CONCEPT PLAN

Southern California Veterans Cemetery

Irvine, California

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Prepared for:

State of California Department of General Services
Project Management and Development Branch

OWEN

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ACRONYMS AND ABBREVIATIONS

Abbreviations	
Asbestos-Containing Building Materials	ACM
Amended and Restated Development Agreement	ARDA
Best Management Practices	BMP
California Department of Veterans Affairs	CalVet
California Environmental Quality Act	CEQA
Department of General Services	DGS
Department of the Navy	DON
Environmental Impact Report	EIR
Environmental Impact Statement	EIS
Federal Aviation Administration	FAA
Irvine Ranch Water District	IRWD
Lead-Based Paint	LBP
Low Impact Development	LID
Marine Corp Air Station	MCAS
National Cemetery Administration	NCA
Orange County Great Park	OCGP
Rough-Order Magnitude	ROM
Regional Water Quality Control Board	RWQCB
Southern California Edison	SCE
Southern California Veterans Cemetery	SCVC
State Cemetery Grants Program	SCGP
State Cemetery Grant's Service	SCGS
Technical Guidance Document	TGD
U.S. Department of Veterans Affairs	USDVA
Veterans Cemetery Grants Program	VCGP
Water Quality Managements Plan	WQMP

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1. EXECUTIVE SUMMARY

The proposed cemetery site is at the former Marine Corps Air Station (MCAS) El Toro in Irvine, California. The former MCAS El Toro is currently being redeveloped as the Orange County Great Park (OCGP), and the State of California, Department of General Services (DGS) is developing this Concept Plan for the acquisition and redevelopment of approximately 125 acres of the Great Park for the proposed Southern California Veterans Cemetery (SCVC). This conceptual design work (Concept Plan) is required for pre-application for a U.S. Department of Veterans Affairs grant proposal.

The purpose of this Concept Plan is to illustrate development of the SCVC over a 100-year build-out timeframe. The Concept Plan outlines a process and strategy for the implementation of the entire cemetery including utility constraints, architectural and design concepts, environmental issues, a signage plan, grading and geotechnical considerations, landscaping needs, phasing and associated cost estimates.

Design of the Cemetery

The overall intent of the proposed design is to create a monument to the service and sacrifice of California State Veterans. Part of this goal is accomplished through the inclusion of features that will make a lasting and memorable impression on visitors to the cemetery.

At full build-out the cemetery will supply 211,125 gravesites with 60,066 in-ground crypts, 645 oversize in-ground crypts, 55,614 in-ground cremains, and 94,800 columbarium niches, enough to serve the anticipate needs of veterans for the next 100 years. The burials will be accommodated by approximately 70 percent cremation and 30 percent precast in ground burials.

Phase 1-Scope of Work

This Concept Plan focuses on the activities and requirements for the construction of Phase 1 while showing how the site will expand through future phases to full build-out. Phase 1 of the SCVC encompasses several significant parts:

Phase 1 - Part 1- Site Preparation and Demolition (125 acres): Phase 1 of the Project will include the demolition of the entire 125 acre site. Demolition includes existing buildings, foundations, floors, floor slabs, concrete, and asphalt. The demolition also includes the removal of underground utilities.

Phase 1 - Part 2 – New Construction (28.3 acres):

Part 2A – New Construction of the cemetery which encompasses approximately 12.5 acres of the property and includes, rough and fine grading, utility trenching and installation, paving of drive aisles and access roads, landscaping, installation of 1,750 in-ground cremain burials,

3,250 columbarium niches, the administration / maintenance complex, ceremonial entrance, cortege assembly area, committal service shelter, flag / assembly area, and memorial walkway.

Part 2B – New Construction of the perimeter berms, walls, fences, and associated landscaping. This portion includes the construction of the retention / detention basins and drainage swale along the south western portion of the site. This area is approximately 15.9 acres.

Phasing

The cemetery layout has been developed to include flexibility through sequential phases which allows the cemetery to be completed on an as-needed basis determined by the burial demands anticipated over the next 100 years. The phased build-out is based on the existing site conditions and topography, utilities, construction cost, plot burial size, layout, overall site organization and layout. A total of 10 phases will complete the cemetery at full build out with Phase 1 constructing the core infrastructure and facilities needed for cemetery operation.

Architecture

Exterior finishes and architectural design will be in keeping with the local architecture of the region. The architectural style that is prevalent in the area is California Tuscan. Tuscan architecture is a timeless and rustic style that fits quite well with City of Irvine's dry seaside climate. This architectural type also reflects a calming but yet elegant style. The exterior materials will be a combination of smooth cement plaster, wood / wrought iron detailing and clay barrel tile roof system, as well as the arched recessed windows and doors, and low-pitched, tiled roof.

Landscaping

The landscape design incorporates the U.S. Department of Veterans Affairs (USDVA) mission of sustainability by using drought tolerant native plantings. This site has reclaimed water available for irrigation which is a resource not subject to drought restrictions; therefore, turf or decomposed granite or crushed rock atop burial areas may be used.

Adjacent Area Land Uses

Adjacent land uses include the OCGP, a new Irvine Unified School District High School, and residential, retail, and commercial uses. The cemetery site is bounded by Cadence Boulevard to the northwest, Pusan Street to the north, Irvine Boulevard to the east, a habitat restoration area to the south and southeast, and a golf course to the west.

Infrastructure

The assessment of existing site conditions at the cemetery property supplies a basis for infrastructure improvements needed for utilities, roadways and services. There are no anticipated off-site utility improvements.

Signage

A signage system for the SCVC has been established with the construction of Phase 1 improvements. This system is consistent with the USDVA standards and is designed to provide visitors with information, direction and regulations for the cemetery.

Control Tower – Building 372

The scope of work for Phase 1 includes the demolition of the control tower; however, there has been significant discussion with regards to the future use of the control tower building. The work required for renovation and repurpose will be costly and will include seismic structural retrofit, roof replacement, entire new HVAC installation, and entire new electrical system installation.

There are several options for the building and include demolishing the entire building, renovating the air-control tower only and demolish the remainder of the building, or renovate and repurpose the entire building.

State Cemetery Grants Program

Through the National Cemetery Administration (NCA) State Cemetery Grants Program (SCGP), the USDVA will provide funds for design and construction of the cemetery. The process to apply for the SCGP includes three steps: pre-application, preparation of interim report and assessment requirements, and application. The State Cemetery Grant's Service (SCGS) at the USDVA National Administration is the final arbiter of a State's proposed cemetery design. Through the three-level program, the USDVA ensures a collaborative process that contributes to likely success for the State in meeting all requirements, and reduces the chances for failed attempts.

This Concept Plan has been developed to include the content requirements published by the NCA.

The design in this Concept Plan has not been reviewed by USDVA and that having the site bisected in two and having two separate entrances present a challenge to the operation of the cemetery and additional structures (i.e. Maintenance Building, Committal Shelter, public restrooms) may be required.

Summary Estimate of Probable Cost – Phase 1

BUILIDNGS	
Administration Building	$848,400
Maintenance Building	$1,252,600
Committal Shelter	$182,400
CEMETERY AND ROADWAYS	
Site Clearing	$184,300
Hazardous Waste Remediation	$3,446,200
Site Demolition & Clearing (12.5 ACRES)	$2,484,700
Site Demolition & Clearing (Remaining site 112.5 Acres)	$6,205,000
Building Demolition & Disposal	$18,121,200
Site Improvements	$5,445,000
Site Development	$14,518,800
Site Utilities	$1,672,900
Escalation	$7,746,600
Construction Contingency at 5%	$3,105,400
PHASE 1 CONSTRUCTION COST SUBTOTAL (Note 1)	**$65,213,500**
SOFT COST	
A/E, Inspection, Special Consultants, Materials Testing Project/Construction Management, Agency Retained, CEQA (EIR/EIS), Mitigation/Surveys, Other Fees	$12,158,500
TOTAL PROJECT COST	**$77,372,000**

Note 1: Construction costs includes Contractor mark-up.

2. INTRODUCTION

2.1 Background

The City of Irvine prepared the OCGP Plan for the reuse of the former MCAS El Toro site in 2001. The plan included large areas of park, recreational uses, and open space. Other uses and activities in the plan included institutional, research and development, agriculture, educational, and various others uses. A strategy was incorporated in the OCGP Plan to assure the realization of the park, open space, and other public uses through dedication to the City of Irvine and other nonprofit or governmental entities via a Development Agreement.

The Development Agreement included a requirement for the dedication of land for public uses and for funding of certain infrastructure and public open space amenity improvements and their long-term maintenance by the buyers/developers, as well as any future owners of the OCGP site.

In 2014, Assembly Bill 1453 was introduced in the California legislature to establish a state veteran's cemetery in Orange County and was approved. The bill directed the California Department of Veterans Affairs (CalVet) to complete conceptual design work required for pre-application for a U.S. Department of Veterans Affairs grant proposal for the Southern California Veterans Cemetery. Specifically, the bill amended the Military and Veterans Code to require CalVet, in voluntary cooperation with local government entities in Orange County, to design, develop, construct, and equip a state-owned and state-operated Southern California Veterans Cemetery to be located at the site of the former MCAS, on 125 acres known as the Amended and Restated Development Agreement (ARDA) site in the OCGP in the City of Irvine. Following adoption of AB 1453, CalVet contracted with the California Department of General Services (DGS) to manage the planning of the project, including design, engineering, and environmental compliance tasks.

The SCVC at Irvine will provide for the burial needs of Veterans in Orange County.

2.2 Physical Settings and Constraints

Located in the former MCAS El Toro in the City of Irvine, the SCVC is a 125 acre site of flat, previously developed topography.

Figure 1: Site Photo

Figure 2: Additional Site Photos

Figure 3: View of Former Marine Corps Air Station Site

Adjacent land uses include the OCGP, a new Irvine Unified School District High School, and residential, retail, and commercial uses. The cemetery site is bounded by Cadence Boulevard to the northwest, Pusan Street to the north, Irvine Boulevard to the East, a habitat restoration area to the south and southeast, and a golf course to the west. Figures 1 thru 4 show various images of the site. Additional site imagery is included in Sheet L0.01 of the Drawings.

Figure 4: Orange County Great Park

2.3 Design Layout

The primary design objective for the SCVC is to create a place that commemorates the service and sacrifice of the State's Veterans by providing a dignified, serene, and beautiful setting upon the former El Toro air base. The design creates impressive views towards the surrounding landscape while shielding views into the site from neighboring communities.

3. LANDSCAPE ARCHITECTURE

3.1 Site Design

Phase 1 of the SCVC encompasses approximately 12.5 acres of the property. It includes 1,750 in-ground cremains burials, 3,250 columbarium niches, the administration / maintenance complex, ceremonial entrance, cortege assembly area, committal service shelter, flag / assembly area, memorial walkway, and supporting roads. These Phase 1 components are meant to meet the requirements of the initial program as described in the Veterans Cemetery Grants Program (VCGP) Space Program Analysis.

Please refer to the Landscape Architecture Plans for the Schematic Site Plan, Phasing Plan, Layout and Signage Plans, Irrigation Plans, Planting Plans, and Sections.

Entrance Area

The main entrance to the cemetery from Cadence Boulevard is aligned across from Pusan Street. Concrete screen walls mask the cemetery from the roadway and neighboring community. The wall is softened by an undulating berm that is planted with native low-water species in a variety of colors and textures. The wall opens at the formal entrance to the cemetery where visitors are welcomed with the cemetery's official entry signage. A divided road leads from the entrance gate to the central road network of the cemetery. Low plantings fill the median of the entrance road containing the Avenue of the Flags. The first exit from the site's main round-a-bout leads to a dual lane cortege that ends adjacent to the Administration building. Designed for 30 cars, the lane was engineered for ease of pull-out and located to be visible from the Director's office.

The FAA facility area is to remain in place and is directly in line of view of visitors entering the cemetery; therefore, screening is provided to the facility. A vegetated buffer with shrubs, trees, berms, and possible walls will provide screening from the entry road and Assembly Area. The FAA facility consists of a building, antennas, and paving.

Administration/Maintenance Complex Site Design

The Administration / Maintenance complex is sited close to the main entrance. The adjacent maintenance and service yard is screened with a vibrant landscape palette. Parking for 22 visitors and staff is located between the maintenance and administration buildings. A walkway and a small plaza lead to the visitors' entrance, the gravesite locator computer, and the restrooms.

Maintenance, service, and delivery vehicles have a separate entrance from Cadence Boulevard. The Maintenance yard has been sized for the turning radius of semi-trucks.

Columbarium Court

The layout of the columbarium courts emphasize the radial pattern of the cemetery. The units are accented with planting reliefs and tree canopy shade. Each cluster can be accessed directly from the road on accessible concrete pathways. Units are set a minimum of 10 feet apart for accessibility and to give visitors a sense of private space in front of each unit. The columbarium are 5 units high in multiples of 8 units long.

Committal Service Shelter Area

The location of the committal service shelter is closely situated to the main entrance road, the administration building, and the cortege lane. Located on a separate loop road, the shelter provides views into the radial columbarium courts. Designed to accommodate thirty cars, the road is approached on the right for ease of turning for the cortege.

The shelter sits at the end of the loop road, providing direct access for the hearse and the family vehicle. To provide sufficient standing area for internment services, a large concrete patio extends from under the roof of the shelter and is supplemented by an additional area of decomposed granite.

Flag Assembly Area

The Flag Assembly Area is situated on the far side of the entrance road in crypt field one. The assembly court is on axis with visitor's site lines as the center the cemetery and provides sweeping views towards the mountains. The National flag is flown on a 50 foot pole towards the center of the plaza. The California State and MIA flags are flown from 30 foot poles on either side.

Memorial Walk

The Memorial Walk provides locations for donated benches, sculptures and plaques to commemorate those who have served. The Walk begins across from the Administration Building. A radial concrete path follows the form of the cemetery moving visitors through a richly planted opening between Columbarium courts 1 through 4. Small, shaded plazas with seating between the Memorial Wall and Columbarium courts provide areas to showcase memorial features while visitors rest and reflect on those who have served.

Memorial Wall

The Memorial Wall is an alternative for families who wish to honor a loved one who has been buried off-site or at sea. The Memorial Wall is located midway along the Memorial Walk. The wall complements the architectural style of the adjacent columbarium and is decorated with plaques listing the veteran's name and service.

Burial Options

The cemetery has a combination of burial facilities to meet the desires of all Veterans. The proposed 211,125 burials will be accommodated by approximately 70 percent cremation and 30 percent precast in ground burials.

At full build-out, the cemetery will supply 211,125 gravesites with 60,066 in-ground crypts, 645 oversize in-ground, 55,614 in-ground cremains, and 94,800 columbarium niches, enough to serve the anticipate needs of veterans for the next 100 years. Phase 1 includes the necessary buildings and 5,000 gravesites- 1,750 in-ground cremains and 3,250 columbarium niches.

For cremated remains, burial will be in freestanding double columbarium wall niches or in-ground cremains burials. Walls are arranged in courts of three to eight walls for a total of 2,000 to 12,400 niches in a single court. The architectural style of the walls are to match the California Tuscan building style.

Of the 60,711 crypt burials planned for the cemetery, 95 percent will be 3 foot by 8 foot plots, with the remaining 5 percent as over-sized 5 foot by 10 foot plots. Full casket burials will utilize pre-placed double depth vaults. The burial areas are divided into 32 crypt fields. The sections are separated by vegetated edges and slopes. Since the site has reclaimed water available the site can use turf or decomposed granite (a local crushed rock). The site is relatively flat and therefore accommodating slopes less than 2 percent can be achieved with minimal grading. Edges along the street would be planted with a colorful significant vegetated edge.

In addition to burial sites, the plan incorporates a memorial wall for those who do not desire burial on site but want to be memorialized as a veteran. The wall consists of 40 plaques in five rows mounted on a stucco wall with a cast stone cap flanked by stucco columns.

3.2 Planting and Irrigation

Recycled Water Availability and Crypt Field Material

Recycled water use is virtually a drought-proof source of water that can be used for irrigation purposes. It is a safe, industry-recommended method that is also available in unlimited quantities. The availability of recycled water provides the optional use of turf over the frequently substituted decomposed granite. The advantages and disadvantages of using turf versus decomposed granite are shown below.

Turf	
Advantages	***Disadvantages***
Allows more comfort to visitors who wish to sit at a burial	May be perceived as a wasteful due to water restrictions
Allows for use of the local water district's recycled water	Requires frequent maintenance (mowing, fertilizer, etc.)
Softens the landscape – appeals to the iconic image of a Veterans Cemetery	
Mitigates heat island effect	
Permeable	
Decomposed Granite	
Advantages	***Disadvantages***
More accessible material than turf	Increased heat of site
Requires less water than turf	Requires maintenance (raking, watering to reduce dust, etc.)
Permeable	Maximum cross-slope must be less than 2 percent

Climate based strategy

According to US Climate Data, Orange County's dry climate accounts for only 14.4 inches of precipitation annually. The planting design of the SCVC utilizes native low water use plants as well some adapted non-invasive trees, shrubs, groundcovers, and perennials. These plants reflect the character of Orange County and meet the necessary demand of low water usage.

Plant Communities

The planting design employs a variety of native species for a diverse range of use. Native trees and woody shrubs will be utilized for the vegetative edges between crypt fields. Water tolerant natives will be planted along the site's stormwater easements and detention basin. Vibrant native shrubs with seasonal color and county approved street trees will line the exterior site wall at both Cadence Boulevard and Pusan Street. Within the columbarium courts and at key visitor assembly points, the Administration building, Committal Shelter, and Flag Assembly area, a mixture of evergreen and deciduous plants will creates a pattern of varying textures, colors, and heights to provide seasonal interest. Flowering specimen trees, palms, and succulents will also be utilized within these areas as vibrant accents.

Selected Species

Trees:
Acacia farnesiana - Sweet Acacia
Butia capitata - Pindo Palm
Fraxinus velutina - Arizona Ash
Olea europaea – Olive
Phoenix dactylifera - Date Palm
Pistacia chinensis - Chinese Pistache
Quercus agrifolia - Coast Live Oak
Quercus lobata - Valley Oak
Schinus molle - California Pepper Tree
Ulmus parvifolia - Chinese Evergreen Elm

Cacti / Succulents:
Agave Americana - Century Plant
Agave geminiflora - Twin Flowered Agave
Agave parryi - Agave Parryi
Senecio mandraliscae - Kleinia

Grasses:
Leymus condensatus 'Canyon Prince' - Wild Rye
Muhlenbergia rigens - Deer Grass
Pennisetum setaceum - Fountain Grass

Shrubs:
Arctostaphylos sunset - Manzanita
Arctostaphylos uva ursi - Bearberry Kinnikinnick
Artemesia californica - California Sagebush
Baccaris pilularis - Dwarf Coyote Brush
Brahea aramata - Mexican Blue Palm
Dendromecon rigida - Bush Poppy
Encelia californica - Coast Sunflower
Leucospermum cordifolium - Nodding Pincushion
Myrica californic - Pacific Wax Myrtle
Olea europaea 'Little Ollie' - Olive
Phormium 'Black Adder' - Black New Zealand Flax
Salvia clevlandii - Cleveland Sage
Salvia leucophylla - Purple Sage
Santolina chamaecyparissus - Lavender Cotton
Sphaeralcea ambigua - Apricot Mallow

4. GRADING AND DRAINAGE PLAN

4.1 Drainage Pattern

The site is relatively flat and drains from the northeast to the southwest. The grading design maintains the natural drainage patterns and maintains consistency with the OCGP Master Drainage plan. The adjacent areas to the northeast are currently under development and based on review of the plans, it is anticipated there will be no off-site storm water run-on.

Tentative Map 17008 shows a proposed stormwater drainage easement to be located along the western boundary of the project site; however, since there is no off-site run-on to this site, the easement dedicated to the City of Irvine will most likely not be required. The conceptual site design reserves this area for drainage improvements.

The OCGP Master Drainage Plan shows that the project drains to the Agua Chinon Channel at the south eastern corner of the project, connection P15 (Parcel 20/21 drain). It is assumed that the construction of the golf course access road will include this storm drain connection. Currently, we will assume this construction will be part of the golf course access road work (by others).

A preliminary hydrology report should be prepared by the design team for the California Environmental Quality Act (CEQA) Environmental Impact Report (EIR) to demonstrate how the impacts to this project will be reduced to less than significant.

4.2 Grading

The conceptual grading plan shows flow patterns and estimated slopes in order to identify approximate design storm discharges for each storm drain facility. The site grading design is anticipated to be close to the existing grades and perpetuate the existing drainage pattern. Due to the design of Cadence Boulevard the entrance to the site is approximately 15 feet above the site; therefore the main entrance roadway will be sloped at no greater than 5 percent in order to connect to existing grades at the site.

A unique challenge for any cemetery development is that it requires a substantial amount of earthwork and excavation to accommodate the burial sites and, in particular, the burial crypts which create a void of 5.3 cubic yards each. The crypt construction will require raising the site in many areas to accommodate this excess fill. Ideally, earthwork would be balanced by phase, though this is not always readily achievable. Therefore, moving of materials to the future phase areas (either export or import) would be used to minimize earthwork costs.

4.3 Low Impact Development (LID)

The conceptual design includes the initial runoff management planning for the development and describes how the impacts of this project will be reduced. The goal of design and construction will be to comply with the requirements of low impact development (LID), which is a design approach to mitigate the impacts of urban and storm water runoff by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to the source of rainfall. LID is a set of best management practices (BMPs) that are designed to effectively remove nutrients, bacteria, and metals while reducing the volume and intensity of storm water flows.

In accordance with the County of Orange/Santa Ana Regional Water Quality Control Board's (RWQCB) guidance, a conceptual Water Quality Management Plan (WQMP) should be prepared by the design team during the environmental review process. The information contained in the WQMP will be discussed in the environmental impact report/environmental impact statement (EIR/EIS) and contribute to the analysis of environmental impacts of the project.

The current project site has been previously developed and has significant impervious surfaces, e.g. roads, building and airport tarmac. The project proposes to remove almost all of previous improvements; therefore, significantly reducing the volume and intensity of the existing storm water flows. Therefore; under the current guidelines for North Orange County Technical Guidance Document (TGD) this project should not have to mitigate for hydromodification impacts.

Phase 1 has the largest area of impervious development, which include the main entry road, maintenance building and yard, administration building, and parking. The recommended strategy is to design the permanent BMP's for the maintenance yard and administration buildings in Phase 1. The columbarium areas will be designed to direct runoff to landscaped areas. There will also be temporary BMP's surrounding the limits of construction where the subsequent phases will remove these temporary BMP's. It is not recommended to design a massive BMP for the design build-out at Phase 1 because new design criteria may be required in the future.

BMP design should first consider infiltration BMP's. According to the Orange County Hydrologic Soil maps, the hydrologic soil group for this project site is Type A and B; therefore, infiltration is anticipated to be good. The design geotechnical report should include infiltration tests in the areas of proposed BMP's to determine the feasibility of infiltration. Special consideration needs to be given to the areas of ground water contamination where infiltration may be restricted.

BMP design should also consider harvest and reuse for irrigation purposes. If this is applied to the roof areas of the building, this sustainable option can be included at a minimal cost. The remainder of the site runoff from the paved and impervious areas should treated by bio-filtration.

5. SITE CHARACTERISTICS

5.1 Site Demolition

There are approximately 77 buildings (both residential and nonresidential) remaining on the site. Many of these remaining buildings and facilities may contain hazardous building materials such as asbestos-containing building materials (ACM) and lead-based paint (LBP).

As part of Phase 1, all existing improvements associated with the former MCAS should be removed from the project site, as required by the Department of the Navy (DON), Federal Aviation Administration, and other agencies with jurisdiction over the site. A limited number of existing structures and infrastructure will remain in place. Following demolition of these improvements, the site would be prepared for implementation of the project.

A flight control tower, Building 372, located at the south-eastern side of the cemetery site, is not occupied. There is discussion on repurposing and occupying this building by local Veterans groups, however, the exact future use of this building is not known. This building may be determined to be demolished. There is additional discussion below regarding this building.

Adjacent to the flight control tower building is an existing Federal Aviation Administration (FAA) easement that occupies 1.7 acres. The City of Irvine staff has previously stated that the FAA building is currently operational and occupied and will not be demolished. Utilities and access to the building and site need to be maintained at all times. Heritage Fields is the organization that is responsible for installing the permanent utilities to the FAA property. In recent discussions with the City of Irvine staff, the City of Irvine and Heritage Fields has not yet determined the locations of the permanent utilities at the time of this report.

A comprehensive soil survey should be conducted during the design of Phase 1. The purpose is to identify as much as possible any impacted soil on the project site. Then additional assessments may be required by the overseeing regulatory agencies, including DTSC, to determine if it is related to a known release or a previously undocumented release. Additionally, a robust Soil Management Plan would be required to ensure that contaminated soil encountered at any stage of the SCVC development is characterized, profiled, and managed appropriately.

Any existing on-site sub-surface utility infrastructure should not be used. All sub-surface utility infrastructures on site should be removed. As a cost savings measure utilities can be abandoned in place; however, this can create a long term maintenance problems if the utilities are able to convey water and create erosion and sink holes. Additionally, future excavations can be problematic when encountering abandoned utilities. Another cost savings measure is to remove all the utilities within each phase of construction, at the beginning of each phase over the 100-year project build out. The costs for the removal of all existing utilities on the entire 125 acres

are included in the Phase 1 cost estimate. These potential cost savings option are not reflected in the estimate.

The review of relevant agreements indicates that Heritage Fields is currently responsible for demolition of runways on the proposed Veterans Cemetery site. That obligation is found in the 2010 Amended and Restated Master Implementation Agreement between the City and Heritage Fields. However, there is no timing specified for the demolition of that hardscape. Further, absent Heritage Fields' consent, the obligation to demolish those runways will terminate upon the City's transfer of the ARDA site to another entity or the State. The cost estimate includes the costs for the demolition of the site hardscape.

The proposed demolition will result in storm water flows that have significantly more sediment and debris. To ensure water quality, a delisting basin is recommended to be constructed at Phase 1. Appropriate erosion and sediment control measures shall be maintained at all times.

5.2 Reuse of Onsite Materials

The project site is relatively flat with a significant amount of asphalt, concrete, foundations, and structures that will be demolished. While the hazardous materials assessment concludes the inability to reuse any subsurface foundations, the on-surface asphalt and concrete can be crushed and reused for berms, subject to the hazardous materials assessment provided in this report. The tarmac onsite that will be removed is anticipated to be a minimum of 18-inches thick.

5.3 Analysis of Infrastructure

Proposed on-site utilities will connect to the utilities in Cadence Boulevard. These utilities include a 10-inch water line, a 12-inch sewer, and a 12-inch recycled water, which are considered adequate to serve the needs of the cemetery.

Proposed onsite utilities will include a new potable water meter, new sewer point of connection, and a new reclaimed/irrigation water meter.

Drainage and Storm Drain

There is a 66-inch storm drain pipe on Cadence Boulevard; however, due to the southwesterly flow of drainage onsite, there will be no need to tie into it the storm drain at Cadence. Instead, the design in Phase 1 calls for a de-silting basin at the southwest corner of the site. The storm water flows ultimately discharge into the Agua Chinon corridor, and it is anticipated that construction of the golf course access road will include the construction of the culvert and storm drain outfall.

Water

The Irvine Ranch Water District (IRWD) is the jurisdictional agency responsible for plan approval and water service to the project area. There is a 10-inch water line on Cadence Boulevard that Phase 1 of this project will feed off. A new potable water meter and lateral will be part of Phase 1 construction.

Sanitary Sewer

The Irvine Ranch Water District (IRWD) is the jurisdictional agency responsible for plan approval and sewer service to the project area. There is a 12-inch sewer line on Cadence Boulevard that Phase 1 of this project will connect to. A new sewer lateral from Cadence Boulevard to the site will be part of Phase 1 construction.

Electrical, Gas and Communications

Southern California Edison (SCE) serves the project via two primary substations. The Southern California Gas Company is the gas provider for the area. AT&T is the communications provider for the area. All services are located in Cadence Boulevard and anticipated to be available for this project.

Recycled Water

There is a 12-inch recycled water main in Cadence Boulevard for irrigation. A new water meter and lateral from Cadence Boulevard to the site will be part of Phase 1 construction. Recycled Water is a resource not affected by drought conditions.

Landscape Lighting

Due to the operational hours of the cemetery, exterior landscape lighting is limited. Security lighting for staff to safely exit the administration and maintenance buildings, and fixtures to illuminate the adjacent parking lot, are necessary. Lighting for other features throughout the site including the committal shelter, assembly center, cemetery entrance and decorative accent lighting are optional.

Pollution Control

The site design includes a trash enclosure and the local trash service will take refuse off the site.

Security

The perimeter of the cemetery is bordered by an 8 foot split face concrete block screening wall along Cadence Boulevard, Pusan Street, and Irvine Boulevard and an 8 foot steel fence along the future golf course, golf course access road, the storm water easement, the Agua Chinon corridor, and Irvine Boulevard. The cemetery visitor entrances will be controlled by a manual swing gate and lock. The maintenance entrance will be controlled by a manual rolling gate and lock. Options for automatic gates are available.

5.5 Utilities to FAA Facility

FAA occupies a 1.7 acre easement adjacent to the flight control tower. This building will not be demolished and will remain in place and operational.

There are temporary utilities serving the FAA facility, and the Heritage Field/Five Points developer will eventually install permanent utility infrastructure to the site. The locations of these utilities are unknown at this time, and future design changes to this concept may be required when the locations of these utilities are known.

5.6 Control Tower – Building 372

The scope of work for Phase 1 includes the demolition of the control tower; however, there has been significant discussion with regards to the future use of the control tower building. There are several options available for the future use of the building:

1. Demolish the entire building and develop for cemetery purposes.
2. Renovate the air-control tower, demolish the remainder of the building, and build a new smaller facility.
3. Renovate and repurpose the entire building.

The work required for renovation and repurpose will be costly and will include seismic structural retrofit, roof replacement, entire new HVAC installation, and entire new electrical system installation. The existing building is probably much larger than the proposed uses.

5.7 Offsite Utility Improvements

All utility points of connection are on Cadence Boulevard near the maintenance area entrance. It is anticipated that these utilities have sufficient capacity for our project and that no offsite utility upgrades are required.

5.8 Hazards and Hazardous Materials

In discussions with the City of Irvine staff, when the site is transferred to the State, the State will be responsible for the environmental remediation if contaminated soil is discovered during excavation.

There are two areas identified on the project site that have various institutional controls. As a result, future development of these areas may be somewhat restricted, depending on the proposed

uses and activities. Some of these restrictions may be lifted as remediation actions are deemed complete. Attachment 1 describes these areas in more detail and a summary is presented below:

FOST 7 area contains contaminated ground water and is located on and around the air control tower building 372 and the FAA facility. It is assumed that surface improvements are and will be allowed; therefore, there are only roadway and columbarium niches proposed. Additionally, the development of these areas are proposed to be completed in Phases 7 and 10.

FOST 8 area has significant instructional controls/restrictions. This is area is located at the eastern portion of the site adjacent to the Navy property. It is assumed that no development will be allowed. Additionally, there is a buffer area of restrictions that is anticipated to be removed in the future and development should be allowed to occur. Burials within this area will not be developed until Phase 10 of construction.

6. ROADWAY SYSTEMS

The 125 acre site cemetery site is bounded by Cadence Boulevard to the northwest, Pusan Street to the north, Irvine Boulevard to the east, a habitat restoration area to the south and southeast, and a golf course to the west. A golf course access road easement anticipated within the site at the southern boundary. Cadence Boulevard transects the cemetery site. For the purpose of design, Cadence Boulevard and Pusan Street (which are currently under construction) are assumed to be completed and fully functional roads at the commencement of Phase 1 construction. At the intersection of Pusan Street and Cadence Boulevard is the proposed primary entrance to the cemetery. A maintenance vehicle driveway will be constructed north of the primary entrance on Cadence Boulevard. A secondary entrance will also be constructed north-east of the primary entrance, off of Pusan Street for access to remainder of the site.

6.1 Phase 1 Roadway Improvements

The main entry from the traffic loop at Cadence Boulevard and Pusan Street is a two lane per direction roadway with a center median. The entry roadway will lead to a traffic loop, with the right side leading to a one way per direction roadway that includes a two lane funeral cortege assembly area which can accommodate up to 30 vehicles. This road will lead to the columbaria and memorial walk, administration building, and the committal service shelter. The roadway loops down and leads to the Assembly Area, and finally loops back to the main entry/exit. At full build-out, it will serve as part of the main road that loops through the cemetery.

The visitor/employee parking area for the administration and maintenance buildings includes 22 standard parking spaces and 3 accessible parking spaces. The parking area also provides access to the maintenance yard.

The maintenance yard has a non-public secondary access on Cadence Boulevard, which will normally be utilized for large delivery vehicles only. The secondary access also serves as an emergency vehicle access for the site.

The driveway entrance from Pusan Street for access to the eastern portion of the site should be constructed in Phase 1.

6.2 Golf Course Access Road Easement

In coordination with the City of Irvine, a separate access road to the golf course at the westerly side of the site will need to be provided. The construction of this road is not anticipated to be part of this project, and assumed to be constructed by others. The specifics of the road should be identified in the deed transfer and is not part of this Concept Plan. The plans reflect a golf course access road easement at the southern boundary of the site.

6.3 Phases 2-10 Onsite Roadway Improvements

Roadway construction is accompanied with each burial build-out.

6.4 Offsite Improvements

Pusan Street and Cadence Boulevard are fully developed streets from right-of-way to right-of-way. Utilities in these streets are anticipated to have the capacity for the full project build out; therefore no offsite utility improvements or street widening are anticipated to be required for the development of the cemetery project site.

7. GEOTECHNICAL SOIL SURVEY FOR BURIALS

The planned development is feasible from a geotechnical engineering point of view, provided the geotechnical recommendations presented in the report are followed. The on-site soils from the existing ground level to about 15 feet below grade predominantly consist of loose silty sand and clayey sand.

A preliminary geotechnical report was prepared and is provided as Attachment 3.

8. ENVIRONMENTAL CONSTRAINTS

Existing environmental documentations associated with the project site has been reviewed as well as site visits conducted in order to identify environmental constraints and mitigations. The full study is found in Attachment 1: "Southern California Veterans Cemetery Environmental Constraints Study" prepared by Dudek. The tables below identify the summary of environmental constraints:

Phase 1 Summary of Environmental Constraints

Summary of Potential environmental Constraints	***Impact Analysis/Mitigation Strategy***
Land Use and Planning	
Consistency with the existing zoning	Land Use Consistency Assessment
Aesthetics	
Consistency with visual character and/or quality of the project site and surrounding area	Visual Simulations
	Off-site frontage improvements such as screening walls, landscape setbacks, pedestrian sidewalks, curb/gutter and storm drains, and potentially half-width roadway buildout (including landscaped median) within the adjacent right-of-way
Air Quality and Greenhouse Gas Emissions	
Proximity of off-site sensitive receptors to on-site construction activities, equipment, and related construction emissions	Air Quality and Greenhouse Gas Emissions Assessment
	Construction Health Risk Assessment
	Tier 4 Construction Equipment
Biological Resources	
Potential suitable habitat for sensitive wildlife and plant species, nesting birds, and roosting bat species	Biological Resources Assessment
	Preconstruction Surveys
	Soil Salvage and Monitoring Plan (if necessary)
	Burrowing Owl Exclusion Plan (if necessary)
	NCC In-Lieu Mitigation Fees (if applicable)
Cultural Resources	
Potential for cultural resources, including historical resources, to occur on site	Cultural Resources Assessment
	Archaeological/Native American/Paleontological monitoring during ground disturbing construction activities.
Recently enacted AB 52 requirements	AB Consultation Coordination
Geology and Soils	
The project would likely be exposed to strong ground shaking over the life of the project	Adherence to all applicable building standards, including California Building Code
The project site is likely underlain by expansive soils	Adherence to all applicable building standards, including California Building Code

Hazards and Hazardous Materials	
Presence of contaminated superficial and subsurface soils on the project site	Soil Survey and Soil Management Plan
	Removal of contaminated soils from the project site
Existing structures may contain hazardous building materials such as ACM and LBP	Abatement of ACM and LBP, and removal of universal wastes from the project site
11-acre former landfill site (IRP Site 3) located within the approximately 20-acre LIFCO/FOST 8 area found on the project site	Adherence to the various use restrictions outlined in the FOST 8 report. Consult with oversight agencies.
Contaminated groundwater underlying Carve-Out Area/FOST 7 area located on the project site	Compliance with the various use restrictions outlined in the FOST 7 report. Consult with oversight agencies.
Hydrology and Water Quality	
General lack of engineered storm drain system under the existing conditions	Drainage Study
Contaminated groundwater underlying Carve-Out Area/FOST 7 area located on the project site	Preliminary WQMP
Noise	
Proximity of off-site sensitive receptors to on-site construction activities, equipment, and related construction noise	Noise Study
	Installation of temporary sound wall
Traffic and Circulation	
Project-related traffic could potential impact the performance of the local and regional circulation system	Traffic Study
	The project may be required to pay its fair share toward the list of NITM improvements included within the established NITM Program.
Project driveway/entrance limited to unsignalized facility	In lieu of a signalized intersection, any project driveway off Irvine Boulevard cannot be signalized, and alternative design features would need to be implemented at any vehicular access point off Irvine Boulevard to facilitate site ingress and egress (e.g., deceleration/acceleration lanes; right-in, right-out geometry).
Utilities and Service Systems	
Construction debris diversion requirements	At least 75% of all concrete and asphalt construction and demolition debris and 50% of all other construction and demolition debris shall be recycled. Preparation of a Waste Management Plan.

Excessive exterior water use	In lieu of traditional turf, the project design should predominantly utilize a variety of drought-tolerant species. Should turf be deemed necessary in certain area on the project site, water-efficient varieties should be installed.
	Water Supply Due Diligence Study

9. PRELIMINARY HAZARDOUS MATERIALS SITE ASSESSMENT

An assessment of the hazardous materials found on site and a contaminated soil evaluation has been conducted by Avocet Environmental, Inc. The full report is found in Attachment 2 "Summary Environmental Evaluation." The report concludes that MCAS El Toro is a very complex, albeit mature, site with numerous documented impacts and very probably other impacts that won't come to light until near-surface soil is disturbed during redevelopment. The proposed SCVC is located near the center of MCAS El Toro and very likely also encompasses multiple areas of impacted soil. As previously noted, this summary evaluation is based on the relevant FOST documents, which provide generally limited information. As such, Avocet adopted a conservative approach in identifying PECs and DRAs but makes no warranty regarding the completeness of the information presented in the FOST documents.

Demolition, redevelopment grading, foundation excavation, utility installation, and excavation for in-ground cremains and crypts will all involve soil disturbance, during which impacted soil could be encountered. In broad terms, contaminated soil encountered during demolition, redevelopment grading, foundation excavation, and utility installation could be addressed "up front" prior to the SCVC becoming operational. Excavation for in-ground cremains and crypts, however, likely would be a recurring activity that could go on for decades. In Avocet's opinion, it would be impractical to address contaminated soil disturbed by in-ground cremains and crypt excavation on a case-by-case basis. The alternative would be to over-excavate and recompact the entire SCVC to a depth of, say, 8 to 10 feet below ground surface prior to it becoming operational and address contaminated soil, as/if encountered, at that time. Of course, there are significant cost considerations with such an approach.

A comprehensive soil survey should be conducted during the design of Phase 1 to identify any additional contaminated soil not previously encountered. If impacted soil is encountered, additional assessment may be required by overseeing regulatory agencies to determine if it is related to a known release or a previously undocumented release. The estimate does not include the cost to abate contaminated soil if discovered as a result of the soil survey, nor does the estimate include the cost for involvement of overseeing regulatory agencies. Based on the findings of the survey, a robust soil management plan should be developed to ensure that contaminated soil encountered at any stage of the SCVE development is characterized, profiled, and managed appropriately.

10. PHASING PLAN

Phase One

Phase 1 - Part 1- Site Preparation and Demolition (125 acres): This part includes preparation of the project site for construction and includes the demolition of the buildings, roads, air field tarmac, and existing underground utilities.

Phase 1 - Part 2 – New Construction (28.3 acres):

Part 2A – New Construction of the cemetery which encompasses approximately 12.5 acres of the property. It includes 1,750 in-ground cremain burials, 3,250 columbarium niches, the administration / maintenance complex, ceremonial entrance, cortege assembly area, committal service shelter, flag / assembly area, memorial walkway, and supporting roads.

Part2B – New Construction of the perimeter berms, walls, fences, and associated landscaping. This portion includes the construction of the retention / detention basins and drainage swale along the south western portion of the site. This area is approximately 15.9 acres.

Phases Two through Ten

Project phasing will follow a sequential pattern, radiating off the central Administration Building. Phases closest to the Administration Building will be developed first, where the final phases across Cadence Boulevard will be built. The areas having more restrictions related to hazardous waste contamination associated with the operation of the former MCAS will also be developed last. Phasing establishes an even development of a diverse type of burial options. Roadway construction is accompanied with each burial build-out. Phasing for this project is estimated to be a 100-year build-out. At full build-out, the SCVC will provide 60,066 standard in-ground crypts, 645 oversize In-ground crypts, 55,614 In-ground cremains, and 94,800 columbarium niches.

Phase 2-10 Burial Counts

Phase	Columbarium niches	In-Ground Cremain	3x8 Crypt (Standard)	Oversize Crypt
Phase 2	19,470	6,279	6,370	64
Phase 3	40,160	9,960	0	0
Phase 4	0	0	6,751	75
Phase 5	0	37,625	0	0
Phase 6	0	0	7,369	99
Phase 7	0	0	11,878	121
Phase 8	0	0	7,811	81
Phase 9	0	0	9,778	102
Phase 10	31,920	0	10,109	103

11. ARCHITECTURE

11.1 Scope

This project includes four building structures; Administrative building and Public building, Maintenance building, and Committal Service Shelter. The Administrative and Public buildings are joined together by a connecting breezeway.

The scope of this Concept Plan is to provide a preliminary design and program for user spaces based on the guidelines provided by the NCA Facilities Design Guide document for a large-size cemetery. The proposed new Maintenance, Administration, and Public buildings are Type V-B wood construction, fully sprinklered with concrete-slab-on-grade foundation. The committal shelter is concrete masonry block, non-sprinklered, with concrete-slab-on-grade. The Maintenance and Administration buildings have been arranged to accommodate future expansion of vehicle storage and offices. Refer to the architectural plans and building elevations.

Code Analysis

The proposed structures should be designed according to the most current California Building Code (CBC) and conform to the Title 24 ADA guidelines for barrier free access. This includes an accessible path of travel from the building(s) to accessible site features including but not limited to, sidewalks, building to building access, restrooms / locker rooms / shower, accessible parking stall(s), crosswalks and ramps as required.

The following are applicable codes that should be used:

- 2013 Building Standards Administrative Code, Part 1, Title 24 C.C.R.
- 2013 California Building Code (CBC), Part 2, Title 24 C.C.R.
- 2014 California Electrical Code (CEC), Part 3, Title 24 C.C.R.
- 2013 California Mechanical Code (CMC), Part 4, Title 24 C.C.R.
- 2013 California Plumbing Code (CPC), Part 5, Title 24 C.C.R.
- 2013 California Energy Code, Part 6, Title 24 C.C.R.
- 2013 California Fire Code, Part 9, Title 24 C.C.R.
- 2013 California Referenced Standards, Part 12, Title 24 C.C.R.
- 2013 Title 19 C.C.R., Public Safety, State Fire Marshal Regulations.

Code Summary									
General Building Summary									
Building Name	Occupancy Group (Ch. 3)	Construction Type(Table 601)	Sprinkler Type	Height		Stories		Areas	
				Allowable (Table 503)	Actual	Allowable (Table 503)	Actual	Allowable Per Building Area Modification (Table 530)	Actual (SF)
Administration / Visitors	B	V-B	NFPA 13	40 FT	19'-8"	1	1	9000 SF	1633 SF
Breezeway	B	V-B	NFPA 13	40 FT	29'-0"	1	1	9000 SF	402 SF
Committal Shelter	A-3	V-B	None	40 FT	14'-6"	1	1	6000 SF	1019 SF
Maintenance	S-1	V-B	NFPA 13	40 FT	31'-8"	1	1	9000 SF	3152 SF

Additional code requirements are listed in Appendix A.

Refer to Appendix E for Plumbing fixture count and Appendix F for Furniture Schedule.

11.2 Functional Analysis of Building Program

Refer to Appendix C for the VCGP "Building Space Program," and Appendix D for the "Building Space Code Analysis.

Administrative Building

Administrative building services the staff and public. Areas generally consist of offices, work areas, break room, conference room and a public lobby / waiting area including a family restroom.

Public Information Building

Public Information Building services the staff and public. Areas generally consist of public and staff restrooms, grave locator kiosk, entry vestibule, janitor closet, mechanical room and electrical room.

Breezeway

The breezeway acts as a sheltered connector to the Administrative and public building and creates a focal point to the buildings.

Maintenance Building

The Maintenance building services staff and honor guard. No public access. Areas generally consist of offices, locker rooms, restrooms, break rooms, parts and tool storage, service bay, vehicle and equipment storage, wash bay and flammable storage.

Committal Service Shelter

The Committal Service Shelter to service the staff and public. Area consists of a covered gathering space opened to the exterior and a storage support space to house support equipment for the shelter.

11.3 Materials Analysis and Character Defining Features

Exterior finishes and architectural design should be consistent with the local architecture of the region. The architectural style that is prevalent in the area is undoubtedly California Tuscan. This was determined by reviewing details and materials from historic structures like the ones within the campus of the University of Southern California, as well as existing residences and housing tracts, important commercial buildings and developments being planned around the proposed cemetery.

Tuscan architecture is a timeless and rustic style that fits quite well with City of Irvine's dry seaside climate. This architectural type also reflects a calming but yet elegant style. The exterior materials used are a combination of smooth cement plaster, wood / wrought iron detailing and clay barrel tile roof system, as well as the arched recessed windows and doors, and the low-pitched, tiled roof. The exterior materials will be a combination of smooth cement plaster, walls covered with vines, stone walls with subtle earth tones, wood / wrought iron detailing and clay barrel tile roof system.

11.4 Interior Finishes

Interior finishes vary from building to building depending on the user function. Usage of warm colors that represent subtle earth tones is best recommended for this style.

The proposed Administration building interior finishes mainly consist of carpet and linoleum flooring, painted gypsum board walls, acoustical ceilings / gypsum board soffits, and operable dual pane windows.

The proposed Public building interior finishes mainly consist of ceramic tile and sealed concrete flooring, painted gypsum board walls, full height ceramic tile (restrooms) and painted gypsum board ceilings.

The proposed Maintenance building interior finishes mainly consist of carpet and linoleum flooring, painted gypsum board walls, acoustical ceilings / gypsum board soffit where appropriate, and operable dual pane windows at the office and honor guard locations. The vehicle service areas and workshop have concrete sealed flooring, painted gypsum board walls at interior locations, cement plaster at exterior locations, and ceilings opened to structure above.

The Committal Service Shelter has exterior finish materials consisting of cement plaster walls, sealed concrete slab and painted cement plaster ceiling with exposed beams.

11.5 Sustainability

Sustainability is an important feature of the design. High efficiency mechanical equipment will be provided as well as low usage high-efficiency plumbing fixtures. Finishes will be selected to contain low VOC’s, rapidly renewable materials, and recycled content.

12. MECHANICAL SYSTEMS

12.1 General

The SCVC Phase 1 construction project compromises of 3 buildings:

1. Administration
2. Maintenance Building
3. Committal Service Shelter

These buildings are described in more detail in Section 12: Architecture.

12.2 Design Criteria

External Design Conditions

Location:	Irvine, Orange County, California
Latitude:	33.70°
Elevation:	50’ Above Sea Level
Climate zone:	8
Summer Design:	88° dry bulb; 68° wet bulb
Winter Design:	33° F
Mean Daily Range:	27 ° F
Geographic Location:	Approximately 11 miles inland from the Pacific Ocean

Internal Air Temperature

Offices and support areas:

Winter:	70° F
Summer:	75° F
Electrical rooms:	Maintain maximum 10° F above ambient.
Mechanical rooms:	Maintain maximum 10° F above ambient.

Data obtained from Title 24 Appendix C California Design Location Data, outdoor design conditions at frequency level of 0.5 percent for summer Dry blub and Wet Bulb temperatures.

Ventilation requirements

Offices:	15 cfm per person
Toilets:	10 air changes per hour

Internal Noise Criteria

The following noise criteria from mechanical services will be achieved:

Offices:	NC35
Toilets and Corridors:	NC40

Insulation Requirements

Insulation thickness and R-value shall exceed the requirements of Title 24 by at least 20 percent.

13. COST ESTIMATE SUMMARY

Phase 1:

An estimate of probable costs for the project has been completed by Lenax Construction Services Appendix G. The estimate includes a thorough break-down of the major components of the Phase 1 costs. The majority of the Phase 1 costs come from the demolition and environment remediation.

Phases 2-10:

The construction costs to build out the entire cemetery were not completed as part of this report.

Summary Estimate of Probable Cost – Phase 1

BUILIDNGS	
Administration Building	$848,400
Maintenance Building	$1,252,600
Committal Shelter	$182,400
CEMETERY AND ROADWAYS	
Site Clearing	$184,300
Hazardous Waste Remediation	$3,446,200
Site Demolition & Clearing (12.5 ACRES)	$2,484,700
Site Demolition & Clearing (Remaining site 112.5 Acres)	$6,205,000
Building Demolition & Disposal	$18,121,200
Site Improvements	$5,445,000
Site Development	$14,518,800
Site Utilities	$1,672,900
Escalation	$7,746,600
Construction Contingency at 5%	$3,105,400
PHASE 1 CONSTRUCTION COST SUBTOTAL (Note 1)	**$65,213,500**
SOFT COST	
A/E, Inspection, Special Consultants, Materials Testing Project/Construction Management, Agency Retained, CEQA (EIR/EIS), Mitigation/Surveys, Other Fees	$12,158,500
TOTAL PROJECT COST	**$77,372,000**

Note 1: Construction costs includes Contractor mark-up.

Appendices A-F

MEANS OF EGRESS (PER SECTION 1015.1):	ONE EXIT IS REQUIRED BASED ON OCCUPANT LOAD CALCULATION OF LESS THAN 50 OCCUPANTS. REFER TO TABLE 1015.1 - SPACES WITH ONE EXIT OR ACCESS DOORWAY
TWO EXITS OR EXIT ACCESS DOORWAYS (PER SECTION 10152.1):	WHERE TWO EXITS OR EXIT ACCESS DOORWAYS ARE REQUIRED FROM ANY PORTION OF THE EXIT ACCESS, THE EXIT DOORS OR EXIT ACCESS DOORWAYS SHALL BE PLACED A DISTANCE APART EQUAL TO NOT LESS THAN ONE-HALF OF THE LENGTH OF THE MAXIMUM OVERALL DIAGONAL DIMENSION OF THE BUILDING OR AREA TO BE SERVED MEASURED IN A STRAIGHT LINE BETWEEN EXIT DOORS OR EXIT ACCESS DOORWAYS.
MINIMUM EXITING WIDTH (PER SECTION 1005.1):	
DOORS:	02" PER OCCUPANT
GLASS AND GLAZING: CHAPTER 24 PER SECTION 2406	PROVIDE SAFETY GLASS IN DOORS AND IN PANELS ADJACENT TO DOORS WITHIN A 24" ARC OF EITHER VERTICAL DOOR EDGE WHEN CLOSED, AND WHERE BOTTOM EDGE IS LESS THAN 5 FT ABOVE WALKING SURFACE. 1. PROVIDE SAFETY GLASS IN FIXED OR OPERABLE PANELS WHERE INDIVIDUAL EXPOSED PANEL IS GREATER THAN 9 SF, BOTTOM EDGE IS LESS THAN 18" ABOVE FLOOR. 2. TOP EDGE IS GREATER THAN 36" ABOVE FLOOR, AND PANEL IS WITHIN 36" HORIZONTALLY OF A
ROOF SYSTEM FIRE CLASSIFICATION:	ROOF CLASS REQUIRED: CLASS C PER TABLE 1505.1. ROOF CLASS PROVIDED: CLASS A
DOOR HARDWARE (PER SECTION 1133B.2.5.2):	HAND-ACTIVATED DOOR OPENING HARDWARE, HANDLES, PULLS, LATCHES, LOCKS AND OTHER OPERATING DEVICES ON ACCESSIBLE DOORS SHALL HAVE A SHAPE THAT IS EASY TO GRASP WITH ONE HAND AND DOES NOT REQUIRE TIGHT GRASPING, TIGHT PINCHING OR TWISTING OF THE WRIST TO OPERATE. HARDWARE SHALL BE CENTERED BETWEEN 30 INCHES AND 44 INCHES ABOVE THE FLOOR. LATCHING AND LICKING DOORS THAT ARE HAND-ACTIVATED AND WHICH ARE IN A PATH-OF-TRAVEL SHALL BE OPERABLE BY LEVER-TYPE HARDWARE, PANIC BARS, PUSH-PULL ACTIVATING BARS, U-SHAPED HANDLES OR OTHER HARDWARE DESIGNED TO PROVIDE PASSAGE. LOCKED EXIT DOORS

FIRE PROTECTION NOTES
PORTABLE FIRE EXTINGUISHERS:

1. PORTABLE FIRE EXTINGUISHERS:
   A. PORTABLE FIRE EXTINGUISHERS SHALL BE PROVIDED WITH A MINIMUM RATING AND CAPACITY OF:
      1. A-3 OCCUPANCY: 10LB, 2A:20B:C
      2. ELECTRICAL AND EQUIPMENT ROOMS: IOLB, SA:20B:C.
      3. VERIFY REQUIREMENTS FOR ANY SPECIAL OCCUPANCY ROOMS WITH LOCAL FIRE DEPARTMENTS.
   B. PORTABLE FIRE EXTINGUISHERS SHALL BE LOCATED TO MAINTAIN A MINIMUM OF ONE EXTINGUISHER PER 3,000 S.F. (OR ANY PORTION THEREOF) AND A MAXIMUM OF 75 FEET TRAVEL DISTANCE TO ANY EXTINGUISHER, VERIFY REQUIRED DISTANCE WITH FIRE DEPARTMENT INSPECTIONS DIVISION PRIOR TO INSTALLATION.
   C. PORTABLE FIRE EXTINGUISHERS SHALL BE MOUNTED IN CABINETS. THE TOP OF THE EXTINGUISHER SHALL BE MOUNTED BETWEEN 36" AND 60" A.F.F.
   D. WHERE EXTINGUISHERS ARE LOCATED ALONG AISLES WITHIN EQUIPMENT OR STORAGE AREAS PROVIDE A VISIBLE MARKING ON THE COLUMN OR WALL TO INDICATE THE EXTINGUISHER LOCATION.
2. FIRE DEPARTMENT GENERAL REQUIREMENTS: A. CONTRACTOR SHALL CONFIRM THAT KNOX BOXES ARE LOCATED ADJACENT TO BUILDING ACCESS DOOR TO PROVIDE ACCESS TO FIRE PROTECTION SYSTEM EQUIPMENT.
3. FIRE EXTINGUISHERS TO COMPLY W/ TITLE 19. FIRE EXTINGUISHERS SHALL HAVE A SERVICE TAG AFFIXED TO THEM WHICH PROVIDES PROOF THEY HAVE BEEN INSPECTED AND SERVICED BY A LICENSED FIRE EXTINGUISHER INSPECTOR. (ALL LOCATIONS ARE SUBJECT TO CHANGE AT FIRE INSPECTOR'S DISCRETION),

Occupancy Load Factors	
(Per CBC 2013 Table 1004.1.2)	
Accessory Storage Areas, Mechanical Equipment Room	300 Gross/Occupant
Assembly Without Fixed Seats - Unconcentrated (tables & Chairs)	15 net/Occupant
Business Areas	100 Gross/Occupant
Industrial Areas	100 Gross/Occupant
Parking Garages	200 Gross/Occupant

VCGP Building Space Program			
	FINAL NET SF	**VA CRITERIA**	**VARIANCE**
Cemetery Type			
Annual Burials			
Employees			
Space			
Administrative/Visitors			
Entry Vestibule	110	150	**-40**
Lobby (Breezeway?)	304	215	**89**
Janitor/Kiosk	28	25	**3**
Men's Toilet - Public	134	115	**19**
Women's Toilet - Public	129	115	**14**
Unisex toilet	0	0	**0**
Family toilet	51	52	-1
Waiting Room (4-6 persons)	153	155	**-2**
Reception/Cemetery Representative	150	150	**0**
Closet	14	10	**4**
Operations (files, office equipment)	150	150	**0**
Director's office	150	150	**0**
Conference Room	162	165	**-3**
Mechanical/Electric	98	95	**3**
Subtotal	**1,633**	**1,547**	**86**
Maintenance/Operations			
Foreman's Office	123	125	**-2**
Honor Guard (kitchenette, lockers & toilet)	274	260	**14**
Boots & Lockers	120	110	**10**
Closets (IT and Coat)	50	10	**40**
Shower/Toilet (Toilet Only)	85	75	**10**
Wash Bay	537	540	**-3**
Service Bay	607	600	**7**
Parts & Tool Storage	147	150	**-3**
Air Compressor	48	50	**-2**
Flammable Storage cabinet	24	25	**-1**
Vehicle and Equipment Storage	1105	1,100	**5**
Mechanical Room	32	0	**32**
Subtotal	**3,152**	**3,045**	**107**
Committal Service Shelter			
Covered Area	894	900	**-6**
Storage Room	125	125	0
Subtotal	**1019**	**1,025**	**-6**
General*			
Break Rooms (admin + Maint)	171	165	**6**
Janitor Closet	39	40	**-1**
Halls (Admin + Maint)	192	90	**102**
Subtotal	**402**	**295**	**107**
TOTALS:	**6,206**	**5,912**	**294**

Notes:

Building program is driven by the annual workload and cemetery staffing and is divided into 4 categories; Rural, Small, Medium and Large.

The area guidelines listed above are based on Net Square Footage and represent the maximum allowance by use space. Maximum allowable Gross Square Footage may be 118% of net.

* If the Administration and Maintenance Buildings are combined there will be one space shared space. If the buildings are seperated there will be one space for each.

VCGP Building Space Code Analysis			
	AREA (Net SF)	**Occ. Factor**	**Occ. Load**
Cemetery Type			
Annual Burials			
Employees			
Space Name			
Administrative/Visitors			
Entry Vestibule	110	100	**2**
Breezeway	304	100	**4**
Janitor/Kiosk	28	300	**1**
Men's Toilet - Public	134	N/A	**0**
Women's Toilet - Public	129	N/A	**0**
Unisex toilet	0	N/A	**0**
Family toilet	51	N/A	0
Waiting Room (4-6 persons)	153	15	**11**
Reception/Cemetery Representative	150	100	**2**
Closet	14	N/A	**0**
Operations (files, office equipment)	150	100	**2**
Break Room	81	100	**1**
Director's office	150	100	**2**
Hallway	108	N/A	**0**
Conference Room	162	15	**11**
Mechanical/Electric	98	300	**1**
Subtotal	**1,822**		**37**
Maintenance/Operations			
Foreman's Office	123	100	**2**
Honor Guard (kitchenette, lockers & toilet)	274	15	**19**
Boots & Lockers	120	100	**2**
Break Room	91	100	**1**
Closets (IT and Coat)	50	300	**1**
Shower/Toilet (Toilet Only)	85	N/A	**0**
Hall Way	115	N/A	**0**
Wash Bay	537	300	**2**
Service Bay	607	300	**3**
Parts & Tool Storage	147	300	**1**
Janitor Closet	39	300	**1**
Air Compressor	48	300	**1**
Flammable Storage cabinet	24	300	**1**
Vehicle and Equipment Storage	1105	200	**6**
Mechanical Room	32	300	**1**
Subtotal	**3,397**		**41**
Committal Service Shelter			
Covered Area	894	15	**60**
Storage Room	125	300	1
Subtotal	**1019**		**61**
TOTALS:	**6,238**		

Public Fixture Count				
(2013 CPC Table 422.1)				
Occupant Load	Based on Group B - Office or Public Buildings (Area Accessible to the Public)			
	Based on Group S-1			
	Fixture	Total Required	Total Provided	Remarks
Administration/Vistors Building (Group B & A)				
Total Occupant Load per CBC Table A: 16				
Service Sink & Laundry Tray	Mop Sink	1	1	Janitor mop sink in Room P-102
Drinking Fountain 1 per 150	Hi/Lo Fountain	1	1	
Restroom Fixtures: Male 8 Occupants				
Water Closets 1 per 1-50	WC	1	1	
Urinals 1 per 1-100	Urinal	1	1	
Lavatories 1 per 1-75	LAV	1	1	
Restroom Fixtures: Female 8 Occupants				
Water Closets 1 per 1-15	WC	2**	2	
Lavatories 1 per 1-50	LAV	1	1	
Unisex Restroom				Additional restroom provided
	WC	0	1	
	LAV	0	1	
Maintenance Building (Group S, B & A)				
Total Occupant Load per CBC Table A: 14				
Restroom Fixtures: Male 7 Occupants	WC			
Water Closets 1 per 1-50	WC	1	1	

Urinals 1 per 1-100**	Urinal	0	0	
Lavatories 1 per 1-75	LAV	1	1	
Restroom Fixtures: Female 8 Occupants				
Water Closets 1 per 1-15	WC	1	1	
Lavatories 1 per 1-50	LAV	1	1	
Drinking Fountain*				No public access, substituted with indoor water stations

* Section 415.2 - Where food is consumed indoors, water stations shall be permitted to be substituted for drinking fountains. Drinking fountain shall not be required for an occupant load of 30 or less.

** The total number of required water closets for females shall be not less than the total number of required water closets and urinals for male, this requirement shall not apply when single occupancy toilet facilities are provided for each sex in an A or E occupancy with an occupant load of less than 50.
Either:

a. The required urinal shall be permitted to be omitted or
b. If installed, the urinal shall not require a second water closet to be provided for the female.

Furniture Schedule					
Administration & Public Building			**Maintenance Building**		
Room	**Count**	**Description**	**Room**	**Count**	**Description**
A-100 Waiting Room			M-101 Break Room		
	2	Single Lounge Chair		1	Table with Seating
	1	4 Seat Bench		1	Microwave
	1	3 Seat Bench			
	2	End Table	M-103 Foremans Office		
				1	Printer
A-102 Conference Room				1	Workstation Computer
	1	Tackboard		1	Workstation Chair
	1	Conference Table with Seating		1	Lateral 4 Drawer File Cabinet
	1	Storage Shelfing System			
			M-104 Honor Guard Kitchen		
A-103 Operations				1	Table with Seating
	1	Copy Machine		1	Microwave
	1	Fax Machine		1	Refrigerator
	1	Printer			
	2	Workstation Computer	M-105 Honor Guard Lockers		
	2	Workstation Chair		10	Metal Lockers
	1	Base File Cabinet		1	Locker Room Bench Seating
	1	Storage Shelfing System			
	1	Wall Mounted Drawing Storage	M-107 Boots & Lockers		
				11	Metal Lockers
A-104 Break Room				1	Locker Room Bench Seating
	1	Table with Chairs			
	1	Microwave	M-110 Parts & Tool Storage		
	1	Refrigerator		1	Storage Shelfing System
A-105 Receptionist					
	3	Lateral 4 Drawer File Cabinet			
	2	Workstation Computer			
	2	Workstation Chair			
A-106 Directors Office					
	1	Printer			
	1	Workstation Computer			
	1	Workstation Chair			
	1	Storage Shelfing System			
	1	Lateral 4 Drawer File Cabinet			
	1	Credenza Workstation/Storage			
	1	Fire-Proof Safe			
	3	Meeting Chairs			

Appendix G

Lenax Construction Services Inc.

prepared for:

OWEN Group

Independent Construction Cost Estimate

CONCEPT PHASE: ROM ESTIMATE

State of California Department of General Services Project Management and Development Branch

Southern California Veterans Cemetery

Estimating
Cost Analysis
CPM Scheduling
Claims Management
Construction Progress

June 10, 2016

3700 Wilshire Blvd., Suite 560
Los Angeles, CA 90010-2908
e-mail: services@lenax.net
Phone: 213-637-9146
Fax: 213-637-9149
www.lenax.net

June 10, 2016

State of California Department of General Services Project Management and Development Branch

Southern California Veterans Cemetery

CONCEPT PHASE: ROM ESTIMATE

CONTENTS **PAGE**

Estimating
Cost Analysis
CPM Scheduling
Claims Management
Construction Progress

Lenax

Lenax
Construction
Services Inc.

Estimating
Cost Control
Claims Management
Construction Management

Our goal is simple... to help you reach yours.

June 10, 2016

Ken Jewel,PE
Project Manager
OWEN Group

220 Technology Dr. Ste 100
Irvine CA. 92618

Subject: *Cost Estimating Services*
OWEN Group
Southern California Veterans Cemetery
CONCEPT PHASE: ROM ESTIMATE

Dear. Mr. Jewel,

Enclosed is for your information and review the ROM Construction Estimate for the above-referenced project.

Very truly yours,
LENAX CONSTRUCTION SERVICES, INC.

George Elkin, CPE
Senior Cost Estimator

Reviewed by:

Oleg Zeetser, CPE
Director of Engineering

3700 Wilshire Blvd., Suite 560 Los Angeles, CA 90010-2908
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[redacted]

June 10, 2016

OWEN GROUP
Southern California Veterans Cemetery
Independent Estimate of Probable Construction Cost
CONCEPT PHASE: ROM ESTIMATE
ESTIMATE CRITERIA

1. SCOPE

Phase 1 - Part 1- Site Preparation and Demolition (125 acres): Phase 1 of the Project will include the demolition of the entire 125 acre site. Demolition includes existing 77 buildings (1,037,139 SF), foundations, floors, floor slabs, concrete, and asphalt. The demolition also includes the removal of underground utilities. Erosion and sediment control measures will be maintained at all times during the demolition.

Phase 1 - Part 2 – New Construction (28.3 acres):

Part 2A – New Construction of the cemetery which encompasses approximately 12.4 acres of the property and includes, rough and fine grading, utility trenching and installation, paving of drive aisles and access roads, landscaping, installation of 1,750 inground cremation burials, 3,250 columbarium niches, the administration / maintenance complex (2,149 SF/3,849SF), ceremonial entrance, cortege assembly area, committal service shelter (1,076SF), flag / assembly area, and memorial walkway.

Part2B – New Construction of the perimeter berms, walls, fences, and associated landscaping. This portion includes the construction of the retention / detention basins and drainage swale along the south western portion of the site. This area is approximately 15.9 acres.

2. DRAWINGS

The estimate is based on Basic Scope Developed by OWEN Group, dated May, 2016

3. ESTIMATE FORMAT

This estimate is presented in Construction Cost Estimate following uniformat break down and report costs at the major building component level. The Building and Sitework direct costs has been combine at the overall summary with markups prorates.

4. QUANTITIES

All scope is quantified for each building trade or system from the documented information. In the event that information is not fully complete, we have used our professional knowledge of technical building systems to allocate proper allowances and contingencies.

5. SOURCES FOR PRICING

The estimated cost information was derived from the several industry accepted data base sources trade publications, such as R.S. Means, BNI Building News, Craftsman (National Estimator). These sources were used as a basis along with the estimator's professional judgment to adjust for this specific project type, location, size, and complexity.

6. CONTRACT PROCUREMENT AND MARK-UPS

The Construction contract procurement method is Design-Bid-Build. The mark-up structure used in this estimate for the general contractor reflects similar percentages used in Lenax's estimate of the previous similar projects. This includes 12% for General Conditions / General Requirements and 6% for GC fee, 2% for bonds.

7. DESIGN/CONSTRUCTION CONTINGENCY

An allowance of 10% for sitework/buildings is included in this cost estimate for Design Scope Contingency & Construction Contingency.

8. CONSTRUCTION SCHEDULE / ESCALATION

The ROM Construction Cost Estimate is 2016 dollars. The escalation cost is excluded.

9. PROJECT SOFT COST - Excluded

SPECIFIC EXCLUSION (SOFT COST)

1 Professional design and consulting fees.
2 General building permit.
3 Testing fees.
4 Owner's field inspection costs.
5 Construction / Program management fees.
6 Plan check fees and building permit fees.
7 Furnishings, fixtures and equipment (FF&E)/Group II, unless listed otherwise
8 Owner-furnished items.
9 Move-in costs or maintenance costs after move-in.
10 Financing and carry costs .
11 LEED commissioning agents. (Assumed to be contracted directly with owner)

10. POTENTIAL VARIANCES FROM THIS COST ESTIMATE

The following items could affect the construction cost and, therefore, could be the cause of a variance from this estimate of probable cost.

1 Modifications to the scope of work included in the drawings and/or specifications used as a basis for this estimate.
2 Restrictive technical specifications or excessive or unpredictable contract conditions.
3 Any specified item of equipment, material, or product that cannot be obtained from at least three different source.
4 Bid procurement other than listed and assumed by this estimate.
5 Bids delayed beyond the projected schedule.
6 Construction schedule before or after the schedule used in this estimate.

11. ASSUMPTIONS MADE IN COST ESTIMATE

1 The site will be fully accessible during normal working hours.
2 Demolition will be done during 1st Phase
3 Construction contract procurement method is Design Build Contractor.
4 Prevailing Wage Structure. Owner Controlled Insurance Program.
5 Attempting LEED certification

Lenax Construction Services staff of professional cost consultants has prepared this estimate with principles and practices coinciding with the cannons and code of ethics of the American Society of Professional Estimators. This staff is available to discuss its content to any interested party.

Estimate Summaries

Estimating
Cost Analysis
CPM Scheduling
Claims Management
Construction Progress

Lenax

Project: Southern California Veterans Cemetery
DESCRIPTION: CEMETERY, ROADWAY & BUILDINGS
Location: Irvine, California
CONCEPT PHASE: ROM ESTIMATE

Lenax Construction Services Inc.

BUILDING GSF : 7,056
Phase 1 Site Area : 544,500

ITEM	DESCRIPTION	QUANTITY		UNIT COST/SF	TOTALS
	SUMMARY ESTIMATE				
	BUILDINGS				**$1,885,573**
	ADMINISTRATION BUILDING	2,149	SF	$326.00	$700,574
	MAINTENANCE BUILDING	3,831	SF	$270.00	$1,034,370
	COMMITTAL SHELTER	1,076	SF	$140.00	$150,629
	CEMETERY & ROADWAY				**$42,970,652**
	HAZARDOUS WASTE REMEDIATION	1,012,714	SF	$2.81	$2,846,000
	SITE DEMOLITION & CLEANING	5,445,000	SF	$4.09	$22,293,567
	SITE IMPROVEMENTS	544,500	SF	$8.26	$4,496,671
	SITE DEVELOPMENT	544,500	SF	$22.02	$11,990,055
	SITE UTILITIES	544,500	SF	$2.47	$1,344,359
	BUILDING & SITE DIRECT COST SUBTOTAL	**544,500**	**SF**	**$82.38**	**$44,856,225**
	GENERAL CONTRACTOR'S MARKUPS:				
	- GENERAL CONDITIONS	12.0%		$762.87	5,382,747
	- GC OVERHEAD & FEE	6.0%		$427.21	3,014,338
	- BOND	2.0%		$150.95	1,065,066
	SUBTOTAL CONSTRUCTION COST			**$99.76**	**54,318,376**
	ESTIMATE SCOPE DESIGN & CONSTRUCTION CONTINGENCY	10.0%			5,431,838
	ESTIMATED CONSTRUCTION COST W/O ESCALATION			**$109.73**	**59,750,214**

Estimate Detail

Estimating
Cost Analysis
CPM Scheduling
Claims Management
Construction Progress

Lenax

Project: **Southern California Veterans Cemetery**
DESCRIPTION: CEMETERY & ROADWAY
Irvine, California
CONCEPT PHASE: ROM ESTIMATE

Lenax Construction Services Inc.

PHASE 1 SITE AREA (SF) : **544,500**

ITEM		DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL
		SITE SUMMARY ESTIMATE				
		HAZARDOUS WASTE REMEDIATION				**$2,846,000**
G1040		HAZARDOUS WASTE REMEDIATION	1,012,714	SF	$2.81	$2,846,000
		SITE DEMOLITION & CLEANING	5,445,000	SF		**$22,293,567**
G1010		SITE DEMOLITION/CLEARING	544,500	SF	$0.28	$152,225
G1020		SITE DEMOLITION & DISPOSAL (w/in 12.5 Acres)	544,500	SF	$3.77	$2,051,944
G1025		SITE DEMOLITION & DISPOSAL (Remainder of 125 Acres)	4,900,500	SF	$1.05	$5,124,330
G1025		BUILDINGS DEMOLITION & DISPOSAL (Remainder of 125 Acres)	1,012,714	SF	$14.78	$14,965,068
		SITE IMPROVEMENTS				**$4,496,671**
G1030		EARTHWORK	544,500	SF	$1.15	$623,957
G2010		ROADWAYS AND PARKING	544,500	SF	$1.04	$567,570
G2030		PEDESTRIAN PAVING	544,500	SF	$4.40	$2,395,022
G2050		LANDSCAPE	544,500	SF	$1.67	$910,122
		SITE DEVELOPMENT				**$11,990,055**
G2040		SITE DEVELOPMENT	544,500	SF	$22.02	$11,990,055
		SITE UTILITIES				**$1,344,359**
G3010		DOMESTIC/FIRE WATER	544,500	SF	$0.31	$170,800
G3030		STORM DRAIN SYSTEM	544,500	SF	$1.03	$558,500
G40		SITE ELECTRICAL UTILITIES	544,500	SF	$1.13	$615,059
		DIRECT CONSTRUCTION COST SUBTOTAL (W/O Markups)	**544,500**	**SF**	**$78.92**	**$42,970,652**

Project: **Southern California Veterans Cemetery**
DESCRIPTION: CEMETERY & ROADWAY
Irvine, California
CONCEPT PHASE: ROM ESTIMATE

Lenax Construction Services Inc.

PHASE 1 SITE AREA (SF) : **544,500**

ITEM		DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL
G10		SITE PREPARATION	544,500	SF		**$25,139,567**
G1040		**HAZARDOUS WASTE REMEDIATION per Report by AVOCET ENVIRONMENTAL INC. (4/2716)**				
		Estimated Cost Associated with Impacted Soil	9,300	TON	$200.00	$1,860,000
		ESTIMATED COST ASSOCIATED WITH HAZARDOUS BUILDING COMPONENTS - ACM	92,000	SF	$8.00	$736,000
		ESTIMATED COST ASSOCIATED WITH HAZARDOUS BUILDING COMPONENTS - LBP and Universal Waste Removal	1	LS	$250,000.00	$250,000
		SUBTOTAL	**1,012,714**	**SF**	**$2.81**	**$2,846,000**
G1010		**SITE DEMOLITION/CLEARING**				
		CLEAR SITE OF TREES, SHRUBS, MISCELLANEOUS CONCRETE OR FOUNDATIONS AS ENCOUNTERED ALLOWANCE	12.50	AC	$10,000.00	$125,000
		MISC. SITE CLEARING	544,500	SF	$0.05	$27,225
		SUBTOTAL	**544,500**	**SF**	**$0.28**	**$152,225**
G1020		**SITE DEMOLITION & DISPOSAL (w/in 12.5 Acres)**				
		DEMOLITION OF BUILDING 3	175	SF	$12.00	$2,100
		DEMOLITION OF BUILDING 606	23,598	SF	$12.00	$283,176
		DEMOLITION OF BUILDING 892	672	SF	$12.00	$8,064
		REMOVE EXISTING WATER LINE	1,095	LF	$25.00	$27,375
		REMOVE EXISTING SEWER LINE	1,305	LF	$30.00	$39,150
		REMOVE EXISTING SEWER MANHOLES	5	EA	$1,200.00	$6,000
		REMOVE EXISTING ELECTRICAL LINE	4,000	LF	$15.00	$60,000
		REMOVE LIGHT / POWER POLES	18	EA	$1,000.00	$18,000
		REMOVE EXISTING GAS LINE	850	LF	$10.00	$8,500
		DEMO (E) REMOVE CONCRETE / ASPHALT PAVEMENT	57,733	SF	$1.00	$57,733
		DEMO (E) REMOVE HEAVY CONCRETE	431,055	SF	$1.75	$754,346
		DEBRIS DISPOSAL	10,500	CY	$75.00	$787,500
		SUBTOTAL	**544,500**	**SF**	**$3.77**	**$2,051,944**
G1025		**SITE DEMOLITION & DISPOSAL (Remainder of 125 Acres)**	**112.50**	**AC**		
G1025		DEMOLITION OF EXISTING UTILITY INFRASTRUCTURE AND SITE PAVEMENT Remainder of the Site - ALLOWANCE	4,900,500	SF	$0.66	$3,234,330
		DEBRIS DISPOSAL	25,200	CY	$75.00	$1,890,000
		SUBTOTAL	**4,900,500**	**SF**	**$1.05**	**$5,124,330**
G1025		**BUILDINGS DEMOLITION & DISPOSAL (Remainder of 125 Acres)**				
G1025		DEMOLITION OF 74 BUILDING/STRUCTURES for Remainder of 125 Acres	1,012,714	SF	$12.00	$12,152,568
		DEBRIS DISPOSAL	37,500	CY	$75.00	$2,812,500
		SUBTOTAL	**1,012,714**	**SF**	**$14.78**	**$14,965,068**
G20		**SITE IMPROVEMENTS**	**544,500**	**SF**	**$30.28**	**$16,486,726**

Project: **Southern California Veterans Cemetery**
DESCRIPTION: CEMETERY & ROADWAY
Irvine, California
CONCEPT PHASE: ROM ESTIMATE

Lenax Construction Services Inc.

PHASE 1 SITE AREA (SF) : **544,500**

ITEM		DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL
G1030	**EARTHWORK**					
		ROUGH GRADING	544,500	SF	$0.12	$65,340
		OVER-EX/COMPACT, SITE FOR PAVING & LANDSCAPING -1'D	20,167	CY	$10.00	$201,667
		IMPORT FILL, 2 HRS. R/TRIP	20,167	CY	$15.00	$302,500
		EROSION CONTROL	544,500	SF	$0.10	$54,450
		SUBTOTAL	**544,500**	**SF**	**$1.15**	**$623,957**
G2010	**ROADWAYS AND PARKING**					
		MAINTENANCE YARD - LIMITED PAVING WALKWAY - AROUND BUILDING	53,229	SF	$10.00	$532,290
		MAINTENANCE BUILDING- Grading Recompaction	3,831	SF	$5.00	$19,155
		ADMINISTRATION BUILDING - Grading Recompaction	2,149	SF	$5.00	$10,745
		COMMITTAL SHELTER BUILDING - Grading Recompaction	1,076	SF	$5.00	$5,380
		SUBTOTAL	**60,285**	**SF**	**$9.41**	**$567,570**
G2030	**PEDESTRIAN PAVING**					
		CONCRETE WALK	43,485	SF	$8.00	$347,880
		ADA RAMPS	2	EA	$2,500.00	$5,000
		A.C. PAVEMENT	131,498	SF	$4.00	$525,992
		COLUMBARIUM PLAZA HARDSCAPE	115,333	SF	$10.00	$1,153,330
		ASSEMBLY AREA (ASSUMED CONCRETE PAVEMENT)	7,997	SF	$10.00	$79,970
		CONCRETE CURB & GUTTER	10,000	LF	$28.00	$280,000
		REGULAR PARKING SPACES	18	EA	$100.00	$1,800
		ADA PARKING SPACES	3	EA	$350.00	$1,050
		SUBTOTAL	**298,315**	**SF**	**$8.03**	**$2,395,022**
G2050	**LANDSCAPE**					
		IRRIGATION AREA	142,528	SF	$3.00	$427,584
		LANDSCAPED ISLANDS	68,934	SF	$7.00	$482,538
		SUBTOTAL	**142,528**	**SF**	**$6.39**	**$910,122**
G2040	**SITE DEVELOPMENT**					
		PICKET FENCE- 8'H	6,615	LF	$150.00	$992,250
		DRAINAGE SWALE 45'W w/Landscaping	3,014	LF	$400.000	$1,205,600
		DRAINAGE SWALE 20'W w/Landscaping	3,602	LF	$180.000	$648,360
		PERIMETER 8" CMU WALL STUCCO FINISH -9' H	7,393	LF	$700.0	$5,175,100
		PERIMETER DIRT BERM 20'W x 1' H w/Landscaping	3,746	LF	$150.000	$561,899
		PERIMETER DIRT BERM 10'W x 1' H w/Landscaping	3,647	LF	$115.000	$419,406
		ENTRANCE & EXIT GATES	1	LS	$200,000.00	$200,000
		TRASH ENCLOSURE	335	SF	$50.00	$16,750
		SIGNAGE	1	LS	$75,000.00	$75,000
		FLAGS (1-50'pole , 2-30' Poles)	3	EA	$4,000.00	$12,000
		MEMORIAL WALL	1	LS	$100,000.00	$100,000
		COLUMBARIUM NICHE FOOTINGS	2,283	SF	$250.00	$570,750
		PRECAST NICHES INCLUDING INSTALLATION OF COVERS ONLY and HARDWARE FOR COVERS (COLUMBARIUM'S)	3,250	EA	$210.00	$682,500
		INGROUND CREMAINS (Grading)	73,588	SF	$5.00	$367,940
		STANDARD INGROUND NICHE CREMAINS	1,750	EA	$550.00	$962,500
		SUBTOTAL	**544,500**	**SF**	**$22.02**	**$11,990,055**

Project: **Southern California Veterans Cemetery**
DESCRIPTION: CEMETERY & ROADWAY
Irvine, California
CONCEPT PHASE: ROM ESTIMATE

Lenax Construction Services Inc.

PHASE 1 SITE AREA (SF) : **544,500**

ITEM		DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL
G30		**SITE MECHANICAL UTILITIES**	**544,500**	**SF**	**$1.34**	**$729,300**
G3010		DOMESTIC/FIRE WATER				
		PIPE 2"-8"	2,060	LF	$70.00	$144,200
		BLDG. POC	2	EA	$1,000.00	$2,000
		WATER METER	1	EA	$5,000.00	$5,000
		FIRE HYDRANT /PBFP ASSEMBLY	1	EA	$15,000.00	$15,000
		POC EXISTING WATER	1	EA	$2,500.00	$2,500
		FIRE DEPARTMENT CONNECTION	1	EA	$2,100.00	$2,100
		SUBTOTAL	**2,060**	**LF**	**$82.91**	**$170,800**
G3030		STORM DRAIN SYSTEM				
		SD 12-24" ALLOW	1,500	LF	$100.00	$150,000
		MANHOLE, INLET, CLEANOUT STRUCTURES - ALLOW	1	LS	$40,000.00	$40,000
		STORM WATER EASEMENT AREA	80,000	SF	$3.00	$240,000
		STORMWATER DETENTION BASIN AREA	14,125	SF	$6.00	$84,750
		SANITARY SEWER				
		PVC SDR 35	495	LF	$50.00	$24,750
		CONNECT TO BLDG. SITE	2	EA	$1,000.00	$2,000
		CONNECT TO EXISTING SEWER LINE	1	EA	$2,000.00	$2,000
		SEWER MANHOLES, CLEANOUT- ALLOWANCE	1	LS	$15,000.00	$15,000
		SUBTOTAL	**1,500**	**SF**	**$372.33**	**$558,500**
G40		**SITE ELECTRICAL UTILITIES**	**544,500**	**SF**	**$1.13**	**$615,059**
		SITE ELECTRICAL- NEW BUILDINGS	7,056	SF	$10.00	$70,559
		SITE LIGHTING	544,500	SF	$1.00	$544,500
		SUBTOTAL	**544,500**		**$1.13**	**$615,059**
		SITE DIRECT COST SUBTOTAL				**$42,970,652**

Project: **Southern California Veterans Cemetery**
DESCRIPTION: ADMINISTRATION BUILDING
Irvine, California
CONCEPT PHASE: ROM ESTIMATE

Lenax Construction Services Inc.

BUILDING GSF : **2,149**

ITEM		DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL
		ROM SUMMARY COST ESTIMATE				
A10		FOUNDATIONS	2,149	SF	$23.00	$49,427
A20		BASEMENT CONSTRUCTION	2,149	SF		
B10		SUPERSTRUCTURE	2,149	SF	$12.00	$25,788
B20		EXTERIOR CLOSURE	2,149	SF	$80.00	$171,920
B30		ROOFING	2,149	SF	$21.00	$45,129
C10		INTERIOR CONSTRUCTION	2,149	SF	$36.00	$77,364
C20		STAIRS	2,149	SF		
C30		INTERIOR FINISHES	2,149	SF	$30.00	$64,470
D10		CONVEYING	2,149	SF		
D20		PLUMBING	2,149	SF	$20.00	$42,980
D30		HVAC	2,149	SF	$34.00	$73,066
D40		FIRE PROTECTION	2,149	SF	$8.00	$17,192
D50		ELECTRICAL	2,149	SF	$57.00	$122,493
E10		EQUIPMENT	2,149	SF		
E20		FURNISHINGS	2,149	SF	$5.00	$10,745
F10		SPECIAL CONSTRUCTION	2,149	SF		NONE
		DIRECT CONSTRUCTION COST SUBTOTAL (W/O Markups)	**2,149**	SF	**$326.00**	**$700,574**

Project: **Southern California Veterans Cemetery**
DESCRIPTION: MAINTENANCE BUILDING
Irvine, California
CONCEPT PHASE: ROM ESTIMATE

Lenax Construction Services Inc.

BUILDING GSF : **3,831**

ITEM		DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL
		ROM SUMMARY COST ESTIMATE				
A10		FOUNDATIONS	3,831	SF	$20.00	$76,620
A20		BASEMENT CONSTRUCTION	3,831	SF		
B10		SUPERSTRUCTURE	3,831	SF	$14.00	$53,634
B20		EXTERIOR CLOSURE	3,831	SF	$55.00	$210,705
B30		ROOFING	3,831	SF	$23.00	$88,113
C10		INTERIOR CONSTRUCTION	3,831	SF	$39.00	$149,409
C20		STAIRS	3,831	SF		
C30		INTERIOR FINISHES	3,831	SF	$23.00	$88,113
D10		CONVEYING	3,831	SF		
D20		PLUMBING	3,831	SF	$17.00	$65,127
D30		HVAC	3,831	SF	$24.00	$91,944
D40		FIRE PROTECTION	3,831	SF	$10.00	$38,310
D50		ELECTRICAL	3,831	SF	$40.00	$153,240
E10		EQUIPMENT	3,831	SF		
E20		FURNISHINGS	3,831	SF	$5.00	$19,155
F10		SPECIAL CONSTRUCTION	3,831	SF		NONE
		DIRECT CONSTRUCTION COST SUBTOTAL (W/O Markups)	**3,831**	SF	**$270.00**	**$1,034,370**

Project: **Southern California Veterans Cemetery**
DESCRIPTION: COMMITTAL SHELTER BUILDING
Irvine, California
CONCEPT PHASE: ROM ESTIMATE

Lenax Construction Services Inc.

BUILDING GSF : **1,076**

ITEM		DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL
		ROM SUMMARY COST ESTIMATE				
A10		FOUNDATIONS	1,076	SF	$20.00	$21,518
A20		BASEMENT CONSTRUCTION	1,076	SF		
B10		SUPERSTRUCTURE	1,076	SF	$30.00	$32,278
B20		EXTERIOR CLOSURE	1,076	SF	$20.00	$21,518
B30		ROOFING	1,076	SF	$30.00	$32,278
C10		INTERIOR CONSTRUCTION	1,076	SF	$10.00	$10,759
C20		STAIRS	1,076	SF		
C30		INTERIOR FINISHES	1,076	SF	$5.00	$5,380
D10		CONVEYING	1,076	SF		
D20		PLUMBING	1,076	SF		
D30		HVAC	1,076	SF		
D40		FIRE PROTECTION	1,076	SF		
D50		ELECTRICAL	1,076	SF	$25.00	$26,898
E10		EQUIPMENT	1,076	SF		
E20		FURNISHINGS	1,076	SF		
F10		SPECIAL CONSTRUCTION	1,076	SF		NONE
		DIRECT CONSTRUCTION COST SUBTOTAL (W/O Markups)	**1,076**	SF	**$140.00**	**$150,629**

State of California Department of General Services Project Management and Development Branch

Lenax Construction Services Inc.

Southern California Veterans Cemetery

OWEN Group

CONCEPT PHASE: ROM ESTIMATE

PROJECT AREAS & CONTROL QUANTITIES 06/10/16

PROJECT AREAS	SF	TOTALS SF
ENCLOSED AREAS		
Administration Building	2,149	
Maintenance Building	3,831	
Committal Shelter	1,076	
SUBTOTAL, ENCLOSED AREAS		**7,056**
TOTAL GROSS FLOOR AREA		**7,056**
EXISTING BUILDINGS AREA		
Phase 1: DEMO 3 EXISTING BUILDINGS	24,445	
Phase 2-10: DEMO 74 BUILDING/STRUCTURES	1,012,714	
SUBTOTAL, EXISTING BUILDINGS AREA		**1,037,159**
SITE AREAS		
Phase 1: 12.5 ACRE	544,500	
Phase 2-10: 112.5 ACRES	4,900,500	
SUBTOTAL, SITE AREAS		**5,445,000**

DEPARTMENT OF GENERAL SERVICES
REAL ESTATE SERVICES DIVISION - PROJECT MANAGEMENT AND DEVELOPMENT BRANCH
PROJECT COST SUMMARY

PROJECT:	Southern California Veterans Cemetery	CONCEPT ESTIMATE:	C6DVA71AW
LOCATION:	Irvine, Orange County	EST. / CURR'T. CCCI:	6240 / 6240
CUSTOMER:	Department of Veterans Affairs	DATE ESTIMATED:	6/14/2016
DESIGN BY:	TBD	ABMS NO:	139669
PROJECT MGR:	K. Savage	PREPARED BY:	LL
TEMPLATE:	Design / Bid / Build	DOF PROJ. I.D. NO.:	0

DESCRIPTION

Phase 1, Part 1: Site preparation and demolition (125 acres): Phase 1 of the project will include the demolition of the entire 125 acre site. Demolition includes the existing 77 buildings (1,037,139 SF), foundations, floors, floor slabs, concrete and asphalt. The demolition also includes the removal of underground utilities. Phase 1, Part 2: New Construction. Part 2A: new construction of the cemetery which encompasses approx. 12.4 acres of the property and includes rough and fine grading, utility trenching and installation, paving of drive aisles and access roads, landscaping, installation of 1,750 in-ground cremains, 3,250 columbarium niches, the administration/ maintenance complex (2,149 SF/3,849 SF), ceremonial entrance, cortege assembly area, committal service shelter (1,076 SF), flag/assembly area, and memorial walk. Part 2B: New Construction of the perimeter berms, walls, fences and associated landscaping. This portion includes the construction of the retention/detention basins and drainage swale along the south western portion of the site. This area is approximately 15.9 acres.

ESTIMATE SUMMARY

Federal Funded Scope:	
Site Demolition/Clearing	$184,300
Site Improvements	$5,445,000
Site Development	$14,518,800
Site Utilities	$1,672,900
Administration Building	$848,400
Maintenance Building & Yard	$1,252,600
Committal Shelter	$182,400
(Subtotal $24,104,400)	
State Funded Scope:	
Hazardous Waste Remediation	$3,446,200
Site Demolition & Disposal (12.5 Acres)	$2,484,700
Site Demolition (Remaining 125 Acres)	$6,205,000
Buildings Demolition & Disposal	$18,121,200
(Subtotal $30,257,100)	
ESTIMATED TOTAL CURRENT COSTS:	**$54,361,500**
Original CCCI on MAY 2016	
Adjust CCCI From 6240 to 6240	$0
ESTIMATED TOTAL CURRENT COSTS ON MAY 2016	**$54,361,500**
Escalation to Start of Construction 42 Months @ 0.25% / Mo.:	$5,708,000
Escalation to Mid Point 15 Months @ 0.25% / Mo.:	$2,038,600
ESTIMATED TOTAL CONTRACTS:	**$62,108,100**
Contingency At: 5%	$3,105,400
ESTIMATED TOTAL CONSTRUCTION COST:	**$65,213,500**

SUMMARY OF COSTS
BY PHASE

PROJECT:	Southern California Veterans Cemetery	CONCEPT ESTIMATE:	C6DVA71AW
LOCATION:	Irvine, Orange County	DATE ESTIMATED:	6/14/2016
ABMS #:	139669		

CONSTRUCTION DURATION:	30 MONTHS	
ESTIMATED CONTRACT:	$62,108,100	$62,108,100
CONSTRUCTION CONTINGENCY:	$3,105,400	$3,105,400
TOTAL:	$65,213,500	$65,213,500

CATEGORY	ACQUISITION STUDY 00	PRELIMINARY PLANS 01	WORKING DRAWINGS 02	CONSTRUCTION 03	TOTAL
ARCHITECTURAL AND ENGINEERING SERVICES					
A&E Design	$200,000	$596,000	$729,000	$525,400	$2,050,400
Construction Inspection				$1,800,000	$1,800,000
Construction Inspection Travel				$50,000	$50,000
Builders Risk Insurance					$0
Advertising, Printing and Mailing		$0	$25,000		$25,000
Construction Guarantee Inspection				$50,000	$50,000
SUBTOTAL A&E SERVICES	$200,000	$596,000	$754,000	$2,425,400	$3,975,400
OTHER PROJECT COSTS					
Special Consultants (Soil/Survey,Geot	$300,000	$600,000	$310,500	$310,500	$1,521,000
Materials Testing				$496,900	$496,900
Project/Construction Management	$75,000	$290,000	$405,000	$1,080,000	$1,850,000
Contract Construction Management			$235,000	$1,800,000	$2,035,000
Site Acquisition Cost & Fees					$0
Agency Retained Items				$300,000	$300,000
SBE/DVBE Assessment				$185,700	$185,700
School Checking			$0		$0
Hospital Checking			$0		$0
Essential Services			$0		$0
Accessibility Checking			$58,400		$58,400
Environmental Document (EIR)	$930,000	$20,000			$950,000
Due Diligence	$15,000	$15,000			$30,000
Other Costs - (SFM)		$6,000	$6,100	$50,000	$62,100
Other Costs - DTSC					$0
Other Cost - Mitigation / Surveys				$694,000	$694,000
SUBTOTAL OTHER PROJECT COSTS	$1,320,000	$931,000	$1,015,000	$4,917,100	$8,183,100
TOTAL ESTIMATED PROJECT COST	$1,520,000	$1,527,000	$1,769,000	$72,556,000	$77,372,000
LESS FUNDS TRANSFERRED	$0	$0	$0	$0	$0
LESS FUNDS AVAILABLE NOT TRANSFERRED	$0	$0	$0	$0	$0
CARRY OVER	$0	$1,520,000	$3,047,000	$4,816,000	
BALANCE OF FUNDS REQUIRED	$1,520,000	$3,047,000	$4,816,000	$77,372,000	$77,372,000

FUNDING DATA & ESTIMATE NOTES

PROJECT:	Southern California Veterans Cemetery	CONCEPT ESTIMATE:	C6DVA71AW
LOCATION:	Irvine, Orange County	DATE ESTIMATED:	6/14/2016
ABMS #:	139669		

FUNDING DATA

Chapter / Item	Phase	Amount	Totals
Fund Transfers			
N/A	0	$0	
0	0	$0	
0	0	$0	
0	0	$0	
0	0	$0	
0	0	$0	
0	0	$0	
0	0	$0	
Total Funds Transferred			$0
Funds Available Not Transferred			
N/A	0	$0	
0	0	$0	
0	0	$0	
0	0	$0	
Total Funds Available not Transferred			$0
Total Funds Transferred and Available			$0

ESTIMATE NOTES

1. The construction costs in this estimate are indexed from the CCCI Index as of the date of estimate preparation to the CCCI index that is current as of MAY 1, 2016. The project estimate is then escalated for a 15 month period to an assumed construction midpoint. Additionally, the project has been escalated to the assumed start of construction.
2. The Agency retained items included in this estimate are: service seals, grave locator, office equipment and bobcat dozer.
3. Special Consultant costs includes Survey w/topo map, Geotechnical, and Hazardous Soil Survey.
4. CEQA/NEPA to include the 125 acre site and will take approximately 21 months to complete. CEQA scope includes a public relations firm. Depending on the results of CEQA, a Construction phase cost includes potential mitigation measures: various surveys (bird and owl), Burrowing Owl mitigation fees ($325,000) in lieu of on-site passive relocation, and a temporary sound wall ($150,000).
5. This estimate assumes a $0 cost to transfer the site from the City of Irvine to the State of California.
6. This estimate does not include the cost to abate contaminated soil if discovered as a result of the hazardous soil survey, nor does this estimate include any cost for the Department of Toxic Substances Control involvement.
7. This estimate is conceptual and was not prepared from design drawings.
8. 0
9. 0
10. 0

OMB Number: 4040-0008
Expiration Date: 01/31/2019

Southern California Veterans Cemetery - Concept Plan (FAI #CAXX-XX)

BUDGET INFORMATION - Construction Programs

NOTE: Certain Federal assistance programs require additional computations to arrive at the Federal share of project costs eligible for participation. If such is the case, you will be notified.

COST CLASSIFICATION	a. Total Cost	b. Costs Not Allowable for Participation	c. Total Allowable Costs (Columns a-b)
1. Administrative and legal expenses	$ 1,884,700	$ 1,566,190	$ 318,510
2. Land, structures, rights-of-way, appraisals, etc.	$ -	$ -	$ -
3. Relocations expenses and payments	$ -	$ -	$ -
4. Architectural and engineering fees	$ 3,571,400	$ 386,300	$ 3,185,100
5. Other architectural and engineering fees	$ 4,005,500	$ 2,731,460	$ 1,274,040
6. Project inspection fees	$ 2,396,900	$ 1,759,880	$ 637,020
7. Site work	$ -	$ -	$ -
8. Demolition and removal	$ -	$ -	$ -
9. Construction	$ 62,108,100	$ 30,257,100	$ 31,851,000
10. Equipment	$ 300,000	$ -	$ 300,000
11. Miscellaneous	$ -	$ -	$ -
12. SUBTOTAL (sum of lines 1-11)	$ 74,266,600	$ 36,700,930	$ 37,565,670
13. Contingencies	$ 3,105,400	$ 1,512,900	$ 1,592,500
14. SUBTOTAL	$ 77,372,000	$ 38,213,830	$ 39,158,170
15. Project (program) income	$ -	$ -	$ -
16. TOTAL PROJECT COSTS (subtract #15 from #14)	$ 77,372,000	$ 38,213,830	$ 39,158,170
FEDERAL FUNDING			
17. Federal assistance requested, calculate as follows: (Consult Federal agency for Federal percentage share.) Enter the resulting federal share.	Enter eligible costs from line 16c Multiply X 100%		$ 39,158,170

Appendix H

STATE OF CALIFORNIA
DEPARTMENT OF VETERANS AFFAIRS

SOUTHERN CALIFORNIA VETERANS CEMETERY - CONCEPT PLAN

LOCATION MAP

SHEET INDEX

GENERAL

T-1	TITLE SHEET
LD-01	SITE IMAGERY

CIVIL

C-1	EXISTING SITE TOPOGRAPHY
C-2	DEMOLITION PLAN
C-3	UTILITIES DEMOLITION PLAN
C-4	GRADING PLAN
C-5	UTILITIES PLAN
C-6	PHASE 1 SITE PLAN
C-7	TYPICAL SITE DETAILS

ARCHITECTURAL

A-1	ADMINISTRATION BUILDING
A-1.01	ADMINISTRATION BUILDING
A-2	MAINTENANCE BUILDING
A-2.01	MAINTENANCE BUILDING
A-3	COMMITTAL SHELTER
A-3.01	COMMITTAL SHELTER

LANDSCAPING

L1.0	SCHEMATIC MASTER PLAN
L1.1	PHASING PLAN
L2.0	LAYOUT & SIGNAGE PLAN
L2.1	LAYOUT & SIGNAGE PLAN AREA 1
L2.2	LAYOUT & SIGNAGE PLAN AREA 2
L2.3	LAYOUT & SIGNAGE PLAN AREA 3
L2.4	LAYOUT & SIGNAGE PLAN AREA 4
L2.5	LAYOUT & SIGNAGE PLAN AREA 5
L2.6	LAYOUT & SIGNAGE PLAN AREA 6
L2.7	LAYOUT & SIGNAGE PLAN AREA 7
L3.0	IRRIGATION PLAN
L3.1	IRRIGATION PLAN, AREA 1
L3.2	IRRIGATION PLAN, AREA 2
L3.3	IRRIGATION PLAN, AREA 3
L3.4	IRRIGATION PLAN, AREA 4
L3.5	IRRIGATION PLAN, AREA 5
L3.6	IRRIGATION PLAN, AREA 6
L3.7	IRRIGATION PLAN, AREA 7
L3.8	IRRIGATION DETAILS
L4.0	PLANTING PLAN
L4.1	PLANTING IMAGES
L5.0	SECTIONS
L5.1	SECTIONS

PROJECT INFORMATION

PROPERTY INFORMATION:
SOUTHERN CALIFORNIA VETERAN CEMETERY

ADDRESS:
FORMER MARINE CORP AIR STATION (MCAS)
ORANGE COUNTY GREAT PARK, IRVINE BLVD, IRVINE, CA

SITE INFORMATION:

OVERALL SITE AREA	125.7 ACRES
PHASE 1 SITE AREA	28.3 ACRES
NUMBER OF PARKING STALLS	20

BUILDING INFORMATION:

ADMINISTRATION BUILDING AREA	2,279 SF
MAINTENANCE BUILDING AREA	3,812 SF
COMMITTAL SHELTER AREA	1,100 SF

BURIAL AREA:

NUMBER OF IN-GROUND CREMAINS	1,750
NUMBER OF COLUMBARIUM NICHES	3,250

DESIGN TEAM

LANDSCAPING:
RHAA
225 MILLER AVE
MILL VALLEY, CA, 94941
(415) 383-7900

CIVIL ENGINEERING & ARCHITECTURAL:
OWEN GROUP, INC.
220 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
(949) 860-4800

State of California
Deptartment of General Services
Real Estate Services Division

DGS GENERAL SERVICES

Real Estate Services Division
Project Management Branch
707 3rd St., Suite 3-305
West Sacramento, CA 95605
Project Director: Dave Edwards
916-376-1643 Voice
Dave.Edwards@dgs.ca.gov

Project:
SOUTHERN CALIFORNIA
VETERANS CEMETERY

OWEN
220 Technology Drive, Suite 100
Irvine, CA 92618
TEL: (949) 860-4800
FAX: (949) 860-4814
www.owengroup.com

CONCEPT PLAN

08 JUNE 2016

TITLE SHEET

Description	Date
--	--
--	--

Job. No.	0814.2114.02
Drawn by	--
Checked by	RG

T-1

VIEW NORTH WEST FROM FAA CONTROL TOWER TOWARDS DOWNTOWN IRVINE AND MOUNTAINS

AERIAL VIEW OF SITE

VIEW NORTH EAST FROM FAA CONTROL TOWER TOWARDS MOUNTAINS

VIEW NORTH EAST ALONG AGUA CHINON

VIEW SOUTH EAST ON TARMAC TOWARDS THE GREAT PARK

rhaa
LANDSCAPE ARCHITECTURE PLANNING
MILL VALLEY SAN FRANCISCO
220 Miller Avenue, Mill Valley, CA 94941
T 415.383.7555 F 415.383.1423 www.rhaa.com

PROJECT/CLIENT NAME

Southern California Veterans Cemetery

Great Park
Irvine Boulevard
Irvine, California

PROJECT NUMBER

15039A

SUBMITTAL

Concept Plan

DATE

08 June 2016

CONSULTANTS

REVISIONS

No.	Date	Description
	03.25.16	ISSUE FOR STATE REVIEW
	05.27.16	ISSUE FOR STATE REVIEW

DRAWN BY: GR/MD
CHECKED BY: MB/SL

REGISTRATION AND SIGNATURE

NOT FOR CONSTRUCTION

SHEET TITLE

SITE IMAGERY

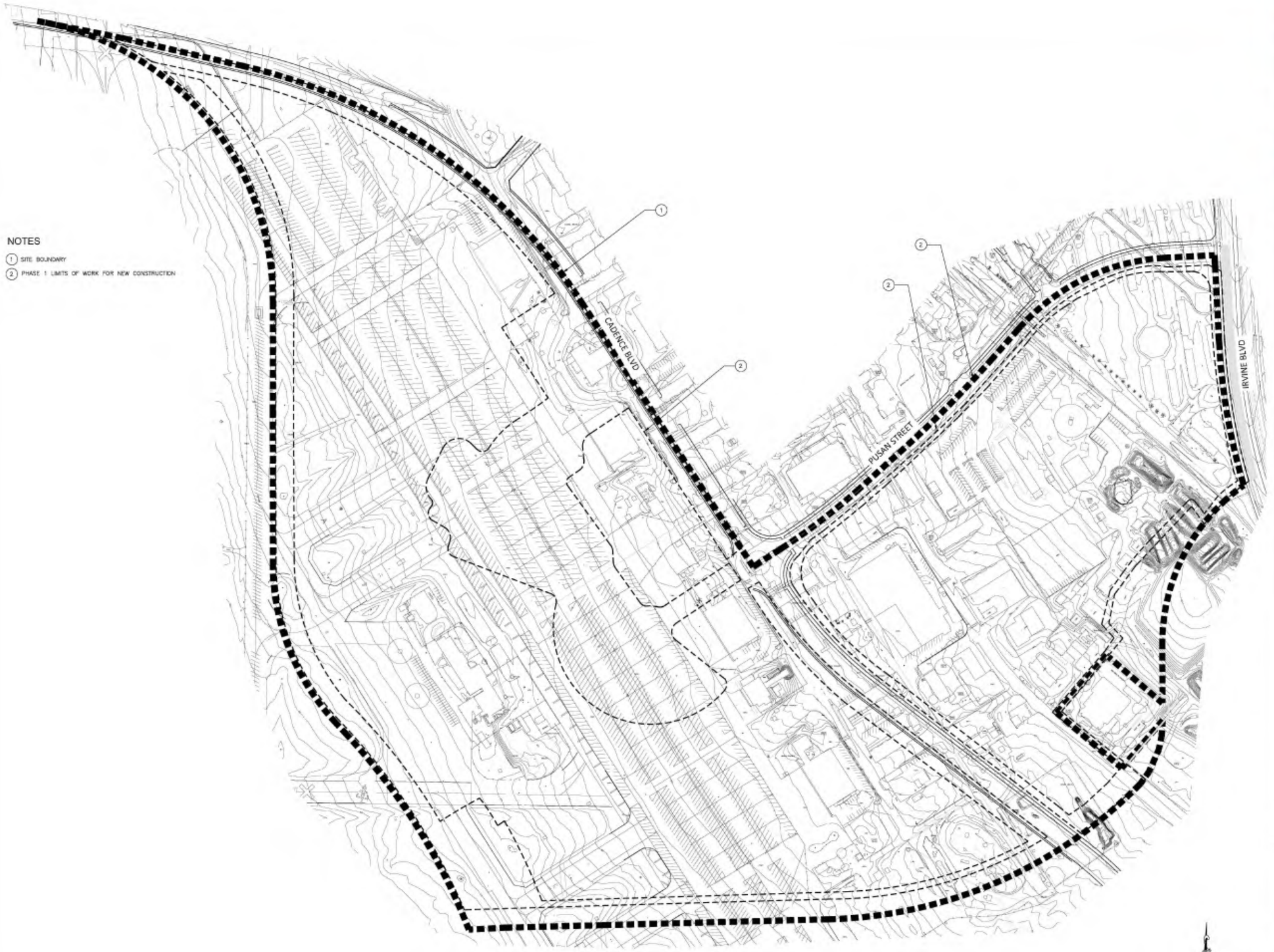
SHEET NUMBER

L0.01

NOTES

(1) SITE BOUNDARY

(2) PHASE 1 LIMITS OF WORK FOR NEW CONSTRUCTION



State of California
Department of General Services
Real Estate Services Division

DGS GENERAL SERVICES

Real Estate Services Division
Project Management Branch

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Project Director: Dave Edwards

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VETERANS CEMETERY

OWEN

200 Technology Drive, Suite 100
Irvine, CA 92618
TEL: (949) 660-4200
FAX: (949) 660-1810
www.owengroup.com

CONCEPT PLAN

08 JUNE 2016

EXISTING SITE
TOPOGRAPHY

Description	Date
–	–

Job No. 0004211400

Drawn by –

Checked by RG

C-1

GENERAL NOTES

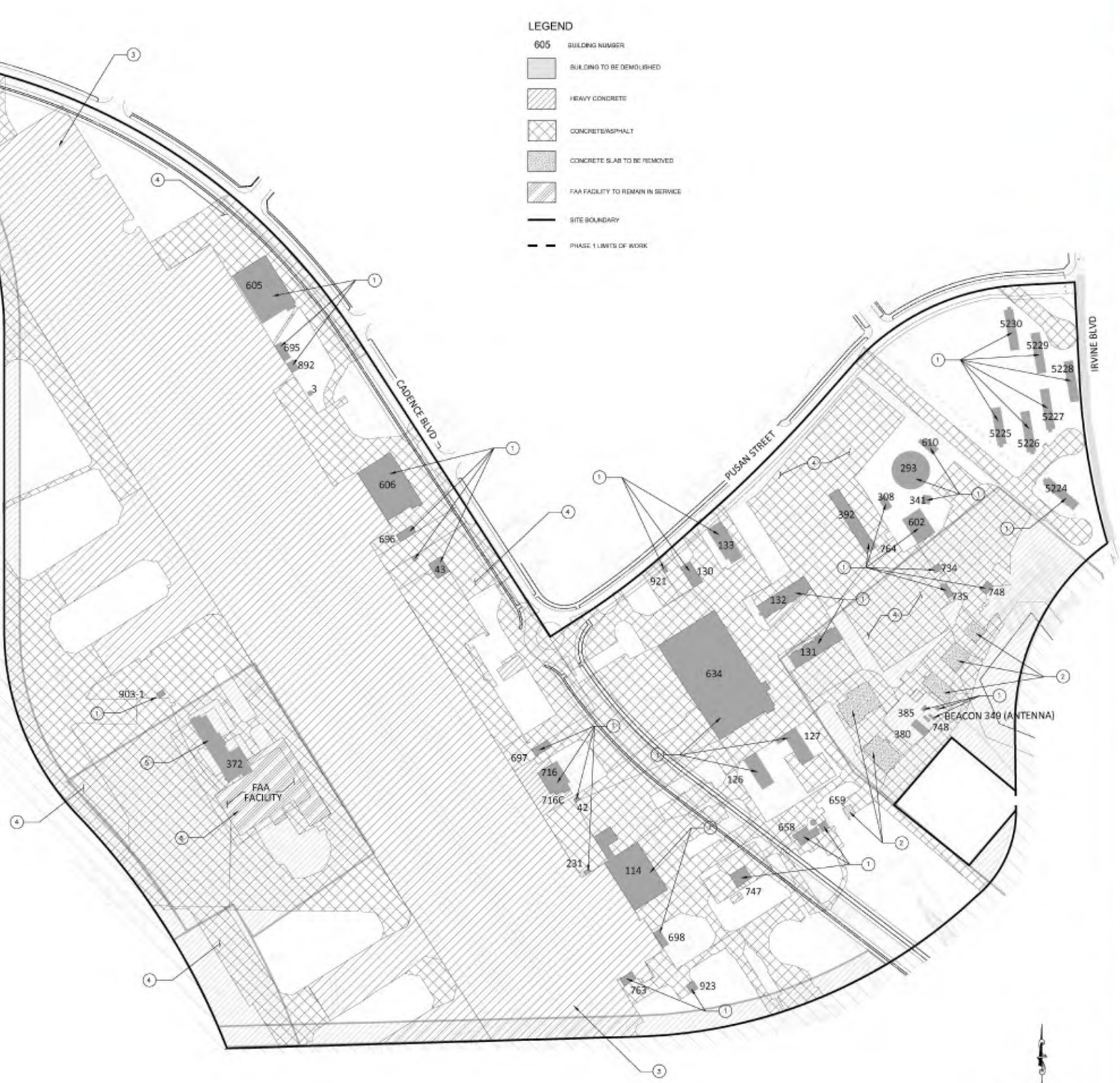
1. DEMOLITION SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE CITY, COUNTY AND STATE REGULATIONS AND STANDARDS.
2. DEMOLITION SHALL BE PERFORMED IN CONJUNCTION WITH AND IN ACCORDANCE WITH THE RECOMMENDATIONS IN THE ASBESTOS, LEAD, AND UNIVERSAL WASTE MATERIAL SURVEY REPORT, BY HSA DATED JAN. 7, 2016.
3. DO NOT COMMENCE DEMOLITION UNTIL BARRICADES, WARNING SIGNS AND OTHER FORMS OF PROTECTION ARE INSTALLED.
4. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED AT ALL TIMES DURING DEMOLITION.
5. THE PURPOSE OF THIS DRAWING IS TO CONVEY THE OVERALL SCOPE OF THE WORK AND IT IS NOT INTENDED TO COVER ALL DETAILS OR SPECIFICATIONS REQUIRED TO COMPLY WITH GENERALLY ACCEPTED DEMOLITION PRACTICES. CONTRACTOR SHALL BE THOUROUGHLY FAMILIARIZED WITH THE SITE, SCOPE OF WORK, AND ALL EXISTING CONDITIONS AT THE JOB SITE PRIOR TO BIDDING AND COMMENCING WORK. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MEANS, METHODS, TECHNIQUES AND PROCEEDURES USED TO COMPLETE THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND IS LIABLE FOR THE SAFETY OF THE PUBLIC AND CONTRACTOR'S EMPLOYEES THROUGHOUT THE PROJECT.
6. THE DEMOLITION PLAN IS INTENDED TO SHOW REMOVAL OF ALL KNOWN SITE AND UTILITY FEATURES AS SHOWN ON THE SURVEY. THERE MAY BE OTHER SITE FEATURES, UTILITIES, STRUCTURES, AND MISCELLANEOUS ITEMS BOTH BURIED AND ABOVE GROUND WITHIN THE LIMITS OF WORK THAT ARE NOT SHOWN HEREON THAT MAY NEED TO BE REMOVED. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF SUCH ITEMS AT NO ADDITIONAL COST TO THE OWNER.
7. THE CONTRACTOR SHALL CONTACT ALL RESPECTIVE UTILITY COMPANIES PRIOR TO THE DEMOLITION TO COORDINATE DISCONNECTION AND REMOVAL OF EXISTING UTILITIES WITHIN THE LIMITS OF WORK.
8. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES THAT ARE INTENDED TO REMAIN IN SERVICE WHETHER THESE PLANS ARE SHOWN ON THE PLANS OR NOT.
9. REMOVE EXISTING PLUMBING AND ELECTRICAL EQUIPMENT FIXTURES AND SERVICES. REMOVE ALL EXISTING AND ABANDONED UTILITIES WITHIN THE LIMITS OF WORK AND CAP UNUSED PORTIONS OF EXISTING LINES. FOR SEWER INSTALL CLEANOUT TO EXISTING GRADE.
10. UPON DISCOVERY OF ANY UNDERGROUND TANKS, CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE. NO REMOVAL OF TANKS SHALL OCCUR UNTIL AUTHORIZED BY OWNER.
11. ALL MATERIAL, EXCEPT THAT BELONGING TO THE PUBLIC UTILITY COMPANY OR AS DENOTED FOR SALVAGE, SHALL BECOME PROPERTY OF THE CONTRACTOR. THE CONTRACTOR SHALL NOTIFY THE OWNER AND UTILITY COMPANY OF WATER, ELECTRIC, GAS METERS WHEN THE METERS ARE READY FOR REMOVAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DISCONNECTING ALL UTILITIES IN COMPLIANCE WITH LOCAL REQUIREMENTS.
12. CONTINUOUSLY CLEAN-UP AND REMOVE ITEMS AS DEMOLITION WORK PROGRESSES. REMOVE RUBBISH, DEBRIS, AND WASTE MATERIALS AND LEGALLY DISPOSE OF OFF PROJECT SITE.
13. SITE UTILITIES TO BE ABANDONED IN PLACE UNLESS OTHERWISE NOTED. SEE UTILITY PLAN.
14. TREES TO REMAIN, UNLESS OTHERWISE NOTED.
15. AREAS WHICH ARE NOT ACTIVELY BEING WORKED ON FOR 14 CONSECUTIVE DAYS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED. PERMANENT STABILIZATION SHALL BE SEED, MULCH, SOLD, PERENNIAL VEGETATIVE COVER, OR OTHER MEANS APPROVED BY LANDSCAPING CONSULTANT.

DEMOLITION NOTES

1. EXISTING BUILDING, FOUNDATION, FLOORS, FLOOR SLABS, AND ANY OTHER UNDERGROUND BUILDING STRUCTURE TO BE REMOVED
2. EXISTING FLOOR SLABS, AND ANY OTHER UNDERGROUND BUILDING STRUCTURE TO BE REMOVED
3. AIRSIDE HEAVY CONCRETE TO BE REMOVED
4. LANDSIDE CONCRETE/ASPHALT TO BE REMOVED
5. FLIGHT CONTROL TOWER BUILDING FUTURE USE/DEMOLITION TO BE DETERMINED
6. FAA FACILITY TO REMAIN

LEGEND

- 605 BUILDING NUMBER
- BUILDING TO BE DEMOLISHED
- HEAVY CONCRETE
- CONCRETE/ASPHALT
- CONCRETE SLAB TO BE REMOVED
- FAA FACILITY TO REMAIN IN SERVICE
- SITE BOUNDARY
- PHASE 1 LIMITS OF WORK



State of California
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DGS GENERAL SERVICES

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OWEN

200 Technology Drive, Suite 100
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TEL: (949) 863-1855
FAX: (949) 863-1814
email: mail@owgp.com

CONCEPT PLAN

08 JUNE 2016

PHASE 1:
Demolition Plan, Buildings, Runway, and Roads

Description	Date
—	—
—	—

Job No. 0814.2114.02
Drawn by —
Checked by RD

C-2

GENERAL NOTES

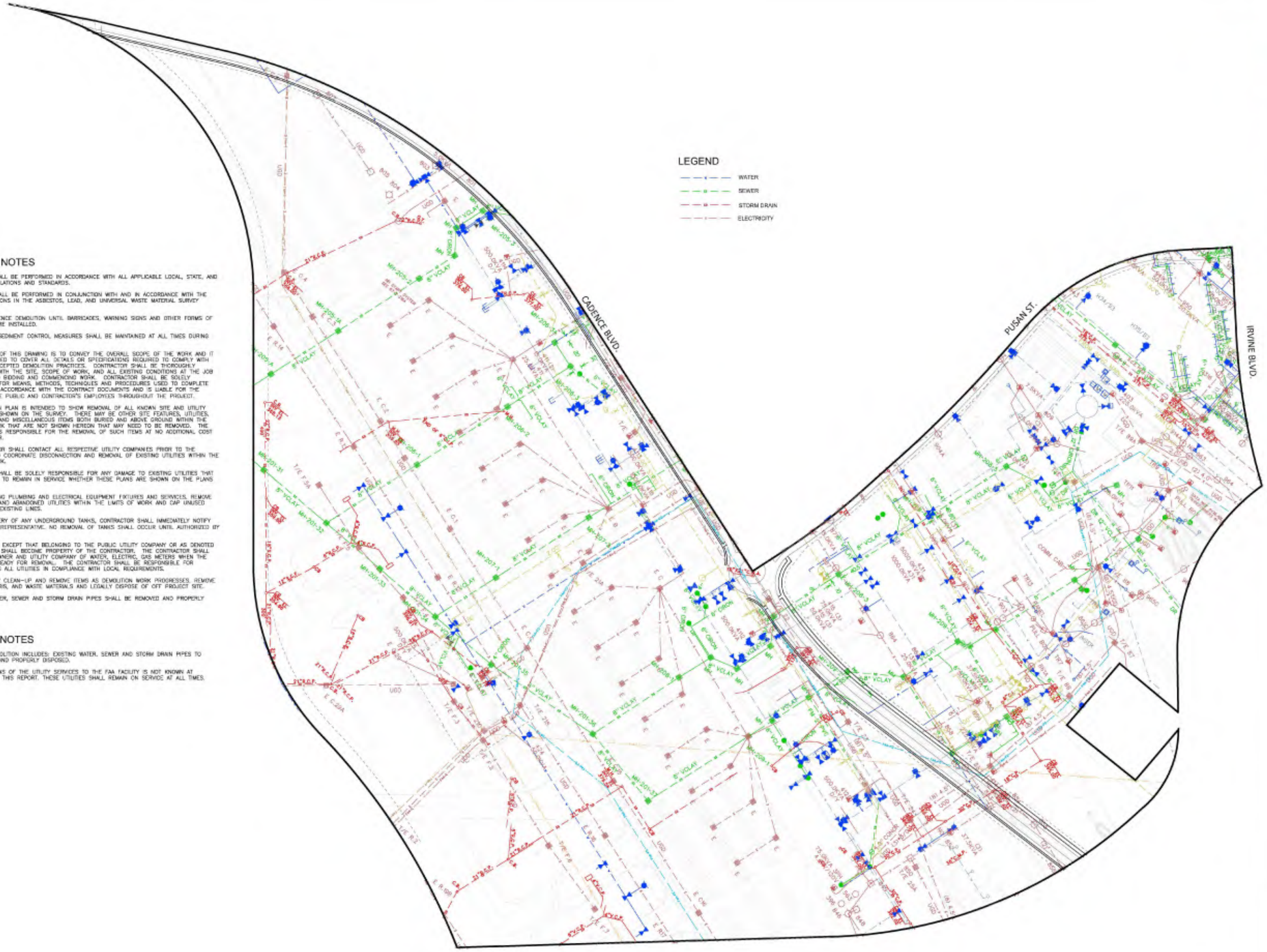
1. DEMOLITION SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS AND STANDARDS.
2. DEMOLITION SHALL BE PERFORMED IN CONJUNCTION WITH AND IN ACCORDANCE WITH THE RECOMMENDATIONS IN THE ASBESTOS, LEAD, AND UNIVERSAL WASTE MATERIAL SURVEY REPORT.
3. DO NOT COMMENCE DEMOLITION UNTIL BARRICADES, WARNING SIGNS AND OTHER FORMS OF PROTECTION ARE INSTALLED.
4. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED AT ALL TIMES DURING DEMOLITION.
5. THE PURPOSE OF THIS DRAWING IS TO CONVEY THE OVERALL SCOPE OF THE WORK AND IT IS NOT INTENDED TO COVER ALL DETAILS OR SPECIFICATIONS REQUIRED TO COMPLY WITH GENERALLY ACCEPTED DEMOLITION PRACTICES. CONTRACTOR SHALL BE THOROUGHLY FAMILIARIZED WITH THE SITE, SCOPE OF WORK, AND ALL EXISTING CONDITIONS AT THE JOB SITE PRIOR TO BIDDING AND COMMENCING WORK. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MEANS, METHODS, TECHNIQUES AND PROCEDURES USED TO COMPLETE THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND IS LIABLE FOR THE SAFETY OF THE PUBLIC AND CONTRACTOR'S EMPLOYEES THROUGHOUT THE PROJECT.
6. THE DEMOLITION PLAN IS INTENDED TO SHOW REMOVAL OF ALL KNOWN SITE AND UTILITY FEATURES AS SHOWN ON THE SURVEY. THERE MAY BE OTHER SITE FEATURES, UTILITIES, STRUCTURES, AND MISCELLANEOUS ITEMS BOTH BURIED AND ABOVE GROUND WITHIN THE LIMITS OF WORK THAT ARE NOT SHOWN HEREON THAT MAY NEED TO BE REMOVED. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF SUCH ITEMS AT NO ADDITIONAL COST TO THE OWNER.
7. THE CONTRACTOR SHALL CONTACT ALL RESPECTIVE UTILITY COMPANIES PRIOR TO THE DEMOLITION TO COORDINATE DISCONNECTION AND REMOVAL OF EXISTING UTILITIES WITHIN THE LIMITS OF WORK.
8. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES THAT ARE INTENDED TO REMAIN IN SERVICE WHETHER THESE PLANS ARE SHOWN ON THE PLANS OR NOT.
9. REMOVE EXISTING PLUMBING AND ELECTRICAL EQUIPMENT FIXTURES AND SERVICES. REMOVE ALL EXISTING AND ABANDONED UTILITIES WITHIN THE LIMITS OF WORK AND CAP UNUSED PORTIONS OF EXISTING LINES.
10. UPON DISCOVERY OF ANY UNDERGROUND TANKS, CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE. NO REMOVAL OF TANKS SHALL OCCUR UNTIL AUTHORIZED BY OWNER.
11. ALL MATERIAL, EXCEPT THAT BELONGING TO THE PUBLIC UTILITY COMPANY OR AS DENOTED FOR SALVAGE, SHALL BECOME PROPERTY OF THE CONTRACTOR. THE CONTRACTOR SHALL NOTIFY THE OWNER AND UTILITY COMPANY OF WATER, ELECTRIC, GAS METERS WHEN THE METERS ARE READY FOR REMOVAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DISCONNECTING ALL UTILITIES IN COMPLIANCE WITH LOCAL REQUIREMENTS.
12. CONTINUOUSLY CLEAN-UP AND REMOVE ITEMS AS DEMOLITION WORK PROGRESSES. REMOVE RUBBISH, DEBRIS, AND WASTE MATERIALS AND LEGALLY DISPOSE OF OFF PROJECT SITE.
13. EXISTING WATER, SEWER AND STORM DRAIN PIPES SHALL BE REMOVED AND PROPERLY DISPOSED.

UTILITIES NOTES

1. PHASE 1 DEMOLITION INCLUDES: EXISTING WATER, SEWER AND STORM DRAIN PIPES TO BE REMOVED AND PROPERLY DISPOSED.
2. THE LOCATIONS OF THE UTILITY SERVICES TO THE FAA FACILITY IS NOT KNOWN AT THE TIME OF THIS REPORT. THESE UTILITIES SHALL REMAIN ON SERVICE AT ALL TIMES.

LEGEND

- WATER
- SEWER
- STORM DRAIN
- ELECTRICITY



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Department of General Services
Real Estate Services Division

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CONCEPT PLAN
08 JUNE 2016

PHASE 1:
DEMOLITION PLAN -
ONSITE-UTILITIES

Description	Date
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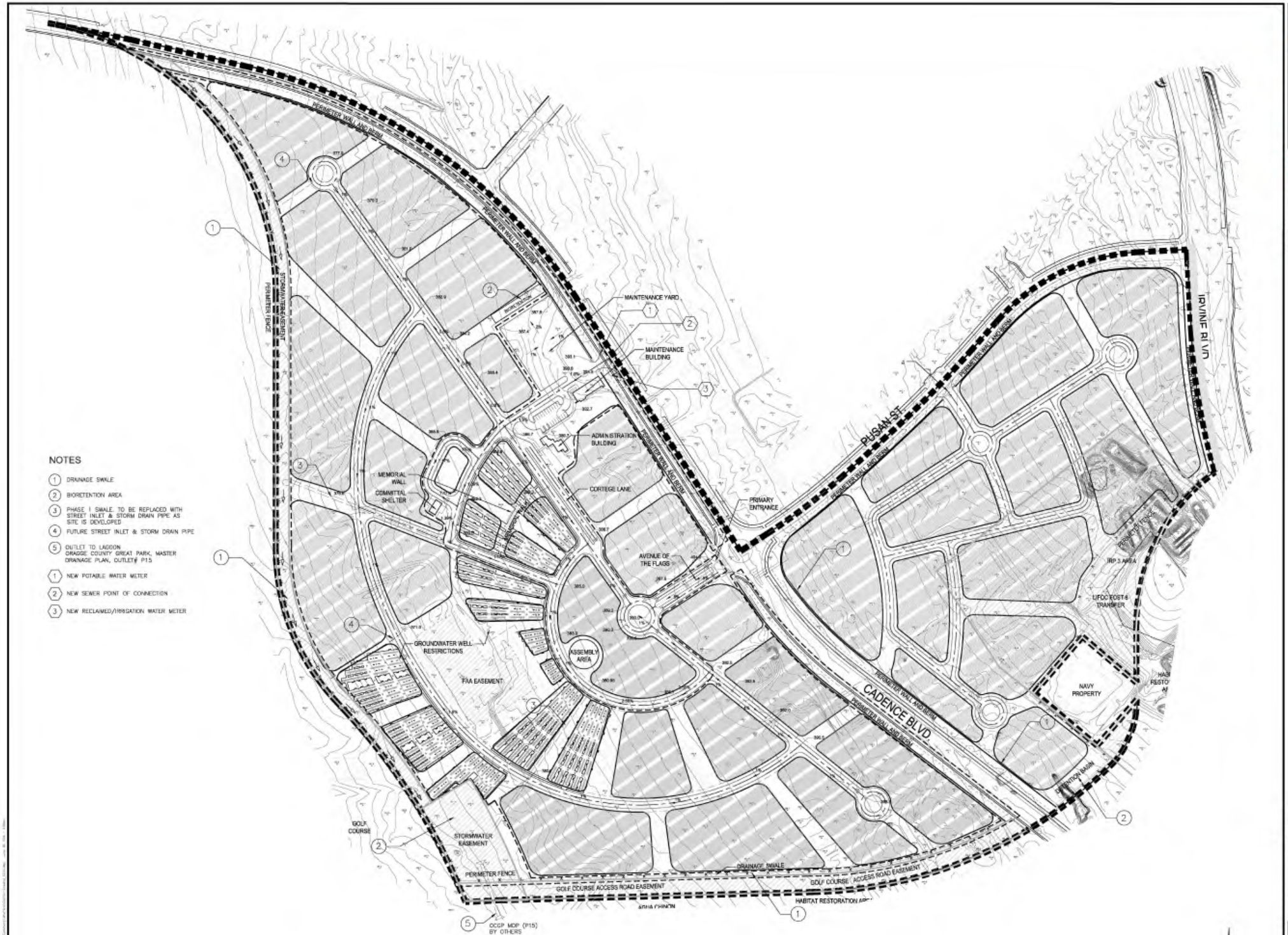
Job No.	0816.01M.03
Drawn by	--
Checked by	RG

C-3



NOTES

1. DRAINAGE SWALE
2. BIORETENTION AREA
3. PHASE I SWALE, TO BE REPLACED WITH STREET INLET & STORM DRAIN PIPE AS SITE IS DEVELOPED
4. FUTURE STREET INLET & STORM DRAIN PIPE
5. OUTLET TO LAGOON DRAGGE COUNTY GREAT PARK, MASTER DRAINAGE PLAN, OUTLET# P15

1. NEW POTABLE WATER METER
2. NEW SEWER POINT OF CONNECTION
3. NEW RECLAIMED/IRRIGATION WATER METER

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CONCEPT PLAN

08 JUNE 2016

PRELIMINARY GRADING AND DRAINAGE PLAN

Description	Date
–	–

Job No. 0816.016.02
Drawn by –
Checked by WG

C–4

GENERAL NOTES

1. ALL PUBLIC UTILITY, STORM DRAIN, DOMESTIC WATER, SEWER AND RECYCLED WATER IMPROVEMENTS ARE PERFORMED PER PLANS PROVIDED FOR THE CITY OF IRVINE PUBLIC WORKS DEPARTMENT BY HUNSAKER & ASSOCIATES.

NOTES

1. EXISTING 10" WATER PIPE
2. EXISTING 66" STORM DRAIN PIPE
3. EXISTING 12" SEWER
4. EXISTING 12" RECYCLED WATER
1. NEW POTABLE WATER METER
2. NEW SEWER POINT OF CONNECTION
3. NEW RECLAIMED/IRRIGATION WATER METER

PERIMETER WALL AND BERM
STORMWATER EASEMENT
PERIMETER FENCE
MAINTENANCE YARD
MAINTENANCE BUILDING
ADMINISTRATION BUILDING
MEMORIAL WALL
COMMITTAL SHELTER
CORTEGE LANE
PRIMARY ENTRANCE
SECONDARY ENTRANCE
PUSAN ST.
IRVINE BLVD.
AVENUE OF THE FLAGS
GROUNDWATER WELL RESTRICTIONS
FAA EASEMENT
ASSEMBLY AREA
CADENCE BLVD.
IRP 3 AREA
LIFOC EOST & TRANSFER
NAVY PROPERTY
HABI RESTO AI
DETENTION BASIN
GOLF COURSE
STORMWATER EASEMENT
PERIMETER FENCE
DRAINAGE SWALE
GOLF COURSE ACCESS ROAD EASEMENT
HABITAT RESTORATION AR
AGUA CHINON

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CONCEPT PLAN

08 JUNE 2016

PRELIMINARY UTILITY PLAN: WATER, SEWER, STORM DRAIN, AND RECYCLED WATER

Description	Date
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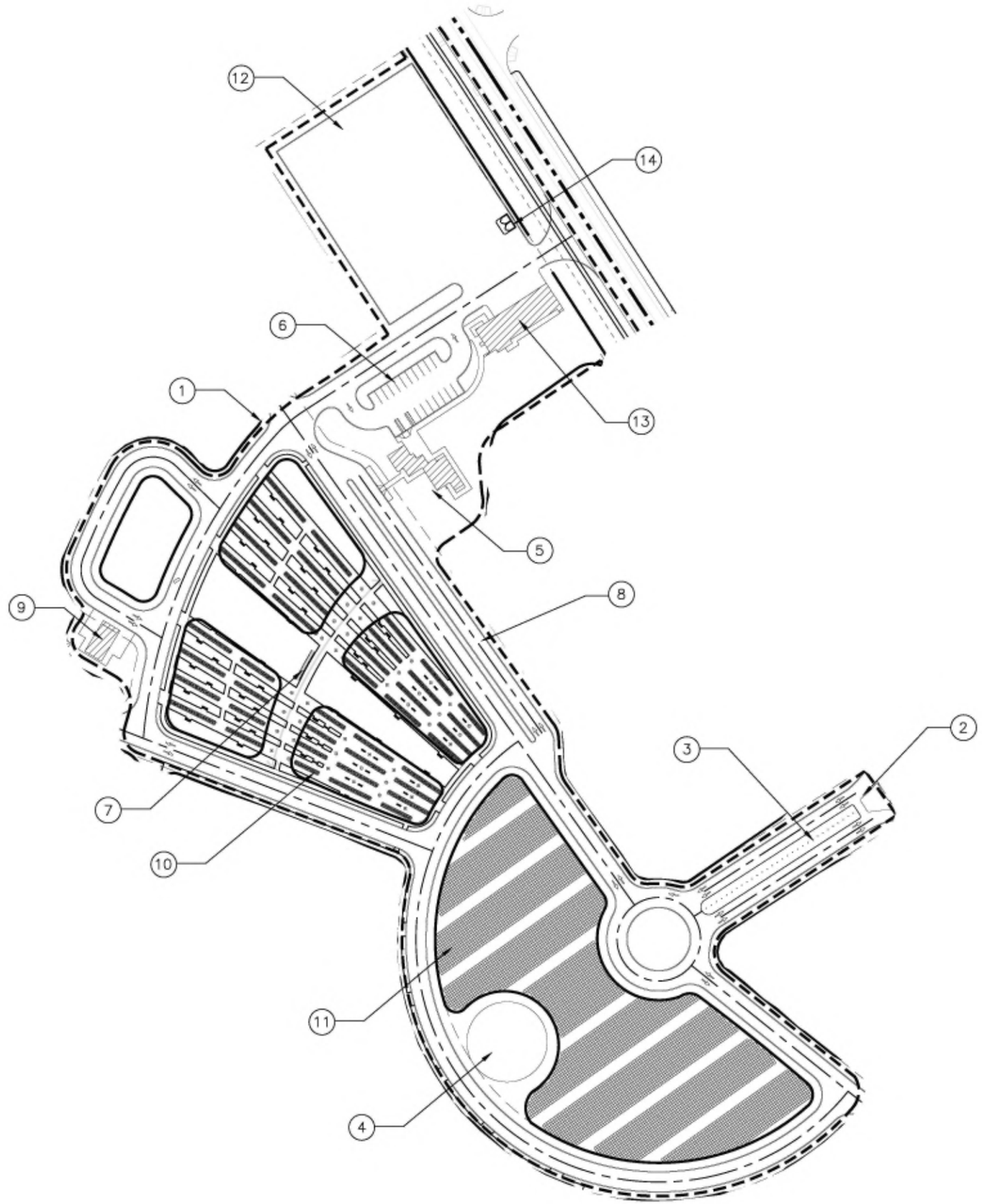
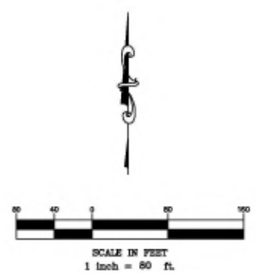
Job No. 0816.2134.02
Drawn by --
Checked by WG

C-5

NOTES

1. PHASE 1 – NEW CONSTRUCTION – LIMITS OF WORK
2. PRIMARY ENTRANCE
3. AVENUE OF THE FLAGS
4. ASSEMBLY AREA
5. ADMINISTRATION BUILDING
6. EMPLOYEE AND VISITOR PARKING STALLS
7. MEMORIAL WALK
8. CORTEGE LANE
9. COMMITTAL SHELTER
10. COLUMBARIUM
11. CRYPT – IN GROUND CREMAINS
12. MAINTENANCE YARD
13. MAINTENANCE BUILDING
14. TRASH ENCLOSURE





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CONCEPT PLAN

08 JUNE 2016

PHASE 1 -
NEW CONSTRUCTION
SITE PLAN

Description	Date
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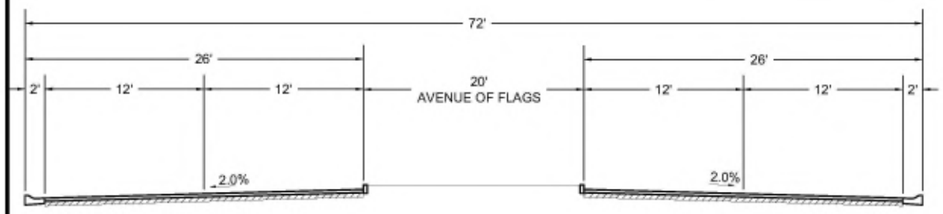
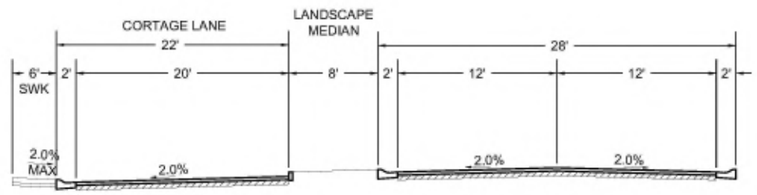
Job. No.	0814.2114.02
Drawn by	--
Checked by	RG

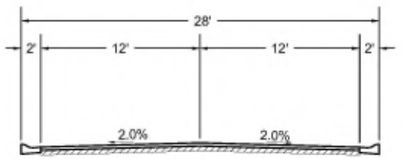
C-6



ENTRY ROAD AND AVENUE OF FLAGS
N.T.S.

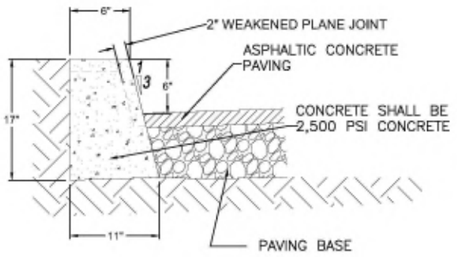


CORTAGE LANE AND PRIMARY ROAD AT ADMINISTRATION BUILDING
N.T.S.

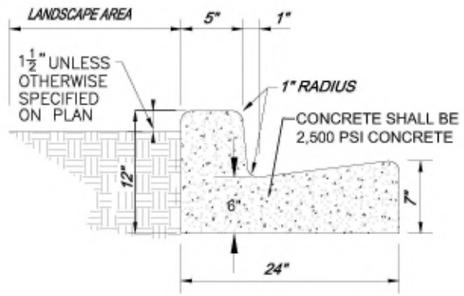


PRIMARY ROAD
N.T.S.

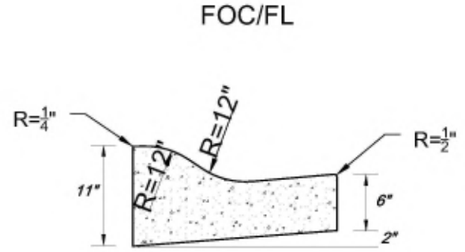
A STREET CROSS SECTIONS
N.T.S.



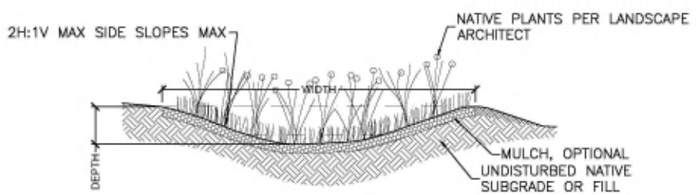
B-1 6 INCH PCC CURB
N.T.S.



B-2 6 INCH PCC CURB AND GUTTER
N.T.S.



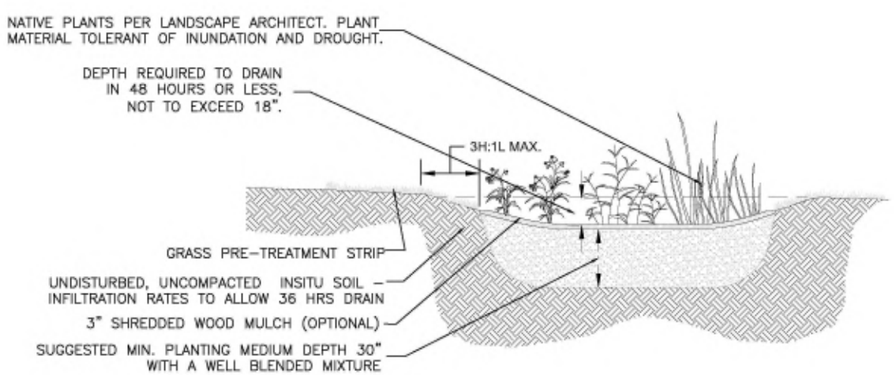
B-3 ROLLED CURB
N.T.S.



CONVEYANCE SWALE NOTES

1. BUILD AND VEGETATE SWALE AS EARLY AS POSSIBLE TO ESTABLISH PLANTINGS BEFORE DIRECTING STORMWATER RUNOFF TO IT OR DIVERT STORMWATER AROUND FACILITY. PREFERABLY, THIS PERIOD WOULD LAST A MINIMUM OF 3 MONTHS OR PER LANDSCAPE ARCHITECT/DESIGNER GUIDELINES.

BMP-1 VEGETATED SWALE
N.T.S.



BMP-2 TYPICAL BIORETENTION DETAIL
N.T.S.

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CONCEPT PLAN

08 JUNE 2016

TYPICAL SITE IMPROVEMENT DETAILS

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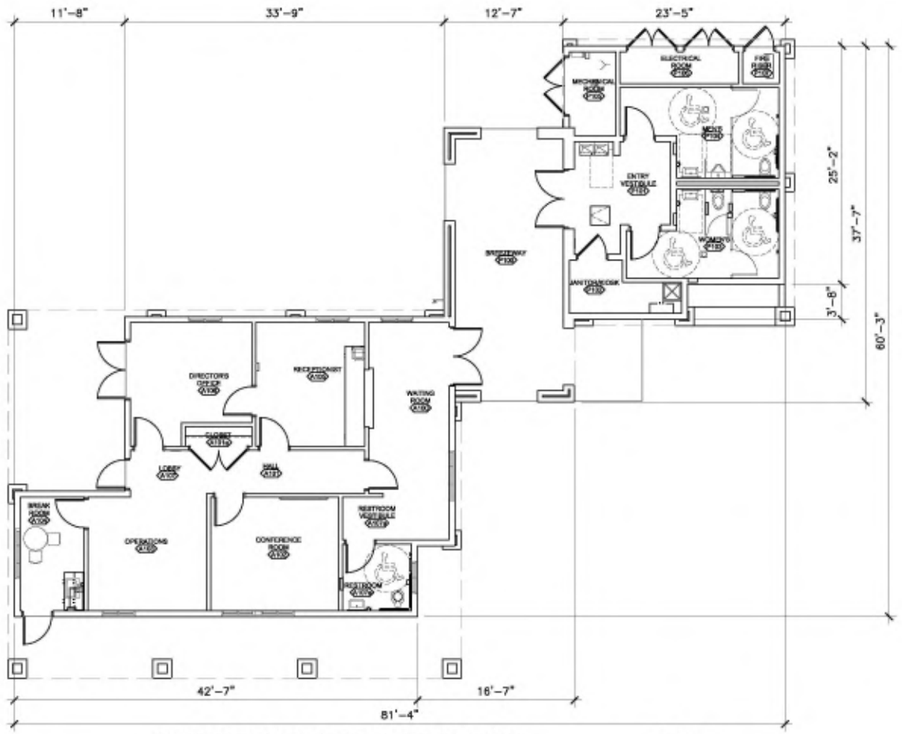
C-7



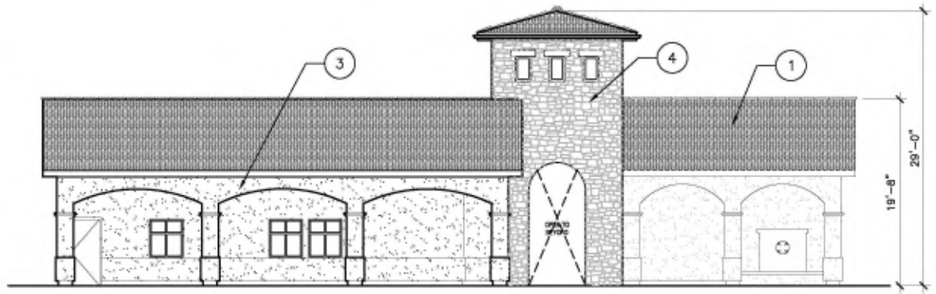
ADMINISTRATION FLOOR PLAN

Scale: 1/8" = 1'-0"

1 A-3.11

KEY NOTES:

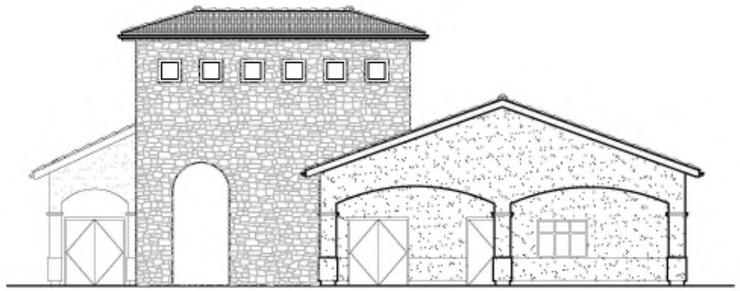
1. SPANISH MISSION TILES BARREL TYPE
2. EXTERIOR CEMENT PLASTER
3. EXTERIOR PLASTER OVER CONCRETE MASONRY UNIT
4. STONE VENEER



ADMINISTRATION EAST ELEVATION

Scale: 1/8" = 1'-0"

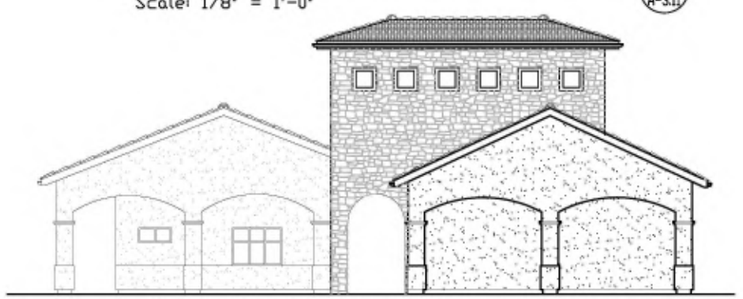
2 A-3.11



ADMINISTRATION SOUTH ELEVATION

Scale: 1/8" = 1'-0"

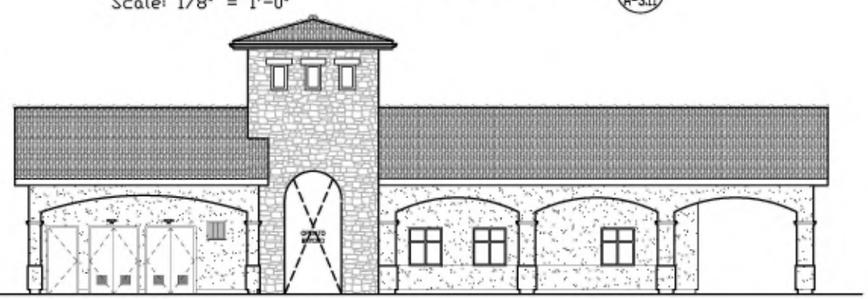
3 A-3.11



ADMINISTRATION NORTH ELEVATION

Scale: 1/8" = 1'-0"

4 A-3.11



ADMINISTRATION WEST ELEVATION

Scale: 1/8" = 1'-0"

5 A-3.11

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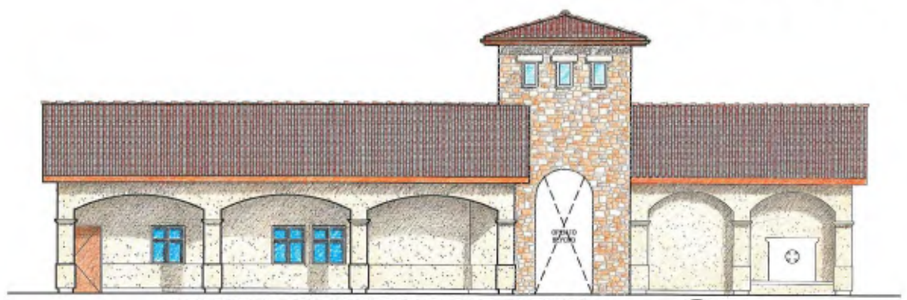
ADMINISTRATION BUILDING FLOOR PLAN & EXTERIOR ELEVATION

A-1

ADMINISTRATION FLOOR PLAN (1 / A-1.01)

Scale: 1/8" = 1'-0"

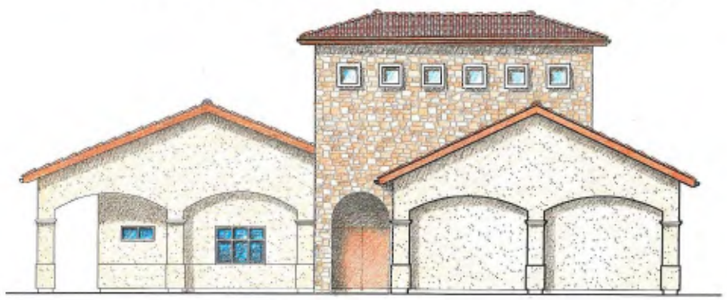


ADMINISTRATION EAST ELEVATION (4 / A-1.01)

Scale: 1/8" = 1'-0"

ADMINISTRATION SOUTH ELEVATION (2 / A-1.01)

Scale: 1/8" = 1'-0"



ADMINISTRATION NORTH ELEVATION (5 / A-1.01)

Scale: 1/8" = 1'-0"

ADMINISTRATION WEST ELEVATION (3 / A-1.01)

Scale: 1/8" = 1'-0"

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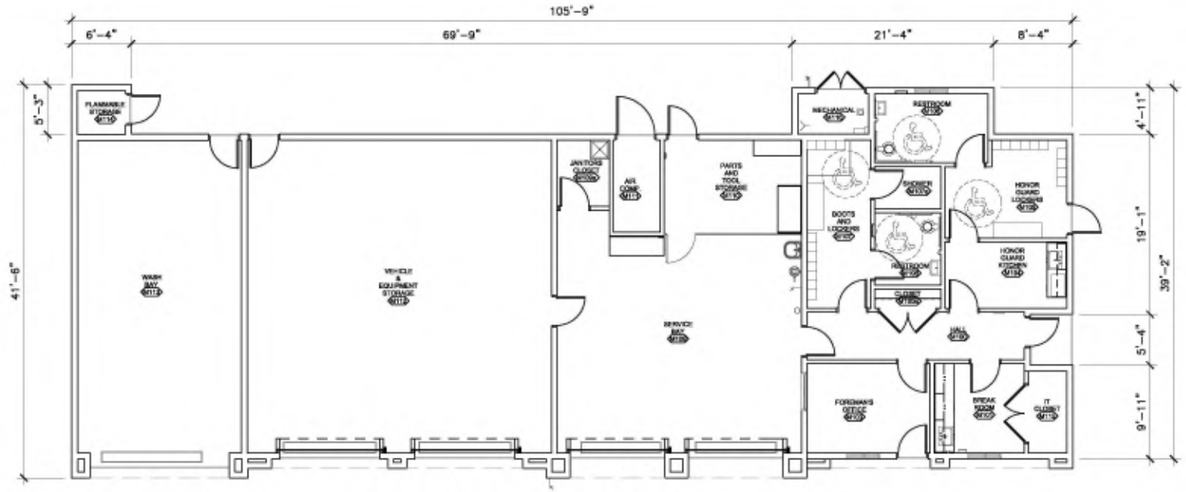
ADMINISTRATION FLOOR PLAN & ELEVATION

A-1.01



MAINTENANCE BLDG FLOOR PLAN 1 / A-2

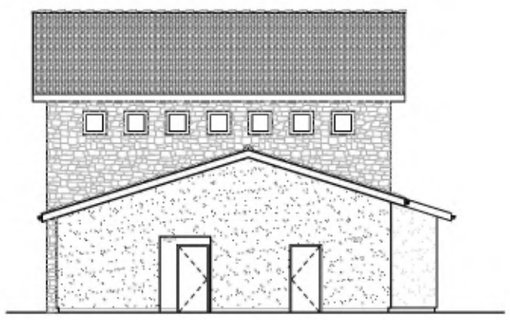
Scale: 1/8" = 1'-0"

KEY NOTES:

1. SPANISH MISSION TILES BARREL TYPE
2. EXTERIOR CEMENT PLASTER
3. EXTERIOR PLASTER OVER CONCRETE MASONRY UNIT
4. STONE VENEER

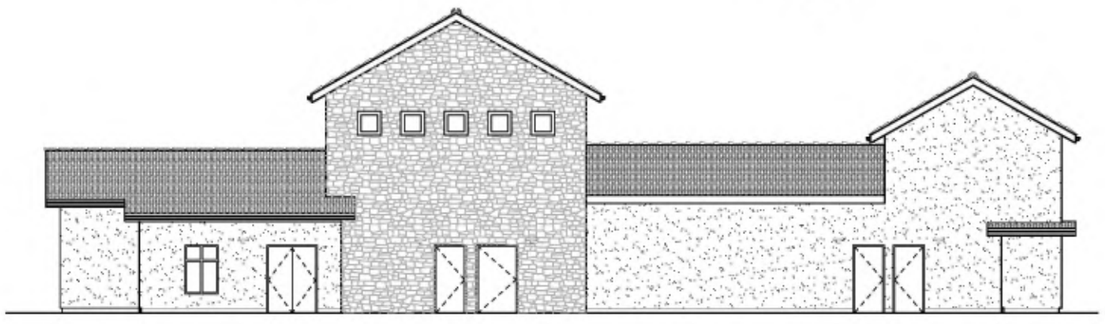
MAINTENANCE BLDG NORTH ELEVATION 2 / A-2

Scale: 1/8" = 1'-0"



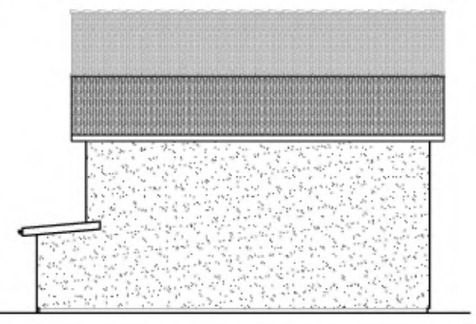
MAINTENANCE BLDG WEST ELEVATION 3 / A-2

Scale: 1/8" = 1'-0"



MAINTENANCE BLDG SOUTH ELEVATION 4 / A-2

Scale: 1/8" = 1'-0"



MAINTENANCE BLDG EAST ELEVATION 5 / A-2

Scale: 1/8" = 1'-0"

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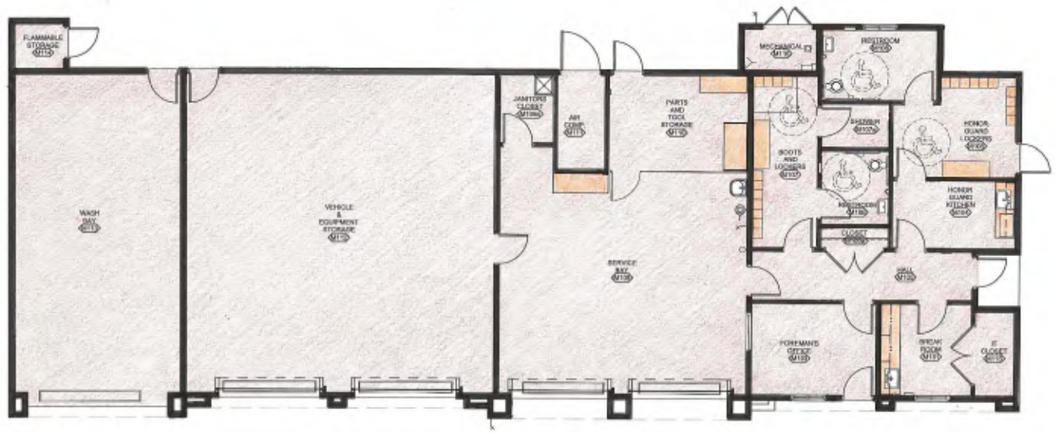
MAINTENANCE BUILDING FLOOR PLAN AND EXTERIOR ELEVATION

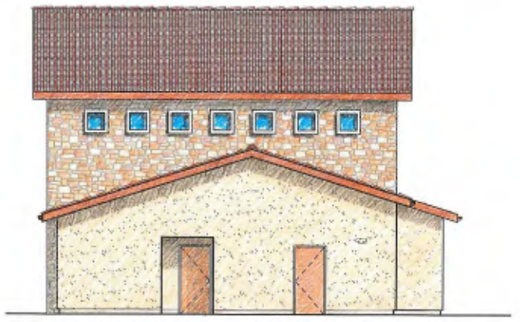
A-2



MAINTENANCE FLOOR PLAN

Scale: 1/8" = 1'-0"

1 / A-2.01



MAINTENANCE WEST ELEVATION

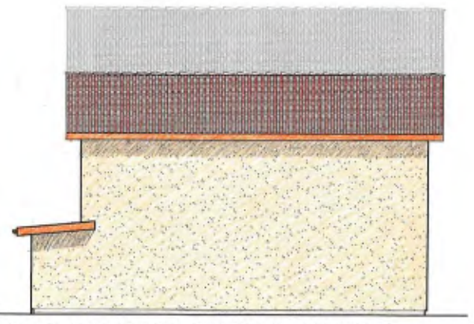
Scale: 1/8" = 1'-0"

4 / A-2.01

MAINTENANCE NORTH ELEVATION

Scale: 1/8" = 1'-0"

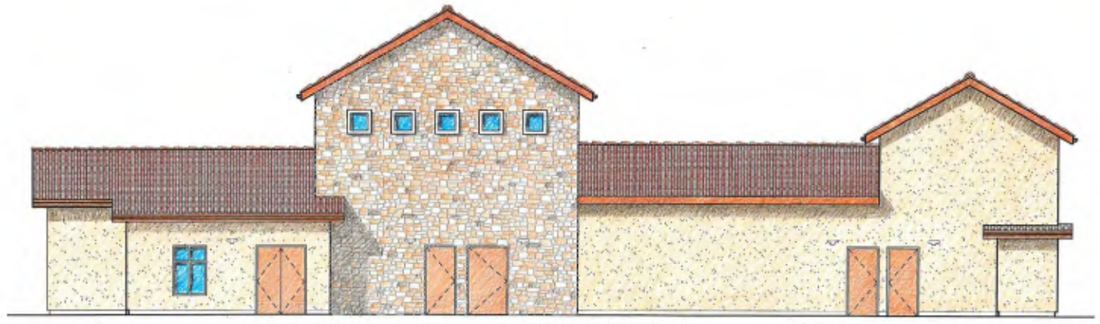
2 / A-2.01



ADMINISTRATION NORTH ELEVATION

Scale: 1/8" = 1'-0"

5 / A-1.01



MAINTENANCE SOUTH ELEVATION

Scale: 1/8" = 1'-0"

3 / A-2.01

State of California
Deptartment of General Services
Real Estate Services Division

DGS GENERAL SERVICES

Real Estate Services Division
Project Management Branch

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West Sacramento, CA 95605

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www.owengroup.com

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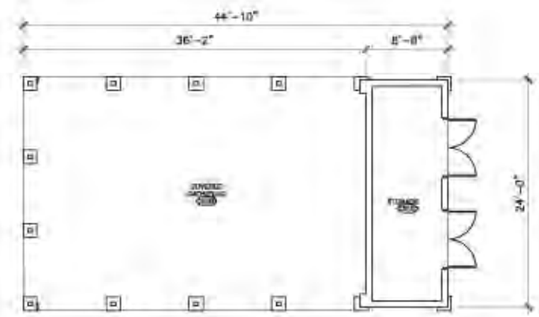
MAINTENANCE FLOOR PLAN & ELEVATION

A-2.01

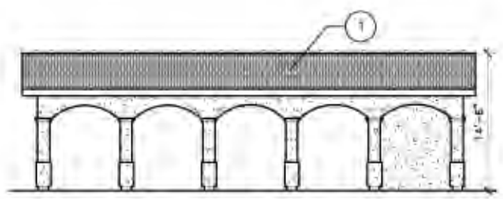


COMMITTAL SHELTER FLOOR PLAN 1 A-3.13
Scale: 1/8" = 1'-0"

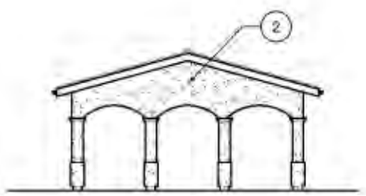
KEY NOTES:

1. SPANISH MISSION TILES BARREL TYPE
2. EXTERIOR CEMENT PLASTER
3. EXTERIOR PLASTER OVER CONCRETE MASONRY UNIT
4. STONE VENEER

COMMITTAL SHELTER NORTH ELEVATION 2 A-3.13
Scale: 1/8" = 1'-0"



COMMITTAL SHELTER EAST ELEVATION 3 A-3.13
Scale: 1/8" = 1'-0"



COMMITTAL SHELTER SOUTH ELEVATION 4 A-3.13
Scale: 1/8" = 1'-0"

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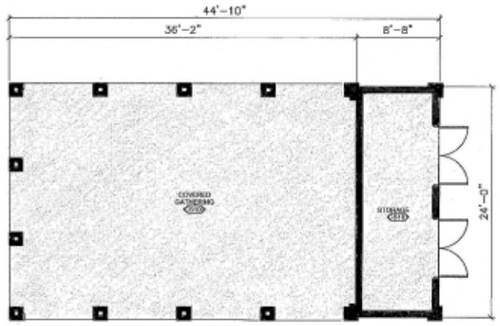
COMMITTAL SHELTER PLAN AND EXTERIOR ELEVATION

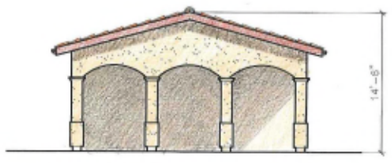
A-3



COMITTAL SHELTER FLOOR PLAN

Scale: 1/8" = 1'-0"

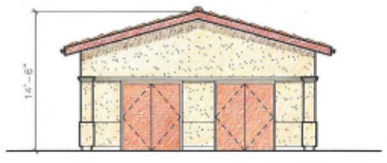
1 / A-3.01



COMITTAL SHELTER SOUTH ELEVATION

Scale: 1/8" = 1'-0"

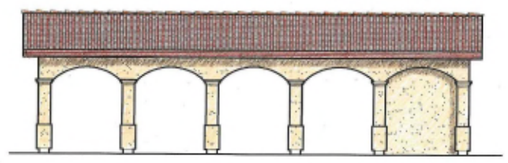
4 / A-2.01



COMITTAL SHELTER NORTH ELEVATION

Scale: 1/8" = 1'-0"

3 / A-3.01



COMITTAL SHELTER EAST ELEVATION

Scale: 1/8" = 1'-0"

2 / A-3.01

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Job. No.	0814.2114.02
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COMITTAL SHELTER FLOOR PLAN & ELEVATION

A-3.01

BURIAL COUNTS

BURIAL COUNTS	REQUIRED		PROVIDED	
IN-GROUND CRYPTS	80,400	38%	80,086	28.8%
OVERSIZE IN-GROUND	806		845	
IN-GROUND CREMAINS	49,080	58%	65,614	26.3%
COLUMBARIUM NICHES	91,600	62%	84,830	44.9%
TOTAL	208,906	100%	211,125	100%

PHASE 1 BURIAL COUNTS	REQUIRED		PROVIDED	
IN-GROUND CRYPTS	0	0%	0	0%
IN-GROUND CREMAINS	1,758	35%	1,750	35%
COLUMBARIUM NICHES	3,250	65%	3,250	65%
TOTAL	5,000	100%	5,000	100%

ASSUMPTIONS

1. COLUMBARIUM CREMAINS — 5 BURIALS PER LINEAR FOOT
2. ADMINISTRATION BUILDING — 2,280 SF
3. MAINTENANCE BUILDING — 3,780 SF
4. MAINTENANCE YARD — 1.2 ACRES
5. ASSEMBLY AREA — 8,000 SF FOR 308 PEOPLE
6. COMMITTAL SHELTER — 1,600 SF WITH PARKING FOR 30 CARS

DESIGN DESCRIPTION

1. PHASE ONE CONSTRUCTION IS 28.3 ACRES.
2. ROADS ORGANIZED IN A RADIAL FORM.
3. ENTRY ROAD ALIGNED WITH VIEW OF MOUNTAIN.
4. ASSEMBLY AREA ALIGNED ON STRONG AXIS.
5. COLUMBARIUM WALLS FOLLOW RADIAL PATTERN.
6. COMMITTAL SHELTER LOCATED DEEP WITHIN PROPERTY FOR PRIVACY.
7. PERIMETER WALLS AND BERMS USED TO PROVIDE PRIVACY AND MAXIMIZE BUILD-OUT.
8. COLUMBARIUMS ARE USED ON SOUTH SIDE OF PROPERTY ONLY.

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PROJECT/CLIENT NAME

Southern California Veterans Cemetery

Great Park
Irvine Boulevard
Irvine, California

PROJECT NUMBER

15039A

SUBMITTAL

Concept Plan

DATE

08 June 2016

CONSULTANTS

0 50' 100' 200'

REVISIONS

No.	Date	Description
	05.26.16	ISSUED FOR STATE REVIEW
	06.27.16	ISSUE FOR STATE REVIEW

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CHECKED BY: MD/SL

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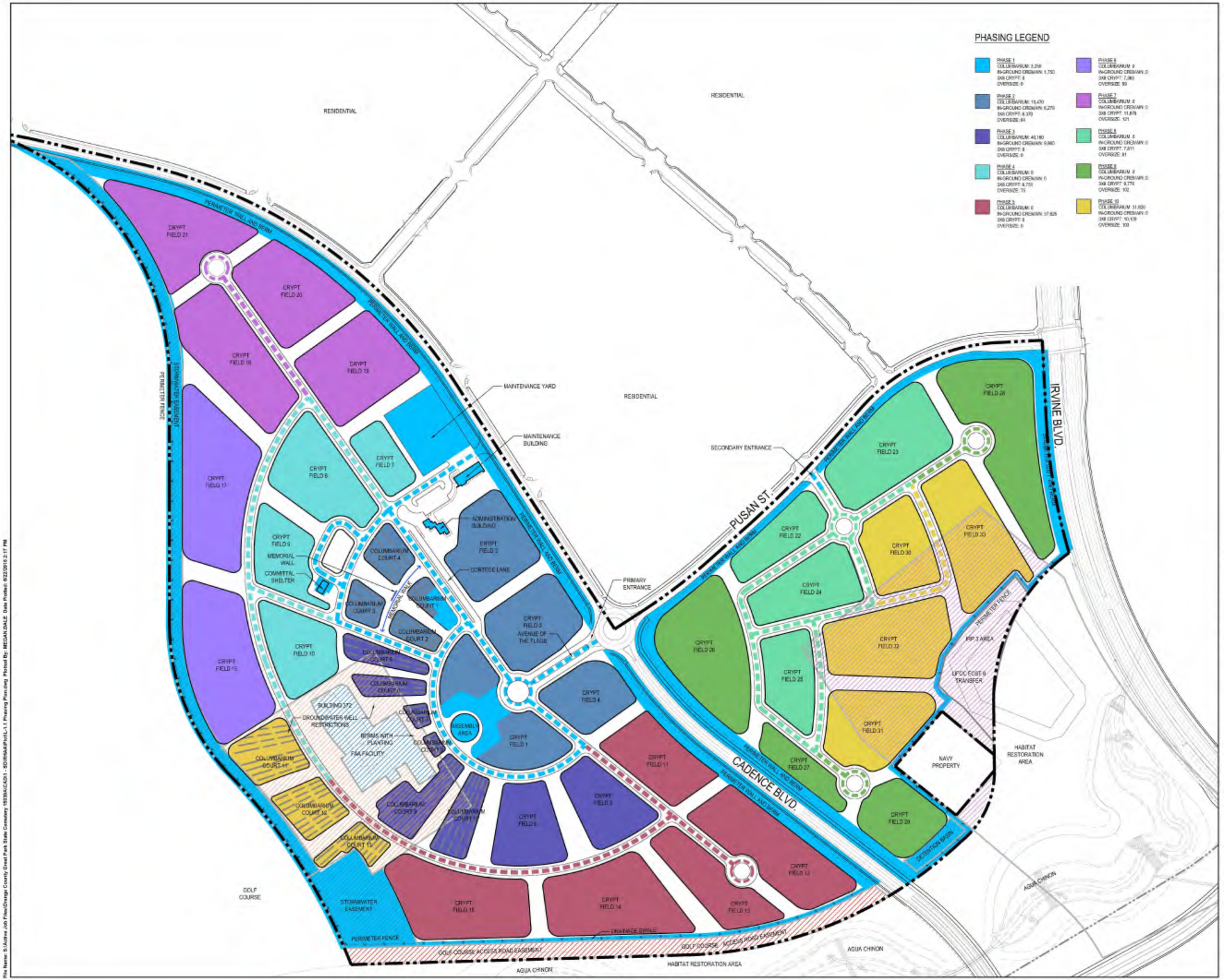
SHEET TITLE

Concept Plan

SHEET NUMBER

L1.0



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SHEET TITLE

Phasing Plan

SHEET NUMBER

L1.1

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TYPE A (TRAFFIC AND REGULATORY SIGNAGE)

SYMBOL / TYPE	TEXT
A1	STOP
A2	ONE WAY
A3	SPEED LIMIT 15 MPH
A4	CEMETERY VEHICLES ONLY
A5	FLORAL REGULATIONS
	ACCESSIBLE VAN PARKING
	VAN ACCESSIBLE
A8	DO NOT ENTER
A9	DO NOT DRINK
A10	CEMETERY HOURS
A11	EMPLOYEES ONLY
A12	SERVICE VEHICLES & DELIVERIES ONLY
A13	YIELD

TYPE C (CONSTRUCTION SIGNAGE)

SYMBOL / TYPE	TEXT
C1	TEMPORARY PROJECT SIGN
C2	TEMPORARY SAFETY SIGN

TYPE B (DIRECTIONAL SIGNAGE)

SYMBOL / TYPE	TEXT
B1	PUBLIC INFORMATION → ADMINISTRATION → RESTROOMS →
B2	→ ALL COLUMBARIA COURTS → CRYPT FIELDS 1, 2, 3, 7, 8, 9, 10, 16, 17, 18, 19, 20, 21 ← CRYPT FIELDS 4, 5, 6, 11, 12, 13,14,15 → COMMITTAL SERVICE SHELTER ← ASSEMBLY AREA → MEMORIAL WALK → ALL FUNERALS
B3	ALL FUNERALS WAIT HERE →
B4	← MEMORIAL WALK
B5	COMMITTAL SERVICE SHELTER →
B6	ASSEMBLY AREA →
B7	← COLUMBARIA 1 AND 2
B8	CEMETERY MAP
B9	← CEMETERY MAIN ENTRANCE
B10	COLUMBARIUM COURT 1
B11	COLUMBARIUM COURT 2
B12	COLUMBARIUM COURT 3
B13	COLUMBARIUM COURT 4
B14	COLUMBARIUM COURT 5
B15	COLUMBARIUM COURT 6
B16	COLUMBARIUM COURT 7
B17	COLUMBARIUM COURT 8

TYPE B (DIRECTIONAL SIGNAGE)

SYMBOL / TYPE	TEXT
B18	COLUMBARIUM COURT 9
B19	COLUMBARIUM COURT 10
B20	COLUMBARIUM COURT 11
B21	COLUMBARIUM COURT 12
B22	COLUMBARIUM COURT 13
B23	CRYPT FIELD 1
B24	CRYPT FIELD 2
B25	CRYPT FIELD 3
B26	CRYPT FIELD 4
B27	CRYPT FIELD 5
B28	CRYPT FIELD 6
B29	CRYPT FIELD 7
B30	CRYPT FIELD 8
B31	CRYPT FIELD 9
B32	CRYPT FIELD 10
B33	CRYPT FIELD 11
B34	CRYPT FIELD 12
B35	CRYPT FIELD 13
B36	CRYPT FIELD 14
B37	CRYPT FIELD 15
B38	CRYPT FIELD 16
B39	CRYPT FIELD 17

TYPE B (DIRECTIONAL SIGNAGE)

SYMBOL / TYPE	TEXT
B40	CRYPT FIELD 18
B41	CRYPT FIELD 19
B42	CRYPT FIELD 20
B43	CRYPT FIELD 21
B44	CRYPT FIELD 22
B45	CRYPT FIELD 23
B46	CRYPT FIELD 24
B47	CRYPT FIELD 25
B48	CRYPT FIELD 26
B49	CRYPT FIELD 27
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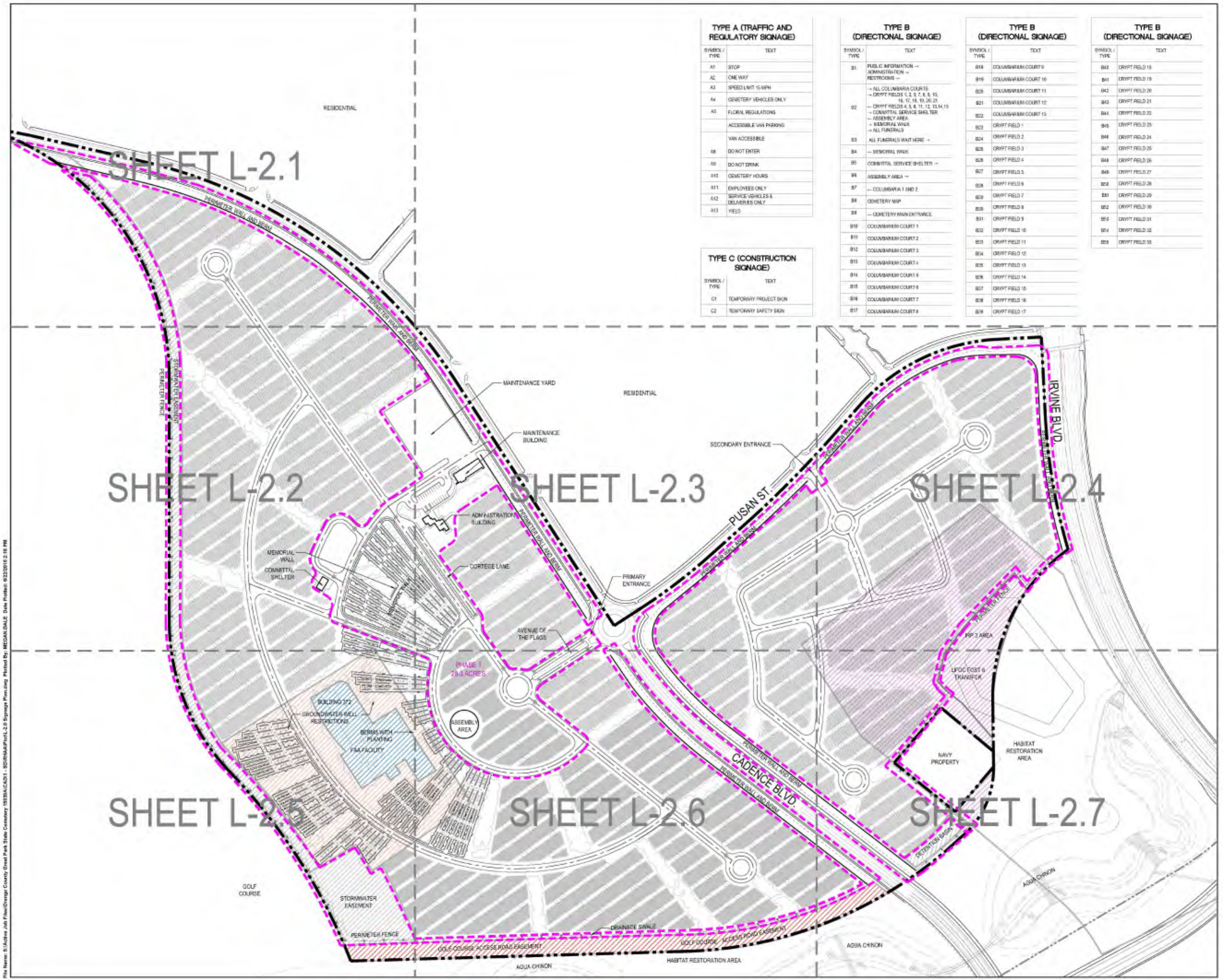
B52	CRYPT FIELD 30
B53	CRYPT FIELD 31
B54	CRYPT FIELD 32
B55	CRYPT FIELD 33



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PROJECT/CLIENT NAME

Southern California Veterans Cemetery

Great Park
Irvine Boulevard
Irvine, California

PROJECT NUMBER

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SUBMITTAL

Concept Plan

DATE

08 June 2016

CONSULTANTS

0 50 100 200

REVISIONS

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	05.25.16	RESUB FOR STATE REVIEW
	05.27.16	ISSUE FOR ESTATE REVIEW

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REGISTRATION AND SIGNATURE

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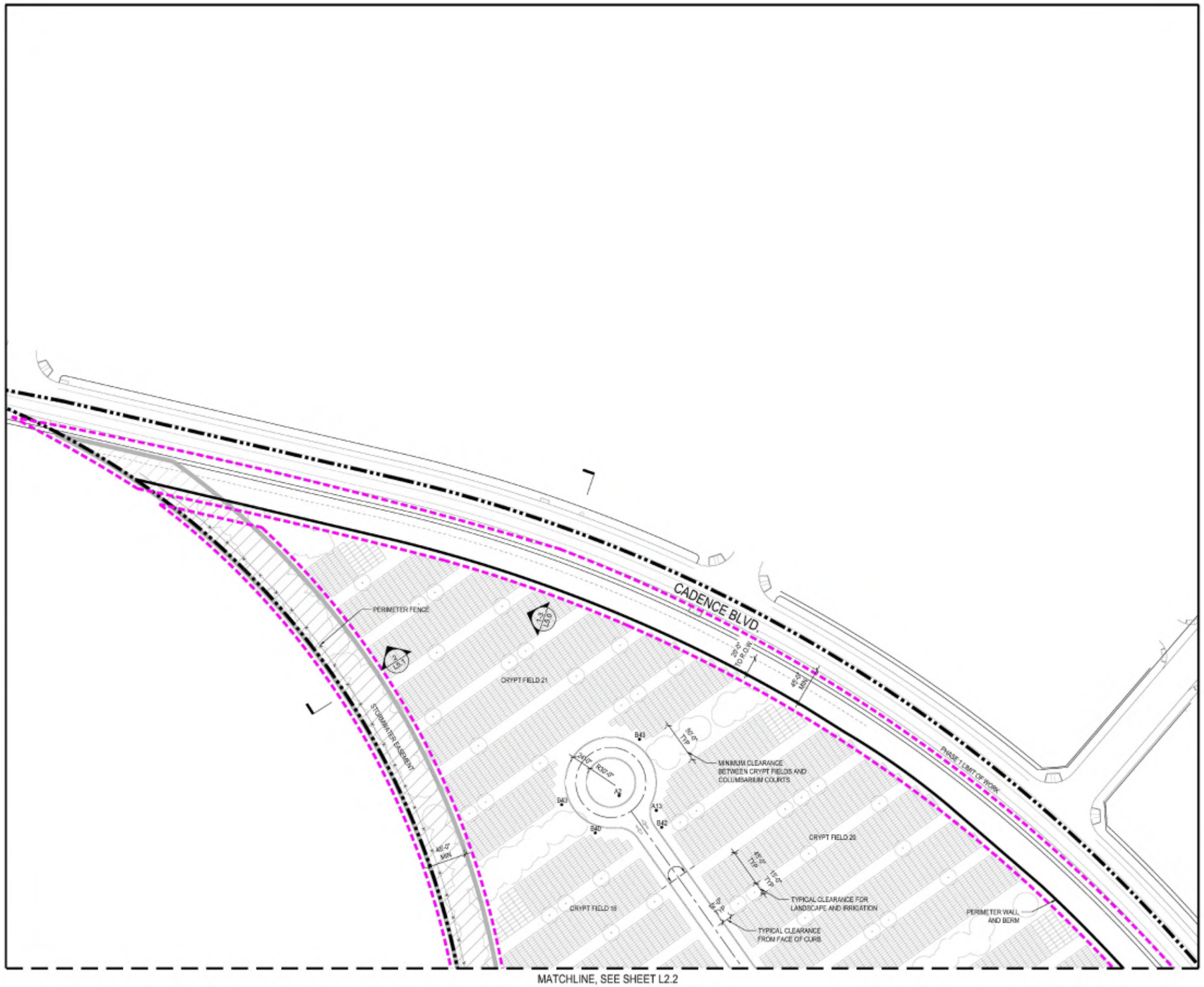
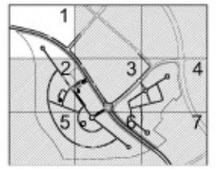
SHEET TITLE

Layout and Signage Plan

SHEET NUMBER

L2.0





KEY MAP

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Southern California Veterans Cemetery

Great Park
Irvine Boulevard
Irvine, California

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0 20' 40' 80'

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Layout and Signage Plan Area 1

SHEET NUMBER
L2.1

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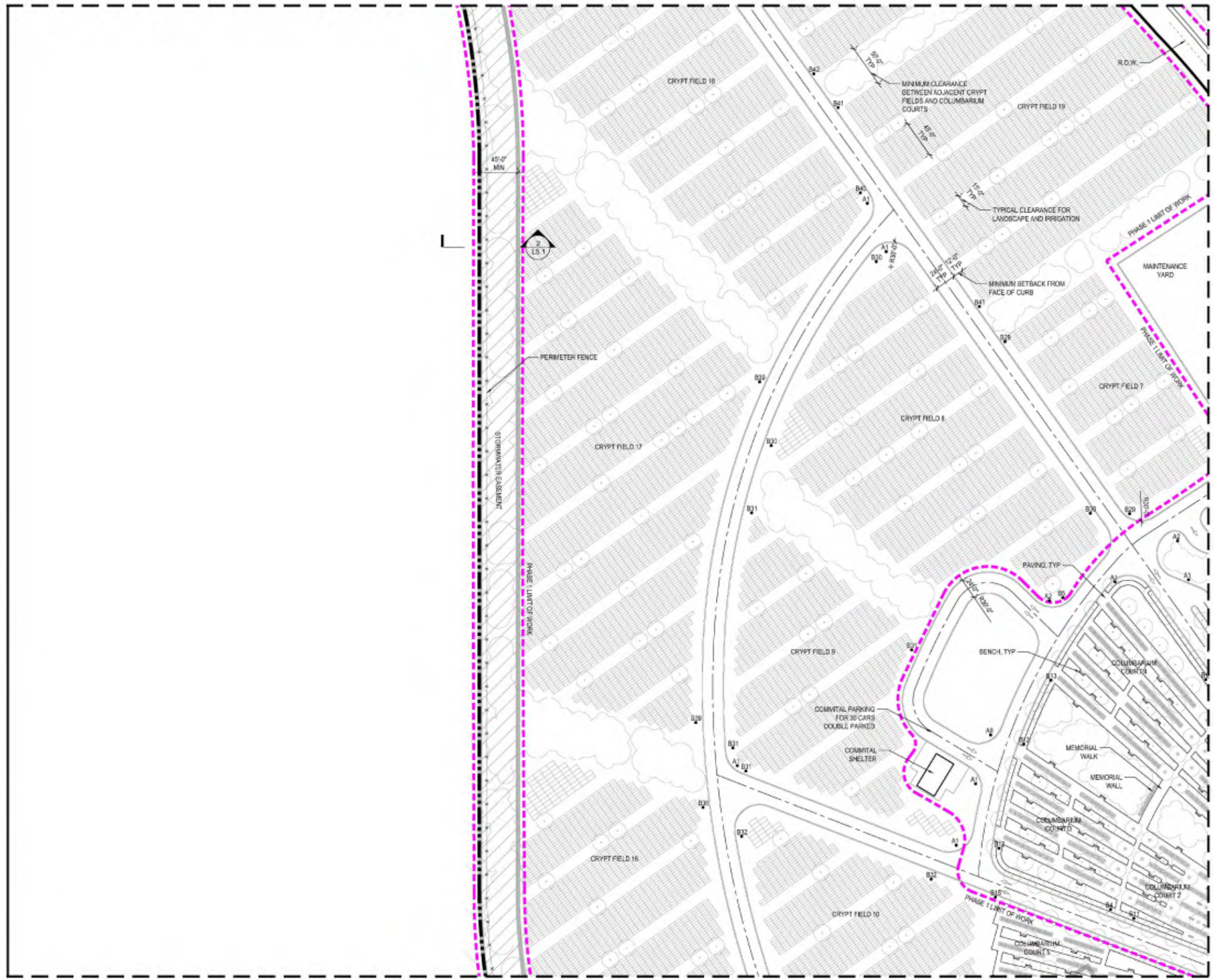
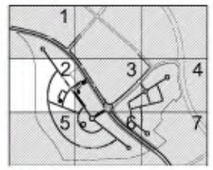


MATCHLINE, SEE SHEET L2.5



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SHEET TITLE

Layout and Signage Plan Area 2

SHEET NUMBER

L2.2

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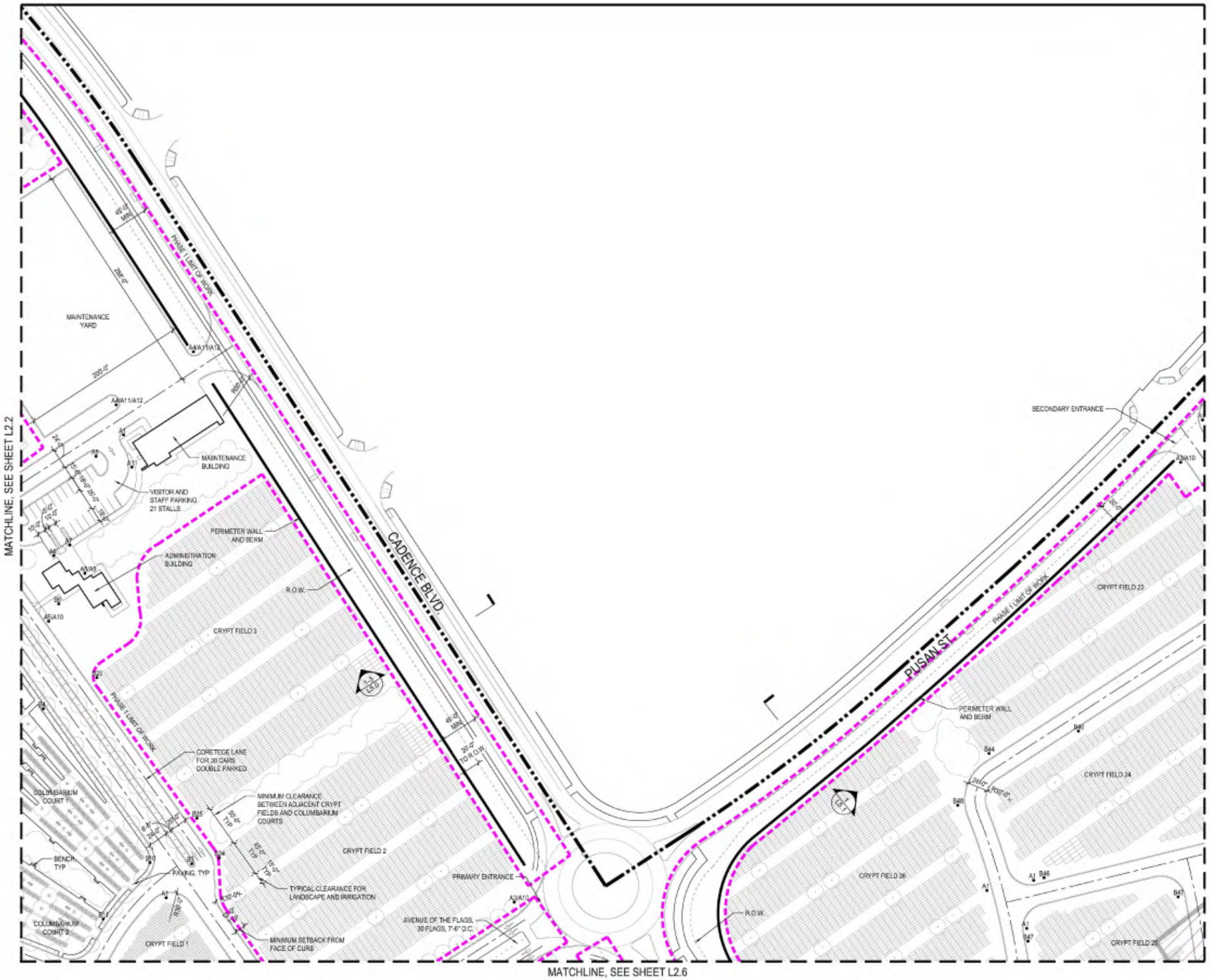

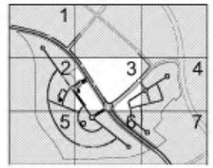

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SHEET TITLE
Layout and Signage Plan Area 3

SHEET NUMBER
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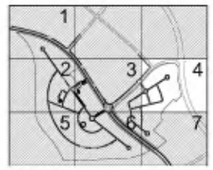

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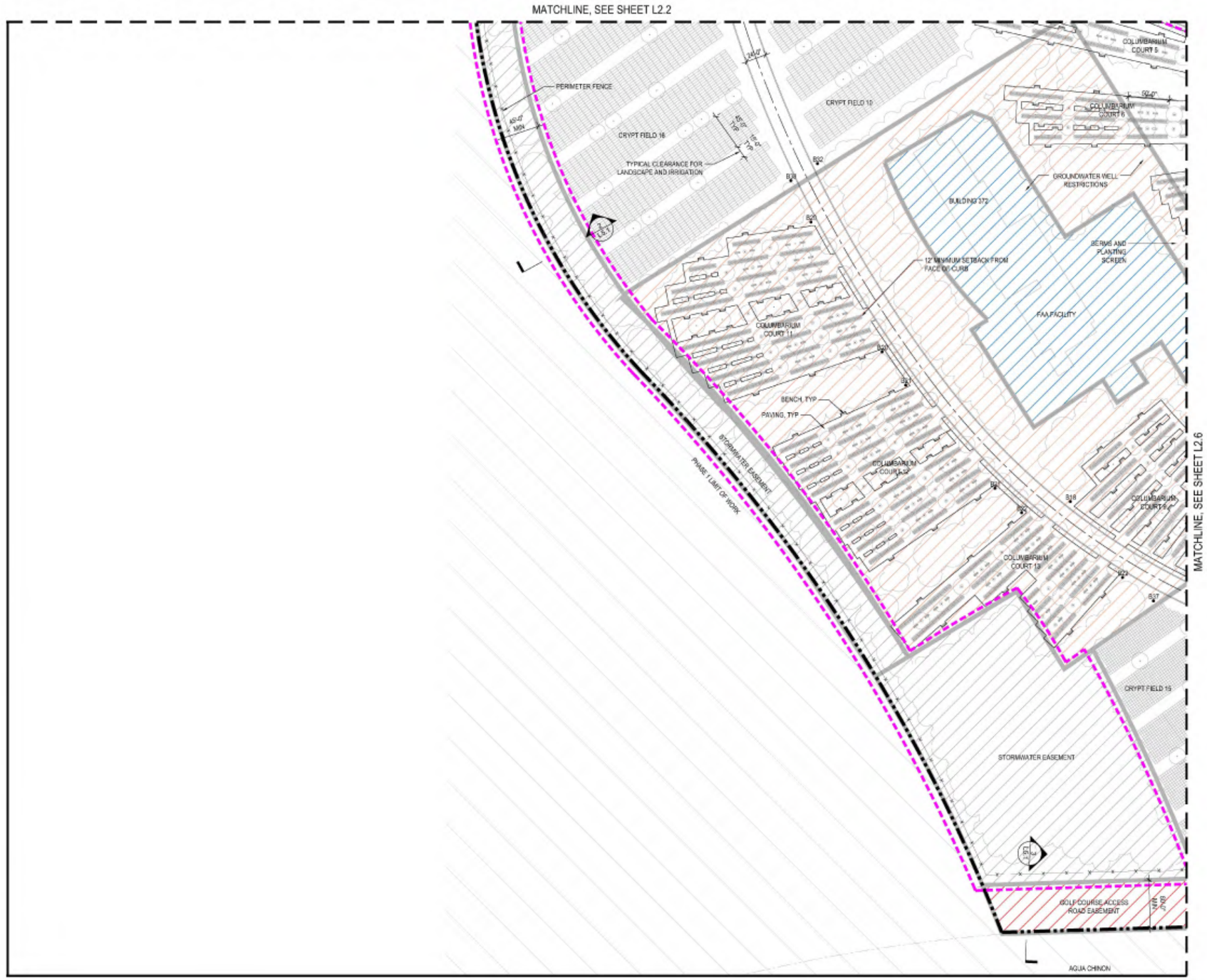
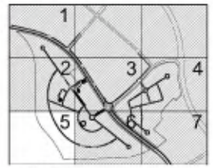
Layout and Signage Plan Area 4

SHEET NUMBER
L2.4





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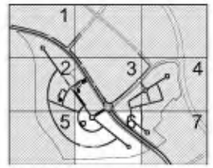
SHEET TITLE
Layout and Signage Plan Area 5

SHEET NUMBER
L2.5



KEY MAP

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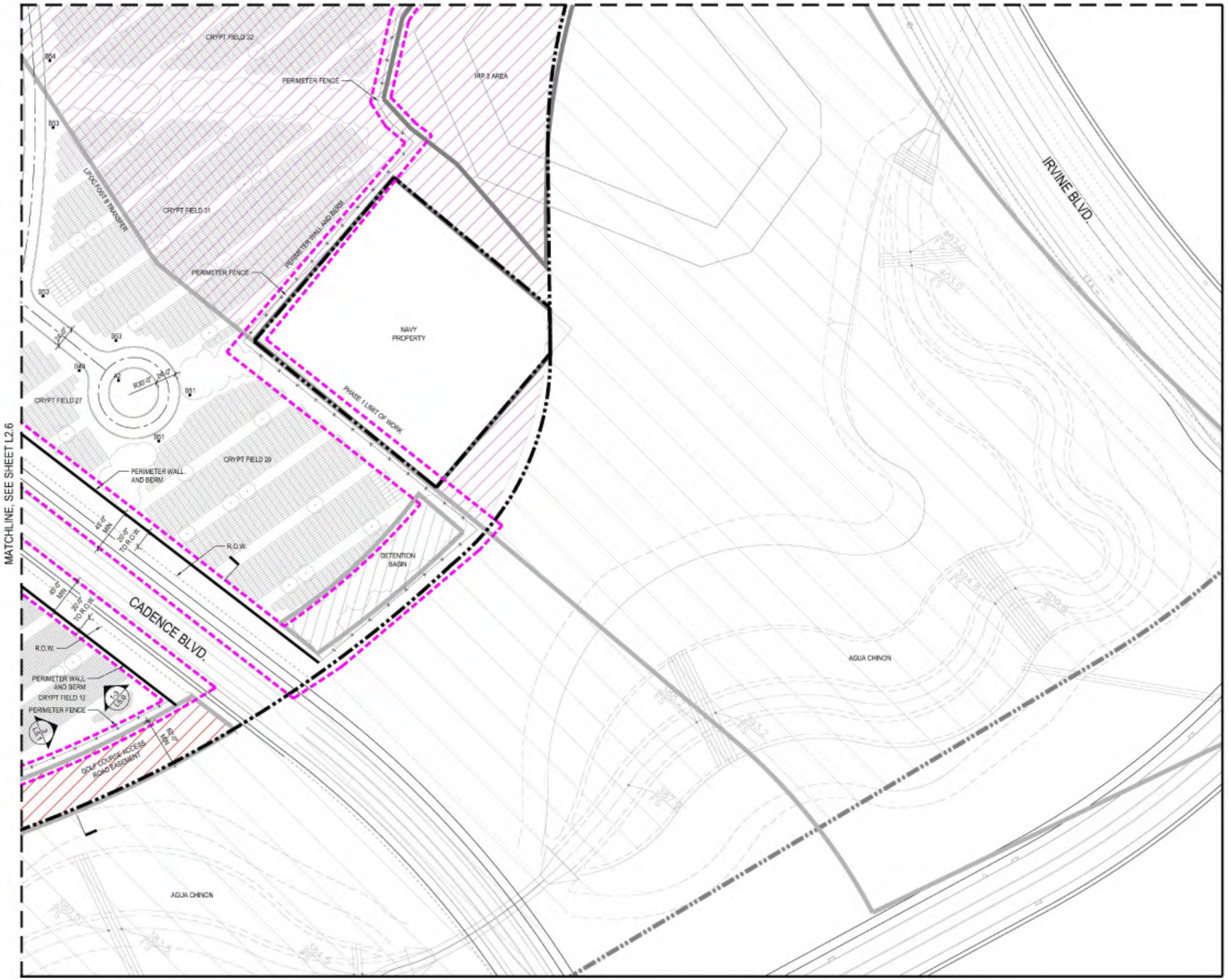
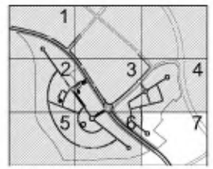
SHEET TITLE
Layout and Signage Plan Area 6

SHEET NUMBER
L2.6

MATCHLINE, SEE SHEET L2.4

MATCHLINE, SEE SHEET L2.6





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SHEET TITLE

Layout and Signage Plan Area 7

SHEET NUMBER

L2.7

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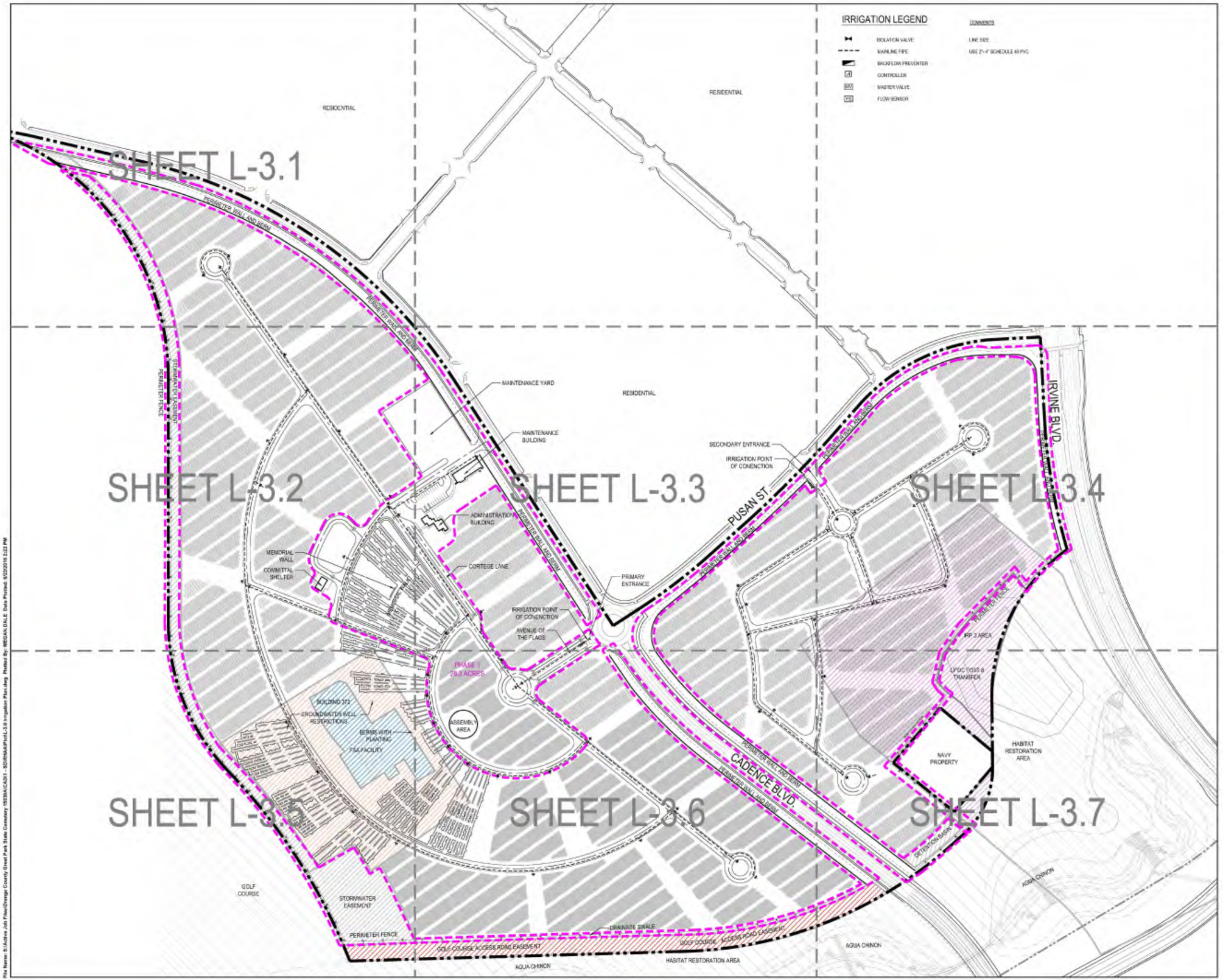

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PROJECT/CLIENT NAME
Southern California Veterans Cemetery

Great Park
Irvine Boulevard
Irvine, California

PROJECT NUMBER
15039A

SUBMITTAL
Concept Plan

DATE
08 June 2016

CONSULTANTS

0 50 100 200

REVISIONS

No.	Date	Description
	03.25.16	ISSUE FOR STATE REVIEW
	05.27.16	ISSUE FOR STATE REVIEW

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CHECKED BY: MD/SL

REGISTRATION AND SIGNATURE

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SHEET TITLE
Irrigation Plan

SHEET NUMBER
L3.0

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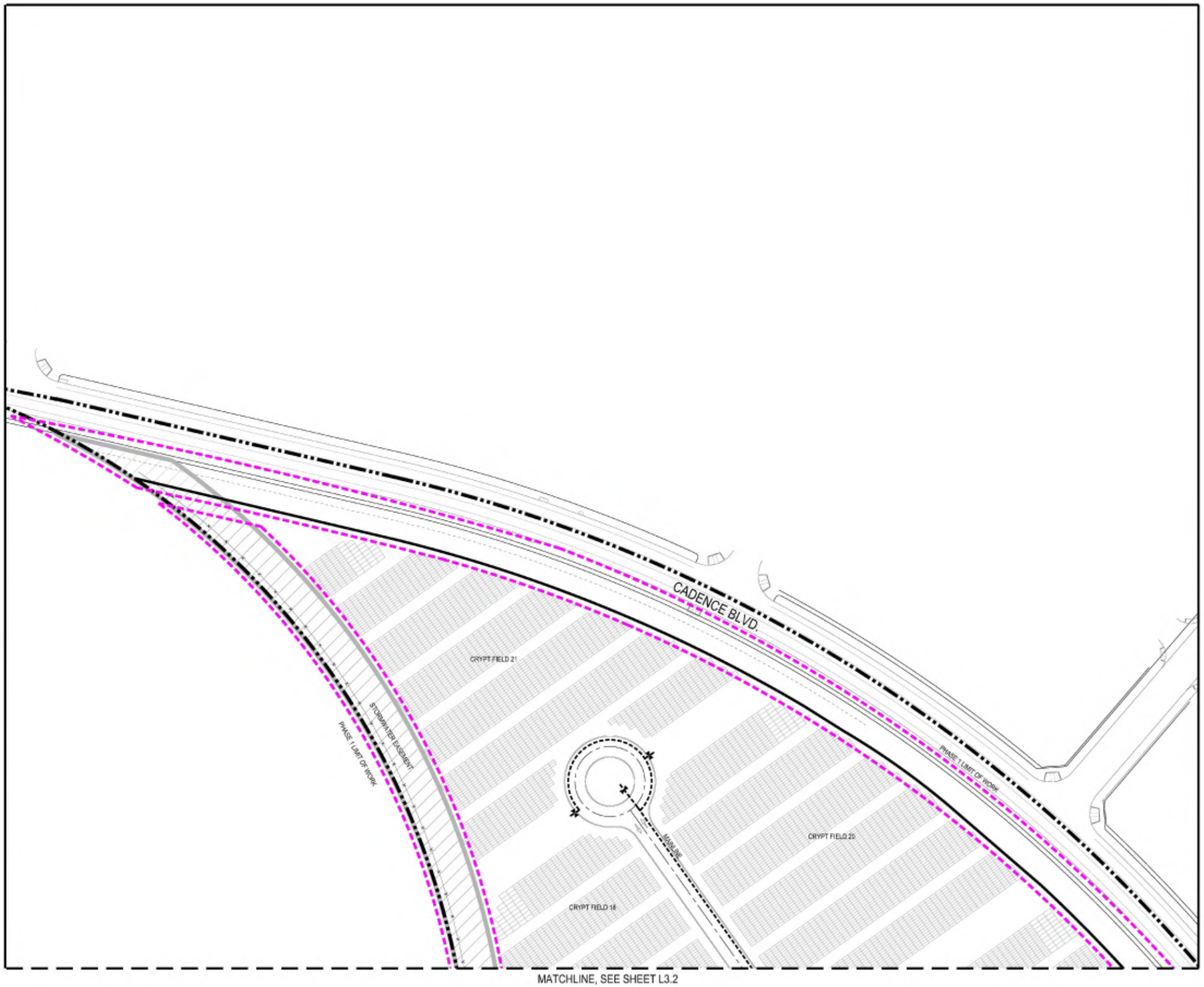

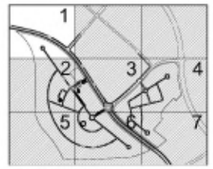

KEY MAP

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220 Miller Avenue, Mill Valley, CA 94941
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PROJECT/CLIENT NAME

Southern California Veterans Cemetery

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Irvine, California

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CONSULTANTS

0 20' 40' 80'

REVISIONS

No.	Date	Description
	05.26.16	ISSUE FOR STATE REVIEW
	06.27.16	ISSUE FOR STATE REVIEW

DRAWN BY: CA
CHECKED BY: MD/SL

REGISTRATION AND SIGNATURE

NOT FOR CONSTRUCTION

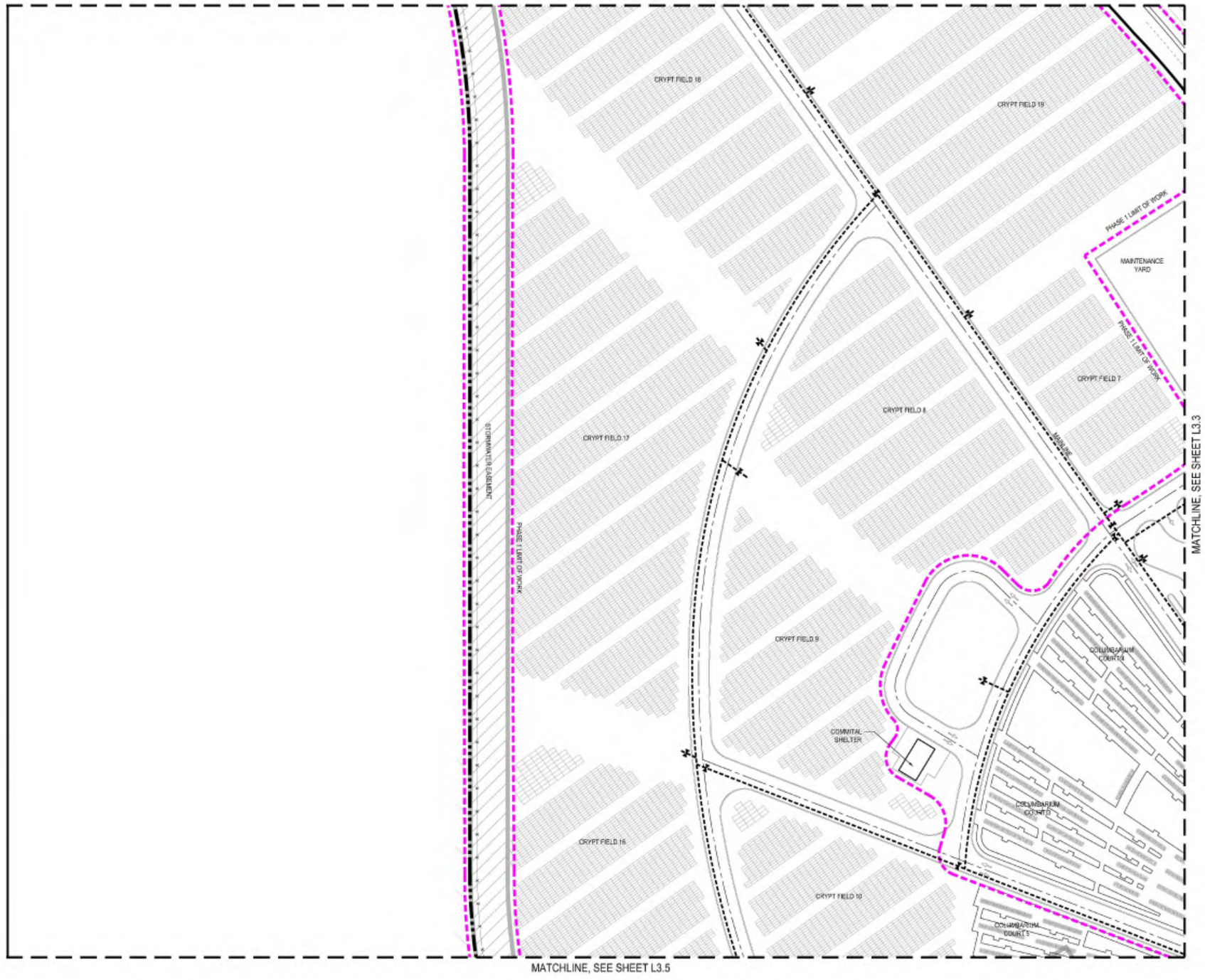
SHEET TITLE

Irrigation Plan
Area 1

SHEET NUMBER

L3.1

MATCHLINE, SEE SHEET L3.1



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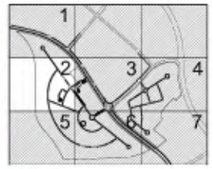

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REGISTRATION AND SIGNATURE

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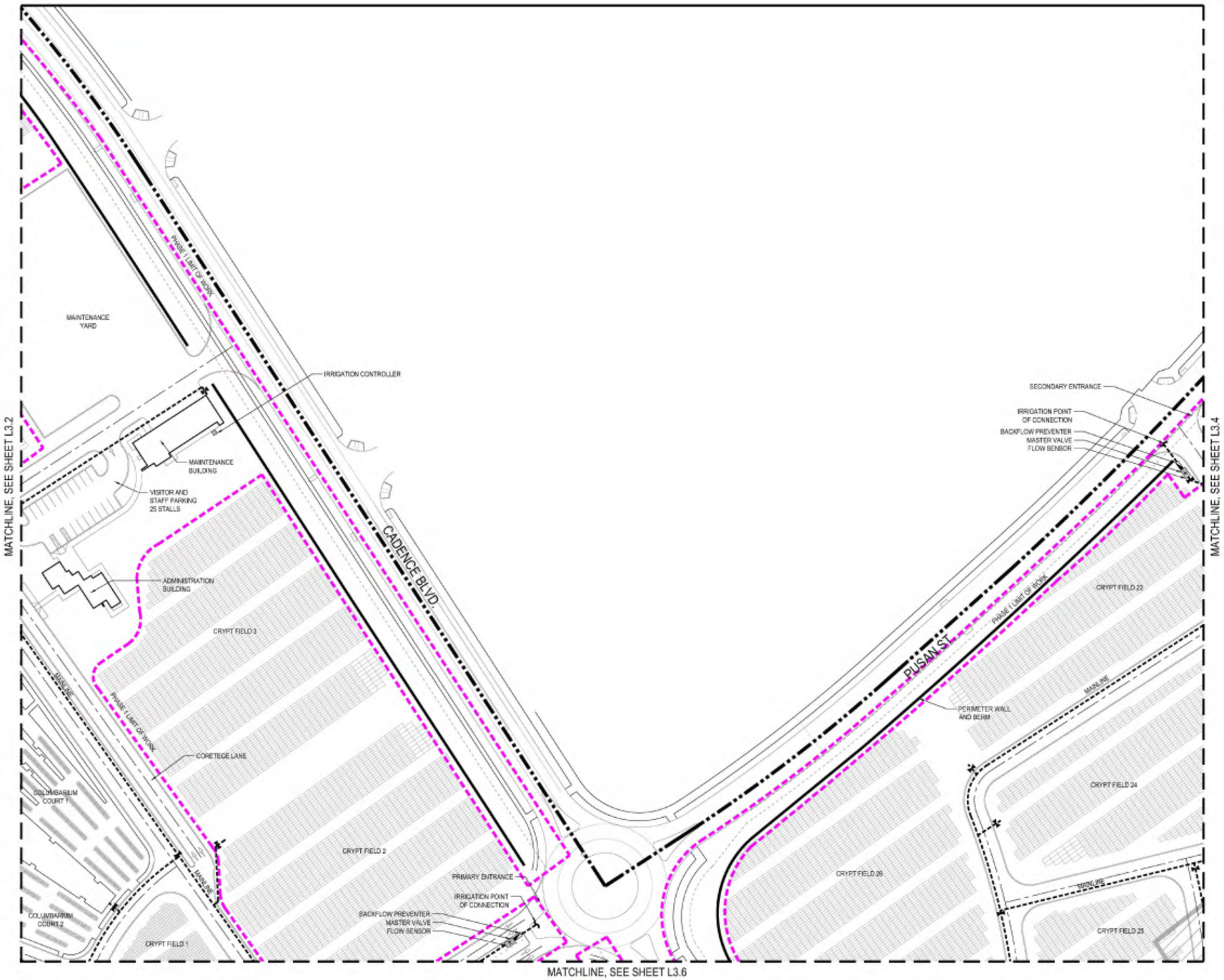
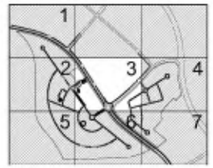
SHEET TITLE

Irrigation Plan
Area 2

SHEET NUMBER

L3.2





KEY MAP

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0 20' 40' 80'

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No.	Date	Description
	03.29.16	ISSUE FOR STATE REVIEW
	05.27.16	ISSUE FOR STATE REVIEW

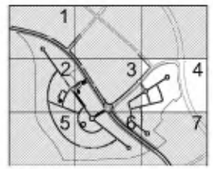
DRAWN BY: CA
CHECKED BY: MD/SL

REGISTRATION AND SIGNATURE

NOT FOR CONSTRUCTION

SHEET TITLE
Irrigation Plan
Area 3

SHEET NUMBER
L3.3



KEY MAP

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CONSULTANTS

0 20' 40' 80'

REVISIONS

No.	Date	Description
	03.28.16	ISSUE FOR STATE REVIEW
	05.27.16	ISSUE FOR STATE REVIEW

DRAWN BY: CA
CHECKED BY: MD/SL

REGISTRATION AND SIGNATURE

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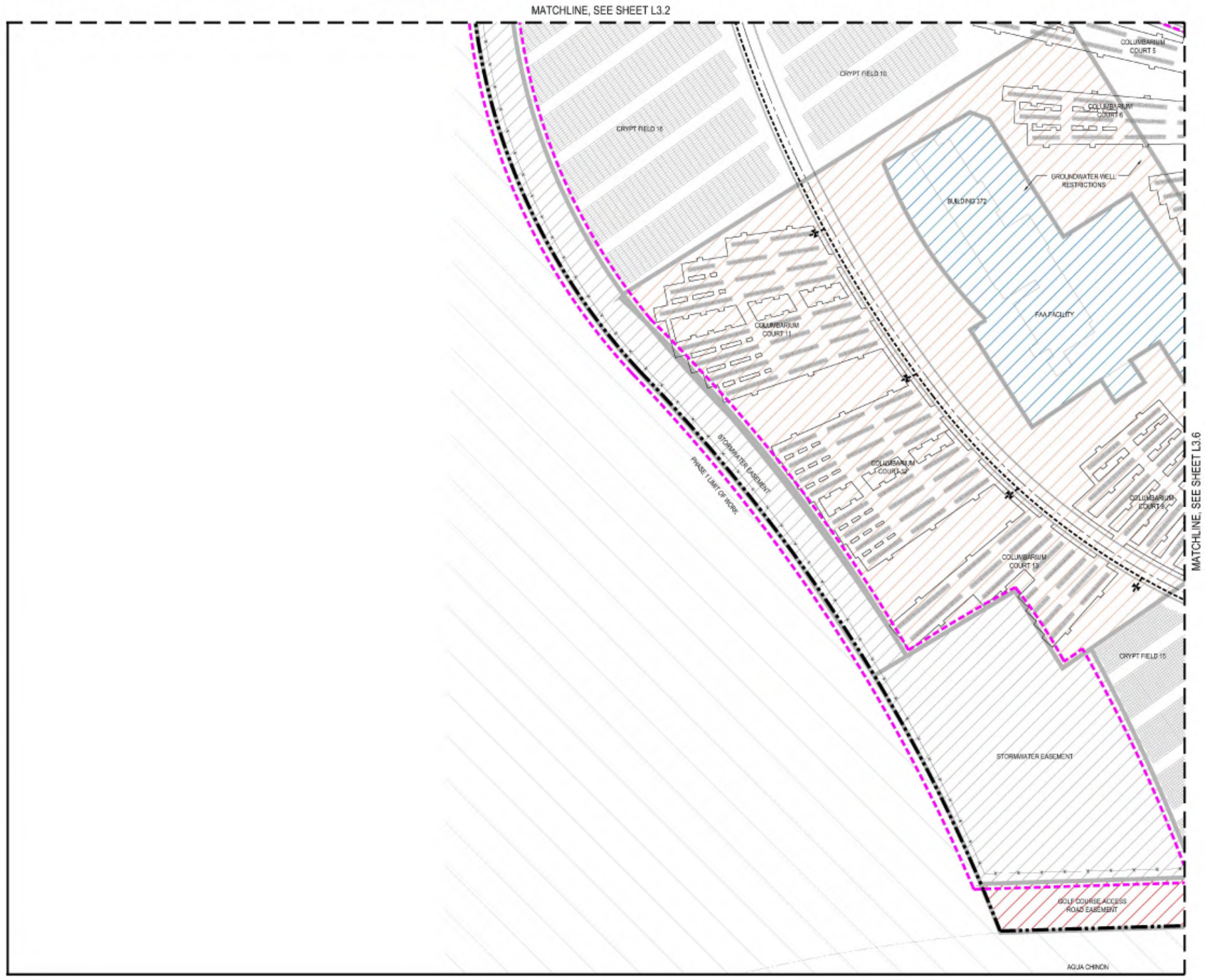
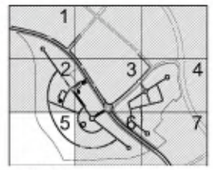
SHEET TITLE
Irrigation Plan
Area 4

SHEET NUMBER
L3.4





KEY MAP

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REGISTRATION AND SIGNATURE

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SHEET TITLE

Irrigation Plan
Area 5

SHEET NUMBER

L3.5

File Name: S:\Active Job Files\Orange County Great Park State Cemetery 15039A\CAD\1 - SD\RHAA\Plot\L-3.5 Irrigation Plan.dwg Plotted By: MEGAN DALE Date Plotted: 9/22/2016 2:24 PM

MATCHLINE, SEE SHEET L3.3

MATCHLINE, SEE SHEET L3.5

MATCHLINE, SEE SHEET L3.7

CRYPT FIELD 2
CRYPT FIELD 4
CRYPT FIELD 26
CRYPT FIELD 25
CRYPT FIELD 1
CRYPT FIELD 27
CRYPT FIELD 11
CRYPT FIELD 5
CRYPT FIELD 6
CRYPT FIELD 12
CRYPT FIELD 15
CRYPT FIELD 14
CRYPT FIELD 13

COLUMBARIUM COURT 5
COLUMBARIUM COURT 6
COLUMBARIUM COURT 7
COLUMBARIUM COURT 8
COLUMBARIUM COURT 9
COLUMBARIUM COURT 10

ASSEMBLY AREA

GROUNDWATER WELL RELOCATIONS

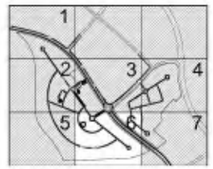
PHASE 1 LIMIT OF WORK

CADENCE BLVD.

MAIN RD.

GOLF COURSE ACCESS ROAD EASEMENT

AGUA CHINON



KEY MAP

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CHECKED BY: MD/SL

REGISTRATION AND SIGNATURE

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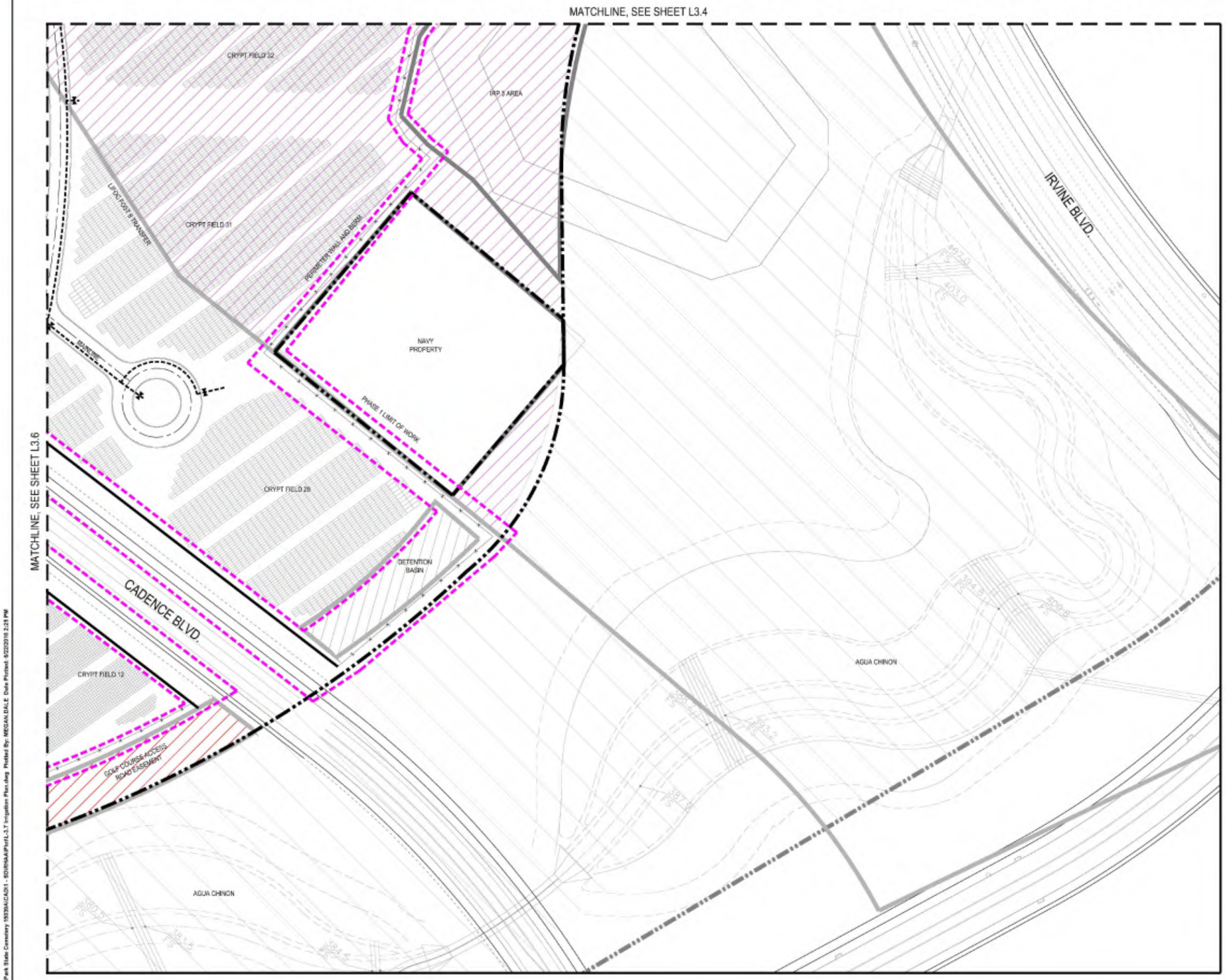
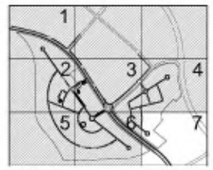
SHEET TITLE
Irrigation Plan
Area 6

SHEET NUMBER
L3.6

File Name: S:\Active Job Files\Orange County Great Park State Cemetery 15039A\CAD\1 - SD\15039APlotL3.6 Irrigation Plan.dwg Plotted By: MEGAN DALE Date Plotted: 6/22/2016 2:23 PM





KEY MAP

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	05.27.16	ISSUE FOR STATE REVIEW

DRAWN BY: CA
CHECKED BY:MD/SL

REGISTRATION AND SIGNATURE

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SHEET TITLE

Irrigation Plan
Area 7

SHEET NUMBER

L3.7

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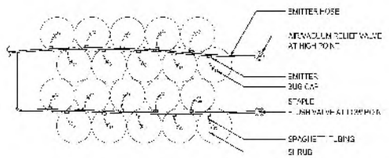
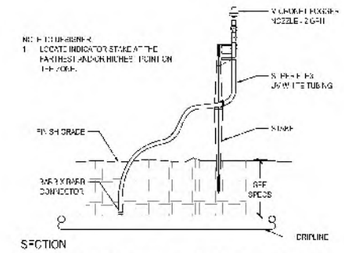
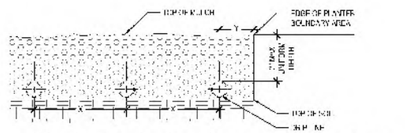


16 SHRUB EMITTER
SCALE: 3/16"=1'-0"

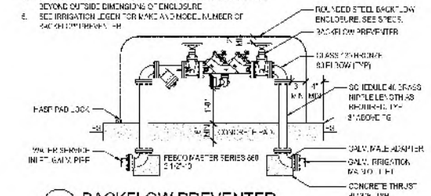


11 DRIPLINE OPERATION INDICATOR
NTS

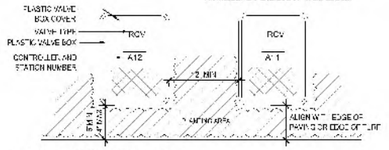
X DIMENSION (INCHES)	Y DIMENSION (INCHES)
12	4 OR 8



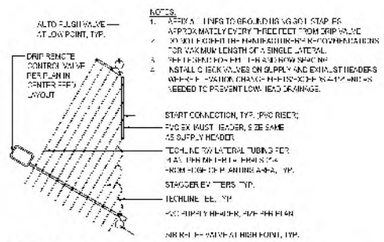
6 DRIP TUBING ON GRADE INSTALLATION
SCALE: 3/4"=1'-0"



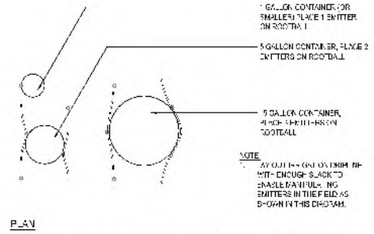
1 BACKFLOW PREVENTER
SCALE: 3/4"=1'-0"



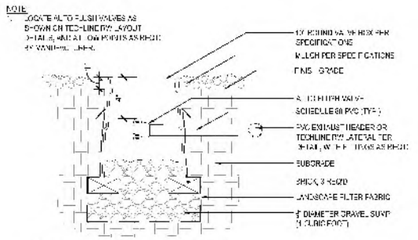
17 VALVE BOXES
SCALE: 1-1/2"=1'-0"



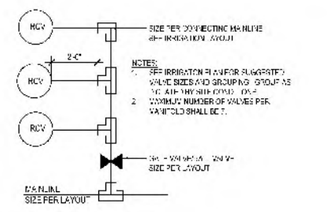
12 IRREGULAR DRIP TUBING LAYOUT
NTS



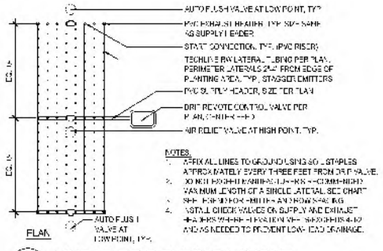
7 DRIP TUBING EMITTER PLACEMENT
SCALE: 1"=1'-0"



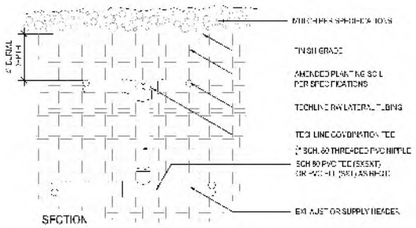
2 AUTO FLUSH VALVE
SCALE: 3/4"=1'-0"



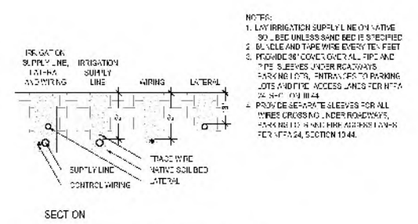
18 VALVE GROUPINGS
SCALE: 1/2"=1'-0"



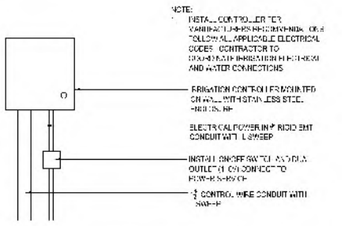
13 LINEAR DRIP TUBING LAYOUT
SCALE: 1"=1'-0"



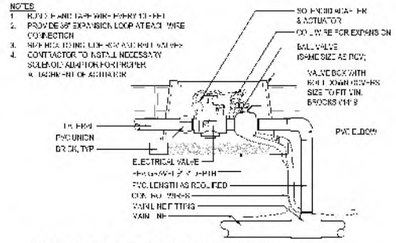
8 DRIP TUBING START CONNECTION
SCALE: 3"=1'-0"



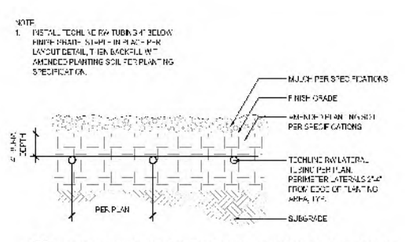
3 IRRIGATION TRENCHING
SCALE: 1/2"=1'-0"



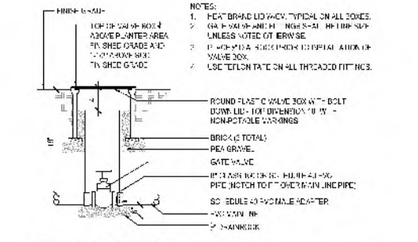
19 WALL-MOUNTED IRRIGATION CONTROL
SCALE: 3/4"=1'-0"



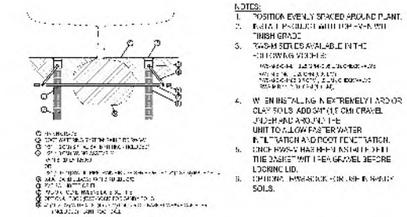
14 REMOTE CONTROL VALVE
SCALE: 1/2"=1'-0"



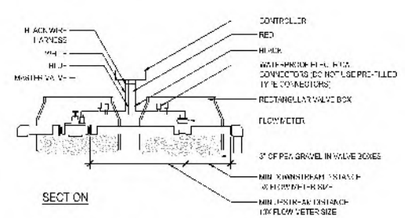
9 DRIP TUBING SUBGRADE INSTALLATION
SCALE: 1-1/2"=1'-0"



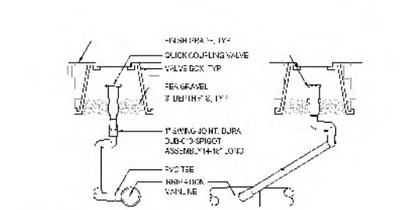
4 ISOLATION GATE VALVE
SCALE: 3/4"=1'-0"



15 ROOT WATER SYSTEM
SCALE: 1/2" = 1'-0"



10 MASTER VALVE AND FLOW METER
SCALE: 3/4"=1'-0"



5 QUICK COUPLING VALVE
SCALE:

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(818) 843-6225 | (818) 567-4811 | rhaa.com

PROJECT/CLIENT NAME
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Irvine, California

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SUBMITTAL
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CONSULTANTS

REVISIONS

No.	Date	Description
	05.04.16	ISSUE FOR CITY SUBMITTAL
	05.31.16	ISSUE FOR ESTATE REVIEW

DRAWN BY: CA
CHECKED BY: MD/BL

REGISTRATION AND SIGNATURE

NOT FOR CONSTRUCTION

SHEET TITLE
Irrigation Details

SHEET NUMBER
L3.8

PLANT LIST

TREES

QTY	ABBR	BOTANICAL NAME	COMMON NAME	SPREAD	HEIGHT	WATER USE
x	ACA FAR	*Acacia farnesiana*	Sweet Acacia	15-20'	20'	VL
x	BUT CAP	*Butia capitata*	Pindo Palm	10-15'	10-20'	L
x	FRA VEL	*Fraxinus velutina*	Arizona Ash	30'	30-40'	M
x	OLE EUR	*Olea europaea*	Olive	20'-30'	20'-30'	L
x	PHO DAC	*Phoenix dactylifera*	Date Palm	25-40'	60'	L
x	PIS CHI	*Pistacia chinensis*	Chinese Pistache	30-60'	30-60'	M
x	QUE AGR	*Quercus agrifolia*	Coast Live Oak	25-70'	25-70'	VL
x	QUE LOB	*Quercus lobata*	Valley Oak	70'	70'	M
x	SCH MOL	*Schinus molle*	California Pepper Tree	25-50'	25-40'	VL
x	ULM PAR	*Ulmus parvifolia*	Chinese Evergreen Elm	50-70'	40-60'	M

SHRUBS

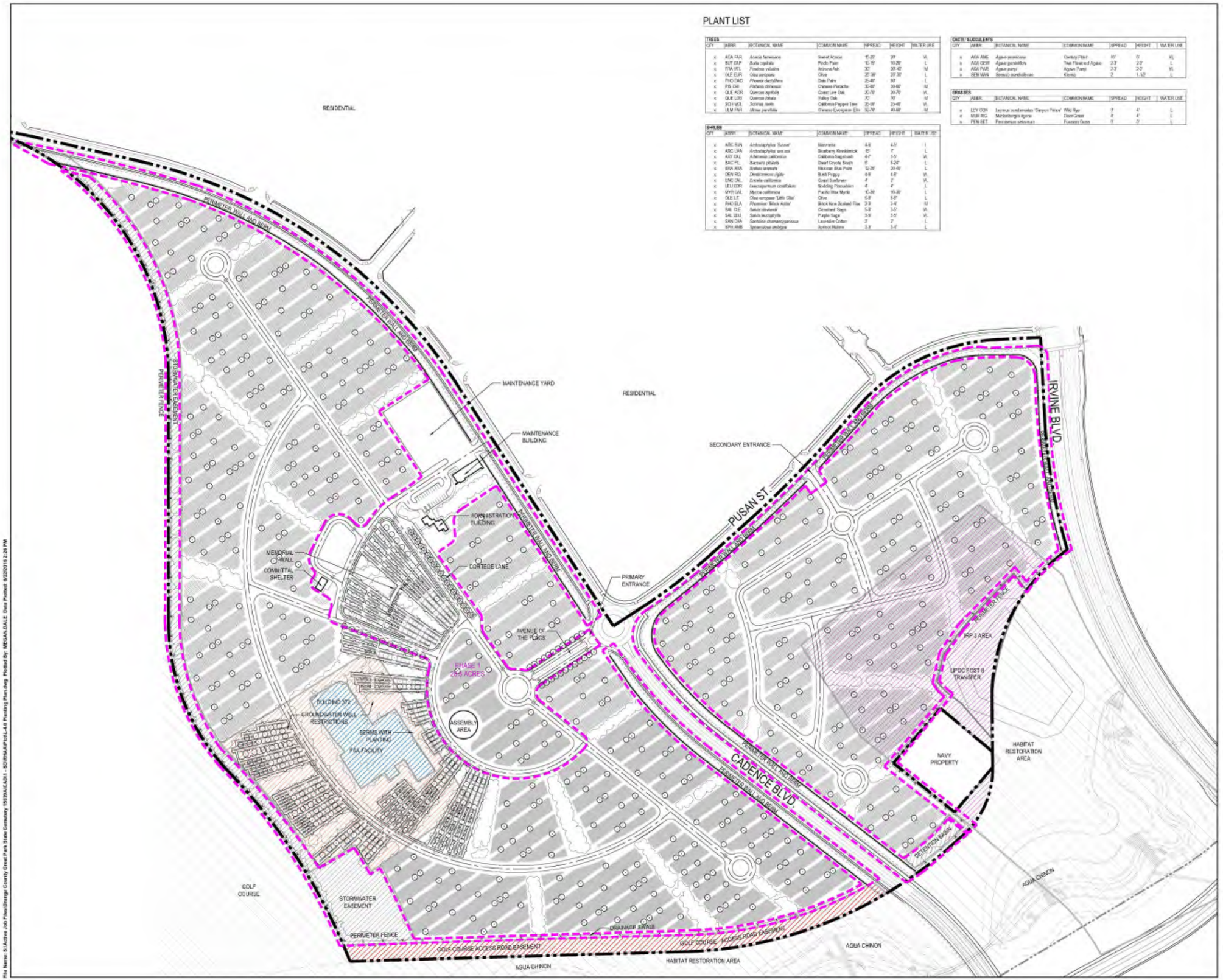
QTY	ABBR	BOTANICAL NAME	COMMON NAME	SPREAD	HEIGHT	WATER USE
x	ARC RUN	*Arctostaphylos 'Sunset'*	Manzanita	4-8'	4-5'	L
x	ARC UVA	*Arctostaphylos uva-ursi*	Bearberry, Kinnikinnick	8'-	1'	L
x	ATR CAL	*Atriplex californica*	California Saltbush	4-7'	1-5'	VL
x	BAC PIL	*Bacharis pilularis*	Dwarf Coyote Brush	8'	6-24'	L
x	BRA ROS	*Brahea armata*	Mexican Blue Palm	12-25'	20-40'	L
x	DEN RIG	*Dendromecon rigida*	Bush Poppy	4-8'	4-8'	VL
x	ENC CAL	*Eriolia californica*	Coast Sunflower	4'	2'	VL
x	LEU CON	*Leucadendron conifolium*	Nodding Pincushion	4'	4'	L
x	MYR CAL	*Myrica californica*	Pacific Wax Myrtle	10-30'	10-30'	L
x	OLE LIT	*Olea europaea 'Little Ollie'*	Olive	5-8'	5-8'	L
x	PHO ELA	*Phormium 'Black Adder'*	Black New Zealand Flax	2-3'	2-4'	M
x	RHA CEI	*Salvia clevelandi*	Cleveland Sage	5-8'	3-5'	VL
x	SAL LEU	*Salvia leucophylla*	Purple Sage	3-5'	3-5'	VL
x	SAN CHA	*Santolina chamaecyparissus*	Lavender Cotton	3'	2'	L
x	XPH AME	*Xylorrhiza orcuttii*	Apricot Mallow	3-4'	3-4'	L

CACTI / SUCCULENTS

QTY	ABBR	BOTANICAL NAME	COMMON NAME	SPREAD	HEIGHT	WATER USE
x	AGA AME	*Agave americana*	Century Plant	10'	6'	VL
x	AGA GEM	*Agave geminiflora*	Twin Flowered Agave	2-3'	2-3'	L
x	AGA PAR	*Agave parryi*	Agave Parry	2-3'	2-3'	VL
x	SEN MAN	*Senecio mandraliscae*	Kleinia	2'	1-1/2'	L

GRASSES

QTY	ABBR	BOTANICAL NAME	COMMON NAME	SPREAD	HEIGHT	WATER USE
x	LEY CON	*Leymus condensatus 'Canyon Prince'*	Wild Rye	3'	4'	L
x	MUH RIG	*Muhlenbergia rigens*	Deer Grass	4'	4'	L
x	PEN SET	*Pennisetum setaceum*	Fountain Grass	3'	3'	L



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PROJECT/CLIENT NAME

Southern California Veterans Cemetery

Great Park
Irvine Boulevard
Irvine, California

PROJECT NUMBER

15039A

SUBMITTAL

Concept Plan

DATE

08 June 2016

CONSULTANTS

0 50 100 200

REVISIONS

No.	Date	Description
	05.20.16	RESUBMISSION REVISED
	05.27.16	ADDED ROW DEDICATION

DRAWN BY: CA
CHECKED BY: MD/SL

REGISTRATION AND SIGNATURE

NOT FOR CONSTRUCTION

SHEET TITLE

Planting Plan

SHEET NUMBER

L4.0

TREES


Acacia famesiana
Sweet Acacia


Butia capitata
Pindo Palm


Fraxinus velutina
Arizona Ash


Olea europaea
Olive


Phoenix dactylifera
Date Palm


Pistacia chinensis
Chinese Pistache


Quercus agrifolia
Coast Live Oak


Quercus lobata
Valley Oak


Schinus molle
California Pepper Tree


Ulmus parvifolia
Chinese Evergreen Elm

SHRUBS


Arctostaphylos sunset
Manzanita


Arctostaphylos uva ursi
Bearberry Kinnikinnick


Artemesia californica
California Sagebush


Baccaris pilularis
Dwarf Coyote Brush


Brahea aramata
Mexican Blue Palm


Dendromecon rigida
Bush Poppy


Encelia californica
Coast Sunflower


Leucospermum cordifolium
Nodding Pincushion


Myrica californica
Pacific Wax Myrtle


Olea europaea 'Little Ollie'
Olive


Phormium 'Black Adder'
Black New Zealand Flax


Salvia clevlandii
Cleveland Sage


Salvia leucophylla
Purple Sage


Santolina chamaecyparissus
Lavender Cotton


Sphaeralcea ambigua
Apricot Mallow

CACTI / SUCCULENTS


Agave americana
Century Plant


Agave geminiflora
Twin Flowered Agave


Agave parryi
Agave Parryi


Senecio mandraliscae
Kleinia

GRASSES


Leymus condensatus 'Canyon Prince'
Wild Rye


Muhlenbergia rigens
Deer Grass


Pennisetum setaceum
Fountain Grass

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PROJECT/CLIENT NAME
Southern California Veterans Cemetery

Great Park
Irvine Boulevard
Irvine, California

PROJECT NUMBER
15039A

SUBMITTAL
Concept Plan

DATE
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REVISIONS

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	05.27.16	ISSUE FOR STATE REVIEW

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SHEET TITLE
Planting Images

SHEET NUMBER
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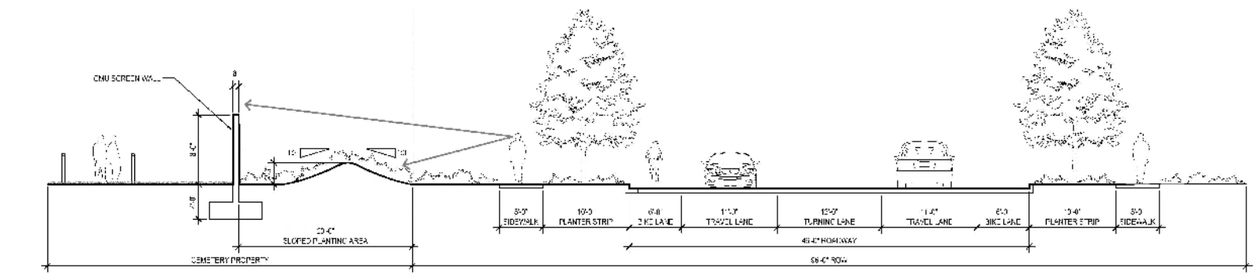

1 SECTION 1A - CADENCE BOULEVARD

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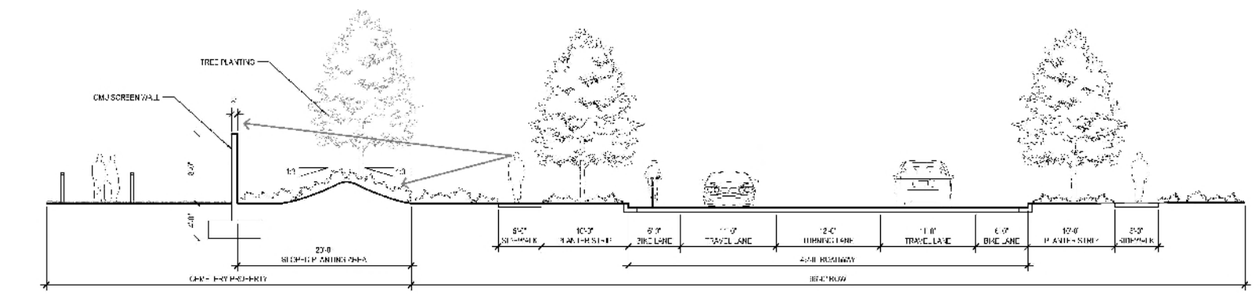

2 SECTION 1B - CADENCE BOULEVARD

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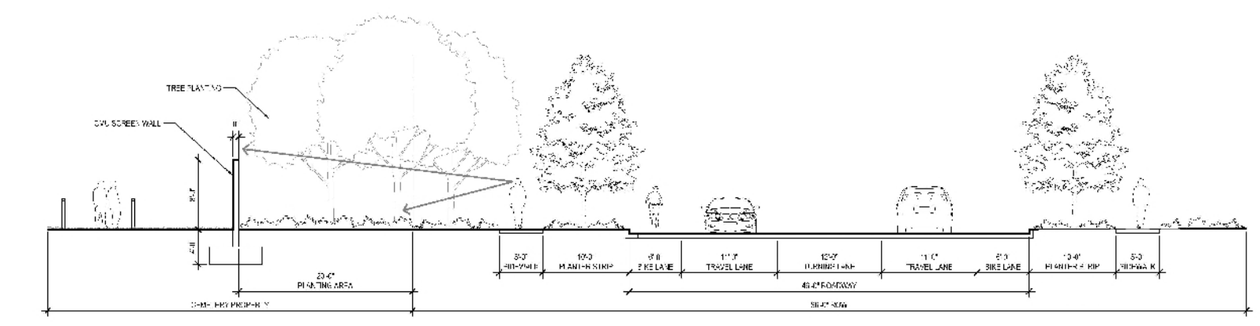

3 SECTION 1C - CADENCE BOULEVARD

SCALE: 3/16" = 1'-0"

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PROJECT/CLIENT NAME

Southern California Veterans Cemetery

Great Park
Irvine Boulevard
Irvine, California

PROJECT NUMBER

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Concept Plan

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REVISIONS

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	05.31.16	SCALE FOR STATE REVIEW

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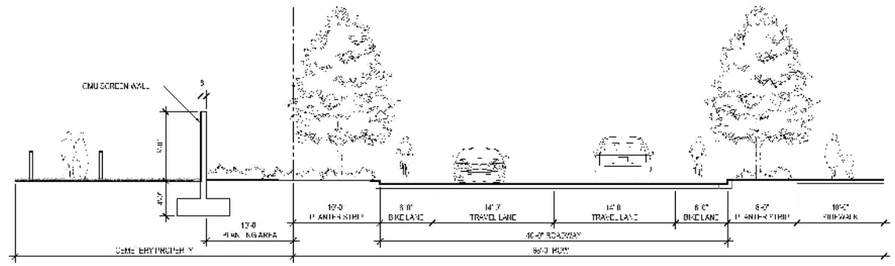
Sections

SHEET NUMBER

L5.0



1 SECTION 2 - PUSAN STREET

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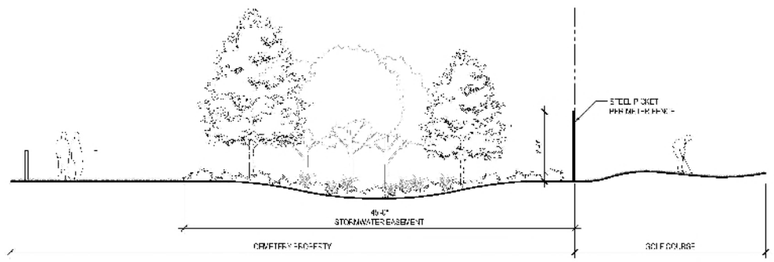

2 SECTION 3 - STORMWATER EASEMENT

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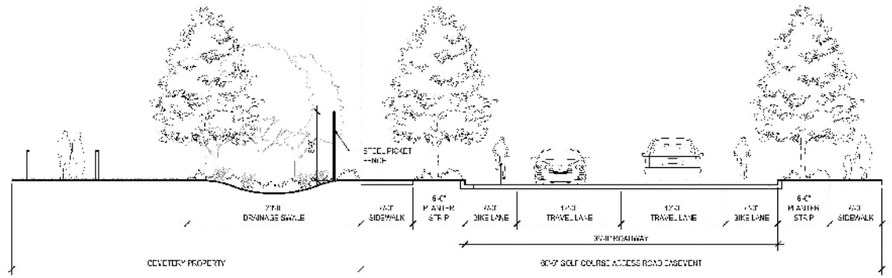

3 SECTION 4 - GOLF COURSE ACCESS ROAD EASEMENT

SCALE: 3/16" = 1'-0"

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[illegible]

PROJECT/CLIENT NAME

Southern California Veterans Cemetery

Great Park
Irvine Boulevard
Irvine, California

PROJECT NUMBER

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SUBMITTAL

Concept Plan

DATE

08 June 2016

CONSULTANTS

REVISIONS

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Sections

SHEET NUMBER

L5.1

Attachment 1

Southern California Veterans Cemetery
Environmental Constraints Study

Prepared for:

Department of General Services
707 3rd Street
West Sacramento, California 95605

Prepared by:

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1 INTRODUCTION AND BACKGROUND

Orange County Great Park

In 2001, the City of Irvine (City) prepared the Orange County Great Park (OCGP) Plan for the reuse of the former Marine Corp Air Station (MCAS) El Toro site (Figure 1, Regional Location Map, and Figure 2, Local Vicinity Map). The plan included large areas of park, recreational uses, and open space. Other uses and activities in the plan included institutional, research and development, agriculture, educational, and various others uses. This concept plan was based on the assumption that the federal government would transfer the land to public entities at low or no cost via public benefit conveyances and/or economic development conveyances similar to other base reuse efforts.

However, as this process moved forward, the prospect that the land would instead be sold to the private sector became increasing probable, and a strategy was incorporated in the OCGP Plan to assure the realization of the park, open space, and other public uses through dedication to the City and other nonprofit or governmental entities via a Development Agreement. To accomplish the goal of substantial public use of the OCGP site while providing economic return to potential private buyers, the OCGP Plan was formulated as both a Base Plan and an Overlay Plan.

The Base Plan represented the minimum level of development anticipated for the OCGP site, while the Overlay Plan defined additional development rights that could be granted if the buyers entered into a Development Agreement with the City. The Development Agreement included a requirement for the dedication of land for public uses and for funding of certain infrastructure and public open space amenity improvements and their long-term maintenance by the buyers/developers, as well as any future owners of the OCGP site.

A Program Environmental Impact Report (EIR) (State Clearinghouse No. 2002101020) was prepared by the City to evaluate the potential environmental impacts associated with implementation of the OCGP Plan's Base Plan and Overlay Plan. This Program EIR was certified by the Irvine City Council in May 2003. Since then, a series of project-level California Environmental Quality Act (CEQA) documents have been prepared by the City, all of which have tiered-off of this original Program EIR. The projects analyzed in these tiered CEQA documents involve residential and nonresidential development on the portions of OCPG owned by Heritage Fields El Toro LLC (Heritage Fields), which are referred to as the Great Park Neighborhoods. Heritage Fields purchased the four parcels of land that composed the former MCAS El Toro at an online auction in February 2005.

The City prepared Addendum No. 5 to the Program EIR (Addendum No. 5) in July 2008. This addendum evaluated the Amended and Restated Development Agreement (ARDA), which (1) vested Heritage Fields' right to develop under the City's General Plan and Zoning Code; (2) revised the funding mechanism for the OCGP maintenance; (3) shifted responsibility for defined "backbone infrastructure" cost overruns from the City to Heritage Fields; (4) transferred 130.5 acres of land from Heritage Fields to the City; (5) established the location of a 5.5-acre on-site police facility, and required the transfer of that land from Heritage Fields to the City; (6) confirmed runway demolition and recycling protocols; and (7) amended and restated the Master Implementation Agreement, which specifies protocol for backbone infrastructure phasing. Addendum No. 5 concluded that, as designed, the matters discussed immediately above would not result in any additional significant environmental effects not already adequately addressed in the 2003 Program EIR, any substantial increase in the severity of previously identified significant effects, or any change in circumstances, and that there was no new information of substantial importance.

Southern California Veterans Cemetery

In 2014, Assembly Bill 1453 (AB 1453) was introduced in the California legislature by former California Assembly member Quirk-Silva to establish a state veterans cemetery in Orange County. The legislation, cosponsored by assembly member Wagner, was approved by the state legislature as of August 25, 2014, signed by Governor Brown on September 27, 2014, and was effective January 1, 2015.

AB 1453 directed the California Department of Veterans Affairs (CalVet) to complete conceptual design work required for pre-application for a U.S. Department of Veterans Affairs (USDVA) grant proposal for the Southern California Veterans Cemetery (project). Specifically, the bill amended Chapter 9.5, Division 6 of the Military and Veterans Code to require CalVet, in voluntary cooperation with local government entities in Orange County, to design, develop, construct, and equip a state-owned and state-operated Southern California Veterans Cemetery to be located at the site of the former MCAS, on 125 acres known as the ARDA site (Figure 1, Regional Location Map) in the OCGP in the City of Irvine. Following adoption of AB 1453, CalVet contracted with the California Department of General Services (DGS) to manage the planning of the project, including design, engineering, and environmental compliance tasks.

2 PROJECT DESCRIPTION

The layout of the project has been developed to include flexibility through sequential phases, which allows the cemetery to be completed on an as-needed basis determined by the burial demands anticipated over the next 100 years. The phased buildout is based on the existing site conditions and topography, utilities, construction cost, plot burial size, layout, and overall site organization. A total of 10 phases will complete the cemetery at full buildout, with Phase 1 constructing the core infrastructure and facilities needed for cemetery operation.

Although still in the planning and design phases, conceptual plans have been prepared to illustrate development of the project on the 125-acre ARDA Transfer Site over a 100-year buildout timeframe. As currently envisioned, the project would support approximately 200,000 total burials upon buildout, with the first (Phase 1) of 10 phases proposing 5,000 burials on approximately 13 acres. Upon buildout, the project would support the following types and numbers of burials:

- +/-70% (+/-140,000 remains) cremation burials
  - +/-65% columbaria niches (+/-91,000 remains)
  - +/-35% in-ground cremains (+/-49,000 remains)
- +/-30% (+/-60,000 remains) pre-cast, in-ground burials
  - +/-99% standard size (+/-59,400 remains)
  - +/-1% oversized crypt (+/-600 remains)

All burials proposed for Phase 1 would involve cremation burials: 65% (3,250 remains) columbaria niches; 35% (1,750 remains) in-ground cremains. No pre-cast, in-ground burials would occur during Phase 1.

In addition to the cemetery grounds, Phase 1 would include a variety of associated improvements, including site access, entry driveway, and internal road(s); administrative building/visitors center; maintenance building/yard; retention basin and storm drain facilities; committal shelter, flag assembly area, and memorial walk/area; parking areas; and pedestrian walkways. These improvements would be designed to support Phase 1 while also supporting buildout of the project. Further, as is the case with many other non-residential projects within master planned residential areas, the City may request frontage improvements such as screening walls and landscape setbacks. If required, these improvements would likely be constructed during Phase 1, although the exact nature or extent of these improvements is speculative at this time.

Although the exact location of and the elements contained within subsequent project phases (Phase 2, Phase 3, etc.) are not specifically defined at this time, it is known that project phasing would follow a sequential pattern, radiating off the central Administration Building. Phases closest to the Administration Building will be developed first, where the final phases across Cadence Boulevard will be built last. The areas having more restrictions related to hazardous waste contamination associated with the operation of the former MCAS will also be developed last. For the purpose of identifying potential environmental constraints and to facilitate cost planning, each subsequent project phase would consist of some element of further construction of the cemetery and would entail approximately 12 to 14 acres of the project site, similar to the size of Phase 1.

Prior to construction of Phase 1, the vast majority of existing improvements associated with the former MCAS will be removed from the project site, in conjunction with the requirements set forth by the Department of the Navy (DON), Federal Aviation Administration, and other agencies with jurisdiction over the site. Demolition activities include removal of existing buildings, foundations, floors, floor slabs, concrete, asphalt, and underground utilities. A limited number of existing structures and infrastructure under the jurisdiction of the DON and Federal Aviation Administration will remain in place. Following demolition of these improvements, the site would be prepared for implementation of the project. Site preparation activities would likely include several discrete, yet potentially overlapping, construction phases, including clearing and grubbing, rough and fine grading, utility trenching and installation, construction of buildings, paving of drive aisles and access roads, and landscaping.

3 METHODOLOGY

Dudek reviewed existing environmental documentation associated with the project site and the OCGP, including the following:

- Final Environmental Impact Report (EIR) for Orange County Great Park (City of Irvine 2003)
- Final Great Park Neighborhoods Supplemental EIR (City of Irvine 2011)
- Final Great Park Neighborhoods Second Supplemental EIR (City of Irvine 2012)
- Addendums No. 1 through No. 9 to the Final EIR for the Orange County Great Park (City of Irvine 2006–2014)
- Final Habitat Mitigation and Monitoring Plan (HMMP) for Heritage Fields and the OCGP (Glenn Lukos Associates 2011)

Sarah Lozano, principal-in-charge, and Collin Ramsey, project manager, attended a project kickoff meeting on October 21, 2015, at the OCGP. Representatives from DGS, CalVet, the City, Orange County Board of Supervisors, and DGS' design, engineering, and environmental consultant teams attended the meeting. Topics discussed included background on the OCGP, the project site, and the project, as well as information related to known physical and environmental constraints that could potentially affect design of the project. Following the meeting, a field visit was conducted on the project site. Karen Mullen, biologist; Sarah Siren, archaeologists/ paleontologist; and Glenna McMahon, hazardous materials specialist, also attended the site visit. The purpose of the site visit was to record the existing baseline conditions on and adjacent to the project site, and to identify potential on-site and project-adjacent sensitive resources and receptors (e.g., schools, residents, habitat, watercourses). Observations of any potential resources, both on and adjacent to the project site, were noted in the field.

In addition to the biological resource sections of the environmental documents listed above, and in order to perform the biological resource constraints analysis, Dudek conducted a review of the California Natural Diversity Database (CNDDB) (CDFW 2015), the U.S. Fish and Wildlife Service (USFWS) Environmental Conservation Online System (USFWS 2015), and the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (CNPS 2015) for the following 7.5-minute U.S. Geological Survey quadrangles: El Toro, Tustin, Santiago Peak, Corona South, Black Star Canyon, Orange, Laguna Beach, San Juan Capistrano, and Canada Gobernador. Additionally, the Natural Resources Conservation Service Web Soil Survey database (NRCS 2015) was reviewed for the project site. The soil data were then evaluated for the potential to support special-status vegetation communities, plants, and/or wildlife.

To identify the potential for cultural resources to occur on or adjacent to the project site, Dudek reviewed correspondence with the Native American Heritage Commission conducted as part of the previous environmental documents prepared for the OCGP. Dudek also reviewed prior records searches of the California Historical Resources Information System included within these environmental documents. These records searches included a review of the National Register of Historic Places, California Register of Historical Resources, California Points of Historical Interest list, California Historical Landmarks list, Archaeological Determination of Eligibility list, and California State Historic Resources Inventory list.

Following the site visit and review of previous environmental documents, Dudek identified environmental constraints (e.g., biological and cultural resources, noise sensitive receptors) within a 500-foot radius of the project site and mapped these constraints onto an aerial photograph (Figure 3, Environmental Constraints Map).

Based on our preliminary knowledge of the surrounding OCGP planned land uses and projects, it is assumed that during the planning phase of this cemetery, surrounding land uses would be built and occupied. Nearby Portola High School is scheduled to open in the fall of 2016. The first phases of the adjacent Great Park Neighborhoods – Development District 4, are expected to begin selling/leasing in late 2016. Additionally, the OCGP golf course is proposed directly to the south of the project site, although an opening year for the course has yet to be determined.

4 ENVIRONMENTAL CONSTRAINTS ANALYSIS

4.1 Land Use and Planning

Assumptions/Constraints

- Although CalVet is a state agency and therefore not typically subject to local land use planning policies and regulations, because the City is the transferring entity, it is assumed that CalVet will attempt to adhere to all feasible and reasonable local plans, policies, and guidelines.
- A 73-acre cemetery land use was originally identified in the 2001 OCGP Plan's Overlay Plan and was analyzed in the 2003 Program EIR. However, a cemetery land use was not identified in the OCGP Plan's Base Plan. The 73-acre site identified as cemetery land use in the Overlay Plan does not correspond with the proposed location (the ARDA Transfer Site), but instead is located west of the ARDA Transfer Site within the current boundary of Great Park Neighborhoods – Development District 4 (VTTM 17008).
- The ARDA Transfer Site is not referenced in either the 2001 OCGP Plan or the 2003 Program EIR. The boundary of the ARDA Transfer Site falls within a larger area identified on both the OCGP's Base Plan and Overlay Plan as Exposition Center land use. The first reference to the ARDA Transfer Site occurs within Addendum No. 5 to the Program EIR, although a cemetery land use was not identified for the ARDA Transfer Site in Addendum No. 5.
- The City's (2014) Zoning Map currently identifies the ARDA Transfer Site as being within the 8.1 – Trails and Transit Oriented Development zone. According to Section 3-3-1, Land Use Matrix, of the City's Zoning Ordinance, a cemetery/mausoleum/crematory land use type is a conditionally permitted land use in the 8.1A zone only. A review of the City's Zoning Map found that the only area of the City zoned as 8.1A is located immediately east of State Route 133 between Portola Parkway to the south (outside the OCGP). Thus, the City should be consulted to determine whether or not a cemetery land use would be conditionally permitted on the ARDA Transfer Site as it is currently zoned, or whether a zone change and/or update to the Zoning Ordinance may be required in order to allow for project implementation.
- Because of the nonresidential nature of the project and the fact that proposed land use is unique not only to the OCGP but to the broader project area, there is a possibility that land use compatibility impacts could occur as a result of the project's perceived compatibility with the surrounding residential, recreational, and school land uses. Recent

media attention has indicated that there may be a public perception that a cemetery land use is not consistent with the existing and future uses and activities in the project area.

Mitigation Strategy

- A land use consistency assessment should be prepared, either as part of a future CEQA document (e.g., EIR) or as a standalone study.
  - Estimated fees: $10,000
  - Estimated schedule: 1 month
- To address the potential public perception within the surrounding community that a cemetery may not be compatible with existing and future uses and activities in the project area, a public relations firm specializing in land use, planning, and CEQA issues should be retained to coordinate a comprehensive public outreach effort.
  - Estimated fees: Largely depends on the level of public outreach effort, but fees can total upwards of $250,000 for an extremely comprehensive public relations strategy, complete with public charrettes, workshops, and meetings; internet and media outreach efforts; and coordination with community leaders.
  - Estimated schedule: Throughout CEQA process

4.2 Aesthetics

Assumptions/Constraints

- Grading and site preparation activities within Great Park Neighborhoods – Development District 4, located immediately adjacent to the project site to the east, is currently underway. Buildout of this residential tract is expected to occur within approximately 5 years, subject to market conditions, and as such, it is assumed that these residents would be established stakeholders. Consistent with engineering plans provided by the City, full-width improvements (i.e., roadway, median, utilities, curb/gutter, sidewalk) would be constructed by Heritage Fields within Cadence Street and within Pusan Street. Both of these streets bound the project site. Despite the nonresidential nature of the project, the design team should assume that the project would be required to construct improvements (i.e., landscaping setback, screening wall) within the project's frontage areas similar to the adjacent residential uses.
- Within the adjacent Great Park Neighborhoods – Development District 4, the residential lots that would back Cadence and Pusan Streets would be located closest to the project site. Based on the City's engineering plans for Cadence Street, the public right-of-way

separating these residential lots and the project site would measure approximately 82 feet. Depending on the type of housing constructed on these lots, there is a potential that residential receptors would have a view of the project site from second-floor (or third-floor) windows or balconies. Because of the nonresidential nature of the project and the fact that the proposed land use is unique not only to the OCGP but to the broader project area, there is possibility that aesthetic impacts could occur as result of the project altering the visual character and/or quality of the project site and surrounding area.

Mitigation Strategy

- Visual simulations should be prepared to illustrate the anticipated views of the project site from public vantage points. Existing case law (*Mira Mar Mobile Community v. City of Oceanside* 2004) holds that a CEQA document may focus on the project's impacts on public views only. Thus, preparing visual simulations from private vantage points would be at the discretion of the lead agency.
    - Estimated fees: $15,000 (assuming six visual simulations are required; $2,500 per visual simulation).
    - Estimated schedule: 1 month following receipt of site plan CAD files.
- As is the case with many other non-residential projects within master planned residential areas, the City may request frontage improvements such as screening walls and landscape setbacks. If required, these off-site improvements would likely be constructed during Phase 1, although the exact nature or extent of these improvements is speculative at this time.
    - Estimated fees: Design/engineering budget item

4.3 Air Quality and Greenhouse Gas Emissions

Assumptions/Constraints

- Potential sensitive receptors will be introduced into the immediate vicinity of the project site over the next few years. Starting in fall 2016, the nearby Portola High School will open. Around this same time, the first phases of the adjacent Great Park Neighborhoods – Development District 4 are expected to begin selling/leasing. Additionally, the OCGP golf course is proposed directly to the south of the project site, although an opening year for the course is not yet known. The student and residential populations that will soon be at these locations could potentially be affected by localized emissions of particulate matter (e.g., fugitive dust or diesel emissions) during construction activities occurring on

the project site. Ultimately, potential risk will depend on the proximity of on-site earthwork activities to the potential receptors.

Mitigation Strategy

- An air quality and greenhouse gas emissions assessment should be prepared to analyze the potential for short-term construction and long-term operational emissions to conflict with established state, regional, and local thresholds.
  - Estimated fees: $20,000
  - Estimated schedule: 2 months following receipt of a project-specific traffic study.
- Additionally, local significant threshold dispersion modeling and a construction health risk assessment may be required, depending on the proximity of on-site earthwork activities to the potential receptors.
  - Estimated fees: $20,000
  - Estimated schedule: 2 months following receipt of site plan CAD files and a project-specific traffic study.
- Based on the findings of the construction health risk assessment, construction equipment may be required to be equipped with more efficient, higher tiered diesel engines. The U.S. Environmental Protection Agency (EPA) recently adopted Tier 4 emissions standards. To meet these standards, engine manufacturers must produce new engines with advanced emission control technologies similar to those already expected for highway trucks and buses.
  - Estimated fees: The costs associated with using Tier 4 engines is dependent on the number of pieces of equipment needed during construction, as well as the duration of construction activities (if equipment is rented).

4.4 Biological Resources

Assumptions/Constraints

- The 2003 Program EIR provided a programmatic-level evaluation of the potential biological resources present throughout the OCGP site, including the project site. Project- or site-specific impact analyses were not conducted but were assumed to occur during specific project-level planning, such as the proposed veterans cemetery project currently being evaluated by CalVet.

- The majority of the 125-acre project site is highly disturbed and contains little or no area that could be considered high-quality, native habitat. Nonetheless, the project site still provides marginal, non-native habitat capable of potentially sustaining limited populations of special-status plant and wildlife species. The Orange County Great Park EIR (City of Irvine 2003) specifically listed three special-status species as having the potential to occur, at least on a temporary basis, within the OCGP site: burrowing owl (*Athene cunicularia*) (wintering only), mountain plover (*Charadrius montanus*), and southern tarplant (*Centromadia parryi* ssp. *australis*). Each of these species is briefly discussed below:
    - Burrowing owl: Due to the project site's topography, low-growing vegetation, and the presence of California ground squirrel (*Spermophilus beecheyi*) burrows, wintering burrowing owls may use the project site. In addition, there is a recent CNDDB occurrence record of burrowing owl adjacent to the project site. Wintering burrowing owls typically arrive in November and remain until late February or early March.
    - Mountain plover: This species typically breeds in the northern plains of the United States and is an occasional winter visitor in parts of Central California. Based on the revised analysis presented in the Final Great Park Neighborhoods Second Supplemental EIR (City of Irvine 2012), it was concluded that mountain plovers were unlikely to occur within the OCGP project site.
    - Southern tarplant: This species is typically found in disturbed settings, and thus, still has the potential to occur within the heavily disturbed project site. This species can remain dormant within shallow subsurface seed banks until disturbed by earthwork activities. Dormant buried seed pods have been known to propagate following grading and site-preparation activities.
- A review of the CNDDB, USFWS, and CNPS databases revealed that a limited number of special-status species, either permanent or seasonal, have low to moderate potential to occur on the project site. A total of 75 special-status plants and 58 special-status wildlife species have initially been identified for evaluation as potentially occurring on the project site. Raptors such as ferruginous hawk (*Buteo regalis*), white-tailed kite (*Elanus leucurus*), and northern harrier (*Circus cyaneus*) have potential to forage over the project site. A number of bat species may use the project site for foraging, including western mastiff bat (*Eumops perotis californicus*) and Yuma bat (*Myotis yumanensis*). An evaluation of each species potential to occur on the project site and immediately surrounding area should be prepared.
- The project site occurs within the Orange County Central and Coastal Natural Community Conservation Plan/Habitat Conservation Plan (Central and Coastal

NCCP/HCP) area and is designated as urban land. Portions of the Central and Coastal NCCP/HCP Habitat Reserve occur approximately 0.4 mile to the east. The project is not anticipated to conflict with the Central and Coastal NCCP/HCP.

- No designated critical habitat for federally protected plant or wildlife species overlaps with the project site. However, critical habitat for the coastal California gnatcatcher (*Polioptila californica californica*) occurs approximately 0.4 mile to the east of the project site. This area of critical habitat corresponds with the Central and Coastal NCCP/HCP Habitat Reserve.
- The project site is located adjacent to a habitat mitigation area associated with the OCGP, the Agua Chinon Corridor, which includes the Agua Chinon drainage and an approximate 50-foot buffer area on both sides of the drainage. This corridor is located immediately adjacent to the eastern boundary of the project site. Restoration and management activities within this corridor have been proposed within the Final HMMP prepared for Heritage Fields and the OCGP (Glenn Lukos Associates 2011). Section IV.A.5 of the HMMP identified allowable/compatible uses and activities, as well as restricted uses and activities within the Agua Chinon Corridor. The following is a summary of both allowable/compatible and restricted uses and activities within the corridor that may be relevant to implementation of the project:
    - Allowable/Compatible Uses and Activities
        - Installation and maintenance of up to three pedestrian-only crossings to connect to a network of trails located outside the Agua Chinon Corridor (including buffer areas). The exact location and design of the crossings will be subject to U.S. Army Corp of Engineers (ACOE) and CDFW approval.
        - Installation and maintenance of storm drain and grade control structures as approved by the ACOE or CDFW.
        - Access by police, maintenance crews, OCGP staff, fire fighters, Orange County Vector Control, and other public safety officials in and through the Agua Chinon Corridor over existing roads to adjacent land or to address any legitimate infrastructure maintenance or other public health or safety matter.
        - Restoration of native plant communities, and revegetation where needed to prevent erosion.
        - Removal or trimming of vegetation downed or damaged due to flood, weather, or other natural occurrences; removal of man-made debris; minor removal or trimming of vegetation for purposes of vector control (e.g., control of mosquito

that serves as vector for West Nile virus); and removal of parasitic (as it relates to the health of the host plant) and non-native or exotic plant or animal species.

- Erection and maintenance of signage and other notification features informing individuals of the nature and restrictions on the Agua Chinon Corridor subject to ACOE and CDFW approval.
- Reasonable access to rights-of-way for utilities and maintenance of utilities within the Agua Chinon Corridor.
- Any other activity approved by the ACOE or CDFW that may be necessary to maintain the Agua Chinon Corridor.

- Restricted Uses and Activities
  - Unseasonal watering once the habitat areas have been removed from irrigation support.
  - Use of herbicides, pesticides, rodenticides, biocides, fertilizers, or other agricultural chemicals or weed abatement activities, except weed abatement activities necessary to control or remove invasive, exotic plant species as identified in the HMMP, or otherwise permitted by the Restrictive Covenant.
  - Fire protection activities not otherwise permitted by the Restrictive Covenant.
  - Use of off-road vehicles and use of any other motorized vehicles except on existing roadways and as necessary to establish native plant communities as required by the HMMP.
  - Livestock grazing or other agricultural activity of any kind.
  - Hunting, fishing, motorized recreation, activities requiring paved or landscaped playing fields.
  - Residential, commercial, or industrial uses.
  - Construction, reconstruction, or placement of any building or other improvement, billboard, or sign except as required by the Final HMMP or the Restrictive Covenant.
  - Depositing or accumulation of soil, trash, ashes, refuse, waste, bio-solids or any other material.
  - Planting, introducing, or dispersing non-native or exotic plant or animal species.
  - Filling, dumping, excavating, draining, dredging, mining, drilling, removing or exploring for or extraction of minerals, loam, gravel, soil, rock, sand, or other material on or below the surface of the Agua Chinon Corridor.

- Removing, destroying, or cutting of trees, shrubs, or other vegetation, except for (1) fire breaks as required by fire safety officials or as set forth in the Restrictive Covenant, (2) creation and maintenance of pedestrian crossings as set forth in this Final HMMP, (3) control of invasive, exotic plants which threaten the integrity of the habitat, (4) prevention or treatment of disease (e.g., vector control activities), or (5) activities otherwise allowed under the long-term maintenance plan for the Agua Chinon Corridor or the Restrictive Covenant.

Although it is assumed that the project activities would be limited to the boundaries of the project site and that no off-site construction or operational activities would occur within the Agua Chinon Corridor, the restricted uses and activities listed in Section IV.A.5 of the HMMP and summarized above should be referenced during the project's design process to ensure that no project improvements, use, or activities would conflict with the requirements set forth in the HMMP. For example, vehicular access to the future OCGP golf course clubhouse should be provided via an on-site driveway constructed along the southern half of the project site's eastern boundary and adjacent to the Agua Chinon Corridor. Care should be taken to ensure that this driveway and any landscape strips proposed along this driveway adhere to the HMMP's restricted uses and activities. Future measures should include using construction fencing to prevent sediments, refuse, and other construction debris from entering the Agua Chinon Corridor, and using native plant species to prevent unseasonal watering and the use of herbicides and pesticides.

- Restoration of the Agua Chinon Corridor is a critical component of the OCGP project's HMMP. The HMMP calls for creation of native, riparian habitat that could support sensitive species such as least Bell's Vireo (*Vireo bellii pusillus*) and willow flycatcher (*Empidonax traillii*), among other riparian-dependent species. Phasing for the Agua Chinon Corridor restoration effort is expected to occur over a number of years. In general, the restoration process is a multiyear undertaking and could take several years before native habitat is successfully established within the Agua Chinon Corridor. If/when restored as intended in the HMMP, the Agua Chinon Corridor would include native riparian habitat that could potentially support special-status species that inhabit riparian vegetation communities, including least Bell's Vireo and willow flycatcher.
- Due to the phased nature of the project, portions of the project site would be constructed following restoration of the Agua Chinon Corridor. As a result, the design and implementation of the project should acknowledge the restricted uses and activities outlined in the OCGP project's HMMP.

- Because of the close proximity to the Agua Chinon Corridor, it is conceivable that species residing within the corridor, as well as within other critical habitat identified in the broader project area, could potentially use the project site for foraging, nesting, wintering, and other activities. This is especially true for portions of the project site that are awaiting development and where vegetation has been allowed to re-propagate the site (and, in the case of burrowing owl, where small mammal burrows have been allowed to return).

  As such, following development of the initial project phase, considerations would need to be made before the start of each subsequent project phase to ensure that no conflicts between project activities and species that may have moved onto or adjacent to the project site would occur. Before commencement of each subsequent project phase, follow-up biological resources assessment and preconstruction surveys should be conducted to ensure that no new potentially significant biological resources have relocated onto or immediately adjacent to the project site. A cost estimate for all "follow-up" activities is provided below.

- The existing on-site buildings and structural improvements may also provide suitable habitat for nesting birds and/or roosting bat species protected under the California Fish and Game Code and federal Migratory Bird Treaty Act of 1918. Disturbing or destroying occupied nests, live young, or eggs is a violation of the Migratory Bird Treaty Act (16 U.S.C. 703) and California Fish and Game Code (Section 3503).

- No jurisdictional wetlands, waters of the United States, or other riparian areas potentially regulated by the ACOE, CDFW, and/or the Regional Water Quality Control Board were identified within the portion of the project site available for review during the field visit. Additionally, no "blue-line" drainages were identified on the 7.5-minute U.S. Geological Survey quadrangle maps review. Although the entirety of the project site was not surveyed during the visit, Dudek does not anticipate jurisdictional wetlands or waters to occur within the project site. As mentioned previously, the Agua Chinon drainage occurs immediately adjacent to the project site. However, the project would completely avoid the Aqua Chinon Corridor.

Mitigation Strategy

- A comprehensive biological resources assessment should be conducted, including focused special-status species habitat assessments. This assessment, combined with the literature review and records searches already conducted, would be used to determine the presence or absence of special-status species on the project site, evaluate the significance of potential impacts resulting from implementation of the project, and identify appropriate compensatory mitigation to address significant impacts.
  - Estimated fees: $15,000

- Estimated schedule: 1 month following receipt of site plan CAD files.

- Preconstruction clearance surveys should be conducted by a qualified biologist before the start of construction activities for special-status species, with particular focus on the presence of southern tarplant, burrowing owl, and nesting birds and bats. This requirement is consistent with the mitigation measures set forth in the OCGP Final EIR (City of Irvine 2003) and reiterated in subsequent tiered CEQA documents. If special-status species are located on the project site, avoidance and/or passive relocation measures would be recommended to minimize impacts to these biological resources before commencement of demolition and/or construction activities.
  - Estimated fees: $5,000 (one-time preconstruction survey for special-status plants and wildlife).
  - Estimated schedule: Preconstruction survey shall occur 1 week before ground-breaking activities.
- In the event that a special-status species is found to occur on the project site, various measures can be employed to passively relocate the individual(s) from the site and onto nearby suitable habitat, following coordination with appropriate agencies. For the southern tarplant, this may include top soil salvage and/or transplanting. For burrowing owl, this may include construction of artificial burrows and implementation of exclusion plans following the CDFW's Staff Report on Burrowing Owl Mitigation (CDFW 2012).

  In other cases, if passive relocation is deemed infeasible, use of mitigation banks to offset a project's impacts to certain special-status species may be an option. Other times, the resource agencies may deem avoidance as the only feasible mitigation strategy. Since the project site occurs within the Central and Coastal NCCP/HCP non-Reserve lands, payment of in-lieu mitigation fees to compensate impacts to special-status species may be an option. Early coordination with the Natural Communities Coalition (NCC) is recommended.
  - Estimated fees: $10,000 (preparation of soil salvage and monitoring plan and agency coordination, if necessary); $10,000 (preparation of burrowing owl exclusion plan and agency coordination, if necessary); $65,000 per acre (NCC in-lieu mitigation fees, if applicable).
  - Estimated Schedule: Additional time would be required for passive relocation efforts and negotiations with NCC regarding in-lieu mitigation fees. In the event that a soil salvage and monitoring plan, a burrowing owl exclusion plan, and/or agency coordination is required, then several months would be added to the project schedule as a result of the often lengthy nature of the agency consultation process.

- Due to the potential for sensitive species, as well as those species protected under the Migratory Bird Treaty Act, to return to undeveloped portions of the project site following the initial project phase, follow-up biological resources assessment and preconstruction surveys should be conducted before commencement of each subsequent project phase.
    - Estimated fees: $10,000 (follow-up biological resources assessment); $5,000 (one-time preconstruction survey for special-status plants and wildlife (assuming that subsequent phases will encompass a similar development footprint as the initial project phase)).
    - Estimated schedule: 1 month (follow-up biological resources assessment); 1 week prior to ground-breaking activities (preconstruction survey).
- Due to the close proximity to the Agua Chinon Corridor, it is conceivable that species residing within the corridor, as well as within other critical habitat identified in the broader project area, could potentially use the project site for foraging, nesting, wintering, and other activities. While there is no prescribed method to prevent burrowing owl or other species from inhabiting a particular location, frequent weed abatement activities such as disking would strongly discourage owl and other avian species from nesting on unimproved portions of the project site. Disking and other similar maintenance activities could occur several times a year to prevent excessive vegetation and rodent burrows from propagating on the project site. Additionally, since burrowing owl largely depends on vacated ground squirrels burrows for shelter and nesting, ongoing maintenance activities could include rodent abatement as well.
    - Estimated fees: Light disking is estimated to cost approximately $20 per acre. Considering that Phase 1 will develop roughly 28.3 acres of the 125-acre project site, it will cost about $1,935 to disk the balance (approximately 96.7 acres) of the site.
    - Estimated schedule: It is anticipated that disking should occur at least twice per year. It should be noted that the City may request/require weed abatement activities to occur at a greater frequency than what is recommended herein.

4.5 Cultural Resources

Assumptions/Constraints

- A majority of the structures associated with the former MCAS El Toro site were constructed in the 1940s, with the balance being built during subsequent decades (Greenwood and Associates 1996). As such, many of the buildings on the former air station were 50 years or older when the 2003 Program EIR was published, and thus, based on age, were eligible for listing on the National Register of Historic Places. Additionally, most

structures on the former MCAS El Toro site, regardless of age, were eligible for listing as Legacy Cold War sites (the Legacy Cold War Project aids in the preservation of properties and objects from the Cold War period, 1945–1991). However, the Program EIR, as well as both 2011 and 2012 Supplemental EIRs, found that none of the structures associated with the former MCAS El Toro site were eligible for listing on either the National Register of Historic Places or as part of the Legacy Cold War Project, primarily because of the varying degrees of modification to these buildings during the 1970s and 1980s.

Despite the findings in the previous Program and Supplemental EIRs, it is currently unclear whether a comprehensive historical resources inventory of each structure on the project site has ever been completed. Because of the prominent nature of some of the buildings located on the project site, including four large hangers, the air traffic control tower, and other structures associated with previous flight operations, the on-site buildings could potentially be perceived as more significant than other structures found elsewhere within the former air station (e.g., non-descript warehouses and administration structures).

- According to the 2003 Program EIR, 10 prehistoric archaeological sites and 8 isolated prehistoric artifacts had been recorded in the northeastern habitat preserve portion of OCGP as of 2003. Although the exact location of these sites are currently unknown (no maps were included as part of the previous CEQA documents due to the confidential nature of these resources), these sites occur in an area between Borrego Canyon Wash and Agua Chinon Wash, which is generally found north-northwest of the project site. It is not believed that any of these known sites are located within the boundary of the project site.

  The Program EIR acknowledged that much of the OCGP had not been surveyed as of publishing of the 2003 Program EIR. Because the majority of the project site is highly disturbed and contains little or no areas that contain virgin soils, the potential that any unknown cultural resources (archaeological, paleontological) of significance would be found within subsurface soils underlying the project site or the surrounding area is low. However, the presence of buried unknown cultural resources can never be fully discounted, and there is always a potential, albeit low, that resource sites are located either on or adjacent to the project site.

- Since a Notice of Preparation would be distributed after July 1, 2015, the project would be subject to the requirements of AB 52. The AB 52 tribal consultation process is intended to be government-to-government consultation; thus, all consultation-related correspondence and related undertakings must be initiated by the state.

- Generally, a cultural resources record search is considered valid for up to 5 years. As such, following development of the initial project phase and prior to commencement of each subsequent project phase, a new records search should be conducted to ensure that

no new potentially significant cultural resources have been recorded adjacent to the project site. A cost estimate for all "follow-up" activities is provided below.

Mitigation Strategy

- A cultural resources assessment should be conducted, including literature review, updated records search of the South Central Coast Information Center's databases, historical resources inventory, and field visits. This assessment would be used to determine the potential for unknown cultural resources or historical structures to occur on the project site, as well as to confirm the location of 10 prehistoric archaeological sites and 8 isolated prehistoric artifacts that have been previously recorded in the surrounding area.

  In regards to historical resources, archival research should be conducted on all historical-age buildings to develop the appropriate historic context for assessing historic significance of each structure. Research of building permits, if available, should also be conducted to determine the nature and extent of alterations that have been made to the structures over time in order to evaluate each building's integrity. The buildings should also be recorded on State of California Department of Parks and Recreation Series 523 Forms (DPR forms). Following these research efforts, a determination would be made as to the historical relevance of each building. If any historical structures are confirmed to be present on the project site, mitigation measures shall be recommended to minimize adverse impacts to these historical resources, which could range from avoidance of the building to preservation of the structure to photo documenting, cataloguing, and memorializing with a physical marker (e.g., plaque, signage, etc.) following demolition of the resource. It should be noted that designating a building or other structural improvement as a historical resources would not necessarily preclude demolition of the resource; however, the lead agency would likely be required to identify the impact to the particular historical resource as significant and unavoidable, and adoption of a Statement of Overriding Considerations would be required concurrent with certification of an EIR.

  - Estimated fees: $70,000 (assumes conducting background research, initiating archaeological and paleontological records searches, performing field surveys, and preparation of a cultural resources technical report and DPR forms; does not assume discovery and curation of any significant find).
  - Estimated schedule: 3 months

- In the event that the cultural resources assessment identified the potential for significant archaeological/Native American/paleontological resources to occur within the project site, there may be a need for archaeological/Native American/ paleontological monitoring

during site preparation, grading, and other earthwork activities where ground disturbance would occur.

  - Estimated fees: $44,000 (assuming $500 per 8-hour day per cross-trained monitor (i.e., capable for monitoring for archaeological/Native American/paleontological resources) and up to 4 months (88 days) of ground disturbance per project phase).
  - Estimated schedule: During site preparation, grading, and other earthwork activities.

- Although the AB 52 consultation process is intended to be a government-to-government process, third-party cultural resources specialists can be retained to provide guidance and general assistance throughout this process, including the preparation of draft letters to the applicable tribal governments, as well as with general guidance and advice throughout consultation.
  - Estimated fees: $10,000
  - Estimated schedule: 3 months
- Due to the potential for new cultural resources to be recorded adjacent to the project site following the initial project phase, follow-up cultural resources records searches should be conducted prior to commencement of each subsequent project phase.
  - Estimated fees: $10,000
  - Estimated schedule: 2 months

4.6 Geology and Soils

Assumptions/Constraints

- The 2003 Program EIR found the following regarding geological conditions the could potentially affect development on the OCGP:
  - The level of seismic activity expected in the project area is similar to Orange County as a whole and other areas of Southern California. The risk of structural damage involving strong seismic ground shaking is similar to the risk associated with other regions within Southern California.
  - No known active or historic/inactive faults underlay the OCGP. The project site is not expected to be susceptible to fault rupture.
  - The project area generally contains denser soils and deeper groundwater. The potential for seismically induced liquefaction resulting from severe ground shaking is considered low based on these characteristics.

- Similar to other locations within the flatlands portions of Orange County, some expansive soils may be present in localized areas within the project area.

Mitigation Strategy

- Soils testing is already planned on portions of the project site that would support structural improvements. This soils testing, which is assumed to include field sampling/boring and laboratory analysis, will determine specific geotechnical constraints that could potentially affect future development on the project site.
  - Estimated fees: Engineering budget item
- Regardless of the specific geotechnical characteristics of the soils underlying the project site, implementation of the project would be required to comply with all applicable design, engineering, and construction standards established to maintain structural integrity in the event of an earthquake and to reduce the potential for loss or injury due to geotechnical issues. At a minimum, the project must adhere to all applicable requirements set forth in the latest version of the California Building Code, including the earthquake load requirements established therein.

4.7 Hazards and Hazardous Materials

Assumptions/Constraints

- The operation of many facilities located within the bounds of the former MCAS El Toro historically involved the use, storage, transfer, and disposal of hazardous materials. During the approximate 55 years of military operation, the air station activities and operation and maintenance of military aircraft and automotive vehicles, required the use of a large variety of hazardous materials. These hazardous materials consisted of petroleum-based products such as aviation and vehicular fuels, engine and lubricating oils, solvents, cleaners, paints, thinners, pesticides, and herbicides; chlorinated/halogenated compounds, including trichloroethylene and polychlorinated biphenyls; some radioactive materials; ordnance munitions; and propellants. Use of these materials typically involves the generation of hazardous byproducts and waste. Oil-water separators (OWSs) were located throughout the former air station at various facility locations. Wastewater from aircraft wash areas and vehicle wash racks passed through OWSs to the sanitary sewer and storm drainage systems. Materials recovered from the OWSs were handled as hazardous waste. Fuel storage areas also generated hazardous waste when fuel storage tanks were cleaned and sludge was pumped out, or when fueling/defueling or loading/unloading operations resulted in spills. Permitted hazardous waste storage areas were located throughout the former air

station and held hazardous, flammable, and unused chemical material and wastes. Ordnance munitions were used, handled, stored, and disposed of in Planning Area (PA) 51. Pesticides and herbicides historically were used at the former air station to control rodents, vectors, and weeds, as well as on agricultural parcels leased to farming operations. Polychlorinated biphenyls transformers were in use throughout the former air station.

- While more than 1,100 buildings have been surveyed, abated, and demolished since certification of the 2003 Program EIR, there are approximately 180 buildings (both residential and nonresidential) remaining on the former MCAS El Toro site. Many of these remaining buildings and facilities may contain hazardous building materials such as asbestos-containing building materials (ACM) and lead-based paint (LBP). ACM is associated with respiratory ailments, including cancers, which are caused by inhaling asbestos fibers, as well as with gastro-intestinal disease associated with ingestion of ACM. Lead is known to have adverse effects on the human body, particularly in children. Exposure is usually through ingestion and inhalation. Both ACM and LBP were in common use prior to 1980 when many of the structures in existing PA 51 were built. Before demolition of any of the remaining buildings, all ACM (1% asbestos), all assumed ACM, and all asbestos-containing construction materials (>0.1% to 1%) will be abated in conformity with all applicable federal, state, and local laws and regulations.
- The Installation Restoration Program (IRP) for the former MCAS El Toro was authorized in 1984, and the Initial Report was completed in 1986. The IRP outlined hazardous remediation needs and identified 24 sites (Sites 1–22, 24, and 25) for investigation at the former MCAS El Toro. The IRP sites were originally divided into two categories: No Further Action sites and Action Required sites. The Action Required sites and Anomaly Area 3 are currently at various stages of remedial investigation and/or cleanup. The four IRP Action Required sites that have the highest priority are Sites 18 and 24 (volatile organic compound (VOC) groundwater and soil contamination) and former landfill Sites 3 and 5. IRP Site 3 (Original Landfill) is located on the project site.

  IRP Site 3 is the approximately 11-acre landfill site located within the approximately 20-acre LIFCO/FOST 8 area. This landfill site served as an active landfill from 1943 to 1955. Site 3 was the original MCAS El Toro landfill, which was operated as a cut-and-fill disposal facility. Wastes were burned at an incinerator to reduce volume prior to disposal. Suspected wastes include metals, incinerator ash, solvents, paint residues, hydraulic fluids, engine coolants, and oily wastes, municipal solid waste, and various inert solid wastes. Several small waste and debris areas exist outside of the main landfill area.

  As of 2009, these waste and debris areas were to be excavated and consolidated within the main landfill area. In their August 2009 Fact Sheet, the DON stated that landfill site

was to be capped with a synthetic flexible membrane liner and a soil cover to protect human health and the environment. The DON stated that the landfill contents are not impacting groundwater quality beneath this area, and no further action was to be required for groundwater (DON 2009).

According to the 2012 Final Great Park Neighborhoods Second Supplemental EIR, the initial phase of the Site 3 investigation is complete. The preliminary results indicated that waste placement areas on Site 3 were significantly smaller in size than previously reported. In addition, the investigation identified waste placement that occurred outside the previously demarcated boundaries. Further investigation activities were conducted to characterize the site. Site 3 (including the approximate 100-foot buffer zone) was assigned an Environmental Condition of Property area type of Category 6 because releases of hazardous substances were identified and response actions were required.

The DON issued a Draft Record of Decision (ROD) for Site 3 in 1999. However, the Draft ROD was not finalized at that time due to the need to incorporate information from radiological investigations. Subsequent investigations were performed as a first step in the landfill cover remedial design and to assess potential radiological contamination at Site 3. The Final ROD (DON 2010) presents the selected remedial action for Site 3 and has been updated to reflect results of a 2006 Feasibility Study Addendum for Site 3. The DON and EPA co-selected the following remedial actions:

- No action for groundwater at Site 3
- No action for soil at Site 3, Units 2 and 3
- Further action for soil at Site 3, Units 1 and 4

Site 3, Unit 4 and Site 3, Unit 1 Waste Areas B through F were recommended for unrestricted reuse after wastes from those areas are consolidated into Site 3, Unit 1 Waste Area A. Based on the comparative ranking of alternatives presented within the 2006 Feasibility Study Addendum, the DON and EPA co-selected "Alternative 4d" as the remedy of choice for Sites 3 and 5. In accordance with the Final ROD, the selected alternative for remediation at Site 3 consists of the following primary components:

- A single-barrier cap with a flexible membrane liner will be used to prevent contact with landfill materials and reduce the infiltration into landfill contents.
- Land-use restrictions applying to the landfill areas and extending approximately 100 feet beyond the waste boundaries will be used to protect the landfill covers, ensure that the containment remedy and contents of the landfills are not disturbed without approval of the Federal Facility Agreement signatories, and allow the DON and other agencies to access the sites for maintenance and monitoring. Construction of structures

within the 100-foot buffer zone will require concurrence of the Federal Facility Agreement signatories and the California Department of Resources Recycling and Recovery (formerly the California Integrated Waste Management Board).

An August 2009 Final Remedial Design/Remedial Action Work Plan and November 2010 Operation and Maintenance/Long-Term Monitoring Plan have been prepared and approved by the California Department of Toxic Substances Control (DTSC) and the field construction activities have been completed. A Removal Action Completion Report was due to the DTSC in 2012, but it is currently unknown whether or not this document was ever submitted or approved since there is no record of it on the DON's environmental documents webpage for the MCAS El Toro site.

- At the October 2015 kickoff meeting, the City identified an area generally comprising the entire southwest portion of the project site as the Carve-Out Area/FOST 7 area. The City distributed a map that delineated this area, as well as two smaller areas within the confines of the larger Carve-Out Area/FOST 7 area identified as "Area Requiring Petroleum Restrictions." The City stated that future development activities within this these areas may be somewhat limited, albeit not to the same extent as in IRP Site 3, due to groundwater contamination. It was also stated at this meeting that groundwater monitoring was currently underway, although the status of groundwater remediation is presently unknown.

  A search for site-specific information on the Carve-Out Area/FOST 7 area garnered little usable results. However, contamination associated with this area is likely linked, at least in part, to soil contamination (and subsequently groundwater contamination) from land disposal of heavy equipment waste crankcase oil. When MCAS EL Toro was operational, trucks were driven to this general area for oil changes, and crankcase oil was frequently drained onto the ground. From 1977 to 1983, approximately 7,000 gallons of waste oil was drained onto the ground. The oily soil was subsequently removed. However, chemicals detected at this site, which likely found their way to the groundwater below, included VOCs, semivolatile organic compound (SVOCs), pesticides, and metals above background levels. This area may also be connected to a large VOC-containing groundwater plume that previously affected the western portion of the MCAS El Toro, extending approximately 3 miles off site to the northwest.
- Dudek briefly reviewed online records maintained by DTSC and the Regional Water Quality Control Board for the project area. In addition to the former MCAS El Toro landfill site, there are at least one other site undergoing active remediation and six sites that are designated as "case closed" within the project area. The site undergoing active

remediation, which consists of a former underground storage tank site, is in the process of being closed.

- Based on input from the City, various institutional controls have been placed on the aforementioned portions of the project site. As a result, future development of these areas may be somewhat restricted, depending on the proposed uses and activities. Some of these restriction may be lifted as remediation actions are deemed complete. Reports prepared for FOST 7 and FOST 8 identify the following instructional controls/restrictions associated with these areas:
  - FOST 7
    - Any activity that causes or facilitates the movement of known contaminated groundwater.
    - Alteration, disturbance, or removal of any component of a corrective action, including but not limited to, groundwater monitoring wells and associated, or associated utilities.
    - Extraction of groundwater and installation of new groundwater wells.
    - Removal of or damage to security features (for example, locks on monitoring wells, survey monuments, fencing, signs, or monitoring equipment and associated appurtenances).
  - FOST 8
    - Construction of facilities, structures, or appurtenances; excavation; or any other land-disturbing activity into or on the surface of the landfills that may involve adverse impacts upon the performance of the caps or affect the drainage or erosion controls developed for the caps.
    - Construction of structures within the areas requiring institutional control.
    - Planting deep-rooted plants that have the potential to interfere with the performance of the caps in preventing infiltration (surface irrigation is not prohibited).
    - Land-disturbing activity within the 100-foot buffer zone adjacent to the landfill that may cause adverse effects upon the landfill through erosion of the surface or diversion of off-site surface water runoff into the cap.
    - Removal of or damage to security features (for example, locks on monitoring wells, survey monuments, fencing, signs, or monitoring equipment and associated appurtenances).
- Avocet Environmental Inc. prepared a report (Attachment A) that provides a summary evaluation of subsurface environmental conditions, hazardous building materials, and

other potentially development-limiting features and restrictions related to the proposed project. The overall objective of this summary evaluation was to identify the possible presence of hazardous substances and other potential development-restricting features that may exist in the subsurface and in structures at the project site.

The report found that, in the context of subsurface environmental conditions, MCAS El Toro is a very complex, albeit mature, site with numerous documented impacts and very probably other impacts that will not come to light until near-surface soil is disturbed during redevelopment. The project site is located near the center of MCAS El Toro and very likely also encompasses multiple areas of impacted soil.

Mitigation Strategy

- As stated above, some of these restriction may be lifted as remediation actions are deemed complete. As such, all applicable agencies with jurisdiction over the continuing remediation of these areas should be consulted early during the planning phase to get a clear and comprehensive understanding of specific development constraints resulting from previous and existing contamination on the project site.
- The Avocet Environmental Inc. report (Attachment A) included a number of abatement measures pertaining to development on the project site, as summarized below:
  - Abatement Measures Related to Impacted Soil
    - As discussed in Avocet's report, 59 Potential Environmental Concerns (PECs) and 51 Development Restricted Areas (DRAs) were identified as part of their evaluation. For conceptual estimate purposes, Avocet assumed that remedial excavation will be required at 50% of the PECs and essentially all of the DRAs other than the various monitoring wells and other monitoring infrastructure. For each of these features, Avocet assumed localized excavation down to 10 feet with 40 to 75 cubic yards of soil removed at each location. As a result, between 1,300 to 2,400 cubic yards of soil related to the PECs and DRAs may need to be removed from the site.

      In addition to impacted soil from the PECs and DRAs, Avocet also estimated the volume of soil that may be impacted by lead from LBP. On other projects, Avocet has found that soil within the drip line of buildings coated with LBP is often impacted by lead to depths on the order of 18 inches. Since only the remaining structures at the site were screened for LBP, it is not clear how many of the previously demolished buildings featured exterior LBP. Avocet assumed that soil within 2 to 3 feet of the remaining buildings with LBP has been impacted by lead

to 18 inches below ground surface and that 1,100 to 1,800 cubic yards of lead-impacted soil may need to be removed from the site.

The total estimated volume of soil to be removed is 2,400 to 4,200 cubic yards. Assuming density ranges from 1.8 to 2.2 tons per cubic yard, the estimated weight ranges from 4,500 to 9,300 tons. The conservative, "worst-case" scenario for soil disposal is as hazardous waste, with an estimated cost for disposal at about $200 per ton. Under this scenario, the estimated cost for soil disposal is $1,860,000 ($200 x 9,300 tons).

- Estimated fees: $1,860,000
- Estimated schedule: 2 months (assuming 4,200 cubic yards of contaminated soil to be removed, 20 cubic yards of soil per haul truck, 8 haul trips per day)

- Abatement Measures Related to Hazardous Building Components
  - Avocet's report estimated 73,000 square feet of ACM. For this conceptual estimate, a 25% contingency was added, for an estimated 92,000 square feet of ACM. Assuming $8 per square foot for abatement, the estimated cost for ACM abatement is $736,000. Additional cost allowances to be included in the abatement cost for hazardous building components are for LBP and universal waste removal at $100,000 and $150,000, respectively. The conceptual estimated cost for abatement of hazardous building components is $986,000.
    - Estimated fees: $986,000
    - Estimated schedule: Prior to and concurrent with demolition of on-site structures

- Preparation of a robust Soil Management Plan would be required to ensure that contaminated soil encountered at any stage of project development is characterized, profiled, and managed appropriately. Since impacted subsurface soils may be encountered during all project phases, the Soil Management Plan shall outline guidelines related to the requirement for additional assessment by the applicable overseeing regulatory agencies to determine if the effected soils are connected to a known release or a previously undocumented release.
  - Estimated fees: Design/engineering budget item

4.8 Hydrology and Water Quality

Assumptions/Constraints

- The Federal Emergency Management Agency's Flood Insurance Rate Map for the project area (Panel 06059C0315J) identifies the project site as being located within Flood Hazard Zone X, which is defined as an area of minimal flood hazard. The closest Special Flood Hazard Area, which is defined as the area that will be inundated by the flood event having a 1% chance of being equaled or exceeded in any given year, is located approximately 800 feet northeast of the project site on the eastern side of Irvine Boulevard. It should be noted that once the restoration efforts are complete within the adjacent Agua Chinon Corridor, there is a possibility that this neighboring area could also be included within a Special Flood Hazard Area.
- Having been previously developed, the project site is relatively flat and appears to generally drain from the northeast to the southwest. Because most of the adjacent areas have not been redeveloped yet, it is probable that the project site still accepts off-site stormwater runoff from neighboring properties. However, since most of these areas will be developed in the future, it is assumed that stormwater drainage improvement would be constructed upon these properties, which should greatly reduce the quantity of off-site runoff conveyed onto the project site.
- The Santa Ana Regional Water Quality Control Board's Water Quality Control Plan for the Santa Ana River Basin indicates that the Irvine Forebay I and II groundwater subbasins generally encompass the project area. The plan currently designates the project area groundwater subbasins for municipal and domestic supply, agricultural supply, and industrial process and service supply. A large plume of groundwater contaminated by organic compounds, including trichloroethylene as a result of the historical use of solvents and fuels, is present beneath the project area (see Section 4.7 above).

Mitigation Strategy

- A Drainage Study should be prepared and include a preliminary hydrology and hydraulic study to estimate the alignments and sizes for main storm drain facilities that serve the project area. Preliminary grading studies should be used to establish flow patterns and estimated slopes in order to identify approximate design storm discharges for each storm drain facility. The study should involve researching and reviewing the current concept designs, in addition to proposed main storm drain facilities within and adjacent to the project site.
    - Estimated fee: Design/engineering budget item

- A Preliminary Water Quality Management Plan should be prepared based on the requirements and guidelines of the National Pollutant Discharge Elimination System Permit. The Preliminary Water Quality Management Plan should include proposed post-construction water quality treatment facilities (i.e., best management practices) to treat the runoff from the project site prior to discharging off site. This document should be a qualitative study to identify options for treatment that conform to the proposed design.
  - Estimated fee: Design/engineering budget item

4.9 Noise

Assumptions/Constraints

- Potential sensitive receptors will be introduced into the immediate vicinity of the project site over the next few years. Starting in fall 2016, the nearby Portola High School will open. Around this same timeframe, the first phases of the adjacent Great Park Neighborhoods – Development District 4 are expected to begin selling/leasing. Additionally, the OCGP golf course is proposed directly to the south of the project site, although an opening year for the course is not yet known. The student and residential populations occurring at these locations could potentially be affected by intermittent and temporary increases in ambient noise levels during construction activities occurring on the project site.
- Certain operational activities occurring on site, including special events, ceremonies, or other gatherings, may generate short-term increases in noise levels in the immediate project area.

Mitigation Strategy

- A noise study should be prepared to analyze the potential for short-term construction and long-term operational activities to result in an exceedance of existing ambient noise levels in the project area beyond those levels permissible by local thresholds.
  - Estimated fees: $15,000
  - Estimated schedule: 6 weeks following receipt of a project-specific traffic study
- Section 6-8-205(A) of the Irvine Municipal Code permits the generation of noise from construction activities between 7:00 a.m. and 7:00 p.m. Mondays through Fridays, and 9:00 a.m. and 6:00 p.m. on Saturdays. No construction activities shall be permitted outside of these hours or on Sundays and federal holidays unless a temporary waiver is granted by the City. It is assumed the state would comply with these restrictions.

Nonetheless, there is always a possibility that construction noise causes an increase in the ambient noise environment (albeit short-term in nature) to the extent that annoyance and/or physical harm may occur, depending on the proximity to noise-sensitive receptors. As such, temporary sound walls may be required along the project boundary when construction activities are proposed in the vicinity of receptors.

- Estimated fees: The cost of sound walls can vary greatly depending on technology and performance, but based on previous experience, a rough estimate of $75 per linear foot is realistic. It is estimated that upwards of 2,000 liner feet of sound walls would be required at any given time to break the line of sight (and thus, provide adequate noise attenuation) between construction activities associated with a particular project phase and nearby receptors. Therefore, a temporary sound wall could cost approximately $150,000 in order to adequately attenuate noise emanating from the site.

4.10 Traffic and Circulation

Assumptions/Constraints

- Based on trip generation rates from the Institute of Transportation Engineers (ITE), the 2011 Final Great Park Neighborhoods Supplemental EIR estimated that the 73-acre cemetery originally identified in the 2001 OCGP Plan's Overlay Plan and analyzed in the 2003 Program EIR could generate approximately 4.73 daily trips per acre, including 0.17 peak AM and 0.84 peak PM trips, per acre (ITE Code 566, Cemetery). Based on these generation rates, the 13-acre cemetery portion of Phase 1 would produce roughly 62 daily trips, including 2 peak-hour AM and 11 peak-hour PM trips. Upon full buildout, the 125-acre project could generate approximately 591 daily trips, including 21 peak-hour AM and 105 peak-hour PM trips.

  According to the City's August 2004 Traffic Impact Analysis Guidelines, a formal traffic study shall be required for "discretionary projects which produce 50 or more peak hour trips during the AM peak period or the PM peak period." As such, consistent with the City's requirements, a comprehensive traffic study would be required to evaluate the project's potential impact on the local and regional circulation system.

- According to the City's February 2007 Transportation Design Procedures, the recommended spacing between signalized intersections on a major highway (i.e., Irvine Boulevard) is 1 mile. At the October 2015 kickoff meeting, the City identified a potential conflict associated with the future signalized intersections located at Irvine Boulevard/Pusan Street and Irvine Boulevard/Merit Street. These intersections are located to the west and east, respectively, of the project's frontage along Irvine

Boulevard, and are separated by a distance of less than a mile. As such, the City has expressed an opinion that any project driveway off Irvine Boulevard cannot be signalized, and alternative design features would need to be implemented at any vehicular access point off Irvine Boulevard to facilitate site ingress and egress (e.g., deceleration/acceleration lanes; right-in, right-out geometry).

Mitigation Strategy

- A formal traffic study should be prepared in accordance with the City's current Traffic Impact Analysis Guidelines.
  - Estimated fees: $75,000
  - Estimated schedule: 4 months
- The City has established the North Irvine Transportation Mitigation (NITM) Program to implement and expedite circulation mitigation measures identified in previously certified CEQA documents. The NITM Program provides a funding mechanism for the coordinated and phased installation of required traffic and transportation improvements established in connection with land use entitlements for City PAs 1, 5, 6, 8, 9, 30, 40 and 51. Depending on the findings of the traffic study, the project may be required to pay its fair share toward the list of NITM improvements included within the established NITM Program.
  - Estimated fees: Dependent on findings of the traffic study and the extent of project impacts, if any, to circulation facilities.
- In lieu of a signalized intersection, any project driveway off Irvine Boulevard cannot be signalized, and alternative design features would need to be implemented at any vehicular access point off Irvine Boulevard to facilitate site ingress and egress (e.g., deceleration/acceleration lanes; right-in, right-out geometry).

4.11 Utilities and Service Systems

Assumptions/Constraints

- The City has previously stated that power must be maintained to the existing Federal Aviation Administration easement located on the western portion of the project site. It is expected that project design would take this into account when laying out utilities for the project site.
- Section 6-7-902 of the Irvine Municipal Code requires that for "covered projects":

> At least 75% of all concrete and asphalt construction and demolition debris and 50% of all other construction and demolition debris generated

> by any Covered Project shall be delivered to a material recovery facility, with the intention that such material be recycled, or otherwise diverted from landfills through direct delivery of such materials to brokers or end-users, through on-site reuse, or through any other diversion method(s) specified in an approved Waste Management Plan. When calculating diversion amounts pursuant to this Section, "all other construction and demolition debris" shall include fixtures, appliances, and other similar items. All Covered Projects are subject to Section 6-7-201 regarding use of City authorized solid waste haulers.

According to Section 6-7-903 of the City's Municipal Code, the project would likely be considered a "covered project," and thus, would be subject to these waste diversion requirements.

- The proposed Creekside Memorial Park Cemetery project, a veterans cemetery project currently undergoing the environmental entitlement process in Contra Costa County, has received public scrutiny because of its potential water use. This particular project proposes to install 10 groundwater wells to meet approximately 75% of its water demand (with the remaining 25% of water demand being met by purchased water). Water demand for this roughly 59-acre cemetery was estimated to be 45 acre-feet during the first year, and 8 years during each subsequent year. The EIR for this project concluded that even with the implementation of water-efficient design features, impacts to groundwater supplies would be significant and unavoidable.

  In light of this, great care should be taken to accurately disclose the annual water demand of the project, as well as highlight all water-efficient design features to be implemented on the project site. In accordance with Sections 10910 and 10912 of the California Water Code, a Water Supply Assessment shall be prepared for certain types of larger projects, including "A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area" (California Water Code, Section 10912(a)(5)) and "A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project" (California Water Code, Section 10912(a)(7)). As a cemetery land use, the project does not fit neatly into any of the specific types of project listed in Section 10912 of the Water Code. However, considering the size of the project site, as well as the potential public perception that a cemetery would require large quantities of water to operate, preparation of a water supply due diligence study should be considered. At a minimum, a study shall be conducted that quantifiably determines the project's estimated water demands and

determines whether or not the local water purveyor has sufficient water supplies, treatment facilities, and delivery infrastructure to serve the project.

Mitigation Strategy

- All utilities plans, including stormwater drainage, sanitary sewer, and domestic and recycled (irrigation) water shall be reviewed and approved by the City prior to construction of any such improvements.
- The City would likely require that at least 75% of all concrete and asphalt construction and demolition debris and 50% of all other construction and demolition debris generated by the project be delivered to a material recovery facility. Preparation of a Waste Management Plan, which would outline a strategy to meet these division requirements, would also be required.

  It should be noted that the project design team has indicated that much of the asphalt and concrete materials collected during demolition of the existing on-site buildings and other structural improvement currently found on the project site (e.g., tarmac, runway) may be suitable for on-site reuse. Additionally, the OCGP participates in an asphalt and concrete recycling program.
- In lieu of traditional turf, the project design should consider use of a variety of drought-tolerant species. Should turf be deemed necessary in certain areas on the project site, water-efficient varieties such as buffalo grass or equivalent should be installed.
- A water supply due diligence study or similar water demand study shall be undertaken to assure that the water purveyor services for the project would have sufficient current and future water supplies, treatment facilities, and delivery infrastructure to adequately serve both the project and its existing (and future) water commitments.
  - Estimated fees: $25,000
  - Estimated schedule: 2 months

4.12 Other Environmental Issues

Assumptions/Constraints

- Neither the project site nor any surrounding parcels are zoned for or currently support agriculture cultivation or mineral extraction operations. Additionally, due to the nature of the planned land use and activities, the proposed project is not anticipated to induce population growth, either directly or indirectly, in the project area. Thus, the proposed project is not anticipated to result in adverse effects related to agriculture and forestry

resources, mineral resources, population and housing, public services, and recreation. It is not expected that any of these topical areas would have impacts on design, construction, or operation of the proposed project.

Mitigation Strategy

- The project is not anticipated to result in adverse impacts to the aforementioned environmental resource areas; therefore, mitigation measures are unlikely to be required for these environmental issue areas.

4.13 CEQA and NEPA Document

Based on the nature of the project and the potential environmental constraints identified herein preparation of a project-level combined EIR (CEQA)/Environmental Impact Statement (EIS) (NEPA) is the most appropriate document to satisfy the requirements of both CEQA and NEPA. This EIR/EIS would evaluate the project's potential to result in environmental impacts as a result of buildout of the project (i.e., development of the entire 125-acre project site). As such, implementation of Phase 1 of the project would fall within the scope of this environmental review. It is envisioned that the project-level EIR would provide CEQA and NEPA clearance for all project phases following Phase 1. However, as previously discussed herein, because buildout of the project would be phased over several decades, follow-up CEQA and NEPA documentation (e.g., existing conditions verification studies) and technical studies (e.g., biological resources assessments, preconstruction surveys, cultural resources records searches) would be required prior to implementation for any subsequent project phase in order to verify that the baseline conditions assumed in the EIR/EIS have not substantially changed over the years.

5 SUMMARY AND CONCLUSIONS

Conclusions of the preceding environmental constraints analysis are summarized in Tables 1a and 2. Table 1a provides environmental mitigation/remediation considerations, as well as estimated costs, associated with Phase 1 only. Table 2 presents mitigation/remediation considerations and projected costs for subsequent project phases (Phases 2–10). Table 1b shows the tasks and costs related to the preparation and processing of the CEQA/NEPA documentation for the project, while Table 3 provides the overall costs associated with full buildout of the project (Phases 1–10).

Table 1a
Summary of Mitigation/Remediation Considerations for Phase 1

Considerations for Phase 1			
Summary of Potential Environmental Constraints	*Mitigation/Remediation Strategy*	*Estimated Costs*	*Estimated Schedule/Timing*
Land Use and Planning			
Consistency with the existing zoning	Land Use Consistency Assessment	Refer to Table 1b	1 month
Aesthetics			
Consistency with visual character and/or quality of the project site and surrounding area	Visual Simulations	Refer to Table 1b	1 month
	Off-site frontage improvements such as screening walls, landscape setbacks, pedestrian sidewalks, curb/gutter and storm drains, and potentially half-width roadway buildout (including landscaped median) within the adjacent right-of-way	Design/engineering budget item	N/A
Air Quality and Greenhouse Gas Emissions			
Proximity of off-site sensitive receptors to on-site construction activities, equipment, and related construction emissions	Air Quality and Greenhouse Gas Emissions Assessment	Refer to Table 1b	2 months
	Construction Health Risk Assessment	Refer to Table 1b	2 months
	Tier 4 Construction Equipment	Varies	For the duration of construction activities
Biological Resources			
Potential suitable habitat for sensitive wildlife and plant species, nesting birds, and roosting bat species	Biological Resources Assessment	Refer to Table 1b	1 month
	Preconstruction Surveys	$5,000	1 week prior to construction activities
	Soil Salvage and Monitoring Plan (if necessary)	$10,000	Several Months (due to the potential need for agency coordination)
	Burrowing Owl Exclusion Plan (if necessary)	$10,000	Several Months (due to the potential need for agency coordination)

Table 1a
Summary of Mitigation/Remediation Considerations for Phase 1

Considerations for Phase 1			
	NCC In-Lieu Mitigation Fees (if applicable)	$325,000 ($65,000 per acre x 5 acres)	Several Months (due to the potential need for agency coordination)
Cultural Resources			
Potential for cultural resources, including historical resources, to occur on site	Cultural Resources Assessment	Refer to Table 1b	3 months
	Archaeological/Native American/Paleontological monitoring during ground disturbing construction activities.	$44,000	For the duration of site preparation, grading, and other earthwork activities
Recently enacted AB 52 requirements	AB Consultation Coordination	$10,000	3 months
Geology and Soils			
The project would likely be exposed to strong ground shaking over the life of the project	Adherence to all applicable building standards, including California Building Code	N/A	N/A
The project site is likely underlain by expansive soils	Adherence to all applicable building standards, including California Building Code	N/A	N/A
Hazards and Hazardous Materials			
Presence of contaminated surficial and subsurface soils on the project site	Removal of contaminated soils from the project site	$1,860,000	2 months
	Preparation of Soil Management Plan	Design/engineering budget item	1 month
Existing structures may contain hazardous building materials such as ACM and LBP	Abatement of ACM and LBP, and removal of universal wastes from the project site	$986,000	Prior to and concurrent with demolition of on-site structures
11-acre former landfill site (IRP Site 3) located within the approximately 20-acre LIFCO/FOST 8 area found on the project site	Adherence to the various use restrictions outlined in the FOST 8 report. Consult with oversight agencies.	N/A	N/A
Contaminated groundwater underlying Carve-Out Area/FOST 7 area located on the project site	Compliance with the various use restrictions outlined in the FOST 7 report. Consult with oversight agencies.	N/A	N/A
Hydrology and Water Quality			
General lack of engineered storm drain system under the existing conditions	Drainage Study	Design/engineering budget item	N/A

Table 1a
Summary of Mitigation/Remediation Considerations for Phase 1

Considerations for Phase 1			
Contaminated groundwater underlying Carve-Out Area/FOST 7 area located on the project site	Preliminary WQMP	Design/engineering budget item	N/A
Noise			
Proximity of off-site sensitive receptors to on-site construction activities, equipment, and related construction noise	Noise Study	Refer to Table 1b	3 months
	Installation of temporary sound wall	$150,000 (2,000 linear feet)	For the duration of construction activities
Traffic and Circulation			
Project-related traffic could potential impact the performance of the local and regional circulation system	Traffic Study	Refer to Table 1b	4 months
	The project may be required to pay its fair share toward the list of NITM improvements included within the established NITM Program.	Dependent on findings of the traffic study and the extent of project impacts (if any) to circulation facilities.	N/A
Project driveway/entrance limited to unsignalized facility	In lieu of a signalized intersection, any project driveway off Irvine Boulevard cannot be signalized, and alternative design features would need to be implemented at any vehicular access point off Irvine Boulevard to facilitate site ingress and egress (e.g., deceleration/acceleration lanes; right-in, right-out geometry).	N/A	N/A
Utilities and Service Systems			
Construction debris diversion requirements	At least 75% of all concrete and asphalt construction and demolition debris and 50% of all other construction and demolition debris shall be recycled. Preparation of a Waste Management Plan.	N/A	N/A
Excessive exterior water use	In lieu of traditional turf, the project design should consider use of a variety of drought-tolerant species. Should turf be deemed necessary in certain area on the project site, water-efficient varieties should be installed.	N/A	N/A
	Water Supply Due Diligence Study	Refer to Table 1b	2 months
Phase 1 Cost Subtotal		*$3,400,000*	

Table 1b
Summary of CEQA/NEPA Documentation for Phase 1

CEQA/NEPA (EIR/EIS) Documentation		
Task	*Estimated Cost*	*Estimated Schedule1*
Initial Study/Notice of Preparation and Environmental Assessment	$30,000	4 months
Public scoping	$10,000	2 months
Public outreach (outside public relations firm)	$250,000	Throughout CEQA/NEPA process
Land Use Consistency Assessment	$10,000	1 month
Visual Simulations	$15,000	1 month
Air Quality and Greenhouse Gas Emissions Assessment	$20,000	2 months
Construction Health Risk Assessment	$20,000	2 months
Biological Resources Assessment	$15,000	1 month
Cultural Resources Assessment	$70,000	3 months
Noise Study	$15,000	2 months
Traffic Study	$75,000	4 months
Water Supply Due Diligence Study	$20,000	2 months
Preparation of the Administrative Draft EIR and EIS	$150,000	8 months
Preparation and distribution of the Draft EIR and EIS	$75,000	4 months
Preparation for and attendance at public hearings	$10,000	3 months
Preparation of the Final EIR and EIS and Response to Comments	$75,000	2 months
Preparation/filing of the Notice of Determination and Finding of No Significant Impact/ Record of Decision	$5,000	1 month
Project management	$20,000	Throughout CEQA/NEPA process
Direct costs (travel expenses, mileage, printing, postage, etc.)	$25,000	N/A
Phase 1 Cost Subtotal	*$910,000*	

[1] Estimated schedule represents the number of months needed to complete each discrete task. In some cases, two or more tasks can occur concurrently; in other instances, tasks must occur independently from one another. In total, it is expected that the CEQA/NEPA process would extend approximately 21 months from project kickoff to filing of the NOD and FONSI/ROD.

Table 2
Summary of Mitigation/Remediation Considerations for Phases 2–10

Considerations for Phases 2–10			
Summary of Potential Environmental Constraints	*Mitigation/Remediation Strategy*	*Estimated Mitigation Cost per Each Subsequent Project Phase*	*Estimated Mitigation Cost for All Subsequent Project Phases*
Biological Resources			
Potential for sensitive species, as well as those species protected under the Migratory Bird Treaty Act, to return to undeveloped portions of the project site following the initial	Frequent disking, weed abatement, and similar maintenance activities	$38,700 ($1,935 per occurrence x 2 times per year x 10 years between project phases)	$348,300 (continuously over the 100-year project buildout timeframe)

Table 2
Summary of Mitigation/Remediation Considerations for Phases 2–10

Considerations for Phases 2–10			
project phase	Follow-up biological resources assessment	$10,000	$90,000
	Preconstruction surveys	$5,000	$45,000
Cultural Resources			
Potential for new cultural resources to be recorded adjacent to the project site following the initial project phase	Follow-up cultural resources records search	$10,000	$90,000
Noise			
Proximity of off-site sensitive receptors to on-site construction activities, equipment, and related construction noise	Installation of temporary sound wall	$150,000 (2,000 linear feet	$1,350,000
Environmental Documentation - CEQA/ NEPA			
Potential for baseline conditions to change between project phases	Existing Conditions Verification Study	$30,000	$270,000
Phases 2–10 Costs Subtotal		*$243,700 (per Phase)*	*$2,193,300 (Phases 2–10)*

Table 3
Summary of Mitigation/Remediation Considerations and Environmental Compliance Documentation for Full Project Buildout (Phases 1–10)

Full Project Buildout (Phases 1–10)		
Project Phase	*Tasks*	*Estimated Costs*
Phase 1	Mitigation/Remediation	$3,400,000
	Environmental Compliance Documentation	$910,000
Phases 2–10	Subsequent Mitigation/Remediation and Follow-up Environmental Compliance Documentation	$2,193,300
Full Project Buildout (Phases 1–10) Cost Total	**$6,503,300**	

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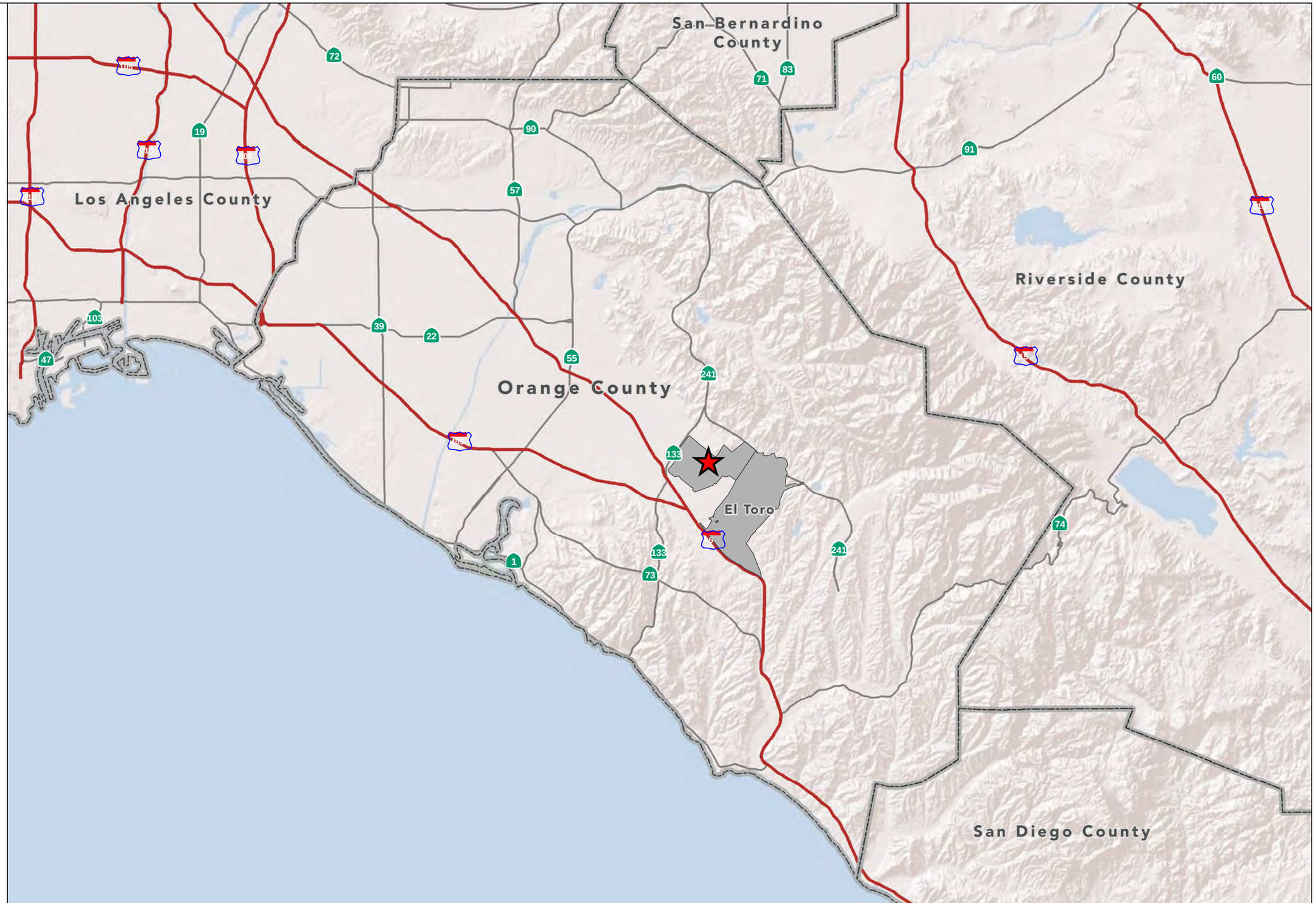
Southern California Veterans Cemetery

County Limits

City



SOURCE: ArcGIS Online Basemap

FIGURE 1

Regional Location Map

DUDEK

Southern California Veterans Cemetery Environmental Constraints Study

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Southern California Veterans Cemetery
Project Site

0 750 1,500 Feet

SOURCE: AERIAL - BING MAPPING SERVICE

DUDEK

FIGURE 2
Local Vicinity Map

Southern California Veterans Cemetery Environmental Constraints Study

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Future Traffic Signal

Veterans Cemetery Project Site

FOST 7

LIFCO PARCEL/FOST 8

Potential Burrowing Owl, Nesting Bird/Bat, Southern Tarplant, and Mountain Plover Habitat

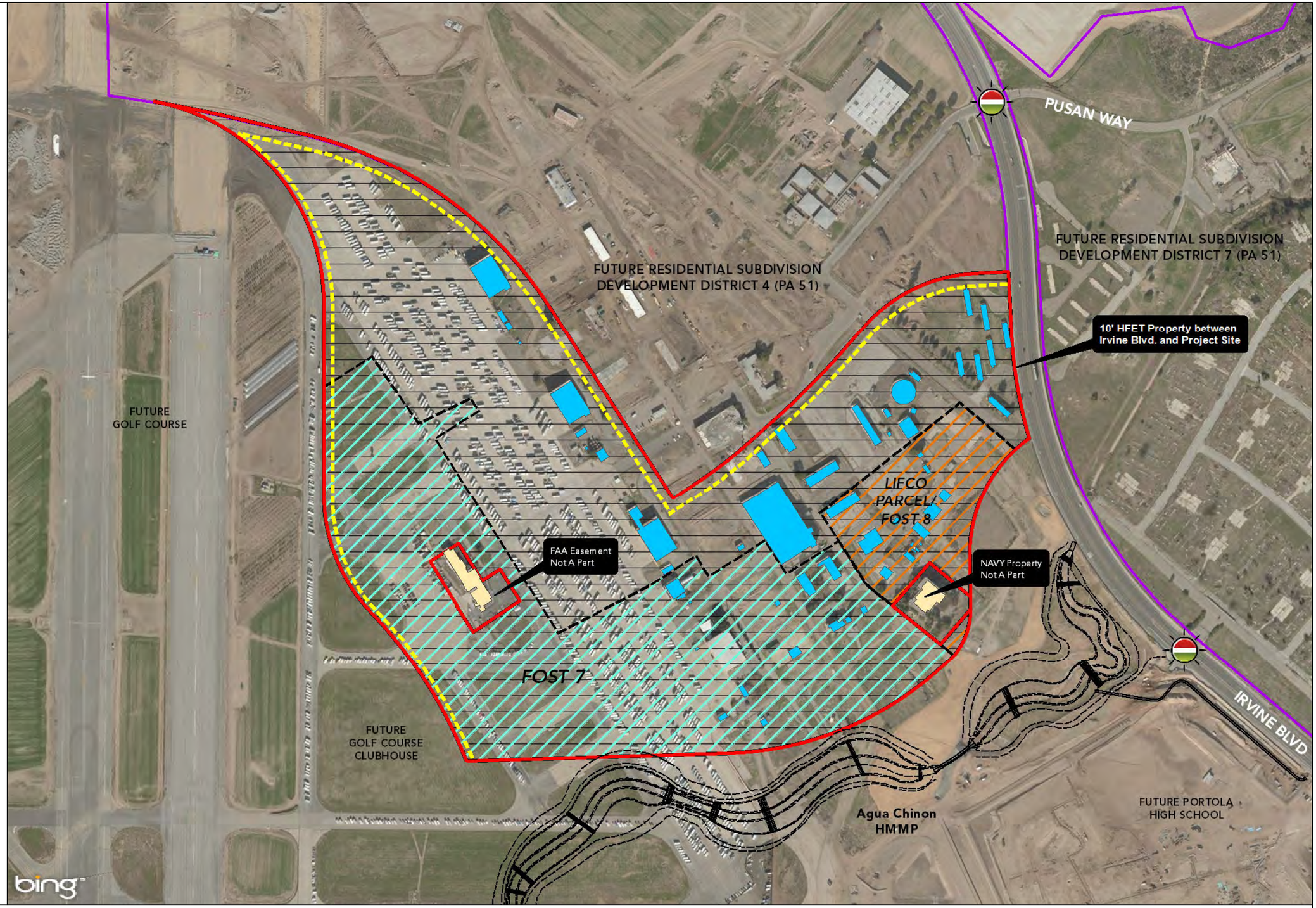
Frontage Improvements Potentially Required

Future Residential Subdivision

Structures Status

Structure/Slab To Be Removed

Structure to Remain



0 300 600 Feet

SOURCE: AERIAL-BING MAPPING SERVICE

DUDEK

FIGURE 3

Environmental Constraints Map

Southern California Veterans Cemetery Environmental Constraints Study

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Attachment 2

SUMMARY ENVIRONMENTAL EVALUATION

Proposed Southern California Veterans Cemetery
Orange County Great Park
Irvine, California

April 27, 2016

AVOCET
ENVIRONMENTAL, INC.

SUMMARY ENVIRONMENTAL EVALUATION

Proposed Southern California Veterans Cemetery
Orange County Great Park
Irvine, California

April 27, 2016

PREPARED FOR

State of California
Department of General Services
707 Third Street, 4th Floor
West Sacramento, California 95605

PREPARED BY

Avocet Environmental, Inc.
1 Technology Drive, Suite C515
Irvine, California 92618-5302

Project No. 1435.001

AVOCET ENVIRONMENTAL, INC.

AVOCET ENVIRONMENTAL, INC.

April 27, 2016 Project No. 1435.001

Ms. Kathryn Savage
Associate Construction Analyst
DEPARTMENT OF GENERAL SERVICES
Project Management & Development Branch
707 Third Street, 4th Floor
West Sacramento, California 95605

Summary Environmental Evaluation
Proposed Southern California Veterans Cemetery
Orange County Great Park
Irvine, California

Dear Ms. Savage:

This report documents a summary environmental evaluation for the proposed Southern California Veterans Cemetery at the Former Marine Corps Air Station El Toro in Irvine, California. The evaluation includes a Contaminated Soil Evaluation and a Hazardous Materials Screening of structures remaining on the site. If you have any questions about the evaluation or require additional information, please do not hesitate to contact the undersigned at (949) 296-0977 Ext. 111 or at dsiren@avocetenv.com. As always, Avocet Environmental, Inc. appreciates the opportunity to be of service to the Department of General Services.

Respectfully submitted,

AVOCET ENVIRONMENTAL, INC.

Deke Siren, P.G.
Senior Project Manager

DCS:sh
Enclosure
cc: Mr. Dave Edwards – Department of General Services

P:\1435_DGS_SCVC El Toro\001_Env Eval\Report\Summary Env Eval Rpt_SCVC_2016-04-27.docx

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LIST OF ABBREVIATIONS AND ACRONYMS

ACM	asbestos-containing materials
APHO	Aerial Photograph Feature/Anomaly
BRAC	Base Closure and Realignment Act
COs	Carve-Outs
CSE	Contaminated Soil Evaluation
cy	cubic yard
DGS	Department of General Services
DON	U.S. Department of the Navy
DRAs	Development-Restricted Areas
DTSC	California Department of Toxic Substances Control
FOST	Finding of Suitability to Transfer
HMS	hazardous materials screening
IRP	Installation Restoration Program Site
LBP	lead-based paint
MCAS El Toro	Marine Corps Air Station El Toro
MSC JP5	Miscellaneous Jet Propulsion Fuel, Grade 5, Pipeline
OWS	Oil/Water Separator Site
PCB	polychlorinated biphenyl
PECs	Potential Environmental Concerns
PRL	Potential Release Location
RFA	Resource Conservation Recovery Act Facility Assessment Site
SCVC	Southern California Veterans Cemetery
sq ft	square foot
SRU	Silver Recovery Unit
TAA	Temporary Accumulation Area
USMC	U.S. Marine Corps
UST	underground storage tank
XRF	X-ray fluorescence

1.0 INTRODUCTION

This report documents a summary evaluation of subsurface environmental conditions, hazardous building materials, and other potentially development-limiting features and restrictions related to the proposed Southern California Veterans Cemetery (SCVC; the "project" or "site") at the former Marine Corps Air Station El Toro (MCAS El Toro) in Irvine, California (Figure 1). The former MCAS El Toro is currently being redeveloped as the Orange County Great Park (the Great Park), and the State of California, Department of General Services (DGS) is developing a Conceptual Plan for the acquisition and redevelopment of approximately 125 acres of the Great Park for the proposed SCVC (Figure 2). Avocet Environmental, Inc. (Avocet) has prepared this report for DGS to summarize known and potential environmental conditions at the site as a decision-making and planning tool in the context of redeveloping the property.

1.1 BACKGROUND

Development of MCAS El Toro began in July of 1942, when construction of a U.S. Marine Corps (USMC) pilot's fleet operational training facility commenced on approximately 2,319 acres of land. The facility was commissioned as MCAS El Toro on March 17, 1943 and was selected for development as a master jet air station and permanent center for marine aviation on the west coast in 1950. The primary function of MCAS El Toro was as a maintenance and operations facility related to USMC aviation units. Over time, additional land was acquired, which increased the size of MCAS El Toro to 4,712 acres by 1986 (U.S. Department of the Navy [DON], January 2009). MCAS El Toro was operationally closed in July 1999 pursuant to the Defense Base Closure and Realignment Act (BRAC).

As part of pre-closure and post-closure environmental assessment activities, at least 25 potentially contaminated areas were identified at MCAS El Toro, including four landfills suspected of containing both hazardous and solid waste, and other areas where polychlorinated biphenyls (PCBs), battery acids, petroleum hydrocarbon fuels, and other hazardous substances were suspected of being dumped or spilled (U.S. Environmental Protection Agency [EPA], April 2016). As part of its investigations, DON completed numerous environmental studies that included many (probably thousands) of soil, soil vapor, and groundwater sampling locations. These studies led to the many environmental cases that are still being overseen by multiple county, state, and federal agencies. As an example, a large volatile organic compound plume, largely composed of trichloroethylene, was delineated in groundwater and extends 3 miles off base. The primary source of this groundwater contamination was two large aircraft hangars located southwest of the proposed SCVC, with the plume traveling away from the proposed SCVC.

Beginning in 2004, DON began transferring ownership of portions of the former MCAS El Toro property to other entities through the BRAC process. However, certain areas, referred to as Carve-Outs (COs), were retained by DON pending further environmental investigation and cleanup until deemed suitable for transfer. Prior to transferring any property, DON issued a

series of Finding of Suitability to Transfer (FOST) documents that summarized how hazardous substances, petroleum products, and other regulated materials in the COs had been addressed (DON, October 2, 2015). The FOST documents also provide a brief summary of existing residual impacts to soil and groundwater beneath specific areas of MCAS El Toro and include information pertaining to building and redevelopment restrictions due to ongoing environmental cleanup and monitoring by DON.

DGS and Avocet agreed that an exhaustive review and evaluation of each and every individual environmental document that potentially could be relevant to the SCVC would be cost and time prohibitive. Accordingly, this summary evaluation is based on reviewing selected FOST documents, specifically FOST Documents 1, 2, and 4 through 8 (the "relevant FOST documents"), which pertain to the area encompassed by or near the proposed SCVC boundary. These FOST documents[1] are heavily supported by tables and figures, some of which have been adapted for incorporation into the subject report.

1.2 OBJECTIVES

The overall objective of this summary evaluation is to identify the possible presence of hazardous substances and other potential development-restricting features that may exist in the subsurface and in structures at the site. Specific objectives of this evaluation are as follows:

- Review information contained within the relevant FOST documents to identify areas of the site where there is potential for environmental impacts in the subsurface related to the past use, storage, handling, or disposal of hazardous substances. In the context of this report, these areas are defined as "Potential Environmental Concerns" (PECs). It is noted that not all of the environmental features discussed in the FOST documents are considered significant and, therefore, some have not been classified as PECs. For the purpose of this evaluation, PECs are considered areas where impacted soil or subsurface features may be subject to further investigation and/or remediation if encountered during development activities.

- Review information in the relevant FOST documents to identify areas of the site that have current institutional or engineering controls related to ongoing environmental cleanup and monitoring activities. These areas restrict future development while environmental cleanup and monitoring activities are ongoing. For the purposes of this report, these areas are defined as "Development-Restricted Areas" (DRAs).

- Review and adapt tables in the relevant FOST documents to produce a set of tables summarizing information pertaining to buildings, COs, PECs, DRAs, and other environmental features, identified and discussed throughout the subject report.

[1] Full references for the applicable FOST documents are provided in the References section.

- Produce a set of figures showing the locations of buildings, COs, PECs, DRAs, and other environmental features discussed throughout the subject report.

- Review information in the relevant FOST documents to identify remaining structures containing asbestos-containing materials (ACM) and lead-based paint (LBP) and prepare tabular and graphical summaries.

- Conduct a hazardous materials screening (HMS) of the remaining structures to confirm their number and current condition. Evaluate the remaining structures for ACM and LBP and provide an estimate of the quantities on a building by building basis.

- Based on the information gathered from the relevant FOST documents and the HMS, provide a conceptual estimate on the volume of soil that may need to be removed for environmental reasons as part of the development for the SCVC.

1.3 REPORT ORGANIZATION

Including this introduction (Section 1.0), this evaluation is organized into four sections. Section 2.0 presents a Contaminated Soil Evaluation (CSE), including the methodology used and the CSE findings. Section 3.0 is a summary of the HMS prepared by Avocet's subcontractor, Advantage Environmental Consultants, LLC (Advantage). Advantage's report and related laboratory reports are included in Appendices A and B, respectively. Section 4.0 presents Avocet's estimates of soil volumes potentially requiring removal from the site along with the assumptions made in generating the estimates. Section 5.0 presents closing thoughts related to this summary evaluation.

1.4 LIMITATIONS

This report documents and evaluation of environmental conditions in the proposed SCVC based on Avocet's review of a subset of the many potentially available documents pertaining to environmental conditions at MCAS El Toro. Avocet's review was conducted in general accordance with the standard of care customary in the environmental consulting industry as of the date of this report. The conclusions drawn in this CSE portion of this report, including the identification and assessment of PECs and DRAs, are based on the information in the relevant FOST documents only; however, Avocet makes no warranty regarding the accuracy or completeness of this information. Moreover, as the FOST documents themselves are not necessarily clear or definitive, there may be additional residual impacts that have not been identified in this evaluation. Any limitations pertaining to the HMS portion of this evaluation are discussed in the HMS report itself, included as Appendix A.

This report specifically excludes any evaluation of geotechnical conditions, the stability of onsite or adjacent slopes or retaining walls, seismicity, flooding hazards, and the possible impact, if any, of electromagnetic fields associated with onsite or nearby electrical facilities. Also, this report cannot and does not include any evaluation of undocumented activities at the site or on

adjacent or nearby properties. The exclusions noted above should not be interpreted to mean that every other condition or potential condition has been considered in the subject report.

2.0 CONTAMINATED SOIL EVALUATION

This section discusses the methodology and findings of the CSE portion of this summary evaluation. Groundwater, contaminated or otherwise, is not addressed in this evaluation based on SCVC operations being unlikely to involve excavation deeper than 10 feet below ground surface, with depth to first groundwater expected to be deeper. .

2.1 CSE METHODOLOGY

Avocet's methodology for identifying PECs and DRAs within the proposed SCVC boundary was based solely on information in the relevant FOST documents. Specifically, Avocet reviewed the tables and figures in the FOST documents, identified potential environmental features and areas subject to engineering or institutional controls as identified by DON within or near the proposed SCVC boundary, and categorized these features as either PECs or DRAs while taking a conservative approach when information was limited. It is noted that if DRAs are under development consideration, applicable information in the evaluation tables should be reviewed to determine if PEC designation might also be applicable after development-restricting controls are lifted.

The FOST documents generally refer to discrete environmental features as "Locations of Concern." To minimize confusion in nomenclature between the FOST documents and this evaluation, "Locations of Concerns" and other areas of historical environmental concern are generally referred to as "environmental features," as summarized below.

Environmental Feature	**Acronym** (Table 1)	**Table No.**
Aerial Photograph Feature/Anomaly	APHO	2
Aboveground Storage Tank	AST	3
Building Environmental Feature	BLDG LOC	4
Landfill Gas Extraction Wells, Groundwater Monitoring Wells, Lysimeters, Piping, and Survey Monuments	WELLS	5
Installation Restoration Program Sites	IRP	6
Miscellaneous Jet Propulsion Fuel, Grade 5, Pipelines	MSC JP5	7
Oil/Water Separator Sites	OWS	8
Polychlorinated Biphenyl Sites	PCB	9
Potential Release Location	PRL	10
Resource Conservation Recovery Act Facility Assessment Sites	RFA	11
Silver Recovery Unit	SRU	12
Temporary Accumulation Area	TAA	13
Underground Storage Tank	UST	14

Figures 3 through 7 show identified environmental features per individual CO, with Tables 2 through 14 summarizing the features evaluated for the CSE.

2.2 CSE FINDINGS

Avocet's evaluation identified 59 PECs and 51 DRAs in or near the proposed SCVC boundary. The PECs and DRAs are summarized below along with the rationale for their identification.

2.2.1 PEC Summary

The 59 PECs in or near the proposed SCVC boundary are summarized in Table 15 and their locations are shown in Figure 8. The PEC listings resulting from APHOs, MSC JP5 pipelines, OWS, PCBs, PRLs, and TAAs are based on possible residual impacts in shallow (less than 10 feet) soil beneath and around these features. More specifically, the two APHOs identified as PECs were based on reported surface releases of wash water and/or possibly petroleum hydrocarbons. The MSC JP5 pipelines were included as PECs based on past evidence of leakage in other areas of MCAS El Toro. The three OWSs are considered PECs based on their being abandoned in place or having been subject to multiple subsurface investigations. Two PCB locations identified as PECs were due to trace concentrations of PCBs detected in confirmation samples collected during prior inspections. The three PRLs listed as PECs are due to impacted soils or stained surfaces found during a prior inspection. Three TAAs were identified as PECs due to them having impacted the underlying soil based on prior sampling.

The IRP PEC listings are related to IRP Site 3 (listed twice) and IRP Site 4. The IRP Site 3 listings are due to historical landfill operations, which were consolidated into the current Waste Area A (also see discussion below in Section 2.2.2). However, due to the various waste excavation areas as shown in Figure 6, all of IRP Site 3 is considered a PEC for evaluation purposes due to the potential for additional waste to be encountered during future development. IRP Site 4 consists of two units, with Unit 1 related to an oil-stained area southeast of Building 658 and Unit 2 consisting of a drainage ditch that received runoff from a ferrocene/hydrocarbon spill. Both of these units have received closure; however, petroleum-impacted groundwater was encountered during related investigations, resulting in a separate DRA listing, discussed below in Section 2.2.2.

Ten RFAs were identified as PECs as part of this evaluation, nine of which are due to former vehicle and/or aircraft wash areas that could have resulted in wash water discharges to the subsurface. The other RFA, RFA 10, is related to a historical oil exploration well reportedly completed in 1925 and abandoned in 1927. The exploration well was not used for production and it is unclear if it was properly destroyed. DON made several attempts to find the former oil exploration well and received "no further action" status from EPA; however, the California Department of Toxic Substances Control (DTSC) has indicated that the abandoned well is still a concern. DTSC indicated to DON that if the well is found during future development, it should be destroyed pursuant to current California Department of Conservation requirements.

As part of the evaluation, Avocet identified 32 USTs as PECs, although 6 were either on or outside the project boundary. The UST PECs are based on either documented/suspected subsurface impacts or the USTs having been abandoned in place. The locations of abandoned-in-place USTs are shown in Figure 8. If the USTs are indeed still present, they will have to be removed as part of the development for the SCVC.

2.2.2 DRA Summary

As summarized in Table 16 and shown in Figure 9, Avocet identified 51 DRAs in the course of the subject evaluation. One of the DRAs is related to IRP Site 3, which is also listed as a PEC due to the waste excavation areas. IRP Site 3 includes Waste Area A (shown in Figures 6 and 9), which was used as a final disposal site for landfill material found throughout IRP Site 3. Waste Area A is a closed landfill currently being monitored following a Record of Decision, which typically requires maintenance and monitoring for 30 years following closure. As such, the DON has identified Waste Area A as an area requiring institutional controls that would limit future development.

Two other areas have been identified by the DON as DRAs in the FOST reports, the "MSC JP5 Pipeline and Associated TFA Groundwater Plume Area with Buffer Zone" and the "Former UST 398 Groundwater Plume Area with Buffer Zone" shown in Figures 7 and 9, respectively. Both of these areas involve ongoing groundwater remediation and monitoring related to petroleum hydrocarbon releases. Also, as stated above, when these two areas are released by the DON for development, they should be considered PECs based on the potential presence of residual hydrocarbons following closure.

Besides these three areas, there are a 48 survey monuments, groundwater monitoring wells, lysimeters, landfill gas extraction and monitoring wells, landfill leachate monitoring wells, and other landfill related infrastructure that are considered DRAs for evaluation purposes. These features will need to be protected in place during future development, and following development, the DON will need to access to these features as part of their ongoing monitoring programs. Alternately, it may be possible to destroy/remove and then replace some of these features once redevelopment is complete.

3.0 HAZARDOUS MATERIAL SCREENING

This section outlines the findings of the HMS conducted by Advantage, Avocet's subcontractor. Advantage's HMS report, which describes the screening methodology, is included in its entirety as Appendix A and the HMS results are summarized in Table 17 and presented graphically in Figure 10.

Prior to mobilizing to the field for the HMS, the relevant FOST documents were reviewed for summaries of prior HMSs. The summaries of prior HMSs indicated which materials are ACM and whether they are friable on non-friable. For the subject HMS, sampling was limited primarily to those materials not already identified as being ACM, although some samples of previously identified ACMs were collected for confirmation purposes. Based on Advantage's HMS, 31 of the 78 structures/buildings within the SCVC boundary contain ACMs. It should be noted that sampling in some of the buildings/structures was limited due to access issues (e.g., the presence of a bee hive or no access to the roof). In those cases, the building components were assumed to contain ACM, as noted in Table 17. Table 17 also includes, where possible, estimates of ACM quantities, although Avocet recommends additional sampling and confirmation of the estimates prior to building demolition. The types of ACM included Transite pipes and tiles, vinyl floor tiles, pipe and duct insulation, window putty, roofing, various mastics, and drywall.

The relevant FOST documents did not provide much information pertaining to LBP so Advantage took 384 X-ray fluorescence (XRF) readings to identify LBP in the remaining structures. The XRF readings indicated that 37 buildings/structures contain LBP, mostly on exterior building components, such as door and window frames, walls, doors, stairs, posts, gutters, and fascia/trim pieces. In addition to building components, XRF readings were taken on both the white and yellow striping paints on the asphalt and concrete surfaces, with some the yellow stripping found to be LBP. As part of the evaluation, the condition of the LBP was graded as good, fair, or poor. Good condition indicates that no abatement is required prior to demolition. Fair condition indicates that there is potential for a minimal amount of abatement or encapsulation prior to demolition. Poor condition indicates loose/flaky paint that would require abatement prior to demolition. Most of the LBP was assessed as being in good or fair condition, with only a few buildings featuring loose/flaky paint.

In addition to the ACM and LBP screenings, several samples were collected from the caulking in joints in the concrete apron along the western half of the site and analyzed for PCBs. It should be noted that the original caulk samples were analyzed for PCBs outside of the method-specific holding time but the results are still relevant, as PCBs are stable and do not decompose readily. Since the original samples were analyzed outside their holding time, additional caulk samples were collected and analyzed. Results from both sets of PCB samples were nondetect above their respectively laboratory reporting limits. Copies of the laboratory reports are included as Appendix B.

4.0 CONCEPTUAL ESTIMATE OF ABATEMENT

As requested by DGS, the following is a conceptual estimate of the abatement required as a precursor to the planned development of the SCVC. The required abatement includes excavation and offsite disposal of impacted soil and hazardous building components.

4.1 ESTIMATES RELATED TO IMPACTED SOIL

As already mentioned, this summary evaluation is based on the relevant FOST documents, which do not include soil and soil gas data. As such, the following estimates are conceptual in nature and are intended for preliminary planning purposes only.

4.1.1 Volume Estimate of Impacted Soil from PECs and DRAs

As discussed above, 59 PECs and 51 DRAs were identified as part of this evaluation. For conceptual estimate purposes, Avocet assumed that remedial excavation will be required at 50 percent of the PECs and at three DRAs (essentially all of the DRAs other than the various monitoring wells and other monitoring infrastructure). For each of these features, Avocet assumed localized excavation down to 10 feet with 40 to 75 cubic yards (cy) of soil removed at each location. As such, between 1,300 to 2,400 cy of soil related to the PECs and DRAs may need to be removed from the site.

4.1.2 Volume Estimate of Impacted Soil from LBP

In addition to impacted soil from the PECs and DRAs, Avocet also estimated the volume of soil that may be impacted by lead from LBP. On other projects, Avocet has found that soil within the drip line of buildings coated with LBP is often impacted by lead to depths on the order of 18 inches. Since only the remaining structures at the site were screened for LBP, it is not clear how many of the previously demolished buildings featured exterior LBP. Avocet assumed that soil within 2 to 3 feet of the remaining buildings with LBP has been impacted by lead to 18 inches bgs and that 1,100 to 1,800 cy of lead-impacted soil may need to be removed from the site as part of the SCVC development.

4.1.3 Estimated Cost Associated with Impacted Soil

The total estimated volume of soil to be removed is 2,400 to 4,200 cy. Assuming density ranges from 1.8 to 2.2 tons per cy, the estimated weight ranges from 4,500 to 9,300 tons. The worst case scenario for soil disposal is as hazardous waste, with an estimated cost for disposal at about $200 per ton. Under this scenario, the estimated cost for soil disposal is $1,860,000 ($200 x 9,300 tons).

4.2 ESTIMATED COST ASSOCIATED WITH HAZARDOUS BUILDING COMPONENTS

Based on the findings of the HMS, ACM and LBP are prevalent in and on many of the remaining structures in the proposed SCVC. It should be noted that the HMS states that the information provided is designed to aid the building owner, architect, construction manager, general

contractor, and potential abatement contractors in locating affected building materials within the proposed SCVC. All estimated square footages (sq ft) are approximate and should not be used for final bidding or notification purposes. In addition, other materials containing asbestos and lead may exist at the property in concealed or inaccessible areas. The HMS was not intended to be utilized as an asbestos abatement bidding document or abatement specification document. As such, the following estimates are conceptual in nature and are intended for preliminary planning purposes only.

The HMS estimated 73,000 sq ft of ACM. For this conceptual estimate, a 25 percent contingency was added, for an estimated 92,000 sq ft of ACM. Assuming $8 per sq ft for abatement, the estimated cost for ACM abatement is $736,000. Additional cost allowances to be included in the abatement cost for hazardous building components are for LBP and universal waste removal at $100,000 and $150,000, respectively. The conceptual estimated cost for abatement of hazardous building components is $986,000.

5.0 CLOSING

In the context of subsurface environmental conditions, MCAS El Toro is a very complex, albeit mature, site with numerous documented impacts and very probably other impacts that won't come to light until near-surface soil is disturbed during redevelopment. The proposed SCVC is located near the center of MCAS El Toro and very likely also encompasses multiple areas of impacted soil. As previously noted, this summary evaluation is based on the relevant FOST documents, which provide generally limited information. As such, Avocet adopted a conservative approach in identifying PECs and DRAs but makes no warranty regarding the completeness of the information presented in the FOST documents.

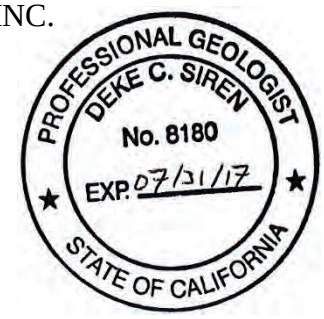
Avocet assumes that all of the existing structures and pavement within the SCVC boundary will be demolished/removed and that the SCVC will feature an administration building, a maintenance building and yard, a committal shelter, a public assembly area, columbarium, in-ground cremains, in-ground crypts, roads, landscape, and other features. Avocet also assumes the in-ground cremains and crypts will be dug at the SCVC to depths on the order of 6 feet below ground surface. Demolition, redevelopment grading, foundation excavation, utility installation, and excavation for in-ground cremains and crypts will all involve soil disturbance, during which impacted soil could be encountered. In broad terms, contaminated soil encountered during demolition, redevelopment grading, foundation excavation, and utility installation could be addressed "up front" prior to the SCVC becoming operational. Excavation for in-ground cremains and crypts, however, likely would be a recurring activity that could go on for decades. In Avocet's opinion, it would be impractical to address contaminated soil disturbed by in-ground cremains and crypt excavation on a case-by-case basis. The alternative would be to over-excavate and recompact the entire SCVC to a depth of, say, 8 to 10 feet below ground surface prior to it becoming operational and address contaminated soil, as/if encountered, at that time. Of course, there are significant cost considerations with such an approach.

Regardless of how DGS proceeds, a robust Soil Management Plan would be required to ensure that contaminated soil encountered at any stage of the SCVC development is characterized, profiled, and managed appropriately. DGS should keep in mind that if impacted soil is encountered, additional assessment may be required by the overseeing regulatory agencies to determine if it is related to a known release or a previously undocumented release.

Respectfully submitted,

AVOCET ENVIRONMENTAL, INC.

Deke Siren, P.G.
Senior Project Manager



AVOCET ENVIRONMENTAL, INC.

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Tables

AVOCET
ENVIRONMENTAL, INC.

Table 1
List of Abbreviations and Acronyms for Tables
Proposed Southern California Veterans Cemetery
Irvine, California

ACM = asbestos-containing material
AOC = area of concern
APHO = aerial photograph feature/anomaly
ARPR = area requiring petroleum restrictions
AST = aboveground storage tank
bgs = below ground surface
BNI = Bechtel National, Inc.
BRAC = Base Realignment and Closure
CABACO = CABACO, Inc.
CDM = CDM Federal Programs Corporation
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
CSMB = California State Mining Bureau
D = disposal of wastes
DCCDOG = Department of Conservation, California Division of Oil and Gas
DNRDMM = State of California, Department of Natural Resources, Division of Mines and Mining
DON = Department of the Navy
DTSC = California Department of Toxic Substances Control
e&e = Ecology & Environment, Inc.
EBS = environmental baseline survey
ECP = Environmental Condition of Property
EFD = Engineering Field Division
EPA = Environmental Protection Agency
FAD = friable, accessible, and damaged (as applied to asbestos)
FML = flexible membrane liner
FOST = Finding of Suitability to Transfer
FS = feasibility study
Geofon = Geofon, Inc.
IAS = Initial Assessment Study
IC = institutional control
IRP = Installation Restoration Program
IT Corp = International Technology Corporation
JEG = Jacobs Engineering Group
JP5 = Jet Propulsion Fuel, Grade 5
JTL = JTL Environmental
LBP = lead-based paint
LFG = landfill gas
LOC = location of concern
LTM = long-term monitoring
MCAS = Marine Corps Air Station
mg/kg = milligrams per kilogram
MNA = monitored natural attenuation
MSC = miscellaneous
N/A = not applicable
NAMAR = Navy/Marine
NAVFAC = Naval Facilities Engineering Command
ND = operations at site are not determined
NFA = no further action
NFI = no further investigation
NOI = Notice of Intention
O&M = operation and maintenance
OCHCA = Orange County Health Care Agency
OHM = OHM Remediation Services, Inc.

Table 1
List of Abbreviations and Acronyms for Tables
Proposed Southern California Veterans Cemetery
Irvine, California

OPS = operating properly and successfully
OU = Operable Unit
OWS = oil/water separator
PCB = polychlorinated biphenyl
PMO = Program Management Office
ppm = parts per million
PRG = Preliminary Remediation Goal
PRL = potential release location
PWC = Public Works Center
RA = remedial action
RACR = Remedial Action Completion Report
RAD = radiological
RAO = remedial action objective
RCRA = Resource Conservation and Recovery Act
RFA = RCRA Facility Assessment
RI = remedial investigation
RMA = RMA land Construction Inc.
ROD = Record of Decision
RWQCB = Regional Water Quality Control Board Santa Ana Region
S = storage of hazardous material or waste
SAIC = Science Applications International Corporation
Shaw = Shaw Environmental Inc.
SI = site inspection
SRU = silver recovery unit
SVOC = semivolatile organic compound
SW = Southwest
SWMU = Solid Waste Management Unit
TAA = Temporary Accumulation Area
Tait = Tait Environmental Management, Inc.
TFA = truck fueling area
TPHd = total petroleum hydrocarbons as diesel
U.S. EPA = U.S. Environmental Protection Agency
UST = underground storage tank
VOC = volatile organic compound
VSI = visual site inspection
W/I BNDY = within boundary

Table 2
Summary of Aerial Photograph Features/Anomalies (APHOs)
Proposed Southern California Veterans Cemetery
Irvine, California

Feature	Carve Out	FOST	Associated Building	Location Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes
APHO 109	CO II-B	FOST #6	129/130	Drum Storage	Information Package, APHOs 87, 99, 98, 99, 100, and 109 5/2003 by NAVFAC SW and NFA Determination for APHOs (site visit by DTSC on 06/13/2003)	DTSC 06/25/2003 RWQCB 08/14/2003	APHO 109 (also known as SAIC 284) was identified as a storage area with probable drums on an aerial photograph dated 1974, The area is located near Building 129, Building 130, and Building 745. The APHO 109 study area included the investigation area for TAA 130A, TAA 130B, TAA 130C, UST 130A, UST 130B, PRL 130, and PRL 745. Based upon a visual inspection conducted in June 2003, DTSC and RWQCB concurred with recommendation of NFA. No further action required.
APHO 90	CO II-B	FOST #6	Q Street and 9th Street	Unidentified Object	Information Package, APHOs 87, 90, 98, 99, 100, and 109 5/2003 by NAVFAC SW and NFA Determination for APHOs (site visit by DTSC on 6/13/2003)	DTSC 6/25/2003 RWQCB 8/14/2003	Outside of SCVC boundary. Identified on a 1960 photograph. Object was considered a possible incinerator or chimney. Adjacent structures in the area include a former paint shop that has a mezzanine section that could be interpreted as a chimney, and a former incinerator was located in the general vicinity of the APHO. The APHO could be the incinerator located at Facility 140/140A. This possibility, and the lack of other evidence in the area, provides the basis for no further action. No further action required.
APHO 37	CO II-E	FOST #5	115	Stains and Wet Soil	Summary Report, APHO 37, Possible Stain 08/20/1999 by NAVFAC SW	DTSC 09/09/1999 U.S. EPA 11/04/1999 RWQCB 03/31/2000	Records reviews, site visits, and comparison of LOCs in the vicinity of the site identified no evidence of releases. No evidence of staining or a release identified during 2002 VSI conducted in support of the EBS. Regulatory agency concurrence of NFA recommendation has been obtained. No further action required.
APHO 110	CO II-E	FOST #5	121	Liquid	Information Package, APHO 110 04/28/2003 by NAVFAC SW	RWQCB 08/14/2003	Identified on a 1974 photograph. The facility associated with this APHO is a fire station, and the liquid flowing from the facility is probably water used in routine operations at the fire station. Based on a VSI conducted in June 2003, RWQCB concurred with no further action in a letter dated 08/14/2003.
APHO 99	CO II-E	FOST #5	139	Soil Stains	Information Package, APHO 87, 90, 98, 99, 100, and 109 05/2003 by NAVFAC SW	RWQCB 08/14/2003	Outside of SCVC boundary. Identified on a 1967 photograph. The anomaly was recorded as three parallel lines on the westerly side of Facility 139. Facility 139 was a public works shop located east of former Tank Farm 4. The area of the anomaly is within the former tank farm boundaries. All fuel tanks were removed and the site was closed in 1996. Based on the location and the fact that all sites within the former tank farm are closed, no further action was recommended for APHO 99. Based on a VSI conducted in June 2003, RWQCB concurred with no further action in a letter dated 08/14/2003.
APHO 119	CO II-E	FOST #5	Edge of Aircraft Apron between 605 and 606	Stains	Information Package, APHO 119 04/22/2003 by NAVFAC SW and NFA Determination for APHOs (site visit by DTSC on 06/13/2003)	DTSC 06/25/2003 RWQCB 08/14/2003	Identified on a 1983 photograph. The APHO area was visually inspected in April 2003. No evidence of staining was found. An inlet for the storm drain was noted in that location. TAA 605 (SWMU 149) and TAA 606 (SWMU 255) are between Facility 605 and 606. NFA has been obtained for these TAAs (see above). Based on a VSI conducted in June 2003, DTSC and RWQCB concurred with recommendation of NFA for APHO 119. No further action required.
APHO 50	CO II-Q	FOST #7	Tank Farm No. 5	Disturbed Ground and Excavation	Summary Report, APHO 50, Former Trench or other Linear Feature 09/29/1999 by NAVFAC EFD SW	DTSC 11/30/1999 RWQCB 03/31/2000	Outside of SCVC boundary. APHO 50 was located near former Tank Farm 5 and Agua Chinon Wash. Historical facility records were reviewed and a Summary Report recommending NFA was submitted in 1999. Regulatory agency concurrence of NFA recommendation has been obtained.

Feature	Carve Out	FOST	Associated Building	Location Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes
APHO 25	CO II-Q	FOST #7	Agua Chinon Wash	Disturbed Ground and Excavation	Summary Report, APHO 25, Mounded Material 08/10/1999 by NAVFAC EFD SW	DTSC 08/31/1999 U.S. EPA 10/06/1999 RWQCB 03/31/2000	Outside of SCVC boundary. APHO 25 is located near Agua Chinon Wash. Historical facility records were reviewed and a Summary Report recommending NFA was submitted in 1999. Regulatory concurrence on NFA has been obtained.
APHO 100	CO II-Q	FOST #7	114	Liquid Flowing	Information Package, APHOs 87, 90, 98, 99, 100, and 109 May 2003 by NAVFAC EFD SW	DTSC 06/25/2003 RWQCB 08/14/2003	Identified on a 1967 photograph. Liquid was reported to be flowing from Facility 114. Facility 114 is adjacent to a former wash rack. The wash rack was evaluated and granted NFA status in 1996. UST 763B and OWS 763A associated with the wash rack have been removed and closed. NFA was recommended for APHO 100 based upon results of sampling for the wash rack and the removal of the associated tank and OWS. Based on a VSI conducted in June 2003, DTSC and RWQCB concurred with recommendation of NFA.
APHO 98	CO II-Q	FOST #7	372	Wet Soil	Information Package, APHO 87, 90, 98, 99, 100, and 109 May 2003 by NAVFAC EFD SW	RWQCB 08/14/2003 DTSC 07/09/2004	Identified on a 1967 photograph. Wet soil was noted near Facility 1793 and Facility 372 and near the edge of an aircraft parking apron. There were three former fuel storage tanks located adjacent to Facility 372 (UST 902A, 902B, and 902C). The tanks were removed and the site was closed in 2000. NFA was recommended at APHO 98, due to the proximity of this anomaly to a former fuel storage area. RWQCB and DTSC concurred with recommendation of NFA.
APHO 4	Parcel II-A	FOST #1	Tank Farm No. 4	Stains and Wet Soil	Summary Report, APHO 4, Probable Soil Stains 7/28/1999 by NAVFAC EFD SW	RWQCB 10/6/1999 EPA 10/6/1999 DTSC 8/16/1999	No evidence of staining or a release identified during 2002 VSI conducted in support of the EBS. Regulatory agency concurrence of NFA recommendation has been obtained. No further action required. ECP Category 1.
APHO 3	Parcel II-A	FOST #1	120	Open Storage Area	Summary Report, APHO 3, Open Storage Area 8/7/1999 by NAVFAC EFD SW	DTSC 8/30/1999 EPA 10/6/1999 RWQCB 3/31/2000	Outside of SCVC boundary. No evidence of a release identified during 2002 VSI conducted in support of the EBS. A visual inspection of the site conducted by the Navy in 1999 found no evidence of a release. Based on the site visit and a review of historical documents, the Navy recommended this site for NFA. Regulatory agency concurrence of NFA recommendation has been obtained. No further action required. ECP Category 1.

Notes:
See Table 1 for a list of acronyms.
Information presented in this table is copied from the applicable FOST document.
Orange highlight indicates Potential Environmental Concerns (PECs)

Table 3
Summary of Aboveground Storage Tanks (ASTs)
Proposed Southern California Veterans Cemetery
Irvine, California

Feature	Carve Out	FOST	Associated Building	Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes	Dates of Operation
AST 380	CO II-D	FOST #8	380	550-Gallon Diesel AST	Tank Closure Report, AST 380 by IT Corp. 12/11/2000	RWQCB 1/17/2001	AST 380 was used for storage of diesel fuel for the emergency generator in Building 380. AST 380 was removed on 5/19/2000, and confirmation soil samples were collected and analyzed. A Tank Closure Report was submitted on 12/11/2000 and the RWQCB concurred with NFA in a letter dated 1/12/2001.	1954 - 1999
AST 372	CO II-Q	FOST #7	372	275 Gallon Diesel AST	Summary Report, Former AST 372 07/24/2000 by NAVFAC EFD SW	RWQCB 08/28/2000	Tank has been removed. NFA decision by RWQCB as of 08/28/2000.	1954 - 1999
AST 658	CO II-Q	FOST #7	658	200 Gallon Ferrocene AST	Information Package, AST 658 04/04/2002 by NAVFAC EFD SW	DTSC 03/10/2003	Formerly situated at Building 658 near IRP Site 4. Tank has been removed and NFA was received as of 03/10/2003.	Unknown - 1999
AST 126	CO II-Q	FOST #7	126	300 Gallon Oil AST	Information Package, AST 126. 11/06/2001 by NAVFAC EFD SW	RWQCB 06/03/2011	Tank has been removed. No releases identified. The RWQCB concurred with the NFA in a letter dated 06/03/2011.	Unknown - 1999
AST 610	Parcel II-A	FOST #1	610	300 Gallon Diesel AST	Summary Report, former AST 610 8/1/2000 by NAVFAC EFD SW	RWQCB 8/23/2000	Tank has been removed. Horizontal tank; tank formerly situated on south side of Building 610; no further action required; NFA decision 8/23/2000. No further action required. ECP Category 2a.	Unknown - 1999

Notes:
See Table 1 for a list of acronyms.
Information presented in this table is copied from the applicable FOST document.

Table 4
Summary of Building Environmental Features (BLDG LOCs)
Proposed Southern California Veterans Cemetery
Irvine, California

Building Number	Carve Out	FOST	Hazardous Substances	Reportable Quantity (lb/yr)	CAS #	RCRA Waste Code	Dates of Operation	Notes
126	CO II-Q	FOST #5	Ethylbenzene	17.41	100-41-4	N.E.	Unknown - 1999	
			p-Xylene	8.70	106-42-3	N.E.		
			m-Xylene	17.41	108-38-3	N.E.		
			Toluene	17.41	108-88-3	U220		
			Perchloroethylene	17.41	127-18-4	U210		
			1,1,1-Trichloroethane	17.41	71-55-6	U226		
			o-Xylene	8.70	95-47-6	N.E.		
126	CO II-Q	FOST #5	1,4-Dichlorobenzene	0.81	25321-22-6	N.E.	Unknown - 1999	
			Perchloroethylene	1.01	127-18-4	U210		
			Dichloromethane	0.60	75-09-2	N.E.		
			Napthalene	12.09	91-20-3	U165		
606	CO II-E	FOST #5	Pesticides	NA	NA	NA	Unknown - 1999	
130	CO II-B	FOST #6	p-Xylene	1.00	106-42-3	N.E.	Unknown - 1999	
			m-Xylene	2.01	108-38-3	N.E.		
			Propylene glycol Monomethyl ether	4.02	107-98-2	N.E.		
			Toluene	20.08	108-88-3	U220		
			o-Xylene	1.00	95-47-6	N.E.		
130	CO II-B	FOST #6	p-Xylene	2.61	106-42-3	N.E.	Unknown - 1999	
			m-Xylene	5.21	108-38-3	N.E.		
			Toluene	15.63	108-88-3	U220		
			Methyl Ethyl Ketone	45.41	78-93-3	U159		
			o-Xylene	2.61	95-47-6	N.E.		
634	CO II-B	FOST #6	Diethanolamine	4.44	111-42-2	N.E.	Unknown - 1999	
634	CO II-B	FOST #6	p-Xylene	0.40	106-42-3	N.E.	Unknown - 1999	
			m-Xylene	0.80	108-38-3	N.E.		
			Toluene	1.06	108-88-3	U220		
			Acetone	2.00	67-64-1	U002		
			o-Xylene	0.40	95-47-6	N.E.		
634	CO II-B	FOST #6	Toluene	6.26	108-88-3	U220	Unknown - 1999	
			Acetone	6.82	67-64-1	U002		
634	CO II-B	FOST #6	Ethylbenzene	0.21	100-41-4	N.E.	Unknown - 1999	
			p-Xylene	0.05	106-42-3	N.E.		
			m-Xylene	0.10	108-38-3	N.E.		
			Toluene	3.48	108-88-3	U220		
			Acetone	2.22	67-64-1	U002		
			o-Xylene	0.05	95-47-6	N.E.		
634	CO II-B	FOST #6	p-Xylene	0.14	106-42-3	N.E.	Unknown - 1999	
			m-Xylene	0.27	108-38-3	N.E.		
			Propylene glycol Monornethyl ether	1.35	107-98-2	N.E.		
			Toluene	4.05	108-88-3	U220		
634	CO II-B	FOST #6	Acetone	9.45	67-64-1	U002	Unknown - 1999	
			Dichloromethane	10.80	75-09-2	N.E.		
			o-Xylene	0.14	95-47-6	N.E.		
634	CO II-B	FOST #6	Ethylbenzene	0.21	100-41-4	N.E.	Unknown - 1999	
			P-Xylene	0.10	106-42-3	N.E.		
			m-Xylene	0.21	108-38-3	N.E.		
			Toluene	3.08	108-88-3	U220		
			Acetone	2.66	67-64-1	U002		
			o-Xylene	0.10	95-47-6	N.E.		
132	Parcel II-A	FOST #1	Ethylebenzene	2.90	100-41-4	N.E.	Unknown - 1999	87 gallons of solvent
			p-Xylene	1.45	106-42-3	N.E.		
			m-Xylene	2.90	108-38-3	N.E.		
			Toluene	2.90	108-88-3	U220		
			Perchloroethylene	2.90	127-18-4	U210		
			1,1,1-Trichloroethane	2.90	71-55-6	U226		
			o-Xylene	1.45	95-47-6	N.E.		

Notes:
See Table 1 for a list of acronyms.
Information presented in this table is copied from the applicable FOST document.

AVOCET ENVIRONMENTAL, INC.

Table 5
Summary of Wells and Similar Development Restricting Features (WELLS)
Proposed Southern California Veterans Cemetery
Irvine, California

Carve Out	FOST	Associated Building	Latitude	Longitude	Well or Feature ID	Purpose / Type
CO II-D	FOST #8	IRP Site 3	2192989.980	6115846.663	03_UGMW26B	Groundwater monitoring well
CO II-D	FOST #8	IRP Site 3	2193463.877	6115384.840	03_DGMW64A	Groundwater monitoring well
CO II-D	FOST #8	IRP Site 3	2193151.935	6115140.368	03_DGMW65XA	Groundwater monitoring well
CO II-D	FOST #8	IRP Site 3	2193021.713	6115939.873	03LYS2	Lysimeter
CO II-D	FOST #8	IRP Site 3	2193148.277	6115529.304	03LYS4	Lysimeter
CO II-D	FOST #8	IRP Site 3	2193081.198	6115574.374	03_LFG01	Landfill gas extraction well
CO II-D	FOST #8	IRP Site 3	2193008.722	6115649.038	03_LFG02	Landfill gas extraction well
CO II-D	FOST #8	IRP Site 3	2193079.430	6115711.442	03_LFG03	Landfill gas extraction well
CO II-D	FOST #8	IRP Site 3	2193167.689	6115643.656	03_LFG04	Landfill gas extraction well
CO II-D	FOST #8	--	N/A	N/A	N/A	Landfill gas conveyance piping
CO II-D	FOST #8	IRP Site 3	2192964.725	6115536.110	03PG05	Landfill gas extraction well
CO II-D	FOST #8	IRP Site 3	2192967.917	6115762.593	03PG06	Landfill gas extraction well
CO II-D	FOST #8	IRP Site 3	2193202.616	6115761.316	03PG07	Landfill gas extraction well
CO II-D	FOST #8	IRP Site 3	2193201.714	6115517.598	03PG08	Landfill gas extraction well
CO II-D	FOST #8	--	2192986.798	6115513.326	03MP1	Survey monument
CO II-D	FOST #8	--	2193182.580	6115650.603	03MP2	Survey monument
CO II-D	FOST #8	--	2193077.494	6115721.467	03MP3	Survey monument
CO II-D	FOST #8	IRP Site 3	N/A	N/A	N/A	12-Inch vitrified clay pipe
CO II-D	FOST #8	IRP Site 3	N/A	N/A	N/A	Gas monitoring trenches
CO II-D	FOST #8	IRP Site 3	2192986.683	6115547.456	03_TR01	Gas monitoring vent
CO II-D	FOST #8	IRP Site 3	2192985.871	6115738.776	03_TR02	Gas monitoring vent
CO II-D	FOST #8	IRP Site 3	2193203.069	6115731.650	03_TR03	Gas monitoring vent
CO II-D	FOST #8	IRP Site 3	2193200.158	6115550.491	03_TR04	Gas monitoring vent
CO II-Q	FOST #7		2192544.234	6115386.898	03LYS1	Leachate monitoring
CO II-Q	FOST #7	IRP Site 3	2192692.688	6114880.518	04DGMW66A	Groundwater monitoring well
CO II-Q	FOST #7	746	2192452.223	6115476.488	04UGMW63	Groundwater monitoring well
CO II-Q	FOST #7	372	2192650.181	6113412.417	ASMW398-01	Groundwater monitoring well
CO II-Q	FOST #7	372	2192674.508	6113356.498	ASMW398-02	Groundwater monitoring well
CO II-Q	FOST #7	372	2192627.605	6113676.564	MW398-01R	Groundwater monitoring well
CO II-Q	FOST #7	372	2192835.647	6113262.203	MW398-12	Groundwater monitoring well
CO II-Q	FOST #7	372	2192835.001	6113060.573	MW398-13	Groundwater monitoring well
CO II-Q	FOST #7	372	2192692.017	6113194.184	MW398-17	Groundwater monitoring well
CO II-Q	FOST #7	372	2192596.709	6113389.916	MW398-19D	Groundwater monitoring well
CO II-Q	FOST #7	372	2192530.224	6113488.993	MW398-21R	Groundwater monitoring well
CO II-Q	FOST #7	372	2192507.231	6113256.872	MW398-26	Groundwater monitoring well
CO II-Q	FOST #7	372	2192523.042	6113112.304	MW398-28	Groundwater monitoring well
CO II-Q	FOST #7	372	2192759.486	6113114.321	MW398-29	Groundwater monitoring well
CO II-Q	FOST #7	372	2192828.512	6113513.631	MW398-30	Groundwater monitoring well
CO II-Q	FOST #7	372	2192662.658	6113345.274	MW398-31	Groundwater monitoring well
CO II-Q	FOST #7	372	2192738.873	6113436.635	MW398-4	Groundwater monitoring well
CO II-Q	FOST #7	372	2192635.314	6113361.452	MW398-6	Groundwater monitoring well
CO II-Q	FOST #7	372	2192526.887	6113219.532	RW398-01	Groundwater monitoring well
CO II-Q	FOST #7	372	2192638.300	6113536.639	RW398-02	Groundwater monitoring well
CO II-Q	FOST #7	--	2191898.961	6114593.481	TF6MW-01	Groundwater monitoring well
CO II-Q	FOST #7	763	2192149.642	6114433.526	TF6MW-02	Groundwater monitoring well
CO II-Q	FOST #7	--	2192330.918	6115019.965	TFAMW-01	Groundwater monitoring well
CO II-Q	FOST #7	--	2192156.891	6115142.434	TFAMW-02	Groundwater monitoring well
CO II-Q	FOST #7	747	2192530.335	6114868.130	TFAMW-03	Groundwater monitoring well

Notes:
Green shading indicates Development-Restricted Areas (DRAs)

AVOCET ENVIRONMENTAL, INC.

Table 6
Summary of Installation Restoration Program (IRP) Sites
Proposed Southern California Veterans Cemetery
Irvine, California

Feature	Carve Out	FOST	Associated Building	Location Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes	Hazardous Substances	Dates of Operation	Remedial Action Taken
IRP SITE 3	CO II-D	FOST #8	Desert Storm Road and North Marine Way	Original Landfill	Final ROD OU 2C, IRP Sites 3 and 5 by DON 2008	DTSC, RWQCB, and U.S. EPA February 2008	The IRP Site 3 landfill, which was the original Station landfill, was active from 1943 to 1955 and operated as a cut-and-fill disposal facility. Investigations conducted at IRP Site 3 include an IAS in 1985, a Phase I RI during 1992–93, a Phase II RI during 1995–96, and an FS in 1997. In December 2006, an FS Addendum was prepared for IRP Site 3 to update RAOs and reevaluate remedial alternatives, as necessary, as a result of the inclusion of LFG control components to the previously proposed remedial alternatives. The RA selected in the Final ROD included consolidation of waste and debris from the outlying areas within Waste Area A, capping this waste and debris with an FML, and covering the FML with a vegetated protective soil layer. In addition, the RA consisted of the installation of a passive and active LFG system. Environmental monitoring at the site includes LFG, leachate, and groundwater. In order to maintain the integrity of the cap, ICs constituting lease and/or deed restrictions are a part of selected remedy documented in the Final ROD. The Final RACR documented that the remedy implemented at IRP Site 3 met the RAOs that were established to protect human health and the environment. The Final RACR was approved by the regulatory agencies. Also, the DON, U.S. EPA, and DTSC counsels agreed that an OPS Report is not required for IRP Site 3 based on the documentation in the Final RACR demonstrating that RAOs had been met. With the exception of Waste Area A, all property within the original IRP Site 3 boundaries and various additional surrounding areas (e.g., waste excavation locations), was released for unrestricted use, including unrestricted RAD release. O&M and LTM are ongoing at IRP Site 3 in accordance with the agency-approved Final O&M/LTM Plan.	Various/Unknown Petroleum Products (although this site is being addressed under CERCLA, petroleum products may have been disposed of there)	1943–1955	

Table 6
Summary of Installation Restoration Program (IRP) Sites
Proposed Southern California Veterans Cemetery
Irvine, California

Feature	Carve Out	FOST	Associated Building	Location Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes	Hazardous Substances	Dates of Operation	Remedial Action Taken
IRP SITE 3	CO II-D	FOST #8	Original Landfill	Original Landfill and Adjacent Areas	Final – Final Status Survey by Shaw 2013	CDPH 2013 DTSC 2013 DON 2013	Radiological risk due to potential exposure to radiation from radium-226 in the surface soil (up to 18 inches below ground surface) of IRP Site 3 has been determined to be acceptable, within background for the residential receptor. However, due to the potential presence of small quantities of waste with radium-226 within the subsurface landfill waste, ICs that restrict land-disturbing activities are a component of the remedy. The Final – Final Status Survey Report recommended that, with the exception of Waste Area A, all property within the original IRP Site 3 boundaries and various additional surrounding areas (e.g., waste excavation locations), be released for unrestricted use, including unrestricted RAD release. The regulatory agencies, including CDPH and DTSC, concurred.	Municipal, industrial, and possibly radiological wastes	1943–1955	IRP Site 3 operated as a cut-and-fill disposal facility. Multiple investigations were conducted between 1985 and 2006. The remedial action selected in the Final ROD, OU 2C, IRP Sites 3 and 5 included waste consolidation into Waste Area A; capping; LFG management; groundwater, LFG, and leachate monitoring; site maintenance; and ICs. The Final RACR documented that the remedy was properly implemented. With the exception of Waste Area A, all property within the original IRP Site 3 boundaries and various additional surrounding areas (e.g., waste excavation locations), was released for unrestricted use, including unrestricted radiological release. O&M and LTM are ongoing at IRP Site 3 in accordance with the agency-approved Final O&M/LTM Plan.

Table 6
Summary of Installation Restoration Program (IRP) Sites
Proposed Southern California Veterans Cemetery
Irvine, California

Feature	Carve Out	FOST	Associated Building	Location Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes	Hazardous Substances	Dates of Operation	Remedial Action Taken
IRP SITE 4 Unit 1 & 2	CO II-Q	FOST #7	658	Ferrocene Spill Area (OU-3)	Final ROD, OU 2A & 3A, No Action Sites 09/30/1997 by NAVFAC SW	U.S. EPA, DTSC, RWQCB 09/30/1997	IRP Site 4 consists of two units: Unit 1 is an oil-stained area southeast of Building 658, which overlaps a concrete transformer pad; and Unit 2 is a drainage ditch, which received runoff from a ferrocene spill. The staining at Unit 1 was the result of oily discharges from Building 658, which were observed over an approximate 2-year period. The contamination at Unit 2 originated from an August 1983 spill, when the contents of a 500-gallon tank (wash water and residual jet fuel) reportedly overflowed during washing and spilled onto the ground, draining into a ditch adjacent to 9th Street. The spilled liquid reportedly contained approximately 5 gallons of ferrocene and a hydrocarbon carrier solution. Investigations conducted at IRP Site 4 include a Phase I RI and aerial photograph surveys in 1993. VOCs and SVOCs were below residential PRGs in both units. The human health and ecological risk assessments showed that the contaminants present in the soil do not present an unacceptable risk to human health or the environment. Therefore, no remedial action was required. The ROD was signed on 9/30/1997. During the RI of IRP Site 4, groundwater monitoring wells were installed near Building 658 and a release of petroleum to groundwater was detected. This release was attributed to jet fuel released from the nearby JP5 pipelines at the former JP5 TFA; the petroleum-impacted groundwater is known as the JP5 TFA Plume. The RWQCB has approved closure of the vadose zone soil for the MSC JP5 pipeline segments and TFA features overlying the plume. An evaluation of natural attenuation of groundwater was completed in 2007, and the RWQCB concurred with MNA with long-term monitoring as the groundwater remedy on 8/31/2007. In 2007, DON was conducting groundwater monitoring of the JP5 TFA Plume in accordance with the MNA remedy as required by the MNA Evaluation and LTM Plan, Former JP-5 TFA, Former MCAS, El Toro, California.	Ferrocene and oily discharges from Building 658	1983	

Notes:
See Table 1 for a list of acronyms.
Information presented in this table is copied from the applicable FOST document.
Green highlight indicates Development-Restricted Areas (DRAs)
Orange highlight indicates Potential Environmental Concerns (PECs)
Green/orange highlight indicates listing as both PEC and DRA.

Table 7
Summary of Miscellaneous Jet Propulsion Fuel, Grade 5, Pipelines (MSC JP5)
Proposed Southern California Veterans Cemetery
Irvine, California

Feature	Carve Out	FOST	Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes	Hazardous Substances	Dates of Operation
MSC JP5	CO-II-Q	FOST #7	Fuel Pipelines and Associated Truck Fueling Areas	Closure Report MSC JP5 Units 1 and 3 06/26/2001 by OHM Information Package MSC JP5 Pipelines 04/29/2011 by DON BRAC PMO West	RWQCB 06/17/2011	The JP5 pipelines and all associated TFA features within CO II-Q are inactive. Pipelines have been abandoned in place. Pipeline segments and associated features were separately investigated and closed by the RWQCB. NFA concurrence was obtained for all the segments of MSC JP5 pipelines and associated TFA features from the RWQCB. The groundwater plume underlying the MSC JP5 pipelines segments and associated TFA encompasses the area beneath former Tank Farm No. 5, former Tank Farm No. 6, the former TFA, and IRP Site 4. The RWQCB has closed the vadose zone soil for the MSC JP5 pipeline segments and TFA features overlying the plume. An evaluation of natural attenuation of groundwater was completed in 2007, and the RWQCB concurred with monitored natural attenuation as the groundwater remedy on 31 August 2007. The ARPR for MSC JP5 pipeline and associated TFA plume addressed in this FOST affects the CO II-Q.	JP5 A sample of the black tarry coating on a segment of the JP5 pipeline near the JP5 Building 363 Dry Well was analyzed for asbestos in order to characterize the coated pipeline for disposal, with non-FAD ACM found.	Unknown - 1999
MSC JP5	CO-II-Q	FOST #2	Fuel Lines	Summary Report, MSC JP5 Valve Box 3 Vicinity, Former MCAS, El Toro 12/27/2004	RWQCB 02/22/2005	JP-5 fuel line has been abandoned. Investigative inspections and activities such as trenching, soil sampling results, and pipeline testing and abandonment of the pipeline between Valve Box 1 (near Aqua Chinon Wash) and Valve Box 4 (NEAR Quarry Road) revealed that no significant release of petroleum hydrocarbons had occurred. RWQCB concurred with NFA on 2/22/2005. No further action required for this portion of the pipeline. ECP Category 2a.	JP5	Unknown - 1999

Notes:
See Table 1 for a list of acronyms.
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Green shading indicates Development-Restricted Areas (DRAs)
Orange shading indicates Potential Environmental Concerns (PECs)

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Table 8
Summary of Oil/Water Separators (OWS)
Proposed Southern California Veterans Cemetery
Irvine, California

Feature	Location	FOST	Associated Building	Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes	Hazardous Substances	Dates of Operation
OWS 605C	CO II-E	FOST #5	605	500-Gallon OWS	Tank Removal Field Activities, Tank 605B & OWS 605C 09/09/1999	OCHCA 12/09/1999	Site also identified as SWMU/AOC 151. OWS was installed in 1984. OWS was removed in 1997. OWS associated with UST 605B. Site was investigated; the RFA recommended leak test/inspection of OWS. No significant soil contamination identified at this site. Site closed by OCHCA in a letter dated 12/09/1999. No further action required.	Oil/water	Unknown - 1999
OWS 892	CO II-E	FOST #5	892	1,375-Gallon OWS	Site Assessment Report, OWS Site 892 07/09/1999 by OHM	RWQCB 07/07/2000	OWS installation date unknown. OWS closed in place. OWS was not associated with a UST. Site was investigated. Site closed by RWQCB in a letter dated 07/07/2000. No further action required.	Oily water	Unknown - 1999
OWS 643B	CO II-E	FOST #5	643	100-Gallon OWS	Tank Removal and Site Closure Report, UST 643A and OWS 643B 06/12/1997 by OHM	OCHCA 07/11/1997	Site also identified as SWMU/AOC 163. OWS was installed in 1982. OWS was removed in 1997. OWS was associated with UST 643A. Site was investigated, and no significant soil contamination was identified at this site based on the results of soil sampling. Site closed by OCHCA in a letter dated 07/11/1997. No further action required.	Oil/water	1982 - 1997
OWS 764B	CO II-I	FOST #4	764	100-Gallon OWS	Summary Report for Former UST 764A and OWS Site 764B Site 12/1/2005	RWQCB 5/16/2006 DTSC 7/31/2006	UST 764A (SWMU 214) and OWS 764B (SWMU 215) were located adjacent to SWMU 213 (a wash rack located adjacent to the southeast end of Building 392 near Building 764). Soil samples were collected adjacent to UST 764A during the RFA Sampling Visit in 1992. UST 764A, OWS 764B, and approximately 6 feet of associated piping were removed on 8/9/1999 with oversight by the OCHCA. Soil samples were collected from four borings during site assessment activities in 2000. Additional soil samples were collected from a boring near the center of the former tank excavation in 2005. The RWQCB concurred with NFA for UST 764A / OWS 764B on 5/16/2006, and DTSC concurred with NFA on 7/31/2006. The RWQCB assigned (No Suggestions) ID T0605968363 to Former UST Site 764A / OWS Site 764B. No further action required.	Oil/water	Unknown - 1999
OWS 716B	CO II-Q	FOST #7	716	100-Gallon OWS	Tank Closure Report, UST 716A and OWS 716B 05/13/1998 by OHM	OCHCA 07/28/1998 RWQCB 04/14/1999	Site also identified as SWMU/AOC 193. OWS was installed in 1976. OWS has been removed. OWS was associated with UST 716A. Site was investigated and recommended for NFA by the RFA based on the results of soil sampling. Site closed by OCHCA in a letter dated 07/28/98 and by RWQCB in an NFA letter dated 04/14/99.	Oil/oily water	1976 - 1988
OWS 763A	CO II-Q	FOST #7	763	100-Gallon OWS	UST & OWS Removal Report, UST 763B & OWS 763A 06/12/2000 by Geofon	OCHCA 07/26/2000	Site also identified as SWMU/AOC 211. OWS installed in 1982. OWS has been removed. OWS was associated with UST 763B. Site was investigated and NFA was recommended in the RFA based on soil sample results. No significant soil contamination was identified at this site. Site closed by OCHCA in an NFA letter dated 07/26/00.	Oily water	1982 - 1999
OWS 658E	CO II-Q	FOST #7	658	10-Gallon OWS	Memorandum, OWS 658E 01/23/2003 by NAVFAC EFD SW	RWQCB 03/07/2003	OWS was removed and backfilled in November 2002. Soil samples were taken during this removal action. Site closed by RWQCB in an NFA letter dated 03/07/2003.	Oil/water	Unknown - 1999
OWS 658D	CO II-Q	FOST #7	658	1,750-Gallon OWS	Site Assessment Report, OWS 658C and 658D 12/31/1998 by NAVFAC EFD SW	RWQCB 01/08/2003	OWS installed in 1995. OWS closed in place. OWS was an aboveground unit and was not associated with a UST. Site closed by RWQCB in an NFA letter dated 01/08/2003.	Oil/water	1995 - 1999
OWS 658C	CO II-Q	FOST #7	658	400-Gallon OWS	Site Assessment Report, OWS 658C and 658D 12/31/1998 by NAVFAC EFD SW	RWQCB 01/08/2003	OWS installed in 1972. OWS closed in place. OWS was an underground unit and was not associated with a UST. Site closed by RWQCB in an NFA letter dated 01/08/2003.	Oil/water	1972 - 1999

Notes:
See Table 1 for a list of acronyms.
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Orange shading indicates Potential Environmental Concerns (PECs)

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Table 9
Summary of Polychlorinated Biphenyls (PCBs) Occurrences
Proposed Southern California Veterans Cemetery
Irvine, California

Feature	Location	FOST	Associated Building	Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes	Hazardous Substances	Dates of Operation
PCB T13	CO II-B	FOST #6	105	Pole	Final EBS 09/12/2003 by Earth Tech	DTSC 09/25/2003 U.S. EPA 09/25/2003	Outside Boundary Removed. This transformer was replaced with non-PCB transformer, and no evidence of a release has been identified at this transformer location.	PCBs	Unknown - 1999
PCB T86	CO II-B	FOST #6	634	Pad	Final EBS 09/12/2003 by Earth Tech	DTSC 09/25/2003 U.S. EPA 09/25/2003	Removed. This transformer was replaced with non-PCB transformer, and no evidence of a release has been identified at this transformer location.	PCBs	Unknown - 1999
PCB T85	CO II-B	FOST #6	634	Pad	Final EBS 09/12/2003 by Earth Tech	DTSC 09/25/2003 U.S. EPA 09/25/2003	Removed. This transformer was replaced with non-PCB transformer, and no evidence of a release has been identified at this transformer location.	PCBs	Unknown - 1999
PCB T81	CO II-E	FOST #5	605	Pad-Mounted Transformer	Final EBS 09/12/2003 by Earth Tech	DTSC 09/25/2003 U.S. EPA 09/25/2003	Replaced with a non-PCB transformer. 1994 field survey indicated no evidence of release. No PCB releases identified through the records search or VSIs conducted for the 2003 EBS.	PCBs	Unknown - 1999
PCB T16	CO II-E	FOST #5	118	Pole-Mounted Transformer	Final EBS 09/12/2003 by Earth Tech	DTSC 09/25/2003 U.S. EPA 09/25/2003	Outside Boundary Replaced with a non-PCB transformer. 1994 field survey indicated original transformer replaced with a non-PCB transformer; no evidence of release. No PCB releases identified through the records search or VSIs conducted for the 2003 EBS.	PCBs	Unknown - 1999
PCB 892	CO II-E	FOST #5	892	3 Oil-filled Cutouts	Final EBS 09/12/2003 by Earth Tech	DTSC 09/25/2003 U.S. EPA 09/25/2003	Three oil-filled cutouts with less than 0.005 ppm PCB; noted to be leaking during 2003 inspection.	PCBs	Unknown - 1999
PCB T82	CO II-E	FOST #5	606	Pad-Mounted Transformer	Final EBS 09/12/2003 by Earth Tech	DTSC 09/25/2003 U.S. EPA 09/25/2003	Replaced with a non-PCB transformer. 1994 field survey indicated no evidence of release. No PCB releases identified through the records search or VSIs conducted for the 2003 EBS.	PCBs	Unknown - 1999
PCB 643	CO II-E	FOST #5	643	3 Oil-filled Cutouts	Final EBS 09/12/2003 by Earth Tech	DTSC 09/25/2003 U.S. EPA 09/25/2003	Three oil-filled cutouts with less than 1 ppm PCB located at the northern portion of the building.	PCBs	Unknown - 1999
PCB T15	CO II-E	FOST #5	115	Pad-Mounted Transformer	Final EBS 09/12/2003 by Earth Tech	DTSC 09/25/2003 U.S. EPA 09/25/2003	Replaced with a non-PCB transformer. 1994 field survey indicated no evidence of release. No PCB releases identified through the records search or VSIs conducted for the 2003 EBS.	PCBs	Unknown - 1999
PCB T60	CO II-Q	FOST #7	378	Transformer Pad	Final EBS 09/12/2003 by Earth Tech	DTSC 09/25/2003 U.S. EPA 09/25/2003	Replaced with a non-PCB transformer. A 1994 field survey indicates no evidence of release. No PCB releases identified through the records search or VSIs conducted for the 2003 EBS.	PCBs	1954-1994
PCB T58	CO II-Q	FOST #7	372	Transformer Pad	Final EBS 09/12/2003 by Earth Tech	DTSC 09/25/2003 U.S. EPA 09/25/2003	Replaced with a non-PCB transformer. A 1994 field survey indicates no evidence of release. No PCB releases identified through the records search or VSIs conducted for the 2003 EBS.	PCBs	1954-1994
PCB T94	CO II-Q	FOST #7	716	Transformer Pad	Final EBS 09/12/2003 by Earth Tech	DTSC 09/25/2003 U.S. EPA 09/25/2003	Replaced with a non-PCB transformer. No evidence of release observed during 1994 field survey. No PCB releases identified through the records search or VSIs conducted for the 2003 EBS.	PCBs	Unknown - 1999
PCB T14	CO II-Q	FOST #7	114	Transformer Pad	Final EBS 09/12/2003 by Earth Tech	DTSC 09/25/2003 U.S. EPA 09/25/2003	Replaced with a non-PCB transformer. A 1994 field survey indicates no evidence of release. No PCB releases identified through the records search or VSIs conducted for the 2003 EBS.	PCBs	Unknown - 1999
PCB T109	CO II-Q	FOST #7	Tank Farm No. 6	Transformer Pole	Final EBS 09/12/2003 by Earth Tech	DTSC 09/25/2003 U.S. EPA 09/25/2003	On Boundary Building demolished; no evidence of release observed during 1994 field survey. No PCB releases identified through the records search or VSIs conducted for the 2003 EBS.	PCBs	Unknown - 1999
PCB T20	CO II-Q	FOST #7	125	Transformer Pad	Final EBS 09/12/2003 by Earth Tech	DTSC 09/25/2003 U.S. EPA 09/25/2003	Replaced with a non-PCB transformer. A 1994 field survey indicates no evidence of release. No PCB releases identified through the records search or VSIs conducted for the 2003 EBS.	PCBs	Unknown - 1999
PCB T21	CO II-Q	FOST #7	125	Transformer Pad	Final EBS 09/12/2003 by Earth Tech	DTSC 09/25/2003 U.S. EPA 09/25/2003	Replaced with a non-PCB transformer. A 1994 field survey indicates no evidence of release. No PCB releases identified through the records search or VSIs conducted for the 2003 EBS.	PCBs	Unknown - 1999
PCB T89	CO II-Q	FOST #7	658	Transformer Pad	Final EBS 09/12/2003 by Earth Tech	DTSC 09/25/2003 U.S. EPA 09/25/2003	Replaced with a non-PCB transformer. A 1994 field survey indicates no evidence of release. No PCB releases identified through the records search or VSIs conducted for the 2003 EBS.	PCBs	Unknown - 1999
PCB T26	Parcel II-A	FOST #1	203	Transformer Pole			On Boundary Replaced with a non-PCB transformer. 1994 field survey indicates original transformer replaced with a non-PCB transformer; no evidence of release. No PCB releases identified through the records search or VSIs conducted for the 2003 EBS. ECP Category 1.	PCBs	Unknown - 1999
PCB T27	Parcel II-A	FOST #1	203	Transformer Pole			Outside Boundary Replaced with a non-PCB transformer. 1994 field survey indicates original transformer replaced with a non-PCB transformer; no evidence of release. No PCB releases identified through the records search or VSIs conducted for the 2003 EBS. ECP Category 1.	PCBs	Unknown - 1999

Feature	Location	FOST	Associated Building	Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes	Hazardous Substances	Dates of Operation
PCB T17	Parcel II-A	FOST #1	120	Transformer Pole			On Boundary Replaced with a non-PCB transformer. 1994 field survey indicates original transformer replaced with a non-PCB transformer; no evidence of release. No PCB releases identified through the records search or VSIs conducted for the 2003 EBS. ECP Category 1.	PCBs	Unknown - 1999
PCB T18	Parcel II-A	FOST #1	120	Transformer Pole			Outside Boundary Replaced with a non-PCB transformer. 1994 field survey indicates original transformer replaced with a non-PCB transformer; no evidence of release. No PCB releases identified through the records search or VSIs conducted for the 2003 EBS. ECP Category 1.	PCBs	Unknown - 1999
PCB T19	Parcel II-A	FOST #1	120	Transformer Pole			Outside Boundary Replaced with a non-PCB transformer. 1994 field survey indicates original transformer replaced with a non-PCB transformer; no evidence of release. No PCB releases identified through the records search or VSIs conducted for the 2003 EBS. ECP Category 1.	PCBs	Unknown - 1999
PCB T22	Parcel II-A	FOST #1	129	Transformer Pole			On Boundary Replaced with a non-PCB transformer. 1994 field survey indicates original transformer replaced with a non-PCB transformer; no evidence of release. No PCB releases identified through the records search or VSIs conducted for the 2003 EBS. ECP Category 1.	PCBs	Unknown - 1999
PCB T23	Parcel II-A	FOST #1	129	Transformer Pole			Outside Boundary Replaced with a non-PCB transformer. 1994 field survey indicates original transformer replaced with a non-PCB transformer; no evidence of release. No PCB releases identified through the records search or VSIs conducted for the 2003 EBS. ECP Category 1.	PCBs	Unknown - 1999
PCB T24	Parcel II-A	FOST #1	129	Transformer Pole			Outside Boundary Replaced with a non-PCB transformer. 1994 field survey indicates original transformer replaced with a non-PCB transformer; no evidence of release. No PCB releases identified through the records search or VSIs conducted for the 2003 EBS. ECP Category 1.	PCBs	Unknown - 1999

Notes:
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Orange shading indicates Potential Environmental Concerns (PECs)

Table 10
Summary of Potential Release Locations (PRLs)
Proposed Southern California Veterans Cemetery
Irvine, California

Feature	Carve Out	FOST	Associated Building	Location Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes	Hazardous Substances	Dates of Operation
PRL 634	CO II-B	FOST #6	634	Avionics Shop	Summary Report for Group IV PRLs March 2008 by Earth Tech	DTSC 08/21/2008 U.S. EPA 04/17/2008	The original floor plans for this facility outline the areas for shops such as Cleaning and Preservation, Decanning, Machine, Metal, Engine, Cleaning, Sand Blasting, X-ray Room, Plating Shop, etc. A major renovation took place in the 1980s; however, the main activities continued. Floor drains and service sink drains were identified throughout the facility, as well as floor drains in the Cleaning and Plating Shop, and an SRU in the X-Ray Processing and Control Room. Sampling investigation of this facility was conducted in 2003. NFI was recommended for PRL 634 in the Summary Report and regulatory concurrence was obtained.	Photographic Development Chemicals, Plating Wastes, Paints, Degreasers	Unknown - 1999
PRL 133	CO II-B	FOST #6	133	Office/Training Facility	Summary Report for Group IV PRLs March 2008 by Earth Tech	DTSC 08/21/2008 U.S. EPA 04/17/2008	Site identified as Building 133 that included SRU 3B. Soil samples were collected during 2003. NFI was recommended for PRL 133 in the Summary Report and regulatory concurrence was obtained.	Photographic Development Chemicals	Unknown - 1999
PRL 105	CO II-B	FOST #6	105	Dental Clinic/ Flight Line Aid Station	Summary Report for Group I PRLs February 2005 by Earth Tech	DTSC 07/13/2005 U.S. EPA 03/16/2005	Outside Boundary Facility is a former dental/medical clinic. X-ray/photographic development chemicals and/or dental amalgam may have been released to the sanitary sewer. NFI was recommended for PRL 105 in the Summary Report and regulatory concurrence was obtained.	X-ray/photographic Development Chemicals	Unknown - 1999
PRL 745	CO II-B	FOST #6	745	Warehouse	Summary Report for Group V PRLs December 2008 By Earth Tech	DTSC 02/04/2009	Outside Boundary During the records review and site inspection in support of 2003 EBS, a sign ("Contaminated Speedy Dry") in the grass area adjacent to Building 745 was identified. A sampling program was conducted to further investigate and assess whether release of hazardous substances or pollutants has occurred to the environment. Soil sampling was conducted in 2005. Review of soil sampling data indicated that no significant release of hazardous substances or pollutants has occurred at PRL 745. NFI was recommended for PRL 745 in the Summary Report and regulatory concurrence was obtained.	Unknown	1983 - 1999
PRL 380	CO II-D	FOST #8	380	Standby Generator Building	Summary Report for Group III PRLs 2005 by Earth Tech	DTSC (2006) U.S. EPA (2005)	PRL 380 is associated with Building 380. Two locations of concern (AST 380 and UST 380A) associated with PRL 380 have been investigated and closed by regulatory agencies. A square, metal, aboveground tank of approximately 500 gallons is located within the concrete containment vault area. No indication of release was identified during the EBS. NFI was recommended for PRL 380 in the Summary Report and regulatory concurrence was obtained.	Diesel	1954 - 1999
PRL 643	CO II-E	FOST #5	643	Fixed Aircraft Start System	Summary Report for Group III PRLs SI October 2005 by Earth Tech	DTSC 02/03/2006 U.S. EPA 11/03/2005	Records review and VSIs were conducted for PRL 643 to evaluate whether the release of hazardous substances or pollutants into the environment has occurred. Based on the results of these investigations, NFI was recommended for PRL 643 in the Summary Report and regulatory concurrence was obtained.	Fuels	Unknown - 1999
PRL 606	CO II-E	FOST #5	606	Maintenance Hangar	Summary Report for Group III PRLs SI October 2005 by Earth Tech, Summary Report for Group VI PRLs SI October 2008 by Earth Tech	DTSC 11/26/2008 U.S. EPA 11/03/2005	Records review, VSIs, and soil sampling were conducted for PRL 606 from 2002 to 2008, to evaluate whether the release of hazardous substances or pollutants into the environment has occurred. Based on the results of these investigations, NFI was recommended for this PRL in Summary Report for Group III and Group VI PRLs. U.S. EPA concurred with NFI recommendation in a letter dated 11/03/2005. DTSC concurrence on NFI was received in November 2008.	Paint	Unknown - 1999
PRL 605	CO II-E	FOST #5	605	Maintenance Hangar	Summary Report for Group III PRLs SI October 2005 by Earth Tech, Summary Report for Group VI PRLs SI October 2008 by Earth Tech	DTSC 11/26/2008 U.S. EPA 11/03/2005	Records review, VSIs, and soil sampling were conducted for PRL 605 from 2002 to 2008, to evaluate whether the release of hazardous substances or pollutants into the environment has occurred. Based on the results of these investigations, NFI was recommended for PRL 605 in the Summary Reports. U.S. EPA concurred with NFI recommendation in a letter dated 11/03/2005. DTSC concurrence on NFI was received in November 2008.	Fuels, Paints, Pesticides	Unknown - 1999
PRL 118	CO II-E	FOST #5	118	Maintenance Hangar	Summary Report for Group I PRLs SI March 2005 by Earth Tech	DTSC 07/13/2005 U.S. EPA 04/07/2005	Outside Boundary Records review, VSIs, and soil sampling were conducted for PRL 118 from 2002 to 2004, to evaluate whether the release of hazardous substances or pollutants into the environment has occurred. Based on the results of these investigations, NFI was recommended for PRL 118 in the Summary Report and regulatory concurrence was obtained.	Solvents, Waste Oils	Unknown - 1999

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Feature	Carve Out	FOST	Associated Building	Location Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes	Hazardous Substances	Dates of Operation
PRL 372	CO II-Q	FOST #7	372	Airfield Operations/Control Tower	Summary Report for Group V PRLs December 2008 by Earth Tech	DTSC 02/04/2009	PRL 372 is associated with Building 372. Pad mounted transformers were identified with stickers indicating less than 50 parts per million polychlorinated biphenyls. No leaks or stains were observed near the transformers. NFI was recommended for PRL 372 in the Summary Report and regulatory concurrence was obtained.	PCBs	Unknown - 1999
PRL 923	CO II-Q	FOST #7	923	Drop Tank Rinse Area runoff	Summary Report for Group II PRLs March 2005 by Earth Tech	DTSC 11/02/2005 U.S. EPA 04/07/2005	PRL 923 is associated with Building 923. This building was utilized as a drop tank rinse facility. A sump was observed in the northwestern portion of Building 923. Soil sampling was completed in January 2005. NFI was recommended for PRL 923 in the Summary Report and regulatory concurrence was obtained.	Drop tank rinse area	Unknown - 1999
PRL 716	CO II-Q	FOST #7	716	Engine Test Cell / Hush House	Summary Report for Group V PRLs December 2008 by Earth Tech	DTSC 02/04/2009	PRL 716 is associated with Building 716. A possible release of a waste. Staining on concrete pad and nearby soil and stressed vegetation was observed during the 2004 VSI. A catch basin for stormwater is situated outside the building. Sumps and trench drains are situated in the facility. A floor drain was identified in a former engine test cell. A hydraulic pit is situated in the facility. Soil sampling was conducted in June 2005 and based on the review of the soil sampling data, NFI was recommended for PRL 716 in the Summary Report and regulatory concurrence was obtained.	Waste JP5	Unknown - 1999
PRL 114	CO II-Q	FOST #7	114	Maintenance Hangar	Summary Report for Group I PRLs February 2005 by Earth Tech	DTSC 07/13/2005 U.S. EPA 03/16/2005	PRL 114 is associated with Maintenance Hangar 114. No significant staining or other evidence of release was observed at Building 114 and its vicinity during the VSI in 2004. NFI was recommended for PRL 114 in the Summary Report and regulatory concurrence was obtained.	Solvents	Unknown - 1999
PRL 747	CO II-Q	FOST #7	747	Contract Refueler Facility	Summary Report for Group V PRLs December 2008 by Earth Tech	DTSC 02/04/2009	PRL 747 is associated with Building 747. Stained areas were noted within concrete berm and at certain locations surrounding concrete bermed area during 2002 VSI. Possible releases of fuel may have occurred due to fuel sampling activities conducted in the past. Soil sampling was conducted in June 2005 and based on the review of the soil sampling data, NFI was recommended for PRL 747 in the Summary Report and regulatory concurrence was obtained.	Waste fuels	Unknown - 1999
PRL 658	CO II-Q	FOST #7	658	Jet Engine Testing Facility	Summary Report for Group I PRLs February 2005 by Earth Tech	DTSC 07/13/2005 U.S. EPA 03/16/2005	PRL 658 is associated with Building 658. No investigation activities were proposed for PRL 658 based on the review of previously completed investigations and closure. NFI was recommended for PRL 658 in the Summary Report and regulatory concurrence was obtained.	Waste JP5	Unknown - 1999
PRL 235	CO II-Q	FOST #7	235	Former Bore Sighting Range/ Pistol Range	Summary Report for Group V PRLs December 2008 by Earth Tech	DTSC 02/04/2009	This facility is a former bore sighting range/pistol range. Facility has been removed. All available records were reviewed and evaluated and NFI was recommended for PRL 235 in the Summary Report and regulatory concurrence on NFI was obtained.	Lead and other metals	Unknown - 1999
PRL 127	CO II-Q	FOST #7	127	Tire Storage Plant	Summary Report for PRL 127 05/15/2009 By DON, BRAC PMO WEST	RWQCB 07/23/2009	Building 127 was a former propeller shop with floor drains and trench drains in the facility. A wash rack, RFA 41 was associated with the operations. During the 2005 EBS update VSI visit, petroleum impacted soils were identified in a small area southwest of Building 127. In 2009, exploratory excavation and soil sampling was completed. A Summary Report was submitted to RWQCB on 05/15/2009 and PRL 127 was closed by RWQCB in a letter dated 07/23/2009.	Petroleum products and hazardous substances	Unknown - 1999

Notes:
See Table 1 for a list of acronyms.
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Orange shading indicates Potential Environmental Concerns (PECs)

Feature	Carve Out	FOST	Associated Building	Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes	Hazardous Substances	Dates of Operation
RFA 293	CO II-B	FOST #6	130	Cleaning Tank	Final RFA report July 1993 by JEG and Final Addendum to RFA report May 1996 by BNI	DTSC 07/23/1996	NFA status identified in 1993 Final RFA Report and regulatory concurrence obtained. No further action required.	Cleaning Tank	Unknown - 1999
RFA 44	CO II-D	FOST #8	143	Drum Storage Area	Final RFA Report 1993 by JEG and Final Addendum to RFA Report 1996 by BNI	DTSC 1996	No releases identified. NFA status identified in Final RFA Report and regulatory concurrence obtained. No further action required.	Substances associated with stored drums	Unknown - 1999
RFA 10	CO II-D	FOST #8	380 and 385	Abandoned Exploratory Oil Well	Request for NFA Letter, SWMU 10 2013 by DON Information Package, SWMU 10 Abandoned Oil Well Site 2006 by DON	RWQCB 2006 DTSC 2013 U.S. EPA 2013	RFA 10 was improperly classified as SWMU 10 under an RFA site visit in 1993. This site consisted of an exploratory oil well drilled by Calny Oil Company (Calny) from October 1924 through August 1925. Based on reports from Calny to the Division of Mines and Geology, the well encountered no oil-bearing formations and thus the well was to be properly abandoned. The boring log indicated only traces of tar and oil at depths of 635 feet or deeper. Subsequently, an NOI to Abandon Well was submitted by Calny to CSMB on 4/8/1927, which noted that the well was full of mud. DNRDMM, acknowledged in its Summary of Operations that the well was abandoned in 1927. Two potential locations for the exploratory well were identified. The primary location is described in the RFA documents based on information obtained from maps from the DCCDOG which indicates the well is within the investigative boundaries of IRP Site 3. The secondary location is shown on historical geological maps and is described in the historical records of the CSMB. The DON attempted several times to locate the abandoned well. The DON conducted visual, geophysical, and exploratory trenching investigations during the RFA and later in 1995, 1999, 2002, 2004, and 2006 at both locations. Despite these efforts, no abandoned well was found. It is documented that this well was used for oil exploration purposes only and had no function or purpose associated with waste materials. Accordingly, DON submitted a SWMU 10 Information Package dated 4/4/2006, requesting NFA, and the RWQCB concurred with the NFA recommendation. The DON submitted another Information Package dated 11/8/2013, and the U.S. EPA subsequently concurred with the NFA recommendation. By a letter dated 12/2/2013, DTSC concurred that RFA Site 10 was misclassified as a SWMU and that it should be removed from the list of SWMUs for Former MCAS El Toro. In its 12/2/2013 letter, DTSC stated that the well was still a concern. DTSC explained that the exploratory well could potentially act as a conduit for contamination. As a result, DTSC advised that if any development at the site is planned, the necessary sampling be conducted to ensure that the well is not acting as a pathway for methane or any other associated contaminant. DTSC further advised that if the location of the well is determined at a later date, proper abandonment procedures pursuant to the Department of Conservation regulations should be taken.		

Feature	Carve Out	FOST	Associated Building	Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes	Hazardous Substances	Dates of Operation
RFA 152	CO II-E	FOST #5	606 (on tarmac)	Aircraft Wash Area	Final RFA report July 1993 by JEG and Final Addendum to RFA report May 1996 by BNI	DTSC 07/23/1996	Aircraft wash area on the tarmac outside of Building 606 (Maintenance Hangar). Site is inactive. NFA status identified in Final RFA Report and DTSC concurred with NFA recommendation in a letter dated 07/23/1996. No further action required.	JP-5, Solvents, Lubricating Oils	Unknown - 1999
RFA 14	CO II-E	FOST #5	606	Drop Tank Fuel Storage Area	Summary Report, Site Verification at Former Aircraft Drop Tank Fuel Storage Area near Building 606, SWMU Number 14 11/09/1999 by NAVFAC SW	RWQCB 03/31/2000	RWQCB concurred with NFA in a letter dated 03/31/2000. No further action required.	Unknown	Unknown - 1999
RFA 150	CO II-E	FOST #5	605 (on tarmac)	Aircraft Wash Area	Final RFA report July 1993 by JEG and Final Addendum to RFA report May 1996 by BNI	DTSC 07/23/1996	Aircraft wash area situated on tarmac. Site is inactive. OWS 605C is associated with this wash rack. NFA status identified in Final RFA Report and DTSC concurred with NFA recommendation in a letter dated 07/23/1996. No further action required.	Solvents	Unknown - 1999
RFA 267	CO II-E	FOST #5	605	Drop Tank Fuel Storage Area	Final RFA report July 1993 by JEG and Final Addendum to RFA report May 1996 by BNI	DTSC 07/23/1996	NFA status identified in Final RFA Report and regulatory concurrence obtained. No further action required.	Gasoline	Unknown - 1999
RFA 43	CO II-E	FOST #5	139	Drum Storage Area	Closure Report, SWMU 43 05/09/2006 by CDM Federal Programs Corp.	DTSC 06/05/2006	Outside SCVC Boundary Site also identified as SWMU 43. RFA site 43 was associated with Building 139, and received site closure concurrence from DTSC in 2006.	Substances Associated with less than 90-day accumulation of wastes	Unknown - 1999
RFA 213	CO II-I	FOST #4	764	Vehicle Wash Rack	Data Summary Report, SWMU 213 12/13/2002 and Supplementary Information Package, SWMU 213, Vehicle Wash rack at Building 392 12/27/2002	RWQCB 2/20/2003 DTSC 3/3/2003	RFA 213, an abandoned vehicle wash rack, is located adjacent to the southeastern side of Building 392, The former UST 764A and the former OWS 764B, located adjacent to the northeastern side of the wash rack, were associated with this wash rack. Soil samples were collected from four shallow borings through the wash rack during the RFA sampling visit in 1992. Cracks in the wash rack were repaired during 1998. Additional soil samples were collected from five borings during 2002 in response to DTSC comments dated 3/30/2001. Based on sampling results and a screening risk evaluation, the RWQCB and DTSC have concurred with recommendation of no further action. No further action is required.		
RFA 258	CO II-Q	FOST #7	N/A	Wash Water Runoff Site associated with Aircraft Fueling Station	Final RFA report July 1993 by JEG and Final Addendum to RFA report May 1996 by BNI	DTSC 07/23/1996	Outside of SCVC Boundary Wash water runoff sites near former Aircraft Direct Fueling Station 577. Site is inactive. NFA status identified in the final RFA report and DTSC concurred with NFA recommendation in a letter dated 07/23/96.	Wash water from vehicles	Unknown - 1999
RFA 15	CO II-Q	FOST #7	N/A	Wash Water Runoff Site associated with Aircraft Fueling Station	Final RFA report July 1993 by JEG and Final Addendum to RFA report May 1996 by BNI	DTSC 07/23/1996	Wash water runoff site situated adjacent to former JP5 Fueling Station 576. Site is inactive. NFA status identified in the final RFA report and DTSC concurred with NFA recommendation in a letter dated 07/23/96.	Wash water from vehicles	Unknown - 1999
RFA 257	CO II-Q	FOST #7	N/A	Wash Water Runoff Site associated with Aircraft Fueling Station	Final RFA report July 1993 by JEG and Final Addendum to RFA report May 1996 by BNI	DTSC 07/23/1996	Wash water runoff sites near former Aircraft Direct Fueling Station 575. Site is inactive. NFA status identified in the final RFA report and DTSC concurred with NFA recommendation in a letter dated 07/23/96.	Wash water from vehicles	Unknown - 1999
RFA 16	CO II-Q	FOST #7	N/A	Wash Water Runoff Site associated with Aircraft Fueling Station	Final RFA report July 1993 by JEG and Final Addendum to RFA report May 1996 by BNI	DTSC 07/23/1996	Wash water runoff sites situated adjacent to former Fueling Station 574. Site is inactive. NFA status identified in the final RFA report and DTSC concurred with NFA recommendation in a letter dated 07/23/96.	Wash water from vehicles	Unknown - 1999
RFA 210	CO II-Q	FOST #7	763	Vehicle Wash Rack	Final RFA report July 1993 by JEG and Final Addendum to RFA report May 1996 by BNI	DTSC 07/23/1996	Inactive vehicle wash rack. NFA status was identified in final RFA report and DTSC concurred with NFA recommendation in a letter dated 07/23/96.	Solvents, waste oil	Unknown - 1999
RFA 13	CO II-Q	FOST #7	114 and 115	Drop Tank Storage Area	Final RFA report July 1993 by JEG and Final Addendum to RFA report May 1996 by BNI	DTSC 07/23/1996	NFA status was identified in the final RFA report and regulatory concurrence obtained.	Unknown	Unknown - 1999

Feature	Carve Out	FOST	Associated Building	Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes	Hazardous Substances	Dates of Operation
RFA 40	CO II-Q	FOST #7	127	Drum Storage Area	Final RFA report July 1993 by JEG and Final Addendum to RFA report May 1996 by BNI	DTSC 07/23/1996	RFA 40, a former drum storage area in the vicinity of Building 127 and RFA 41, was not located during the RFA. The site was described in a letter dated 6/23/1989. NFA was recommended in the RFA report and regulatory concurrence was obtained in a letter dated 7/23/1996.	Substances associated with drum storage areas	Unknown - 1999
RFA 41	CO II-Q	FOST #7	127	Vehicle Wash Rack	Final RFA report July 1993 by JEG and Final Addendum to RFA report May 1996 by BNI	DTSC 07/23/1996	RFA 41, a former vehicle wash rack, was located near Building 127. Soil samples were collected during the RFA Sampling Visit. NFA was recommended in the RFA report, and DTSC concurred with NFA recommendation in a letter dated 07/23/96.	Wash water from vehicles	Unknown - 1999
RFA 237	Parcel II-A	FOST #1	1700	< 90-Day Accumulation Point	Final RFA report July 1993 by JEG and Final Addendum to RFA report May 1996 by BNI	DTSC 7/23/1996	Not located during RFA; no releases identified. NFA status identified in Final RFA Report and regulatory concurrence obtained. No further action required. ECP Category 1.	Substances Associated with Materials Storage	Unknown - 1999

Notes:
See Table 1 for a list of acronyms.
Information presented in this table is copied from the applicable FOST document.
Orange shading indicates Potential Environmental Concerns (PECs)

Table 12
Summary of Silver Recovery Unit (SRU)
Proposed Southern California Veterans Cemetery
Irvine, California

Feature	Carve Out	FOST	Associated Building	Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes	Hazardous Substances	Dates of Operation
SRU 3B	CO II-B	FOST #6	133	Photography Laboratory	Summary Report for Group IV PRLs March 2008 by Earth Tech	DTSC 08/21/2008	Site identified as a former Silver Recovery Unit at a photography laboratory. Site was evaluated as part of PRL 133 during the EBS. Soil samples were collected during 2003. DTSC concurred with the NFA for PRL 133 in a letter dated 08/21/2008. No further action required.	Photographic Chemicals	Unknown - 1999

Notes:
See Table 1 for a list of acronyms.
Information presented in this table is copied from the applicable FOST document.

Table 13
Summary of Temporary Accumulation Areas (TAAs)
Proposed Southern California Veterans Cemetery
Irvine, California

Feature	Carve Out	FOST	Associated Building	Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes	Hazardous Substances	Dates of Operation
TAA 634	CO II-B	FOST #6	634	< 90-Day Accumulation Point	Closure Report March 2007 by CDM	DTSC 06/08/2007	Sampling conducted in 2006. Closure report requesting NFA submitted in 2007. Site was closed by DTSC in a letter dated 06/08/2007. No further action required.	Substances Associated with less than 90-day accumulation of wastes	Unknown - 1999
TAA 130B	CO II-B	FOST #6	130	< 90-Day Accumulation Point	Closure Report, Former TAA 130A and TAA 130B January 2004 by Shaw Environmental Inc.	DTSC 12/10/2004	Site also identified as SWMU/AOC 295. Sampling conducted in 2003. Site closed by DTSC in a letter dated 12/10/2004. No further action required.	Substances Associated with less than 90-day accumulation of wastes	Unknown - 1999
TAA 130A	CO II-B	FOST #6	130	< 90-Day Accumulation Point	Closure Report, Former TAA 130A and TAA 130B January 2004 by Shaw Environmental Inc.	DTSC 12/10/2004	Site also identified as SWMU/AOC 294. Sampling conducted in 2003. Site closed by DTSC in a letter dated 12/10/2004. No further action required.	Substances Associated with less than 90-day accumulation of wastes	Unknown - 1999
TAA 130C	CO II-B	FOST #6	130	< 90-Day Accumulation Point	Closure Report for Former TAA 130C January 2009 by RMA	DTSC 03/19/2009	Site also identified as SWMU/AOC 42. Contaminated soil was excavated and confirmation soil samples were collected in 2008. Site was closed by DTSC in a letter dated 03/19/2009. No further action required.	Substances Associated with less than 90-day accumulation of wastes	Unknown - 1999
TAA 900	CO II-D	FOST #8	900	<90-Day Accumulation Point	Summary Report, TAA 900 2003 by IT Corp.	DTSC 9/15/2003	Outside Boundary TAA 900 was located northeast of Building 746 near IRP Site 3. Visual inspections were conducted in 2002, and a closure report was submitted to DTSC in January 2003. DTSC concurred with NFA in a letter dated 09/15/2003.	Substances associated with less than 90-day accumulation of wastes	Unknown - 1999
TAA 605	CO II-E	FOST #5	605/912	< 90-Day Accumulation Point	Closure Report, TAA 605 by Shaw Environmental Inc.	DTSC 09/13/2004	SWMU/AOC 149. Sampling results below residential PRGs. NFA was recommended and DTSC concurred with NFA. No further action required.	Substances Associated with less than 90-day accumulation of wastes	Unknown - 1999
TAA 606	CO II-E	FOST #5	606/913	< 90-Day Accumulation Point	Closure Report, TAA 605 by Shaw Environmental Inc.	DTSC 09/16/2004	Site also identified as SWMU/AOC 255. Sampling results below residential PRGs. NFA was recommended and DTSC concurred with NFA. No further action required.	Substances Associated with Materials Storage	Unknown - 1999
TAA 115	CO II-E	FOST #5	115/914	< 90-Day Accumulation Point	Closure Report, Former TAA 115 07/20/2006 By Brown and Caldwell	DTSC 12/28/2006	Site also identified as SWMU/AOC 39. Sampling results below residential PRGs. No visible signs of release noted during 2002 VSI conducted in support of the EBS. NFA recommended based on RFA sampling results and the 2002 VSI. DTSC concurred with NFA. No further action required.	Substances Associated with less than 90-day accumulation of wastes	Unknown - 1999
TAA 392A	CO II-I	FOST #4	392	< 90-Day Accumulation Point	Closure Report, TAA 392A and 392B 2/27/2001	DTSC 3/10/2003	TAA 392A was also known as SWMU/AOC 124, The TAA consisted of a concrete pad with berm, sump, and canopy, and was located north of Building 392. Soil samples were collected during the RFA Sampling Visit in 1992. Additional soil samples were collected during November 1999 and the results with a screening risk evaluation were presented in the Closure Report dated 2001. No further action is required.		
TAA 392B	CO II-I	FOST #4	392	< 90-Day Accumulation Point	Closure Report, TAA 392A and 392B 2/27/2001	DTSC 3/10/2003	TAA 392B was also known as SWMU/AOC 271, The TAA consisted of a concrete pad with berm and a sump, and was located north of Building 392. Soil samples were collected during the RFA Sampling Visit in 1992. Additional soil samples were collected during November 1999 and the results with a screening risk evaluation were presented in the Closure Report dated 2001. No further action is required.		

Feature	Carve Out	FOST	Associated Building	Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes	Hazardous Substances	Dates of Operation
TAA 698	CO II-Q	FOST #7	698	< 90-day Accumulation Point	Closure Report TAA 698 06/06/2003 By Shaw Environmental Inc.	DTSC 09/28/2004	TAA 698 also known as SWMU/AOC 252. Soil sampling was completed in February 2003. A closure report was submitted on 06/06/2003 to DTSC and DTSC concurred with the NFA recommendation in a letter dated 09/28/2004.	Substances associated with materials storage	Unknown - 1999
TAA 779	CO II-Q	FOST #7	779	< 90-day Accumulation Point	Addendum to Closure Report TAA 779 02/05/2003 By IT Corp.	DTSC 09/07/2004	TAA 779 also known as SWMU/AOC 227. Soil sampling was completed in December 2002. An addendum to closure report was submitted on 02/05/2003 to DTSC and DTSC concurred with the NFA recommendation in a letter dated 09/07/2004.	Substances associated with less than 90-day accumulation of wastes	Unknown - 1999
TAA 658	CO II-Q	FOST #7	658	< 90-day Accumulation Point	Addendum to Closure Report for TAA 658 05/27/2003 By Shaw Environmental Inc.	DTSC 09/01/2004	TAA 658 also known as SWMU/AOC 171. Site assessment and soil sampling was completed in March 2003. An addendum to closure report was submitted on 05/27/2003 to DTSC and DTSC concurred with the NFA recommendation in a letter dated 09/01/2004.	Substances associated with less than 90-day accumulation of wastes	Unknown - 1999

Notes:
See Table 1 for a list of acronyms.
Information presented in this table is copied from the applicable FOST document.
Orange shading indicates Potential Environmental Concerns (PECs)

Table 14
Summary of Underground Storage Tanks (USTs)
Proposed Southern California Veterans Cemetery
Irvine, California

Feature	Carve Out	FOST	Associated Building	Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes	Hazardous Substances	Dates of Operation
UST 130B	CO II-B	FOST #6	130	1,500 Gallon Diesel UST	Tank Removal and Site Closure Report for USTs 130A and 130B 01/14/1998 by OHM	OCHCA 02/27/1998	Removal completed on 11/14/1997. Site closed by OCHCA in a letter dated 02/27/1998. No further action required.	Diesel	1943-1997
UST 130A	CO II-B	FOST #6	130	1,500 Gallon Diesel UST	Tank Removal and Site Closure Report for USTs 130A and 130B 01/14/1998 by OHM	OCHCA 02/27/1998	Removal completed on 11/14/1997. Site closed by OCHCA in a letter dated 02/27/1998. No further action required.	Diesel	1943-1997
UST 634	CO II-B	FOST #6	634	10,000 Gallon Fuel Oil UST	Tank Removal Field Activities 10/18/1993 By JTL	OCHCA 12/2/1996	Tank removed in 1993. Site closed by OCHCA in a letter dated 12/02/1996. No further action required.	Fuel Oil	1969-1993
UST 133	CO II-B	FOST #6	133	500 Gallon Diesel UST	Closure Report/Final Report, Tank 133 01/7/1992 by JTL	OCHCA 11/12/1996	Tank has been removed. Confirmation soil sampling was performed. No significant evidence of a release was identified. Site closed by OCHCA in a letter dated 11/12/1996. No further action required.	Diesel	1943-1996
UST 105A	CO II-B	FOST #6	105	1,000 Gallon Fuel Oil UST	Site Assessment Report, Former UST Tank Sites 33, 35, 105A, 241 February 1996 by OHM	RWQCB 10/30/1996 OCHCA 10/21/2003	Outside Boundary Removal completed on 11/27/1992. Site closed by RWQCB in a letter dated 10/30/1996. No further action required. The OCHCA letter dated 10/21/2003 clarified the identities of UST 105A and UST 105B. No further action required.	Fuel Oil	1943-1992
UST 105B	CO II-B	FOST #6	105	500 Gallon Diesel UST	UST Closure Report, Removal and Disposal of UST 105B 10/2/2003 by Geofon	OCHCA 10/16/2003	Outside Boundary Tank was removed and confirmation soil samples were collected on 06/05/2003. The site was closed by OCHCA in a letter dated 10/16/2003. No further action required.	Diesel	1943-1999
UST 380A	CO II-D	FOST #8	380	10,500 Gallon Diesel UST	Site Assessment Report, Former UST Site 380A 1998 by BNI	RWQCB 1998	UST 380A and associated piping were removed on 07/22/1993. The tank excavation measured 14 feet deep by 15 feet wide by 20 feet long. BTEX constituents were not detected in the soil samples collected from the bottom of the excavation. TPHd ranged from non-detect to 15,000 mg/kg. Four soil borings were drilled to depths of 10 to 56.5 feet, and soil samples were collected for analysis. The highest TPHd concentration was 23,000 mg/kg at 29 feet bgs. The deepest soil sample was collected at 56.5 feet bgs and TPHd was detected at 140 mg/kg. A leachability test was performed on the 31.5-foot bgs sample. TPHd was detected at 3,000 mg/kg, and the TPHd concentration in the leachate was 19 mg/L. A Site Assessment Report was submitted to the RWQCB on 03/05/1998 and the RWQCB concurred with NFA in a letter dated 05/15/1998, based on the depth to groundwater and absence of volatile petroleum hydrocarbons in the soil samples collected.	Diesel	1954–1993
UST 605B	CO II-E	FOST #5	605	500-Gallon Diesel UST	Tank Removal Field Activities, Tank 605B & OWS 605C 09/09/1999	OCHCA 12/09/1999	Removal completed on 09/09/1999. No evidence of a release was identified. Site closed by OCHCA in a letter dated 12/09/1999. No further action required.	Diesel	1965-1999
UST 117	CO II-E	FOST #5	117	500-Gallon Diesel UST	Site Assessment Report, UST Site 117 12/10/1997	RWQCB 01/07/1998	Tank has been removed. Site closed by RWQCB in a letter dated 01/07/1998. No further action required.	Diesel	1943-1997

Feature	Carve Out	FOST	Associated Building	Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes	Hazardous Substances	Dates of Operation
UST 605A	CO II-E	FOST #5	605	1,700-Gallon Diesel UST	Technical Memorandum, Former UST Sites 114A, 295, 296, 435, 455, 605A, and 606A 03/21/1997 by NAVFAC SW	RWQCB 04/11/1997	Removal completed 10/08/1991. Site closed by RWQCB in a letter dated 04/11/1997. No further action required.	Diesel	1965-1991
UST 116	CO II-E	FOST #5	116	500-Gallon Diesel UST	Site Assessment Report, Former UST Site 116 01/12/1999 by OHM	RWQCB 08/31/2000	Tank has been removed. Site closed by RWQCB in a letter dated 08/31/2000. No further action required.	Diesel	1943-1999
UST 606A	CO II-E	FOST #5	606	1,700-Gallon Diesel UST	Technical Memorandum, Former UST Sites 114A, 295, 296, 435, 455, 605A, and 606A 03/21/1997 by NAVFAC SW	RWQCB 04/11/1997	Tank has been removed. Site closed by RWQCB in a letter dated 04/11/1997. No further action required.	Diesel	1965-1997
UST 643A	CO II-E	FOST #5	643	185-Gallon Waste Oil UST	Tank Removal and Site Closure Report, UST 643A and OWS 643B 06/12/1997 by OHM	OCHCA 07/11/1997	Site also identified as SWMU/AOC 162. Removal completed on 03/06/1997. Site closed by OCHCA in a letter dated 07/11/1997. No further action required.	Waste Oil	1982-1997
UST 115B	CO II-E	FOST #5	115	560-Gallon Fuel Oil UST	Site Assessment Report, UST Site 115B 12/10/1997 by OHM	RWQCB 01/07/1998	Removal completed on 06/17/1993. Site closed by RWQCB in a letter dated 01/07/1998. No further action required.	Fuel Oil	1966-1993
UST 115A	CO II-E	FOST #5	115	650-Gallon Fuel Oil UST	Site Assessment Report, Former UST Site 115A 11/13/1996 by OHM	RWQCB 12/16/1996	Removal completed on 02/28/94. Site closed by RWQCB in a letter dated 12/16/1996. No further action required.	Fuel Oil	1943-1994
UST 392C	CO II-I	FOST #4	392	400-Gallon Diesel UST	Tank Removal and Site Closure Report, UST 392C 6/20/1997	OCHCA 7/11/1997	UST 392C was removed on 03/12/1997 under OCHCA plan check 96-193. The tank was located northeast of Building 392. Site closed by OCHCA in a letter dated 07/11/97. No further action required.	Diesel	Unknown - 1997
UST 392F	CO II-I	FOST #4	392	2,000-Gallon Gasoline UST	UST Removal Report, UST 392F 10/27/1999	OCHCA 12/9/1999	UST 392F, the fuel dispensing island, and approximately 30 feet of associated piping were removed on 09/09/1999. The tank was located along the southwestern side of Building 392. OCHCA closed the site on 12/09/1999. No further action is required.	Gasoline	Unknown - 1999
UST 392E	CO II-I	FOST #4	392	2,000-Gallon Gasoline UST	UST Removal Report, UST 392E 10/27/1999	OCHCA 12/9/1999	UST 392E, the fuel dispensing island, and approximately 30 feet of associated piping were removed on 09/09/1999. The tank was located south of Building 392. OCHCA closed the site on 12/09/1999. No further action is required.	Gasoline	Unknown - 1999
UST 392B	CO II-I	FOST #4	392	2,000-Gallon Gasoline UST	Tank Removal Field Activities 12/18/1987	OCHCA 3/14/1997	UST 392B was removed on 12/18/1987. Site closed by OCHCA in a letter dated 03/14/97. No further action required.	Gasoline	Unknown - 1987
UST 392A	CO II-I	FOST #4	392	500-Gallon Unleaded Fuel UST	Tank Removal Field Activities 08/15/1993	OCHCA 1219/1996	UST 392A (also known as SWMU/AOC 298) and approximately 22 feet of associated piping were removed on 7/15/1993 under OCHCA plan check 92-283. The tank was located near the former boiler room at Building 392. Site closed by OCHCA in a letter dated 12/09/96. No further action required.	Gasoline	Unknown - 1993

Feature	Carve Out	FOST	Associated Building	Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes	Hazardous Substances	Dates of Operation
UST 764A	CO II-I	FOST #4	764	500-Gallon Waste Oil UST	Summary Report for Former UST 764A and OWS Site 764B Site 12/1/2005	RWQCB 5/16/2006 DTSC 7/31/2006	UST 764A (SWMU 214) and OWS 764B (SWMU 215) were located adjacent to SWMU 213 (a wash rack located adjacent to the southeast end of Building 392 near Building 764). Soil samples were collected adjacent to UST 764A during the RFA Sampling Visit in 1992. UST 764A, OWS 764B, and approximately 6 feet of associated piping were removed on 08/09/1999 with oversight by the OCHCA. Soil samples were collected from four borings during site assessment activities in 2000. Additional soil samples were collected from a boring near the center of the former tank excavation in 2005. The RWQCB concurred with NFA for UST 764A/ OWS 764B on 05/16/2006, and DTSC concurred with NFA on 07/31/2006. The RWQCB assigned Geotracker ID T0605968363 to Former UST Site 764A/ OWS Site 764B. No further action required.	Waste Oil	Unknown - 1999
UST 392D	CO II-I	FOST #4	392	2,000-Gallon Gasoline UST	Addendum Number 2 to Site Assessment Report, Former UST 392D Site 2/26/2004	RWQCB 6/7/2004	UST 392D, a former diesel fuel storage tank, was removed in approximately 1987. A new fiberglass tank, UST 392F, was installed at the location of Former UST 392D, and UST 392F was removed with OCHCA oversight and closed in 1999. Soil samples were collected from several borings during the site assessment activities that were conducted at Former UST Site 392D during the period from 1999 through 2002. The vertical extent of the release is approximately 60 feet below ground surface based upon the results of the site assessment sampling activities. A site assessment addendum with an evaluation of the leaching potential of residual petroleum hydrocarbons was completed in 2004, and the RWQCB concurred with no further action status in their letter dated 06/07/2004. The RWQCB assigned Case Number 083003998T to Former UST Site 392D. No further action required.	Gasoline	Unknown - 1987
UST 308	CO II-I	FOST #4	308	280-Gallon Diesel UST	Summary Report, Former UST Site 308 11/18/2005	RWQCB 5/1/2006	UST 308 was a 280-gallon steel fuel storage tank for the potable water system booster pump in Building 308. The tank site is located southwest of Building 308 and northeast of Building 392. UST 308 was removed in March 2003 and confirmation soil samples were collected with OCHCA oversight. The site was referred to the RWQCB by OCHCA on 06/06/2003, Soil samples were collected from three borings near the former tank excavation in October 2004 and the approximate extent of the petroleum-impacted soils was evaluated. The release appeared to be limited to a relatively small area near the concrete foundation for the former tank. The concrete foundation and approximately 10 tons of petroleum-impacted soils were excavated and removed in July 2005. The RWQCB assigned Geotracker ID T0605921683 to Former UST Site 308. No further action is required.	Diesel	Unknown
UST 902A	CO II-Q	FOST #7	902	50,000 Gallon JP-5 UST	UST removal report, UST 902A 07/11/2000 by Geofon	OCHCA 08/04/2000	Tank has been removed. Site closed by OCHCA in an NFA letter dated 08/04/00.	JP-5	1993-2000

Feature	Carve Out	FOST	Associated Building	Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes	Hazardous Substances	Dates of Operation
UST 902B	CO II-Q	FOST #7	902	50,000 Gallon JP-5 UST	UST removal report, UST 902C 07/11/2000 by Geofon	OCHCA 08/04/2000	Tank has been removed. Site closed by OCHCA in an NFA letter dated 08/04/00.	JP-5	1993-2000
UST 902C	CO II-Q	FOST #7	902	2,500 Gallon JP-5 UST	UST removal report, UST 902C 07/11/2000 by Geofon	OCHCA 08/04/2000	Tank has been removed. Site closed by OCHCA in an NFA letter dated 08/04/00.	JP-5	1993-2000
UST 372A	CO II-Q	FOST #7	372	2,000 Gallon Diesel UST	UST removal report, UST 372A 06/12/2000 by Geofon	OCHCA 07/26/2000	Removal completed on 02/28/00. No evidence of a release was identified. Site closed by OCHCA in an NFA letter dated 07/26/00.	Diesel	1954-2000
UST 372B	CO II-Q	FOST #7	372	2,500 Gallon Diesel UST	Site assessment report, UST 372 08/1995 by BNI	RWQCB 12/11/1995	Removal completed on 02/28/94. Site closed by RWQCB in an NFA letter dated 12/11/95.	Diesel	1954-1994
UST 398	CO II-Q	FOST #7	398	108,000 Gallon JP-5 UST	Information Package Former Tank 398 Site 01/27/2011 by DON BRAC PMO West	RWQCB 03/11/2011	UST 398 was removed in 1993. A Remedial Action Plan for MNA of groundwater and free product removal was approved by RWQCB in December 2006. A five year MNA demonstration with free product removal is on going since 2007. A Summary Information Package with NFA for vadose zone soil at former UST 398 Site was submitted on 01/27/2011 to the RWQCB. The RWQCB in a letter dated March 11, 2011 closed the vadose zone soil at former UST 398 Site. The ARPR for former UST 398 Site addressed in this FOST affects the CO II-Q.	JP-5	1956-1993
UST 716A	CO II-Q	FOST #7	716	3,000 Gallon Waste Oil UST	Tank closure report, UST 716A and OWS 716B 05/13/1998 by OHM	OCHCA 07/28/1998 RWQCB 04/14/1999	SWMU/AOC 192. Tank closed in place. Site closed by OCHCA in a letter dated 07/28/98 and by RWQCB in an NFA letter dated 04/14/99.	Waste Oil	1976-1998
UST 114A	CO II-Q	FOST #7	114	1,500 Gallon Fuel Oil UST	Technical Memorandum, Former UST Sites 114A, 295, 296, 435, 455, 605A, and 606A 03/21/1997 by NAVFAC EFD SW	RWQCB 04/11/1997	UST removal completed on 10/11/91. Site closed by RWQCB in an NFA letter dated 04/11/97.	Fuel Oil	1966-1991
UST 114C	CO II-Q	FOST #7	114	600 Gallon Fuel Oil UST	Closure Report UST 114C 04/08/2004 by Geofon	OCHCA 05/25/2004	UST 114C was closed in place with OCHCA oversight on 3/10/2004. Tank contents were removed, tank closed in place, and soil samples were collected on 3/10/2004. Site closed by OCHCA in a letter dated 05/25/2004.	Fuel Oil	1966-1991
UST 114B	CO II-Q	FOST #7	114	560 Gallon Diesel UST	Site Assessment Report, Former UST Site 114B 06/15/1998 By OHM	RWQCB 04/12/1999	Removal completed on 10/11/91. Site closed by RWQCB in an NFA letter dated 04/12/99.	Diesel	1966-1991
UST 763B	CO II-Q	FOST #7	763	500 Gallon Waste Oil UST	UST & OWS removal report, UST 763B & OWS 763A 06/12/2000 by Geofon	OCHCA 07/26/2000	SWMU/AOC 212. Removal completed on 02/28/00. Site closed by OCHCA in an NFA letter dated 07/26/00.	Waste Oil	1982-1999
UST 206	CO II-Q	FOST #7	206	50,000 Gallon Unleaded Fuel UST	Summary Report UST 206 July 2008 by Enviro Compliance Solutions, Inc.	RWQCB 09/10/2008	SWMU/AOC 62. Tank was formerly within Tank Farm No. 6. UST 206 was removed on 08/31/1999. From 2000 to 2008 additional site assessment and excavation activities were completed. A Summary report was submitted to the RWQCB in July 2008 and RWQCB concurred with NFA in a letter dated 09/10/2008.	Unleaded Gasoline	1945-1999
UST T-7	CO II-Q	FOST #7	T-7	2,000 Gallon Waste JP-5 UST	UST Removal Report, UST T-7 06/12/2000 by Geofon	OCHCA 07/26/2000	SWMU/AOC 24. Associated with Tank Farm No. 6. Removal completed on 02/28/00. No evidence of a release was identified. Site closed by OCHCA in an NFA letter dated 07/26/00.	Waste JP-5	1988-1999

Feature	Carve Out	FOST	Associated Building	Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes	Hazardous Substances	Dates of Operation
UST 204	CO II-Q	FOST #7	204	50,000 Gallon Diesel UST	UST Removal Report, UST 204 10/29/1999 by Geofon and Addendum Site Assessment Report, UST 204 09/09/2003 by Shaw	RWQCB 11/6/2003	SWMU/AOC 60. Tank was formerly within Tank Farm No. 6. Tank has been removed. All required response actions have been completed. RWQCB concurred with NFA in a letter dated 11/06/2003.	Diesel	1943-1999
UST 205	CO II-Q	FOST #7	205	25,000 Gallon Recovered JP-5 UST	Tank Closure Report, USTs 205 and 207 03/18/1998 by OHM	OCHCA 04/24/1998	SWMU/AOC 61. Tank was formerly within Tank Farm No. 6. Removal completed on 12/29/97. Site closed by OCHCA in an NFA letter dated 04/24/98.	Recovered JP-5	1943-1997
UST 207	CO II-Q	FOST #7	207	50,000 Gallon Unleaded Fuel UST	Tank Closure Report, USTs 205 and 207 03/18/1998 by OHM	OCHCA 04/24/1998	SWMU/AOC 63. Tank was formerly within Tank Farm No. 6. Removal completed on 01/8/98. Site closed by OCHCA in an NFA letter dated 04/24/98.	Unleaded Fuel	1943-1998
UST T-9	CO II-Q	FOST #7	T-9	2,000 Gallon JP-5 UST	Tank Removal and Site Closure Report, UST T-9 06/16/1997 by OHM	OCHCA 07/11/1997	SWMU/AOC 228. Associated with Tank Farm No.6. Removal completed on 03/27/97. Site closed by OCHCA in an NFA letter dated 07/11/97.	Waste JP-5	1988-1999
UST T-8	CO II-Q	FOST #7	T-8	2,000 Gallon Waste JP-5 UST	UST Removal Report, UST T-8 06/12/2000 by Geofon	OCHCA 07/26/2000	Outside Boundary SWMU/AOC 22. Associated with Tank Farm No.5. Removal completed on 02/28/00. Site closed by OCHCA in an NFA letter dated 07/26/00.	Waste JP-5	1988-1999
UST T-6	CO II-Q	FOST #7	T-6	2,000 Gallon Waste JP-5 UST	Tank Removal Field Activities, Tank 208, 209, 211, 213, 215, and T-6 12/16/1996 & 12/17/1996 by American Processing	OCHCA 03/27/1997	Outside Boundary SWMU/AOC 21. Associated with Tank Farm No. 5. Removal completed on 12/16/96. Site closed by OCHCA in an NFA letter dated 03/27/97.	Waste JP-5	1988-1996
UST 126	CO II-Q	FOST #7	126	500 Gallon Diesel UST	Site Assessment Report, UST 126 November 1995 by BNI	RWQCB 03/12/1996	UST 126 was removed on 11/27/1991 under the OCHCA oversight. Additional site assessment activities were completed in 1995. A site assessment report was submitted to RWQCB in November 1995. Site closed by RWQCB in an NFA letter dated 03/12/96.	Diesel	Unknown - 1996
UST 658A	CO II-Q	FOST #7	658	10,000 Gallon JP-5 UST	Tank closure report, USTs 658A and 658B 03/27/1998 by OHM	OCHCA 04/24/1998	Removal completed on 01/26/98. Site closed by OCHCA in an NFA letter dated 04/24/98.	JP-5	1972-1998
UST 658B	CO II-Q	FOST #7	658	10,000 Gallon JP-5 UST	Tank closure report, USTs 658A and 658B 03/27/1998 by OHM	OCHCA 04/24/1998	Removal completed on 1/26/98. Site closed by OCHCA in an NFA letter dated 04/24/98.	JP-5	1972-1998
UST 208	CO II-Q	FOST #7	208	50,000 Gallon Aviation Gas UST	Tank Removal Field Activities, Tank 208, 209, 211, 213, 215, and T-6 12/16/1996 to 12/17/1996 by American Processing	OCHCA 03/27/1997	Tank was formerly within Tank Farm No. 5. Removal completed on 12/16/96. Site closed by OCHCA in an NFA letter dated 03/27/97.	Aviation Gas	1943-1996
UST 210	CO II-Q	FOST #7	210	25,000 Gallon Aviation Gas, JP5 UST	Tank Removal Closure Report for USTs at Tank Farm No. 5 08/01/1996 by Toxguard	OCHCA 09/20/1996	Tank was formerly within Tank Farm No. 5. Removal completed on 06/14/96. Site closed by OCHCA in an NFA letter dated 09/20/96.	Aviation Gas, JP-5	1943-1996
UST 212	CO II-Q	FOST #7	212	50,000 Gallon Aviation Gas, JP-5 UST	Tank Removal Closure Report for USTs at Tank Farm No. 5 08/01/1996 by Toxguard	OCHCA 09/20/1996	Tank was formerly within Tank Farm No. 5. Removal completed on 6/14/96. Site closed by OCHCA in an NFA letter dated 09/20/96.	Aviation Gas, JP-5	1943-1996
UST 214	CO II-Q	FOST #7	214	25,000 Gallon Aviation Gas, JP-5 UST	Tank Removal Closure Report for USTs at Tank Farm No. 5 08/01/1996 by Toxguard	OCHCA 09/20/1996	Outside Boundary Tank was formerly within Tank Farm No. 5. Removal completed on 06/14/96. Site closed by OCHCA in an NFA letter dated 09/20/96.	Aviation Gas, JP-5	1943-1996

Feature	Carve Out	FOST	Associated Building	Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes	Hazardous Substances	Dates of Operation
UST 215	CO II-Q	FOST #7	215	50,000 Gallon Aviation Gas UST	Tank Removal Field Activities, Tank 208, 209, 211, 213, 215, and T-6 12/16/1996 to 12/17/1996 by American Processing	OCHCA 03/27/1997	Outside Boundary Tank was formerly within Tank Farm No. 5. Removal completed on 12/16/96. Site closed by OCHCA in an NFA letter dated 03/27/97.	Aviation Gas	1943-1996
UST 213	CO II-Q	FOST #7	213	25,000 Gallon Aviation Gas UST	Tank Removal Field Activities, Tank 208, 209, 211, 213, 215, and T-6 12/16/1996 to 12/17/1996 by American Processing	OCHCA 03/27/1997	Tank was formerly within Tank Farm No. 5. Removal completed on 12/16/96. Site closed by OCHCA in an NFA letter dated 03/27/97.	Aviation Gas	1943-1996
UST 211	CO II-Q	FOST #7	211	50,000 Gallon Aviation Gas UST	Tank Removal Field Activities, Tank 208, 209, 211, 213, 215, and T-6 12/16/1996 to 12/17/1996 by American Processing	OCHCA 03/27/1997	Tank was formerly within Tank Farm No. 5. Removal completed on 12/16/96. Site closed by OCHCA in an NFA letter dated 03/27/97.	Aviation Gas	1943-1996
UST 209	CO II-Q	FOST #7	209	25,000 Gallon Aviation Gas UST	Tank Removal Field Activities, Tank 208, 209, 211, 213, 215, and T-6 12/16/1996 to 12/17/1996 by American Processing	OCHCA 03/27/1997	Tank was formerly within Tank Farm No. 5. Removal completed on 12/16/96. Site closed by OCHCA in an NFA letter dated 03/27/97.	Aviation Gas	1943-1996
UST T-10	Parcel II-A	FOST #1	T-10	1,000 Gallon JP-5 UST	Tank Removal and Site Closure Report, UST T-10 06/13/1997 by OHM	OCHCA 7/11/1997	SWMU/AOC 108. Removal completed on 3/5/97. Site closed by OCHCA in a letter dated 7/11/97. Associated with Tank Farm 4. No further action required. ECP Category 2b.	JP-5	1988-1997
UST T-2	Parcel II-A	FOST #1	T-2	2,000 Gallon Waste JP-5 UST	Tank Removal Field Activities 08/01/1996	OCHCA 11/13/1996	SWMU/AOC 18. Associated with Tank Farm 4. Tank has been removed. Site closed by OCHCA in a letter dated 11/13/96. No further action required. ECP Category 2b.	Waste JP-5	1988-1996
UST 197	Parcel II-A	FOST #1	197	50,000 Gallon Diesel UST	Tank Removal Field Activities 08/02/1996 to 08/31/1996	OCHCA 11/13/1996	Tank was formerly within Tank Farm 4. Tank has been removed. Site closed by OCHCA in a letter dated 11/13/96. No further action required. ECP Category 2b.	Diesel	1943-1996
UST 196	Parcel II-A	FOST #1	196	25,000 Gallon Diesel UST	Tank Removal Field Activities 08/02/1996 to 08/31/1996	OCHCA 11/13/1996	Tank was formerly within Tank Farm 4. Tank has been removed. Site closed by OCHCA in a letter dated 11/13/96. No further action required. ECP Category 2b.	Diesel	1943-1996
UST 199	Parcel II-A	FOST #1	199	25,000 Gallon JP-5 UST	Tank Removal Field Activities 08/02/1996 to 08/31/1996	OCHCA 11/13/1996	Tank was formerly within Tank Farm 4. Tank has been removed. Site closed by OCHCA in a letter dated 11/13/96. No further action required. ECP Category 2b.	JP-5	1943-1996
UST 198	Parcel II-A	FOST #1	198	50,000 Gallon JP-5 UST	Tank Removal Field Activities 08/02/1996 to 08/31/1996	OCHCA 11/13/1996	Tank has been removed. Tank was formerly within Tank Farm 4. Site closed by OCHCA in a letter dated 11/13/96. No further action required. ECP Category 2b.	JP-5	1943-1996
UST 201	Parcel II-A	FOST #1	201	50,000 Gallon JP-4 UST	Tank Removal Field Activities 08/02/1996 to 08/31/1996	OCHCA 11/13/1996	Tank was formerly within Tank Farm 4. Tank has been removed. Site closed by OCHCA in a letter dated 11/13/96. No further action required. ECP Category 2b.	JP-4	1943-1996
UST 202	Parcel II-A	FOST #1	202	50,000 Gallon JP-4 UST	Tank Removal Field Activities 08/02/1996 to 08/31/1996	OCHCA 11/13/1996	Outside Boundary Tank was formerly within Tank Farm 4. Tank has been removed. Site closed by OCHCA in a letter dated 11/13/96. No further action required. ECP Category 2b.	JP-4	1943-1996
UST 292	Parcel II-A	FOST #1	292	1,400 Gallon Diesel UST	UST Removal Report, UST 292 02/14/1997 by Geofon	OCHCA 3/27/1997	Removal completed on 12/19/96. Site closed by OCHCA in a letter dated 3/27/97. No further action required. ECP Category 2b.	Diesel	1944-1996

Feature	Carve Out	FOST	Associated Building	Description	Closure Report Title/Date	NFA Letter Agency/Date	Notes	Hazardous Substances	Dates of Operation
UST 610	Parcel II-A	FOST #1	610	300 Gallon Gasoline UST	Tank Removal Field Activities 09/07/1993	OCHCA 12/9/1996	Tank removed in 1993. Site closed by OCHCA in a letter dated 12/09/96. No further action required. ECP Category 2b.	Gasoline	1966-1993
UST 5225	Parcel II-A	FOST #1	5225	300 Gallon Diesel UST	Tank Removal Field Activities, Namar Housing Area 08/01/1995 to 08/31/1995	OCHCA 3/1/1996	Removal completed on 09/15/95. Site closed by OCHCA in a letter dated 03/01/96. No further action required. ECP Category 2b.	Diesel	1945-1995
UST 5226	Parcel II-A	FOST #1	5226	300 Gallon Diesel UST	Tank Removal Field Activities, Namar Housing Area 08/01/1995 to 08/31/1995	OCHCA 3/1/1996	Removal completed on 09/15/95. Site closed by OCHCA in a letter dated 03/01/96. No further action required. ECP Category 2b.	Diesel	1945-1995
UST 5224	Parcel II-A	FOST #1	5224	300 Gallon Diesel UST	Tank Removal Field Activities, Namar Housing Area 08/01/1995 to 08/31/1995	OCHCA 3/1/1996	Removal completed on 09/15/95. Site closed by OCHCA in a letter dated 03/01/96. No further action required. ECP Category 2b.	Diesel	1945-1995
UST 5223	Parcel II-A	FOST #1	5223	300 Gallon Diesel UST	Tank Removal Field Activities, Namar Housing Area 08/01/1995 to 08/31/1995	OCHCA 2/23/1996	Tank has been removed. Site closed by OCHCA in a letter dated 02/23/96. No further action required. ECP Category 2b.	Diesel	1945-1996
UST 5227	Parcel II-A	FOST #1	5227	300 Gallon Diesel UST	Tank Removal Field Activities, Namar Housing Area 08/01/1995 to 08/31/1995	OCHCA 3/1/1996	Removal completed on 09/15/95. Site closed by OCHCA in a letter dated 03/01/96. No further action required. ECP Category 2b.	Diesel	1945-1995
UST 5228	Parcel II-A	FOST #1	5228	300 Gallon Diesel UST	Tank Removal Field Activities, Namar Housing Area 08/01/1995 to 08/31/1995	OCHCA 3/1/1996	Removal completed on 09/15/95. Site closed by OCHCA in a letter dated 03/01/96. No further action required. ECP Category 2b.	Diesel	1945-1995
UST 5229	Parcel II-A	FOST #1	5229	300 Gallon Diesel UST	Tank Removal Field Activities, Namar Housing Area 08/01/1995 to 08/31/1995	OCHCA 3/1/1996	Removal completed on 09/15/95. Site closed by OCHCA in a letter dated 03/01/96. No further action required. ECP Category 2b.	Diesel	1945-1995
UST 5230	Parcel II-A	FOST #1	5230	300 Gallon Diesel UST	Tank Removal Field Activities, Namar Housing Area 08/01/1995 to 08/31/1995	OCHCA 3/1/1996	Removal completed on 09/15/95. Site closed by OCHCA in a letter dated 03/01/96. No further action required. ECP Category 2b.	Diesel	1945-1995
UST 5231	Parcel II-A	FOST #1	5231	300 Gallon Diesel UST	Tank Removal Field Activities, Namar Housing Area 08/01/1995 to 08/31/1995	OCHCA 3/1/1996	Removal completed on 09/15/95. Site closed by OCHCA in a letter dated 03/01/96. No further action required. ECP Category 2b.	Diesel	1945-1995
UST 581	Parcel II-A	FOST #1	581	550 Gallon Diesel UST	Tank Removal Field Activities 06/03/1993	OCHCA 12/9/1996	Tank removed in 1993. Site closed by OCHCA in a letter dated 12/09/96. No further action required. ECP Category 2b.	Diesel	1945-1993
UST 200	Parcel II-A	FOST #1	200	25,000 Gallon JP-5 UST	Tank Removal Field Activities 08/02/1996 to 08/31/1996	OCHCA 11/13/1996	Outside Boundary Tank was formerly within Tank Farm 4. Tank has been removed. Site closed by OCHCA in a letter dated 11/13/96. No further action required. ECP Category 2b.	JP-5	1943-1996
UST 203	Parcel II-A	FOST #1	203	25,000 Gallon JP-4 UST	Tank Removal Field Activities 08/02/1996 to 08/31/1996	OCHCA 11/13/1996	On Boundary Tank was formerly within Tank Farm 4. Tank has been removed. Site closed by OCHCA in a letter dated 11/13/96. No further action required. ECP Category 2b.	JP-4	1943-1996
UST 5237	Parcel II-A	FOST #1	5237	300 Gallon Diesel UST	Site Investigation and Remedial Investigation Activities at Former Barracks Location (Building 7750) 10/23/1990 & 11/19/1990	OCHCA 2/28/1996	On Boundary Tank removed in 1990. Site closed by OCHCA in a letter dated 02/28/96. No further action required. ECP Category 2b.	Diesel	1945-1990
UST 5236	Parcel II-A	FOST #1	5236	300 Gallon Diesel UST	Tank Removal Field Activities, Namar Housing Area 08/01/1995 to 08/31/1995	OCHCA 3/1/1996	Outside Boundary Removal completed on 09/15/95. Site closed by OCHCA in a letter dated 03/01/96. No further action required. ECP Category 2b.	Diesel	1945-1995

Notes:
See Table 1 for a list of acronyms.
Information presented in this table is copied from the applicable FOST document.
Orange highlight indicates Potential Environmental Concerns (PECs)
Green highlight indicates Development-Restricted Areas (DRAs)

Table 15
Summary of Potential Environmental Concerns (PECs)
Proposed Southern California Veterans Cemetery
Irvine, California

Feature	Carve Out	FOST	Associated Building	Description	Hazardous Substances	Notes
APHO 100	CO II-Q	FOST #7	114	Liquid Flowing	Unknown	See Table 2
APHO 98	CO II-Q	FOST #7	372	Wet Soil	Unknown	See Table 2
IRP SITE 3	CO II-D	FOST #8	Desert Storm Road and North Marine Way	Original Landfill	Various / Unknown Petroleum Products	See Table 6
IRP SITE 3	CO II-D	FOST #8	Original Landfill	Original Landfill and Adjacent Areas	Municipal, industrial, and possibly radiological wastes	See Table 6
IRP SITE 4 Unit 1 & 2	CO II-Q	FOST #7	658	Ferrocene Spill Area (OU-3)	Ferrocene and oily discharges	See Table 6
MSC JP5	CO-II-Q	FOST #2	N/A	Fuel Lines	JP5	See Table 8
OWS 892	CO II-E	FOST #5	892	1,375-Gallon OWS	Oily water	See Table 9
OWS 764B	CO II-I	FOST #4	764	100-Gallon OWS	Oily water	See Table 9
OWS 658D	CO II-Q	FOST #7	658	1,750-Gallon OWS	Oily water	See Table 9
OWS 658C	CO II-Q	FOST #7	658	400-Gallon OWS	Oily water	See Table 9
PCB 892	CO II-E	FOST #5	892	3 Oil-filled Cutouts	PCBs	See Table 10
PCB 643	CO II-E	FOST #5	643	3 Oil-filled Cutouts	PCBs	See Table 10
PRL 716	CO II-Q	FOST #7	716	Engine Test Cell / Hush House	Waste JP5	See Table 11
PRL 747	CO II-Q	FOST #7	747	Contract Refueler Facility	Waste fuels	See Table 11
PRL 127	CO II-Q	FOST #7	127	Tire Storage Plant	Petroleum products and hazardous substances	See Table 11
RFA 10	CO II-D	FOST #8	380 and 385	Abandoned Exploratory Oil Well	Crude oil and other organics	See Table 11
RFA 152	CO II-E	FOST #5	606 (on tarmac)	Aircraft Wash Area	JP-5, Solvents, Lubricating Oils	See Table 12
RFA 150	CO II-E	FOST #5	605 (on tarmac)	Aircraft Wash Area	JP-5, Solvents, Lubricating Oils	See Table 12
RFA 213	CO II-I	FOST #4	764	Vehicle Wash Rack	Wash water from vehicles	See Table 12

Table 15
Summary of Potential Environmental Concerns (PECs)
Proposed Southern California Veterans Cemetery
Irvine, California

Feature	Carve Out	FOST	Associated Building	Description	Hazardous Substances	Notes
RFA 258	CO II-Q	FOST #7	N/A	Wash water Runoff Site associated with Aircraft Fueling Station	JP-5, Solvents, Lubricating Oils	Outside of SCVC Boundary See Table 12
RFA 15	CO II-Q	FOST #7	N/A	Wash water Runoff Site associated with Aircraft Fueling Station	JP-5, Solvents, Lubricating Oils	See Table 12
RFA 257	CO II-Q	FOST #7	N/A	Wash water Runoff Site associated with Aircraft Fueling Station	JP-5, Solvents, Lubricating Oils	See Table 12
RFA 16	CO II-Q	FOST #7	N/A	Wash water Runoff Site associated with Aircraft Fueling Station	JP-5, Solvents, Lubricating Oils	See Table 12
RFA 210	CO II-Q	FOST #7	763	Vehicle Wash Rack	Wash water from vehicles	See Table 12
RFA 41	CO II-Q	FOST #7	127	Vehicle Wash Rack	Wash water from vehicles	See Table 12
TAA 130C	CO II-B	FOST #6	130	< 90-Day Accumulation Point	Various wastes	See Table 13
TAA 392A	CO II-I	FOST #4	392	< 90-Day Accumulation Point	Various wastes	See Table 13
TAA 392B	CO II-I	FOST #4	392	< 90-Day Accumulation Point	Various wastes	See Table 13
UST 133	CO II-B	FOST #6	133	500-Gallon Diesel UST	Diesel	See Table 14
UST 380A	CO II-D	FOST #8	380	10,500 Gallon Diesel UST	Diesel	See Table 14
UST 764A	CO II-I	FOST #4	764	500-Gallon Waste Oil UST	Waste Oil	See Table 14
UST 716A	CO II-Q	FOST #7	716	3,000 Gallon Waste Oil UST	Waste Oil	See Table 14

Table 15
Summary of Potential Environmental Concerns (PECs)
Proposed Southern California Veterans Cemetery
Irvine, California

Feature	Carve Out	FOST	Associated Building	Description	Hazardous Substances	Notes
UST 114C	CO II-Q	FOST #7	114	600 Gallon Fuel Oil UST	Fuel Oil	See Table 14
UST 206	CO II-Q	FOST #7	206	50,000 Gallon Unleaded Fuel UST	Unleaded Gasoline	See Table 14
UST T-7	CO II-Q	FOST #7	T-7	2,000 Gallon Waste JP-5 UST	Waste JP-5	See Table 14
UST 204	CO II-Q	FOST #7	204	50,000 Gallon Diesel UST	Diesel	See Table 14
UST 205	CO II-Q	FOST #7	205	25,000 Gallon Recovered JP-5 UST	Recovered JP-5	See Table 14
UST 207	CO II-Q	FOST #7	207	50,000 Gallon Unleaded Fuel UST	Unleaded Fuel	See Table 14
UST T-9	CO II-Q	FOST #7	T-9	2,000 Gallon JP-5 UST	Waste JP-5	See Table 14
UST T-8	CO II-Q	FOST #7	T-8	2,000 Gallon Waste JP-5 UST	Waste JP-5	Outside Boundary See Table 14
UST T-6	CO II-Q	FOST #7	T-6	2,000 Gallon Waste JP-5 UST	Waste JP-5	Outside Boundary See Table 14
UST 126	CO II-Q	FOST #7	126	500 Gallon Diesel UST	Diesel	See Table 14
UST 208	CO II-Q	FOST #7	208	50,000 Gallon Aviation Gas UST	Aviation Gas	See Table 14
UST 210	CO II-Q	FOST #7	210	25,000 Gallon Aviation Gas, JP5 UST	Aviation Gas, JP-5	See Table 14
UST 212	CO II-Q	FOST #7	212	50,000 Gallon Aviation Gas, JP-5 UST	Aviation Gas, JP-5	See Table 14
UST 214	CO II-Q	FOST #7	214	25,000 Gallon Aviation Gas, JP-5 UST	Aviation Gas, JP-5	Outside Boundary See Table 14

Table 15
Summary of Potential Environmental Concerns (PECs)
Proposed Southern California Veterans Cemetery
Irvine, California

Feature	Carve Out	FOST	Associated Building	Description	Hazardous Substances	Notes
UST 215	CO II-Q	FOST #7	215	50,000 Gallon Aviation Gas UST	Aviation Gas	Outside Boundary See Table 14
UST 213	CO II-Q	FOST #7	213	25,000 Gallon Aviation Gas UST	Aviation Gas	See Table 14
UST 211	CO II-Q	FOST #7	211	50,000 Gallon Aviation Gas UST	Aviation Gas	See Table 14
UST 209	CO II-Q	FOST #7	209	25,000 Gallon Aviation Gas UST	Aviation Gas	See Table 14
UST T-10	Parcel II-A	FOST #1	T-10	1,000 Gallon JP-5 UST	JP-5	See Table 14
UST T-2	Parcel II-A	FOST #1	T-2	2,000 Gallon Waste JP-5 UST	Waste JP-5	See Table 14
UST 197	Parcel II-A	FOST #1	197	50,000 Gallon Diesel UST	Diesel	See Table 14
UST 196	Parcel II-A	FOST #1	196	25,000 Gallon Diesel UST	Diesel	See Table 14
UST 199	Parcel II-A	FOST #1	199	25,000 Gallon JP-5 UST	JP-5	See Table 14
UST 198	Parcel II-A	FOST #1	198	50,000 Gallon JP-5 UST	JP-5	See Table 14
UST 201	Parcel II-A	FOST #1	201	50,000 Gallon JP-4 UST	JP-4	See Table 14
UST 202	Parcel II-A	FOST #1	202	50,000 Gallon JP-4 UST	JP-4	See Table 14
UST 200	Parcel II-A	FOST #1	200	25,000 Gallon JP-5 UST	JP-5	Outside Boundary See Table 14
UST 203	Parcel II-A	FOST #1	203	25,000 Gallon JP-4 UST	JP-4	On Boundary See Table 14

Table 16
Summary of Development Restricted Areas
Proposed Southern California Veterans Cemetery
Irvine, California

Feature	Carve Out	FOST	Associated Building	Description	Hazardous Substances	Notes
IRP SITE 3	CO II-D	FOST #8	Waste Area A	Permitted Landfill	Various / Unknown Petroleum Products; Municipal, Industrial, and Possibly Radiological Wastes	See Table 6 Idenifited as "Waste Area A."
MSC JP5	CO-II-Q	FOST #7	N/A	Fuel Pipelines and Associated Truck Fueling Areas	JP5; non-FAD ACM found	See Table 7 Also identified as "MSC JP5 Pipeline and Associated TFA Groundwater Plume Area with Buffer Zone"
UST 398	CO II-Q	FOST #7	398	108,000 Gallon JP-5 UST	JP-5	See Table 14 Also identified as "Former UST 398 Groundwater Plume Area with Buffer Zone"
WELLS	CO II-D	FOST #8	--	03_UGMW26B	N/A	Groundwater monitoring well
WELLS	CO II-D	FOST #8	734	03_DGMW64A	N/A	Groundwater monitoring well
WELLS	CO II-D	FOST #8	749	03_DGMW65XA	N/A	Groundwater monitoring well
WELLS	CO II-D	FOST #8	--	03LYS2	N/A	Lysimeter
WELLS	CO II-D	FOST #8	--	03LYS4	N/A	Lysimeter
WELLS	CO II-D	FOST #8	--	03_LFG01	N/A	Landfill gas extraction well
WELLS	CO II-D	FOST #8	--	03_LFG02	N/A	Landfill gas extraction well
WELLS	CO II-D	FOST #8	--	03_LFG03	N/A	Landfill gas extraction well
WELLS	CO II-D	FOST #8	--	03_LFG04	N/A	Landfill gas extraction well
WELLS	CO II-D	FOST #8	--	N/A	N/A	Landfill gas conveyance piping
WELLS	CO II-D	FOST #8	--	03PG05	N/A	Landfill gas extraction well
WELLS	CO II-D	FOST #8	--	03PG06	N/A	Landfill gas extraction well
WELLS	CO II-D	FOST #8	--	03PG07	N/A	Landfill gas extraction well
WELLS	CO II-D	FOST #8	--	03PG08	N/A	Landfill gas extraction well
WELLS	CO II-D	FOST #8	--	03MP1	N/A	Survey monument
WELLS	CO II-D	FOST #8	--	03MP2	N/A	Survey monument
WELLS	CO II-D	FOST #8	--	03MP3	N/A	Survey monument
WELLS	CO II-D	FOST #8	--	N/A	N/A	12-Inch vitrified clay pipe
WELLS	CO II-D	FOST #8	--	N/A	N/A	Gas monitoring trenches
WELLS	CO II-D	FOST #8	--	03_TR01	N/A	Gas monitoring vent
WELLS	CO II-D	FOST #8	--	03_TR02	N/A	Gas monitoring vent
WELLS	CO II-D	FOST #8	--	03_TR03	N/A	Gas monitoring vent
WELLS	CO II-D	FOST #8	--	03_TR04	N/A	Gas monitoring vent
WELLS	CO II-Q	FOST #7	746	03LYS1	N/A	Leachate monitoring
WELLS	CO II-Q	FOST #7	658	04DGMW66A	N/A	Groundwater monitoring well
WELLS	CO II-Q	FOST #7	746	04UGMW63	N/A	Groundwater monitoring well
WELLS	CO II-Q	FOST #7	372	ASMW398-01	N/A	Groundwater monitoring well
WELLS	CO II-Q	FOST #7	372	ASMW398-02	N/A	Groundwater monitoring well
WELLS	CO II-Q	FOST #7	372	MW398-01R	N/A	Groundwater monitoring well
WELLS	CO II-Q	FOST #7	372	MW398-12	N/A	Groundwater monitoring well
WELLS	CO II-Q	FOST #7	372	MW398-13	N/A	Groundwater monitoring well
WELLS	CO II-Q	FOST #7	372	MW398-17	N/A	Groundwater monitoring well
WELLS	CO II-Q	FOST #7	372	MW398-19D	N/A	Groundwater monitoring well
WELLS	CO II-Q	FOST #7	372	MW398-21R	N/A	Groundwater monitoring well
WELLS	CO II-Q	FOST #7	372	MW398-26	N/A	Groundwater monitoring well
WELLS	CO II-Q	FOST #7	372	MW398-28	N/A	Groundwater monitoring well
WELLS	CO II-Q	FOST #7	372	MW398-29	N/A	Groundwater monitoring well

Table 16
Summary of Development Restricted Areas
Proposed Southern California Veterans Cemetery
Irvine, California

Feature	Carve Out	FOST	Associated Building	Description	Hazardous Substances	Notes
WELLS	CO II-Q	FOST #7	372	MW398-30	N/A	Groundwater monitoring well
WELLS	CO II-Q	FOST #7	372	MW398-31	N/A	Groundwater monitoring well
WELLS	CO II-Q	FOST #7	372	MW398-4	N/A	Groundwater monitoring well
WELLS	CO II-Q	FOST #7	372	MW398-6	N/A	Groundwater monitoring well
WELLS	CO II-Q	FOST #7	372	RW398-01	N/A	Groundwater monitoring well
WELLS	CO II-Q	FOST #7	372	RW398-02	N/A	Groundwater monitoring well
WELLS	CO II-Q	FOST #7	--	TF6MW-01	N/A	Groundwater monitoring well
WELLS	CO II-Q	FOST #7	763	TF6MW-02	N/A	Groundwater monitoring well
WELLS	CO II-Q	FOST #7	--	TFAMW-01	N/A	Groundwater monitoring well
WELLS	CO II-Q	FOST #7	--	TFAMW-02	N/A	Groundwater monitoring well
WELLS	CO II-Q	FOST #7	747	TFAMW-03	N/A	Groundwater monitoring well

Table 17
Summary of Hazardous Materials in Remaining Buildings
Proposed Southern California Veterans Cemetery
Irvine, California

Building Number	Building Location	Description	Year of Construction	Square Feet	Historical Asbestos Survey Information	Comments from FOST Documents	Asbestos Content?	Asbestos Materials and Percent Asbestos	Material Location	Estimated Square Footage	Lead-Based Paint?	Location and Lead Concentration (lead concentration in mg/cm^2)
114	CO II-Q	Maintenance Hangar	1966	32,921	IT Corp (1989): Floor tile, transite, pipe insulation CABACO/Tait (6/15/99): Stucco, pipe elbows, floor tile & mastic, window putty, boiler flue, exterior mastic, wall panels, drywall joint compound	Non-FAD ACM found	**Yes**	**Transite Boiler Vent Pipe- (assumed)** **Vinyl Floor Tile - 2% Chrysotile (sampled)** Mastic- ND (sampled and previously sampled) **Pipe Insulation (previously sampled)** **Window Putty (previously sampled)** Interior Plaster- ND (sampled) 12x12 Ceiling Tile Mastic- ND (sampled) Exterior Stucco- ND (sampled)	**Transite Boiler Vent Pipe- Exterior** **Vinyl Floor Tile** and Mastic-**Throughout Interior First and Second Floor** **Pipe Insulation- Throughout Interior** **Window Putty-Throughout Window** Interior Plaster- Throughout Interior Walls 12x12 Ceiling Tile Mastic- Throughout Second Floor Exterior Stucco- Throughout Exterior Walls	**Transite Boiler Vent Pipe- 500 SF** **Vinyl Floor Tile** and Mastic- **7,000 SF** **Pipe Insulation- 1,200 LF** **Window Putty-1,200 LF**	**Yes**	**Hangar Big Door (exterior metal)- 10.4** **Hangar Big Door Jamb (exterior metal)- 1.4** **Frame (exterior metal)- 1.4** **Rollup Door Frame (exterior metal)- 12.3** **Rollup Door (exterior metal)- 4.3** **Stairs (exterior metal)- 12.1** **Frame (interior metal)- 3.1** **Columns (interior metal)- 9.6** **Ceramic Tile (interior restroom walls)- 9.3** **Stairs (interior yellow paint)- 7.9**
115	CO II-E	Aircraft Maintenance Hangar	1966	25,414	IT Corp (1989): Floor tile, transite, pipe insulation CABACO/Tait (06/15/1999): Stucco, pipe elbows, floor tile & mastic, window putty, boiler flue, exterior mastic, wall panels, drywall joint compound	Non-FAD ACM found	Building To Be Demolished by the City of Irvine					
126	CO II-Q	Maintenance Hangar	1943	4,224	IT Corp (1989): No ACM Found	No ACM found	**Yes**	**Vinyl Floor Tile- Trace Chrysotile (sampled)** Mastic- ND Drywall and Joint Compound- ND	**Vinyl Floor Tile** and Mastic- **Throughout Interior** Drywall and Joint Compound- Throughout Interior	**Vinyl Floor Tile** and Mastic - **500 SF**	**Yes**	**Wall (exterior stucco)- 4.3**
127	CO II-Q	Tire Storage Plant	1943	4,026	IT Corp (1989): No ACM Found	No ACM found	No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			**Yes**	**Wall (exterior stucco)- 1.3**
130	CO II-B	Aviation Paint Area	1943	2,906	Radian (Jan-01): No FAD ACM observed	No FAD ACM observed; non-FAD ACM unknown	No	Drywall and Joint Compound- ND (sampled) Vinyl Floor Tile and Mastic- ND (sampled)	N/A		**Yes**	**Rollup Door Jamb (exterior metal)- 3.2** **Rain Gutter (exterior metal)- 2.9**
131	CO II-D	No summary available in FOST #8					**Yes**	**Assumed- No Access (bees)**	Vinyl Floor Tile and Mastic- Throughout Interior Drywall and Joint Compound- Throughout Interior Baseboard and Mastic- Throughout Interior	--	No	N/A
132	W/I BNDY	Aviation Armament Shop	1943	6,240	IT Corp (1989): No ACM Found	No ACM found	No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
133	CO II-B	Office/Training Facility	1943	3,390	IT Corp (1989): Transite	Non-FAD ACM found	**Yes**	**9x9 Vinyl Floor Tile- 3% Chrysotile (sampled)** Mastic- ND **Transite (previously sampled but AEC could not find)**	**9x9 Vinyl Floor Tile and Mastic- Under Carpet** **Transite- (AEC could not find)**	**9x9 Vinyl Floor Tile** and Mastic- **2,000 SF**	**Yes**	**Wall (exterior wood)- 1.9** **Eaves (exterior wood)- 1.9** **Fascia (exterior wood)- 1.9** **Wood Slat Wall (interior wood)- 5.2**
142	W/I BNDY	Hazardous Material/ Flammable Material Storage	1943	640	IT Corp (1989): No ACM Found	No ACM found	No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
230	CO II-Q	Paint Locker	1943	78	IT Corp. (1989): No ACM Found	No ACM found	No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			**Yes**	**Wall (exterior concrete)- 4.3**
231	CO II-Q	Paint Locker	1943	78	IT Corp. (1989): No ACM Found	No ACM found	No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			**Yes**	**Wall (exterior concrete)- 2.4**
293	W/I BNDY	Storage Tank/Potable Water	<1948	N/A	No summary available in FOST #1		**Yes**	**Roofing- 2% Chrysotile (sampled)**	**Roofing- Throughout Roof**	**3,000 SF**	**Yes**	**Roof (exterior wood)- 2.6** **Trim (exterior metal)- 2.6** **Water Gage (exterior metal)- 1.7**
308	CO II-I	Ground Support Equipment Storage	1944	720	IT Corp (1989): Floor tile	Non-FAD ACM found; not surveyed since 1997	**Yes**	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			**Yes**	**Wall (exterior stucco)- 1.9** **Fascia (exterior wood)- 2.3**
341	W/I BNDY	Ground Support Equipment Shop	1945	468	IT Corp (1989): No ACM Found	No ACM found.	No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			**Yes**	**Wall (exterior stucco)- 5.3** **Fascia (exterior wood)- 5.3**
363	CO II-Q	Petroleum, oil, and lubricants Pipeline Shelter	1952	200	e&e (1991): No ACM Found	No ACM found	No	No Asbestos Samples Deemed Warranted (building no longer present)			**Yes**	**Yellow Paint (exterior asphalt)- 2.3**
372	CO II-Q	Airfield Operations /Control Tower	1954	26,375	IT Corp (1989): Transite, vibration dampener, pipe insulation, floor tile CABACO/Tait (6/15/99): Ceiling panels, drywall joint compound, floor tile & mastic, pipe insulation, duct connectors (assumed), cement panels (assumed)	Non-FAD ACM found	**Yes**	**Window Putty- Trace Chrysotile (sampled)** **Transite Panels- (assumed)**	**Window Putty- Windows** **Transite Panels-Bottom of Exterior Doors**	**Window Putty- 1,200 SF** **Transite Panels- 500 SF**	**Yes**	**Window (exterior metal)- 1.6** **Window (exterior metal)- 1.8** **Door (exterior wood)- 2.2** **Door Jamb (exterior metal)- 2.4** **Door Jamb (interior metal)- 1.2** **Door (interior wood)- 2.3** **Window (interior metal)- 1.6** **Handrail (interior metal)- 4.2**
380	CO II-D	Standby Generator Building	<1954	Unknown	No summary available in FOST #8		**Yes**	**Window Putty- Trace Chrysotile (sampled)**	**Window Putty- Windows**	**300 SF**	No	N/A
385	CO II-D	Electrical Distribution Substation #4	1954	160	IT Corp (1989): No ACM found	No summary available in FOST #8	No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			**Yes**	**Fascia (exterior wood)- 1.7**
392	CO II-I	Aircraft Ground Support Equipment	1955	6,400	IT Corp (1989): Duct insulation, pipe insulation	FAD ACM found	**Yes**	**Pipe Insulation- (previously sampled)** **Duct Insulation- (previously sampled)** Vinyl Floor Tile and Mastic- ND (sampled) Window Putty - ND (sampled)	**Pipe Insulation- Throughout Interior** **Duct Insulation- Throughout Interior** Vinyl Floor Tile and Mastic- Restroom Window Putty - Throughout Window	**Pipe Insulation- 2,000 SF** **Duct Insulation- 1,000 SF**	**Yes**	**Rollup Door Jamb (exterior metal)- 9.7** **Rollup Door (exterior metal)- 11.2** **Door Jamb (exterior metal)- 8.6** **Window (exterior metal)- 2.0** **Wall (interior plaster)- 1.2** **Frame (interior metal)-12.9** **Ladder (interior metal)- 9.6** **Wall (interior restroom ceramic tile)- 5.7**
602	W/I BNDY	Van Maintenance Shop	1964	4,800	No summary available in FOST #1		No	Vinyl Floor Tile and Mastic- ND (sampled)	N/A		**Yes**	**Frame (exterior metal)-1.2**

Building Number	Building Location	Description	Year of Construction	Square Feet	Historical Asbestos Survey Information	Comments from FOST Documents	Asbestos Content?	Asbestos Materials and Percent Asbestos	Material Location	Estimated Square Footage	Lead-Based Paint?	Location and Lead Concentration (lead concentration in mg/cm^2)
605	CO II-E	Maintenance Hangar	1962 (1965?)	23,598	e&e (1991): Floor tile, roofing, pipe fitting insulation, damper gaskets, carpet CABACO/Tait (06/15/1999): Floor tile & mastic, window putty, pipe elbows	FAD ACM found	**Yes**	**Transite Boiler Vent Pipe- (assumed)** **Vinyl Floor Tile and Mastic- (previously sampled)** **Pipe Insulation- (previously sampled)** **Window Putty- (previously sampled)** Exterior Panel Coating- ND (sampled)	**Transite Boiler Vent Pipe- Exterior** **Vinyl Floor Tile and Mastic- Throughout interior first and second floor** **Pipe Insulation- Throughout Interior** **Window Putty-Throughout Window** Exterior Panel Coating- Throughout Exterior Metal Siding	**Transite Boiler Vent Pipe- 500 SF** **Vinyl Floor Tile and Mastic- 5,000 SF** **Pipe Insulation- 1,200 LF** **Window Putty-1,200 SF**	**Yes**	**Hangar Big Door (exterior metal)- 10.4** **Hangar Big Door Jamb (exterior metal)- 1.4** **Frame (exterior metal)- 1.4** **Rollup Door Frame (exterior metal)- 12.3** **Rollup Door (exterior metal)- 4.3** **Ladder (exterior metal)- 0.6** **Stairs (exterior metal)- 12.1** **Frame (interior metal)- 3.1** **Columns (interior metal)- 9.6** **Ceramic Tile (interior restroom walls)- 9.3** **Stairs (interior yellow paint)- 7.9**
606	CO II-E	Maintenance Hangar	1965	23,598	e&e (1991): Floor tile, roofing, pipe fitting insulation, damper gaskets, carpet CABACO/Tait (06/15/1999): Floor tile & mastic, window putty, pipe elbows	FAD ACM found	**Yes**	**Assumed- No Access** **Transite Boiler Vent Pipe- (assumed)** **Vinyl Floor Tile and Mastic- (previously sampled)** **Pipe Insulation- (previously sampled)** **Window Putty- (previously sampled)**	**Transite Boiler Vent Pipe- Exterior** **Vinyl Floor Tile and Mastic- Throughout interior first and second floor** **Pipe Insulation- Throughout Interior** **Window Putty-Throughout Window**	**Transite Boiler Vent Pipe- 500 SF** **Vinyl Floor Tile and Mastic- 5,000 SF** **Pipe Insulation- 1,200 LF** **Window Putty-1,200 SF**	**Yes**	**Hangar Big Door (exterior metal)- 10.4** **Hangar Big Door Jamb (exterior metal)- 1.4** **Frame (exterior metal)- 1.4** **Rollup Door Frame (exterior metal)- 12.3** **Rollup Door (exterior metal)- 4.3** **Stairs (exterior metal)- 12.1** **Frame (interior metal)- 3.1** **Columns (interior metal)- 9.6** **Ceramic Tile (interior restroom walls)- 9.3** **Stairs (interior yellow paint)- 7.9**
610	W/I BNDY	Water Distribution Building	1966	1,126	No summary available in FOST #1		No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
634	CO II-B	Avionics Shop/ Maintenance Hangar/ Engine Maintenance Shop	1969	54,891	e&e (1991): Floor tile, roofing, linoleum, carpet CABACO/Tait (6/15/99): Sheet vinyl flooring, exterior metal coating, pipe insulation mastic	Non-FAD ACM found	**Yes**	**Vinyl Floor Tile and Mastic- (previously sampled)** **Pipe Insulation- (previously sampled)** **Roofing- (previously sampled)** **Vinyl Sheet Flooring- (previously sampled)** **12x12 Ceiling Tile and Mastic- (previously sampled)**	**Vinyl Floor Tile and Mastic- Throughout Interior** **Pipe Insulation- Throughout Interior** **Roofing- Throughout Roof** **Vinyl Sheet Flooring- Throughout Interior** **12x12 Ceiling Tile and Mastic- Throughout Second Floor**	**Vinyl Floor Tile and Mastic- 2,000 SF** **Pipe Insulation- 3,000 SF** **Roofing- 54,000 SF** **Vinyl Sheet Flooring- 1,000 SF** **12x12 Ceiling Tile and Mastic- 2,000 SF**	**Yes**	**Frame (interior metal)- 15.9** **Rollup Door (interior metal)- 9.6** **Rollup Door Frame (interior metal)- 8.7**
639	CO II-E	Electric Power Plant Building	1969	144	e&e (1991): No ACM Found	No ACM found	No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
640	CO II-E	Electric Power Plant Building	1969	144	e&e (1991): No ACM Found	No ACM found	No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
641	CO II-E	Electric Power Plant Building	1969	144	e&e (1991): No ACM Found	No ACM found	No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
642	CO II-Q	Electric Power Plant	1969	144	e&e (1991): No ACM Found	No ACM found	No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
643	CO II-E	Fixed Aircraft Start System	<1973	14,915	No summary available in FOST #5		No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
658	CO II-Q	Jet Engine Testing Facility	1972	2,894	e&e (1991): Floor tile, noise and fireproofing panels	Non-FAD ACM found	**Yes**	**Vinyl Floor Tile and Mastic- (previously sampled)** **Nose Panels- (previously sampled)**	**Vinyl Floor Tile and Mastic- Throughout Interior** **Nose Panels- Throughout Interior**	**Vinyl Floor Tile and Mastic- 500 SF** **Nose Panels- 10,000 SF**	**Yes**	**Big Door (exterior metal)- 7.7** **Big Door Jamb (exterior metal)- 6.8** **Wall Restroom (interior ceramic tile)- 6.4**
S659	CO II-Q	Storage Tank Non-Potable Water	<1973	25,000 gallons	No summary available in FOST #7		No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			**Yes**	**Water Tank (exterior metal)- 6.0**
695	CO II-E	Line Maintenance Shelter	1975	900	e&e (1991): Floor tile, roofing	Non-FAD ACM found; not surveyed since 1997	**Yes**	**Assumed- No Interior Access** **Vinyl Floor Tile and Mastic (previously sampled)** **Drywall and Joint Compound (assumed)** **Roofing (previously sampled)**	**Vinyl Floor Tile and Mastic- Interior** **Drywall and Joint Compound- Interior** **Roofing- Throughout Roof**	**Vinyl Floor Tile and Mastic- 2,500 SF** **Drywall and Joint Compound- 1,500 LF** **Roofing- 900 SF**	No	N/A
696	CO II-E	Line Maintenance Shelter	1975	900	e&e (1991): Floor tile, roofing	Non-FAD ACM found; not surveyed since 1997	**Yes**	696A- Acoustic Ceiling- ND (sampled) Drywall and Joint Compound- ND (sampled) 696B- Drywall and Joint Compound- ND (sampled)	N/A		No	N/A
697	CO II-E	Line Maintenance Shelter	1975	900	e&e (1991): Roofing	Non-FAD ACM found; no interior ACM observed; not surveyed since 1997	**Yes**	Drywall and Joint Compound- ND (sampled)	N/A		No	N/A
698	CO II-Q	Line Maintenance Shelter	1975	900	e&e (1991): Floor tile, roofing	Non-FAD ACM found	**Yes**	**Drywall- ND** **Joint Compound 2% Chrysotile (sampled)**	**Drywall and Joint Compound- Interior**	**2,000 SF**	No	N/A
716	CO II-Q	Engine Test Cell / Hush House	1978	8,880	e&e (1991): Floor tile, fireproofing panels CABACO/Tait (10/15/99): Floor tile mastic	Non-FAD ACM found	**Yes**	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			**Yes**	**Frame (exterior metal)- 10.1** **Big Front Door Frame (exterior metal)- 9.8** **Big Front Door Jamb (exterior metal)- 10.1** **Frame (interior metal)- 9.8**
734	CO II-D	Public Toilet/Van Complex	1980	560	e&e (1991): Roofing	Non-friable, accessible, and damaged (FAD) ACM found; no interior ACM observed; not surveyed since 1997	**Yes**	**Assumed- No Interior Access** **Drywall (assumed)** **Roofing (assumed)**	**Drywall- Throughout Interior** **Roofing- Throughout Roof**	**Drywall- N/A** **Roofing- 560 SF**	No	N/A
735	CO II-D	Generator Building/Van Complex	1980	1,100	e&e (1991): Roofing	Non-FAD ACM found; no interior ACM observed; not surveyed since 1997	**Yes**	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
747	CO II-Q	Contract Refueler Facility	1983	1,200	IT Corp (1989): No ACM Found	No ACM found	No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
748	CO II-D	Public Toilet/Van Complex	1983	560	e&e (1991): Floor tile, roofing	Non-FAD ACM found; not surveyed since 1997	**Yes**	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A

Building Number	Building Location	Description	Year of Construction	Square Feet	Historical Asbestos Survey Information	Comments from FOST Documents	Asbestos Content?	Asbestos Materials and Percent Asbestos	Material Location	Estimated Square Footage	Lead-Based Paint?	Location and Lead Concentration (lead concentration in mg/cm^2)
749	CO II-D	Public Toilet/Van Complex	1983	560	e&e (1991): Floor tile, roofing	Non-FAD ACM found; not surveyed since 1997	**Yes**	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
750	CO II-D	Sentry Booth/Van Complex	1983	60	e&e (1991): No ACM Found	No ACM found	No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
763	CO II-Q	Aircraft Washrack Utility Building	1984	684	No summary available in FOST #7		**Yes**	**Roofing (assumed)**	**Roofing- Throughout Roof**	**Roofing- 1,600 SF**	No	N/A
764	CO II-I	Vehicle Wash Rack Utility Building	1984	228	Not Surveyed	Not Surveyed	No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
779	CO II-Q	Hazardous Waste Collection Facility	1983	204	No summary available in FOST #7		No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
892	CO II-E	Aircraft Washrack Pavement	1991	672	No summary available in FOST #5		**Yes**	**Roofing (assumed)**	**Roofing- Throughout Roof**	**Roofing- 670 SF**	No	N/A
903	CO II-Q	Shelter	<1997	315	No summary available in FOST #7		No	Vinyl Floor Tile and Mastic- ND (sampled)	N/A		No	N/A
912	CO II-E	Hazardous and Flammable Materials Storehouse	1993	150	No summary available in FOST #5		No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
913	CO II-E	Hazardous and Flammable Materials Storehouse	1993	150	No summary available in FOST #5		No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
914	CO II-E	Vacant Hazardous and Flammable Materials Storehouse	1993	150	No summary available in FOST #5		No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
923	CO II-Q	Drop Tank Rinse Facility	1993	576	No summary available in FOST #7		No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
932	CO II-B	Hazardous Material Storehouse	1994	120	No summary available in FOST #6		No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
936	CO II-E	Hazardous Waste Storehouse	1994	272	No summary in FOST #5	LBP restrictions not necessary	No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
938	CO II-Q	Vacant Hazardous Waste Storehouse	<1997	272	No summary available in FOST #7		No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			**Yes**	**Yellow Striping (exterior)- 4.8**
939	CO II-E	Hazardous Waste Storehouse	1994	255	No summary in FOST #5	LBP restrictions not necessary	No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
940	CO II-E	Hazardous Waste Storage	1994	272	No summary in FOST #5	LBP restrictions not necessary	No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
972	CO II-E	Liquid Oxygen Shelter	1994	320	No summary in FOST #5		No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
5224	W/I BNDY	NAMAR Housing (includes 32 units)	1945	110,674	PWC (12/11/95): Floor tile, linoleum, spray-on acoustical ceiling, roofing vent pipe mastic	Non-FAD ACM found; not surveyed since 1997	**Yes**	**Roof Mastic- (assumed)** Drywall and Joint Compound- ND (sampled) Baseboard and Mastic- ND (sampled) Exterior Stucco- ND (sampled)	**Roof Mastic- Throughout Roofs; all other asbestos has been removed** Drywall and Joint Compound- Throughout Interiors Baseboard and Mastic- Throughout Interiors Exterior Stucco- Throughout Exterior	**500 SF**	**Yes**	**Wood Eaves (exterior)- 11.2** **Wood Eaves (exterior)- 10.9** **Wood Eaves (exterior)- 11.1**
5225	W/I BNDY	NAMAR Housing (includes 32 units)	1945	110,674	PWC (12/11/95): Floor tile, linoleum, spray-on acoustical ceiling, roofing vent pipe mastic	Non-FAD ACM found; not surveyed since 1997	**Yes**	**Roof Mastic- (assumed)** Drywall and Joint Compound- ND (sampled) Baseboard and Mastic- ND (sampled) Exterior Stucco- ND (sampled)	**Roof Mastic- Throughout Roofs; all other asbestos has been removed** Drywall and Joint Compound- Throughout Interiors Baseboard and Mastic- Throughout Interiors Exterior Stucco- Throughout Exterior	**500 SF**	**Yes**	
5226	W/I BNDY	NAMAR Housing (includes 32 units)	1945	110,674	PWC (12/11/95): Floor tile, linoleum, spray-on acoustical ceiling, roofing vent pipe mastic	Non-FAD ACM found; not surveyed since 1997	**Yes**	**Roof Mastic- (assumed)** Drywall and Joint Compound- ND (sampled) Baseboard and Mastic- ND (sampled) Exterior Stucco- ND (sampled)	**Roof Mastic- Throughout Roofs; all other asbestos has been removed** Drywall and Joint Compound- Throughout Interiors Baseboard and Mastic- Throughout Interiors Exterior Stucco- Throughout Exterior	**500 SF**	**Yes**	
5227	W/I BNDY	NAMAR Housing (includes 32 units)	1945	110,674	PWC (12/11/95): Floor tile, linoleum, spray-on acoustical ceiling, roofing vent pipe mastic	Non-FAD ACM found; not surveyed since 1997	**Yes**	**Roof Mastic- (assumed)** Drywall and Joint Compound- ND (sampled) Baseboard and Mastic- ND (sampled) Exterior Stucco- ND (sampled)	**Roof Mastic- Throughout Roofs; all other asbestos has been removed** Drywall and Joint Compound- Throughout Interiors Baseboard and Mastic- Throughout Interiors Exterior Stucco- Throughout Exterior	**500 SF**	**Yes**	
5228	W/I BNDY	NAMAR Housing (includes 32 units)	1945	110,674	PWC (12/11/95): Floor tile, linoleum, spray-on acoustical ceiling, roofing vent pipe mastic	Non-FAD ACM found; not surveyed since 1997	**Yes**	**Roof Mastic- (assumed)** Drywall and Joint Compound- ND (sampled) Baseboard and Mastic- ND (sampled) Exterior Stucco- ND (sampled)	**Roof Mastic- Throughout Roofs; all other asbestos has been removed** Drywall and Joint Compound- Throughout Interiors Baseboard and Mastic- Throughout Interiors Exterior Stucco- Throughout Exterior	**500 SF**	**Yes**	
5229	W/I BNDY	NAMAR Housing (includes 32 units)	1945	110,674	PWC (12/11/95): Floor tile, linoleum, spray-on acoustical ceiling, roofing vent pipe mastic	Non-FAD ACM found; not surveyed since 1997	**Yes**	**Roof Mastic- (assumed)** Drywall and Joint Compound- ND (sampled) Baseboard and Mastic- ND (sampled) Exterior Stucco- ND (sampled)	**Roof Mastic- Throughout Roofs; all other asbestos has been removed** Drywall and Joint Compound- Throughout Interiors Baseboard and Mastic- Throughout Interiors Exterior Stucco- Throughout Exterior	**500 SF**	**Yes**	
5230	W/I BNDY	NAMAR Housing (includes 32 units)	1945	110,674	PWC (12/11/95): Floor tile, linoleum, spray-on acoustical ceiling, roofing vent pipe mastic	Non-FAD ACM found; not surveyed since 1997	**Yes**	**Roof Mastic- (assumed)** Drywall and Joint Compound- ND (sampled) Baseboard and Mastic- ND (sampled) Exterior Stucco- ND (sampled)	**Roof Mastic- Throughout Roofs; all other asbestos has been removed** Drywall and Joint Compound- Throughout Interiors Baseboard and Mastic- Throughout Interiors Exterior Stucco- Throughout Exterior	**500 SF**	**Yes**	
349, BEACON	CO II-D	Aircraft Beacon	<1948	Unknown	No summary in FOST #8		No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			**Yes**	**Frame (exterior metal)-2.6** **Frame (exterior metal)-2.5**
716C	CO II-Q				No summary available in FOST #7		No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			**Yes**	**Frame (exterior metal)- 9.1** **Frame (exterior metal) 9.2**
S558	CO II-Q	Aircraft Truck Fueling Facility	<1973	160	No summary available in FOST #7		No	No Asbestos Samples Deemed Warranted (buildings no longer present)			**Yes**	**Yellow Paint (exterior asphalt)- 2.3**
S559	CO II-Q	Aircraft Truck Fueling Facility	<1973	160	No summary available in FOST #7		No	No Asbestos Samples Deemed Warranted (buildings no longer present)			**Yes**	**Yellow Paint (exterior asphalt)- 2.3**
S560	CO II-Q	Aircraft Truck Fueling Facility	<1973	160	No summary available in FOST #7		No	No Asbestos Samples Deemed Warranted (buildings no longer present)			**Yes**	**Yellow Paint (exterior asphalt)- 2.3**
Building #1	CO II-Q	Canopy			No summary available in FOST #7		No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			**Yes**	**Frame (exterior metal)- 4.9** **Frame (exterior metal)-4.7**

Building Number	Building Location	Description	Year of Construction	Square Feet	Historical Asbestos Survey Information	Comments from FOST Documents	Asbestos Content?	Asbestos Materials and Percent Asbestos	Material Location	Estimated Square Footage	Lead-Based Paint?	Location and Lead Concentration (lead concentration in mg/cm^2)
Building #2	CO II-Q	Guard Shack	No summary available in FOST #7				No	Window Putty- ND (sampled)	N/A		**Yes**	**Window Frame (exterior metal)- 6.5** **Window Frame (exterior metal)- 6.3** **Frame (exterior metal)- 6.4**
Building #3	CO II-E	Concrete Structure	No summary available in FOST #5				No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
Building #4	CO II-E	Canopy (Collapsed)	No summary available in FOST #5				No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
S904	CO II-Q	Aircraft Fueling Station	<1997	800	No summary available in FOST #7		No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
S905	CO II-Q	Aircraft Fueling Station	<1997	800	No summary available in FOST #7		No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
92D	W/I BNDY	Canopy	No summary available in FOST #1				No	No Additional Asbestos Samples Deemed Warranted or No Suspected Asbestos Present			No	N/A
Runway and Concrete Apron Area			No summary available in FOST #1				No	Caulking- ND (sampled)	N/A		**Yes**	**Yellow Strips (exterior concrete)- 2.8**

Notes:

Detected/Previously Sampled/Assumed Concentrations of Asbestos in BOLD
Detected Concentrations of Lead Based Paint above 1.0 milligram per squared centimeter (mg/cm2) are in BOLD
< = before

77 Number of Buildings/Structures

31 Buildings/Structures with ACM
45 Buildings/Structures without ACM

37 Buildings/Structures with LBP
39 Buildings/Structures without LBP

Figures

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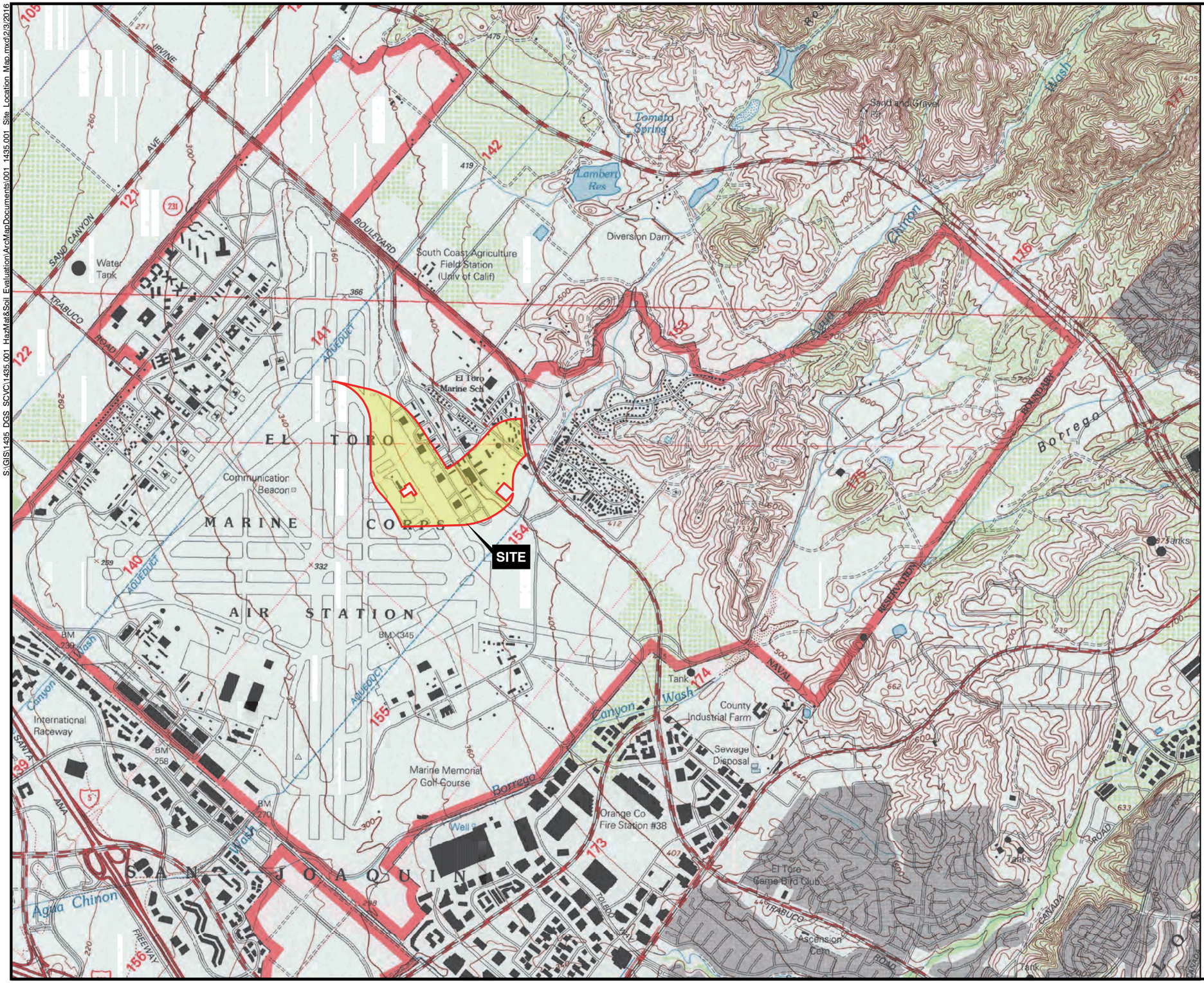

VICINITY MAP

EXPLANATION

- PROPOSED CEMETERY BOUNDARY
- FORMER EL TORO NAVAL RESERVATION BOUNDARY

REFERENCE:
7.5 MINUTE U.S.G.S. TOPOGRAPHIC MAPS
OF EL TORO, CALIFORNIA
DATED: 1997
PHOTOREVISED: 2000

0 1,000 2,000 4,000
FEET

FIGURE 1

SITE LOCATION MAP

SOUTHERN CALIFORNIA VETERANS CEMETERY
DEPARTMENT OF GENERAL SERVICES
IRVINE, CALIFORNIA

AVOCET ENVIRONMENTAL, INC.

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CO II-E
(FOST #5)

CO II-Q
(FOST #7)

CO II-B
(FOST #6)

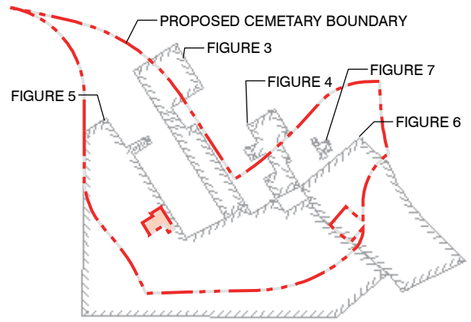
CO II-I
(FOST #4)

CO II-D
(FOST #8)

IRVINE BOULEVARD

940 912 605 BLDG#3 BLDG#4 695 892 639 913 606 696 640 696A 696B 643 939 972 936 914 641 115 697 716 716C 642 230 231 114 698 763 938 923 779 747 BLDG#2 BLDG#1 658 S659 126 127 142 634 132 130 133 131 932 392 764 734 735 748 750 749 BEACON 349 385 380 746 308 92D 610 293 341 602 5230 5229 5226 5225 5228 5227 5224 S904 S905 S906 S907 903 372 S908 S909

KEY MAP



N

EXPLANATION

- CARVE-OUT (CO) AREA (VARIOUS COLORS)
- PROPOSED CEMETERY BOUNDARY
- FAA PROPERTY BOUNDARY (NOT PART OF THIS STUDY)
- 634 EXISTING BUILDING WITH NUMBER
- BUILDING TO BE DEMOLISHED BY THE CITY OF IRVINE
- FUTURE ROAD

REFERENCE:
AERIAL PHOTOGRAPH BY GOOGLE EARTH.
DATED: MARCH 24, 2015

NOTES:
ALL SITE FEATURES ARE APPROXIMATE

0 200 400 800
FEET

FIGURE 2

SITE PLAN

SOUTHERN CALIFORNIA VETERANS CEMETERY
DEPARTMENT OF GENERAL SERVICES
IRVINE, CALIFORNIA

AVOCET ENVIRONMENTAL, INC.

S:\GIS\1435_DGS_SCVC\1435.001_HazMat&Soil_Evaluation\ArcMapDocuments\009_1435.001_Site_Plan_CO-II-E.mxd\4/20/2016

UST T-10
PCB T27
PCB T26
APHO 4
UST 202
UST 200
UST 203
UST 198
UST 201
UST 196
UST 199
UST 197
RFA 43
APHO 99
PCB T16
OWS 605C
940
912
UST T-2
PRL 118
TAA 605
PRL 605
RFA 267
UST 605B
RFA 150
PCB T81
605
UST 605A
UST 117
695
BLDG#3
BLDG#4
892
PCB 892
OWS 892
639
APHO 3
PCB T19
PCB T18
UST 292
PCB T17
APHO 119
913
RFA 14
PRL 606
PCB T82
UST 116
606
UST 606A
APHO 110
TAA 606
OWS 643B
696
RFA 152
PRL 643
640
PCB 643
UST 643A
696A
PCB 643
696B
939
643
972
936
914
641
APHO 37
UST 115B
115
PCB T15
TAA 115
UST 115A
697
716
716C
372
903
S907
S906
S905
S904
CO II-E
(FOST #5)
CO II-B
(FOST #6)
CO II-Q
(FOST #7)
133
130
132
932
131
634
142
127
126

PROPOSED CEMETARY BOUNDARY

N

KEY MAP

EXPLANATION

- UNDERGROUND STORAGE TANK (UST)
- RCRA FACILITY ASSESSMENT SITE (RFA)
- POTENTIAL RELEASE LOCATION (PRL)
- POLYCHLORINATED BIPHENYL (PCB)
- OIL/WATER SEPARATOR (OWS)
- TEMPORARY ACCUMULATION AREA (TAA)
- AERIAL PHOTOGRAPHY ANOMALY AREA (APHO)
- BUILDING LOCATION OF CONCERN (LOC)
- 634 EXISTING BUILDING WITH NUMBER
- BUILDING TO BE DEMOLISHED BY THE CITY OF IRVINE
- PROPOSED CEMETERY BOUNDARY
- FAA PROPERTY BOUNDARY (NOT PART OF THIS STUDY)
- FUTURE ROAD
- CARVE-OUT (CO) AREA (VARIOUS COLORS)

REFERENCE:
AERIAL PHOTOGRAPH BY GOOGLE EARTH.
DATED: MARCH 24, 2015

NOTES:
ALL SITE FEATURES ARE APPROXIMATE
FOST = FINDING OF SUITABILITY TO TRANSFER

0 100 200 400 FEET

FIGURE 3

CO II-E (FOST #5) SITE PLAN

SOUTHERN CALIFORNIA VETERANS CEMETERY
DEPARTMENT OF GENERAL SERVICES
IRVINE, CALIFORNIA

AVOCET ENVIRONMENTAL, INC.

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CO II-B
(FOST #6)

UST 105B

PRL 105

PCB T13

UST 105A

92D

CO II-I
(FOST #4)

392

133

SRU 3B

CO II-E
(FOST #5)

PCB T24

PRL 745

APHO 90

APHO 109

TAA 130C

PCB T23

UST 133

PCB T22

130

RFA 293

PRL 133

TAA 130A

TAA 130B

UST 130A

UST 130B

CO II-D
(FOST #8)

132

972

914

936

641

PRL 634

TAA 634

UST 634

932

131

PCB T86

634

PCB T85

115

CO II-Q
(FOST #7)

142

PROPOSED CEMETARY BOUNDARY

KEY MAP

N

EXPLANATION

- UNDERGROUND STORAGE TANK (UST)
- SILVER RECOVERY UNIT
- RCRA FACILITY ASSESSMENT SITE (RFA)
- POTENTIAL RELEASE LOCATION (PRL)
- POLYCHLORINATED BIPHENYL (PCB)
- OIL/WATER SEPARATOR (OWS)
- TEMPORARY ACCUMULATION AREA (TAA)
- AERIAL PHOTOGRAPHY ANOMALY AREA (APHO)
- BUILDING LOCATION OF CONCERN (LOC)
- 634 EXISTING BUILDING WITH NUMBER
- BUILDING TO BE DEMOLISHED BY THE CITY OF IRVINE
- PROPOSED CEMETERY BOUNDARY
- FAA PROPERTY BOUNDARY (NOT PART OF THIS STUDY)
- FUTURE ROAD
- CARVE-OUT (CO) AREA (VARIOUS COLORS)

REFERENCE:
AERIAL PHOTOGRAPH BY GOOGLE EARTH.
DATED: MARCH 24, 2015

NOTES:
ALL SITE FEATURES ARE APPROXIMATE
FOST = FINDING OF SUITABILITY TO TRANSFER

0 50 100 200 FEET

FIGURE 4

CO II-B (FOST #6) SITE PLAN

SOUTHERN CALIFORNIA VETERANS CEMETERY
DEPARTMENT OF GENERAL SERVICES
IRVINE, CALIFORNIA

AVOCET ENVIRONMENTAL, INC.

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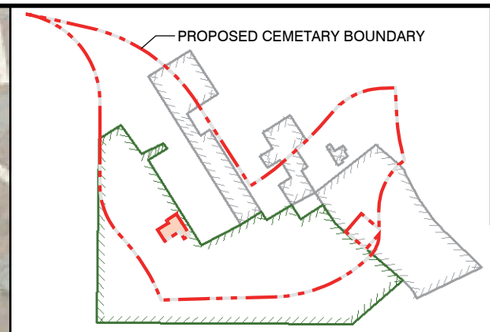

KEY MAP

EXPLANATION

- GROUNDWATER MONITORING WELL
- UNDERGROUND STORAGE TANK (UST)
- ABOVEGROUND STORAGE TANK (AST)
- RCRA FACILITY ASSESSMENT SITE (RFA)
- POTENTIAL RELEASE LOCATION (PRL)
- POLYCHLORINATED BIPHENYL (PCB)
- OIL/WATER SEPARATOR (OWS)
- TEMPORARY ACCUMULATION AREA (TAA)
- AERIAL PHOTOGRAPHY ANOMALY AREA (APHO)
- BUILDING LOCATION OF CONCERN (LOC)
- EXISTING BUILDING WITH NUMBER (634)
- BUILDING TO BE DEMOLISHED BY THE CITY OF IRVINE
- PROPOSED CEMETERY BOUNDARY
- FAA PROPERTY BOUNDARY (NOT PART OF THIS STUDY)
- FUTURE ROAD
- CARVE-OUT (CO) AREA (VARIOUS COLORS)
- MISCELLANEOUS JET FUEL 5 (JP5) PIPELINE
- INSTALLATION RESTORATION PROGRAM (IRP) SITE BOUNDARY
- AREA REQUIRING PETROLEUM RESTRICTIONS

REFERENCE:
AERIAL PHOTOGRAPH BY GOOGLE EARTH.
DATED: MARCH 24, 2015
NOTES:
ALL SITE FEATURES ARE APPROXIMATE
FOST = FINDING OF SUITABILITY TO TRANSFER

0 150 300 600
FEET

FIGURE 5

CO II-Q (FOST #7) SITE PLAN

SOUTHERN CALIFORNIA VETERANS CEMETERY
DEPARTMENT OF GENERAL SERVICES
IRVINE, CALIFORNIA

AVOCET ENVIRONMENTAL, INC.

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CO II-B
(FOST #6)

CO II-I
(FOST #4)

C STREET

TRABUCO ROAD

IRVINE BOULEVARD

92D
610
5225
5226
5224
293
341
308
602
392
764
133
130
132
03_DGMW64A
IRP SITE 3
734
735
748
750
AREA REQUIRING
INSTITUTIONAL CONTROLS
03MP2
03_TR04
03PG08
03PG07
03_TR03
WASTE AREA A
932
131
634
BEACON 349
03_DGMW65XA
PRL 380
03LYS4
03_LFG04
749
RFA 10
03_LFG01
TAA 900
RFA 44
142
385
03MP3
AST 380
03_LFG02
03_LFG03
03LYS2
UST 380A
03MP1
03_TR01
03_UGMW26B
380
03PG05
03PG06
03_TR02
127
126
746
S659
658
CO II-D
(FOST #8)
12" VITRIFIED CLAY PIPE
WITH GRATED INLET
IRP SITE 3
114
747
BLDG#1
BLDG#2
698
938
763
779
923
CO II-Q
(FOST #7)

PROPOSED CEMETARY BOUNDARY

N

KEY MAP

EXPLANATION

- UNDERGROUND STORAGE TANK (UST)
- ABOVEGROUND STORAGE TANK (AST)
- RCRA FACILITY ASSESSMENT SITE (RFA)
- POTENTIAL RELEASE LOCATION (PRL)
- TEMPORARY ACCUMULATION AREA (TAA)
- PROPOSED CEMETERY BOUNDARY
- GROUNDWATER MONITORING WELL
- LANDFILL GAS CONVEYANCE PIPE WITH EXTRACTION WELL
- LANDFILL GAS MONITORING TRENCH WITH VENTS
- LANDFILL GAS MONITORING WELL
- LYSIMETER
- SURVEY MONUMENT
- WASTE EXCAVATION AREAS
- INSTALLATION RESTORATION PROGRAM (IRP) SITE
- WASTE AREA
- 634 EXISTING BUILDINGS WITH NUMBER
- FUTURE ROAD
- CARVE-OUT (CO) AREA (VARIOUS COLORS)

REFERENCE:
AERIAL PHOTOGRAPH BY GOOGLE EARTH.
DATED: MARCH 24, 2015

NOTES:
ALL SITE FEATURES ARE APPROXIMATE
IRP = INSTALLATION RESTORATION PROGRAM SITE
FOST = FINDING OF SUITABILITY TO TRANSFER

0 100 200 400
FEET

FIGURE 6

CO II-D (FOST #8) SITE PLAN

SOUTHERN CALIFORNIA VETERANS CEMETERY
DEPARTMENT OF GENERAL SERVICES
IRVINE, CALIFORNIA

AVOCET ENVIRONMENTAL, INC.

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UST 5236
UST 5231
UST 581
UST 5230
UST 5237
5230
5229
UST 5229
5228
UST 5228
TRABUCO ROAD
5227
UST 5227
IRVINE BOULEVARD
5225
UST 5225
5226
UST 5226
CO II-B
(FOST #6)
610
AST 610
UST 610
92D
CO II-I
(FOST #4)
293
UST 5224
UST 5223
CO II-D
(FOST #8)
5224
UST 392C
TAA 392A
UST 392F
341
308
392
UST 392D
UST 308
OWS 764B
UST 392E
UST 764A
602
UST 392B
UST 392A
TAA 392B
764
RFA 213
133
734
748
735
750
132

PROPOSED CEMETARY BOUNDARY

KEY MAP

N

EXPLANATION

- UNDERGROUND STORAGE TANK (UST)
- ABOVEGROUND STORAGE TANK (AST)
- RCRA FACILITY ASSESSMENT SITE
- OIL/WATER SEPARATOR
- TEMPORARY ACCUMULATION AREA
- PROPOSED CEMETERY BOUNDARY
- 634 EXISTING BUILDINGS WITH NUMBER
- FUTURE ROAD
- CARVE-OUT (CO) AREA (VARIOUS COLORS)

REFERENCE:
AERIAL PHOTOGRAPH BY GOOGLE EARTH.
DATED: MARCH 24, 2015

NOTES:
ALL SITE FEATURES ARE APPROXIMATE
FOST = FINDING OF SUITABILITY TO TRANSFER

0 50 100 200
FEET

FIGURE 7

CO II-I (FOST #4) SITE PLAN

SOUTHERN CALIFORNIA VETERANS CEMETERY
DEPARTMENT OF GENERAL SERVICES
IRVINE, CALIFORNIA

AVOCET ENVIRONMENTAL, INC.

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UST T-10
UST 198
UST 200
UST 202
UST 203
TANK FARM #4
UST 201
UST 196
UST 199
UST 197
UST T-2
RFA 150
PCB 892
OWS 892
(CLOSED IN PLACE)
RFA 16
RFA 152
RFA 257
PCB 643
PCB 643
TRABUCO ROAD
IRVINE BOULEVARD
C STREET
OWS 764B
TAA 392A
UST 764A
IRP SITE 3
TAA 130C
TAA 392B
RFA 213
UST 133
WASTE AREA A
RFA 10
UST 380A
PRL 127
RFA 41
UST 126
IRP SITE 4
UNIT 1 & 2
PRL 716
APHO 100
OWS 658C (CLOSED IN PLACE)
UST 716A
(CLOSED IN PLACE)
PRL 747
IRP SITE 3
OWS 658D (CLOSED IN PLACE)
UST 209
UST 208
UST 211
UST 213
UST 210
UST 215
UST T-9
UST 212
RFA 15
RFA 210
UST 214
TANK FARM #5
UST 206
UST T-8
UST T-7
UST 207
UST T-6
UST 205
RFA 258
UST 204
TANK FARM #6

EXPLANATION

- POTENTIAL ENVIRONMENTAL CONCERN (PEC)
- PEC - INSTALLATION RESTORATION PROGRAM (IRP) SITE
- PEC - MISCELLANEOUS JET FUEL 5 (JP5) PIPELINE
- WASTE EXCAVATION AREAS
- ASSUMED TANK FARM BOUNDARIES
- DEVELOPMENT RESTRICTED AREA PER THE DEPARTMENT OF THE NAVY
- PROPOSED CEMETERY BOUNDARY
- FAA PROPERTY BOUNDARY (NOT PART OF THIS STUDY)
- EXISTING BUILDINGS
- BUILDING TO BE DEMOLISHED BY THE CITY OF IRVINE
- FUTURE ROAD

N

REFERENCE:
AERIAL PHOTOGRAPH BY GOOGLE EARTH.
DATED: MARCH 24, 2015

NOTES:
ALL SITE FEATURES ARE APPROXIMATE

ACRONYMS:
APHO = AERIAL PHOTOGRAPHY ANOMALY AREA
IRP = INSTALLATION RESTORATION PROGRAM
OWS = OIL/WATER SEPARATOR
PCB = POLYCHLORINATED BIPHENYL
PRL = POTENTIAL RELEASE LOCATION
RCRA = RESOURCE CONSERVATION AND RECOVERY ACT
RFA = RCRA FACILITY ASSESSMENT SITE
TAA = TEMPORARY ACCUMULATION AREA
UST = UNDERGROUND STORAGE TANK

0 200 400 800
FEET

FIGURE 8

SITE PLAN
WITH POTENTIAL ENVIRONMENTAL CONCERNS (PECs)

SOUTHERN CALIFORNIA VETERANS CEMETERY
DEPARTMENT OF GENERAL SERVICES
IRVINE, CALIFORNIA

AVOCET ENVIRONMENTAL, INC.

S:\GIS\1435_DGS_SCVC\1435.001_HazMat&Soil_Evaluation\ArcMapDocuments\015_1435.001_Site Plan_DRAs.mxd\4/20/2016

N

EXPLANATION

- DRA - WELL OR MONITORING POINT
- DRA - SURVEY MONUMENT
- DRA - UNDERGROUND STORAGE TANK (UST)
- DRA - ASSOCIATED PIPING AND TRENCHES
- DEVELOPMENT RESTRICTED AREA (DRA) PER THE DEPARTMENT OF THE NAVY
- WASTE EXCAVATION AREAS
- PROPOSED CEMETERY BOUNDARY
- FAA PROPERTY BOUNDARY (NOT PART OF THIS STUDY)
- EXISTING BUILDINGS
- BUILDING TO BE DEMOLISHED BY THE CITY OF IRVINE
- FUTURE ROAD

REFERENCE:
AERIAL PHOTOGRAPH BY GOOGLE EARTH.
DATED: MARCH 24, 2015

NOTES:
ALL SITE FEATURES ARE APPROXIMATE

ACRONYMS:
DRA = DEVELOPMENT RESTRICTED AREA
UST = UNDERGROUND STORAGE TANK
IRP = INSTALLATION RESTORATION PROGRAM
JP5 = JET PROPULSION FUEL, GRADE 5

0 200 400 800
FEET

FIGURE 9

SITE PLAN WITH DEVELOPMENT-RESTRICTED AREAS (DRAs)

SOUTHERN CALIFORNIA VETERANS CEMETERY
DEPARTMENT OF GENERAL SERVICES
IRVINE, CALIFORNIA

AVOCET ENVIRONMENTAL, INC.

S:\GIS\1435_DGS_SCVC\1435.001_HazMat&Soil Evaluation\ArcMapDocuments\016_1435.001_Site Plan_Lead_Asbestos_Results.mxd\4/20/2016

EXPLANATION

- SITE BOUNDARY
- FAA PROPERTY BOUNDARY (NOT PART OF THIS STUDY)
- 634 EXISTING BUILDINGS WITH NUMBER
- BUILDING TO BE DEMOLISHED BY THE CITY OF IRVINE
- BUILDING WITH LBP
- BUILDING REMNANTS WITH LBP
- BUILDING WITH ACM
- BUILDING WITH ACM & LBP
- FUTURE ROAD

N

REFERENCE:
AERIAL PHOTOGRAPH BY GOOGLE EARTH.
DATED: MARCH 24, 2015

NOTES:
ALL SITE FEATURES ARE APPROXIMATE
ACM = ASBESTOS-CONTAINING MATERIALS
LBP = LEAD BASED PAINT

0 200 400 800
FEET

FIGURE 10

SITE PLAN
WITH ACM AND LBP RESULTS

SOUTHERN CALIFORNIA VETERANS CEMETERY
DEPARTMENT OF GENERAL SERVICES
IRVINE, CALIFORNIA

AVOCET ENVIRONMENTAL, INC.

Appendix A

Hazardous Material Screening

AVOCET
ENVIRONMENTAL, INC.

ASBESTOS AND LEAD BASED PAINT SCREENING

Proposed Southern California Veterans Cemetery
Irvine, California

AEC Project No. 16-110SD
April 20, 2016

Prepared for:

Avocet Environmental, Inc.
1 Technology Drive, Suite C515
Irvine, California 92618-5302

For use by:

State of California Department of General Services
707 Third Street, 4th Floor, MS-504
W. Sacramento, CA 95605

Prepared by:

Advantage Environmental Consultants, LLC
145 Vallecitos De Oro, Suite 201
San Marcos, California 92069
Phone (760) 744-3363 • FAX (760) 744-3383

ADVANTAGE
ENVIRONMENTAL
CONSULTANTS, LLC.

April 20, 2016

Mr. Deke Siren
Avocet Environmental, Inc.
1 Technology Drive, Suite C515
Irvine, California 92618

Subject: **Asbestos and Lead Based Paint Screening**
Proposed Southern California Veterans Cemetery
Irvine, California
AEC Project Number: 16-110SD

Dear Mr. Siren:

Advantage Environmental Consultants, LLC (AEC) has performed an asbestos and lead based paint screening at the above referenced property. The following report describes the screening protocol, sampling procedures and laboratory results of the materials tested. AEC has provided conclusions and recommendations based on the results of the screening.

We appreciate the opportunity to be of service to Avocet Environmental, Inc. If you should have any questions regarding this report, please contact us at (760) 744-3363.

Sincerely,

ADVANTAGE ENVIRONMENTAL CONSULTANTS, LLC

Daniel Weis, R.E.H.S.
Branch Manager
Western Regional Office

John Payne, CAC
Project Manager

Table of Contents

1.0 Purpose and Methodology

The purpose of the asbestos and lead based paint screening was to evaluate for the presence of visible and accessible potentially hazardous materials that would require abatement prior to future demolition of the Site structures. The screening focused on asbestos containing materials (ACMs) and lead-based paint (LBP) within and on the structures at the Site.

A State of California Certified Asbestos Consultant and United States Environmental Protection Agency (USEPA) certified building inspector for Asbestos- Containing Building Materials and a California Department of Health Services Certified Lead Inspector/Assessor performed multiple field inspections in March 2016. Potential ACM and LBP identification was performed by evaluating accessible spaces and assessing visible structural/mechanical components and architectural finishes. The physical conditions, friability, accessibility, activity and damage of suspect ACM was also assessed and documented. Readings for potential LBP were obtained from building components identified within each room equivalent by the use of a hand held X-Ray Fluorescence (XRF) lead-based paint analyzer. Each reading location and condition of paint was documented. In addition to sampling and analysis conducted during our field activities, prior survey information pertaining to the subject buildings was reviewed and evaluated and in applicable cases is referenced herein.

The ACM screening methodology is summarized below:

- Select suspect ACM was sampled in accordance with sampling guidelines established by the USEPA. The following summarizes the sampling procedures utilized:

- Bulk samples were collected by extracting a representative section of the selected material, placing it in a sampling container and assigning a unique sample number. The samples were placed into a sealed shipping container for delivery to an accredited laboratory for analysis by polarized light microscopy (PLM).

- The personnel performed proper decontamination procedures to prevent the spread of secondary contamination.

Each bulk sample was recorded on a bulk sample log and possession of the samples was tracked by a chain of custody record. The laboratory analyzed the building material samples and reported results in accordance with State of California protocol. The lower limit of reliable detection for this method is 1%. Samples that contain more than 1% of asbestos are reported in 5% ranges. Samples which contain asbestos in a concentration lower than the limit of reliable detection (<1%) are considered "Trace."

All bulk samples were analyzed by PLM in accordance with the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples EPA - 600/M4-82-020" dated December 1982 and adopted by the National Voluntary Laboratory Accreditation Program (NVLAP) Title 15, part 7 of the Code of Federal Register as affiliated with the National Institute for Standards and Testing (NIST).

Thirty (30) samples were obtained at the subject structures at the Site and analyzed for asbestos content by Forensic Analytical of Rancho Dominguez, California. Forensic Analytical is accredited by the American Industrial Hygiene Association, NVLAP, NIST, and is a successful participant in the Proficiency Analytical Testing Program (PAT).

The LBP screening methodology is summarized below:

As stated previously, LBP readings were collected utilizing an XRF analyzer. Readings were collected in accordance with Chapter 7 of the HUD Guidelines for Evaluation and Control of Lead-Based Paint Hazards in Housing and U.S. Environmental Protection Agency (EPA) 40 CFR part 745 and Title X of the 1992 Housing and Community Development Act.

The California Department of Health Services standard for the definition of LBP is 1.0 mg/cm^2 or 5,000 parts per million (ppm). However, the California Occupational Safety and Health Commission (CALOSHA) standard for the definition of LBP is 0.7 mg/cm^2 or 600 ppm and requires that all workers be properly protected when working with building components containing any level of lead in accordance with Title 8 CCR Section 1532.1.

2.0 Findings

ASBESTOS CONTAINING MATERIALS SAMPLE RESULTS AND LOCATIONS

Eight (8) of the 30 samples were found to contain asbestos and are noted in the table below.

Building 114

Material	Sample Number	Asbestos Content	Location of Material	Friable	Approx. Square Footage	Damage
Vinyl Floor Tile and Mastic	03 04	Tile 2% Chrysotile Mastic Non Detected	Throughout Interior First and Second Floor	No	7,000 SF	No

Building 126

Material	Sample Number	Asbestos Content	Location of Material	Friable	Approx. Square Footage	Damage
Vinyl Floor Tile and Mastic	16	Tile Trace Chrysotile Mastic Non Detected	Throughout Interior	No	500 SF	No

Building 133

Material	Sample Number	Asbestos Content	Location of Material	Friable	Approx. Square Footage	Damage
9x9 Vinyl Floor Tile and Mastic	19	Tile 3% Chrysotile Mastic Non Detected	Under Carpet	No	2,000 SF	No

Building 293

Material	Sample Number	Asbestos Content	Location of Material	Friable	Approx. Square Footage	Damage
Roofing	18	2% Chrysotile	Throughout Roof	No	3,000 SF	Yes

Building 372

Material	Sample Number	Asbestos Content	Location of Material	Friable	Approx. Square Footage	Damage
Window Putty	21	Trace Chrysotile	Throughout Windows	No	1,200 SF	No

Building 380

Material	Sample Number	Asbestos Content	Location of Material	Friable	Approx. Square Footage	Damage
Window Putty	22	Trace Chrysotile	Window	No	300 SF	No

Building 698

Material	Sample Number	Asbestos Content	Location of Material	Friable	Approx. Square Footage	Damage
Drywall and Joint Compound	25	Drywall Non Detected Joint Compound 2% Chrysotile	Throughout Interior	No	2,000 SF	Yes

The information above is designed to aid the building owner, architect, construction manager, general contractor and potential asbestos abatement contractors in locating affected building materials within the scope of work and access constraints identified in this report. All estimated square footages identified in the above table are approximate and should not be used for final bidding or notification purposes. In addition, other materials containing asbestos may exist at the property within concealed areas of the property or outside the scope of work. This report was not prepared to be utilized as an asbestos abatement bidding document or abatement specification document.

The remaining building materials sampled during the screening were not found to contain asbestos and are noted in the table below:

Building 2

Material	Sample Number	Location of Material	Friable	Damage
Window Putty	17	Windows	N/A	N/A

Building 114

Material	Sample Number	Location of Material	Friable	Damage
Interior Plaster	06 07 08	Throughout Interior Walls	No	No
12x12 Ceiling Tile Mastic	05	Throughout Second Floor	No	No
Exterior stucco	09	Throughout Exterior Walls	No	No

Building 126

Material	Sample Number	Location of Material	Friable	Damage
Drywall and Joint Compound	15	Throughout Interior	No	No

Building 130

Material	Sample Number	Location of Material	Friable	Damage
Drywall and Joint Compound	01	Throughout Interior	No	No
Vinyl floor Tile and Mastic	02	Throughout Interior	No	No

Building 392

Material	Sample Number	Location of Material	Friable	Damage
Vinyl floor Tile and Mastic	11	Restroom	No	No
Window Putty	12	Throughout Window	No	No

Building 602

Material	Sample Number	Location of Material	Friable	Damage
Vinyl floor Tile and Mastic	10	Office	No	No

Building 605

Material	Sample Number	Location of Material	Friable	Damage
Exterior Panel Coating	29	Throughout Exterior Metal Siding	No	Yes

Building 696-A

Material	Sample Number	Location of Material	Friable	Damage
Acoustic Ceiling	13	Throughout Interior	Yes	N/A
Drywall and Joint Compound	14	Throughout Interior	No	No

Building 696-B

Material	Sample Number	Location of Material	Friable	Damage
Drywall and Joint Compound	23	Throughout Interior	No	No

Building 697

Material	Sample Number	Location of Material	Friable	Damage
Drywall and Joint Compound	24	Throughout Interior	N/A	N/A

Building 903-1

Material	Sample Number	Location of Material	Friable	Damage
Vinyl Floor Tile and Mastic	20	Throughout Interior	N/A	N/A

Building 5224, 5225, 5226, 5227, 5228, 5229, 5230

Material	Sample Number	Location of Material	Friable	Damage
Drywall and Joint Compound	26	Throughout Interiors	No	Yes
Baseboard and Mastic	27	Throughout Interior	No	No
Exterior Stucco	28	Throughout Exterior	No	No

Runway

Material	Sample Number	Location of Material	Friable	Damage
Caulking	30	Runway	N/A	N/A

The bulk sample logs and analysis report, located in Appendix A, contain a listing of all analyzed samples, sample locations, and analytical results. Results are reported in percent asbestos by volume and indicate the type(s) of asbestos. Materials with trace asbestos contain asbestos at percentages ranging from 0.1% to 1%. Other common non-asbestos components may also be noted on the analytical report.

LEAD BASED PAINT SAMPLE RESULTS AND LOCATIONS

Several of building component surfaces analyzed during the screening were found to contain detectable concentrations of lead over 0.7 mg/cm^2 and are presented in **BOLD** type. The lead sampling results are shown on the table below:

Building 1

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Frame	Metal	Fair	**4.9**
Exterior	Frame	Metal	Fair	**4.7**

Building 2

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Metal	Fair	0.0
Exterior	Wall	Metal	Fair	0.0
Exterior	Window Frame	Metal	Fair	**6.5**
Exterior	Window Frame	Metal	Fair	**6.3**
Exterior	Door	Metal	Fair	0.0
Exterior	Door Jamb	Metal	Fair	0.0
Interior	Wall	Metal	Fair	0.0
Interior	Frame	Metal	Fair	**6.4**

Building 3

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Concrete	Good	0.0
Exterior	Wall	Concrete	Good	0.0
Interior	Wall	Concrete	Good	0.0

Building 4

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Frame	Wood	Good	0.0

Building 114

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Metal	Good	0.0
Exterior	Wall	Metal	Good	0.0
Exterior	Hanger Big Door	Metal	Good	**10.4**
Exterior	Hanger Big Door Jamb	Metal	Good	**1.4**
Exterior	Walls	Metal	Fair	0.0
Exterior	Frame	Metal	Good	**1.4**
Exterior	Rollup Door Frame	Metal	Good	**12.3**
Exterior	Rollup Door	Metal	Good	**4.3**
Exterior	Ladder	Metal	Fair	0.6
Exterior	Wall	CMU	Good	0.0
Exterior	Stairs	Metal	Fair	**12.1**
Interior	Frame	Metal	Good	**3.1**
Interior	Wall	CMU	Good	0.0
Interior	Wall	Metal	Good	0.5
Interior	Wall	Metal	Good	0.4
Interior	Columns	Metal	Good	**9.6**
Interior	Doors	Metal	Good	0.0
Interior	Door Jamb	Metal	Good	0.0
Interior Restroom	Walls	Ceramic Tile	Good	**9.3**
Interior Restroom	Floor	Ceramic Tile	Good	0.0
Interior	Stairs	Yellow Paint	Good	**7.9**

Building 126

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Stucco	Fair	**4.3**
Exterior	Door	Wood	Good	0.0
Exterior	Door Jamb	Wood	Good	0.0
Exterior	Fascia	Wood	Good	0.0
Exterior	Window	Wood	Good	0.0
Interior	Wall	Concrete	Good	0.0
Interior	Wall	Concrete	Good	0.0
Interior	Post	Wood	Good	0.0

Building 127

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Stucco	Good	**1.3**
Exterior	Wall	Concrete	Good	0.0

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Door	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0
Exterior	Wall	Metal	Good	0.0
Exterior	Fascia	Wood	Good	0.0

Building 130

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Concrete	Good	0.0
Exterior	Rollup Door	Metal	Good	0.0
Exterior	Rollup Door Jamb	Metal	Good	**3.2**
Exterior	Rain Gutter	Metal	Poor	**2.9**
Exterior	Stairs	Metal	Good	0.0
Exterior	Window	Metal	Good	0.0
Interior	Wall	Concrete	Good	0.0

Building 131

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Stucco	Good	0.0
Exterior	Wall	Stucco	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Door Frame	Metal	Good	0.0
Exterior	Rollup Door	Metal	Good	0.0
Exterior	Rollup Door Jamb	Metal	Good	0.0
Exterior	Trim	Wood	Good	0.0

Building 132

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Concrete	Good	0.0
Exterior	Wall	Stucco	Good	0.0
Exterior	Rollup Door	Metal	Good	0.0
Exterior	Rollup Door Frame	Metal	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0
Exterior	Stair Rail	Metal	Good	0.0
Interior	Wall	Drywall	Good	0.0
Interior	Wall	Drywall	Good	0.0
Interior	Door	Metal	Good	0.0
Interior	Door Jamb	Metal	Good	0.0

Building 133

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Wood	Poor	**1.9**
Exterior	Wall	Stucco	Good	0.0

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Eaves	Wood	Poor	**1.9**
Exterior	Fascia	Wood	Poor	**1.9**
Exterior	Door	Wood	Good	0.0
Exterior	Door Jamb	Wood	Good	0.0
Exterior	Window Frames	Wood	Good	0.0
Interior	Wood Slat Wall	Wood	Good	**5.2**
Interior	Wall	Drywall	Good	0.0
Interior	Door	Wood	Good	0.0
Interior	Door Jambs	Wood	Good	0.0
Interior	Wall	Drywall	Good	0.0

Building 142

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Concrete	Good	0.0
Exterior	Wall	Concrete	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0

Building 230

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Concrete	Poor	**4.3**

Building 231

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Concrete	Poor	**2.4**

Building 293

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Concrete	Good	0.0
Exterior	Wall	Concrete	Good	0.0
Exterior	Roof	Wood	Poor	**2.6**
Exterior	Trim	Metal	Poor	**2.6**
Exterior	Water Gage	Metal	Poor	**1.7**

Building 308

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Stucco	Poor	**1.9**
Exterior	Fascia	Wood	Poor	**2.3**
Exterior	Door	Wood	Fair	0.0
Exterior	Door Jamb	Wood	Fair	0.0
Exterior	Window	Metal	Poor	0.0
Interior	Wall	Wood	Good	0.0

Building 341

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Stucco	Poor	**5.3**
Exterior	Fascia	Wood	Poor	**5.3**
Exterior	Door	Wood	Fair	0.0
Exterior	Door Jamb	Wood	Fair	0.0
Exterior	Window	Wood	Fair	0.0
Interior	Wall	Drywall	Good	0.0

Building 349

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Frame	Metal	Fair	**2.6**
Exterior	Frame	Metal	Fair	**2.5**

Building 372

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Window	Metal	Good	**1.6**
Exterior	Window	Metal	Good	**1.8**
Exterior	Door	Wood	Good	**2.2**
Exterior	Door Jamb	Metal	Good	**2.4**
Interior	Door Jamb	Metal	Good	**1.2**
Interior	Door	Wood	Good	**2.3**
Interior	Wall	Concrete	Good	0.4
Interior	Wall	Concrete	Good	0.2
Interior	Window	Metal	Good	**1.6**
Interior	Floor	Ceramic Tile	Good	0.0
Interior	Floor	Ceramic Tile	Good	0.0
Interior	Handrail	Metal	Good	**4.2**

Building 380

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Concrete	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0
Interior	Wall	Concrete	Good	0.0

Building 385

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	CMU	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0
Exterior	Fascia	Wood	Good	**1.7**
Interior	Wall	CMU	Good	0.0

Building 392

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Metal	Good	0.0
Exterior	Rollup Door Jamb	Metal	Good	**9.7**
Exterior	Rollup Door	Metal	Good	**11.2**
Exterior	Door	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	**8.6**
Exterior	Window	Metal	Fair	**2.0**
Interior	Wall	Plaster	Poor	**1.2**
Interior	Frame	Metal	Good	**12.9**
Interior	Ladder	Metal	Good	**9.6**
Interior Restroom	Wall	Ceramic Tile	Good	**5.7**

Building 602

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Frame	Metal	Good	**1.3**
Exterior	Siding	Metal	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0
Interior	Wall	Metal	Good	0.0
Interior	Frame	Metal	Good	0.0
Interior	Stairs	Wood	Good	0.0

Building 605

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Metal	Good	0.0
Exterior	Wall	Metal	Good	0.0
Exterior	Hanger Big Door	Metal	Good	**10.4**
Exterior	Hanger Big Door Jamb	Metal	Good	**1.4**
Exterior	Walls	Metal	Fair	0.0
Exterior	Frame	Metal	Good	**1.4**
Exterior	Rollup Door Frame	Metal	Good	**12.3**
Exterior	Rollup Door	Metal	Good	**4.3**
Exterior	Ladder	Metal	Fair	0.6
Exterior	Wall	CMU	Good	0.0
Exterior	Stairs	Metal	Fair	**12.1**
Interior	Frame	Metal	Good	**3.1**
Interior	Wall	CMU	Good	0.0
Interior	Wall	Metal	Good	0.5
Interior	Wall	Metal	Good	0.4
Interior	Columns	Metal	Good	**9.6**
Interior	Doors	Metal	Good	0.0
Interior	Door Jamb	Metal	Good	0.0
Interior Restroom	Walls	Ceramic Tile	Good	**9.3**

Location	Component	Substrate	Condition	Pb mg/cm^2
Interior Restroom	Floor	Ceramic Tile	Good	0.0
Interior	Stairs	Yellow Paint	Good	**7.9**

Building 606-Assumed No Access

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Metal	Good	0.0
Exterior	Wall	Metal	Good	0.0
Exterior	Hanger Big Door	Metal	Good	**10.4**
Exterior	Hanger Big Door Jamb	Metal	Good	**1.4**
Exterior	Walls	Metal	Fair	0.0
Exterior	Frame	Metal	Good	**1.4**
Exterior	Rollup Door Frame	Metal	Good	**12.3**
Exterior	Rollup Door	Metal	Good	**4.3**
Exterior	Ladder	Metal	Fair	0.6
Exterior	Wall	CMU	Good	0.0
Exterior	Stairs	Metal	Fair	**12.1**
Interior	Frame	Metal	Good	**3.1**
Interior	Wall	CMU	Good	0.0
Interior	Wall	Metal	Good	0.5
Interior	Wall	Metal	Good	0.4
Interior	Columns	Metal	Good	**9.6**
Interior	Doors	Metal	Good	0.0
Interior	Door Jamb	Metal	Good	0.0
Interior Restroom	Walls	Ceramic Tile	Good	**9.3**
Interior Restroom	Floor	Ceramic Tile	Good	0.0
Interior	Stairs	Yellow Paint	Good	**7.9**

Building 610

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	CMU	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0
Interior	Wall	CMU	Good	0.0
Interior	Piping	Metal	Good	0.0

Building 634

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	CMU	Good	0.0
Exterior	Wall	CMU	Good	0.0
Exterior	Wall	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Roof Ladder	Metal	Good	0.0

Location	Component	Substrate	Condition	Pb mg/cm^2
Interior	Frame	Metal	Good	**15.9**
Interior	Rollup Door	Metal	Good	**9.6**
Interior	Rollup door Frame	Metal	Good	**8.7**
Interior	Wall	CMU	Good	0.0
Interior	Wall	Metal	Good	0.0
Interior	Door	Metal	Good	0.0
Interior	Door Jamb	Metal	Good	0.0
Interior Restroom	Wall	Ceramic Tile	Good	0.0

Building 639

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Metal	Good	0.0
Interior	Wall	Metal	Good	0.0

Building 640

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Frame	Metal	Good	0.0
Exterior	Frame	Metal	Good	0.0

Building 641

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Metal	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0
Interior	Wall	Metal	Good	0.0
Interior	Frame	Metal	Good	0.0

Building 642

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Metal	Good	0.0
Interior	Wall	Metal	Good	0.0

Building 643

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Metal	Good	0.0
Interior	Wall	Metal	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0
Exterior	Pipes	Metal	Good	0.0
Exterior	Tanks	Metal	Good	0.0
Exterior	Pipes	Metal	Good	0.0

Building 658

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	CMU	Good	0.0
Exterior	Wall	Concrete	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Big Door	Metal	Good	**7.7**
Exterior	Big Door Jamb	Metal	Good	**6.8**
Exterior	Ladder	Metal	Good	0.0
Interior	Wall	Concrete	Good	0.0
Interior	Wall Restroom	Ceramic Tile	Good	**6.4**
Interior	Floor Restroom	Ceramic Tile	Good	0.0
Interior	Beam	Metal	Good	0.0
Interior	Door	Metal	Good	0.0
Interior	Door Jamb	Metal	Good	0.0

Building 659

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Water Tank	Metal	Fair	**6.0**

Building 695

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	CMU	Good	0.0
Exterior	Wall	CMU	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0
Exterior	Fascia	Wood	Good	0.0
Exterior	Fascia	Wood	Good	0.0

Building 696

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	CMU	Good	0.0
Interior	Wall	CMU	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0
Exterior	Fascia	Wood	Good	0.0
Interior	Walls	Drywall	Good	0.0
Interior	Walls	Drywall	Good	0.0

Building 696-A

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Metal	Good	0.0
Exterior	Wall	Metal	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0
Interior	Wall	Drywall	Good	0.0
Interior	Door	Wood	Good	0.0

Location	Component	Substrate	Condition	Pb mg/cm^2
Interior	Door Jamb	Wood	Good	0.0

Building 696-B

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Metal	Good	0.0
Exterior	Wall	Metal	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0
Interior	Wall	Drywall	Good	0.0
Interior	Door	Wood	Good	0.0
Interior	Door Jamb	Wood	Good	0.0

Building 697

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	CMU	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0
Interior	Wall	Drywall	Good	0.0
Interior	Door	Wood	Good	0.0
Interop	Door Jamb	Metal	Good	0.0

Building 698

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	CMU	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0
Exterior	Fascia	Wood	Good	0.0
Interior	Wall	Drywall	Good	0.0
Interior	Door Jamb	Metal	Good	0.0
Interior	Door	Wood	Good	0.0

Building 716

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Frame	Metal	Good	**10.1**
Exterior	Wall	Metal	Good	0.0
Exterior	Wall	Metal	Good	0.0
Exterior	Big Front Door	Metal	Good	0.0
Exterior	Big Front Door Frame	Metal	Good	**9.8**
Exterior	Big Front Door Jamb	Metal	Good	**10.1**
Interior	Wall	Metal	Good	0.0
Interior	Frame	Metal	Good	**9.8**

Building 716-C

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Frame	Metal	Good	**9.1**
Exterior	Wall	Metal	Good	0.0
Interior	Wall	Metal	Good	0.0
Interior	Frame	Metal	Good	**9.2**
Interior	Door	Metal	Good	0.0
Interop	Door Jamb	Metal	Good	0.0
Interior	Floor	Ceramic Tile	Good	0.0

Building 734

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	CMU	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0
Exterior	Fascia	Wood	Good	0.0
Exterior	Window	Metal	Good	0.0

Building 735

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	CMU	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Door Jamb	Wood	Good	0.0
Exterior	Fascia	Wood	Good	0.0
Interior	Wall	CMU	Good	0.0
Exterior	Tank	Metal	Good	0.0
Exterior	Transformer	Metal	Good	0.0

Building 747

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	CMU	Good	0.0
Exterior	Wall	CMU	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0
Interior	Wall	Drywall	Good	0.0
Interior	Wall	Drywall	Good	0.0
Interior	Door	Wood	Good	0.0
Interior	Door Jamb	Metal	Good	0.0

Building 748

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	CMU	Good	0.0
Exterior	Fascia	Wood	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0
Interior	Wall	CMU	Good	0.0
Interior	Wall	CMU	Good	0.0

Building 749

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	CMU	Good	0.0
Exterior	Fascia	Wood	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0
Interior	Wall	CMU	Good	0.0
Interior	Wall	CMU	Good	0.0

Building 750

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Brick	Good	0.0
Exterior	Frame	Metal	Good	0.0

Building 763

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	CMU	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0
Exterior	Fascia	Wood	Good	0.0
Interior	Wall	CMU	Good	0.0
Interior	Door Jamb	Metal	Good	0.0
Interior	Door	Metal	Good	0.0

Building 764

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	CMU	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0
Exterior	Door	Metal	Good	0.0
Interior	Wall	CMU	Good	0.0

Building 779

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Frame	Metal	Good	0.0
Exterior	Frame	Metal	Good	0.0

Building 892

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	CMU	Good	0.0
Exterior	Wall	CMU	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0
Exterior	Rollup Door	Metal	Good	0.0
Exterior	Rollup Door Jamb	Metal	Good	0.0
Interior	Wall	CMU	good	0.0

Building 903-1

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Metal	Good	0.0
Interior	Wall	Metal	Good	0.0
Exterior	Door	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0

Building 904-1

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Sign	Metal	Good	0.0

Building 905-1

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Sign	Metal	Good	0.0

Building 912

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Metal	Good	0.0
Exterior	Wall	Metal	Good	0.0

Building 913

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Metal	Good	0.0
Exterior	Wall	Metal	Good	0.0

Building 914

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Frame	Metal	Good	0.0
Exterior	Wall	Metal	Good	0.0
Exterior	Door Jamb	Metal	Good	0.0
Interior	Wall	Metal	Good	0.0
Interior	Frame	Metal	Good	0.0

Building 923

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Frame	Metal	Good	0.0
Exterior	Frame	Metal	Good	0.0

Building 932

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Frame	Metal	Good	0.0
Exterior	Frame	Metal	Good	0.0

Building 936

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Frame	Metal	Good	0.0
Exterior	Frame	Metal	Good	0.0

Building 938

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Frame	Metal	Good	0.0
Exterior	Frame	Metal	Good	0.0
Exterior	Striping Yellow	Concrete	Fair	**4.8**
Exterior	Striping White	Concrete	Fair	0.0

Building 939

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Frame	Metal	Good	0.0
Exterior	Frame	Metal	Good	0.0

Building 940

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Frame	Metal	Good	0.0
Exterior	Frame	Metal	Good	0.0

Building 972

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Frame	Metal	Good	0.0
Exterior	Frame	Metal	Good	0.0

Building S558-S559, S560-363

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Yellow Paint	Asphalt	Fair	**2.3**
Exterior	Tank	Metal	Good	0.0

Runway

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Yellow Strips	Concrete	Good	**2.8**
Exterior	White Strips	Concrete	Good	0.0

Building 5224, 5225, 5226, 5227, 5228, 5229, 5230

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Wall	Stucco	Good	0.0
Exterior	Wall	Stucco	Good	0.0
Exterior	Wall	Stucco	Good	0.0
Exterior	Wall	Stucco	Good	0.0

Location	Component	Substrate	Condition	Pb mg/cm^2
Exterior	Eaves	Wood	Fair	**11.2**
Exterior	Eaves	Wood	Fair	**10.9**
Exterior	Eaves	Wood	Fair	**11.1**
Exterior	Door Jamb	Wood	Good	0.0
Exterior	Door Jamb	Wood	Good	0.0
Exterior	Door Jamb	Wood	Good	0.0
Exterior	Door Jamb	Wood	Good	0.0
Exterior	Porch	Wood	Good	0.0
Exterior	Porch	Wood	Good	0.0
Exterior	Trim	Wood	Good	0.0
Exterior	Trim	Wood	Good	0.0
Exterior	Trim	Wood	Good	0.0
Interior	Wall	Drywall	Good	0.0
Interior	Wall	Drywall	Good	0.0
Interior	Wall	Drywall	Good	0.0
Interior	Wall	Drywall	Good	0.0

The information above is designed to aid the building owner, architect, construction manager, general contractor of potential abatement contractors in locating affected building materials within the scope of work and access constraints identified in this report. Other lead containing building components may exist at the property within concealed areas of the property or outside the scope of work.

3.0 Conclusions and Recommendations

AEC is providing the following conclusions and recommendations based on the results of this screening:

- All asbestos must be removed if it is to be disturbed during planned demolition of the subject structures. Current federal and state regulations require any repair, renovation and/or demolition of any such material should be conducted only by workers and/or contractors who have been properly trained in the correct handling of such materials. All asbestos work should be accomplished under the direction of an Independent State Certified Asbestos Consultant with oversight performed by a State Certified Site Surveillance Technician. The waste material must be disposed of at an approved facility licensed to handle such waste. It is the responsibility of the selected abatement contractor to quantify, characterize, profile and properly dispose of all asbestos in and on the site structures prior to building demolition.

- The OSHA Construction Asbestos Standard requires building and/or facility owners to notify the following persons of the presence, location and quantity of ACM or material presumed to be ACM, at the work sites in their buildings and facilities:

    (A) Prospective employers applying or bidding for work whose employees reasonably can be expected to work in or adjacent to areas containing such material;
    (B) Employees of the owner who will work in or adjacent to areas containing such material;
    (C) On multi-employer worksites, all employers of employees who will be performing work within or adjacent to areas containing such materials; and
    (D) Tenants who will occupy areas containing such material.
    (E) Any additional suspect materials not previously sampled should be assumed to contain asbestos until further testing proves otherwise.

- LBP was identified at the subject property. Such paint was considered to be in generally in fair to good condition at the time of the survey (i.e. not likely to require significant abatement). However, some of the LBP was noted as being in poor condition (i.e. significantly loose and flakey). Any loose and flakey LBP must be removed with the underlying substrate stabilized prior to building demolition. The contractor is responsible for the characterization/profiling of all waste materials (including lead) to be removed from the property during abatement and/or demolition, including those that contain lead. All lead removal work must be conducted under lead safe work practices.

AEC warrants that our services are performed within the limits prescribed by our client with the usual thoroughness and competence of the engineering profession. Any recommendations in this report are professional opinions based solely on visual observations and analytical analyses, as described in this report. Because the scope of services was limited to accessible and visible suspect ACM and potential LBP, and intrusive sampling methods were not conducted, it is possible that unrecognized ACM and LBP might exist. Any unassessed materials present in inaccessible locations and areas that were not visible during the screening (if encountered at a later time) must be sampled for ACM or LBP prior to disturbance. Opinions and recommendations presented herein apply to site conditions existing at the time of our investigation and cannot necessarily apply to site changes of which this office is not aware and/or has not had the opportunity to evaluate.

APPENDIX A

Bulk Sampling Log, Analytical Laboratory Report and Chain of Custody

:ONMENTAL CONSULTANTS, LLC
: 201
)9

ASBESTOS BULK SAMPLE LOG Page 1 of 3

Client Name: _____

Project Location: El Toro, Irvine

Date: 3-8-16 **Field Technician:** John Bayar

Project Number: 16-1165 **Priority:** ASAP ___ 24 HR ___ ~~3-5~~ 2 Days ✓

SAMPLE NUMBER	SAMPLE LOCATION	MATERIAL DESCRIPTION	SQUARE FOOTAGE
01	Building 130	Joint compound	
02	Building 130	Vinyl Floor Tile And Mastic	
03	Building 114 12x12 Interior	Vinyl Floor Tile And Mastic	
04	Building 114 Main Room	" "	
05	Building #114	12x12 Ceramic Tile And Mastic	
06	Building #114 2nd Floor	Exterior Plaster	
07	" "	" "	
08	" "	" "	
09	Building #114 Single Story	Exterior Stucco	
10	Building #602 Office	Vinyl Floor Tile And Mastic	

Chain of Custody **Analytical Method:** PLM: ✓ TEM: ____ Other: _____

Sampled By		Date	Time
Relinquished By		Date	Time
Received By	FE	Date 3/16/16	Time 9:55 am
Relinquished By		Date	Time
Received By		Date	Time

ADVANTAGE ENVIRONMENTAL CONSULTANTS, LLC
145 Vallecitos De Oro, Suite 201
San Marcos, California 92069

ASBESTOS BULK SAMPLE LOG

Client Name: _____

Project Location: El Toro, Irvine

Date: 3-8-16 **Field Technician:** John Rayan

Project Number: 16-1165 **Priority:** ASAP ___ 24 HR ___ ~~3-5~~ 2 Days ✓

SAMPLE NUMBER	SAMPLE LOCATION	MATERIAL DESCRIPTION	SQUARE FOOTAGE
11	Building #392 Restroom	Vinyl Floor Tile And Mastic	
12	Building #392	Window Putty	
13	Building #696-A	Acoustic Ceiling	
14	↓ ↓	Drywall And Joint Compound	
15	Building #126	Drywall And Joint Compound	
16	Building #126	Vinyl Floor Tile And Mastic	
17	Building #2	Window Putty	
18	Building #293 (TANK)	Roofing	
19	Building #133 949	Vinyl Floor Tile And Mastic	
20	Building #G0371	Vinyl Floor Tile And Mastic	100 SF

Chain of Custody **Analytical Method:** PLM: ✓ TEM: ____ Other: _____

Sampled By		Date	Time
Relinquished By		Date	Time
Received By		Date 3/16/16	Time 9:55 am
Relinquished By		Date	Time
Received By		Date	Time

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145 Vallecitos De Oro, Suite 201
San Marcos, California 92069

ASBESTOS BULK SAMPLE LOG

Page 3 of 3

Client Name: _____

Project Location: El Toro, Irvine

Date: 3-8-16 **Field Technician:** John Player

Project Number: 16-1165 **Priority:** ASAP ___ 24 HR ___ ~~3-5~~ 3 Days ✓

SAMPLE NUMBER	SAMPLE LOCATION	MATERIAL DESCRIPTION	SQUARE FOOTAGE
21	Bldg #372	window putty	
22	Bldg 380	window putty	
23	Bldg #696-B	Drywall and Joint compound	
24	Bldg #697	Drywall and Joint compound	
25	Bldg #698	Drywall and Joint compound	
26	Bldg #5225	Drywall and Joint compound	
27	Bldg #5227	Both Boards and mastic	
28	Bldg #5226	Exterior Stucco	
29	Bldg #605	Exterior Paint/coating	
30	Runway	Caulking	

Chain of Custody **Analytical Method:** PLM: ✓ TEM: ____ Other: _____

Sampled By		Date	Time
Relinquished By		Date	Time
Received By	J Camacho F/E	Date 3/16/16	Time 9:55 AM
Relinquished By		Date	Time
Received By		Date	Time

Forensic Analytical LABORATORIES

Final Report

Bulk Asbestos Analysis

(EPA Method 600/R-93-116, Visual Area Estimation)

Client ID: 5697
Report Number: B218212
Date Received: 03/16/16
Date Analyzed: 03/18/16
Date Printed: 03/18/16
First Reported: 03/18/16

Job ID/Site: 16-1165; El Toro, Irvine

Date(s) Collected: 03/08/2016

FALI Job ID: 5697
Total Samples Submitted: 30
Total Samples Analyzed: 30

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
01	50979484						
Layer: Off-White Skimcoat/Joint Compounds			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							
02	50979485						
Layer: Off-White Tile			**ND**				
Layer: Beige Mastic and Debris			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							
03	50979486						
Layer: Off-White Tile		Chrysotile	**2 %**				
Layer: Tan Mastic			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (2%)**					
Cellulose (Trace)							
04	50979487						
Layer: Black Tile		Chrysotile	**Trace**				
Layer: Tan Mastic			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (Trace)**					
Cellulose (Trace)							
05	50979488						
Layer: Brown Mastic			**ND**				
Layer: Beige Fibrous Material			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (25 %) Fibrous Glass (35 %)							
06	50979489						
Layer: Beige Plaster			**ND**				
Layer: White Plaster			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							

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Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
07	50979490						
Layer: Beige Plaster			**ND**				
Layer: White Plaster			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							
08	50979491						
Layer: Beige Plaster			**ND**				
Layer: White Plaster			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							
09	50979492						
Layer: Grey Cementitious Material			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							
10	50979493						
Layer: Green Non-Fibrous Material			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							
11	50979494						
Layer: Off-White Tile			**ND**				
Layer: Beige Mastic and Debris			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							
12	50979495						
Layer: Grey Putty			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							
13	50979496						
Layer: Drywall Backing			**ND**				
Layer: White Semi-Fibrous Material			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (15 %)							
14	50979497						
Layer: White Drywall			**ND**				
Layer: White Skimcoat/Joint Compound			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (15 %) Fibrous Glass (3 %)							

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Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
15	50979498						
Layer: Off-White Drywall			**ND**				
Layer: Off-White Skimcoat/Joint Compound			**ND**				
Layer: Paint			**ND**				
Layer: Off-White Skimcoat/Joint Compound			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (15 %) Fibrous Glass (Trace)							
16	50979499						
Layer: Off-White Tile		Chrysotile	**Trace**				
Layer: Tan Mastic			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (Trace)**					
Cellulose (Trace)							
17	50979500						
Layer: Grey Putty			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							
18	50979501						
Layer: Silver Paint		Chrysotile	**2 %**				
Layer: Black Tars			**ND**				
Layer: Black Felts			**ND**				
Layer: Coating			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (Trace)**					
Cellulose (25 %) Fibrous Glass (30 %)							
19	50979502						
Layer: Beige Tile		Chrysotile	**3 %**				
Layer: Black Mastic			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (3%)**					
Cellulose (Trace)							
20	50979503						
Layer: Off-White Tile			**ND**				
Layer: Black Mastic			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							
21	50979504						
Layer: White Putty		Chrysotile	**Trace**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (Trace)**					
Cellulose (Trace)							
22	50979505						
Layer: White Putty		Chrysotile	**Trace**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (Trace)**					
Cellulose (Trace)							

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Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
23	50979506						
Layer: White Drywall			**ND**				
Layer: Drywall Tape			**ND**				
Layer: White Skimcoat/Joint Compounds			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (20 %) Fibrous Glass (3 %)							
24	50979507						
Layer: White Drywall			**ND**				
Layer: Drywall Tape			**ND**				
Layer: White Skimcoat/Joint Compounds			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (20 %) Fibrous Glass (3 %)							
25	50979508						
Layer: White Drywall			**ND**				
Layer: Off-White Skimcoat/Joint Compound		Chrysotile	**2 %**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (Trace)**					
Cellulose (15 %) Fibrous Glass (2 %)							
26	50979509						
Layer: White Drywall			**ND**				
Layer: White Skimcoat/Joint Compound			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (15 %) Fibrous Glass (3 %)							
27	50979510						
Layer: Brown Non-Fibrous Material			**ND**				
Layer: Brown Mastic			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							
28	50979511						
Layer: Grey Cementitious Material			**ND**				
Layer: Beige/Green Cementitious Material			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							
29	50979512						
Layer: Black Mastic			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							

2959 Pacific Commerce Drive, Rancho Dominguez, CA 90221 / Telephone: (310) 763-2374 (888) 813-9417 / Fax: (310) 763-8684

Report Number: B218212
Date Printed: 03/18/16

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
30	50979513						
Layer: Black Non-Fibrous Material			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							

Tiffani Ludd, Laboratory Supervisor, Rancho Dominguez Laboratory

Note: Limit of Quantification ('LOQ') = 1%. 'Trace' denotes the presence of asbestos below the LOQ. 'ND' = 'None Detected'.

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Appendix B

Laboratory Reports

AVOCET
ENVIRONMENTAL, INC.

American Environmental Testing Laboratory Inc.
2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

Ordered By

Advantage Environmental Consultants
145 Vallecitos De Oro Suite 201
San Marcos, CA 92069-

Telephone: (760)744-3363
Attention: Dan Weis

Number of Pages	**4**
Date Received	**04/15/2016**
Date Reported	**04/19/2016**

Job Number	Order Date	Client
81179	04/15/2016	AEC

Project ID: PCBS
Project Name: PCBs

Enclosed please find results of analyses of 2 solid samples which were analyzed as specified on the attached chain of custody. If there are any questions, please do not hesitate to call.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

American Environmental Testing Laboratory Inc.

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CHAIN OF CUSTODY RECORD

№ 96430

AETL JOB No. 81179

Page 1 of 1

COMPANY AEC	PROJECT MANAGER DAN WELS
COMPANY ADDRESS	PHONE FAX
PROJECT NAME	PROJECT #
SITE NAME AND ADDRESS	PO #

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	PCBs
1	01	81179.01			Solid	BAG	—	X
2	02	81179.02			↓	↓	—	X
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

ANALYSIS REQUESTED

TEST INSTRUCTIONS & COMMENTS

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	2	PROPERLY COOLED Y / N / NA	
CUSTODY SEALS Y / N / NA		SAMPLES INTACT Y / N / NA	
RECEIVED IN GOOD COND. Y / N		SAMPLES ACCEPTED Y / N	

TURN AROUND TIME

☐ NORMAL ☒ RUSH ☐ SAME DAY ☐ NEXT DAY ☐ 2 DAYS ☐ 3 DAYS

Need Result 4/18 COB

DATA DELIVERABLE REQUIRED

☐ HARD COPY
☐ PDF
☐ GEOTRACKER (GLOBAL ID) _____
☐ OTHER (PLEASE SPECIFY) _____

	RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
	Signature:	Signature:	Signature:
	Printed Name:	Printed Name:	Printed Name: Sergio P
	Date: Time:	Date: Time:	Date: 04/15/16 Time: 1830
	RECEIVED BY: 1.	RECEIVED BY: 2.	RECEIVED BY LABORATORY: AETC 3.
	Signature:	Signature:	Signature:
	Printed Name:	Printed Name:	Printed Name: Jean Claude
	Date: Time:	Date: Time:	Date: 04/15/16 Time: 1830

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

American Environmental Testing Laboratory Inc.
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Ordered By

Advantage Environmental Consultants **145 Vallecitos De Oro Suite 201** **San Marcos, CA 92069-**

Project ID: PCBS **Date Received 04/15/2016** **Date Reported 04/19/2016**

Telephone: (760)744-3363
Attention: Dan Weis

Job Number	Order Date	Client
81179	04/15/2016	AEC

CERTIFICATE OF ANALYSIS
CASE NARRATIVE

AETL received 2 samples with the following specification on 04/15/2016.

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers
81179.01	01	/ /	Solid	1
81179.02	02	/ /	Solid	1

Method ^ Submethod	*Req Date*	*Priority*	*TAT*	*Units*
(8082)	04/18/2016	2	Rush	ug/Kg

The samples were analyzed as specified on the enclosed chain of custody.
No analytical non-conformances were encountered.

Unless otherwise noted, all results of soil and solid samples are based on wet weight.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

American Environmental Testing Laboratory Inc.
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ANALYTICAL RESULTS

Ordered By

Advantage Environmental Consultants
145 Vallecitos De Oro
Suite 201
San Marcos, CA 92069-

Telephone: (760)744-3363
Attn: Dan Weis
Page: **2**

Project ID: PCBS
Project Name: PCBs

AETL Job Number	Submitted	Client
81179	04/15/2016	AEC

Method: (8082), Polychlorinated Biphenyls (PCBs) by GC

QC Batch No: 041516-2

Our Lab I.D.			Method Blank				
Client Sample I.D.							
Date Sampled							
Date Prepared			**04/15/2016**				
Preparation Method			**3550B**				
Date Analyzed			**04/18/2016**				
Matrix			Solid				
Units			ug/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Aroclor-1016 (PCB-1016)	**25.0**	**50.0**	**ND**				
Aroclor-1221 (PCB-1221)	**25.0**	**50.0**	**ND**				
Aroclor-1232 (PCB-1232)	**25.0**	**50.0**	**ND**				
Aroclor-1242 (PCB-1242)	**25.0**	**50.0**	**ND**				
Aroclor-1248 (PCB-1248)	**25.0**	**50.0**	**ND**				
Aroclor-1254 (PCB-1254)	**25.0**	**50.0**	**ND**				
Aroclor-1260 (PCB-1260)	**25.0**	**50.0**	**ND**				
Aroclor-1262 (PCB-1262)	**25.0**	**50.0**	**ND**				
Aroclor-1268 (PCB-1268)	**25.0**	**50.0**	**ND**				
Our Lab I.D.			Method Blank				
Surrogates	**%Rec.Limit**		**% Rec.**				
Decachlorobiphenyl	**30-150**		**90.5**				
Tetrachloro-m-xylene	**30-150**		**90.8**				

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ANALYTICAL RESULTS

Ordered By

Advantage Environmental Consultants
145 Vallecitos De Oro
Suite 201
San Marcos, CA 92069-

Telephone: (760)744-3363
Attn: Dan Weis
Page: **3**

Project ID: PCBS
Project Name: PCBs

AETL Job Number	Submitted	Client
81179	04/15/2016	AEC

Method: (8082), Polychlorinated Biphenyls (PCBs) by GC

QC Batch No: 041516-2

Our Lab I.D.			81179.01	81179.02			
Client Sample I.D.			01	02			
Date Sampled			/ /	/ /			
Date Prepared			04/15/2016	04/15/2016			
Preparation Method			3550B	3550B			
Date Analyzed			04/18/2016	04/18/2016			
Matrix			Solid	Solid			
Units			ug/Kg	ug/Kg			
Dilution Factor			20	20			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Aroclor-1016 (PCB-1016)	500	1000	ND	ND			
Aroclor-1221 (PCB-1221)	500	1000	ND	ND			
Aroclor-1232 (PCB-1232)	500	1000	ND	ND			
Aroclor-1242 (PCB-1242)	500	1000	ND	ND			
Aroclor-1248 (PCB-1248)	500	1000	ND	ND			
Aroclor-1254 (PCB-1254)	500	1000	ND	ND			
Aroclor-1260 (PCB-1260)	500	1000	ND	ND			
Aroclor-1262 (PCB-1262)	500	1000	ND	ND			
Aroclor-1268 (PCB-1268)	500	1000	ND	ND			

Comment(s):
81179.01: Analyzed under dilution due to matrix interference 81179.02: Analyzed under dilution due to matrix interference

Our Lab I.D.			81179.01	81179.02			
Surrogates	**%Rec.Limit**		**% Rec.**	**% Rec.**			
Decachlorobiphenyl	30-150		78.3	83.8			
Tetrachloro-m-xylene	30-150		101	95.1			

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QUALITY CONTROL RESULTS

Ordered By

Advantage Environmental Consultants
145 Vallecitos De Oro
Suite 201
San Marcos, CA 92069-

Telephone: (760)744-3363
Attn: Dan Weis
Page: **4**

Project ID: PCBS
Project Name: PCBs

AETL Job Number	Submitted	Client
81179	04/15/2016	AEC

Method: (8082), Polychlorinated Biphenyls (PCBs) by GC

QC Batch No: 041516-2; LCS: Blank; Units: ug/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Aroclor-1016 (PCB-1016)	0.00	500	695	139	500	640	128	8.2	50-150	<20
Aroclor-1260 (PCB-1260)	0.00	500	720	144	500	665	133	7.9	50-150	<20
Surrogates										
Decachlorobiphenyl	0.00	50.0	55.0	110	50.0	48.0	96.0	13.6	30-150	<20
Tetrachloro-m-xylene	0.00	50.0	68.5	137	50.0	64.0	128	6.8	30-150	<20

QC Batch No: 041516-2; LCS: Blank; Units: ug/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Aroclor-1016 (PCB-1016)	500	705	141	500	705	141	<1	50-150	<20	
Aroclor-1260 (PCB-1260)	500	660	132	500	620	124	6.3	50-150	<20	
Surrogates										
Decachlorobiphenyl	50.0	49.6	99.2	50.0	45.3	90.6	9.1	30-150	<20	
Tetrachloro-m-xylene	50.0	45.1	90.2	50.0	62.0	124	31.6	30-150	<20	

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Data Qualifiers and Descriptors

Data Qualifier:

#:	Recovery is not within acceptable control limits.
*:	In the QC section, sample results have been taken directly from the ICP reading. No preparation factor has been applied.
B:	Analyte was present in the Method Blank.
D:	Result is from a diluted analysis.
E:	Result is beyond calibration limits and is estimated.
H:	Analysis was performed over the allowed holding time due to circumstances which were beyond laboratory control.
J:	Analyte was detected . However, the analyte concentration is an estimated value, which is between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL).
M:	Matrix spike recovery is outside control limits due to matrix interference. Laboratory Control Sample recovery was acceptable.
MCL:	Maximum Contaminant Level
NS:	No Standard Available
S6:	Surrogate recovery is outside control limits due to matrix interference.
S8:	The analysis of the sample required a dilution such that the surrogate concentration was diluted below the method acceptance criteria.
X:	Results represent LCS and LCSD data.

Definition:

%Limi:	Percent acceptable limits.
%REC:	Percent recovery.
Con.L:	Acceptable Control Limits
Conce:	Added concentration to the sample.
LCS:	Laboratory Control Sample
MDL:	Method Detection Limit is a statistically derived number which is specific for each instrument, each method, and each compound. It indicates a distinctively detectable quantity with 99% probability.

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Data Qualifiers and Descriptors

MS:	Matrix Spike
MS DU:	Matrix Spike Duplicate
ND:	Analyte was not detected in the sample at or above MDL.
PQL:	Practical Quantitation Limit or ML (Minimum Level as per RWQCB) is the minimum concentration that can be quantified with more than 99% confidence. Taking into account all aspects of the entire analytical instrumentation and practice.
Recov:	Recovered concentration in the sample.
RPD:	Relative Percent Difference

Enthalpy Analytical, Inc.
Formerly Associated Labs
806 N. Batavia - Orange, CA 92868
Tel: (714)771-6900 Fax: (714)538-1209
www.associatedlabs.com
info-sc@enthalpy.com

MONTROSE ENVIRONMENTAL

Client:	Avocet Environmental, Inc.
Address:	1 Technology Dr. Suite C515 Irvine, CA 92618
Attn:	Deke Siren

Lab Request:	368557
Report Date:	04/20/2016
Date Received:	04/19/2016
Client ID:	15396

Comments: SCVC El Toro
Project# 1435.001

This laboratory request covers the following listed samples which were analyzed for the parameters indicated on the attached Analytical Result Report. All analyses were conducted using the appropriate methods. Methods accredited by NELAC are indicated on the report. This cover letter is an integral part of the final report.

Sample #	Client Sample ID
368557-001	CS-1-Rubber
368557-002	CS-1-Felt
368557-003	CS-2-Rubber

Thank you for the opportunity to be of service to your company. Please feel free to call if there are any questions regarding this report or if we can be of further service.

Report Review performed by: Ranjit Clarke, Project Manager

NOTE: Unless notified in writing, all samples will be discarded by appropriate disposal protocol 45 days from date reported.

Matrix: Solid **Client:** Avocet Environmental, Inc. **Collector:** Client
Sampled: 04/19/2016 10:40 **Site:**
Sample #: **368557-001** **Client Sample #:** CS-1-Rubber **Sample Type:**

Analyte	Result	DF	RDL	Units	Prepared	Analyzed	By	Notes
Method: EPA 8082 *NELAC*	Prep Method: EPA 3545					QCBatchID: QC1165907		
PCB-1016	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	
PCB-1221	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	
PCB-1232	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	
PCB-1242	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	
PCB-1248	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	
PCB-1254	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	
PCB-1260	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	
PCB-1262	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	
PCB-1268	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	

Surrogate	*% Recovery*	*Limits*	*Notes*
Decachlorobiphenyl DCB (SUR)	*00*	*36-136*	*S2* *surrogates diluted out. 100DF*

Matrix: Solid **Client:** Avocet Environmental, Inc. **Collector:** Client
Sampled: 04/19/2016 10:40 **Site:**
Sample #: **368557-002** **Client Sample #:** CS-1-Felt **Sample Type:**

Analyte	Result	DF	RDL	Units	Prepared	Analyzed	By	Notes
Method: EPA 8082 *NELAC*	Prep Method: EPA 3545					QCBatchID: QC1165907		
PCB-1016	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	
PCB-1221	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	
PCB-1232	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	
PCB-1242	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	
PCB-1248	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	
PCB-1254	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	
PCB-1260	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	
PCB-1262	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	
PCB-1268	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	

Surrogate	*% Recovery*	*Limits*	*Notes*
Decachlorobiphenyl DCB (SUR)	*00*	*36-136*	*S2*

Matrix: Solid **Client:** Avocet Environmental, Inc. **Collector:** Client
Sampled: 04/19/2016 11:30 **Site:**
Sample #: **368557-003** **Client Sample #:** CS-2-Rubber **Sample Type:**

Analyte	Result	DF	RDL	Units	Prepared	Analyzed	By	Notes
Method: EPA 8082 *NELAC*	Prep Method: EPA 3545					QCBatchID: QC1165907		
PCB-1016	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	
PCB-1221	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	
PCB-1232	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	
PCB-1242	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	
PCB-1248	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	
PCB-1254	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	
PCB-1260	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	
PCB-1262	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	
PCB-1268	ND	100	5	mg/Kg	04/19/16	04/19/16	LW	

Surrogate	*% Recovery*	*Limits*	*Notes*
Decachlorobiphenyl DCB (SUR)	*00*	*36-136*	*S2*

QCBatchID:	**QC1165907**	**Analyst:**	lwong	**Method:**	EPA 8082
Matrix:	Solid	**Analyzed:**	04/19/2016	**Instrument:**	SVOA-GC (group)

Blank Summary

Analyte	Blank Result	Units		RDL	Notes
QC1165907MB1					
PCB-1016	ND	mg/Kg		0.05	
PCB-1221	ND	mg/Kg		0.05	
PCB-1232	ND	mg/Kg		0.05	
PCB-1242	ND	mg/Kg		0.05	
PCB-1248	ND	mg/Kg		0.05	
PCB-1254	ND	mg/Kg		0.05	
PCB-1260	ND	mg/Kg		0.05	
PCB-1262	ND	mg/Kg		0.05	
PCB-1268	ND	mg/Kg		0.05	

Lab Control Spike/ Lab Control Spike Duplicate Summary

Analyte	Spike Amount		Spike Result		Units	Recoveries		RPD	Limits		Notes
	LCS	LCSD	LCS	LCSD		LCS	LCSD		%Rec	RPD	
QC1165907LCS1, QC1165907LCSD1											
PCB-1254	0.5	0.5	0.36	0.38	mg/Kg	72	76	5	70-130	25	

Data Qualifiers and Definitions

Qualifiers

A	See Report Comments.
B	Analyte was present in an associated method blank.
B1	Analyte was present in a sample and associated method blank greater than MDL but less than DRL.
BQ1	No valid test replicates. Sample Toxicity is possible. Best result was reported.
BQ2	No valid test replicates.
BQ3	No valid test replicates. Final DO is less than 1.0 mg/L. Result may be greater.
C	Possible laboratory contamination.
D	RPD was not within control limits. The sample data was reported without further clarification.
D1	Lesser amount of sample was used due to insufficient amount of sample supplied.
D2	Reporting limit is elevated due to sample matrix. Target analyte was not detected above the elevated reporting limit.
DW	Sample result is calculated on a dry weigh basis.
E	Concentration is estimated because it exceeds the quantification limits of the method.
I	The sample was read outside of the method required incubation period.
J	Reported value is estimated
L	The laboratory control sample (LCS) or laboratory control sample duplicate (LCSD) was out of control limits. Associated sample data was reported with qualifier.
M	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits due to matrix interference. The associated LCS and/or LCSD was within control limits and the sample data was reported without further clarification.
M1	The matrix spike (MS) or matrix spike duplicate (MSD) is not within control limits due to matrix interference.
M2	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits. The associated LCS and/or LCSD was not within control limits. Sample result is estimated.
N1	Sample chromatography does not match the specified TPH standard pattern.
NC	The analyte concentration in the sample exceeded the spike level by a factor of four or greater, spike recovery and limits do not apply.
P	Sample was received without proper preservation according to EPA guidelines.
P1	Temperature of sample storage refrigerator was out of acceptance limits.
P2	The sample was preserved within 24 hours of collection in accordance with EPA 218.6.
Q1	Analyte Calibration Verification exceeds criteria. The result is estimated.
Q2	Analyte calibration was not verified and the result was estimated.
Q3	Analyte initial calibration was not available or exceeds criteria. The result was estimated.
Q4	Analyte result out of calibration range. Result was estimated.
S	The surrogate recovery was out of control limits due to matrix interference. The associated method blank surrogate recovery was within control limits and the sample data was reported without further clarification.
S1	The associated surrogate recovery was out of control limits; result is estimated.
S2	The surrogate was diluted out due to the presence of high concentrations of target and/or non-target compounds. Surrogate recoveries in the associated batch QC met recovery criteria.
T	Sample was extracted/analyzed past the holding time.
T1	Reanalysis was reported past hold time due to failing replicates in the original analysis (BOD only).
T2	Sample was analyzed ASAP but received and analyzed past the 15 minute holding time.
T3	Sample received and analyzed out of hold time per client's request.
T4	Sample was analyzed out of hold time per client's request.
T5	Reanalysis was reported past hold time. The original analysis was within hold time, but not reportable.
T6	Hold time is indeterminable due to unspecified sampling time.
T7	Sample was analyzed past hold time due to insufficient time remaining at time of receipt.

Definitions

DF	Dilution Factor
MDL	Method Detection Limit. Result is reported ND when it is less than or equal to MDL.
ND	Analyte was not detected or was less than the detection limit.
NR	Not Reported. See Report Comments.
RDL	Reporting Detection Limit
TIC	Tentatively Identified Compounds

AVOCET ENVIRONMENTAL, INC.
1 Technology Drive, Suite C515
Irvine, California 92618-5302
TEL (949) 296-0977
FAX (949) 296-0978

Sheet 1 of 1

368557

CHAIN OF CUSTODY RECORD

Project Information:	Event Name: Caulk Sampling
Site Name	SCVC El Toro
Site Location	Irvine, CA
Project No.	1435.001
Project Manager	Deke Siren
Sampled By	DC
Turnaround Time	24 Hour
Reporting Requirement(s)	

Sample Identification	Sample Date	Sample Time	Matrix	No. of Cntnrs.	Lab I.D. Number	Analyses: PCBs (EPA Method 8082)
CS-1-Rubber	4/19/16	1040				X
CS-1-Felt	4/19/16	1040				X
CS-2-Rubber	4/19/16	1130				X

Relinquished by	Company	Received by	Company
Printed Name: Breanna Gaynor Date: 4/19/16	Avocet Environmental, Inc.	Printed Name: John Date: 4-19	
Signature: Time: 12:37		Signature: Time: 12:39	
Printed Name: Date:		Printed Name: Date:	
Signature: Time:		Signature: Time:	
Printed Name: Date:		Printed Name: Date:	
Signature: Time:		Signature: Time:	

Sample Receipt		Billing Information	Special Instructions
Total Containers	TAT	Bill To: Avocet Environmental, Inc. 1 Technology Drive, Suite C515 Irvine, CA 92618-5302	Please bill to Avocet Environmental, Inc. Please submit results electronically to Deke Siren (Avocet PM) @ dsiren@avocetenv.com. If any questions, please call Deke Siren @ (949) 296 0977 Ext.111.
Temperature °C / °F	Lab No.		
COC Seal (Y/N/NA)	Intact (Y/N)		

ENTHALPY analytical, inc.

SAMPLE ACCEPTANCE CHECKLIST

Section 1

Client: Aucet

Project: SCUC El Toro

Date Received: 4-19-16

Sampler's Signature Present: (Yes) No

Sample temperature: _____

Sample(s) received in cooler: (Yes) No (Skip Section 2)

Shipping Information: 3

Section 2

Was the cooler packed with: ✓ Ice ____ Ice Packs ____ Bubble Wrap ____ Styrofoam ____ Paper ____None ____ Other_____

Cooler 1 Temperature: 3.5 Cooler 2 Temperature:_____ Cooler 3 Temperature:_____

(Acceptance range is 0 to 6 Deg. C. or arrival on ice; For Microbiology sample ≤ 10 Deg. C or arrival on ice)

Section 3	YES	NO	N/A
Was a COC received?	✓		
Were IDs present?	✓		
Were sampling dates & times present?	✓		
Was a signature present?	✓		
Were tests clearly indicated?	✓		
Were custody seals present?		✓	
If Yes – were they intact?			✓
Were all samples sealed in plastic bags?	✓		
Did all samples arrive intact? If no, indicate below.	✓		
Did all bottle labels agree with COC? (ID, dates and times)	✓		
Were correct containers used for the tests required?	✓		
Was a sufficient amount of sample sent for tests indicated?	✓		
Was there headspace in VOA vials?			✓
Were the containers labeled with correct preservatives?			✓
Was total residual chlorine measured (Fish Bioassay samples only)? * **If the answer is no, please inform Fish Bioassay Dept. immediately.*			✓

Section 4

Explanations/Comments

Section 5

Was the Project Manager notified via email of discrepancies: Y / N (N/A)

Project Manager's response:_____

Completed By: _____ Date: 4-19-16

Attachment 3

Geo-Advantec Inc.

G Geotechnical Engineering
A Earthquake Engineering
Inspection and Testing
I Engineering Geology

GEOTECHNICAL ENGINEERING EVALUATION REPORT

PROJECT:
SOUTHERN CALIFORNIA VETERANS CEMETERY
ORANGE COUNTY GREAT PARK
IRVINE BOULEVARD
IRVINE, CA 92618

FOR:
OWEN GROUP
20 MORGAN
IRVINE, CA 92618

PREPARED BY:
GEO-ADVANTEC INC.
457 W. ALLEN AVENUE, SUITE 113
SAN DIMAS, CALIFORNIA 91773
PROJECT NO. 15-1180
JUNE 3, 2016

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Subject ***Page***

Geo-Advantec Inc.

Geotechnical Engineering. Earthquake Engineering. Engineering Geology

Mr. Ken Jewell, P.E.
Project Engineer
OWEN Group
20 Morgan
Irvine, CA 92618

June 3, 2016
Project No. 15-1180

Subject: Geotechnical Engineering Evaluation Services
Proposed Southern California Veterans Cemetery at:
Orange County Great Park
Irvine Boulevard
Irvine, CA 92618

1. INTRODUCTION

This report presents the results of a Geotechnical evaluation performed by Geo-Advantec Inc. (GAI) for the proposed new Southern California Veterans Cemetery in Orange County Great Park on Irvine Boulevard, located within the city of Irvine, California. This Geotechnical evaluation was performed to provide geotechnical information for the design and construction of the proposed developments, as described in the forthcoming sections of this report, and includes our recommendations for the design and construction of the proposed developments from a geotechnical standpoint.

The recommendations provided within this submittal are based on the results of our field exploration, laboratory testing, engineering analyses and our experience from similar projects. Our services were performed in general accordance with our Proposal No. 15-1180, dated December 5, 2016.

A vicinity map is presented as Figure A-1 of Appendix A. Also, the locations of our borings with respect to the aerial photo of the site and the approximate layout of the proposed cemetery are depicted in Figure A-2, within Appendix A of this submittal.

Our professional services have been performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical consultants practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional advice included in this report. This report has been prepared for OWEN Group and their design consultants for this project. The report has not been prepared for use by other parties, and may not contain sufficient information for the purposes of other parties or other uses. The

Geotechnical Engineer of Record should be allowed to review the plans for the proposed developments and perform such additional geotechnical analyses as may be required to confirm the applicability of the recommendations contained in this report to the final design.

2. SITE CONDITIONS

The site of the proposed development is located northwest of the existing Orange County Great Park, within the city of Irvine, California. The site is a part of the decommissioned Marine Corps Air Station El Toro and is not currently being used. The site area is located on the north side of the existing FAA control tower in the vicinity of the hanger 164. The site is relatively flat with an approximate elevation of 390 feet Above Mean Sea Level (AMSL). More detailed information about the location of the subject project and its development plan is presented on Figures A-1 and A-2 within Appendix A of this report.

3. PROPOSED DEVELOPMENTS

Based on the information provided by the Client, it is our understanding that the proposed development at the site includes removal of the existing hanger, buildings and portion of the runway and constructing one or two new one-story buildings, possibly a maintenance building and an administrative building for the Southern California Veterans Cemetery. Our understanding of the proposed development is based on the information provided by the Client, and is the basis for the geotechnical recommendations provided in this submittal.

4. SCOPE OF SERVICES

Our scope of services for this project and included the following:

- Performing site reconnaissance, evaluating the general site condition and marking the proposed site exploration locations on the site for the purpose of underground utility clearance and drilling;
- Conducting a total of two borings within the footprints of future developments using a truck-mounted drilling rig using hollow-stem auger techniques;

- Performing laboratory testing on selected soils samples obtained from our exploratory borings;
- Reviewing the field data and the laboratory test results, performing engineering analyses, and preparing a final geotechnical evaluation report for the site which includes our findings and recommendation for the design and construction of the proposed developments from the geotechnical point of view.

5. FIELD EXPLORATORY WORKS

Figure A-2 presents the locations of the conducted borings plotted on the aerial photo within the provided proposed developments planned area. The boring locations were selected by the client within the proposed maintenance and administrative building footprints. Both borings were drilled down to the planned depth of about 32 feet below the ground surface (bgs).

6. SUBSURFACE CONDITIONS

Borings B-1 and B-2 were extended down to about 32 feet below the ground surface (bgs). The layers encountered in boring B-1 comprised mainly of silty sand and well-graded sand with clay to about 26 feet bgs. This layer is underlain by silty clay to the maximum depth explored, i.e. 32 feet. The layers encountered in boring B-2 comprised mainly of silty and clayey sand to about 30 feet bgs. This layer is also underlain by silty clay to the maximum depth explored, i.e. 32 feet. The sandy soils in the upper 10 feet were generally found to be loose, while the deeper layers were generally found to be medium dense. The silty clay layer at the bottom of both borings was found to be stiff to hard.

Variations in the layers conditions, as well as more detailed information, are indicated on the attached Boring Logs in Appendix B. Approximate locations of the borings are shown on the boring location plan, Figure A-2.

The soil conditions described in this report are based on the soils observed in the test borings drilled for this investigation and the laboratory test results. It is possible that soil conditions could vary in areas other than the boring locations.

7. LABORATORY TESTING

Laboratory testing, including moisture content, unit weight, gradation, plasticity index (Atterberg limits), sand equivalent, modified proctor compaction, and expansion index tests were performed on selected samples obtained from the site investigation to aid in the classification of the encountered layers and to evaluate their engineering properties. Also, Direct Shear, consolidation, sulfates, chlorides, resistivity, and pH tests (corrosivity tests) have been conducted on selected samples. The results of our laboratory tests are presented on the Boring Logs in Appendix B, as well as in Appendix C.

8. GROUNDWATER

As mentioned above, the subject site has an approximate elevation of about 390 feet Above Mean Sea Level (AMSL). We have reviewed the historically highest groundwater contour map shown in "Seismic Hazard Zone Report for the El Toro 7.5-Minute Quadrangle; Seismic Hazard Zone Report 047", published by "Department of Conservation, California Division of Mine and Geology", shown in Figure D-2 within Appendix D, and the data provided by the California Department of Water Resources (DWR). Historically highest groundwater depth was found to be deeper than 40 feet, and well data of 3 closest wells (State Well No. 06S08W05M002S, 06S08W05E002S, and 06S08W05P001S) approximately 1 to 1.5 miles west of the site observed recent groundwater depth at about 100 to 150 feet bgs. No groundwater was encountered during our exploratory work to a maximum depth of 32 feet bgs.

Based on the site topography, historically highest groundwater contour map, available well record data, and data obtained from the exploratory borings conducted at the site it is our opinion that the groundwater depth at the site is currently lower than 50 feet from the existing grade and it is unlikely that groundwater would be encountered during the course of construction for the proposed buildings.

9. SITE GEOLOGY

9.1. General

The site is located within the Los Angeles physiographic basin. The Los Angeles basin is bounded on the north by the Santa Monica and San Gabriel Mountains, on the east and southeast

by the Santa Ana Mountains and the San Joaquin Hills, and on the west and south by the Pacific Ocean. The Los Angeles basin represents a down-warped block of basement rock overlain by approximately 31,000 feet of sediment.

The Los Angeles physiographic basin is part of the Peninsular Ranges Geomorphic Province. The Peninsular Ranges extend north to the San Gabriel Mountains and south into Mexico to the tip of Baja California. The Peninsular Ranges Province is characterized by alluviated basins, elevated erosion surfaces, and northwest-trending mountain ranges bounded by northwest trending faults.

Morton and Miller (2006) showed most of the site to be underlain by sandy young alluvial fan deposit and silty sand young alluvial fan deposit of the Holocene age. Borings placed on the site during our investigation on May 12, 2016 (Borings B-1 and B-2) encountered clayey sand, sandy clay, silty clay and silty sand material. The geologic map of the site is shown in Figure G-1 within Appendix G.

9.2. Oil Wells

The search result on the oil wells at the vicinity of the site on the Department of Conservation's Division of Oil, Gas, and Geothermal Resources (DOGGR) is presented in Figure A-3 within Appendix A. The DOGGR records indicate that one active oil well (API # 05900884) is within one mile radius of the site. However, given the relatively large distance of the active wells to the site and the local topography, it is our opinion that no hazardous materials associated with any oil well/field is expected on the site.

10. SEISMIC CONSIDERATIONS

10.1. General

The subject site, like the rest of Southern California, is located within a seismically active region as a result of being located near the active margin between the North American and Pacific tectonic plates. The principal source of seismic activity is movement along the northwest-trending regional faults such as the San Andreas, San Jacinto, Newport-Inglewood and Whittier-Elsinore fault zones.

By definition of the California Geological Survey (CGS), an active fault is one which has had surface displacement within the Holocene Epoch (roughly the last 11,000 years). The CGS has

defined a potentially active fault as any fault which has been active during the Quaternary Period (approximately the last 1,600,000 years). These definitions are used in delineating Earthquake Fault Zones as mandated by the Alquist-Priolo Geologic Hazard Zones Act of 1972 and as subsequently revised in 1997 as the Alquist-Priolo Earthquake Fault Zones. The intent of the act is to require fault investigations on sites located within Special Studies Zone to preclude new construction of certain inhabited structures across the trace of active faults. The subject site is not located within the Alquist-Priolo Earthquake Fault Zone. The nearest active fault is the San Joaquin Hills Fault. The fault is located approximately 2.0 miles (3.2 km) south of the site. No evidence of active or potentially active faulting was observed on the subject site during our investigation. Surface rupture is not considered to be a potential hazard to the site.

Table 1 below tabulates the faults, their corresponding maximum magnitude and distances to the site and Figure G-2 in Appendix G illustrates the fault activity map at the vicinity of the project.

Table 1 – Active Faults at the Vicinity of the Site

Fault Name	Maximum Magnitude	Distance to the Site (km)
San Joaquin Hills	7.0	4.2
Newport Inglewood fault zone (S. Los Angeles Basin section-southern)	7.2	14.5
Elsinore (Glen Ivy) rev	7.7	21.2
Elsinore fault zone (Chino section)	6.6	16.7
Elsinore (Temecula)	7.7	30.9

Historic seismicity on the site was evaluated from earthquakes listed in the USGS database and is included in Appendix G, Figure G-3. From historical records, the site has experienced moderate to severe ground shaking in the past. There are no records of any failures due to historic earthquakes for the site. No evidence of active or potentially active faulting was observed on the subject site during our investigation. Surface rupture is not considered to be a potential hazard to the site.

Due to the proximity of the site to the San Joaquin Hills Fault, near field effects from strong ground motion associated with a large earthquake along this fault may occur at the site. These near field effects, including “fling” and directivity of strong ground motion, may result in significantly higher accelerations at the site.

10.2. Landsliding and Slope Stability

As mentioned above the site is relatively flat and no evidence for landsliding was observed on or in the immediate vicinity of the site. Due to the lack of significant topographic changes at the project site, it is our opinion is that landsliding is not a potential hazard to the site.

10.3. Liquefaction

Liquefaction may occur when saturated, loose to medium dense, cohesionless soils are densified by ground vibrations. The densification results in increased pore water pressures if the soils are not sufficiently permeable to dissipate these pressures during and immediately following an earthquake. When the pore water pressure is equal to or exceeds the overburden pressure, liquefaction of the affected soil layers occurs. For liquefaction to occur, three conditions are required:

- ground shaking of sufficient magnitude and duration;
- a ground water level at or above the level of the susceptible soils during the ground shaking; and
- soils that are susceptible to liquefaction.

Based on the State of California "Seismic Hazard Zone" map, published by the Department of Conservation, Division of Mines and Geology, the site does not lies in a seismic hazard zone of liquefaction as shown in Figure D-1 within Appendix D. Moreover, the historically highest depth to groundwater was greater than 40 feet at the subject project. Therefore, it is our opinion that liquefaction will not induce a potential hazard at the subject site.

10.4. Earthquake-Induced Ground Settlement

Strong ground motion during earthquake will reduce the pore space between soils particles and it is well known that loose sands tend to compress during dynamic shaking. Soils underlying the site consist of layers of loose to medium dense silty and clayey sand to a depth of about 25 feet bgs underlain by stiff to hard silty clay to the maximum depth explored. Therefore, following the grading recommendations provided later, the earthquake-induced ground settlement at the project site is expected to be about 1.3 inches.

10.5. Flooding

The site does not lie within a 100-year flood area, nor in a dam inundation area as shown on the FEMA Flood Maps #06059C0315J, revised date 12/3/2009 (Figure A-4 within Appendix A). Therefore, flooding is not considered to be a potential hazard to the site

11. CONCLUSIONS AND RECOMMENDATIONS

11.1. General

We have reviewed the provided site plan and based on the provided information, as well as our understanding of the project, have determined that the planned development is feasible from a geotechnical engineering point of view, provided the geotechnical recommendations presented in this report are followed. The on-site soils from the existing ground level to about 15 feet bgs predominantly consists of loose silty sand and clayey sand. Therefore, to reduce any potential future damages due to likelihood of excessive total and differential settlement under the anticipated loads, the followings recommendations should be incorporated into design and construction of the proposed on-site developments. As discussed in the following sections of this report, conventional shallow footings are recommended.

It is recommended that a formal review of foundation plans be performed by GAI, when plans become available, to verify the applicability of the recommendations contained herein.

11.2. Grading

11.2.1. Grading Requirements for Conventional Shallow Footings

As discussed, the upper soils strata underlying the site and the proposed development is comprised predominantly of loose silty sand and clayey sand. Therefore, to provide a more uniform bearing stratum and to minimize any potential heave, settlement and creep to a tolerable level, over-excavation, moisture-conditioning and backfilling of the existing soil or import soil below the designated areas for the buildings and spread and strip/walls footings is recommended.

We recommend that the on-site sandy soil be completely over-excavated, moisture-conditioned, placed and compacted for the entire footprint area of the proposed new structures, so that the footings will be supported entirely on at least 2 feet of engineered fill. The over-excavation shall laterally extend at least 3 feet from outer faces of the perimeter building footings in all directions.

The over-excavated area shall be backfilled to the designated grade. Adjacent to the existing structures, over-excavation shall be performed by employing slot-cut (A-B-C) method.

We recommend that backfill soils shall be moisture conditioned to a moisture content between the optimum and 3% above the optimum moisture content, and be compacted to at least 90% of the maximum dry density obtained per ASTM D1557 to the designated grade. The backfilled materials shall comply with the requirements outlined in Section 11.4 of this report. Prior to placement of backfill, the bottom of removal shall be observed and confirmed to be competent by the Geotechnical Engineer of Record.

Following the over-excavation, we recommend that the areas to receive engineered fill be scarified to a minimum depth of 8 inches, moisture conditioned to moisture content between the optimum and 3% above the optimum moisture content, and compacted to at least 90% of the maximum dry density obtained per ASTM D1557.

11.3. General Grading Requirements

All fills, unless otherwise specifically stated in the report, shall be compacted to at least 90% of the maximum dry density as determined by ASTM D1557 Method of Soil Compaction. The moisture content during compaction shall be as stated in items 5 and 6 below, unless otherwise specifically stated in the report.

1. No fill shall be placed until the area to receive the fill has been adequately prepared and approved by the Geotechnical Consultant or his representative.
2. Fill soils should be kept free of debris and organic material.
3. Rocks or hard fragments larger than 3 inches may not be placed in the fill without approval of the Geotechnical Consultant or his representative, and in a manner specified for each occurrence.
4. The fill material shall be placed in layers which, when loose, shall not exceed 8 inches per layer. Each layer shall be spread evenly and shall be thoroughly mixed during the spreading to insure uniformity of material and moisture.
5. When the moisture content of the fill material is too low to obtain adequate compaction, water shall be added and thoroughly dispersed until the soil has a moisture content between the optimum and 3% above the optimum moisture content.

6. When the moisture content of the fill material is too high to obtain adequate compaction, the fill material shall be aerated by blading or other satisfactory methods until the soil has moisture content between the optimum and 3% above the optimum moisture content.
7. Fill and cut slopes should not be constructed at gradients steeper than 2:1 (H:V).

11.4. Fill Materials and Import

The on-site shallow silty sand has been determined to have low expansion potential; therefore, either the on-site soils or import materials may be used for backfilling purposes. The imported materials being used for backfilling purpose should have low expansion potential, with an expansion index (EI) of less than 30, be free of organic materials, debris, and cobbles larger than 3 inches, and with no more than 25% of the materials being larger than 2 inches in size and no more than 40% passing #200 sieve. A bulk sample of potential backfill material, weighing at least 30 pounds, should be submitted to the Geotechnical Consultant at least 72 hours before fill operations. Upon approval of the potential backfill earth materials, contractor will be allowed to start importing/hauling process. All backfill materials should be approved by the Geotechnical Consultant prior to being placed at the site.

11.5. Seismic Coefficients

Under the Earthquake Design Regulations of Chapter 16, Section 1613A of the CBC 2013, and using the site specific acceleration parameters as specified in ASCE 7-10, the following coefficients and factors tabulated in Table 2 apply to lateral-force design for structures at the site.

Table 2 – Seismic Coefficients

Site Class (CBC 2013 – 1613A.5.2)	D
Seismic Design Category based on Risk Category II (CBC 2013-Table 1604.5 &1613A.3.5)	D
Mapped Acceleration Parameter for Short Period (0.2 Second), S_S	1.486
Mapped Acceleration Parameter for 1.0 Second, S_1	0.551
Adjusted Maximum Spectral Response Parameter for Short Period (0.2 Second), S_{MS}	1.486
Adjusted Maximum Spectral Response Parameter for 1.0 Second Period , S_{M1}	0.826
Design Spectral Response Acceleration Parameter, S_{DS}	0.991
Design Spectral Response Acceleration Parameter, S_{D1}	0.551
Mapped Peak Ground Acceleration, PGA	0.548

Project Site Coordinates: Longitude: W117.72274° Latitude: N33.67842°
Project Site Soil Classification: Stiff Soil

11.6. Building Foundations

11.6.1. General

At the time of preparation of this report we have not been provided with the magnitude of maximum structural loads. For the purpose of preparing this report, we assumed that the proposed structures will impose column loads of less than 40 kilo-pounds (kips) and continuous footing loads of less than 4.0 kips per foot (kpf). The ensuing sections of this report discusses the bearing capacity and settlement characteristics of recommended shallow foundation system. All spread and/or strip footings supporting the perimeter walls and slab shall be underlain by compacted fill as addressed in the "Grading" section of this report. The project's structural engineer should design foundations and floor slabs in accordance with the requirements of the applicable building code.

11.6.2. Conventional Shallow Spread/Strip Footings

Bearing Capacity: The proposed building's foundations and its walls may be supported on conventional spread and strip footings, designed using an allowable bearing value of 2,500 pounds per square foot (psf) provided that the recommendations addressed in grading section of this report are strictly followed and observed by the project's Geotechnical engineer at the time of construction. The footings should have a minimum width of 24 inches for both strip and spread footings, with a minimum embedment depth of 2 feet below the lowest adjacent finished grade. An additional allowable bearing capacity equal to 150 psf may be added to the above mentioned values for every foot of additional depth or width, with a maximum bearing capacity

of 3,000. The recommended bearing value is a net value and the weight of concrete in the footings may be taken as 50 pounds per cubic foot (pcf).

The weight of soil backfill may be neglected when determining the downward loads from the footings. A one-third increase in the bearing value may be used when considering wind or seismic loads.

Lateral Resistance: Lateral loads may be resisted by soil friction and by the passive resistance utilized by the compacted granular engineered fill. A coefficient of friction of 0.3 may be used between the footings, floor slabs, and the supporting soils. The passive resistance of level properly compacted fill soils may be assumed to be equal to the pressure developed by a fluid with a density of 250 pcf. A one-third increase in the passive value may be used for wind or seismic loads. The frictional resistance and the passive resistance of the soils may be combined provided that the passive resistance is reduced by one-third.

Settlement: Based on the results of our analyses and provided that our recommendations in preceding sections of this report are followed, we estimate that the maximum total settlement of the perimeter walls as well as the footings supporting the columns would be about 0.8 inch, corresponding to about 0.4 inch differential settlement within a horizontal distance of 30 feet. Additionally, the effect of excess settlement due to earthquake motions was considered. The results of seismic-induced settlement analysis provided in the Appendix E of this report indicate a maximum total settlement of about 1.3 inch. Therefore, it is our recommendation that the foundations should be evaluated and designed for a static differential settlement of about 0.4 inch and a combined differential settlement of about 1.0 inch within a horizontal distance of 30 feet.

11.7. Floor Slabs

11.7.1. General

The slabs-on-grade within the building footprint will be underlain by compacted fill, as addressed in the "Grading" section of this report, and shall be compacted to a minimum of 90% relative compaction per ASTM D1557. The backfill materials shall comply with the specifications outlined in Section 11.4 of this report.

The building floor slabs should have a nominal minimum thickness of 4 inches and should contain, as a minimum, No. 4 bars spaced a maximum of 18 inches on center, in both directions. It is recommended that the compacted subgrade be moistened prior to casting floor slabs.

Thicker slabs and additional reinforcement may be required depending on the floor loads and the structural requirements. These conditions are referred to the Project Structural Engineer.

Perimeter grades around the building should be sloped in a manner allowing water to drain away from the structure and not to pond next to the foundations. Roof down drains should be connected to underground pipes carrying water away from the building area or have extenders so water does not drain and pond next to the building.

11.7.2. Moisture Sensitive Floor Coverings

Water vapor transmitted through floor slabs is a common cause of floor covering problems. In areas where moisture-sensitive floor coverings (such as tile, hardwood floors, linoleum or carpeting) are planned, a vapor barrier should be installed below the concrete slab to reduce excess vapor drive through the slab.

The function of the recommended impermeable membrane (vapor barrier) is to reduce the amount of soil moisture or water vapor that is transmitted through the floor slab. The membrane should be at least 15-mil thick and care should be taken to preserve the continuity and integrity of the membrane beneath the floor slab. At least 4 inches of free drainage gravel, with no more than 2 percent passing ASTM No. 200 sieve, should be placed below the vapor barrier to serve as a capillary break. The gravel layer shall be compacted to a minimum of 92% relative compaction per ASTM D1557. The gradation for the free drainage material shall conform to the requirements for No. 3 Concrete Aggregates as specified in section 200-1.4 of the latest edition of the Greenbook.

Another factor affecting vapor transmission through floor slabs is the water to cement ratio in the concrete used for the floor slab. A high water to cement ratio increases the porosity of the concrete, thereby facilitating the transmission of water vapor through the slab. The Project Structural Engineer should provide recommendations for design of concrete for footings and floor slabs in accordance with the latest version of the applicable codes.

11.8. Concrete Flatwork

It is recommended that the upper 12 inches of soils below exterior concrete flatwork or hardscapes located around and within the vicinity of the proposed development and subject to pedestrian loads only, be over-excavated and backfilled with existing or import materials and compacted. The backfilled materials shall be moisture conditioned to a moisture content between

the optimum and 3% above the optimum moisture content, and compacted to at least 90% of the maximum dry density obtained per ASTM D1557. The backfill materials shall comply with the specifications outlined in Section 11.4 of this report. Prior to placement of the above recommended fill layer, the upper layer of exposed subgrade shall be scarified to a minimum depth of 8 inches, moisture conditioned to moisture content between the optimum and 3% above the optimum moisture content, and compacted to at least 90% of the maximum dry density obtained per ASTM D1557.

11.9. Utility Trench Backfilling

A minimum of 4 inches of bedding material shall be first placed below the bottom of the utility line, on a firm and unyielding subgrade. Bedding material shall also be placed immediately around a utility line extending to a point 12 inches above the top of the line. The bedding material should consist of sand, fine-grained gravel, or cement slurry to support the line and protect it. The bedding material should meet the specification given in the latest edition of the "Standard Specification for Public Works Construction" (Greenbook). Sand or gravel should be compacted in accordance with Greenbook specifications.

Above the bedding material and up to the finished ground surface, utility trench backfills may consist of low-expansive material (EI less than 30), and should be mechanically compacted to at least 90 percent of the maximum dry density of the soils, except below pavements or within the areas with a higher relative compaction such as building pads. A minimum relative compaction of 95 percent will be required in the upper 1 foot of the backfill underneath the pavement areas and the minimum required relative compaction for the upper 2 feet within the building pads shall be as set forth for the building pads. Prior to backfilling, the gradation and expansivity of the backfill material shall be tested, reviewed, and approved by the soils engineer. The bedding materials and backfilling should be placed in accordance with Sections 306-1.2.1 and 306-1.3 of the "Standard Specification for Public Works Construction" (Greenbook).

When adjacent to any footings, utility trenches and pipes should be located above an imaginary line measured at a gradient of 1:1 (horizontal: vertical) projected down from the bottom edges of any footings. Otherwise the pipe should be designed to accept the lateral effect from the footing load, or the footing bottom should be deepened as needed to comply with this requirement, into competent materials.

For bedding and backfilling of trenches and upon approval of the soils engineer, slurry mix (CLSM) may be used. The slurry mix shall comply with the requirements of Section 201-6 of the "Standard Specification for Public Works Construction" (Greenbook). The backfill material shall be observed, tested and approved by the Geotechnical Engineer.

11.10. Temporary Excavations

11.10.1. General

The proposed structure includes shallow conventional footings. Based on the grading recommendations provided, it is expected that the excavation for grading and construction of the shallow conventional strip/spread footings might be as deep as about 5 feet bgs. The shallower sandy soil at the site are expected to be temporarily stable when excavated at a gradient of 1.5:1 (H:V) for excavations that are less than 5 feet in height. The top of slopes should be barricaded to prevent vehicles and storage loads within 7 feet of the tops of the slopes. A greater setback may be necessary when considering heavy vehicles, such as concrete trucks and cranes; we should be advised of such heavy vehicle loadings so that specific setback requirements can be established. When excavating adjacent to footings of existing buildings, proper means should be employed to prevent any possible damage to the existing structures. Adjacent to existing buildings, un-shored excavations should not extend below a 1:1 (H:V) plane extending downward from the lower edge of adjacent footings. Where there is insufficient space to slope back an excavation, shoring or sequential excavation may be required. All regulations of State or Federal OSHA should be followed. Moreover, due to the high level of groundwater, dewatering of excavations deeper than 5 feet may be warranted.

Temporary excavations are assumed to be those excavated to the recommended gradient, and will remain open for a period of time not exceeding 10 days. In dry weather, the excavation slopes should be kept slightly moist, but not saturated. If excavations are made during the rainy season (normally from November through April), particular care should be taken to protect slopes against erosion. Mitigative measures, such as installation of berms, plastic sheeting, or other devices, may be warranted to prevent surface water from flowing over or ponding at the top of excavations.

12. SOIL CORROSIVITY

AP Engineering performed corrosivity tests on a sample of on-site soils and the results of the tests are presented in Appendix C of this report. It is concluded that the amount of sulfate in tested soils at a depth of about 5 feet is less than 0.1 percent by weight (water soluble sulfate). The resistivity test result indicates existence of a moderately corrosive condition. Further interpretation of the corrosivity test results, including the resistivity value, and providing corrosion design and construction recommendations are referred to corrosion specialists/consultants and design engineers.

13. SOIL EXPANSIVITY

We have performed one expansion index test on a selected soil sample obtained from boring B-1, to determine the expansion characteristics of the on-site shallow soils. The sample was obtained from on-site soil at about 0.5 to 5 feet below the existing grade, which is susceptible to expansion when facing seasonal cycles of saturation/desiccation. The test result is presented in the following table:

Table 3 – Expansion Index Test Result

Sample Location	Sample Depth (ft)	Expansion Index (EI)	Potential Expansion (ASTM D4829 – 08)
B-2	0.5 - 5	12	Very Low

Based on the current test result, as well as the classification of the on-site shallow silty sand soil within the footprint of the proposed developments, the on-site shallow soils is determined to have a very low expansion potential, based on ASTM D4829-11. It should be noted that the expansivity of the soils that will be encountered during the construction phase can vary and might be different from the test above and therefore should be tested at that time.

14. OBSERVATION AND TESTING

This report has been prepared assuming that GEO-ADVANTEC, INC. will perform all geotechnical-related field observations and testing. If the recommendations presented in this report are utilized, and observation of the geotechnical work is performed by others, the party performing the observations must review this report and assume responsibility for

recommendations contained herein. That party would then assume the title "Geotechnical Consultant of Record".

A representative of the Geotechnical Consultant should be present to observe all grading operations as well as all footing excavations. Upon the client's request, a report or final verification letter presenting the results of these observations and related testing should be issued upon completion of the grading operations.

15. CLOSURE

The findings and recommendations presented in this report were based on the results of our field and laboratory investigations, combined with professional engineering experience and judgment. The report was prepared in accordance with generally accepted engineering principles and practice. We make no other warranty, either expressed or implied.

The soils encountered in the boreholes are believed to be representative of the total under consideration area for the subject proposed developments; however soil characteristics can vary throughout the site. GAI should be notified if subsurface conditions are encountered which differ from those described in this report.

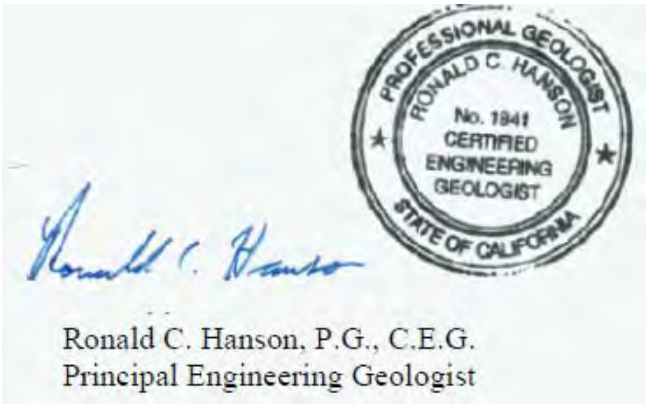
Samples secured for this investigation will be retained in our laboratory for a period of 45 days from the date of this report and will be disposed after this period unless other arrangements are made.

Should you have any questions concerning this submittal, or the recommendations contained herewith, please do not hesitate to call our office.

Respectfully submitted,
GEO-ADVANTEC, INC.

Reza Mortezaie, Ph.D., P.E.
Senior Engineer

Shawn Ariannia, Ph.D., P.E., G.E.
Principal Geotechnical Engineer



Ronald C. Hanson, P.G., C.E.G.
Principal Engineering Geologist

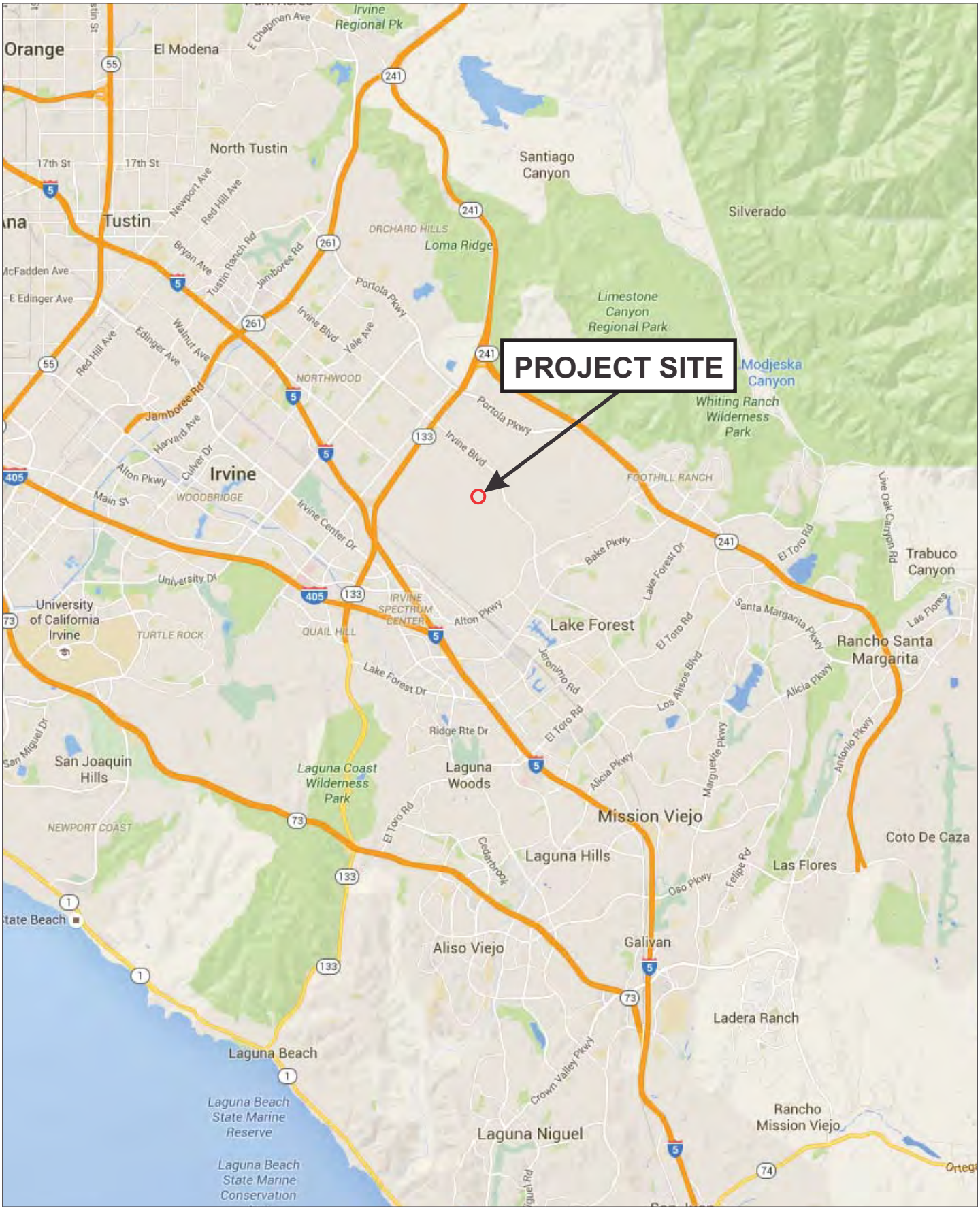
Distribution:
1. Addressee (3 wet stamped copy + pdf copy via email)
2. File

APPENDICES

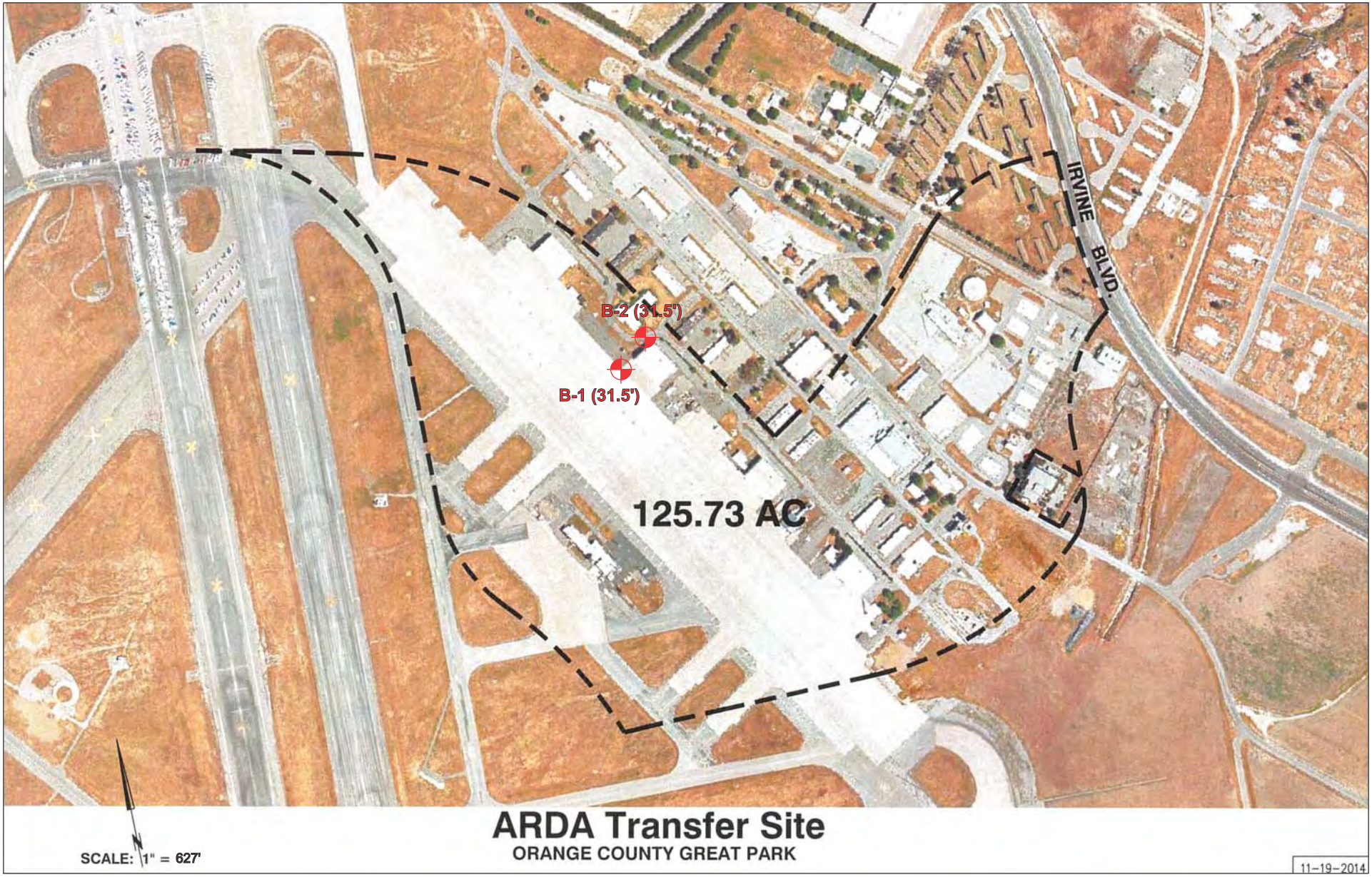
APPENDICES

APPENDIX A

MAPS, PLANS AND FIGURES



Geo-Advantec Inc.		VICINITY MAP	FIGURE
PROJECT NO.	15-1180	Proposed Southern California Veterans Cemetery - Irvine, CA	A-1
DATE	06-03-2016		

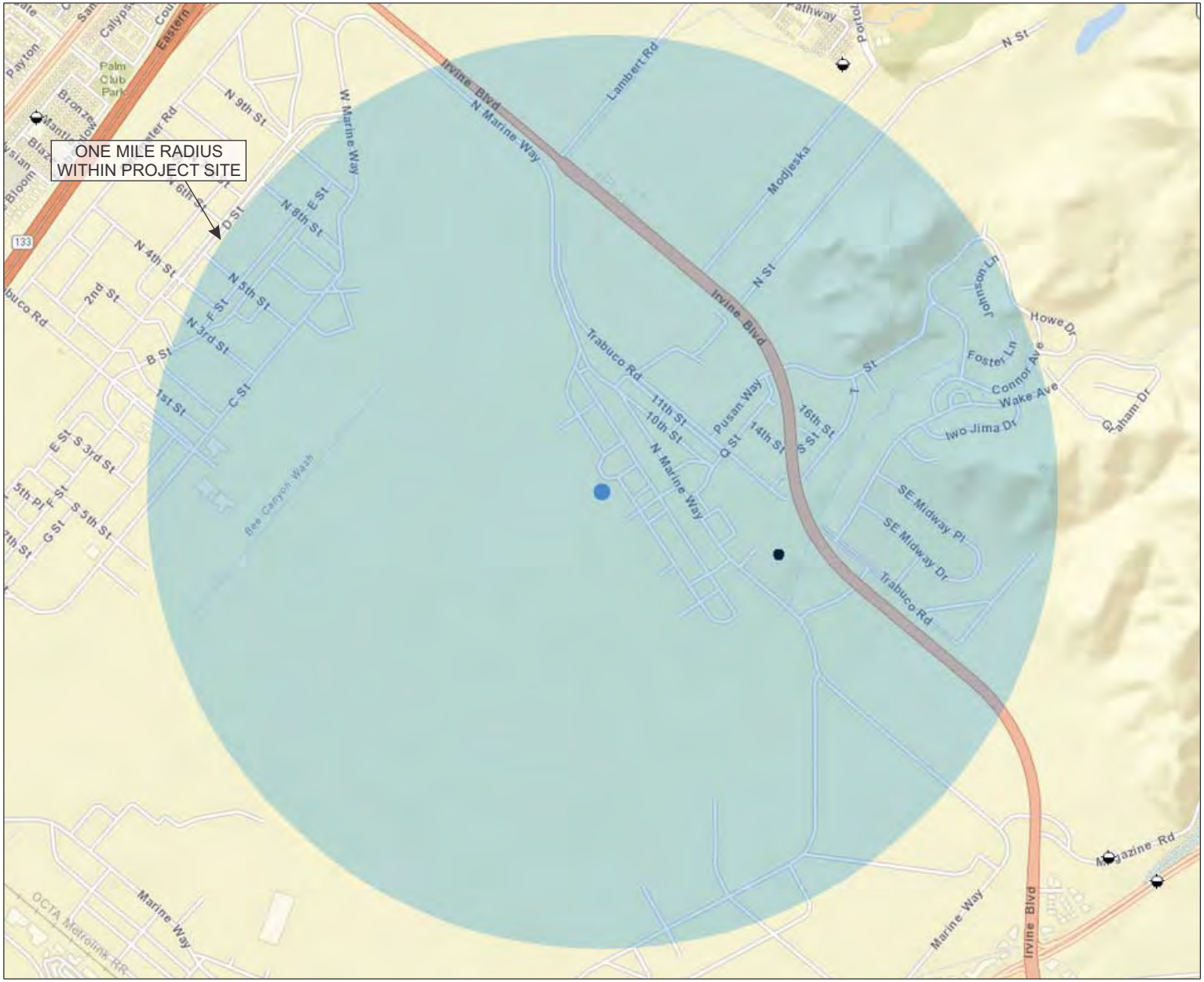


Geo-Advantec Inc.		BORING LOCATIONS PLAN	FIGURE
PROJECT NO.	15-1180	Proposed Southern California Veterans Cemetery - Irvine, CA	A-2
DATE	06-03-2016		

LEGEND

BORING LOCATION

NAME (DEPTH) **B-2 (31.5')**



LEGEND

- New
- Active Producer
- Active Injector
- Dry Hole
- Plugged
- Geothermal
- Notice & Permit
- Enhanced Oil Recovery
- Disposal

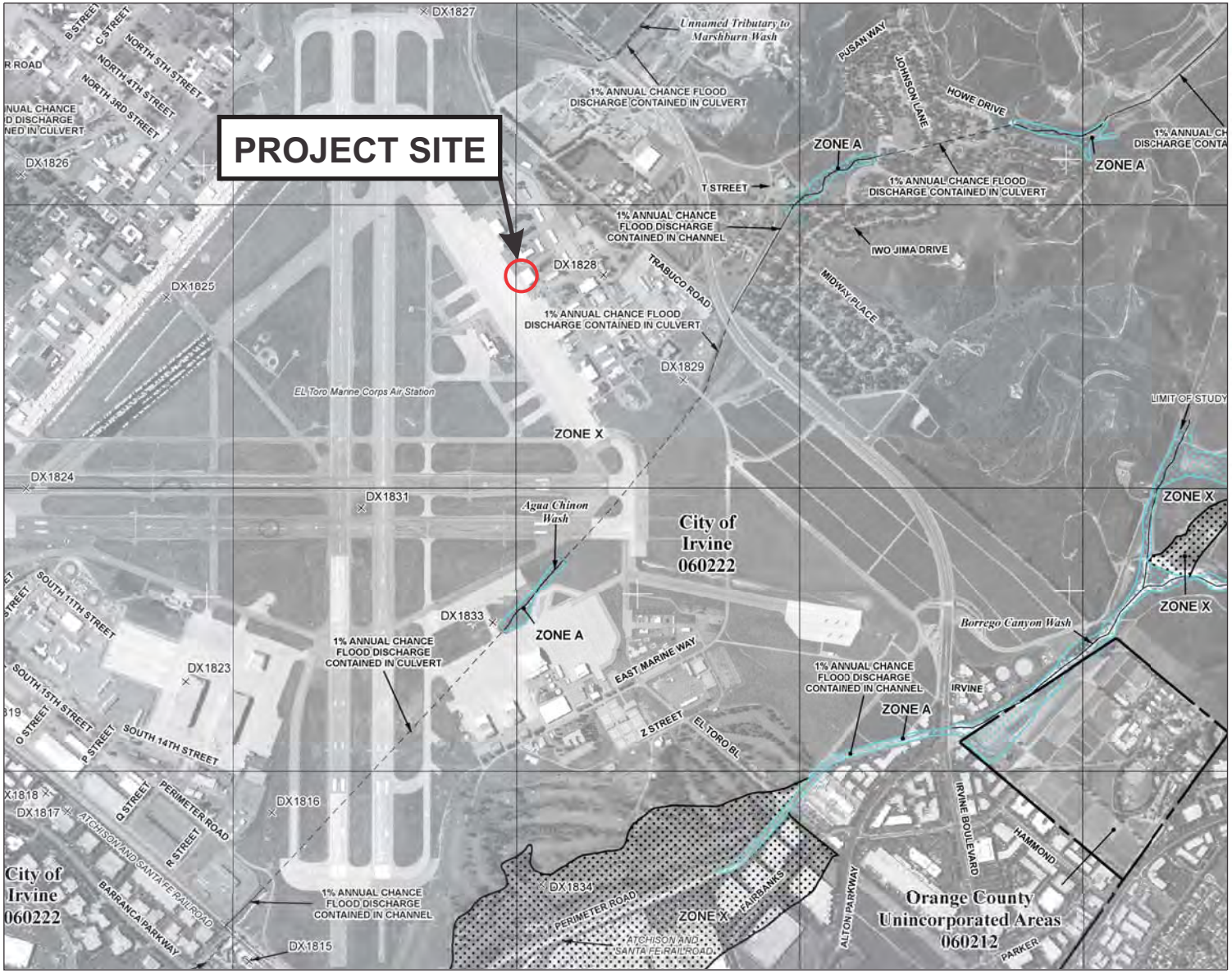
SCALE (MILE)

0 0.25 0.5 1.0

Geo-Advantec Inc.		DOGGR OIL WELL MAP	FIGURE
PROJECT NO.	15-1180	Proposed Southern California Veterans Cemetery - Irvine, CA	A-3
DATE	06-03-2016		

OIL, GAS & GEOTHERMAL

CALIFORNIA CONSERVATION



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0315J

FIRM

FLOOD INSURANCE RATE MAP

ORANGE COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 315 OF 539

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
IRVINE, CITY OF	060222	0315	J
LAKE FOREST, CITY OF	060759	0315	J
ORANGE COUNTY	060212	0315	J

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06059C0315J

MAP REVISED
DECEMBER 3, 2009

Federal Emergency Management Agency

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Geo-Advantec Inc.		FEMA FLOOD MAP	FIGURE
PROJECT NO.	15-1180	Proposed Southern California Veterans Cemetery - Irvine, CA	A-4
DATE	06-03-2016		

APPENDIX B

FIELD EXPLORATORY BORING LOGS

KEY TO LOGS

SOILS CLASSIFICATION

MAJOR DIVISIONS			GRAPHIC LOG	USCS SYMBOL	TYPICAL NAMES
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS MORE THAN 50% OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS LESS THAN 5% FINES		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES MORE THAN 12% FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS 50% OR MORE OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS LESS THAN 5% FINES		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES MORE THAN 12% FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS 50% OR MORE OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT IS LESS THAN 50			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT IS 50 OR MORE			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR GRAVELLY ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT AND OTHER HIGHLY ORGANIC SOILS

GRAIN SIZES

SILT AND CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		
	#200	#40	#10	#4	3/4"	3"	12"
SIEVE SIZES							

Bulk Bag Sample

Standard Penetration Test (SPT)

California Modified Sampler

Change in material observed in sample or cores

Change in material cannot be accurately located due to limitations in the drilling/sampling methods used

KEY TO LOGS

SPT/CD BLOW COUNTS VS. CONSISTENCY/DENSITY					
FINE-GRAINED SOILS (SILTS, CLAYS, etc.)			GRANULAR SOILS (SANDS, GRAVELS, etc.)		
CONSISTENCY	*BLOWS/FOOT		RELATIVE DENSITY	*BLOWS/FOOT	
	SPT	CD		SPT	CD
SOFT	0-4	0-4	VERY LOOSE	0-4	0-8
FIRM	5-8	5-9	LOOSE	5-10	9-18
STIFF	9-15	10-18	MEDIUM DENSE	11-30	19-54
VERY STIFF	16-30	19-39	DENSE	31-50	55-90
HARD	over 30	over 39	VERY DENSE	over 50	over 90

* CONVERSION BETWEEN CALIFORNIA DRIVE SAMPLERS (CD) AND STANDARD PENETRATION TEST (SPT) BLOW COUNT HAS BEEN CALCULATED USING "FOUNDATION ENGINEERING HAND BOOK" BY H.Y. FANG. (**VALUES ARE FOR 140 Lbs HAMMER WEIGHT ONLY**)

DESCRIPTIVE ADJECTIVE VS. PERCENTAGE	
DESCRIPTIVE ADJECTIVE	PERCENTAGE REQUIREMENT
TRACE	1 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
AND	35 - 50%

*THE FOLLOWING "DESCRIPTIVE TERMINOLOGY/ RANGES OF MOISTURE CONTENTS" HAVE BEEN USED FOR MOISTURE CLASSIFICATION IN THE LOGS.

APPROXIMATE MOISTURE CONTENT DEFINITION			
DEFINITION	MOISTURE CONTENT (%)		DESCRIPTION
	FINE-GRAINED SOILS (SILTS, CLAYS, etc.)	GRANULAR SOILS (SANDS, GRAVELS, etc.)	
DRY	<10	2 - 4	Dry to the touch; no observable moisture
SLIGHTLY MOIST	15-24	6-8	Some moisture but still a dry appearance
MOIST	24-28	10-13	Damp, but no visible water
VERY MOIST	30-38	15-20	Enough moisture to wet the hands
WET	>40	20-25	Almost saturated; visible free water

Boring No. : B-1

Sheet: 1 of 1

Drilling Co.: Geoboden, Inc. **Ground Elevation:**
Drilling Method: 8" Hollow Stem Auger **Lat:**
Sampling Method: SPT - CD - Bulk **Lon:**
Hammer Weight: 140 lbs **Drop Height:** 30"
Location: See Figure A-2 **Date Drilled:** 05-12-2016

Sample No.	Moisture Content (%)	Dry Unit Weight (pcf)	Blows	Depth (ft)	Soil Type (USCS)	Description / Interpretation	
				0		4" Asphalt concrete	
				1	SM	**Silty SAND:** slightly moist, brown	EI = 12
			3 2 3	5		fine to medium, loose	FC = 27%
	7.4	98.8	1 3 7	10		reddish brown	FC = 23%
			3 6 8	15	SW-SC	**Well-graded SAND with Clay:** trace gravel, medium dense, slightly moist, light brown	FC = 9%
	5.5	107.6	8 11 15	20		grades to finer sand	
			6 6 7	25	CL-ML	**Sandy Silty CLAY:** stiff, dry to slightly moist, dark brown	FC = 54% LL = 25, PI = 7
	11.2	124.2	6 18 26	30		trace gravel, hard, reddish brown with tan interlayers	
				31.5		Bottom of borehole at 31.5 ft Groundwater not encountered during drilling	

Geo-Advantec Inc.		BORING LOG	FIGURE
PROJECT NO.	15-1180	Proposed Southern California Veterans Cemetery - Irvine, CA	
DATE	06-03-2016		

Boring No. : B-2

Sheet: 1 of 1

Drilling Co.: Geoboden, Inc. **Ground Elevation:**
Drilling Method: 8" Hollow Stem Auger **Lat:**
Sampling Method: SPT - CD - Bulk **Lon:**
Hammer Weight: 140 lbs **Drop Height:** 30"
Location: See Figure A-2 **Date Drilled:** 05-12-2016

Sample No.	Moisture Content (%)	Dry Unit Weight (pcf)	Blows	Depth (ft)	Soil Type (USCS)	Description / Interpretation	
				0		4" Asphalt concrete, 9" Base	
				1	SM	**Silty SAND:** slightly moist, brown	SE = 19
				2			
				3			
				4			
	10.2	105.5	3 4 6	5		loose, slightly moist to moist	FC = 27%
				6			
				7			
				8			
				9			
			2 3 5	10	SC	**Clayey SAND:** loose, slightly moist to moist, light brown	
				11		grades to less fines	FC = 14%
				12			
				13			
				14			
	12.4	119.9	6 14 22	15		grades to more fines, medium dense, dark brown with light tan interlayers	FC = 47% LL = 32, PI = 14
				16			
				17			
				18			
				19			
			7 7 9	20		grades to less fines, fine to medium, light brown	FC = 16%
				21			
				22			
				23			
				24			
			6 11 11	25		grades to more fines, brown	
				26			
				27			
				28			
				29			
			6 10 13	30	CL-ML	**Silty CLAY with Sand:** fine sand, very stiff, slightly moist, tan brown	FC = 77%
				31			
				32		Bottom of borehole at 31.5 ft Groundwater not encountered during drilling	
				33			
				34			
				35			
				36			
				37			
				38			
				39			
				40			

Geo-Advantec Inc.

BORING LOG

FIGURE

PROJECT NO.	15-1180
DATE	06-03-2016

Proposed Southern California Veterans Cemetery - Irvine, CA

APPENDIX C

LABORATORY TEST RESULTS

PARTICLE SIZE DISTRIBUTION REPORT

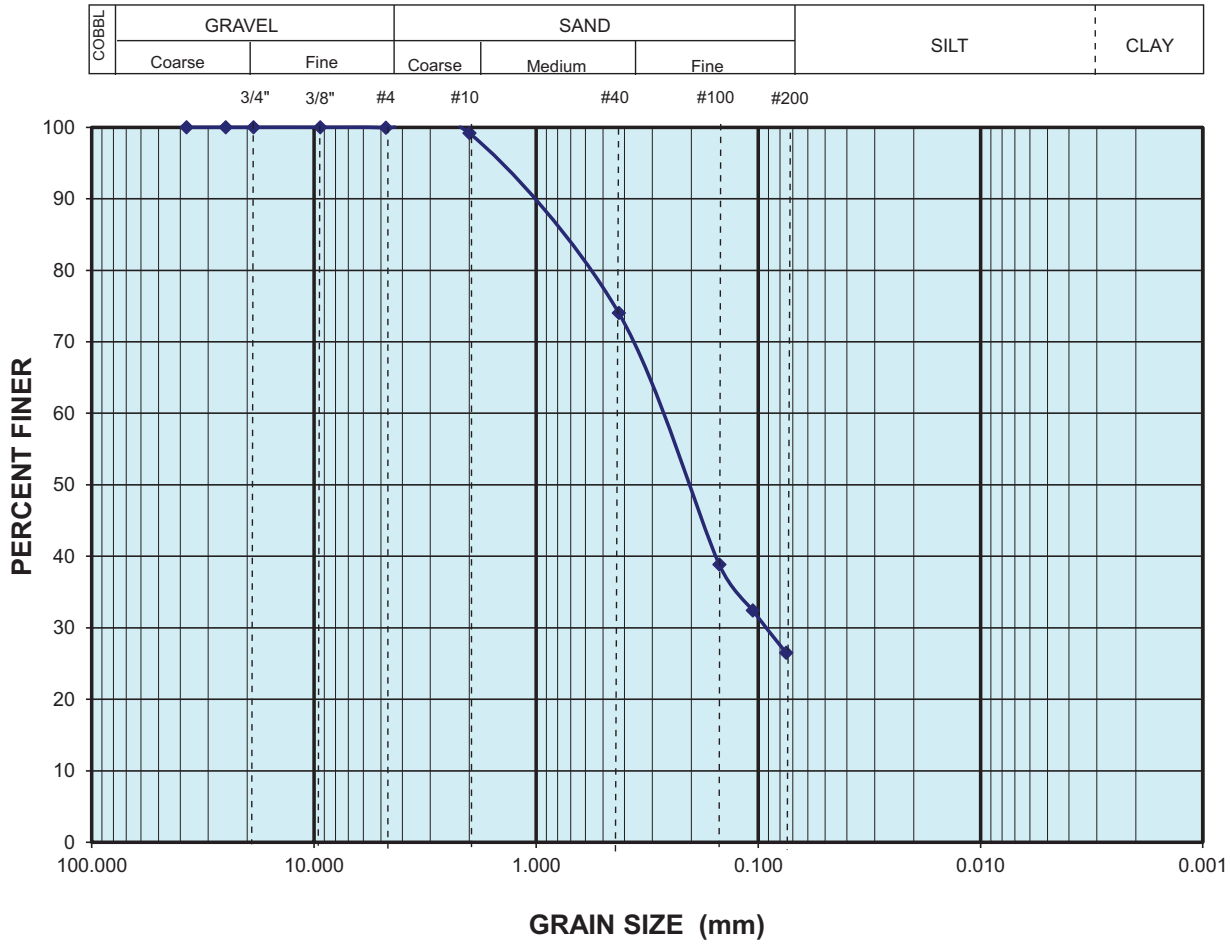
Client: Southern California Veteran Cemetery
Site: Irvine
Tech: RR

Project No. 15-1180
Date: 05/20/16

Sample B1@5'
Material Silty Sand (SM)

Test Specification: ASTM C136

Sieve	Mesh Opening (mm)	Percent Passing (%)
1 1/2 in	37.50	100.0 %
1 in	25.00	100.0 %
3/4 in	18.75	100.0 %
3/8 in	9.38	100.0 %
No. 4	4.75	99.9 %
No. 10	2.00	99.2 %
No. 40	0.43	74.0 %
No. 100	0.150	38.8 %
No. 140	0.106	32.4 %
No. 200	0.075	26.5 %



Geo-Advantec Inc.		SIEVE ANALYSIS	FIGURE
PROJECT NO.	15-1180	Proposed Southern California Veterans Cemetery - Irvine, CA	
DATE	06-03-2016		

PARTICLE SIZE DISTRIBUTION REPORT

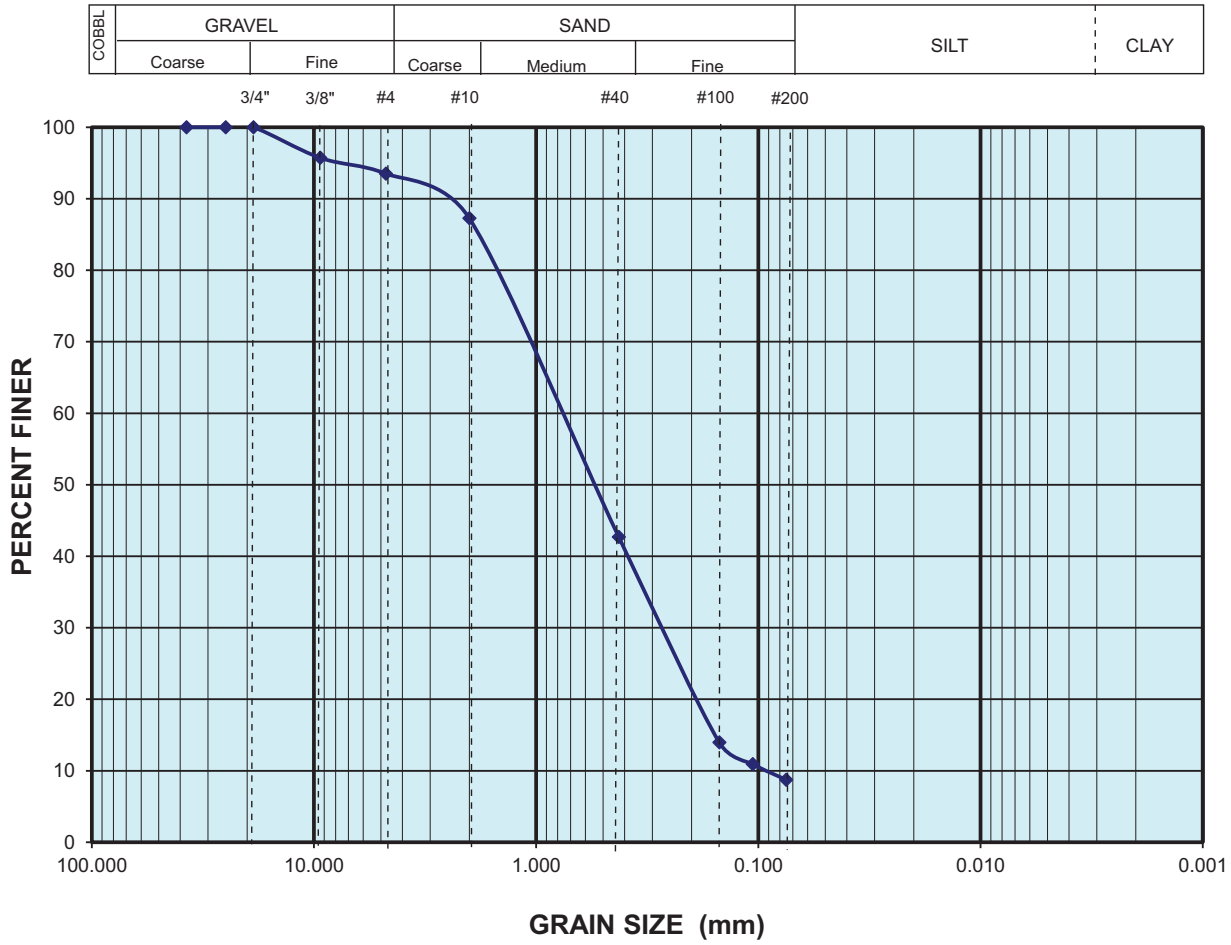
Client: Southern California Veteran Cemetery
Site: Irvine
Tech: RR

Project No. 15-1180
Date: 05/20/16

Sample B1@15'
Material Well-graded Sand with clay (SW-SC)

Test Specification: ASTM C136

Sieve	Mesh Opening (mm)	Percent Passing (%)
1 1/2 in	37.50	100.0 %
1 in	25.00	100.0 %
3/4 in	18.75	100.0 %
3/8 in	9.38	95.7 %
No. 4	4.75	93.5 %
No. 10	2.00	87.3 %
No. 40	0.43	42.7 %
No. 100	0.150	14.0 %
No. 140	0.106	10.9 %
No. 200	0.075	8.7 %



Geo-Advantec Inc.		SIEVE ANALYSIS	FIGURE
PROJECT NO.	15-1180	Proposed Southern California Veterans Cemetery - Irvine, CA	
DATE	06-03-2016		

PARTICLE SIZE DISTRIBUTION REPORT

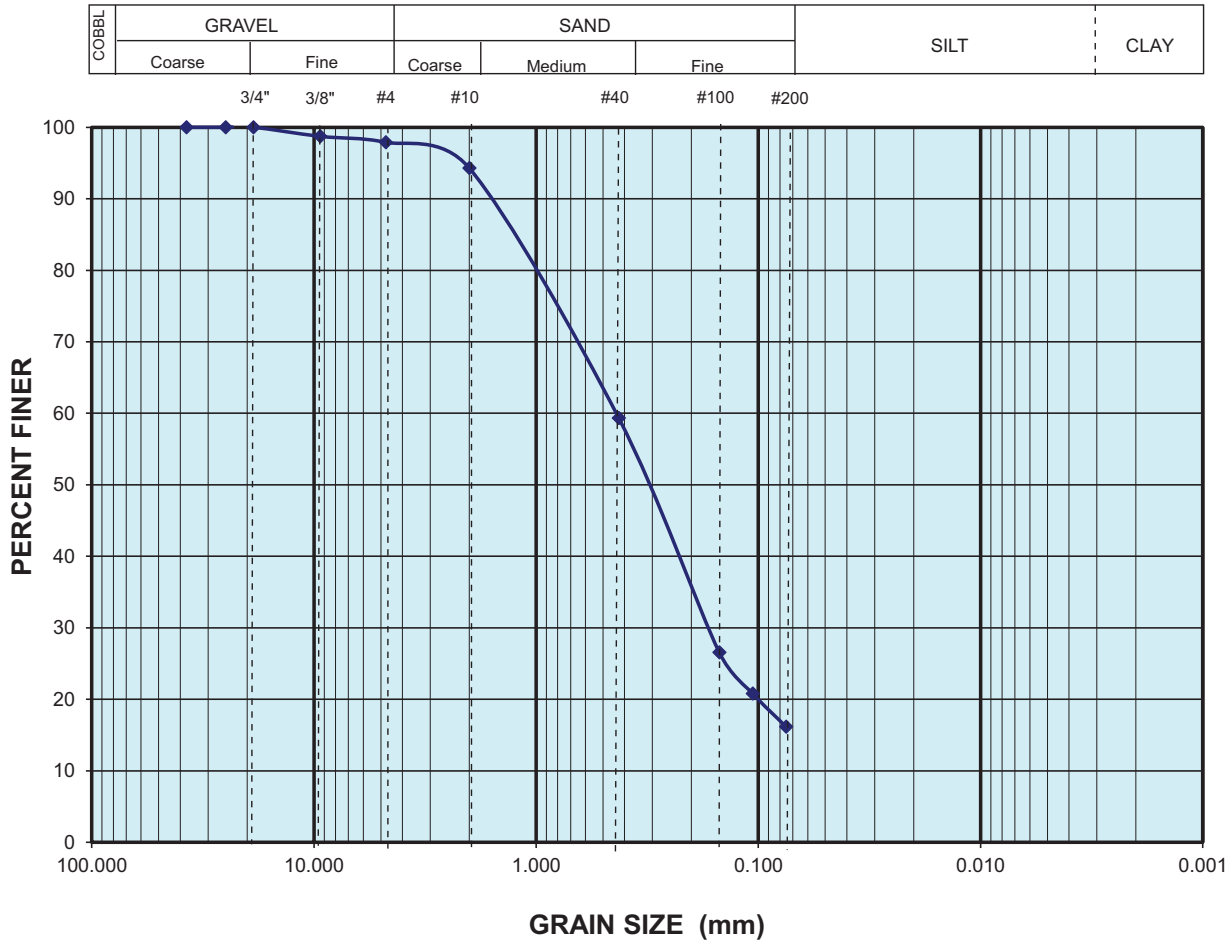
Client: Southern California Veteran Cemetery
Site: Irvine
Tech: RR

Project No. 15-1180
Date: 05/20/16

Sample B2@20'
Material Clayey Sand (SC)

Test Specification: ASTM C136

Sieve	Mesh Opening (mm)	Percent Passing (%)
1 1/2 in	37.50	100.0 %
1 in	25.00	100.0 %
3/4 in	18.75	100.0 %
3/8 in	9.38	98.7 %
No. 4	4.75	97.9 %
No. 10	2.00	94.3 %
No. 40	0.43	59.3 %
No. 100	0.150	26.6 %
No. 140	0.106	20.8 %
No. 200	0.075	16.1 %



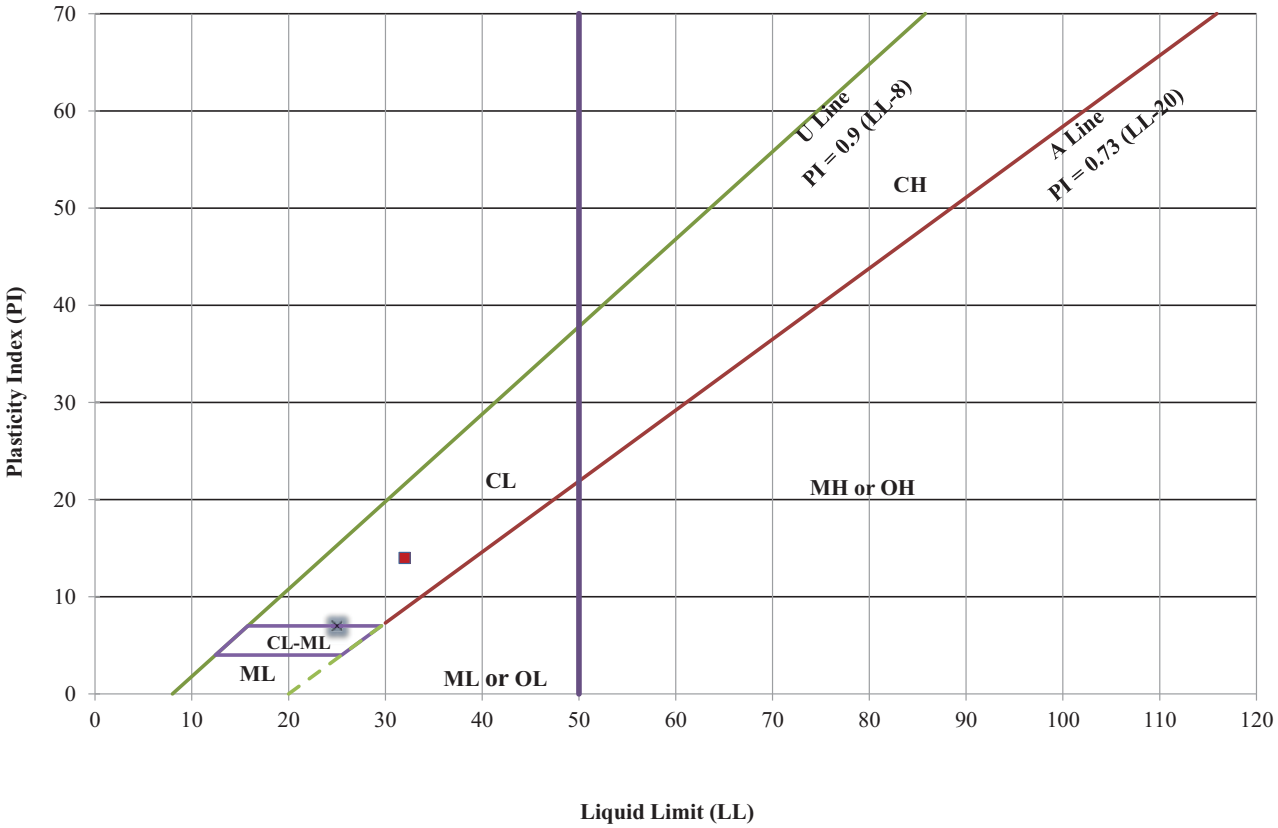
Geo-Advantec Inc.		SIEVE ANALYSIS	FIGURE
PROJECT NO.	15-1180	Proposed Southern California Veterans Cemetery - Irvine, CA	
DATE	06-03-2016		

SIEVE ANALYSIS (SOIL PASSING #200) ASTM D1140

LOCATION	PRE-WASH DRY WEIGHT (gm)	AFTER WASH DRY WEIGHT (gm)	% - # 200	SOIL TYPE
B1@10'	130.80	100.50	23.2	SM
B1@26'	116.70	54.10	53.6	CL-ML
B2@5'	116.00	84.80	26.9	SM
B2@11'	137.30	118.20	13.9	SC
B2@15'	163.70	86.90	46.9	SC
B2@30'	126.20	29.60	76.5	CL-ML

Geo-Advantec Inc.		PERCENT FINER THAN NO. 200 SIEVE	FIGURE
PROJECT NO.	15-1180	Proposed Southern California Veterans Cemetery - Irvine, CA	
DATE	06-03-2016		

PLASTICITY CHART (ASTM D4318)



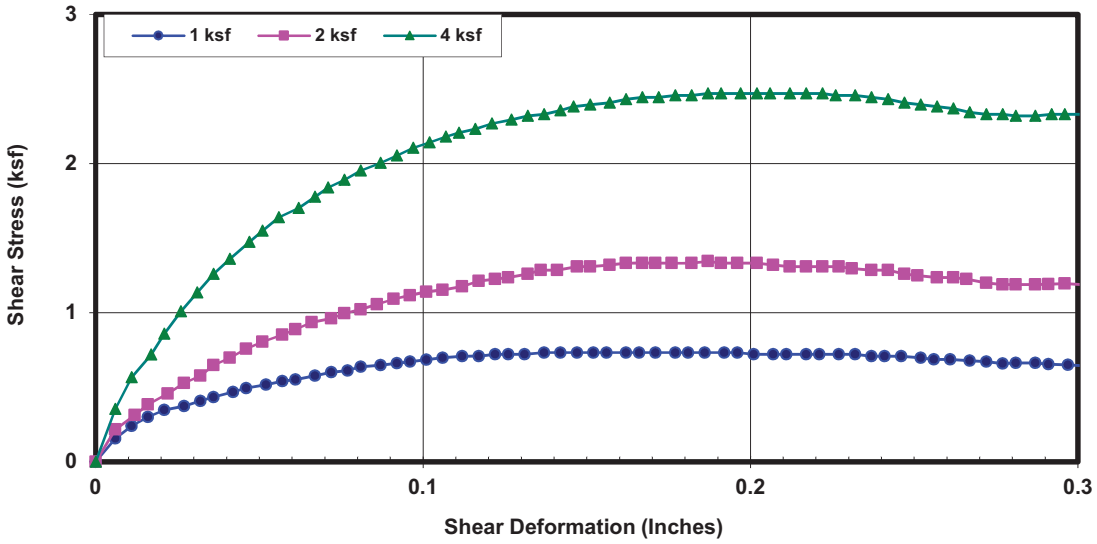
Symbol	Source	Depth (ft)	Classification	Natural M.C. (%)	Liquid Limit (LL)	Plasticity Index (PI)	%Passing #200 Sieve
×	B1	26	Sandy Silty Clay (CL-ML)		25	7	54
■	B2	15	Clayey Sand (SC)		32	14	47

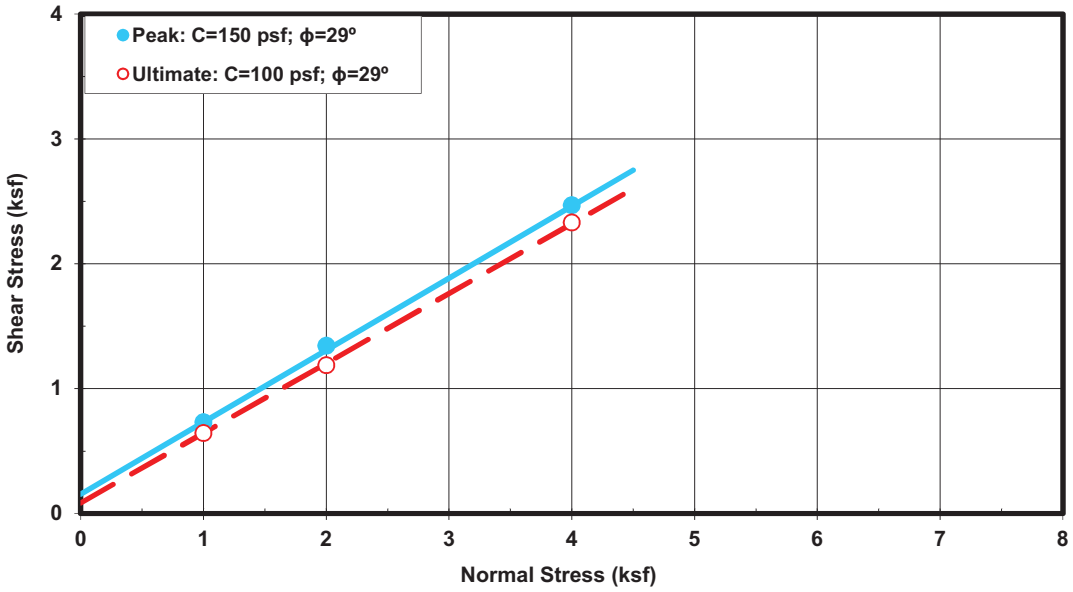
Geo-Advantec Inc.		PLASTICITY CHART	FIGURE
PROJECT NO.	15-1180	Proposed Southern California Veterans Cemetery - Irvine, CA	
DATE	06-03-2016		

DIRECT SHEAR TEST RESULTS
ASTM D 3080

Project Name:	Southern California Veterans Cemetery		**Tested By:**	ALB	**Date:** 05/18/16
Project No.:	15-1180		**Computed By:**	JP	**Date:** 05/20/16
Boring No.:	B-1		**Checked by:**	AP	**Date:** 05/20/16
Sample No.:	-	**Depth (ft):** 10			
Sample Type:	Mod. Cal.				
Soil Description:	Silty Sand				
Test Condition:	Inundated	**Shear Type:** Regular			

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
106.1	98.8	7.4	23.7	28	91	1	0.732	0.644
						2	1.344	1.188
						4	2.470	2.331





Geo-Advantec Inc.	DIRECT SHEAR TEST RESULTS	FIGURE
PROJECT NO. 15-1180	Proposed Southern California Veterans Cemetery - Irvine, CA	
DATE 06-03-2016		

CONSOLIDATION TEST (Consolidation Curve)

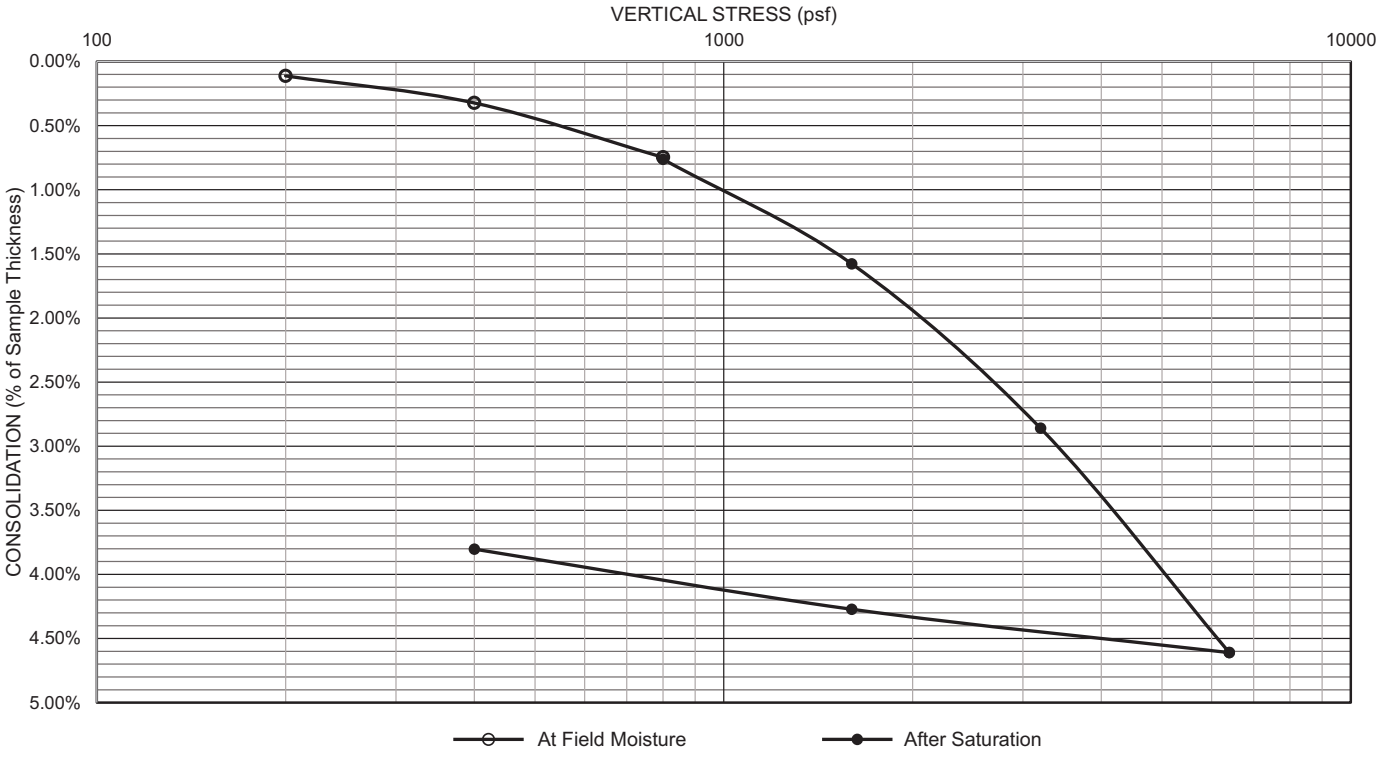
Project / Client: Southern California Veterans Cemetery | Project No.: 15-1180 | Date Tested: 05-13-2016

Site Location: Irvine | Tested by: RR

Boring No.: B-2 | Sample No.: | Depth: 5' | Frame No.: 2 | Sample Type: Intact CD

Soil Description: Silty Sand (SM) | Water added: 800 psf

CONSOLIDATION CURVE



Initial Moisture Content	10.2%	Final Moisture Content	18.9%
Initial Dry Unit Weight	105.5	Final Dry Unit Weight	109.3
Initial Void Ratio	0.60	Final Void Ratio	0.54
Initial Degree of Saturation	46.0%	Final Degree of Saturation	94.1%
Assumed Specific Gravity	2.7		

Remarks: Consolidation = 0.01% upon inundation

Geo-Advantec Inc.		ONE-DIMENSIONAL CONSOLIDATION TEST	FIGURE
PROJECT NO.	15-1180	Proposed Southern California Veterans Cemetery - Irvine, CA	
DATE	06-03-2016		

CORROSION TEST RESULTS

Project / Client: Southern California Veterans Cemetery | Project No.: 15-1180 | Date Tested: 05/17/16

Site Location: Irvine | Test Specification: (See notes)

Tested by: AP | Sample Type: Bulk

Boring No.	Sample No.	Depth (feet)	Soil Type	Minimum Resistivity (ohm-cm)	pH	Sulfate Content (ppm)	Chloride Content (ppm)
B-2	-	0 - 5	SM	4157	7.5	45	36

NOTES:

Resistivity Test and pH: California Test Method 643

Sulfate Content: California Test Method 417

Chloride Content: California Test Method 422

ND = Not Detectable

NA = Not Sufficient Sample

NR = Not Requested

Geo-Advantec Inc.		CORROSION TEST RESULTS	FIGURE
PROJECT NO.	15-1180	Proposed Southern California Veterans Cemetery - Irvine, CA	
DATE	06-03-2016		

SAND EQUIVALENT TEST

Client: Southern California Veterans Cemetery
Project No. 15-1180
Site: Irvine
Date: 5/16/2016
Technician: RR
Sample: B2@0-5'
Test Specification: ASTM D-2419
Soil: Silty Sand (SM)

	Actual Clay Reading:	Actual Sand Reading:	Sand Equivalent: Intial:	Rounded:
Sample 1	12.4	2.1	16.9	17
Sample 2	10.8	2	18.5	19
Sample 3	9.3	1.9	20.4	21

Average Sand Equivalent: 19

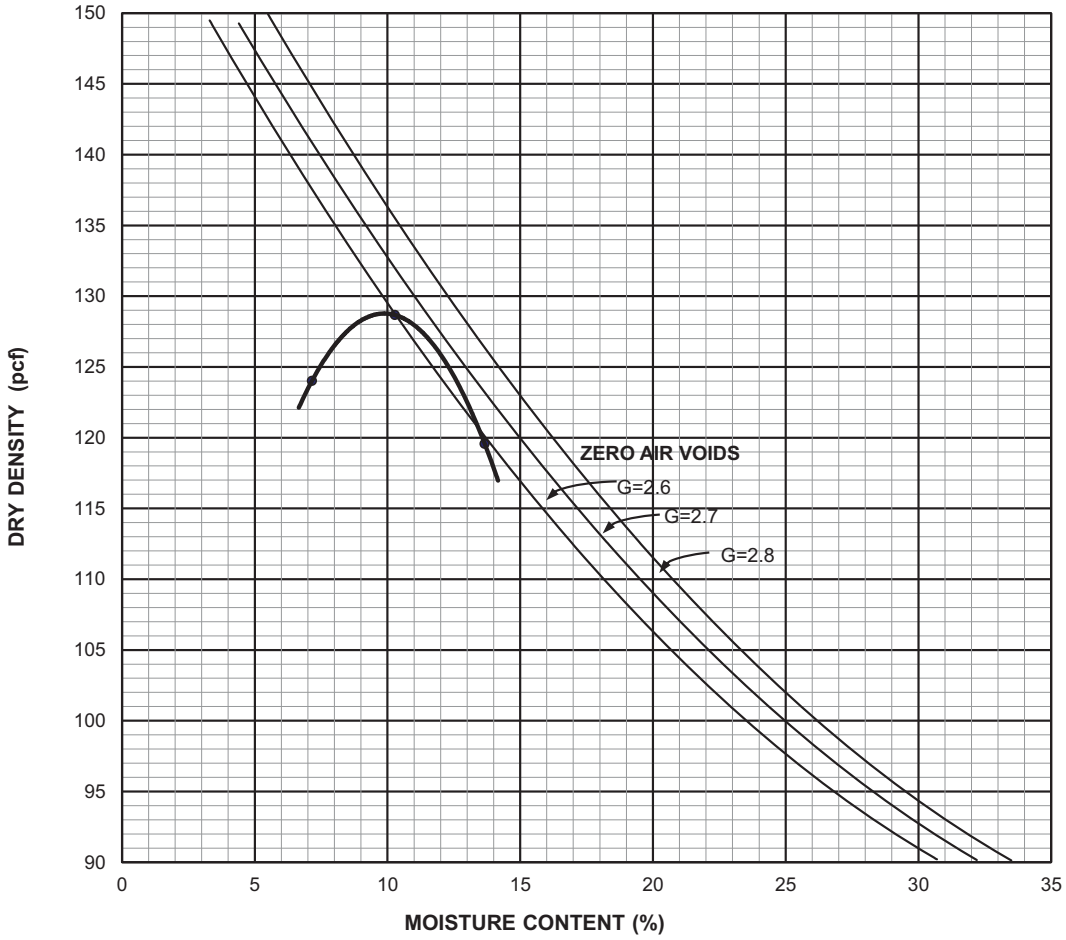
Geo-Advantec Inc.		SAND EQUIVALENT TEST - ASTM D2419	FIGURE
PROJECT NO.	15-1180	Proposed Southern California Veterans Cemetery - Irvine, CA	
DATE	06-03-2016		

MAXIMUM DENSITY / OPTIMUM MOISTURE

Client:	Southern California Veterans Cemetery	Job No.	15-1180
Site:	Irvine	Date:	5/18/2016
Tech:	RR		
Test Specification:	ASTM D-1557		
Mold Dia.:	4.0 inches	Layers:	5.0
Height:	4.58 inches	Blows per Layer:	25.0
Sample:	B1@0-5'		
Material:	Silty Sand (SM)		
Remarks:	3.5% retained on 3/8" sieve		

MAXIMUM DRY DENSITY: **128.8 pcf**

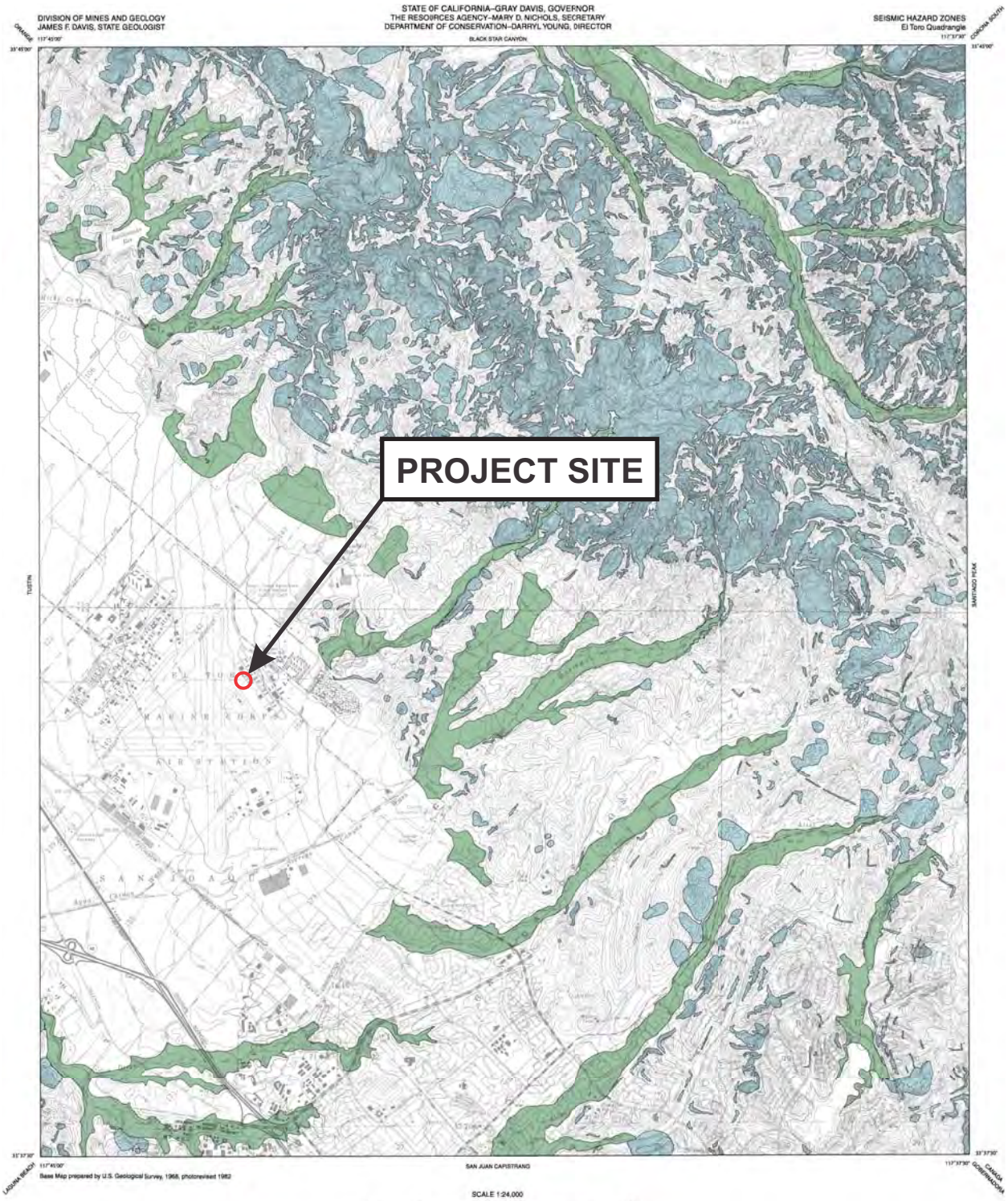
OPTIMUM MOISTURE CONTENT: **9.9 %**



Geo-Advantec Inc.		MAXIMUM DENSITY / OPTIMUM MOISTURE	FIGURE
PROJECT NO.	15-1180	Proposed Southern California Veterans Cemetery - Irvine, CA	
DATE	06-03-2016		

APPENDIX D

QUADRANGLE MAP



Geo-Advantec Inc.		SEISMIC HAZARD ZONES MAP	FIGURE
PROJECT NO.	15-1180	Proposed Southern California Veterans Cemetery - Irvine, CA	D-1
DATE	06-03-2016		

APPENDIX E

ENGINEERING ANALYSES RESULTS

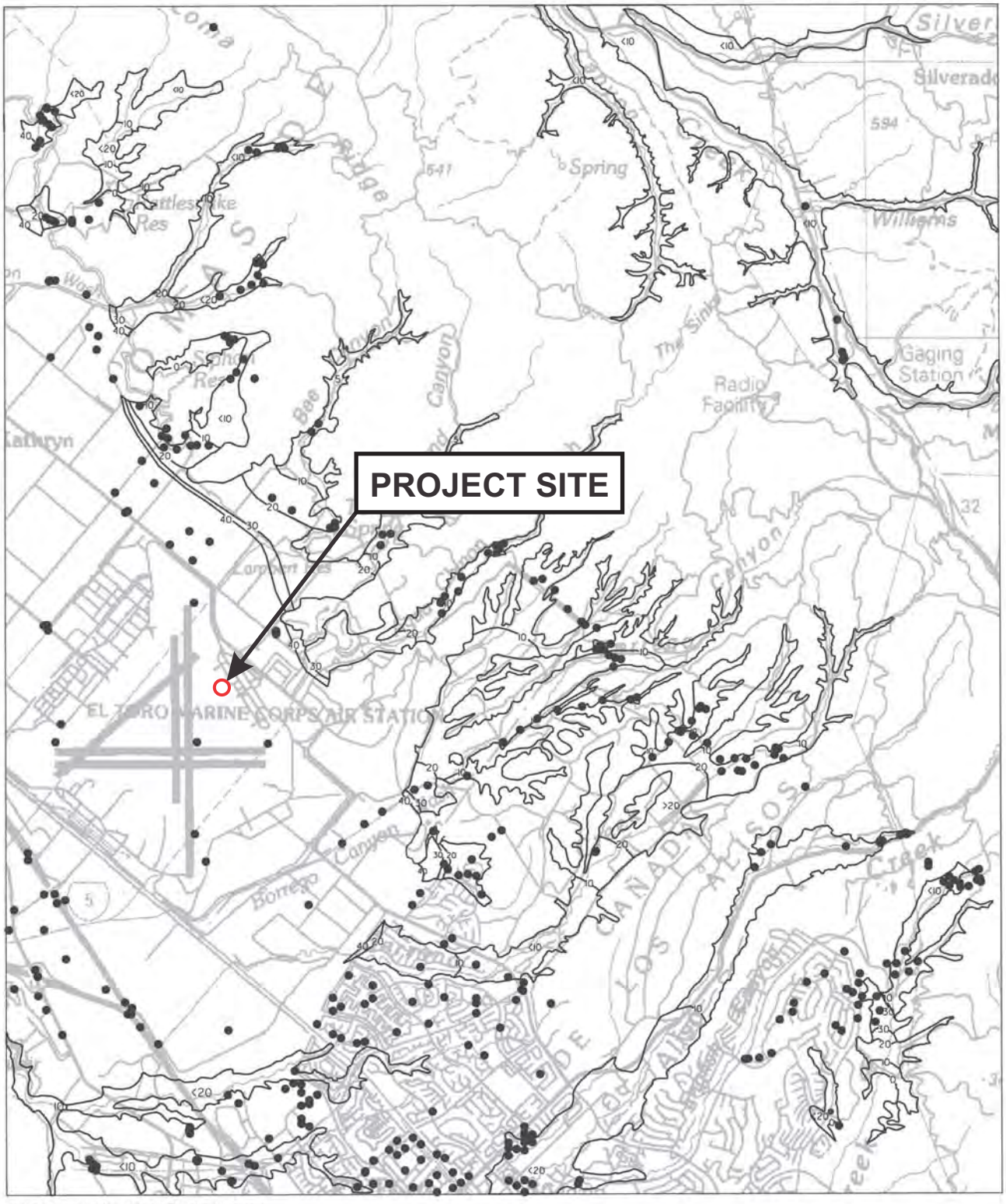


Plate 1.2 Anticipated high ground water levels in the El Toro Quadrangle, Orange County.

● Borehole Site — 30 — Depth to ground water in feet

ONE MILE
Scale

Geo-Advantec Inc.		HISTORICALLY HIGHEST GROUND WATER MAP	FIGURE
PROJECT NO.	15-1180	Proposed Southern California Veterans Cemetery - Irvine, CA	D-2
DATE	06-03-2016		

APPENDIX G

GEOLOGIC AND SEISMIC DATA

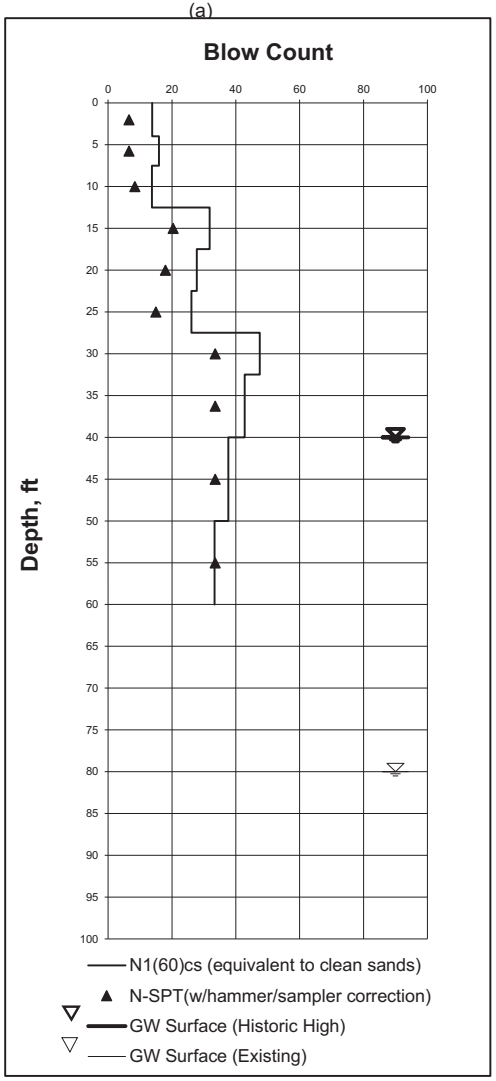
COMPUTER PROGRAM: EQLique&Settle"2"

Location……. **B-1 to B-2** **Surcharge** 2.70 ksf

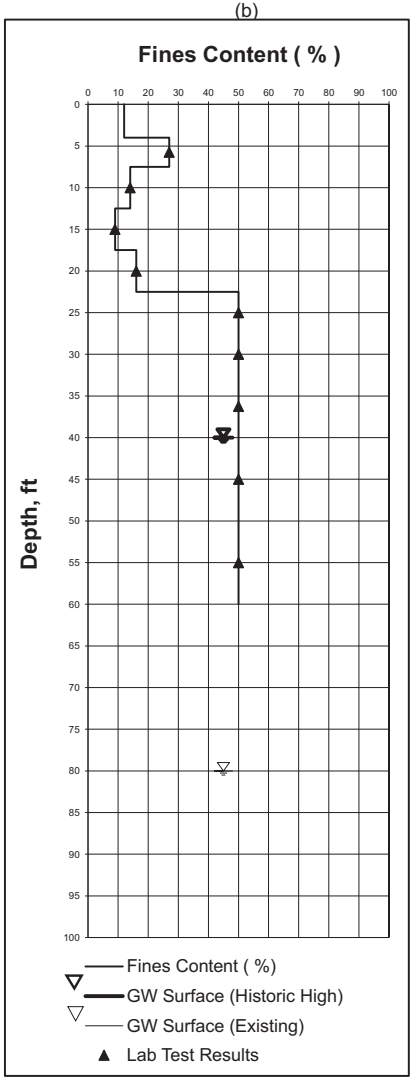
Elevation (MSL) (ft) 400

NOTE: If the total settlement is very small (e.g.<0.05"), it will not be seen due to the scale used, and should be reported as "negligible".

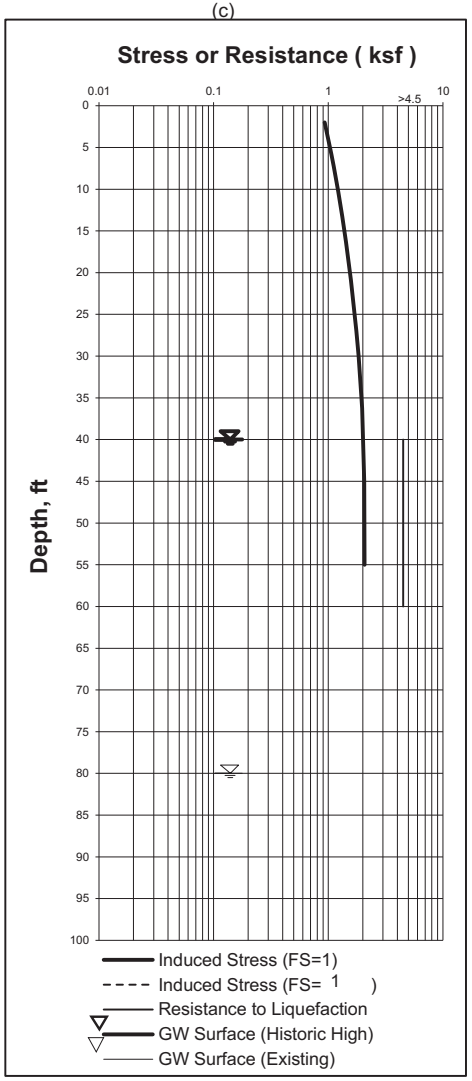
(a)



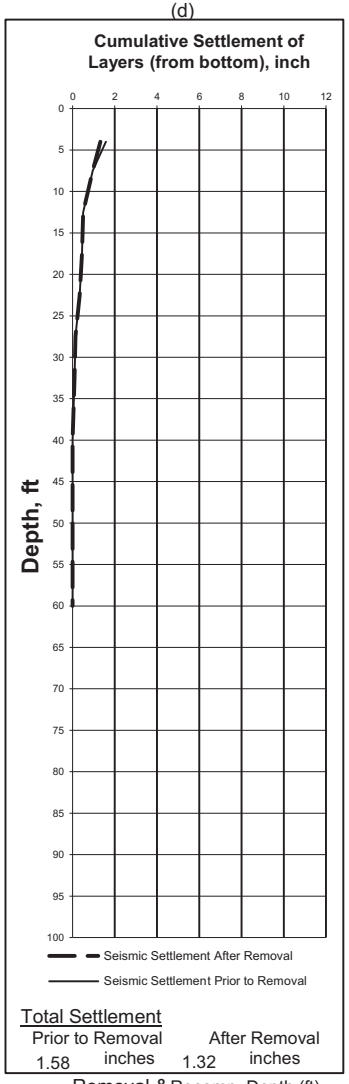
(b)



(c)



(d)



Total Settlement

Prior to Removal		After Removal	
1.58	inches	1.32	inches

Removal & Recomp. Depth (ft) = 4

Weighted Ground Accel. (M=7.5) = 0.49 g

Site Magnitude = 7.0

Geo-Advantec Inc.		LIQUEFACTION & SEISMIC SETTLEMENTS	FIGURE
PROJECT NO.	15-1180	Proposed Southern California Veterans Cemetery - Irvine, CA	E-1
DATE	06-03-2016		