should be provided along at least one side of BMPs that are seven meters or less in width. Those BMPs that have shoreline-to-shoreline distances in excess of seven meters should have perimeter road access on both sides or be designed such that no parcel of water is greater than seven meters from the road.

Construction/Inspection Considerations

- In areas with porous soils an impermeable liner may be required to maintain an adequate permanent pool level.

- Outlet structures and piping should be installed with collars to prevent water from seeping through the fill and causing structural failure.

- Inspect facility after first large storm to determine whether the desired residence time has been achieved.

Performance

The processes that impact the performance of constructed wetlands are essentially the same as those operating in wet ponds and similar pollutant reduction would be expected. One concern about the long-term performance of wetlands is associated with the vegetation density. If vegetation covers the majority of the facility, open water is confined to a few well defined channels. This can limit mixing of the stormwater runoff with the permanent pool and reduce the effectiveness as compared to a wet pond where a majority of the area is open water.

Siting Criteria

Wet ponds are a widely applicable stormwater management practice and can be used over a broad range of storm frequencies and sizes, drainage areas and land use types. Although they have limited applicability in highly urbanized settings and in arid climates, they have few other restrictions. Constructed wetlands may be constructed on- or off-line and can be sited at feasible locations along established drainage ways with consistent base flow. An off-line design is preferred. Constructed wetlands are often utilized in smaller sub-watersheds and are particularly appropriate in areas with residential land uses or other areas where high nutrient loads are considered to be potential problems (e.g., golf courses).

Wetlands generally consume a fairly large area (typically 4-6 percent of the contributing drainage area), and these facilities are generally larger than wet ponds because the average depth is less.

Wet basin application is appropriate in the following settings: (1) where there is a need to achieve a reasonably high level of dissolved contaminant removal and/or sediment capture; (2) in small to medium-sized regional tributary areas with available open space and drainage areas greater than about 10 ha (25 ac.); (3) where base flow rates or other channel flow sources are relatively consistent year-round; (4) in settings where wildlife habitat benefits can be appreciated.

Additional Design Guidelines

Constructed wetlands generally feature relatively uniformly vegetated areas with depths of one foot or less and open water areas (25-50% of the total area) no more than about 1.2 m (4 feet) deep, although design configuration options are relatively flexible. Wetland vegetation is comprised generally of a diverse, local aquatic plant species. Constructed wetlands can be designed on-line or off-line and generally serve relatively smaller drainage areas than wet ponds, although because of the shallow depths, the footprint of the facility will be larger than a wet pond serving the same tributary area.

The extended detention shallow wetland combines the treatment concepts of the dry extended detention pond and the constructed wetland. In this design, the water quality volume is detained above the permanent pool and released over 24 hours. In addition to increasing the residence time, which improves pollutant removal, this design also attenuates peak runoff rates. Consequently, this design alternative is recommended.

Pretreatment incorporates design features that help to settle out coarse sediment particles. By removing these particles from runoff before they reach the large permanent pool, the maintenance burden of the pond is reduced. In ponds, pretreatment is achieved with a sediment forebay. A sediment forebay is a small pool (typically about 10 percent of the volume of the permanent pool). Coarse particles remain trapped in the forebay, and maintenance is performed on this smaller pool, eliminating the need to dredge the entire pond.

Effective wetland design displays "complex microtopography." In other words, wetlands should have zones of both very shallow (<6 inches) and moderately shallow (<18 inches) wetlands incorporated, using underwater earth berms to create the zones. This design will provide a longer flow path through the wetland to encourage settling, and it provides two depth zones to encourage plant diversity.

There are a variety of sizing criteria for determining the volume of the permanent pool, mostly related to the water quality volume (i.e., the volume of water treated for pollutant removal) or the average storm size in a particular area. In addition, several theoretical approaches to determination of permanent pool volume have been developed. However, there is little empirical evidence to support these designs. Consequently, a simplified method (i.e., permanent pool volume equal to twice the water quality volume) is recommended.

Design features are also incorporated to ease maintenance of both the forebay and the main pool of ponds. Ponds should be designed with a maintenance access to the forebay to ease this relatively routine (every 5–7 year) maintenance activity. In addition, ponds should generally have a drain to draw down the pond for vegetation harvesting or the more infrequent dredging of the main cell of the pond.

Summary of Design Recommendations

(1) Facility Sizing – The basin should be sized to hold the permanent pool as well as the required water quality volume. The volume of the permanent pool should equal twice the water quality volume.

(2) Pond Configuration - The wet basin should be configured as a two stage facility with a sediment forebay and a main pool. The basins should be wedge-shaped, narrowest at the inlet and widest at the outlet. The minimum length to width ratio should be 1.5 where feasible. The depth in the center of the basin should be about 4 feet deep to prevent vegetation from encroaching on the pond open water surface.

(3) Pond Side Slopes - Side slopes of the basin should be 3:1 (H:V) or flatter for grass stabilized slopes. Slopes steeper than 3:1 should be stabilized with an appropriate slope stabilization practice.

(4) Sediment Forebay - A sediment forebay should be used to isolate gross sediments as they enter the facility and to simplify sediment removal. The sediment forebay

should consist of a separate cell formed by an earthen berm, gabion, or loose riprap wall. The forebay should be sized to contain 15 to 25% of the permanent pool volume and should be at least 3 feet deep. Exit velocities from the forebay should not be erosive. Direct maintenance access should be provided to the forebay. The bottom of the forebay may be hardened (concrete) to make sediment removal easier. A fixed vertical sediment depth marker should be installed in the forebay to measure sediment accumulation.

(5) Splitter Box - When the pond is designed as an off-line facility, a splitter structure is used to isolate the water quality volume. The splitter box, or other flow diverting approach, should be designed to convey the 25-year event while providing at least 1.0 foot of freeboard along pond side slopes.

(6) Vegetation - A plan should be prepared that indicates how aquatic and terrestrial areas will be vegetatively stabilized. Wetland vegetation elements should be placed along the aquatic bench or in the shallow portions of the permanent pool. The optimal elevation for planting of wetland vegetation is within 6 inches vertically of the normal pool elevation. A list of some wetland vegetation native to California is presented in the wet pond fact sheet.

Maintenance

The amount of maintenance required for a constructed wetland is highly dependent on local regulatory agencies, particular health and vector control agencies. These agencies are often extremely concerned about the potential for mosquito breeding that may occur in the permanent pool.

Routine harvesting of vegetation may increase nutrient removal and prevent the export of these constituents from dead and dying plants falling in the water. A previous study (Faulkner and Richardson, 1991) documented dramatic reductions in nutrient removal after the first several years of operation and related it to the vegetation achieving a maximum density. Vegetation harvesting in the summer is recommended.

Typical maintenance activities and frequencies include:

- Schedule semiannual inspections for burrows, sediment accumulation, structural integrity of the outlet, and litter accumulation.
- Remove accumulated trash and debris in the basin at the middle and end of the wet season. The frequency of this activity may be altered to meet specific site conditions and aesthetic considerations.
- Where permitted by the Department of Fish and Game or other agency regulations, stock wet ponds/constructed wetlands regularly with mosquito fish (*Gambusia spp.*) to enhance natural mosquito and midge control.
- Introduce mosquito fish and maintain vegetation to assist their movements to control mosquitoes, as well as to provide access for vector inspectors. An annual vegetation harvest in summer appears to be optimum, in that it is after the bird breeding season, mosquito fish can provide the needed control until vegetation reaches late summer density, and there is

time for re-growth for runoff treatment purposes before the wet season. In certain cases, more frequent plant harvesting may be required by local vector control agencies.

- Maintain emergent and perimeter shoreline vegetation as well as site and road access to facilitate vector surveillance and control activities.
- Remove accumulated sediment in the forebay and regrade about every 5-7 years or when the accumulated sediment volume exceeds 10 percent of the basin volume. Sediment removal may not be required in the main pool area for as long as 20 years.

Cost

Construction Cost

Wetlands are relatively inexpensive storm water practices. Construction cost data for wetlands are rare, but one simplifying assumption is that they are typically about 25 percent more expensive than storm water ponds of an equivalent volume. Using this assumption, an equation developed by Brown and Schueler (1997) to estimate the cost of wet ponds can be modified to estimate the cost of storm water wetlands using the equation:

$$C = 30.6^{V0.705}$$

where:

C = Construction, design, and permitting cost;

V = Wetland volume needed to control the 10-year storm (ft3).

Using this equation, typical construction costs are the following:

$ 57,100 for a 1 acre-foot facility

$ 289,000 for a 10 acre-foot facility

$ 1,470,000 for a 100 acre-foot facility

Wetlands consume about 3 to 5 percent of the land that drains to them, which is relatively high compared with other storm water management practices. In areas where land value is high, this may make wetlands an infeasible option.

Maintenance Cost

For ponds, the annual cost of routine maintenance has typically been estimated at about 3 to 5 percent of the construction cost; however, the published literature is almost totally devoid of actual maintenance costs. Since ponds are long-lived facilities (typically longer than 20 years), major maintenance activities are unlikely to occur during a relatively short study.

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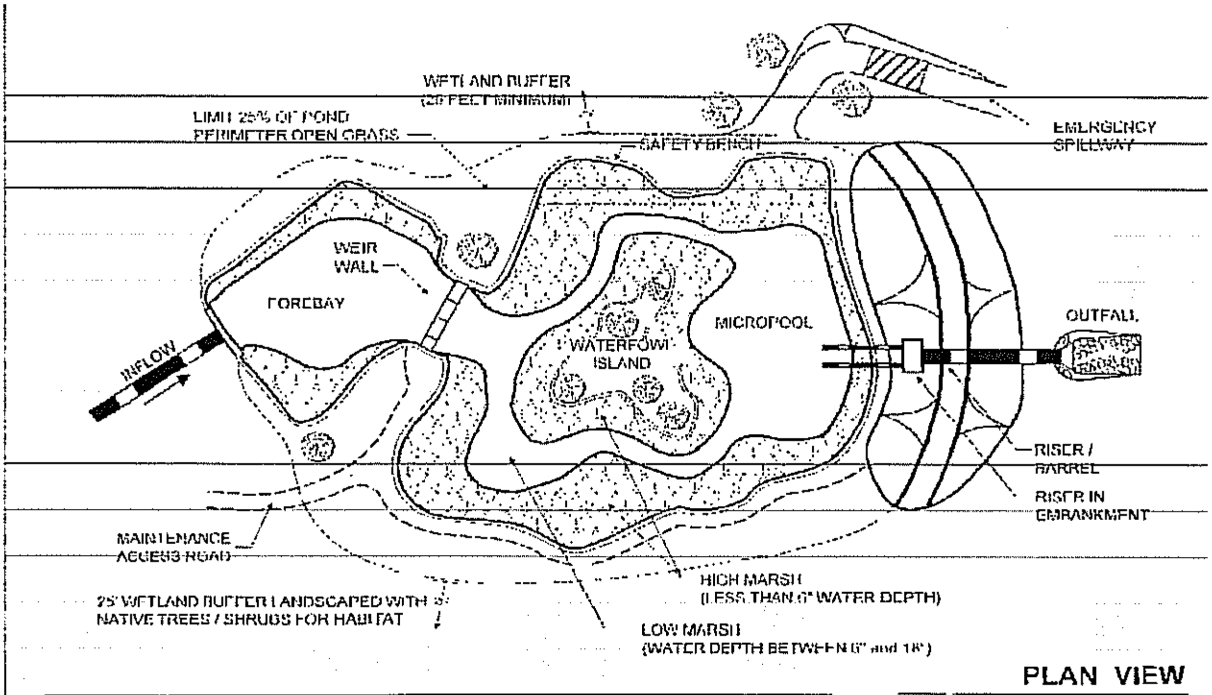
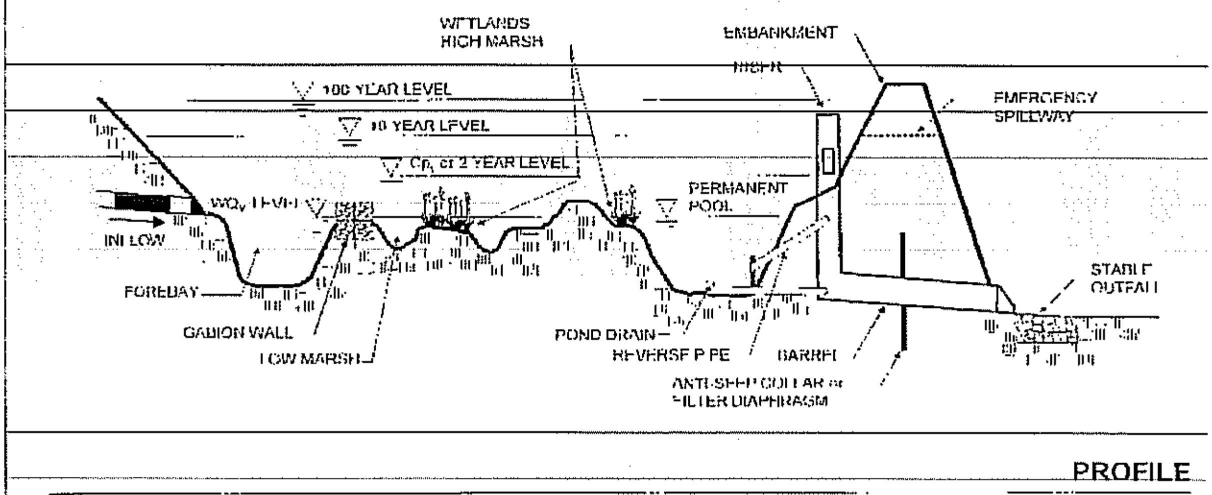
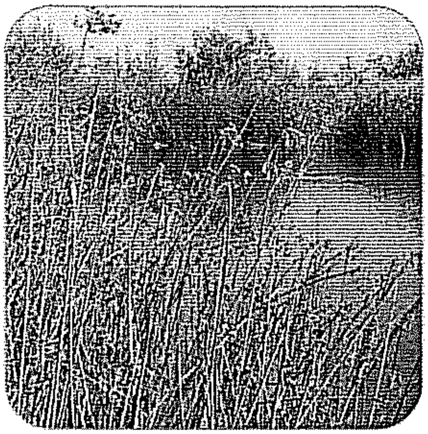

WETLAND BUFFER
LIMIT 25% OF POND PERIMETER OPEN GRASS
SAFETY BENCH
EMERGENCY SPILLWAY
WEIR WALL
FOREBAY
INFLOW
WATERFOWL ISLAND
MICROPOOL
OUTFALL
RISER / BARREL
RISER IN EMBANKMENT
MAINTENANCE ACCESS ROAD
HIGH MARSH
(LESS THAN 6" WATER DEPTH)
25' WETLAND BUFFER LANDSCAPED WITH NATIVE TREES / SHRUBS FOR HABITAT
LOW MARSH
PLAN VIEW


WETLANDS HIGH MARSH
EMBANKMENT
100 YEAR LEVEL
10 YEAR LEVEL
2 YEAR LEVEL
EMERGENCY SPILLWAY
PERMANENT POOL
INFLOW
FOREBAY
GABION WALL
LOW MARSH
POND DRAIN
REVERSE PIPE
BARREL
STABLE OUTFALL
ANTI-SEEP COLLAR or FILTER DIAPHRAGM
PROFILE

PSOMAS



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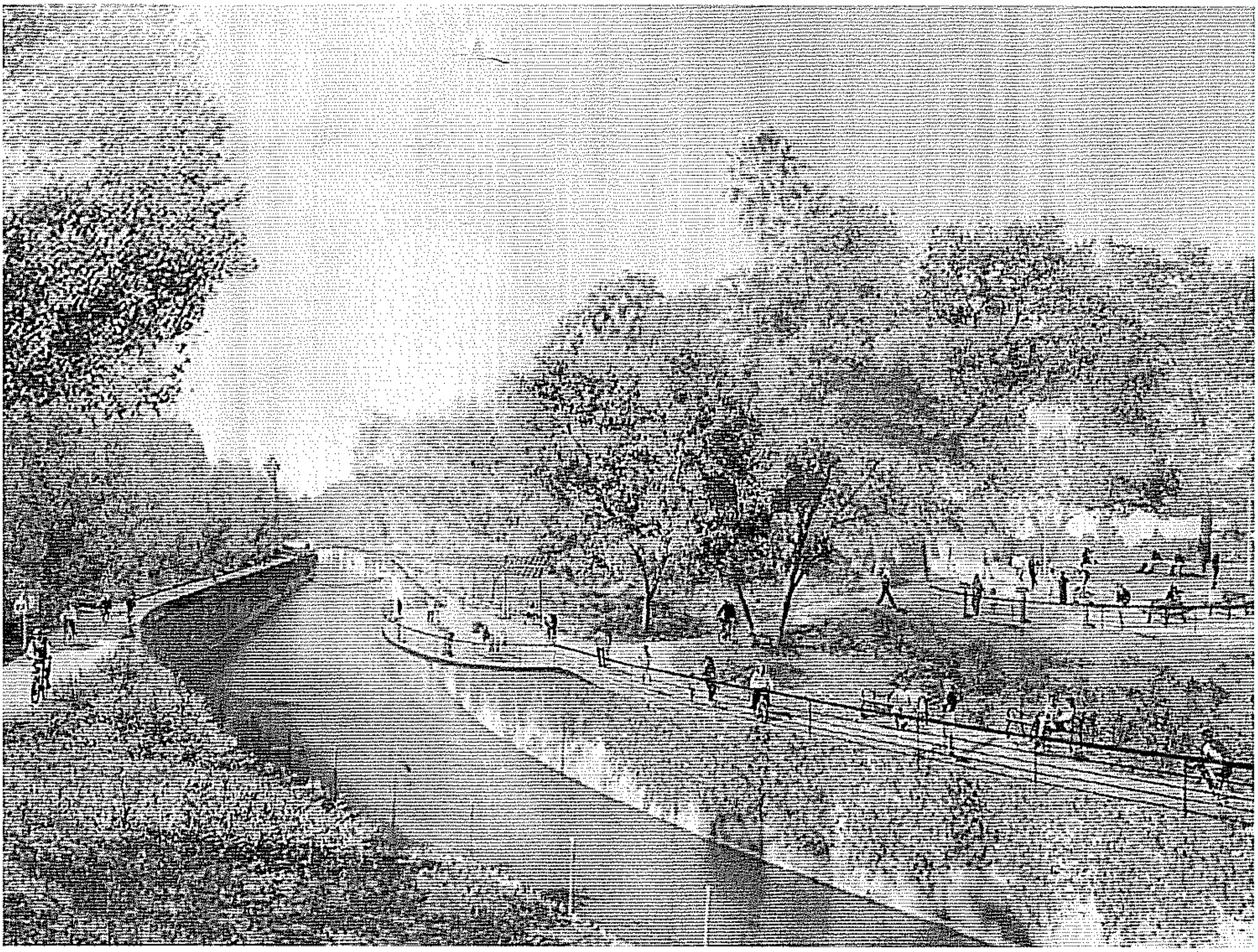

LOS ANGELES RIVER REGIONAL PUBLIC ACCESS FEASIBILITY ANALYSIS

STUDIO CITY, SAN FERNANDO VALLEY

PREPARED FOR:

FUNDED BY:

SANTA MONICA MOUNTAINS CONSERVANCY & SAVE L.A. RIVER OPEN SPACE

MIA LEHRER + ASSOCIATES

LANDSCAPE ARCHITECTURE

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SUMMARY

The Los Angeles River Natural Park site is located in Studio City, CA and has tremendous potential to become a multi-benefit, precedent-setting project with an emphasis on water quality improvements and regional public access to the Los Angeles River. Known as the Weddington Golf and Tennis facility, the 16-acres site abuts the Los Angeles River. A nearby public parking garage and improvements on the Los Angeles River trail are an integral part of the vision for the park, and have been incorporated into the definition of the project site.

This Los Angeles River Regional Public Access Feasibility Analysis evaluates the site's potential as a regional staging area and public access point for the Los Angeles River. This study identifies the river-related public access elements as well as the opportunity for connecting to existing and future bicycle networks to provide an opportunity for alternate methods of transportation. This study integrates the creation of regional public access with "Green Solution" water quality improvements and native habitat creation, as analyzed by Psomas, with planned improvements to the L.A. River and with links to a regional bicycle transportation network.

Detailed regional and site analysis led to findings that support this site's suitability as a Regional River Access Hub which offers ample public parking, easy access via public transportation or bicycle, a direct connection to the Los Angeles River and many other project benefits. The project furthers the goals of the Los Angeles River Revitalization Master Plan as well as the City of Los Angeles 2010 Bicycle Plan and other regional plans to encourage multi-modal transportation alternatives.

A regional public access concept plan was developed for the L.A. River Natural Park to include the following multiple benefits. Off-site parking at the existing Public Parking Garage 500 yards downstream will allow visitors to easily reach the site via a short walk along an improved L.A. River Trail, while bicycle rentals and other bicycle amenities at the parking garage will provide easy bicycle access to the river trail and encourage bicycle usage. Visitors will be greeted at the project site with a signature gateway that clearly marks the Park entry and a river-themed Visitor Information Center. Cantilevered river terraces will provide views of the L.A. River, while bicycle corral and trail entrances will lead visitors both to the L.A. River Trail and into the site's natural habitat environment. Interpretive kiosks, signage and pedestrian paths through the site will allow visitors to experience the site's natural, habitat-oriented water quality improvement features. Signage and way finding will ensure a friendly and safe experience for visitors.

The public parking garage will be improved to be clearly visible and accessible from both Ventura Boulevard and the L.A. River, and the L.A. River Trail will be extended from the garage to Coldwater Canyon. A new pedestrian bridge crossing the L.A. River from the site will connect the L.A. River Natural Park to Ventura Boulevard and its many visitor-serving amenities.

As this Regional Public Access Feasibility Analysis demonstrates, the features and conditions existing at the Los Angeles River Natural Park site make it an ideal location for a regional hub and trailhead providing public access for people throughout the region to the Los Angeles River and its tributaries, as well as an ideal location for linking to regional bicycle networks.

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PROJECT DESCRIPTION

NEED FOR REGIONAL PUBLIC ACCESS TO THE L.A. RIVER

The LA. River Natural Park is a grand opportunity to provide a much needed regional gateway to the LA. River. The lack of other such gateways has created a vast disconnect between the LA. River and the City. This site has a unique potential to fill in that gap through a variety of different ways. Its close proximity to the public parking garage/bicycle hub, connections to numerous bus and Metro lines provides easy accessibility for its visitors. It will also have a positive impact on the environment by its capacity to naturally capture and clean polluted runoff and improve water quality in the LA. River.

The Los Angeles River Natural Park is an opportunity to create a precedent-setting "smart", multi-benefit, river-oriented park on this last remaining, unprotected open space along the LA. River in the San Fernando Valley. It includes development of regional public access to the LA. River, riverfront preservation, water quality improvement, recreational opportunities and linkage to both public transit and regional bicycle transportation networks.

The project includes the 16-acre LA. River Natural Park site in Studio City, a nearby public parking garage, and trail improvements along the LA. River from the parking garage to Coldwater Canyon Blvd.

This report evaluates the feasibility of using the LA. River Natural Park as a regional public access hub for the LA. River. A site analysis was undertaken that looked at the site in its regional and local contexts and examined existing conditions and qualities of the site as well as opportunities and constraints. The regional analysis included the site's relationship to existing open space, public transit, City and County public transportation corridors, the City and County bicycle and trail networks, including both existing and proposed routes, adjacent zoning and amenities, issues with neighborhood compatibilities, the LA. River Revitalization Master Plan and the LA. River watershed, water quality and habitat. Prior studies were also consulted, including BlueGreen's Vision and Concept Design study and analysis and recommendations developed by Psomas' Hydrology, Hydraulic & Water Quality Components technical memorandum.

The LA. River Natural Park integrates the creation of regional public access and a staging area for the LA. River in the San Fernando Valley with the LA. River Trail, important water quality improvements, habitat restoration, open space protection, active recreation (tennis & golf) and links to a regional bicycle transportation network. The project site would provide regional public access to the LA. River for communities throughout the Valley and beyond, connect to upstream and downstream existing and planned river parks and trails, provide a centralized bicycle staging area and help to fulfill the goals of the City of Los Angeles LA. River Revitalization Master Plan & recently-approved LA. 2010 Bicycle Plan. The riverfront location for the project site would be maximized, would link to the existing LA. River Trail system, expand regional transportation opportunities, provide a regional bicycle hub, and emphasize education about the LA. River, the LA. River watershed, water quality and habitat.

The increase in vehicular use in Los Angeles - an increase of 6500% since 1950 - correlates to urban sprawl, obesity, impersonal communities and increased greenhouse gas emissions, according to the Metropolitan Transportation Authority (Metro). Metro is engaged in an L.A. County mission-shift and is promoting alternative forms of travel as a strategy for congestion relief and climate protection. Recent relevant legislative and policy changes include:

- The Intermodal Surface Transportation Efficiency Act of 1991 that established funding and encouraged multiple modes of transportation, including bicycles and pedestrians
- California Complete Streets Act of 2008 (AB 1358), that requires that transportation facilities must be designed, planned, operated, and maintained for all users: bicyclists, pedestrians, transit vehicles and motorists
- U.S. Department of Transportation Policy on Bicycle and Pedestrian Accommodation 2010, which requires transportation agencies to plan, fund and implement improvements to walking and bicycling networks, including linkages to transit
- SB 375, Redesigning Communities to Reduce Greenhouse Gases 2009, which sets emission-reducing goals to support the development of sustainable communities.

The development of the L.A. River Natural Park site as an access point to the L.A. River and a hub that links trails and bicycle networks supports local and state efforts to promote alternative forms of movement, maximize mobility and build healthy communities.

There is a need for regional access to the L.A. River. As this feasibility analysis demonstrated, features and conditions exist in the proposed L.A. River Natural Park site that make it ideal for a regional hub and trailhead for public access to the L.A. River and its tributaries.

THE REGIONAL CONTEXT

THE L.A. RIVER

The Los Angeles River flows approximately 51 miles from its origin in the San Fernando Valley to Long Beach Harbor and the Pacific Ocean. The L.A. River runs east/southeast for 22 miles through the San Fernando Valley in the City of Los Angeles, along the cities of Burbank and Glendale, and then heads southward, flowing through the cities of Vernon, Commerce, Maywood, Bell, Bell Gardens, South Gate, Lynwood, Compton, Paramount, Carson, and Long Beach, where it enters San Pedro Bay.

THE L.A. RIVER IN THE SAN FERNANDO VALLEY

The L.A. River is a regional asset because it flows through many communities on its way through the Valley to San Pedro Bay. The river's headwaters are in Canoga Park at the confluence of Bell and Calabasas Creeks. It then flows through Reseda-West Van Nuys, Encino, and Tarzana, and through the Sepulveda Dam Recreational Area and Flood Control Basin. It continues through Van Nuys, Sherman Oaks, and Studio City, and then along the southern border of the City of Burbank and the northern border of Griffith Park, and through Elysian Valley, Lincoln Heights, Boyle Heights, and Downtown before flowing out of the City of Los Angeles.

Key tributaries of the L.A. River that include existing or renewed trail systems in the San Fernando Valley and in immediately adjacent areas include the Tujunga Wash, Pacoima Wash and the Arroyo Seco.

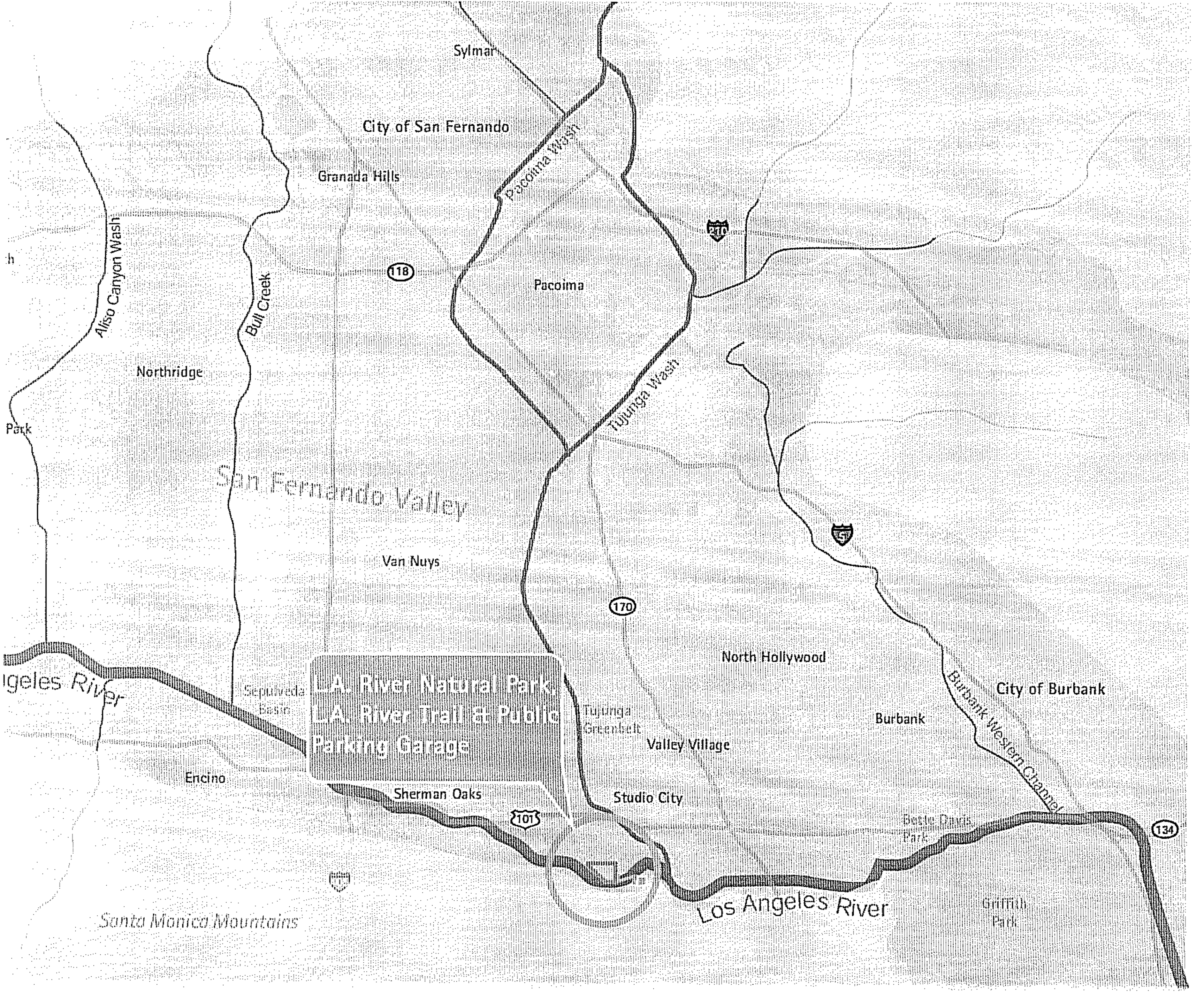
See Figure 1: Regional Context

Regional Bikeway Network

The L.A. River Natural Park, and the L.A. River Trail and Public Parking Garage that connect to the site, are located contiguous to a diversity of bicycle-friendly streets, lanes, paths, routes and transit stations as identified in the City of Los Angeles' 2010 Bicycle Plan. The 2010 Bicycle Plan identifies a network of 1,633 miles of continuous bikeways throughout the city, which will provide bicycle-friendly access to parks, schools, commercial areas and other key visitor destinations. The bike network will be comprised of off-street paths, routes, bicycle lanes and bicycle-friendly streets. As called for in the L.A. River Revitalization Master Plan, a continuous bicycle path will be installed along the south/west sides of the L.A. River. The L.A. River Natural Park has a bus stop and is near a number of bus lines.

In the area surrounding the project site, the 2010 Bicycle Plan identifies Laurel Canyon Blvd., Ventura Blvd., Valley Vista Blvd., Moorpark St., Riverside Dr., Colfax Ave., Tujunga Wash, Bellaire Ave., Hazeltine Ave., and the L.A. River Trails as part of either an existing regional bicycle network or segments to be improved or created.

VIEW OF LOS ANGELES RIVER FACING WEST
SOUTH SIDE OF THE LOS ANGELES RIVER ACROSS FROM PROJECT SITE



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THE PROJECT SITE

KEY ELEMENTS

The project site includes these three key elements:

- A 16-acre L.A. Riverfront parcel site
- An adjacent 391-space public parking garage and bicycle hub
- L.A. River Trail connections and improvements

The project site is a 16-acre parcel immediately adjacent to the L.A. River in Studio City between Whitsett Avenue and Coldwater Canyon Boulevard and is bordered on two sides by single family residential, on one side by multi-family residential and on one side by the L.A. River. Across the L.A. River are commercial/retail businesses along Ventura Blvd.

Currently privately-owned, the site has a 9-hole golf course, putting green, driving range, 16 tennis courts and club house and is utilized as a golf and regional tennis facility. The Los Angeles County Flood Control District owns and maintains the wide, unpaved rights-of-way along the L.A. River's edge along the property and across the river and the concrete flood channel.

A public parking garage owned by the City of Los Angeles is located 500 yards from the site, and is connected to the site via an existing L.A. River Trail and pedestrian bridge along a 1.5-mile stretch of improved river trail.

EXISTING CONDITIONS

LIMITED L.A. RIVER REGIONAL PUBLIC ACCESS IN THE SAN FERNANDO VALLEY

In the densely-developed San Fernando Valley, there are few places where the public can access the LA. River. Throughout the Valley, buildings exist up to the river right-of-way for nearly the entire length of the river, severely limiting opportunities for high-capacity public access. Adequate parking is necessary to create a trailhead and regional staging area for trails along the LA. River; currently there are no available large areas adjacent to the river for an appropriately-sized parking area.

While LA. River access for a large number of people could potentially be established at the Sepulveda Basin Recreation Area, this stretch of the LA. River is soft-bottom and is surrounded by important native habitat, making this site less than optimal for establishing a regional public access point.

Existing public access to the LA. River in the Valley is largely along busy streets, with no improved crossings, parking or other visitor-serving amenities. Two public parks do front the LA. River but do not have features that are key for the development of a regional hub. Bette Davis Picnic Area, part of Griffith Park and operated by the City of Los Angeles, is located in Glendale on the upstream end of the Glendale Narrows where Riverside Drive, Victory and Sonora meet, and is not conjoined with Griffith Park. It is small, unstaffed, has only limited on-street parking, and adjoins a walking/equestrian trail where bicycles are prohibited. It is 7.5 miles east of the proposed site of the LA. River Natural Park in a residential neighborhood with limited amenities and visitor-related services, and along with Griffith Park, services a different geographic sector.

See Figure 2: L.A. River Public Access Constraints

PARKING AND VEHICULAR ACCESS TO THE SITE

There are six freeways in the Valley (Interstate 405, U.S. Route 101, State Route 118, State Route 170, Interstate 210, and Interstate 5). Of these, the 101 (Hollywood/Ventura Freeway), 405 (San Diego Freeway) and 170 (Hollywood Freeway) are within a short distance of the project site, and two freeway exits are within one mile of the site.

A public parking garage owned by the City of Los Angeles with parking for 391 vehicles is located 500 yards from the site, within easy walking distance, and is connected to the site via an existing LA. River Trail and pedestrian bridge along a 1.5-mile stretch of improved river corridor. An existing trail is accessed from the rear of the parking structure via an ADA-compliant ramp that slopes down to the LA. River trail.

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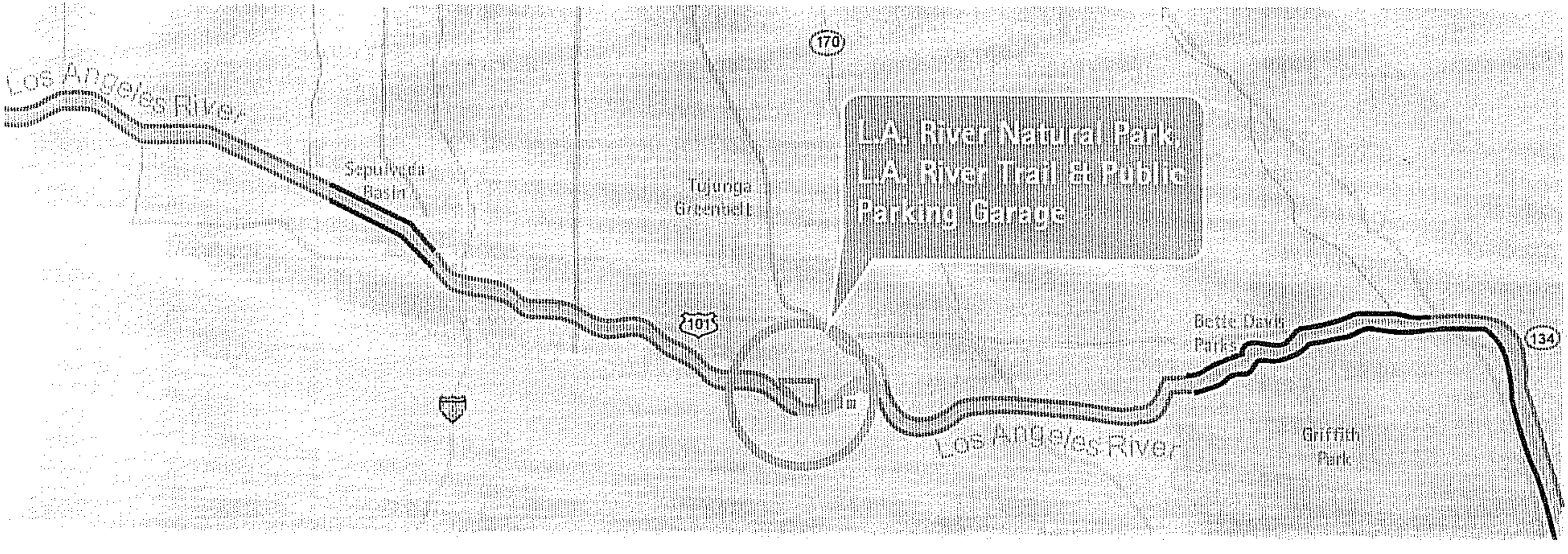
Aerial image of the project site



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L.A. RIVER TRAIL ACCESS

The existing multi-purpose L.A. River Trail extends from Whitsett downstream for 1.5 miles to Laurel Canyon and is used by pedestrians and bicyclists. The western end of the trail terminates at the pedestrian bridge that crosses the Los Angeles River and connects to Valleyheart Drive on the north.

BICYCLE ACCESS

Bikeways and Bicycle Access

There is currently no bicycle access to the project site, and no river trail connecting to the project site. The existing multi-purpose L.A. River Trail described above is part of the citywide bicycle network, and is a segment of a planned 51-mile contiguous bicycle path along the L.A. River. The existing 1.5 mile trail provides a pleasant, bicycle-friendly path along the river, completely separated from surrounding streets. Bicyclists must dismount and walk across Laurelgrove Ave., Colfax Ave., Whitsett Ave., and Laurel Canyon Blvd. There are no crosswalks at these trail crossings, and the streets are very busy.

A bicycle-friendly, ADA compliant ramp is located at the rear of the parking garage. The ramp connects to a pedestrian/bicycle-only bridge, which crosses the L.A. River at Laurelgrove Ave. and connects to Valleyheart Dr. The parking garage & connection to the L.A. River are not visible from Ventura Blvd.

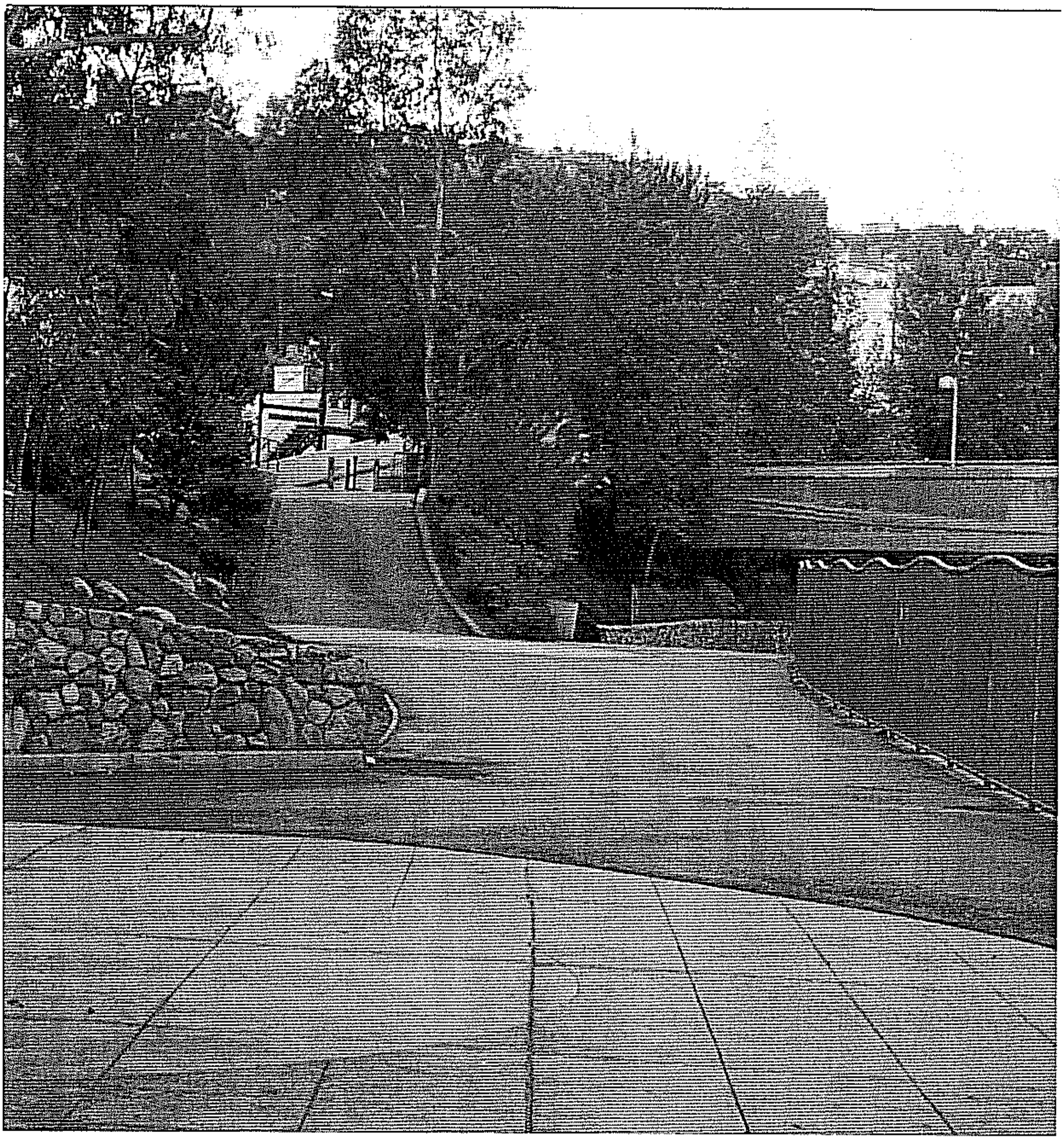
Bicycle lanes – painted lanes on existing streets – are located within one mile of the project site on Riverside Drive, and within two miles of the project site on Colfax Avenue and Chandler Blvd. A bicycle route along the MTA Orange Line exists within two miles of the site. No bicycle lanes or routes exist south of the site in the San Fernando Valley.

See Figures 3-4: 3.5 Mile Radius Bicycle Network Study
5 Mile Radius Bicycle Network Study

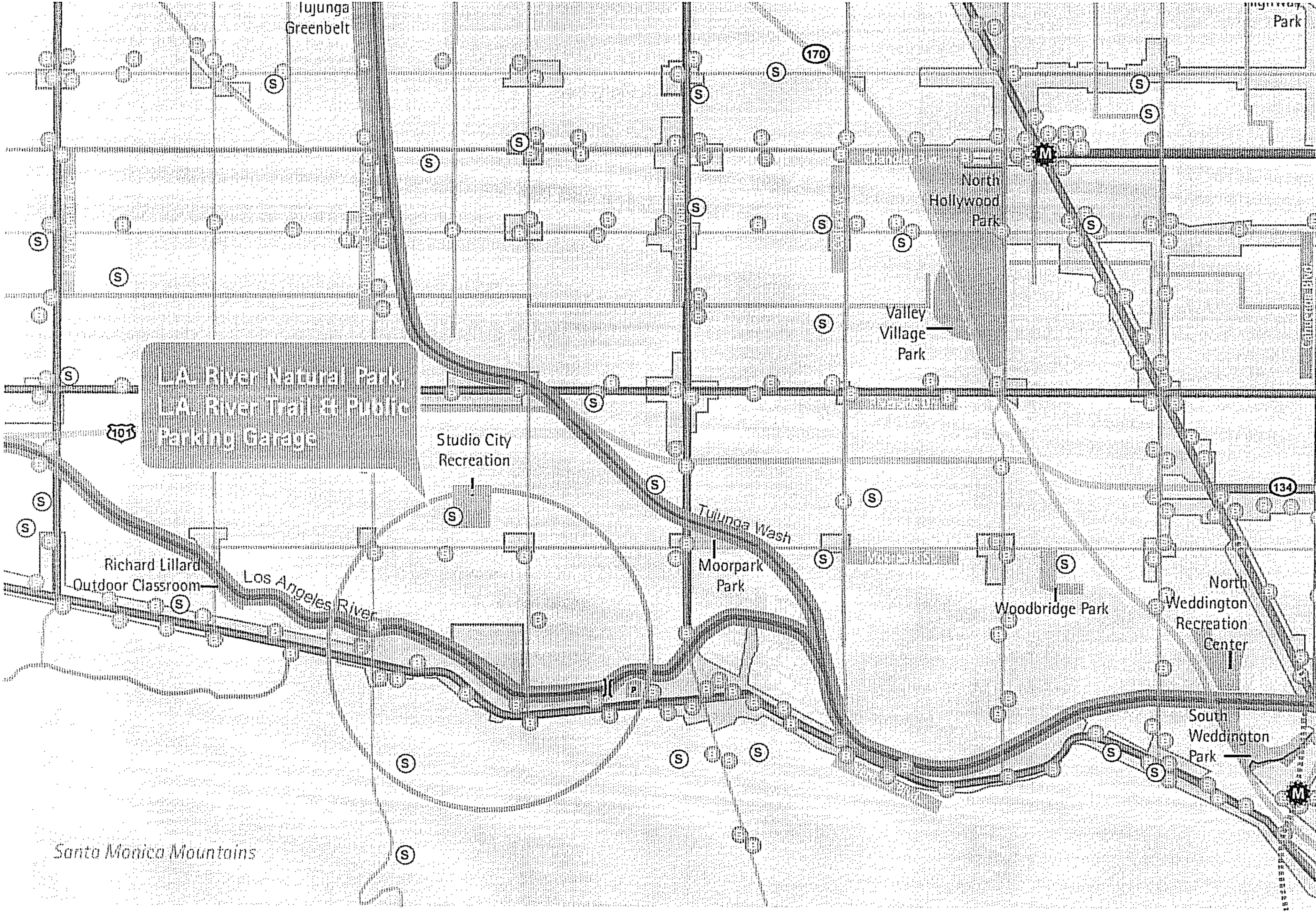
PUBLIC TRANSPORTATION AND PEDESTRIAN ACCESS

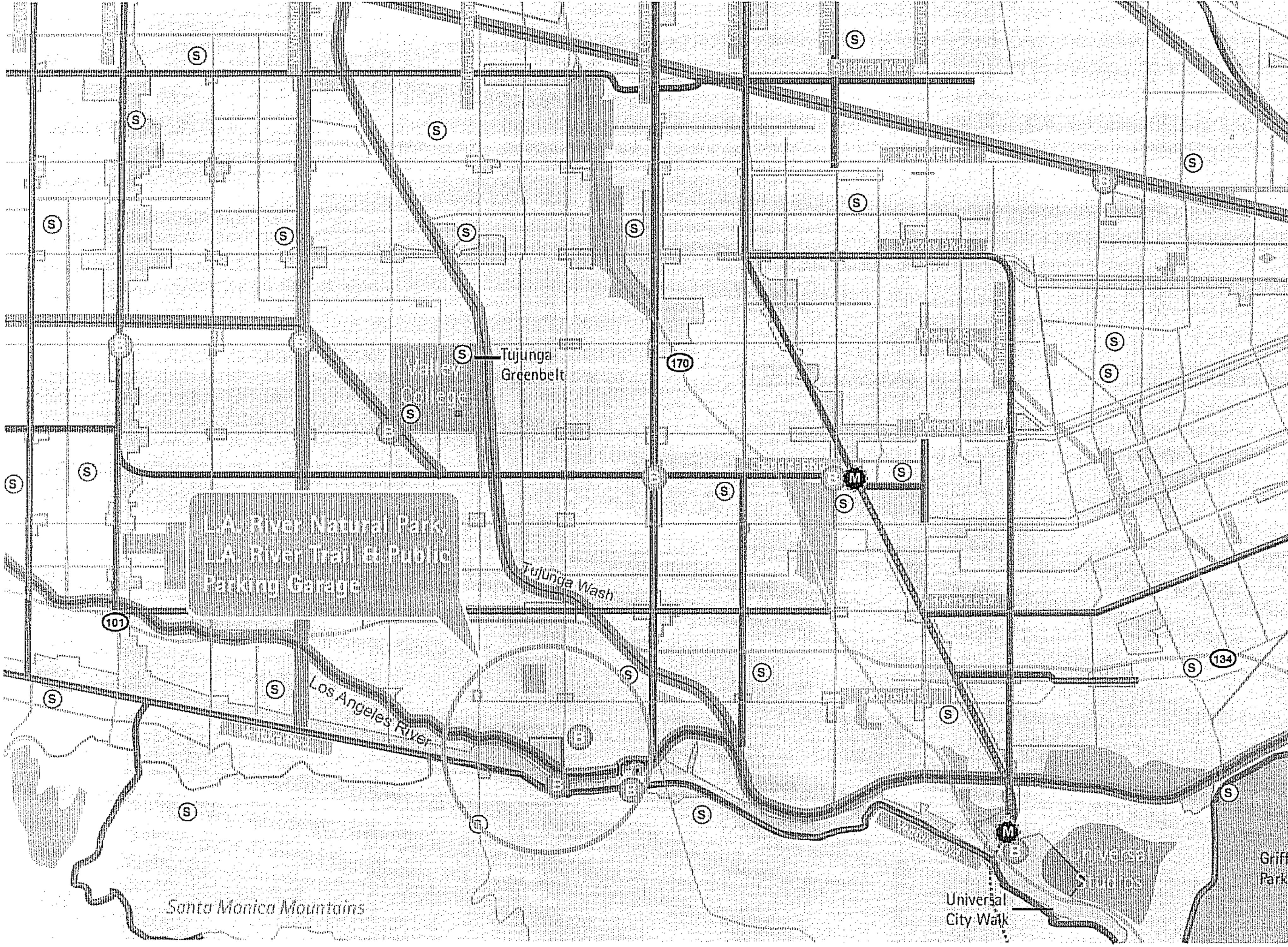
Public transportation is located in front of the project site and there is pedestrian access from Whitsett Avenue. Nearby, Ventura Blvd. provides visitor-serving amenities, including cafes, shops, dining, entertainment and farmers markets.

See Figure 5: Freeway, Streets, Transit + Walking Access



VIEW TOWARDS EXISTING PEDESTRIAN BRIDGE
WEST OF PARKING STRUCTURE


Tujunga Greenbelt
Park
170
North Hollywood Park
Valley Village Park
L.A. River Natural Park
L.A. River Trail & Public Parking Garage
101
Studio City Recreation
134
Tujunga Wash
Moorpark Park
Woodbridge Park
North Weddington Recreation Center
Richard Lillard Outdoor Classroom
Los Angeles River
South Weddington Park
Santa Monica Mountains



Tujunga Greenbelt
Valley College
170
L.A. River Natural Park
L.A. River Trail & Public Parking Garage
Tujunga Wash
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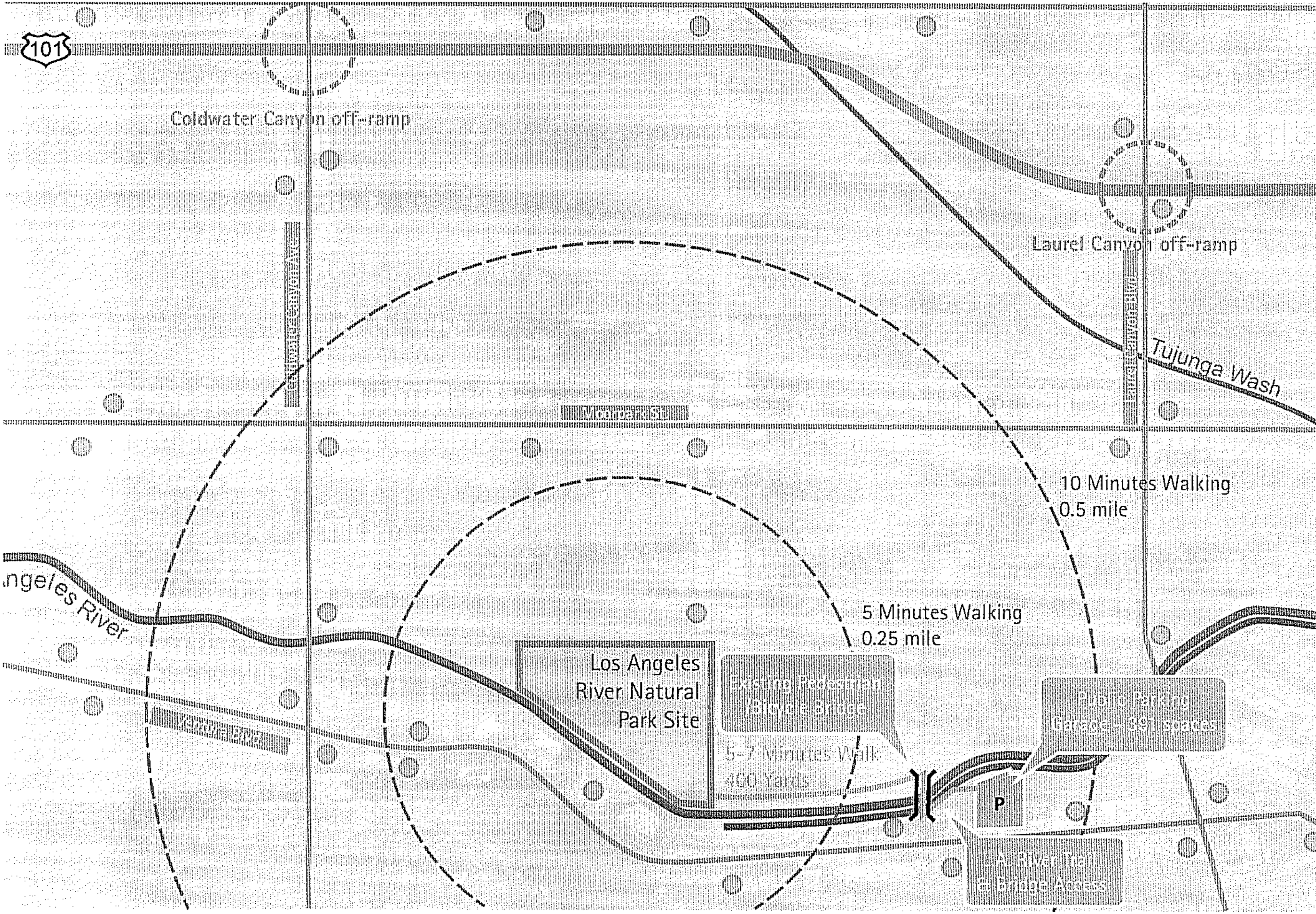
Los Angeles River
134
Santa Monica Mountains
Universal Studios
Universal City Walk
Griffith Park


101
Coldwater Canyon off-ramp
Laurel Canyon off-ramp
Tujunga Wash
Moorpark St
10 Minutes Walking
0.5 mile
5 Minutes Walking
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ngeles River
Los Angeles
River Natural
Park Site
Existing Pedestrian
/Bicycle Bridge
Public Parking
Garage - 391 spaces
5-7 Minutes Walk
400 Yards
P
L.A. River Trail
& Bridge Access

THE VISION
L.A. RIVER REGIONAL PUBLIC ACCESS HUB & TRAILHEAD

WHAT IS AN L.A. RIVER 'REGIONAL PUBLIC ACCESS' HUB?

An L.A. River regional public access hub must include these characteristics:

- Have easy access to the L.A. River
- Be centrally located
- Have ample parking readily available
- Be bicycle-friendly and connect to a regional bikeway network
- Easily accessible by public transit
- Be a regional destination that attracts visitors
- Have established visitor-serving infrastructure and amenities
- Have potential for connection to other river trails
- Be accessible via multiple modes of transportation, including mass transit, bicycle and walking

The project site includes all of the above characteristics and is well-positioned to serve as a regional public access hub and trailhead for the L.A. River in the San Fernando Valley and to provide a key bicycle staging area linking to regional bicycle networks. Development of this project site will create a regional trailhead/staging area for public access to the entire 51-mile L.A. River Trail and other river parks and trails, including Tujunga, Pacoima and Arroyo Seco.

There is an opportunity to connect to river parks and trails on the 51-mile Los Angeles River and its tributaries, in particular to Coldwater Canyon Boulevard as part of this project and to the planned L.A. River Trail improvements that include trails on both sides of the river. Other L.A. River tributaries that already have river trails in place or are in planning stages and can be connected to the project site include the Tujunga Wash, Pacoima Wash and the Arroyo Seco.

OPPORTUNITIES

This project offers all of the attributes of an L.A. River Regional Public Access Hub and includes additional amenities that contribute to regional public access.

1. L.A. Riverfront location and central San Fernando Valley location

The project site is adjacent to the Los Angeles River and is centrally located in the San Fernando Valley with easy access from major streets and nearby freeways. In addition to vehicular access, there are multiple bus lines that stop either at or adjacent to the project site providing easy access via public transportation. There is also easy pedestrian and bike access. The site is located in an area with both residential and commercial land uses, and is one block from the Ventura Boulevard commercial corridor. Improving neighborhood walkability and wayfinding will benefit both local neighborhoods and regional visitors. In addition to Ventura Blvd., there are multiple destination points that can be accessed from the L.A. River Natural Park site, including regional parks and recreation facilities, metro lines, bus stops and schools. Universal Studios is located on the L.A. River, three miles from the project site. The L.A. River Natural Park will serve as a hub linking visitors to all of these destinations.

2. Parking

The multi-level, L.A. City-owned public parking garage that can accommodate 391 vehicles is immediately adjacent to the improved L.A. River Trail and is 500 yards from the project site. There is an existing ADA-compliant ramp that connects the parking garage to the existing L.A. River Trail. The parking garage is easily accessed from Ventura Boulevard, Coldwater Canyon Boulevard, and Laurel Canyon Boulevard and is close to two freeway off-ramps. The garage connects to an existing pedestrian bridge which crosses the L.A. River, providing access to both sides of the L.A. River and to the project site. This high-capacity parking garage is also an excellent location for a centralized bicycle hub, storage, and bicycle rental program to serve this project site as well as the rest of the L.A. River Trail system. It can provide an essential staging area to enhance the viability of a regional bicycle transportation network and to encourage bicycle use.

3. Connections to L.A. River Trail

The existing adjacent 1.5 mile L.A. River Trail connects the project site to the parking garage via a pedestrian bridge that links to the river trail and adjoining commercial/retail destinations on Ventura Boulevard.

4. Potential for easy connection to other river trails, existing and planned, including Tujunga Wash, Pacoima Wash and the Arroyo Seco.

5. Access to numerous regional destinations and visitor-serving amenities, including regional parks, recreation facilities, metro lines, bus stops, schools and commercial corridors.

6. Bicycle access and link to Regional Bike Transportation Network

The project site can be an important link with regional bicycle transportation networks by providing bicycle staging, parking, storage and some bicycle services.

The project site is positioned to contribute substantially to the implementation of the City of Los Angeles 2010 Bicycle Plan, approved March 2011, given its adjacency to the Neighborhood Bikeway, Green Bikeway and Backbone Bikeway Networks as detailed in that plan. It also achieves multiple goals set forth by the Southern California Association of Governments (SCAG) Non-Motorized Transportation Plan and Metropolitan Transportation Authority's Bicycle Transportation Strategic Plan. Los Angeles County's Plan of Bikeways, a sub-element to the L.A. County General Plan, covers bicycling issues in unincorporated areas of the County of Los Angeles and studies the potential for new and improved bike paths along flood control facilities – rivers, creeks, arroyos, washes and drains. Unincorporated areas in L.A. County are commonly non-contiguous but comprise over 2,600 square miles; this is an opportunity to support both the City and County's efforts and would serve as a link and connector for both City and County bike networks.

The project site can provide a regional bicycle hub and can be an important component of providing safe, accessible non-motorized opportunities to people throughout the San Fernando Valley and beyond. The site can contribute to a regional bicycle transportation network by providing bicycle-friendly access to the LA. River, safe connections to planned bicycle routes along surrounding streets, and a regional bicycle staging area in the public parking garage. The parking garage can provide important bicycle amenities that facilitate bicycle access to the river and nearby visitor destinations, and that help encourage regional bicycle use and reduction of car trips.

Extensions to the LA. River Trail can create a contiguous, off-street bicycle path for riders of all ages, providing recreation, commuting opportunities, and connections to parks, other cities, the commercial corridor along Ventura Blvd., and other regional destinations.

OTHER PROJECT BENEFITS

This project offers all of the attributes of an LA. River Regional Public Access Hub and includes additional amenities that contribute to regional public access.

1. Further the goals of the L.A. River Revitalization Master Plan

   The Los Angeles River Revitalization Master Plan, adopted by the City of Los Angeles in 2005, outlines a series of goals for the LA. River, neighborhoods along the river and the region. These goals include water quality treatment, the development of the LA. River as a linear greenway to serve the entire region, connecting neighborhoods to the river and making it a focus of activity, and value for the residents of greater Los Angeles.

2. Further the goals of the Los Angeles 2010 Bicycle Plan

   The Los Angeles 2010 Bicycle Plan, adopted by the City of Los Angeles in March 2011, aims to "create an environment that increases, improves and enhances bicycling in the City as a safe, healthy, and enjoyable means of transportation and recreation for bicyclists..." The Plan's goals focus on making the City a bicycle-friendly community through creation of a citywide bikeway system that will encourage use of this healthy transportation alternative by all City residents; the Plan includes creating a wide diversity of bicycle-serving amenities, regional and neighborhood bikeways, and links with public transit and visitor-serving destinations. The City's 2010 Bicycle Plan is consistent with the LA. City General Plan, the Southern California Association of Governments (SCAG) Non-Motorized Transportation Program, and Metropolitan Transportation Authority's Bicycle Transportation Strategic Plan.

   The LA. River Natural Park project will help further these goals by 1) providing a central, easily-accessible public garage for parking and bicycle staging that connects to the LA. River Trail and to many miles of city bikeways around the project site, and which includes bicycle parking, bicycle rental, and other key bicycle services; 2) establishing a site for regional public access to the LA. River Trail system; and 3) creating new bicycle trails along the LA. River that connect to city streets and planned bikeways. All of these improvements will enhance public access to the LA. River Trail and connecting bikeway networks for residents throughout the Valley and beyond, and will provide access to nearby commercial areas, parks, Valley College, and public transit.

The Los Angeles 2010 Bicycle Plan incorporates the recommendation of the LA. River Revitalization Master Plan to provide a continuous bicycle path along the LA. River.

The LA. River Natural Park project's bicycle hub, bicycle-friendly features, trail linkages and connections to bikeway networks and surface transportation will forward regional goals for reducing car trips, maximizing mobility, encouraging use of bicycles to reach commercial, school, park and other visitor-serving destinations.

3. Help the City meet mandated air quality goals

By providing a regional bicycle hub and staging site, bicycle parking, new bike trails and links to a regional bikeway network, the project will encourage bicycle use and will help reduce the number of vehicle trips. This will help the City meet state-mandated air quality improvement and sustainability goals outlined by Assembly Bill 32, the Global Warming Solutions Act, Senate Bill 375 (aimed at reducing greenhouse gas emissions), and the Complete Streets Act of 2008.

4. Environmental and water quality improvement

Environmental benefits include natural treatment of stormwater and urban runoff to improve water quality in the LA. River, using creation of a complex of riparian and related native habitats. Polluted runoff will be captured from 200 acres of surrounding urban areas and naturally treated on-site. Stored water will be reused for irrigation. Restored habitat will provide nesting and foraging sites for numerous resident and migratory bird species.

5. Preserve L.A. Riverfront open space

The Los Angeles Neighborhood Land Trusts reports that LA. ranks last among major cities in per capita open space. The project will preserve the last remaining unprotected open space along 22 miles of the LA. River in the San Fernando Valley.

6. Improved signage and wayfinding

Development of way-finding and signage will benefit both local and regional visitors.

7. Community benefits

Community benefits include preserving and enhancing precious open space, the potential to incorporate mature trees, traffic calming and control, enhancing site and neighborhood security with perimeter fencing, addressing local flooding problems and improving drainage, preserving historic recreation, developing off-site parking, bike parking and public access, improving walking opportunities, strengthening connectivity to Ventura Boulevard, other commercial corridors, schools, parks, bus stops and metro lines, developing an educational/interpretive component and improving health and the quality of life in the San Fernando Valley.

The project will help address the open space deficit in the Valley, and will provide a critically-needed public access point to the L.A. River to serve residents from communities throughout the San Fernando Valley. Links to public transit will make the L.A. River easily accessible to a wide diversity of visitors. The site will provide a vital link that over time will connect to other river greenways, trails and parks in the Valley and beyond.

CONSTRAINTS

1. Lack of project site visibility

   The project site is screened from view from the site entrance on Whitsett Avenue. An existing berm and numerous palm trees prevent views of the site from the L.A. River.

2. Limited project site access and entry

   The entrance to the site is limited to Whitsett Avenue, and is constrained by the existing fire station at the southern corner. Neighborhoods on Valley Spring Lane and Bellaire Avenue preclude public access from these streets. There is currently no access from the L.A. River to the project site and there is a grade differential. However, there is a current plan sponsored and funded by the County that will develop the trail system.

3. No access between project site and Ventura Boulevard.

   There is no direct connection across the L.A. River to the adjacent commercial corridor located on Ventura Boulevard.

4. Traffic

   Whitsett Avenue is a busy street with no pedestrian crossings near the project entry, which is located mid-block, and no pedestrian crossing connecting to the L.A. River.

5. The parking garage is not visible from Ventura Boulevard nor from L.A. River

   The public parking garage is set back from Ventura Boulevard and there is no signage to properly identify the garage and clearly define the entrance, both from Ventura Boulevard and the L.A. River. The garage is not visually connected to the river because of the grade change between the garage and the river.

6. L.A. River Trail connectivity

There is currently no existing L.A. River Trail at the project site. Connection to the existing L.A. River Trail immediately downstream is via Valleyheart. Limited space would make a crossing under-grade below Whitsett Avenue difficult. Connecting from the planned L.A. River Trail extension to the project site would require coming up to street level and crossing Whitsett. The existing pedestrian bridge which connects the public parking garage to the existing L.A. River Trail crosses the river and connects to Valleyheart.

7. No bicycle amenities

The project site and L.A. River Trail connections are not bicycle-friendly. There are major gaps in the L.A. River Trail and in existing bicycle networks (bike lanes and streets) around the project site. No current bicycle connections to public transit or arterial streets exist at the project site, so Valley College and the heavily-used visitor destinations along Ventura Blvd. are not easily or safely accessible by bike. There is no place to park and unload bicycles in order to access the existing bike trail along the L.A. River. There are no bicycle crosswalks where the L.A. River Trail crosses the busy streets of Laurelgrove Ave. and Colfax Ave., nor at Whitsett Ave. where the project site is located.

CONCEPT PLAN
A REGIONAL GATEWAY TO THE L.A. RIVER

A natural, L.A. River-oriented park that is a regional gateway to the L.A. River, providing easy access for people through the region to the L.A. River Trail and to regional bicycle transportation networks.

See Figure 6: L.A. River Regional Public Access Concept Plan

THE VISION: L.A. RIVER REGIONAL PUBLIC ACCESS & BICYCLE HUB

The L.A. River Natural Park will be a regional gateway to the L.A. River that provides easy access, welcoming visitors from throughout the region. The nearby public parking garage/bicycle hub links visitors to the site via the L.A. River Trail, provides ample parking as well as bicycle staging, storage, repairs and rentals to connect to a regional bicycle network and increases non-motorized mobility. Connections to numerous bus lines and nearby Metro lines make the site easily accessible by public transit. Trail improvements along the L.A. River will extend the river trail to Coldwater Canyon Boulevard along both sides of the river from the parking garage and bicycle hub on Ventura Boulevard. A system of constructed, designed wetlands and natural habitat will naturally capture and clean polluted runoff, improving water quality in the L.A. River and creating a green oasis in the heart of the San Fernando Valley. Regional tennis courts, a driving range and putting green will be part of the park.

CONCEPT PLAN: A REGIONAL GATEWAY TO THE L.A. RIVER

This concept vision for the L.A. River Natural Park focuses on the proposed regional public access, regional bicycle network and public transit connection components of the project site, public parking garage and adjacent L.A. River Trails. The overall concept for the site also includes creation of habitat and green space to help naturally capture and treat urban runoff to improve water quality, related water storage, and active recreation (regional tennis, driving range and putting green).

The L.A. River Natural Park will be a regional hub for public access to the L.A. River, drawing visitors in and easily connecting to the nearby public parking garage and bicycle hub, public transit, river trails, citywide and neighborhood bicycle networks, schools, Valley College and the commercial corridor along Ventura Blvd.

1. PROJECT SITE

The site will feature an L.A. River Entry Plaza, Visitor Information Center, picnic areas and ample bicycle parking. The Entry Plaza fronts Whitsett Avenue with a signature gateway that clearly marks the L.A. River Natural Park entrance and invites visitors into the project site. A pedestrian crosswalk along Whitsett reinforces the entrance and promotes visitor safety. Through the gateway, the visitor is drawn in by a river-themed water feature, shade structure with interpretive kiosks integrated with the Visitor Information Center and bicycle parking. The Visitor Information Center sets the tone for the L.A. River Natural Park as an L.A. River regional public access hub and trailhead integrated with the site's showcase water quality improvement features, natural habitat, walking trails, links to regional bicycle networks and active recreation.

The public interface at the street transitions to an L.A. River Viewing Terrace, which features an observation deck and views of the L.A. River, picnic areas, seating and an entrance to the L.A. River Natural Park's walking trails. A walkway from the L.A. River Viewing Terrace brings visitors to a cantilevered deck over the L.A. River and connects to the L.A. River's bicycle and pedestrian trails. These L.A. River Trails connect visitors to the parking garage 500 yards downstream, and, via a new pedestrian/bicycle-only bridge upstream of the site, to cafes, restaurants and shopping on Ventura Boulevard.

2. L.A. RIVER PARKING GARAGE AND BIKE RENTAL

The L.A. City-owned and operated existing multi-level parking garage with 391 parking spaces that is located within 500 yards of the project site gives the site great advantage, and provides an opportunity to develop a regional bicycle hub with various visitor-serving bicycle amenities. The parking garage connects to the project site via an existing L.A. River Trail and pedestrian/bicycle bridge. The L.A. River Trail is accessed from the rear of the structure with an ADA-compliant ramp that slopes down to the trail. There is ample space to develop and house bicycle rental, storage and repair.

3. L.A. RIVER TRAIL IMPROVEMENTS: PARKING GARAGE TO COLDWATER CANYON

The access road along the north side of the L.A. River from the existing pedestrian/bicycle bridge to Coldwater Canyon would be improved to provide a continuous pedestrian and bicycle trail. This L.A. River Trail would include landscaping with native plants, signage, seating and solar panels to offset electrical usage at the site. The City of Los Angeles is currently developing L.A. River Trail improvements on the south side of the river from Whitsett Blvd. to Coldwater Canyon, including trail enhancements, seating, slope stabilization and landscaping.

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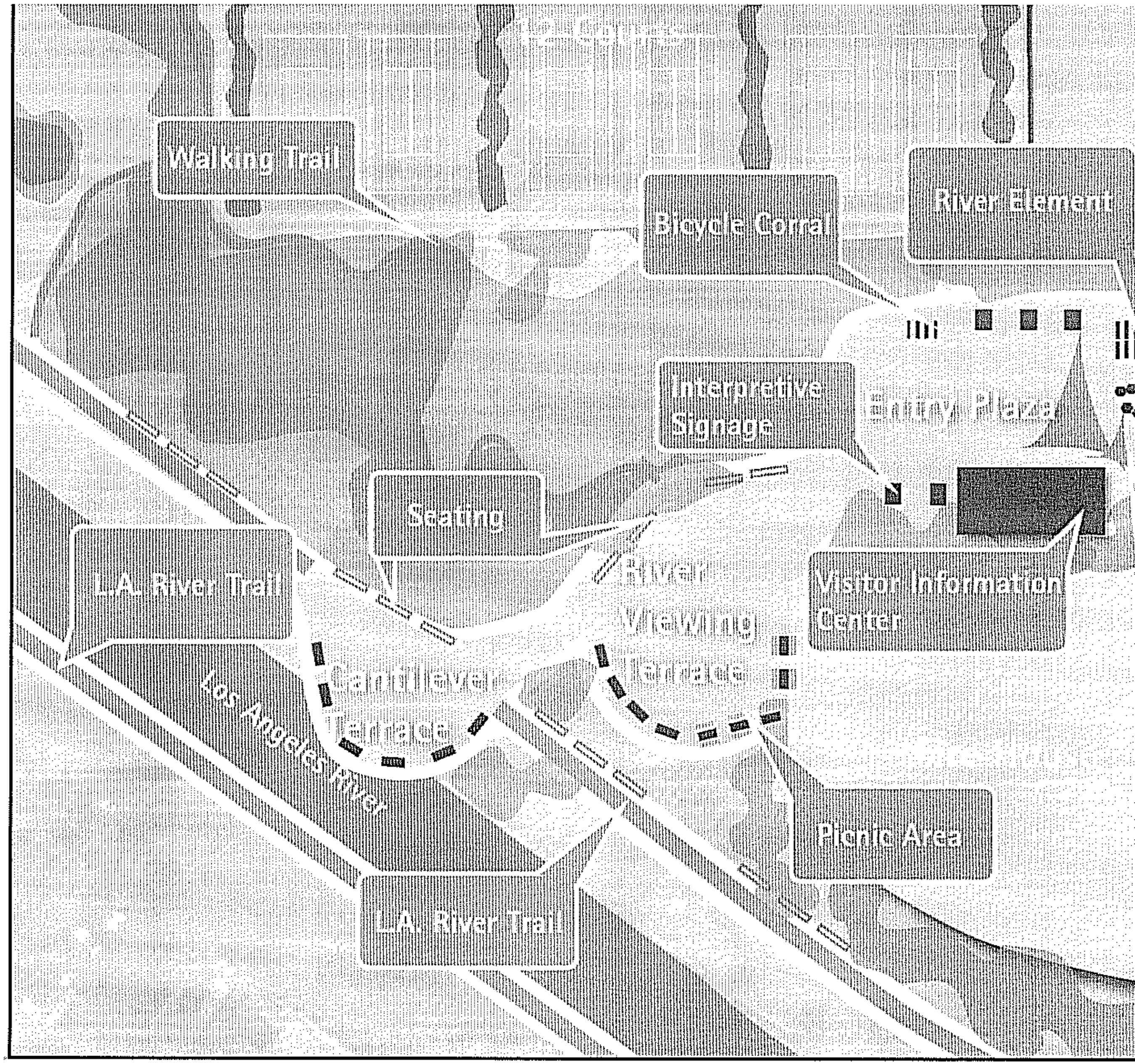

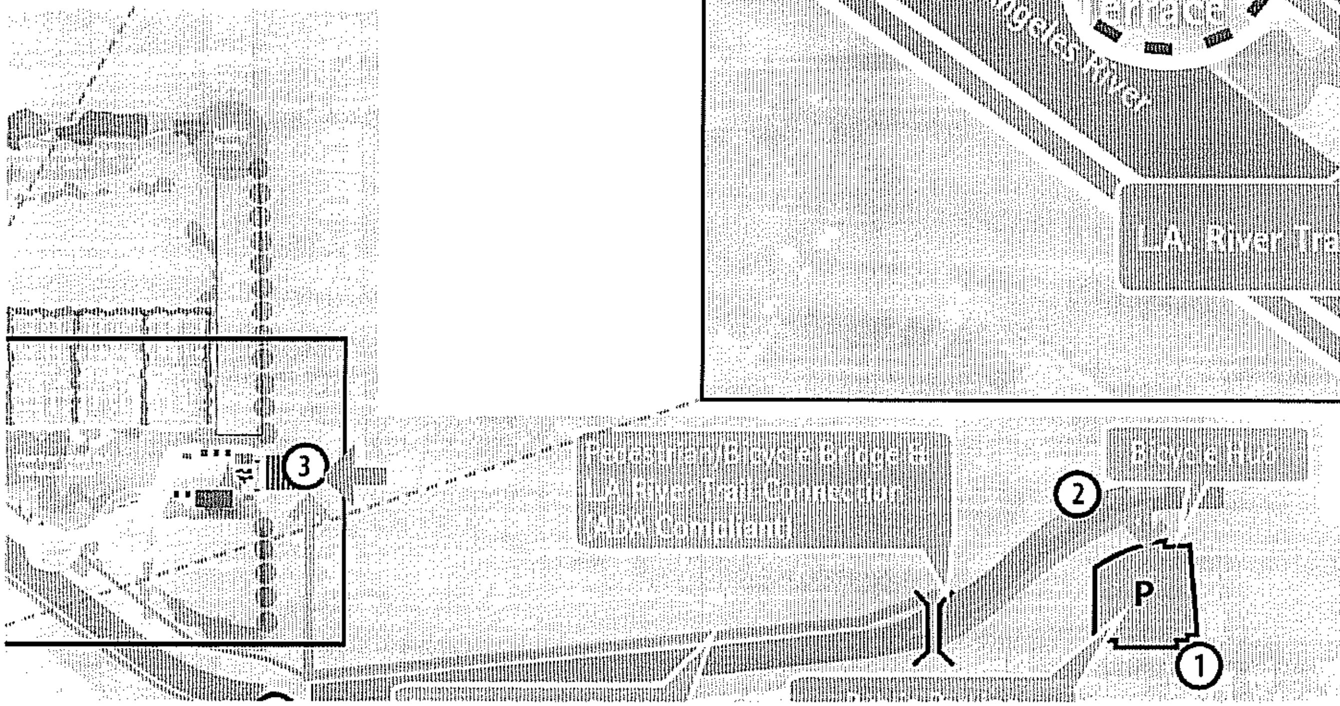

L.A. RIVER REGIONAL PUBLIC ACCESS CONCEPT VISION

The Los Angeles River Natural Park features the following program components:

1. L.A. RIVER GATEWAY
   - Crosswalk and traffic calming at entrance access point
   - Enhanced street buffer along Whitsett Avenue
   - Entry Plaza: Public greeting area
   - Visitor information center
   - Shade structure
   - Information and interpretive kiosks
   - Bicycle corral
   - River-themed water feature
   - L.A. River Viewing Terrace
     - Picnic areas
     - Observation deck
     - Seating
     - Trailhead to site Natural Park walking paths
   - L.A. River Terrace at river's edge
     - Seating, observation

2. L.A. RIVER PUBLIC PARKING GARAGE AND BICYCLE RENTAL
   - Off-site parking in existing public garage on the L.A. River 500 yards downstream
   - Easy connection to L.A. River Trail and pedestrian/bicycle bridge (existing)
   - Development of bicycle hub with bicycle amenities linked to regional bicycle network
     - Wayfaring signage to L.A. River Trail, regional bicycle network and destinations
     - Bicycle rental signage
     - Bicycle staging, parking and storage
     - Bicycle rental program
     - Light bicycle repair

3. L.A. RIVER TRAIL IMPROVEMENTS
   - Multi-use river trail, fencing and native landscaping from parking garage/bicycle hub to Coldwater Canyon
   - Pedestrian/bicycle bridge at parking garage/bicycle hub
   - L.A. River Trail improved from parking garage/bicycle hub, across Whitsett Avenue to Coldwater Canyon Boulevard, including linkages to project site
   - L.A. River Trail improved from Whitsett Avenue to Coldwater Canyon Boulevard across river from site
   - New pedestrian bridge from project site to connect to Ventura Boulevard

See Figures 7-10: Illustration #1: L.A. River Parking Garage & Bicycle Hub
Illustration #2: Parking Garage, L.A. River Trail & L.A. River Access
Illustration #3: L.A. River Gateway & Entry Plaza
Illustration #4: L.A. River Viewing Terrace & River Trail

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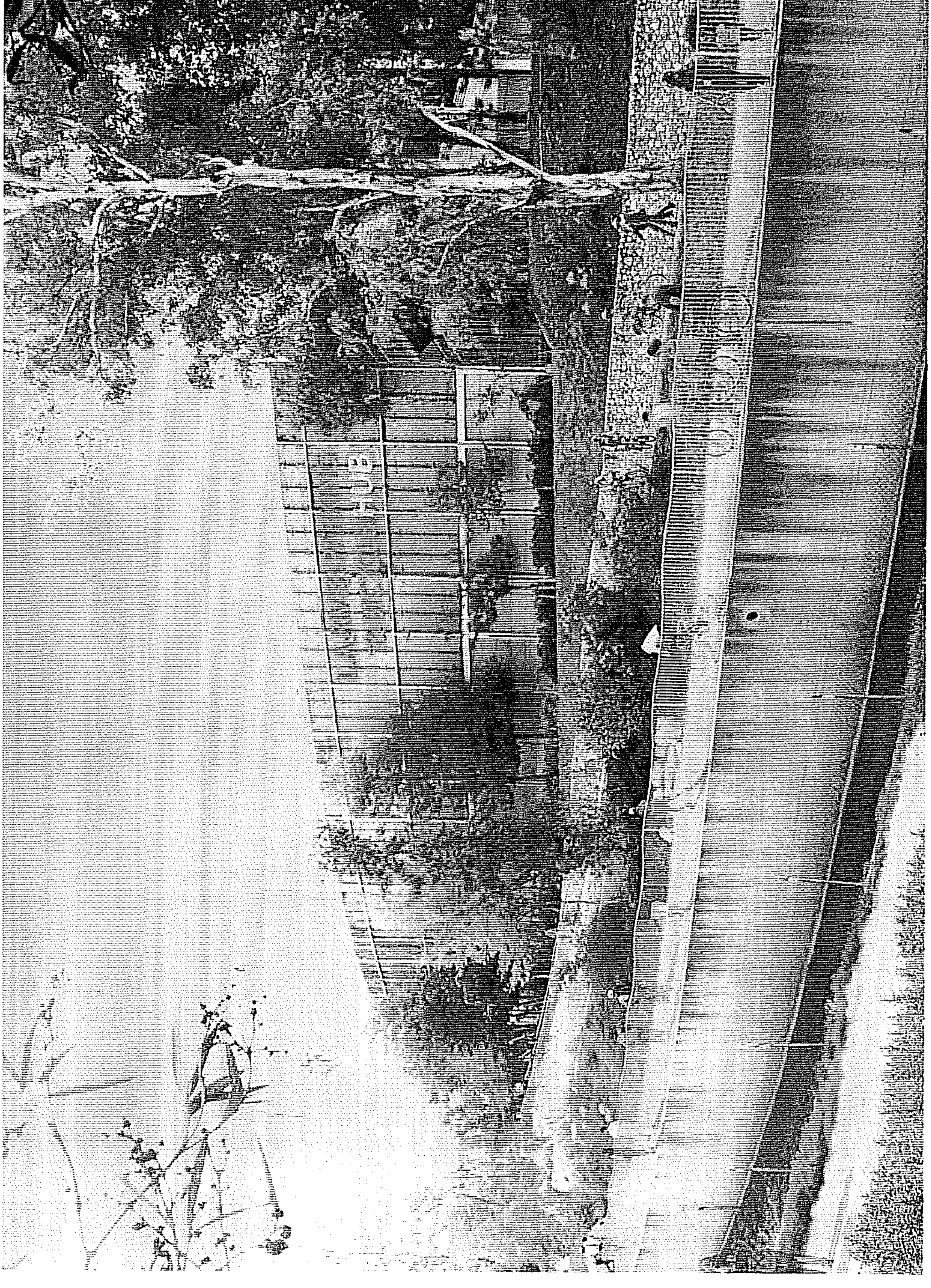
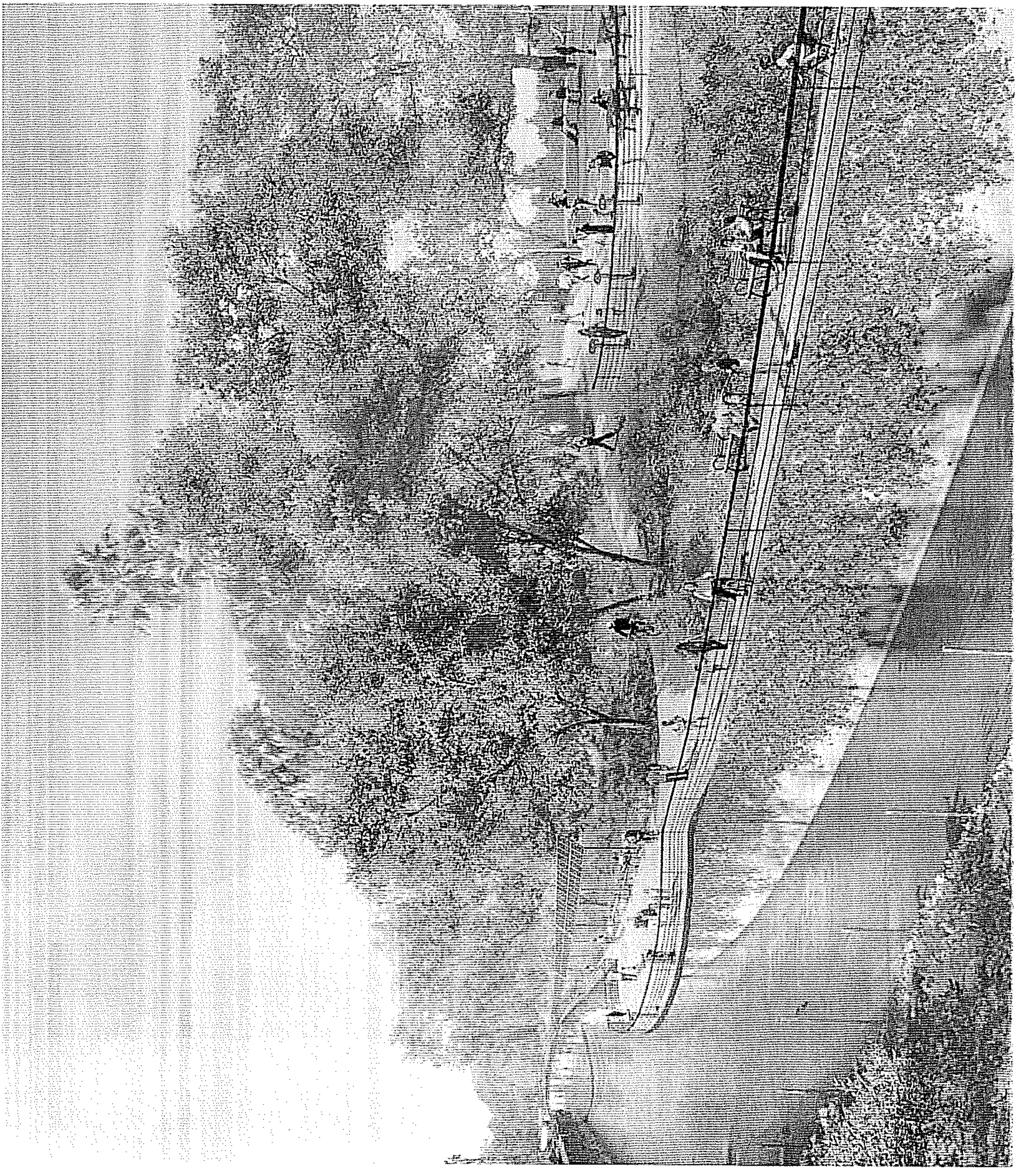
L.A.
RIVER
TRAIL
L.A. RIVER
NATURAL
PARK
AIRS, PARKING




LOS ANGELES RIVER NATURAL PARK



RECOMMENDATIONS

1. DEVELOP PROJECT SITE AS L.A. RIVER REGIONAL PUBLIC ACCESS PROTOTYPE

The LA. River Natural Park site has unique features that make it particularly suitable as a regional access hub, but it can be a developed as a prototype that showcases how to provide a centralized, easily accessible regional public gateway to the LA. River Trail system and to a regional bicycle transportation network. Elements of this project can be applied to other sites along the LA. River and in other cities looking to make similar connections to their rivers. Prototype elements include parking facilities, links to river trails and bicycle networks, linkages to heavily-used commercial/restaurant areas, the bike rental program, educational components, water management, and solutions for issues of compatibility with adjacent neighborhoods.

2. DEVELOP PEDESTRIAN AND BICYCLE-FRIENDLY CROSSING AND TRAFFIC CALMING STRATEGIES

Access from the LA. River Trail to the project site entrance requires a pedestrian crosswalk and traffic calming, as Whitsett Avenue is a busy street and crossing Whitsett either on foot or on bicycle can be dangerous. Traffic calming measures such as a stop light or stop sign, bulb outs, and enhanced paving are all methods of slowing or stopping traffic to allow for safe crossing.

3. DEVELOP SITE SIGNAGE AND WAYFINDING

Signage and improved wayfinding can be developed to ensure park visitors a friendly and safe experience. Directional signage and wayfinding should clearly identify the public parking garage/bicycle hub and link it to the LA. River Trail and to the project site. Signage along the LA. River Trail should easily guide visitors to the site and to nearby visitor-serving amenities.

4. IMPROVE CONNECTIONS TO PARKING GARAGE/BICYCLE HUB

Physical and visual connections to the parking garage from Ventura Boulevard need to be developed. Signage needs to be improved and a visual connection made to draw people in from the street. This parking garage can serve as a connection to the LA. River Trail and from the River Trail to the garage, and from the site to the parking garage.

5. DEVELOP L.A. RIVER BICYCLE STAGING AND RENTAL PROGRAM

Develop a user-friendly bicycle rental and storage program in the parking garage, and enhance connections to the existing multi-purpose LA. River Trail. Improvements include signage, parking and off-loading for cars with bikes, development of the garage as a regional bicycle hub with services that cyclists would appreciate (e.g., maps, tire repair).

There is an opportunity to provide bicycle rental, storage and repairs in the parking structure as it adjoins the existing multi-purpose LA. River Trail. In addition to existing river trails, many trails are in the planning stages for the LA. River throughout the San Fernando Valley and beyond. The ability to connect to existing Los Angeles River trails and to provide this much parking is unique to this site. In the San Fernando Valley buildings were constructed almost up to the river right of way for most of the length of the river. While access for a large number of people can be found at the Sepulveda Basin Recreation Area the river is in its natural state there and direct access to the river or the creation of trails immediately adjacent to the river will endanger habitat.

6. DEVELOP LINK TO REGIONAL BICYCLE NETWORK

Develop site and parking garage as a key regional access node in regional bicycle networks to maximize mobility throughout the San Fernando Valley. Develop wayfinding and signage that links bicycle routes and paths and other elements of the regional bicycle network throughout the San Fernando Valley to the parking garage/bicycle hub, the project site, the LA. River Trail and surrounding destinations. Utilize the LA. River Natural Park and parking garage/bicycle hub to encourage bicycle access to Ventura Boulevard and other commercial areas, schools, parks and visitor-serving destinations. River trails and bicycle routes exist and are being planned for key tributaries that connect to the project site and the LA. River Trail, including the Tujunga Wash, Pacoima Wash, and the Arroyo Seco. The LA. River Natural Park and parking garage/bicycle hub should be improved to maximize these regional connections for bicycle use, and to provide linkages to existing and planned elements of a regional bikeway network.

7. ENHANCE SECURITY

Develop wayfinding to the project site as well as to river trails and other local destinations. Develop environmentally-sensitive site lighting along the LA. River Trail and at the parking garage/bicycle hub. Increase visibility into the site. Address security and public safety through the CEPTED (Crime Prevention Through Environmental Design) approach: perimeter fencing that secures the project site night, screening areas with active recreation protects the privacy of adjacent homes.

8. DEVELOP EDUCATIONAL AND INTERPRETIVE COMPONENTS

Provide educational and interpretive information on the LA. River watershed, habitat, native plants, water management and water quality improvements.

9. UNDERTAKE ADDITIONAL TECHNICAL STUDIES AND ANALYSIS

NEXT DESIGN/PROCESS STEPS

- Move forward with site design
  - Contract with landscape architect to develop a site plan
  - Develop signage program with graphic designer
  - Develop site lighting with lighting consultant
  - Develop visitor center with architect
  - Develop bike staging/rental program
  - Develop connection to parking garage/bicycle hub

RECOMMENDED TECHNICAL STUDIES

The following technical studies and/or analyses should be undertaken during the pre-design phase for integration of hydrologic and habitat restoration elements with public access design goals:

- Topographic/civil survey
- Structural evaluation for wall and cantilevered deck over river
- Geotechnical reports for soil structure and fertility
- Arborist evaluation of health of trees
- Biological assessment and plant community mapping
- Detailed vegetation plan for native habitat restoration/creation
- Bicycle amenities planning for parking garage
  - Rental
  - Storage
- Design of improvements to parking garage
- River Trail Planning:
  - Survey
  - Right-of-Way evaluation
  - Trail width evaluation
  - Signage and connections to existing trails and destinations
- Street crossings

Agency coordination will be required with the U.S. Army Corps of Engineers, Los Angeles County Flood Control District and the City of Los Angeles Bureau of Engineering, River Office

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OPINION OF PROBABLE COSTS

LA River Natural Park
Opinion of Probable Costs

ITEM	QTY	unit price	unit	TOTAL
Site Demolition	3,970	$40.00	sf	$158,800.00
Earthwork	3,970	$10.00	sf	$39,700.00
Pedestrian Trail	430	$6.00	sf	$2,580.00
Multi Purpose Trail	1240	$25.00	lf	$31,000.00
Seating	10	$1,500.00	ea	$15,000.00
Bike Corral	24	$500.00	lf	$12,000.00
Interpretive Signage	12	$1,500.00	ea	$9,000.00
Visitor Center	1	$2,000,000.00	ea	$2,000,000.00
Picnic Tables	5	$1,200.00	sf	$6,000.00
Traffic Calming Crossing	3700	$3.00	sf	$11,100.00
River Element	1	$150,000.00	ea	$150,000.00
Signage at Public Parking	1	$35,000.00	ea	$35,000.00
Pedestrian Bridge	1	$1,000,000.00	ea	$1,000,000.00
River Viewing Terrace	15000	$15.00	sf	$225,000.00
River Cantilever Terrace	6200	$40.00	sf	$248,000.00
Shade Structure	1	$100,000.00	lf	$100,000.00
Enhanced Street Buffer	4000	$5.00	sf	$20,000.00
Irrigation	63500	$2.00	ls	$127,000.00
River Trail Improvements	1	$500,000.00	ea	$500,000.00
Parking Garage Improvements	1	$500,000.00	ea	$500,000.00
Planting	63500	$1.50	ea	$95,250.00
subtotal 1				$5,285,430.00
Estimating Contingency - 20% of subtotal 1	20%			$1,057,086.00
subtotal 2				$6,342,516.00
Mobilization - 7% of subtotal 2	7%			$443,976.12
Permits - 2% of Subtotal 2	2%			$126,850.32
Allowances - 5% of Subtotal 2	5%			$317,125.80
subtotal 3				$7,230,468.24
Construction Contingency - 10% of subtotal 3	10%			$723,046.82
TOTAL, HARD COSTS				$7,953,515.06

SOFT COSTS	
Design Fees Entry Area and River Edge	$1,184,140.00
Topographical Survey	$10,000.00
Structural evaluation	$20,000.00
Arborist Report	$5,000.00
Biological Assessment	$15,000.00
Vegetation Plan	$5,000.00
Parking Garage Improvements Design	$125,000.00
Structural engineering bridge and terraces	$175,000.00
TOTAL, SOFT COSTS	$1,539,140.00

TOTAL, ALL $9,492,655.06