

# Cemetery Area Water Pipeline Replacement Project

Technical Appendices

December 15, 2011

Lead agency:  
**City of Escondido**  
Planning Division  
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Escondido, CA 92025-2798

Prepared by:  
**HELIX Environmental Planning, Inc.**  
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**CITY OF ESCONDIDO  
CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT**

**APPENDICES FOR  
DRAFT MITIGATED NEGATIVE DECLARATION REPORT**

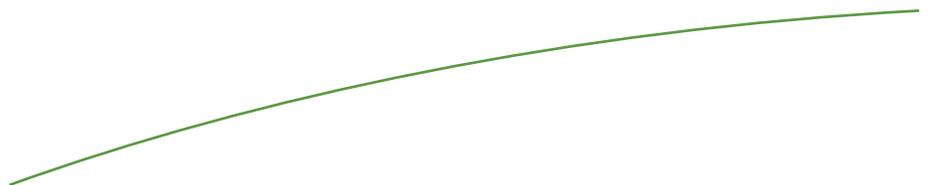
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Appendix A

AFFECTED PARCELS LIST



Cemetery Area Water Pipeline Replacement Project:  
Affected Parcels

Assessors Parcel Number	Name	Address	Apt or Suite #	City	State	Zip Code
240-230-34-00	LEE LIVING TRUST 01-14-09	303 W PALM DR		ARCADIA	CA	91007
240-180-03-00	NORTH COUNTY CEMETERY DISTRICT	PUBLIC AGENCY			CA	00000
240-230-31-00	BOYDEN SUSAN TR	1364 EMERAUDE GLN		ESCONDIDO	CA	92029
240-220-39-00	KEEFER BART&COLLEEN FAMILY TRUST 10-10-03	2686 CANYON CREST DR		ESCONDIDO	CA	92027
240-230-11-00	NORTH COUNTY CEMENTERY DISTRICT	PUBLIC AGENCY			CA	00000
240-230-21-00	MARSHBURN NEIL&ELAINE FAMILY TRUST 12-01-03	2690 CANYON CREST DR		ESCONDIDO	CA	92027
241-171-01-00	DJUKIC BORKA, DJUKIC LIVING TRUST	1765 S MAPLE ST		ESCONDIDO	CA	92025
240-230-29-00	BOYDEN SUSAN TR	1364 EMERAUDE GLN		ESCONDIDO	CA	92029
240-230-30-00	BOYDEN SUSAN TR	1364 EMERAUDE GLN		ESCONDIDO	CA	92029
240-433-01-00	RANCHO SANPASQUAL COMMUNITY ASSOCIATION	C/O ENCORE PROPERTY MANAGEMENT 268 N LINCOLN AVE	#5	CORONA	CA	92882
240-230-14-00	HARVEY LEAH M	2678 CANYON CREST DR		ESCONDIDO	CA	92027
240-400-04-00	ANGEL MIGUEL&VERONICA	915 FALCONER RD		ESCONDIDO	CA	92027
240-400-05-00	ARAGON MARCEL&CLAUDIA	1435 PEARL PL		ESCONDIDO	CA	92027
240-400-08-00	BAILEY GLEN E JR&JACQUELIN B	2840 LA COLINA DR		ESCONDIDO	CA	92027
240-400-09-00	SKERRITT THOMAS M&BARBARA J TRUST 07-02-01	931 FALCONER RD		ESCONDIDO	CA	92027
241-160-13-00	BROOKS ALLEN&PATRICIA	2804 MOUNTAIN VIEW DR		ESCONDIDO	CA	92027
240-220-29-00	PETRO CHRISTA E	2742 MOUNTAIN VIEW DR		ESCONDIDO	CA	92027
241-160-12-00	BRISKI&ARSENAULT FAMILY TRUST 04-06-07	3187 WILLOW TREE LN		ESCONDIDO	CA	92027
240-230-32-00	QUIGLEY KEVIN J&TERRY L	2239 N NUTMEG ST		ESCONDIDO	CA	92026
240-190-34-00	ALLEN STEPHEN B	925 REED TER		ESCONDIDO	CA	92027
240-190-24-00	JOHNSON FAMILY TRUST 01-20-03	935 REED TER		ESCONDIDO	CA	92027
240-190-21-00	WHITTAKER RALPH G&CAROL A FAMILY TRUST 12-01-94	2917 REED RD		ESCONDIDO	CA	92027
241-161-04-00	KIRBY FAMILY TRUST 08-17-98	3020 MOUNTAIN VIEW DR		ESCONDIDO	CA	92027
241-161-05-00	CHRISTENSEN SIDNEY W&CLAIRE	2974 MOUNTAIN VIEW DR		ESCONDIDO	CA	92027
241-010-03-00	GRANGETTO REVOCABLE TRUST 02-04-04	2743 MOUNTAIN VIEW DR		ESCONDIDO	CA	92027
241-161-02-00	ROBINSON ROBBIE S&HAASE MELISSA A	3313 WILD OAK LN		ESCONDIDO	CA	92027
241-170-08-00	DUDECK FAMILY TRUST 11-06-03	3060 MOUNTAIN VIEW DR		ESCONDIDO	CA	92027
241-161-03-00	KIRBY FAMILY TRUST 08-17-98	3020 MOUNTAIN VIEW DR		ESCONDIDO	CA	92027
241-021-02-00	GRANGETTO REVOCABLE TRUST 02-04-04	2743 MOUNTAIN VIEW DR		ESCONDIDO	CA	92027
240-220-19-00	HENDERSON NEAL A&CAROLYN M	2740 MOUNTAIN VIEW DR		ESCONDIDO	CA	92027
241-010-21-00	BRAUN ANTHONY W&CHARLENE K	895 LAPHAM DR		SOUTH LAKE TAHOE	CA	96150
241-010-31-00	GRANGETTO RANCHES INC	2601 MOUNTAIN VIEW DR		ESCONDIDO	CA	92027
241-160-14-00	WOLVES DEN L L C	2832 MOUNTAIN VIEW DR		ESCONDIDO	CA	92027
241-010-26-00	GRANGETTO RANCH INC	2601 MOUNTAIN VIEW DR		ESCONDIDO	CA	92027
240-220-30-00	PETRO CHRISTA E	2742 MOUNTAIN VIEW DR		ESCONDIDO	CA	92027
241-161-06-00	HARREBOME E FAMILY TRUST 01-24-06	2932 MOUNTAIN VIEW DR		ESCONDIDO	CA	92027
241-020-09-00	NELSON FAMILY REVOCABLE LIVING TRUST 03-14-07	3053 MOUNTAIN VIEW DR		ESCONDIDO	CA	92027
241-160-11-00	HARREBOME E HANS JR	2838 MOUNTAIN VIEW DR		ESCONDIDO	CA	92027
240-220-01-00	RIECHES RANDY G&DARCY W	2684 CANYON CREST DR		ESCONDIDO	CA	92027
240-540-01-00	HILL SUSAN P TRUST 08-28-97	2654 EMERALD OAKS GLN		ESCONDIDO	CA	92027
240-220-33-00	WARNER JOHN R&DIANE L	2672 CANYON CREST DR		ESCONDIDO	CA	92027
240-540-22-00	LUTGEN PHILIP J&YUN W	2648 EMERALD OAKS GLN		ESCONDIDO	CA	92027
241-160-02-00	MEIER DONAL A&GERTRUDE E	2756 MOUNTAIN VIEW DR		ESCONDIDO	CA	92027

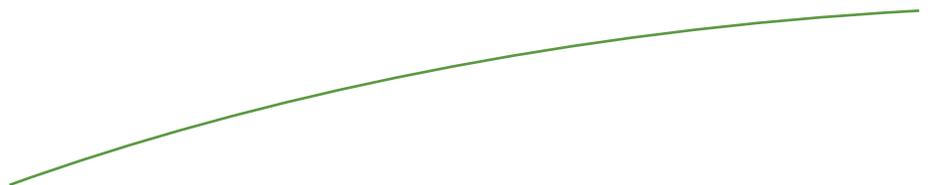
Cemetery Area Water Pipeline Replacement Project:  
Affected Parcels

241-160-01-00	LITSCHIEWSKI JILL TRUST 06-15-07	P O BOX 461621		ESCONDIDO	CA	92046
240-230-22-00	HILBERT MARK A&TERRI	2692 CANYON CREST DR		ESCONDIDO	CA	92027
240-170-16-00	NORTH COUNTY CEMETERY DISTRICT	PUBLIC AGENCY				00000
240-190-56-00	NORTH COUNTY CEMETERY DISTRICT	PUBLIC AGENCY				00000
240-170-18-00	JASPERSE FAMILY TRUST 10-19-99	2635 GLENRIDGE RD		ESCONDIDO		92027
241-170-09-00	REED ROBERT R&BERNADETTE J	1463 CLOVERDALE RD		ESCONDIDO		92027
241-210-10-00	ONE STONE GOLF LLC	1509 WORKMAN MILL RD		CITY OF INDUSTRY		90601
241-210-09-00	RANCHO SAN PASQUAL COMMUNITY ASSN	C/O CALIFORNIA COASTAL COMMUNITIES, 6 EXECUTIVE CIR	#250	IRVINE		92614
241-180-17-00	HEGER MARION B TRUST 05-14-96	1650 CLOVERDALE RD		ESCONDIDO		92027
231-460-02-00	ESCONDIDO UNION SCHOOL DISTRICT	PUBLIC AGENCY				00000
240-310-16-00	EARLY JOSEPH D&JULIE K	2845 REED RD		ESCONDIDO		92027



Appendix B

BIOLOGICAL TECHNICAL REPORT



# Cemetery Area Water Pipeline Replacement Project

Biological Technical Report

August 12, 2011

Prepared for:  
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## LIST OF ACRONYMS

BMO	Biological Mitigation Ordinance
BMPs	best management practices
BRCA	Biological Resource Core Area
BSA	biological study area
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
City	City of Escondido
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Corps	U.S. Army Corps of Engineers
County	County of San Diego
ESA	Endangered Species Act
FPA	Focused Planning Area
HCP	Habitat Conservation Plan
HELIX	HELIX Environmental Planning, Inc.
HLP	Habitat Loss Permit
lf	linear feet
MBTA	Migratory Bird Treaty Act
MHCP	Multiple Habitat Conservation Program
MSCP	Multiple Species Conservation Program
NCCP	Natural Communities Conservation Program
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
OHWM	ordinary high water mark
PAMA	Pre-approved Mitigation Area
PVC	polyvinylchloride
RPO	Resource Protection Ordinance
RWQCB	Regional Water Quality Control Board
SWMP	Storm Water Mitigation Plan
SWPPP	Storm Water Pollution Prevention Plan
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

## EXECUTIVE SUMMARY

This biological technical report was prepared to evaluate the proposed Cemetery Area Water Pipeline Replacement project. The approximately 29.7-acre biological study area (BSA), which includes the project footprint plus an additional buffer on each side of the footprint, is located within the City of Escondido (City) and County of San Diego (County) (the buffer is generally approximately 35 feet wide but varies in some areas). The portion of the BSA within the City is included in the Public Review Draft Escondido Subarea Plan (Ogden and CBI 2001) for the Multiple Habitat Conservation Program (MHCP). The unincorporated lands of the County within the BSA are located within the Metro-Lakeside-Jamul Segment of the County's Multiple Species Conservation Program (MSCP; County 1997).

The project proposes to replace aging water transmission and distribution infrastructure and increase potable water delivery capacity and pressure, as well as provide pipeline infrastructure for future delivery of recycled water in the vicinity. The primary objective of the increase in pressure or capacity that could result from the proposed project is to improve the flow of water to existing property owners during a wildfire-related emergency.

Ten vegetation communities occur within the BSA including: southern coast live oak riparian forest (including disturbed), willow riparian woodland, riparian scrub, coast live oak woodland (including disturbed), Diegan coastal sage scrub (including disturbed), non-native grassland, non-native vegetation, agriculture, disturbed habitat, and developed land.

Areas under the jurisdiction of U.S. Army Corps of Engineers (Corps), California Department of Fish and Game (CDFG), and/or County of San Diego Resource Protection Ordinance (RPO) wetlands occur within the BSA.

No sensitive plant species were observed within the BSA. No federal or state listed as endangered or threatened animal species were observed or detected within the BSA. However, 3 animal species considered sensitive by the County were observed flying near the BSA, including turkey vulture (*Cathartes aura*), western bluebird (*Sialia mexicana*), and barn owl (*Tyto alba*).

Implementation of the proposed project would result in direct impacts to 1.3 acres of sensitive vegetation communities, including 0.3 acre of coast live oak woodland (including disturbed), 0.6 acre of Diegan coastal sage scrub (including disturbed), and 0.4 acre of non-native grassland. In addition, impacts to non-sensitive communities would total 4.7 acres and include 0.7 acre of agriculture, 0.4 acre of disturbed habitat, and 3.6 acres of developed land.

No impacts to Corps or CDFG jurisdictional areas or County RPO wetlands are anticipated upon implementation of the proposed project.

No impacts to sensitive plant species are anticipated as none were observed within the BSA. The 3 sensitive animal species (turkey vulture, western bluebird, and barn owl) observed during surveys were observed flying near the BSA. As such, no direct impacts to these species are anticipated. Indirect impacts could occur through habitat loss and would be mitigated as such. A pre-grading survey would be conducted if construction would occur during the breeding season

for coastal California gnatcatcher (*Polioptila californica californica*; February 15 through August 31) or tree-nesting raptors (February 1 through September 15).

Mitigation of direct impacts to sensitive vegetation communities and indirect impacts to sensitive animal species (through habitat loss) would occur through off-site acquisition of mitigation credits, or creation and/or restoration of appropriate habitat in consultation with the City, County, and appropriate resource agencies. Mitigation measures for indirect impacts (construction noise and human activity) also would be implemented. These proposed mitigation measures would reduce project-related impacts to biological resources below a level of significance.

## 1.0 INTRODUCTION

This report describes biological conditions for Cemetery Area Water Pipeline Replacement project (proposed project). It provides the project applicant (City of Escondido [City]), County of San Diego (County), resource agencies, and public with current biological data to satisfy project review under the California Environmental Quality Act (CEQA) and other federal, state, City, and County regulations. This report describes vegetation communities and plant and animal species within the biological study area (BSA), which includes the project footprint plus an additional on each side of the project footprint (the buffer is generally approximately 35 feet wide but varies in some areas), and identifies sensitive resources that occur or have potential to occur within the BSA. Impacts to biological resources from the proposed project are assessed, and mitigation is proposed for significant biological impacts from project implementation.

### 1.1 PROJECT LOCATION

The approximately 29.7-acre BSA for the proposed project is located within both the City and County and is within and adjacent to the Oak Hill Memorial Park. It is in unsectioned land within Township 12 South, Range 1 West on the U.S. Geological Survey (USGS) 7.5-minute Escondido and Valley Center quadrangle maps (Figures 1 and 2). Specifically, the BSA is located west of Cloverdale Road, within and north of Mountain View Road, south of Falconer Road, and east of Whispering Highlands Drive (Figure 3).

The portion of the BSA within the City is included in the Public Review Draft Escondido Subarea Plan (Ogden and CBI 2001) for the Multiple Habitat Conservation Program (MHCP). A very small area in the City is within the hardline Focused Planning Area (FPA) further described below (Figure 3). The unincorporated lands of the County within the BSA are located within the Metro-Lakeside-Jamul Segment of the County's Multiple Species Conservation Program (MSCP; County 1997). A small portion of the BSA within the County is designated as Pre-approved Mitigation Area (PAMA), also described below (Figure 3).

### 1.2 PROJECT DESCRIPTION

The proposed project consists of the abandonment of approximately 17,500 linear feet (lf), or 3.3 miles, of existing 12-inch and 24-inch diameter concrete-lined steel potable water pipeline in the eastern portion of the City's water service area. The existing pipelines would be capped and abandoned in place following completion of the project, or removed in areas where necessary to make room for the proposed pipeline segments. The existing pipelines would be replaced with approximately 12,600 lf (2.4 miles) of potable water transmission and distribution lines generally ranging between 12 and 24 inches diameter and consisting of steel, ductile iron, polyvinylchloride (PVC) or high-density polyethylene (HDPE) pipe material. Numerous smaller PVC or copper pipes would be installed as service laterals. The project also would include construction of an approximately 2,545-foot long, 20-inch diameter HDPE recycled water pipeline. Unlike the proposed potable water pipelines which would be put into service immediately, the recycled water pipeline would be installed at the time of the potable water lines, but not activated until some point in the future. A small pressure-reducing station also would be constructed as a part of the proposed project, located along the potable water pipeline in the

southeast corner of the BSA. The project would replace aging water transmission and distribution infrastructure and increase potable water delivery capacity and pressure, as well as provide infrastructure for future delivery of recycled water in the vicinity. The primary objective of any increase in pressure or capacity that would result from the proposed project is to improve the flow of water to existing property owners during a fire-related emergency and not to allow for increased density or development in the project area.

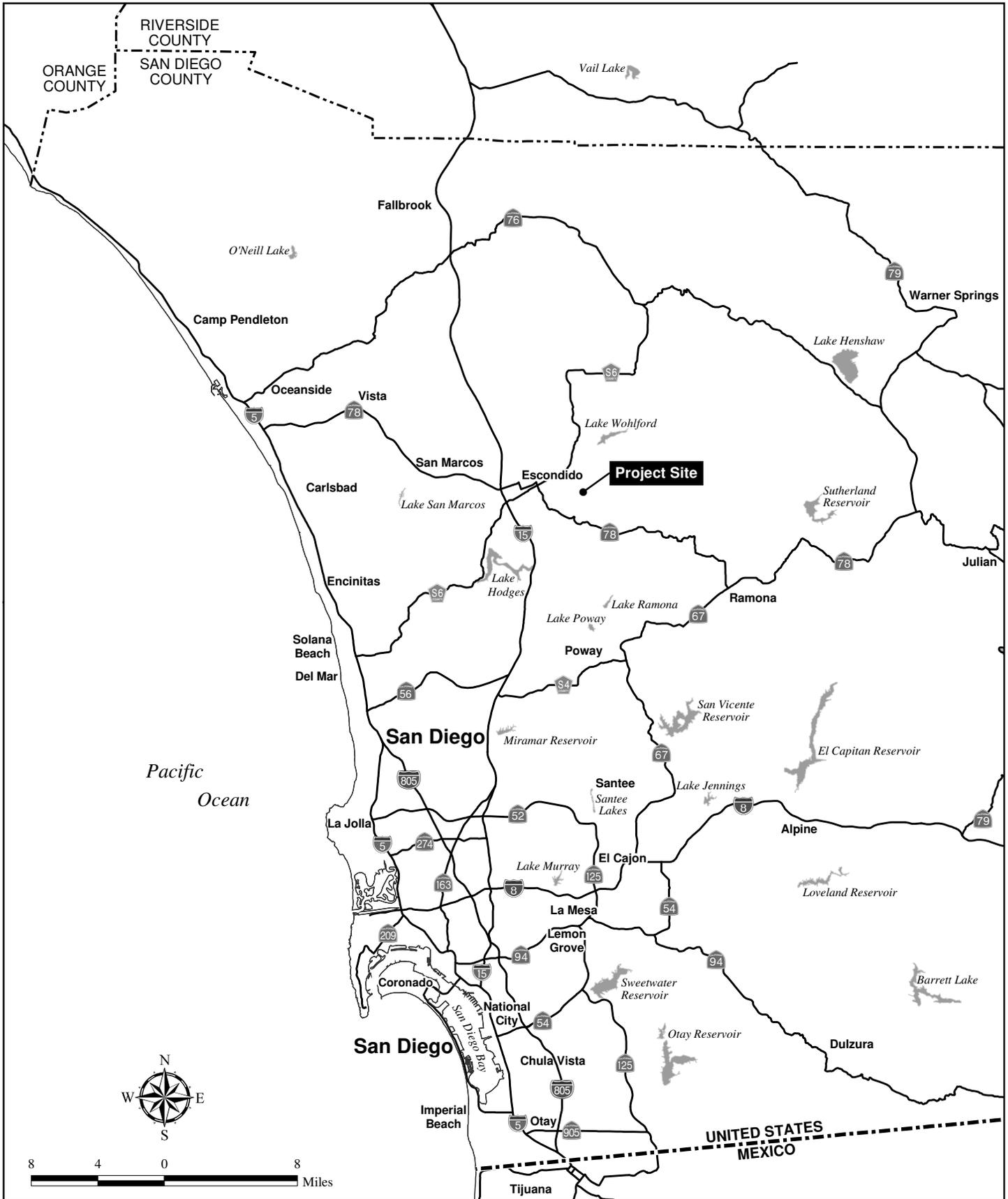
The existing project area pipelines are within the Reed and Hogback pressure zones (Figure 3). The BSA covers approximately 29.7 acres within these pressure zones and extends along four new proposed pipeline alignments. The proposed recycled water pipeline alignment would parallel one of the four proposed potable pipeline alignments for the first approximately 2,250 feet, after which it would deviate from the potable water alignment for approximately 295 feet before terminating within a public right-of-way south of Oak Hill Memorial Park. The proposed pressure-reducing structure would be located within the potable water alignment along Mountain View Drive in the southeast corner of the BSA, near the intersection with Cloverdale Road. The proposed approximately 10- by 20-foot pressure-reducing structure would rest on a concrete slab and have reinforced concrete retaining walls on 3 sides. The enclosure would include full-width chain-link access gates on the fourth side and a lightweight, removable roof which also would comprise chain-link fencing.

New lateral lines and new meters also would be constructed and, in some cases, existing meters would be relocated as part of the project. The proposed lateral lines and new meters would be constructed within existing disturbed driveways or private roadways and existing meters would be relocated to the public right-of-way.

### **1.3 PHYSIOGRAPHY**

The BSA is situated in an area with rural and dense residential lots, the Oak Hill Memorial Park, agricultural uses (avocado orchards), and undeveloped land (Figures 4a and 4b). The Eagle Crest Golf Course and Cloverdale Creek are located east of the BSA. Elevations within the BSA range between approximately 430 feet to 980 feet above mean sea level.

Twelve (12) soil types are mapped within the BSA and include Cienega coarse sandy loam (30 to 65 percent slopes, eroded), Escondido very fine sandy loam (9 to 15 percent slopes, eroded), Escondido very fine sandy loam (15 to 30 percent slopes, eroded), Escondido very fine sandy loam deep (5 to 9 percent slopes), Fallbrook sandy loam (15 to 30 percent slopes, eroded), Fallbrook-Vista sandy loams (9 to 15 percent slopes), Placentia sandy loam (2 to 9 percent slopes), Placentia sandy loam, thick surface (2 to 9 percent slopes), Visalia sandy loam (0 to 2 percent slopes), Vista coarse sandy loam (15 to 30 percent slopes, eroded), Vista coarse sandy loam (5 to 9 percent slopes), and Vista coarse sandy loam (9 to 15 percent slopes; Bowman 1973).

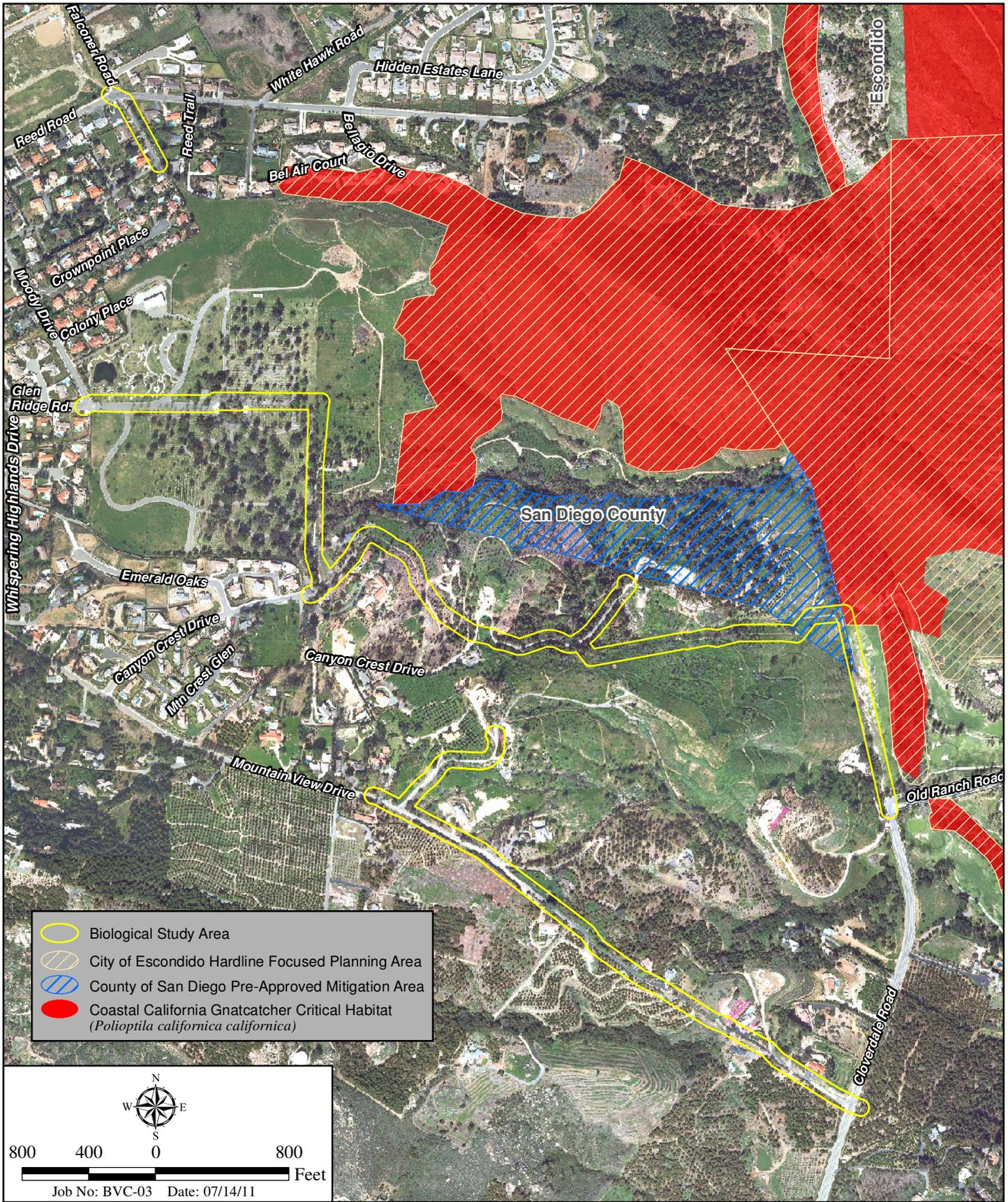


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## Regional Location Map

CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT

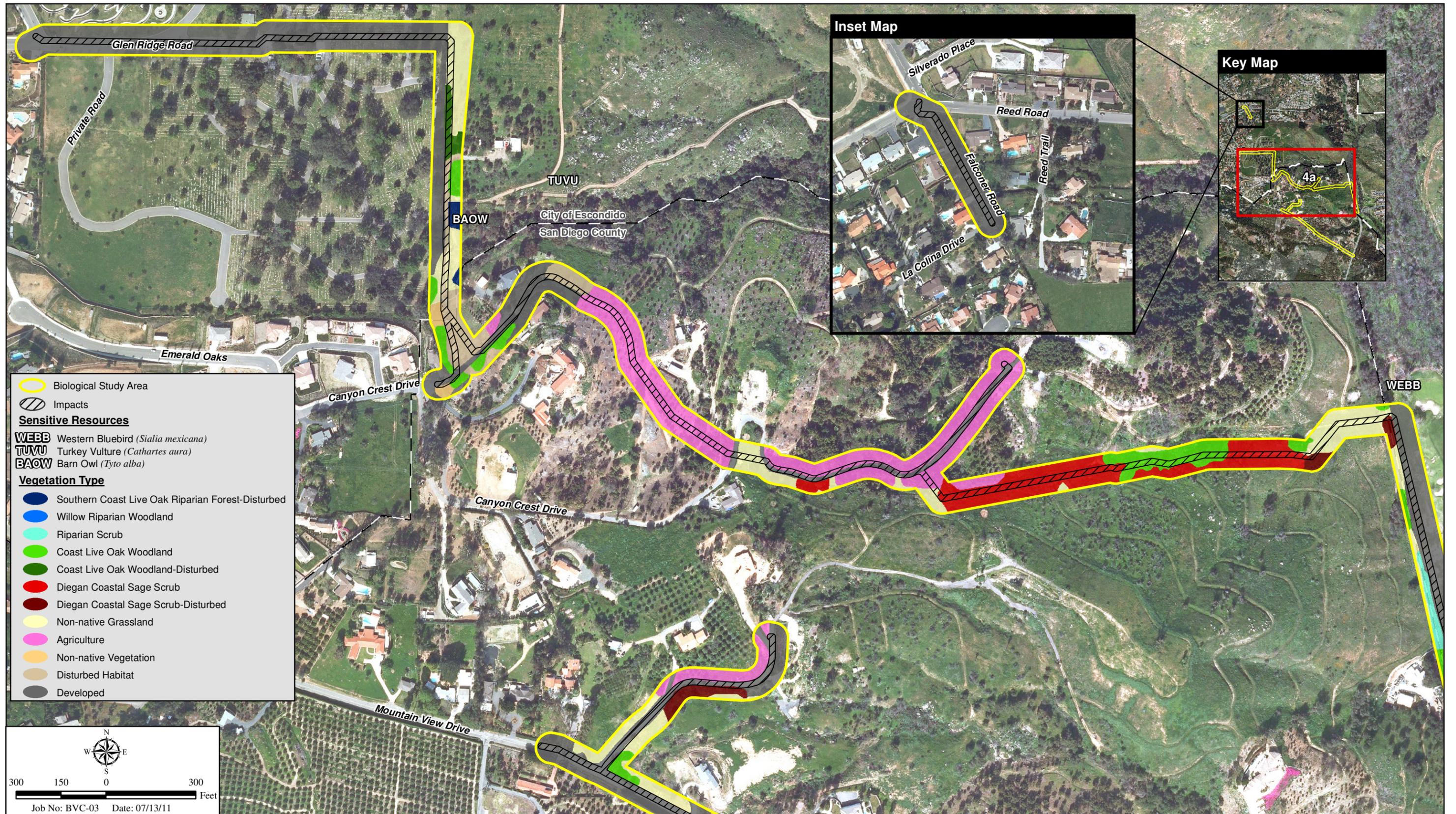




## SubArea Plan Designations

CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT

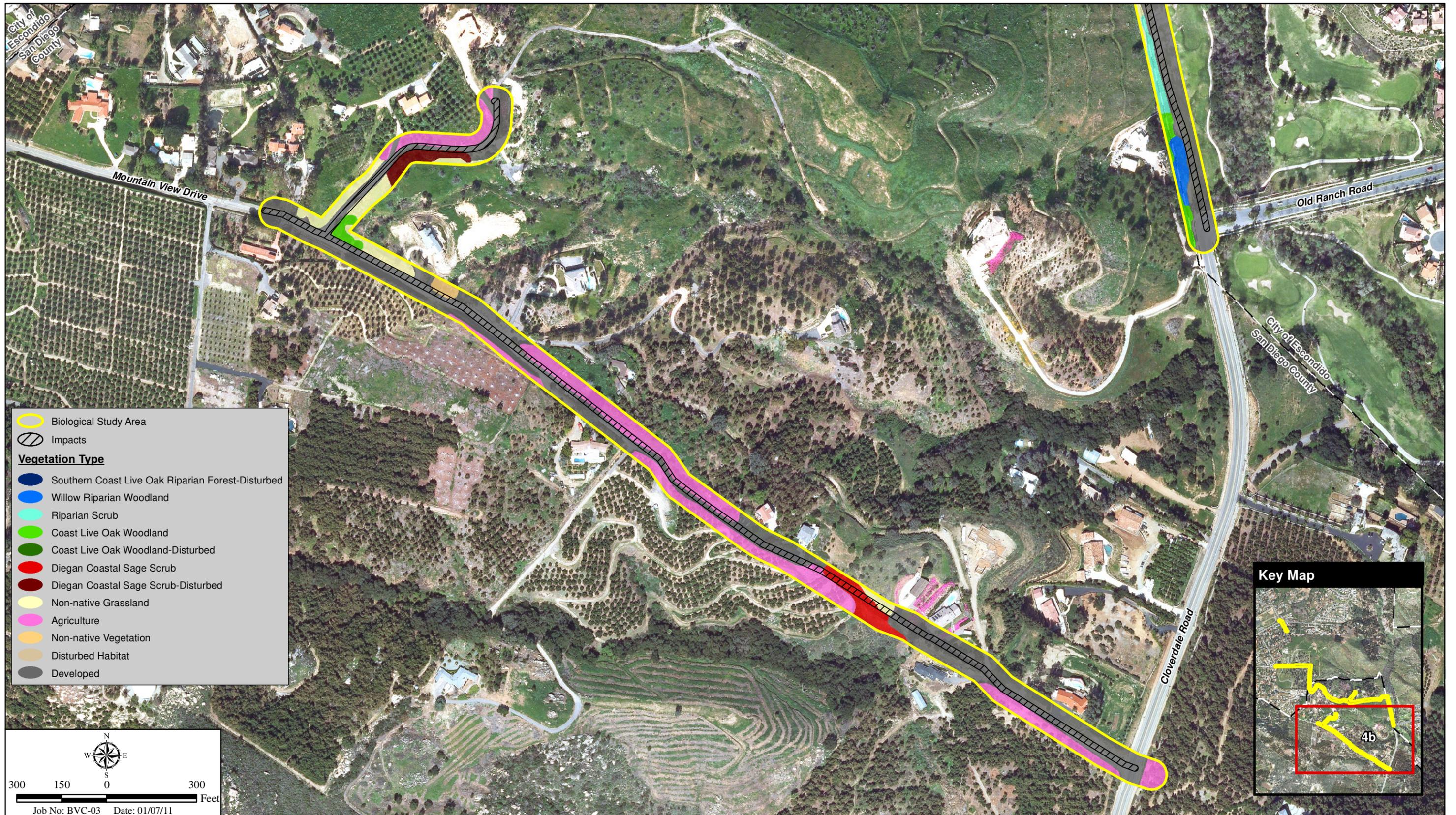
Figure 3



## Vegetation and Sensitive Resources/Impacts

CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT

Figure 4a



## Vegetation and Sensitive Resources/Impacts

CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT

Figure 4b

## 2.0 METHODS

### 2.1 LITERATURE REVIEW

Prior to conducting biological field surveys, searches of the California Natural Diversity Database (CNDDDB), California Native Plant Society (CNPS) online database for the Escondido and Valley Center USGS quadrangle maps and review of the Draft Escondido Subarea Plan and the County's MSCP Subarea Plan were conducted for information regarding sensitive species known to occur within the vicinity of the BSA. In addition, review of the biological assessment for the expansion of Oak Hill Memorial Park prepared by Consultants Collaborative, Inc. (CCI; 2008) was conducted.

### 2.2 BIOLOGICAL SURVEYS

#### 2.2.1 General Biological Surveys

HELIX Environmental Planning, Inc. (HELIX) biologists Stacy Nigro and Kimberly Davis conducted vegetation mapping, a general biological survey, and jurisdictional delineation on January 25, 2010. On March 10, 2010, Ms. Nigro, accompanied by City staff, completed the vegetation mapping on private property that was previously inaccessible. An additional site visit was conducted by Ms. Nigro and HELIX planner Lara Costantino Grimmer, with the project engineers and City staff, on December 15, 2010. Vegetation communities within the BSA were mapped on an aerial photograph of the BSA (1"=200' scale) with overlaid topography. A list of all plant and animal species observed or detected within the BSA was prepared. Plant species were identified in the field or later in the laboratory with the aid of voucher specimens. Animals were identified in the field by direct visual observation with the aid of binoculars or indirectly by detection of calls, tracks, burrows, or scat.

#### 2.2.2 Jurisdictional Delineation

Prior to beginning jurisdictional delineation fieldwork, aerial photographs (1"=200' scale), USGS topographic maps, and soil survey maps of the BSA were reviewed to determine the location of potential jurisdictional areas that may be affected by the project. Data were collected in areas that were suspected to be jurisdictional habitats (and where necessary, their upland counterparts) on January 25, 2010 by Ms. Nigro and Ms. Davis.

### Corps Jurisdictional Areas

U.S. Army Corps of Engineers (Corps) wetland boundaries were determined using 3 criteria (vegetation, hydrology, and soils) established for wetland delineations, as described within the Wetlands Delineation Manual (Environmental Laboratory 1987) and Arid West Regional Supplement (Corps 2008). Other references included memoranda (Corps 2007; Grumbles and Woodley 2007) that help clarify the wetland manual and recent court decisions.

All potential wetlands areas were surveyed. If an area was suspected of being a wetland, vegetation and hydrology indicators were noted and soil was sampled and described. The area was then determined to be a federal (Corps) wetland if it satisfied all 3 wetland criteria.

Areas were determined to be non-wetland Waters of the U.S. if there was evidence of regular surface flow (e.g., bed and bank) but either vegetation and/or soils criteria were not met. Jurisdictional limits for these areas were defined by the ordinary high water mark (OHWM), which is defined in 33 CFR Section 329.11 as “that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of the soil; destruction of terrestrial vegetation; the presence of litter or debris; or other appropriate means that consider the characteristics of the surrounding areas.” The Corps has issued further guidance on the OHWM (Riley 2005), which was also used for the delineation.

### **CDFG Jurisdictional Areas**

California Department of Fish and Game (CDFG) jurisdictional boundaries were determined based on the presence of riparian vegetation or regular surface flow. Streambeds within CDFG jurisdiction were delineated based on the definition of streambed as “a body of water that flows at least periodically or intermittently through a bed or channel having banks and supporting fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports riparian vegetation” (Title 14, Section 1.72). This definition for CDFG jurisdictional habitat allows for a wide variety of habitat types to be jurisdictional, including some that do not include wetland species (e.g., oak woodland and alluvial fan sage scrub). The CDFG jurisdictional habitat includes all riparian shrub or tree canopy that may extend beyond the banks of a stream.

### **County Resource Protection Ordinance Wetlands**

Areas were considered County Resource Protection Ordinance (RPO) wetlands if they met 1 of the 3 following attributes pursuant to the RPO: (1) at least periodically, the land supports a predominance of hydrophytes (plants whose habitat is water or very wet places); (2) the substratum is predominantly undrained hydric soil; or (3) an ephemeral or perennial stream is present, whose substratum is predominately non-soil and such lands contribute substantially to the biological functions or values of wetlands in the drainage system.

#### **2.2.3 Nomenclature**

Nomenclature for this report is taken from Holland (1986) and Oberbauer (2008) for vegetation communities; and Rebman and Simpson (2006) and Hickman, ed. (1993) for plants. Additional references include Heath (2004) for butterflies, Collins and Taggart (2002) for reptiles, American Ornithologists’ Union (2009) for birds, and Baker, et al. (2003) for mammals. Plant species status is taken from the CNPS (2010). Animal species status is taken from the CDFG CNDDDB (2009).

### 3.0 EXISTING CONDITIONS

#### 3.1 VEGETATION COMMUNITIES

Ten vegetation communities occur within the BSA including: southern coast live oak riparian forest (including disturbed), willow riparian woodland, riparian scrub, coast live oak woodland (including disturbed), Diegan coastal sage scrub (including disturbed), non-native grassland, non-native vegetation, agriculture, disturbed habitat, and developed land (Figures 4a and 4b: Table 1). A brief description of each community within the BSA is provided below, and the communities within Table 1 have been segregated according to their location within the City or County.

VEGETATION COMMUNITY*	ACREAGE**		
	City of Escondido	County of San Diego	Total
Southern coast live oak riparian forest (including disturbed; 61310)	0.11	0.01	0.12
Willow riparian woodland (62000)	0.16	0.05	0.21
Riparian scrub (63000)	0.11	0.06	0.17
Coast live oak woodland (including disturbed; 71160)	0.5	1.1	1.6
Diegan coastal sage scrub (including disturbed; 32510)	<0.1	2.8	2.8
Non-native grassland (42200)	0.9	2.0	2.9
Non-native vegetation (11000)	0.1	0.1	0.2
Agriculture (orchards; 18100)	0.0	6.6	6.6
Disturbed habitat (11300)	0.3	0.6	0.9
Developed (12000)	7.6	6.6	14.2
<b>TOTAL</b>	<b>9.8</b>	<b>19.9</b>	<b>29.7</b>

\*Vegetation categories and numerical codes are from Holland (1986) and Oberbauer (2008)

\*\*Wetland acreages are rounded to the nearest 0.01, while upland acreages are rounded to the nearest 0.1; thus, totals reflect rounding

##### 3.1.1 Southern Coast Live Oak Riparian Forest (including disturbed)

Southern coast live oak riparian forest is an open, to locally dense, evergreen, sclerophyllous, riparian woodland that is dominated by coast live oak (*Quercus agrifolia*). This community appears to be richer in herbs and poorer in understory shrubs than other riparian communities. Southern coast live oak riparian forest occurs on fine-grained alluvial soils on the floodplains along large streams in the canyons and valleys of coastal southern California (Holland 1986). Associated species include toyon (*Heteromeles arbutifolia*), Mexican elderberry (*Sambucus mexicana*), spreading snowberry (*Symphoricarpos mollis*), California rose (*Rosa californica*), California blackberry (*Rubus ursinus*), and poison oak (*Toxicodendron diversilobum*).

Approximately 0.12 acre of southern coast live oak riparian forest occurs within the BSA (Figures 4a and 4b). Dominant species within this vegetation community within the BSA include coast live oak and evergreen ash (*Fraxinus uhdei*).

### **3.1.2 Willow Riparian Woodland**

Riparian woodlands are often similarly composed of winter-deciduous trees that require water near the soil surface. Willow (*Salix* spp.), cottonwood (*Populus* spp.), and western sycamore (*Platanus racemosa*) typically form dense, medium-height woodland in moist canyons and drainage bottoms. Associated understory species often include mule fat (*Baccharis salicifolia*), stinging nettle (*Urtica dioica* ssp. *holosericea*), and wild grape (*Vitis girdiana*). The differences between woodlands and forests are physiognomic rather than compositional. Woodlands have less canopy cover than forests, whose individual tree canopy species overlap so that a cover exceeding 100 percent may occur in the upper tree stratum, where woodlands may contain large canopy gaps in the same area. Woodlands may also have near total cover in the tree stratum but exist over a relatively small area.

The dominant species within this vegetation community within the BSA is red willow (*Salix laevigata*). Other species include coast live oak and mule fat. Approximately 0.21 acre of willow riparian woodland occurs within the BSA (Figures 4a and 4b).

### **3.1.3 Riparian Scrub**

Riparian scrub is a generic term for several shrub dominated communities that occur along drainages and/or riparian corridors. This vegetation community occurs in the BSA as a shrubby habitat of mule fat, red willow, arroyo willow (*Salix lasiolepis*), and is dominated by stinging nettle and evening-primrose (*Oenothera elata*). Approximately 0.17 acre of riparian scrub occurs within the BSA (Figures 4a and 4b).

### **3.1.4 Coast Live Oak Woodland (including disturbed)**

Coast live oak woodland is an open to dense evergreen woodland or forest community, dominated by coast live oak that may reach 35 to 80 feet in height. The shrub layer consists of toyon, Mexican elderberry, spreading snowberry, fuchsia-flowered gooseberry (*Ribes speciosum*), and poison oak. A dense herbaceous understory is dominated by miner's lettuce (*Claytonia perfoliata* var. *perfoliata*) and chickweed (*Stellaria media*).

Approximately 1.6 acres of coast live oak woodland occurs within the BSA (Figures 4a and 4b) and is dominated by coast live oak and Bermuda-buttercup (*Oxalis pes-caprae*). Other species occurring within this vegetation community within the BSA include evergreen ash, poison oak, and bridal creeper (*Asparagus asparagoides*).

### **3.1.5 Diegan Coastal Sage Scrub (including disturbed)**

Diegan coastal sage scrub is dominated by subshrubs with leaves that abscise during drought and are replaced by a lesser amount of smaller leaves. This adaptation of drought evasion allows these species to withstand drought periods in summer and fall in areas of low precipitation.

Dominant species within this vegetation community within the BSA include laurel sumac (*Malosma laurina*), California sagebrush (*Artemisia californica*), deerweed (*Lotus scoparius*), white sage (*Salvia apiana*), and California buckwheat (*Eriogonum fasciculatum*). Disturbed Diegan coastal sage scrub contains many of the same shrub species as undisturbed Diegan coastal sage scrub but is sparser and has a higher proportion of non-native annual species. Approximately 2.8 acres of Diegan coastal sage scrub (including disturbed) occur within the BSA (Figures 4a and 4b).

### **3.1.6 Non-native Grassland**

Non-native grassland is a dense to sparse cover of annual grasses, often associated with native annual forbs. This vegetation community occurs on gradual slopes with deep, fine-textured, usually clay soils. Most of the annual introduced species that comprise non-native grassland originated from the Mediterranean region of Europe, an area with a climate similar to that in California and a long history of agriculture. These 2 factors have contributed to the successful invasion and establishment of these species and the replacement of native grasslands with an annual dominated non-native grassland (Jackson 1985). Typical invasive species such as black mustard (*Brassica nigra*), foxtail chess (*Bromus madritensis* ssp. *rubens*), and common ripgut grass (*B. diandrus*) are common within the non-native grassland. Disturbed non-native grassland has sufficient cover by grasses to be considered grassland, but has a higher proportion of non-native forbs.

Dominant species within this vegetation community included common ripgut grass, oats (*Avena* sp.), and cheeseweed (*Malva parviflora*). Approximately 2.9 acres of non-native grassland (including disturbed) occur within the BSA (Figures 4a and 4b).

### **3.1.7 Non-native Vegetation**

Non-native vegetation is the name ascribed to cultivated plants such as hottentot fig (*Carpobrotus edulis*), Peruvian pepper tree (*Schinus molle*), and/or eucalyptus (*Eucalyptus* spp.) that have become naturalized in native habitat areas or that are remnant of previous cultivated land uses. This vegetation community covers approximately 0.2 acre within the BSA (Figures 4a and 4b) and consists primarily of scattered eucalyptus seedlings.

### **3.1.8 Agriculture**

Within the BSA, agricultural consists of orchards growing avocado (*Persea americana*) and citrus (*Citrus* sp.). Approximately 6.6 acres of agriculture occur within the BSA (Figures 4a and 4b).

### **3.1.9 Disturbed Habitat**

Disturbed habitat includes land that has little or no habitat value because it has been cleared of vegetation for agricultural purposes or contains heavily compacted soils following disturbance such as grading. Disturbed habitat covers 0.9 acre of the BSA.

### **3.1.10 Developed Land**

Developed land is where permanent structures and/or pavement have been placed, which prevents the growth of vegetation, or where landscaping is clearly tended and maintained. Within the BSA, developed land consists of roadways, single-family homes and associated landscaping, as well as the cemetery. Approximately 14.2 acres of developed land occur within the BSA (Figures 4a and 4b).

## **3.2 PLANTS**

A total of 71 plant species were observed within the BSA (Appendix A).

## **3.3 ANIMALS**

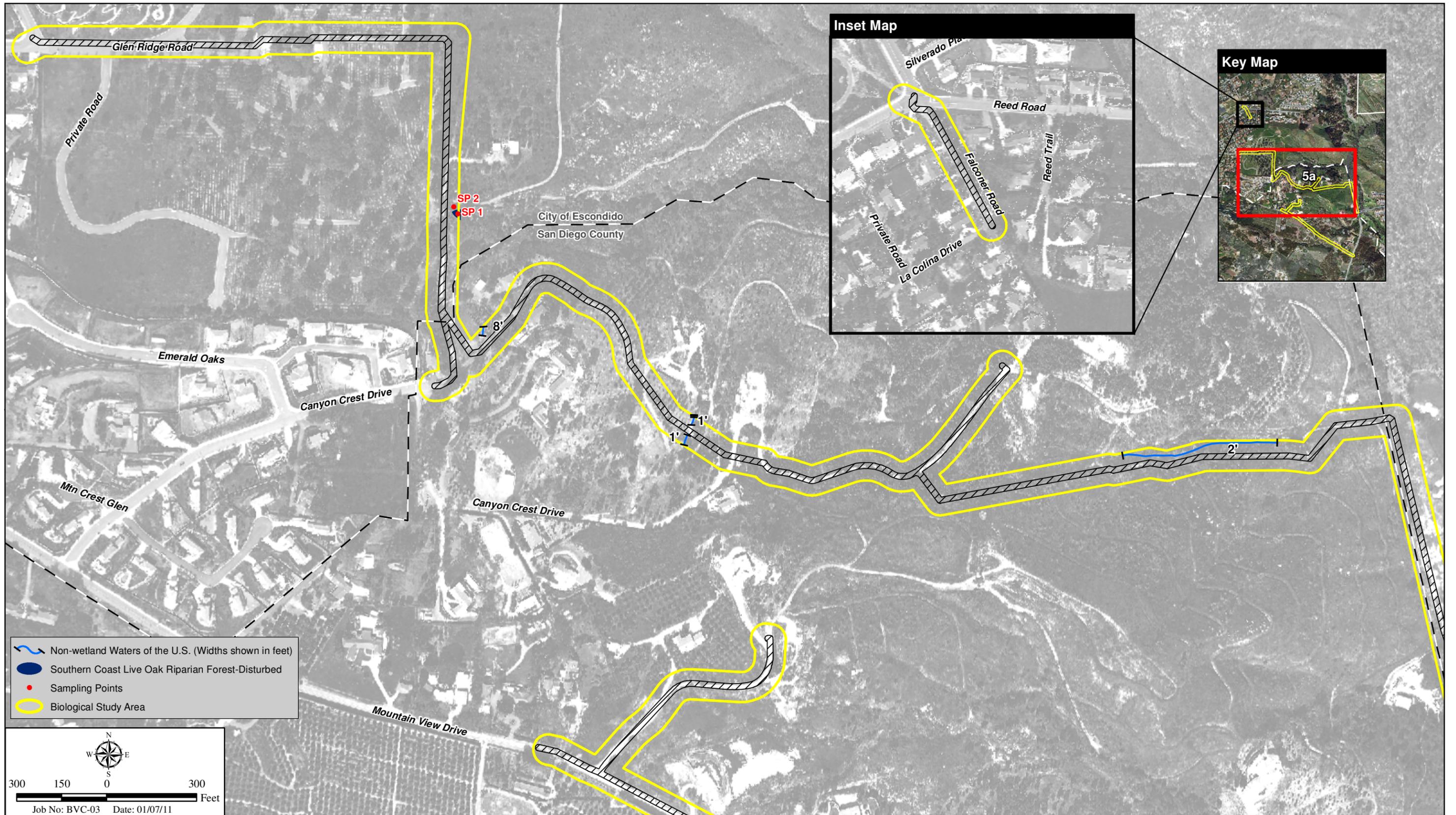
A total of 35 animal species were observed/detected within the BSA and include: 2 butterfly, 1 amphibian, 1 reptile, 28 bird, and 3 mammal species (Appendix B).

## **3.4 JURISDICTIONAL AREAS**

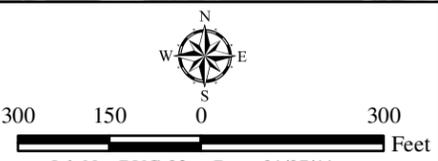
As stated above, the jurisdictional delineation fieldwork was conducted within the BSA. Areas under the jurisdiction of Corps, CDFG, and/or County occur within the BSA and include southern coast live oak riparian forest (including disturbed), willow riparian woodland, riparian scrub, and coast live oak woodland. Waters of the U.S./State are not shown as a habitat on the vegetation map (Figures 4a and 4b), as these areas were mapped as being part of the umbrella vegetation community in which they occur. Waters of the U.S./State have been identified on the jurisdictional delineation figures for the Corps and CDFG (Figures 5a, 6a, and 6b), respectively. The County does not regulate Waters of the U.S./State.

### **3.4.1 Federal (Corps) Jurisdiction**

Corps jurisdictional areas within the BSA total 0.05 acre and includes 0.02 acre of wetland habitat and 0.03 acre of non-wetland Waters of the U.S. (Figure 5a; Table 2). The jurisdictional areas within Table 2 have been segregated according to their location within the City or unincorporated County.

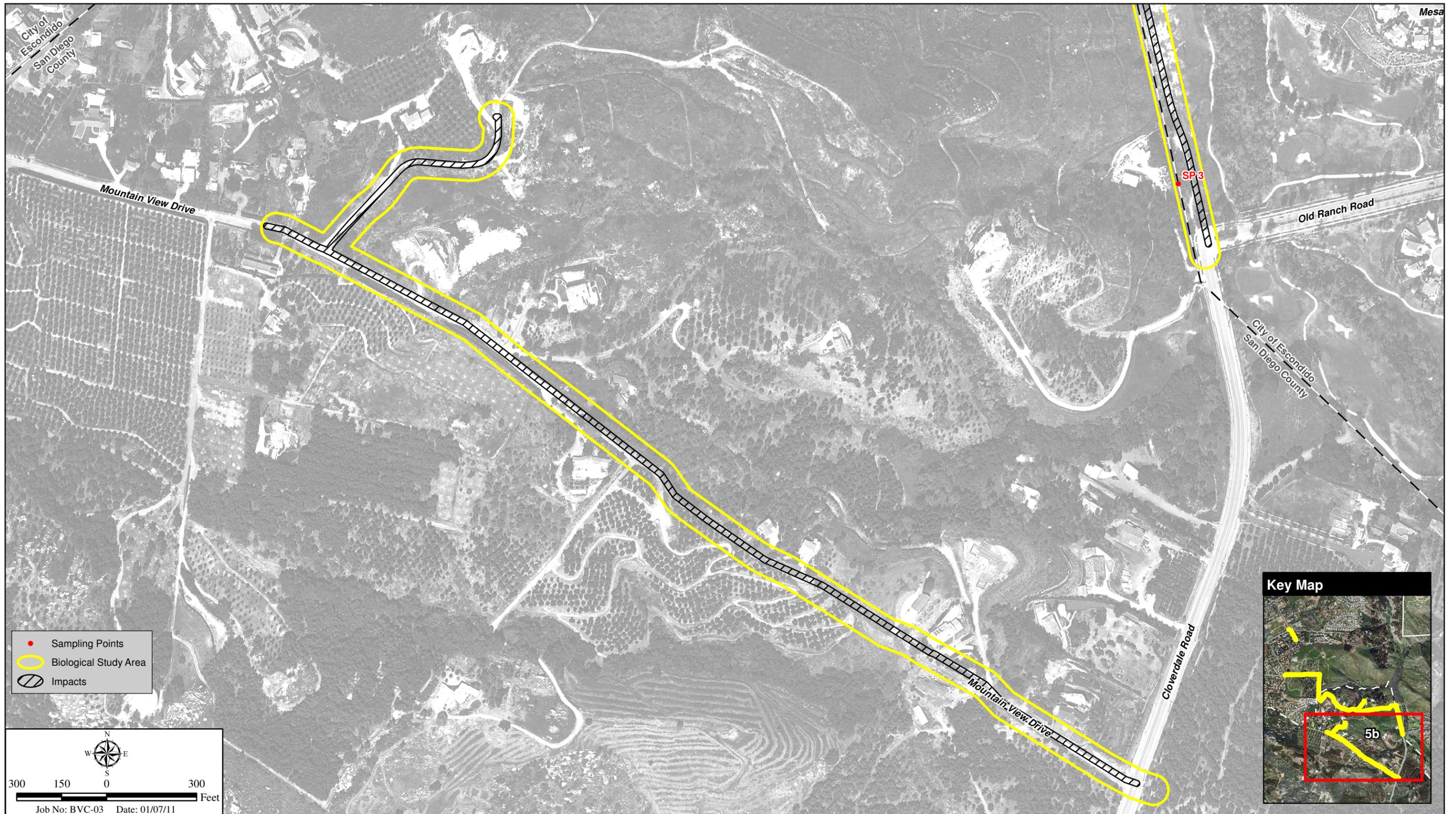


- Non-wetland Waters of the U.S. (Widths shown in feet)
- Southern Coast Live Oak Riparian Forest-Disturbed
- Sampling Points
- Biological Study Area

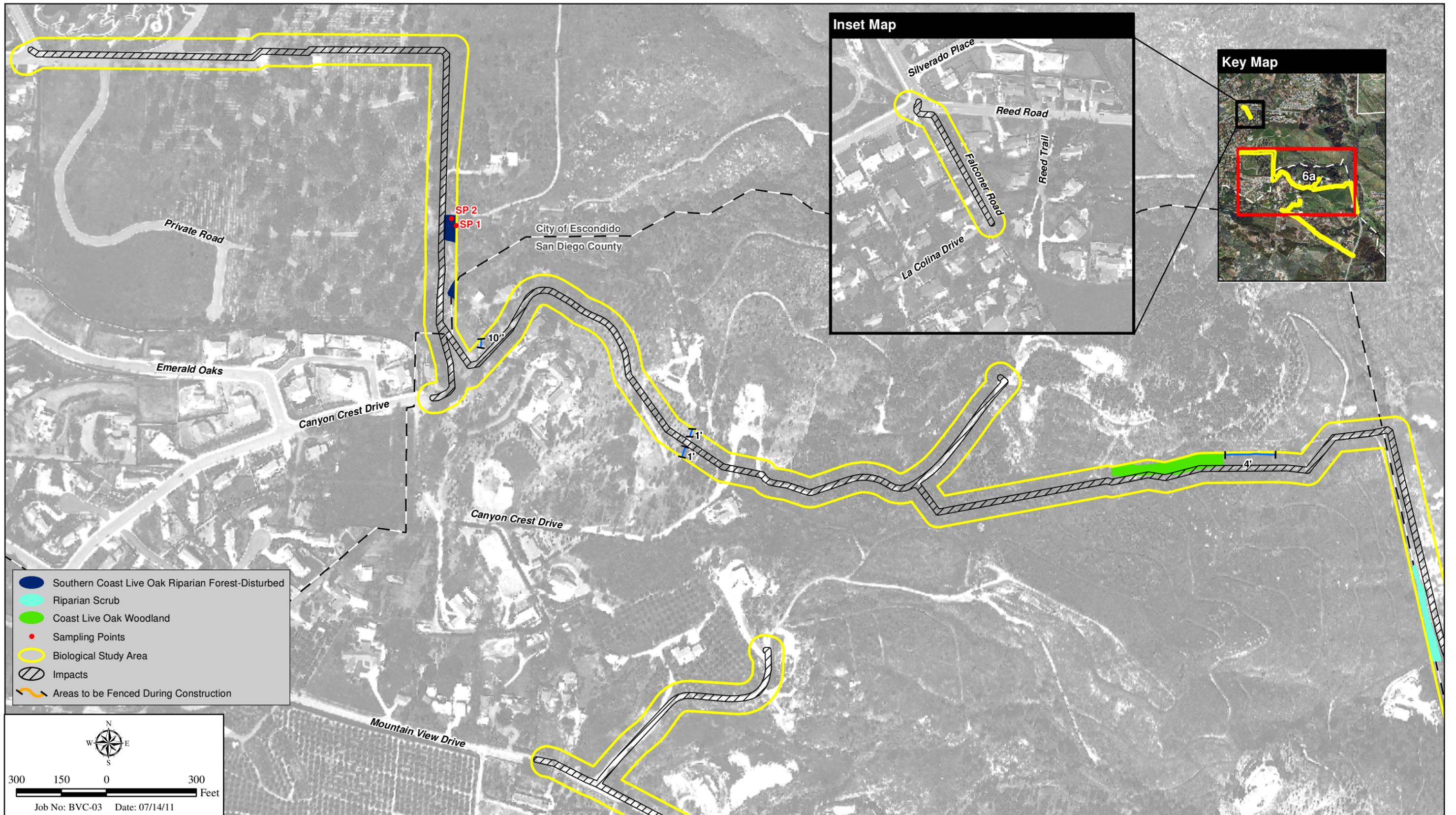


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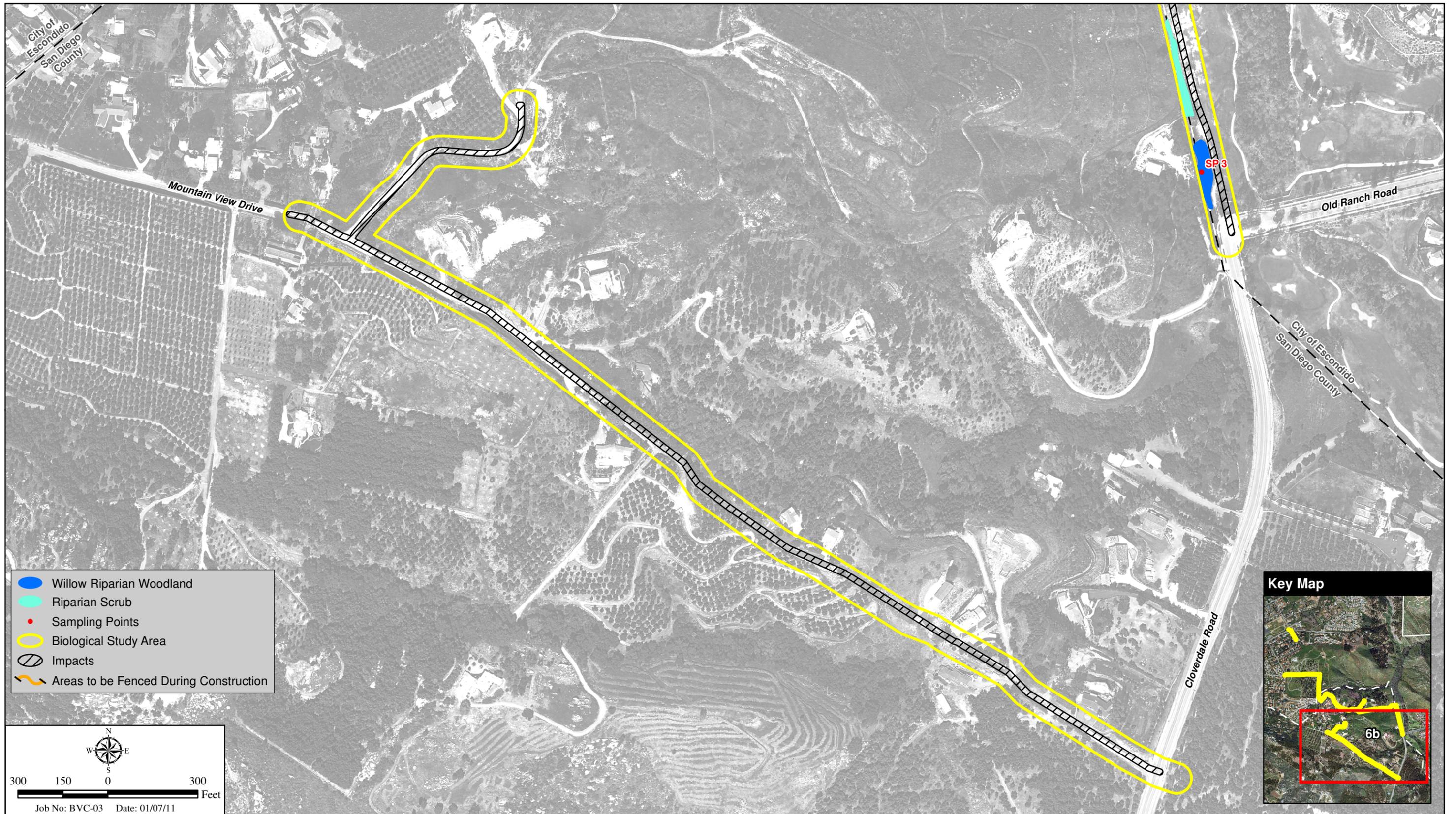
**Corps Jurisdictional Areas/Impacts**  
CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT



**Corps Jurisdictional Areas/Impacts**  
 CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT



**CDFG Jurisdictional Areas/Impacts**  
 CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT



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**CDFG Jurisdictional Areas/Impacts**  
CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT

**Table 2  
JURISDICTIONAL AREAS WITHIN THE BSA**

HABITAT	JURISDICTION				
	CORPS		CDFG		COUNTY RPO WETLANDS
	City of Escondido	County of San Diego	City of Escondido	County of San Diego	
<b>Wetlands</b>					
Southern coast live oak riparian forest (including disturbed)	0.02	0.00	0.11	0.01	0.01
Willow riparian woodland	0.00	0.00	0.16	0.05	0.05
Riparian scrub	0.00	0.00	0.10	0.07	0.06
Coast Live Oak Woodland	0.00	0.00	0.00	0.38	0.00
<b>Non-wetland Waters of the U.S./State</b>					
Drainage/Streambed	0.00	0.03	0.00	0.02	0.00
<b>Subtotal</b>	<b>0.02</b>	<b>0.03</b>	<b>0.37</b>	<b>0.53</b>	<b>0.12</b>
<b>TOTAL</b>	<b>0.05</b>		<b>0.90</b>		<b>0.12</b>

### 3.4.2 State (CDFG) Jurisdiction

CDFG jurisdictional areas within the BSA total 0.90 acre and include 0.88 acre of wetland habitat and 0.02 acre of non-wetland Waters of the State (Figures 6a and 6b; Table 2).

### 3.4.3 County RPO Wetlands

County RPO wetlands occur only within areas under the County’s jurisdiction within the BSA and total 0.12 acre (Figures 7a and 7b: Table 2).

## 3.5 WILDLIFE CORRIDOR/CORE WILDLIFE AREAS

Wildlife corridors can be local or regional in scale and may function in different ways depending on species and time of year. Wildlife corridors represent areas where wildlife movement is concentrated due to natural or manmade constraints. Local corridors provide access to resources such as food, water, and shelter. Animals can use these corridors, such as hillsides and tributary drainages to main drainages, to travel among different habitats (i.e., riparian and upland habitats). Some animals require riparian habitat for breeding and upland habitat for burrowing. Regional corridors provide these functions and also link 2 or more large areas of open space. Regional corridors also provide avenues for wildlife dispersal, migration, and contact between otherwise distinct populations.

The Draft Escondido Subarea Plan identifies Cloverdale Creek, located immediately east of the BSA, as a Biological Core and Linkage Area. In addition, a small portion of the BSA is within the PAMA, which according to the County’s MSCP meets the requirements of a Biological Resource Core Area (BRCA). The BSA, however, is outside any wildlife corridor or linkage.

An unnamed tributary to Cloverdale Creek, near the southeastern edge of Oak Hill Memorial Park (a small portion of which occurs within the BSA), potentially acts as a local wildlife corridor. Cloverdale Creek, which flows from north to south and connects to Santa Ysabel Creek eventually flowing into Lake Hodges, acts as a regional corridor.

## **4.0 SENSITIVE RESOURCES**

Sensitive resources are those defined as (1) habitat areas or vegetation communities that are unique, of relatively limited distribution, or of particular value to wildlife; and (2) species that have been given special recognition by federal, state, or local government agencies and organizations due to limited, declining, or threatened populations.

### **4.1 SENSITIVE VEGETATION COMMUNITIES**

The following vegetation communities within the BSA are considered sensitive and/or are regulated by the resource agencies, City, and/or County: southern coast live oak riparian woodland (including disturbed), willow riparian woodland, riparian scrub, coast live oak woodland (including disturbed), Diegan coastal sage scrub (including disturbed), and non-native grassland (Figures 4a and 4b).

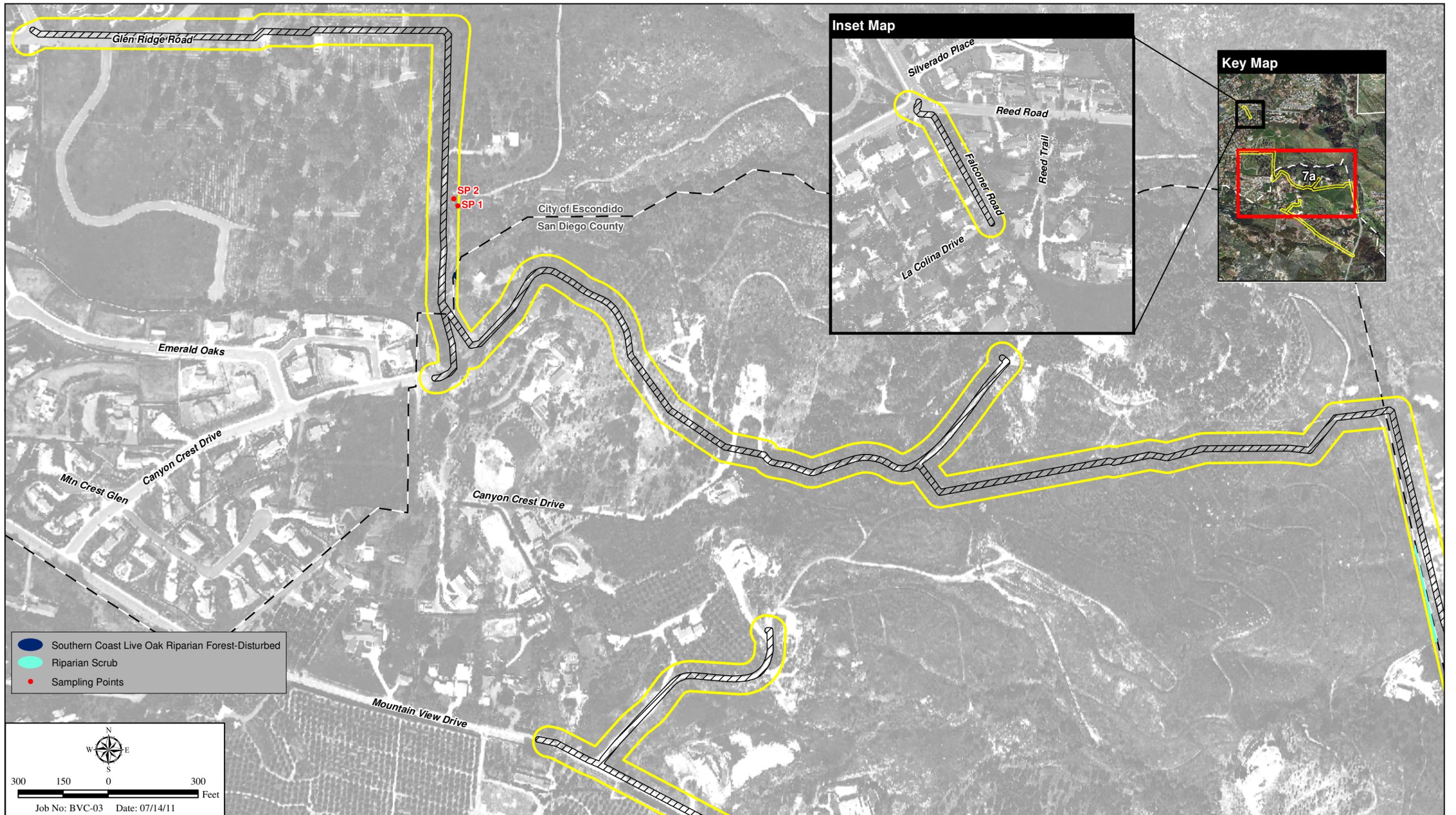
### **4.2 SENSITIVE PLANT SPECIES**

Sensitive species are those considered unusual or limited in that they are: (1) only found in the San Diego region; (2) a local representative of a species or association of species not otherwise found in the region; or (3) severely depleted within their ranges or within the region.

The Draft Escondido Subarea Plan identifies major populations and critical locations of plant species within its boundaries. Major populations are those considered sufficiently large to be self-sustaining with a minimum of active or intensive management intervention, and hence are important to preserve design. Critical populations are those locations that must be substantially conserved for a species to be considered covered by the MHCP or a subarea plan. The Draft Escondido Subarea Plan does not identify any major plant populations or critical plant locations within the BSA.

The County's MSCP Subarea Plan includes a list of narrow endemic plant species, which are protected under the MSCP. In addition, the County's Biological Mitigation Ordinance (BMO) differentiates between plant species in terms of Lists (i.e., List A, B, C, and D).

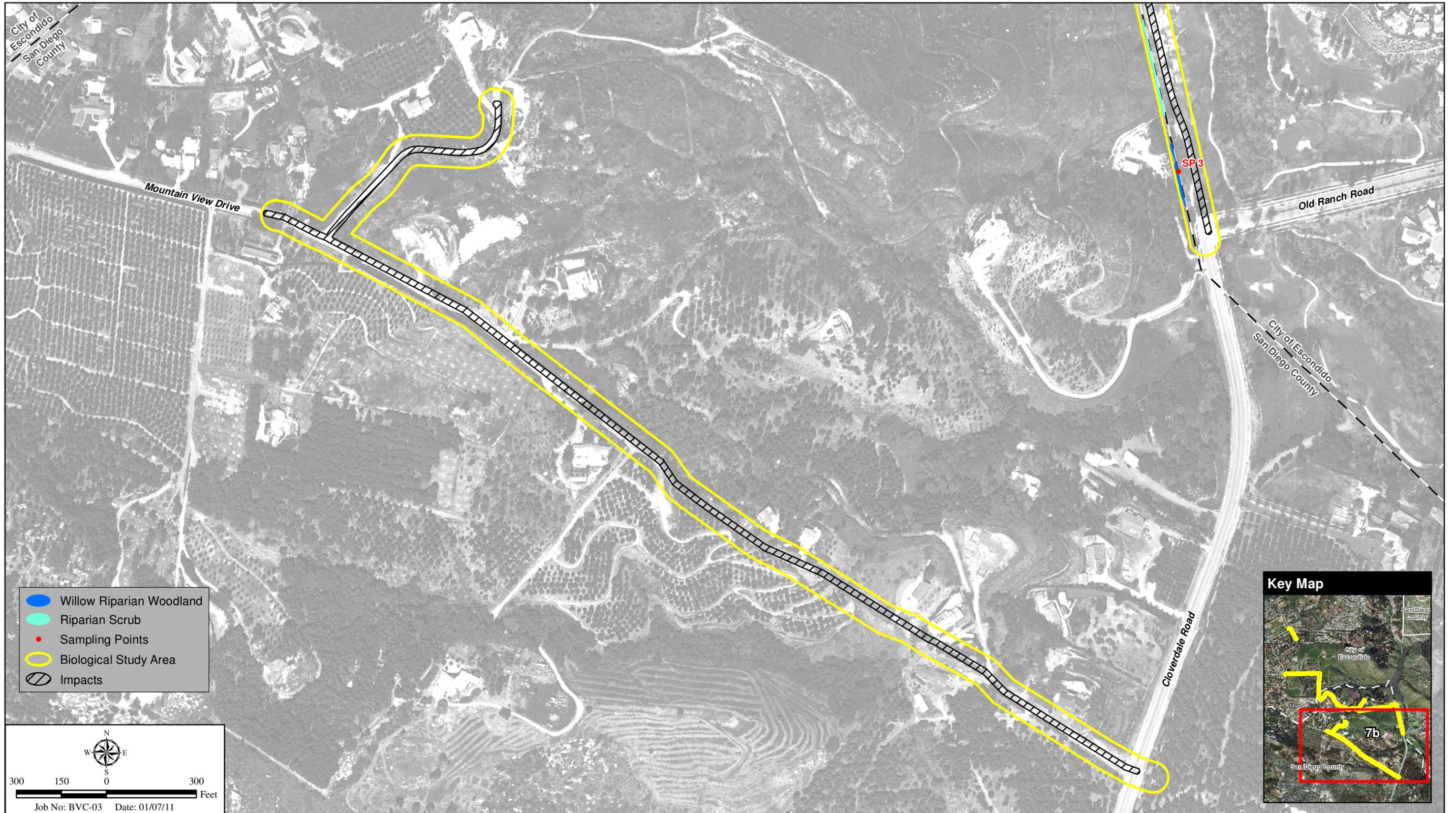
No sensitive plant species included in the Draft Escondido Subarea Plan, County's MSCP Subarea Plan, or listed as sensitive by the CNPS were observed within the BSA during surveys.



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### San Diego County RPO Wetlands/Impacts

CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT



## San Diego County RPO Wetlands/Impacts

CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT

Figure 7b

**Sensitive Plant Species with Potential to Occur**

Table 3 presents sensitive plant species with potential to occur within the BSA. Each species is listed alphabetically by scientific name.

<b>Table 3 SENSITIVE PLANT SPECIES WITH POTENTIAL TO OCCUR</b>		
<b>SPECIES</b>	<b>LISTING OR SENSITIVITY*</b>	<b>POTENTIAL TO OCCUR/COMMENTS</b>
San Diego thornmint ( <i>Acanthomintha ilicifolia</i> )	FT/SE CNPS List 1B.1 MSCP-covered County Narrow Endemic (NE) County List A MHCP-covered MHCP NE	Low. Grassy openings in the chaparral or sage scrub, or near vernal pools, with friable or broken clay soils are the preferred habitat. Suitable habitat (sage scrub) occurs within the BSA; however, this species is not known from the project vicinity.
San Diego ambrosia ( <i>Ambrosia pumila</i> )	FE/-- CNPS List 1B.1 MSCP-covered County NE County List A MHCP-covered MHCP NE	Low. Found in a variety of habitats, including sage scrub, grasslands, wetlands, disturbed habitat, and sloped areas. Known in California from fewer than 20 occurrences. Critical habitat for this species occurs within 5 miles of the BSA.
San Diego sagewort ( <i>Artemisia palmeri</i> )	--/-- CNPS List 4.2 County List D	Low. Occurs in stream courses, often within coastal sage scrub and southern mixed chaparral. Minimal suitable habitat occurs within the BSA.
San Diego milk-vetch ( <i>Astragalus oocarpus</i> )	--/-- CNPS List 1B.2 CA Endemic County List A	None. Occurs in open or disturbed areas of cismontane woodland and chaparral. Suitable habitat does not occur within the BSA.
Orcutt's brodiaea ( <i>Brodiaea orcuttii</i> )	--/-- CNPS List 1B.1 MSCP-covered County List A	None. Vernal moist grasslands, mima mound topography, and vernal pool periphery are preferred habitat. Occasionally will grow on streamside embankments in clay soils. Suitable habitat does not occur within the BSA.
Southern tarplant ( <i>Centromadia parryi</i> ssp. <i>australis</i> )	--/-- CNPS List 1B.1 County List A	None. Occurs in seasonally moist (saline) grasslands and peripheral salt marsh. Although suitable habitat occurs within the BSA, appropriate soils do not.

**Table 3 (cont.)  
SENSITIVE PLANT SPECIES WITH POTENTIAL TO OCCUR**

<b>SPECIES</b>	<b>LISTING OR SENSITIVITY*</b>	<b>POTENTIAL TO OCCUR/COMMENTS</b>
Smooth tarplant ( <i>Centromadia pungens</i> ssp. <i>laevis</i> )	--/-- CNPS List 1B.1 CA Endemic County List A	None. Prefers valley and foothill grasslands, particularly near alkaline locales. Although suitable habitat occurs within the BSA, appropriate soils do not.
Delicate clarkia ( <i>Clarkia delicata</i> )	--/-- CNPS List 1B.2 County List A	Low. Prefers shaded areas or the periphery of oak woodlands and cismontane chaparral. Minimal suitable habitat occurs within the BSA.
Summer holly ( <i>Comarostaphylis</i> <i>diversifolia</i> ssp. <i>diversifolia</i> )	--/-- CNPS List 1B.2 County List A MHCP-covered	None. Mesic north-facing slopes in southern mixed chaparral are the preferred habitat of this large, showy shrub. Suitable habitat does not occur within the BSA.
Palmer's goldenbush ( <i>Ericameria palmeri</i> var. <i>palmeri</i> )	--/-- CNPS List 2.2 MSCP-covered County NE County List B MHCP-covered	Very low. This sizeable shrub grows along coastal drainages, in mesic chaparral sites, or rarely in Diegan coastal sage scrub. Occasionally occurs as a hillside element (usually at higher elevations inland on north-facing slopes). Known in California from only 6 occurrences. Some suitable habitat occurs within the BSA.
Engelmann oak ( <i>Quercus engelmannii</i> )	--/-- CNPS List 4.2 County Group D	High. Oak woodland and southern mixed chaparral. Larger oaks sometimes occur in vast savannah grasslands. In foothills, may also occur as a shrubby element within the chaparral. Species occurs north of the BSA (Ogden and CBI 2001; CCI 2008).

\*Refer to Appendix C for an explanation of status codes for plants and animals

### 4.3 SENSITIVE ANIMAL SPECIES

The Draft Escondido Subarea Plan identifies major populations and critical locations of animal species within its boundaries. Major populations are defined for animals as those that support enough breeding individuals to contribute reliably to the overall metapopulation stability of the species. Critical locations are areas that must be substantially conserved for a species to be considered adequately conserved. The Draft Escondido Subarea Plan does not identify any major populations or critical locations of sensitive animal species within the BSA.

The County's MSCP Subarea Plan includes a list of rare, narrow endemic animal species, which are protected under the MSCP. In addition, the County's BMO differentiates between plant species in terms of Groups (i.e., Group 1 and 2).

No federal or state listed endangered or threatened animal species were observed or detected within the BSA. Three animal species considered sensitive by the County were observed flying near the BSA and include turkey vulture (*Cathartes aura*), western bluebird (*Sialia mexicana*), and barn owl (*Tyto alba*; Figure 4a). A brief description of each sensitive animal species observed flying near the BSA is provided below. An explanation of status codes can be found in Appendix C.

**Turkey vulture (*Cathartes aura*)**

**Status:** --/--; County Group 1

**Distribution:** Observed throughout San Diego County with the exception of extreme coastal San Diego where development is heaviest

**Habitat(s):** Foraging habitat includes most open habitats with breeding occurring in crevices among boulders

**Status on site:** Flying overhead (Figure 4a)

**Western bluebird (*Sialia mexicana*)**

**Status:** --/--; MHCP-covered; County Group 2

**Distribution:** Occurs throughout much of San Diego County, but concentrated in foothills and mountains

**Habitat(s):** Montane coniferous and oak woodlands

**Status on site:** Flying near the BSA (Figure 4a)

**Barn owl (*Tyto alba*)**

**Status:** --/--; County Group 2

**Distribution:** Observed throughout much of San Diego County

**Habitat(s):** Woodland habitats and open areas with trees or other structures that can offer shelter

**Status on site:** Flying near the BSA (Figure 4a)

**Sensitive Animal Species with Potential to Occur**

Listed or sensitive animal species with potential to occur within the BSA are listed in Table 4. The species are grouped into invertebrates, fish, amphibians, reptiles, birds, and mammals, then alphabetized (by scientific name).

**Table 4**  
**SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR**

SPECIES	LISTING OR SENSITIVITY*	POTENTIAL TO OCCUR/COMMENTS
<b>INVERTEBRATES</b>		
Quino checkerspot butterfly ( <i>Euphydryas editha quino</i> )	FE/-- MHCP-covered Rare, NE County Group 1	None. Potential habitat includes vegetation communities with areas of low-growing and sparse vegetation. These habitats include open stands of sage scrub and chaparral, adjacent open meadows, old foot trails and dirt roads. The BSA is outside the U.S. Fish and Wildlife Service (USFWS) Survey Area for this species.
Harbison dun skipper ( <i>Euphyes vestris harbisoni</i> )	--/-- Rare, NE MHCP-covered County Group 1	None. Occurs in riparian habitats and chaparral with narrow canyons or drainages, where perennial sources of water provide adequate habitat for the larval foodplant, San Diego sedge ( <i>Carex spissa</i> ). San Diego sedge not observed within the BSA. Recorded location of species occurs north of the BSA along Cloverdale Creek (Ogden and CBI 2001).
<b>VERTEBRATES</b>		
<b>Reptiles and Amphibians</b>		
Arroyo toad ( <i>Anaxyrus californicus</i> )	FE/SSC MSCP-covered Rare, NE County Group 1 MHCP-covered	None. Found on banks with open-canopy riparian forest characterized by willows, cottonwoods, or sycamores; breeds in areas with shallow, slowly moving streams, but burrows in adjacent uplands during dry months. No suitable habitat occurs within the BSA.
Orange-throated whiptail ( <i>Aspidoscelis hyperythra</i> )	--/SSC MSCP-covered County Group 2 MHCP-covered	Moderate. Occurs in coastal sage scrub, chaparral, edges of riparian woodlands, and washes. Important habitat requirements include open, sunny areas, shaded areas, and abundant insect prey base, particularly termites ( <i>Reticulitermes</i> sp.). Suitable habitat occurs within the BSA. Recorded locations near the BSA (CCI 2008).

**Table 4 (cont.)**  
**SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR**

SPECIES	LISTING OR SENSITIVITY*	POTENTIAL TO OCCUR/COMMENTS
<b>VERTEBRATES (cont.)</b>		
Coastal whiptail ( <i>Aspidoscelis tigris stejnegeri</i> )	--/-- County Group 2	Moderate. Open coastal sage scrub, chaparral, and woodlands. Important habitat components include open, sunny areas, shrub cover with accumulated leaf litter, and an abundance of insects, spiders, or scorpions. Suitable habitat occurs within the BSA.
<b>Reptiles and Amphibians (cont.)</b>		
Coastal rosy boa ( <i>Charina trivirgata</i> )	--/-- County Group 2	Low. Occurs in rocky Diegan coastal sage scrub. Minimal habitat occurs within the BSA.
Northern red-diamond rattlesnake ( <i>Crotalus ruber ruber</i> )	--/SSC County Group 2	Low. Occurs in dense chaparral or coastal sage scrub, often near large rocks or boulders. Minimal habitat occurs within the BSA.
Coronado skink ( <i>Eumeces skiltonianus interparietalis</i> )	--/SSC County Group 2	Low. Grasslands, coastal sage scrub, open chaparral, oak woodland, and coniferous forests, usually under rocks, leaf litter, logs, debris, or in the shallow burrows it digs (Zeiner et al. 1988). Minimal habitat occurs within the BSA.
San Diego horned lizard ( <i>Phrynosoma coronatum</i> )	--/SSC County Group 2	Low. Coastal sage scrub and open areas in chaparral, oak woodlands, and coniferous forests with sufficient basking sites. Require native ants, especially harvester ants ( <i>Pogonomyrmex</i> sp.), and are generally excluded from areas invaded by Argentine ants ( <i>Linepithema humile</i> ).
Western spadefoot ( <i>Spea hammondi</i> )	--/SSC County Group 2	None. Occurs in open coastal sage scrub, chaparral, and grassland, along sandy or gravelly washes, floodplains, alluvial fans, or playas; require temporary pools for breeding and friable soils for burrowing; generally excluded from areas with bullfrogs ( <i>Rana catesbiana</i> ) or crayfish ( <i>Procambarus</i> sp.). Temporary pools not observed within the BSA.

**Table 4 (cont.)  
SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR**

SPECIES	LISTING OR SENSITIVITY*	POTENTIAL TO OCCUR/COMMENTS
<b>VERTEBRATES (cont.)</b>		
<b>Birds</b>		
Cooper's hawk ( <i>Accipiter cooperii</i> )	--/WL MSCP-covered County Group 1 MHCP-covered	Moderate. Oak groves, mature riparian woodlands, and eucalyptus stands or other mature forests. Suitable habitat occurs in the BSA.
San Diego cactus wren ( <i>Campylorhynchus brunneicapillus sandiegensis</i> )	BCC/SSC MSCP-covered Rare, NE County Group 1 MHCP-covered MHCP NE	None. Occurs in cactus thickets. No suitable habitat occurs within the BSA. This species is documented within the Rancho San Pasqual project east of the BSA (Ogden and CBI 2001). It is also documented north of the BSA (CCI 2008).
White-tailed kite ( <i>Elanus leucurus</i> )	--/Fully Protected County Group 1	Moderate. Riparian woodlands and oak or sycamore groves adjacent to grassland. Suitable habitat occurs within the BSA. Recorded near the BSA (Ogden and CBI 2001).
Southwestern willow flycatcher ( <i>Empidonax traillii extimus</i> )	FE/SE MSCP-covered Rare, NE County Group 1 MHCP-covered	Low. Breeds within thickets of willows or other riparian understory usually along streams, ponds, lakes, or canyons. Migrants may be found among other shrubs in wetter areas. Minimal suitable habitat occurs within the BSA.
Yellow-breasted chat ( <i>Icteria virens</i> )	--/SSC County Group 1 MHCP-covered	Moderate. Mature riparian woodland. Suitable habitat occurs within the BSA.
White-faced ibis ( <i>Plegadis chihi</i> )	--/WL MSCP-covered County Group 1 MHCP-covered	None. Nests in freshwater marshes and forages in shallow waters and wet, grassy habitats. No suitable habitat occurs in the BSA.
Coastal California gnatcatcher ( <i>Polioptila californica californica</i> )	FT/SSC MSCP-covered County Group 1 MHCP-covered	Low. Occurs in sage scrub. Marginal suitable habitat occurs within the BSA. This species has been documented within the project vicinity (CCI 2008; Ogden and CBI 2001).

**Table 4 (cont.)  
SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR**

SPECIES	LISTING OR SENSITIVITY*	POTENTIAL TO OCCUR/COMMENTS
<b>VERTEBRATES (cont.)</b>		
<b>Birds (cont.)</b>		
Least Bell's vireo ( <i>Vireo bellii pusillus</i> )	FE, BCC/SE Rare, NE County Group 1 MHCP-covered	Low. Occurs in mature riparian woodland. Minimal suitable habitat occurs within the BSA. This species is documented within the vicinity of Cloverdale Creek south of the BSA (Ogden and CBI 2001).
<b>Mammals</b>		
Pallid bat ( <i>Antrozous pallidus</i> )	--/SSC County Group 2	Low. Deserts and canyons. Daytime roosts in buildings, crevices; less often in caves, mines, hollow trees, and other shelters. Suitable roosting habitat occurs within the BSA. Minimal foraging habitat occurs within the BSA.
Dulzura pocket mouse ( <i>Chaetodipus californicus femoralis</i> )	--/SSC County Group 2	Moderate. Primarily associated with mature chaparral. It has, however, been trapped in mule fat scrub and is known to occur in coastal sage scrub. This species has been documented within the project vicinity (Ogden and CBI 2001).
Stephens' kangaroo rat ( <i>Dipodomys stephensi</i> )	FE/ST County Group 1 MHCP-covered	Low. Sparsely vegetated habitats of sagebrush or annual grasses. Minimal suitable habitat occurs within the BSA.
Hoary bat ( <i>Lasiurus cinereus</i> )	--/--	Moderate. Prefer trees at the edge of clearings, but have been found in trees in heavy forests, open wooded glades, and shade trees along urban streets and in city parks. Suitable habitat occurs within the BSA.
San Diego black-tailed jackrabbit ( <i>Lepus californicus bennettii</i> )	--/SSC County Group 2 MHCP-covered	Moderate. Occurs primarily in open habitats including coastal sage scrub, chaparral, grasslands, croplands, and open, disturbed areas if there is at least some shrub cover present. Suitable habitat occurs within the BSA.

<b>Table 4 (cont.)</b>		
<b>SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR</b>		
<b>SPECIES</b>	<b>LISTING OR SENSITIVITY*</b>	<b>POTENTIAL TO OCCUR/COMMENTS</b>
<b>VERTEBRATES (cont.)</b>		
<b>Mammals (cont.)</b>		
San Diego desert woodrat ( <i>Neotoma lepida intermedia</i> )	--/SSC County Group 2	Moderate. Open chaparral and coastal sage scrub, often building large, stick nests in rock outcrops or around clumps of cactus or yucca. Suitable habitat occurs within the BSA.
Big free-tailed bat ( <i>Nyctinomops macrotis</i> )	--/SSC County Group 2	Low. Rocky areas, in day they roost in rocky cliffs, sometimes caves, buildings, or tree holes. Minimal suitable habitat occurs within the BSA.
American badger ( <i>Taxidea taxus</i> )	--/SSC MSCP-covered	Moderate. Open plains and prairies, farmland, and sometimes edges of woods. Suitable habitat occurs within the BSA.

\*Refer to Appendix C for an explanation of status codes for plants and animals

## **5.0 REGIONAL CONTEXT AND REGULATORY ISSUES**

Biological resources within the BSA are subject to regulatory control by the federal government, State of California, City of Escondido, and County of San Diego. The federal government administers non-marine plant and wildlife related regulations through the U.S. Fish and Wildlife Service (USFWS), while Waters of the U.S. (wetlands and non-wetland waters) are administered by the Corps. California law regarding wetland, water-related, and wildlife issues is administered by the CDFG. The City is the lead agency for the CEQA environmental review process in accordance with state law and local ordinances. The County is a responsible party given that a portion of the BSA occurs within the unincorporated portion of the County.

### **5.1 FEDERAL GOVERNMENT**

Administered by the USFWS, the federal Endangered Species Act (ESA) provides the legal framework for the listing and protection of species (and their habitats) that are identified as being endangered or threatened with extinction. Actions that jeopardize endangered or threatened species and the habitats upon which they rely are considered take under the ESA. Section 9(a) of the ESA defines take as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” “Harm” and “harass” are further defined in federal regulations and case law to include actions that adversely impair or disrupt a listed species’ behavioral patterns.

Sections 7 and 4(d) of the Federal ESA regulate actions that could jeopardize endangered or threatened species. Section 7, administered by the USFWS, describes a process of Federal interagency consultation for use when Federal actions may adversely affect listed species. A Section 7 Consultation (formal or informal) is required when there is a nexus between a listed species' use of a site and impacts to Corps jurisdictional areas. A biological assessment is required for any major construction activity, if it may affect listed species. Take can be authorized via a letter of Biological Opinion, issued by the USFWS, for non-marine related listed species issues. No impacts to listed species are anticipated as none were observed within the BSA and the only listed species with moderate potential to occur within the BSA is coastal California gnatcatcher (*Polioptila californica californica*). Therefore, based on the foregoing and the fact that no Corps jurisdictional areas would be impacted, it is not anticipated that a Section 7 consultation would be required.

A special rule under Section 4(d) of the ESA was finalized which authorizes take of certain protected species under approved Natural Communities Conservation Programs (NCCPs), which are administered by the states. If the Corps does not include impacts to Diegan coastal sage scrub (habitat for the listed coastal California gnatcatcher) in the Section 7 consultation, the Project would be required to comply with ESA requirements in an additional way, such as through a Habitat Loss Permit (HLP; described below), in conformance with Section 4(d) of the ESA. Each enrolled jurisdiction (City and County) is allowed a loss of up to 5 percent of its coastal sage scrub habitat if it is actively developing a NCCP. Local jurisdictions may authorize such losses, subject to concurrence by the USFWS and CDFG.

Identified by the USFWS, critical habitat is defined as areas of land that are considered necessary for endangered or threatened species to recover. The ultimate goal is to restore healthy populations of listed species within their native habitat so they can be removed from the list of threatened or endangered species. Once an area is designated as critical habitat pursuant to the federal ESA, all federal agencies must consult with the USFWS to ensure that any action they authorize, fund, or carry out is not likely to result in destruction or adverse modification of the critical habitat. Critical habitat for coastal California gnatcatcher occurs immediately adjacent to the BSA and critical habitat for San Diego ambrosia and arroyo toad occurs within 5 miles of the BSA. No critical habitat for any species occurs within the BSA.

All migratory bird species that are native to the U.S. or its territories are protected under the federal Migratory Bird Treaty Act (MBTA). The MBTA is generally protective of migratory birds but does not actually stipulate the type of protection required. In common practice, the MBTA is now used to place restrictions on disturbance of active bird nests during the nesting season (generally February 1 to July 31).

Federal wetland regulation (non-marine issues) is guided by the Rivers and Harbors Act of 1899 and the Clean Water Act. The Rivers and Harbors Act deals primarily with discharges into navigable waters, while the purpose of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of all Waters of the U.S. Permitting for projects filling Waters of the U.S. (including wetlands) is overseen by the Corps under Section 404 of the Clean Water Act. Projects could be permitted on an individual basis or be covered under one of several approved nationwide permits. Individual permits are assessed individually based on the

type of action, amount of fill, etc. Individual permits typically require substantial time (often longer than 6 months) to review and approve, while nationwide permits are pre-approved if a project meets appropriate conditions. A Section 404 Permit would be required if impacts occur to Corps jurisdictional areas; however, this is not the case for the proposed project as no impacts to Corps jurisdictional areas would occur.

## **5.2 STATE OF CALIFORNIA**

The California ESA is similar to the federal ESA in that it contains a process for listing of species and regulating potential impacts to listed species. Section 2081 of the California ESA authorizes CDFG to enter into a memorandum of agreement for take of listed species for scientific, educational, or management purposes.

The Native Plant Protection Act (NPPA) enacted a process by which plants are listed as rare or endangered. The NPPA regulates collection, transport, and commerce in plants that are listed. The California ESA followed NPPA and covers both plants and animals that are determined to be endangered or threatened with extinction. Plants listed as rare under NPPA were also designated rare under the California ESA.

The California Fish and Game Code (Sections 1600 through 1603) requires a CDFG agreement for projects affecting riparian and wetland habitats through issuance of a Streambed Alteration Agreement. A 1602 Streambed Alteration Agreement would be required if impacts occur to CDFG jurisdictional areas. In addition, any project that requires a Section 404 Permit also would require a Water Quality Certification by the California Regional Water Quality Control Board (RWQCB) under Section 401 of the Clean Water Act. However, as no impacts to CDFG jurisdictional areas would occur under the proposed project, neither a 1602 Streambed Alteration Agreement nor a Water Quality Certification would be required.

CEQA and its implementing guidelines (CEQA Guidelines) require discretionary projects with potentially significant effects (or impacts) on the environment to be submitted for environmental review. Mitigation for significant impacts to the environment is determined through the environmental review process in accordance with existing laws and regulations.

## **5.3 CITY OF ESCONDIDO**

The California Natural Communities Conservation Planning (NCCP) Act (Section 2835) allows CDFG to authorize take of species covered by plans in agreement with NCCP guidelines. An NCCP initiated by the State of California under Section 4(d) of the federal ESA focuses on conserving coastal sage scrub to avoid the need for future federal and state listing of coastal sage scrub-dependent species. The coastal California gnatcatcher is presently listed as threatened under the federal ESA, while several additional species inhabiting coastal sage scrub are candidates for federal and/or state listing. The Draft Escondido Subarea Plan and County MSCP Subarea Plan are intended to be completed subarea plans under the NCCP and Habitat Conservation Plan (HCP) processes.

The MHCP Subregional Plan was adopted and certified by the San Diego Association of Governments Board of Directors on March 28, 2003. Each of the 7 jurisdictions within the MHCP planning area (including Escondido) are required to implement their respective portion of the MHCP via citywide subarea plans. The City circulated a Draft Escondido Subarea Plan for public review in June 2001, but it has not yet been approved. The Draft Escondido Subarea Plan addresses the City's plans for conservation of natural biotic communities and sensitive plant and wildlife species, and represents the City's contribution to the MHCP and to regional NCCP conservation goals.

Approval and adoption of the Draft Escondido Subarea Plan by the City would result in the issuance of Federal and State authorizations (granted by USFWS and CDFG) for the take of listed rare, threatened, or endangered species, as well as the preservation and/or restoration of habitat in some areas of the City. The City, in turn, would then be able to authorize the taking of natural habitats or associated species by public or private projects within its jurisdiction, as long as those biological resources are adequately conserved by, and the project impacts are consistent with and covered by, the provisions of the Draft Escondido Subarea Plan. Adequate mitigation must also occur in the form of preservation or restoration/creation of biological resources within designated habitat preserve areas.

As stated above, each enrolled jurisdiction is allowed a loss of up to 5 percent of its coastal sage scrub habitat if it is actively developing a NCCP. The City has reached the 5-percent limit of allowable take of coastal sage scrub. As such, any impacts to coastal sage scrub would require the City to apply to the County (under County Board of Supervisors Policy I-122) for allocation of portions of the County's 5-percent take allowance of Diegan coastal sage scrub. As no impacts to Diegan coastal sage scrub would occur within the City, no application to the County for allocation of the of the County's take allowance of Diegan coastal sage scrub would be required.

Issues discussed in the Draft Escondido Subarea Plan that pertain to the proposed project include: Habitats Conserved, Mitigation Standards for Vegetation Communities, Conservation and Buffer Requirements along Tributaries and Creeks, and Wetlands Mitigation Standards. These issues are discussed below. The Narrow Endemic Species standards of the Draft Escondido Subarea Plan are not covered because no City narrow endemic plant species were observed within the BSA. In addition, FPAs are discussed below.

### **5.3.1 Habitats Conserved**

The Draft Escondido Subarea Plan requires conservation of at least 6,570 acres of existing native habitats as biological open space in the City. The composition of the open space preserve system must meet the minimum acreage criteria set forth in Table 4-1 of the Draft Escondido Subarea Plan. The configuration of the preserve system must also be consistent with all of the subarea objectives.

### **5.3.2 Wetlands Mitigation Standards**

The Draft Escondido Subarea Plan addresses avoidance, minimization, and mitigation measures for wetland habitats subject to development impacts. Development projects that affect wetland vegetation communities will be required to comply with these terms, which meet the federal policy of no net loss of wetland functions and services. Compliance with the terms of the Draft Escondido Subarea Plan will constitute the full extent of mitigation measures for the take of covered species required or recommended by the USFWS and CDFG.

The following standards and policies apply to all wetland vegetation communities within the City:

- **No Net Loss Policy.** For all vegetation communities listed by the MHCP as wetland vegetation communities (see Table 5-2, Habitat Group A in the Draft Escondido Subarea Plan) the City shall require, in priority order, maximum avoidance of project impacts, minimization of impacts, and mitigation of impacts. Mitigation of unavoidable impacts shall be designed to achieve no net loss of both wetland vegetation acreage and biological value within the City. This is consistent with existing wetland policies of the CDFG.
- **Mitigation for Unavoidable Impacts.** To achieve the no net loss standard, mitigation for unavoidable impacts (e.g., wetland habitat creation) should preferably occur on site. Alternatively, off-site mitigation may occur as long as such mitigation demonstrably contributes to the Escondido preserve design and biological value (e.g., by adjacency to other preserve areas). Off-site mitigation should preferentially occur within the same watershed as the impact. In any case, wetland mitigation sites shall be designated as preserve lands and managed for biological values.
- **Conservation and Buffer Requirements along Tributaries and Creeks**  
Wherever development or other discretionary actions are proposed in or adjacent to riparian habitats under common ownership, the riparian area shall be designated as biological open space and incorporated into the preserve. In addition, a minimum 50-foot biological buffer, plus a minimum 50-foot planning buffer (total width of both equals 100 feet) should be established for upland habitats, beginning at the outer edge of riparian vegetation. Within the 50-foot biological buffer, no new development shall be allowed, and the area shall be managed for natural biological values as part of the preserve system. In the event that natural habitats do not currently (at the time of proposed action) cover the 50-foot buffer area, habitats appropriate to the location and soils shall be restored as a condition for the proposed action. Within the additional 50-foot planning buffer, no new buildings or other uses considered incompatible with adjacent preserve goals shall be established, although uses considered compatible in preserve buffer areas may be established (e.g., trails or utilities; see MHCP Section 4.3 for a complete discussion of compatible and incompatible land uses adjacent to the preserve).

### **5.3.3 Land Uses Planned Adjacent to the Preserve (Adjacency Guidelines)**

Planned or existing land uses adjacent to the preserve include single and multiple family residential, active recreation, commercial, industrial, and agricultural uses. Land uses adjacent to

the preserve would be monitored to ensure minimal impacts to the preserve. The following adjacency guidelines would be addressed during either the planning (new development) or management (new and existing development) stages of preserve assembly.

- **Drainage and Toxics.** All new and proposed parking lots and developed areas adjacent to the preserve shall not drain directly into the preserve. All developed and paved areas, agricultural uses, golf courses, and other recreational uses shall be designed to prevent the release of toxins, chemicals, petroleum products, exotic plant materials, and other elements that might degrade or harm the natural environment or ecosystem processes within the preserve. This can be accomplished using a variety of methods, including natural detention basins, grass swales, or mechanical trapping devices. These systems shall be placed within the development footprint and be maintained by the property owner as often as needed to ensure proper functioning. Maintenance may include dredging out sediments if needed, removing exotic plant materials, and adding chemical neutralizing compounds (e.g., clay compounds when necessary and appropriate).
- **Erosion and Sedimentation.** All new development adjacent to preserve areas shall be required to adhere to measures to avoid degradation of habitats from erosion and sedimentation. These include restrictions on slope height and inclination, and requirements for drainage improvement and revegetation, as well as timing of such activities. For example, grading or vegetation removal adjacent to preserve areas shall be prohibited during the rainy season, unless determined to be allowable on a site-specific basis. Where possible, vegetation clearing adjacent to the preserve should involve brushing rather than discing. Grading and clearing activities should occur outside the breeding season of sensitive species. In addition, all necessary erosion control devices shall be placed within the development footprint and in place, and appropriate monitoring and maintenance shall be implemented during the grading period.
- **Lighting.** Lighting of all developed areas adjacent to the preserve shall be confined to areas necessary for public safety and directed away from the preserve. Low-pressure sodium fixtures and shielding shall be used, where feasible, in accordance with the City's outdoor lighting ordinance. Where necessary, development shall provide adequate shielding, berming, and/or other methods to protect the preserve and sensitive species from night lighting.
- **Noise.** Uses adjacent to the preserve shall be designed to minimize noise impacts. Berms and sound walls shall be constructed adjacent to commercial areas and any other area uses that may introduce noises that could impact or interfere with wildlife utilization of the preserve. Excessively noisy uses or activities adjacent to breeding areas shall incorporate noise reduction measures, such as limits on hours of operation, and be curtailed during the breeding season of sensitive species. Siting facilities that generate excess noise adjacent to preserves should be avoided.
- **Barriers.** New development adjacent to the preserve may be required to provide barriers (e.g., noninvasive vegetation, rocks/boulders, fences, walls, and/or signs) along the

preserve boundary to direct public access to appropriate entrance locations and reduce domestic animal predation.

- **Landscaping Restrictions.** When landscaping is adjacent to the preserve, the following guidelines shall be followed. In general, landscaping palettes for areas adjacent to the preserve should be composed of native species similar to, and compatible with, the adjacent habitat in the preserve. Prohibit the use of nonnative, invasive plant species in landscaping palettes within 1,000 feet of preserve. Revegetate areas of exotic species removal with species appropriate to the adjacent preserve area. Table 4-2 of the Draft Escondido Subarea Plan provides a partial list of attractive native landscaping plants that are tolerant of some summer irrigation and are compatible adjacent to preserve areas. See also Table 6-1 in Section 7 of the Draft Escondido Subarea Plan for a list of landscaping plants prohibited within 1,000 feet of preserve areas. Control and monitor horticultural regimes (irrigation, fertilization, pest control, and pruning) that can alter site conditions in natural areas, to prevent shifts in species composition from native to nonnative flora. In general, irrigation should be directed away from the preserve as this may foster conditions favorable to Argentine and fire ants. Irrigation runoff, for example, can alter natural areas that are adapted to xeric (dry) conditions, thereby promoting establishment of nonnative plants and displacement of native species. Irrigation can also carry pesticides into natural areas, adversely affecting both plants and wildlife. Finally, fertilizer management programs shall be implemented that apply the minimal amount of fertilizer required for all public horticultural areas adjacent to the preserve.
- **Fire and Brush Management.** Fire and brush management plans shall be enforced so that both biological and safety goals are met, consistent with the recommendations of the Wildland/Urban Interface Task Force in the Wildland/Urban Interface Development Standards. Brush management to reduce fuel and protect urban uses will occur where existing development is adjacent to the preserve. New residential development located adjacent to the preserve must be set back to incorporate brush management zones on the development pad and outside the preserve. For existing projects and approved projects, the brush management zones, standards and locations, and clearing techniques will not change from those required under existing regulations.

#### **5.3.4 Focused Planning Areas**

The City cooperatively designed the FPAs in partnership with the resource agencies and property owners. The FPA is the area within which the permanent Escondido preserve will be assembled and managed for its biological resources. The FPA is defined by its mapped boundaries, as shown in Figure 4-1 for the Draft Escondido Subarea Plan. The mapped boundaries include “hardlined” and “softlined” areas. Hardlined areas include properties that have approved land use entitlements or development agreements showing designated development and biological open space areas. For these properties, the area that has been developed or is approved for development is outside the preserve, while the open space area is in the preserve and conserved at 90 to 100 percent (depending on the types of approved activities). For softlined areas, which do not have approved land use entitlements or development agreements, onsite conservation

standards and mitigation ratios will be applied to achieve the projected conservation. As previously stated, a small portion of the BSA is within the hardlined FPA (Figure 3).

## **5.4 COUNTY OF SAN DIEGO**

As previously stated, the BSA is located within the Metro-Lakeside-Jamul Segment of the County's MSCP. A portion of the BSA is within the PAMA (Figure 3). County regulations that pertain to the proposed project are discussed below.

### **5.4.1 Multiple Species Conservation Program**

The NCCP Act of 1991 (Section 2835) allows the CDFG to authorize take of species covered by plans in agreement with NCCP guidelines. A Natural Communities Conservation Program initiated by the State of California focuses on conserving coastal sage scrub, and in concert with the USFWS and the federal ESA, is intended to avoid the need for future federal and state listing of coastal sage scrub dependent species.

The MSCP has been prepared to meet the requirements of the California NCCP, federal ESA, and California ESA. It is a comprehensive, long-term HCP that addresses the needs of multiple species by identifying key areas for preservation as open space in order to link core biological areas into a regional wildlife preserve. The County's MSCP Subarea Plan (County 1997) implements the MSCP within the unincorporated areas under County jurisdiction.

### **5.4.2 Resource Protection Ordinance**

The County regulates natural resources (among other resources) via the RPO, the regulations of which cover wetlands, sensitive plants and animals, sensitive habitats, and habitats containing sensitive animals or plants as sensitive biological resources. It is the intent of the RPO to increase the preservation and protection of the County's unique topography, natural beauty, biological diversity, and natural and cultural resources. Areas within the BSA were considered County RPO wetlands if they met one of the 3 following attributes pursuant to the RPO: (1) at least periodically, the land supports a predominance of hydrophytes (plants whose habitat is water or very wet places); (2) the substratum is predominantly undrained hydric soil; or (3) an ephemeral or perennial stream is present, whose substratum is predominately non-soil and such lands contribute substantially to the biological functions or values of wetlands in the drainage system. Sensitive habitat lands are identified by the RPO as lands that "support unique vegetation communities, or habitats of rare or endangered species or sub-species of animals or plants as defined by Section 15380 of the CEQA Guidelines."

The proposed project is an essential public facility or project and may be exempt from the RPO pursuant to Section 86.605(c), provided the following findings are made:

- The facility or project is consistent with adopted community or subregional plans;
- All possible mitigation measures have been incorporated into the facility or project, and there are no feasible less environmentally damaging location, alignment, or non-structural alternatives that would meet project objectives;

- Where the facility or project encroaches into a wetland or floodplain, mitigation measures are required that result in any net gain in the wetland and/or riparian habitat;
- Where the facility or project encroaches into steep slopes, native vegetation will be used to revegetate and landscape cut and fill areas; and
- No mature riparian woodland is destroyed or reduced in size due to otherwise allowed encroachments.

### *No Net Loss Policy*

For all County RPO wetlands, the County requires that mitigation of unavoidable impacts shall be designed to achieve no net loss. This is consistent with existing wetland policies of the Corps and CDFG.

### **5.4.3 Biological Mitigation Ordinance**

The BMO is the mechanism by which the County implements the County's approved MSCP Subarea Plan at the project level to attain the goals set forth in the County MSCP Subarea Plan. The BMO contains design criteria and mitigation standards which, when applied to projects requiring discretionary permits, protect habitats and species and helps ensure that a project does not preclude the viability of the MSCP Preserve System. In this way, the BMO promotes the preservation of lands that contribute to contiguous habitat core areas or linkages.

As such, under the BMO, habitat is considered a BRCA if it meets one of the following criteria:

- It is considered a PAMA on the wildlife agencies' PAMA map;
- It contains biological resources that support or contribute to the long-term survival of sensitive species and is adjacent to the PAMA;
- It is part of a regional linkage/corridor;
- It is mapped as Very High or High on the Habitat Evaluation Map and links significant patches of habitat;
- It is part of a patch of habitat greater than 500 acres in area that contributes to the conservation of sensitive species; or
- It supports a high number of sensitive species and is contiguous to undisturbed habitats.

A small portion of BSA lands designated as PAMA within the County's MSCP Subarea Plan (Figure 3) meet the criteria of a BRCA. As such, this area is subject to the BMO's avoidance and mitigation requirements. County guidelines direct that projects should incorporate avoidance of impacts to 80 percent of local populations of County Group A and B sensitive plants. It should be noted that no County Group A or B plant species were observed during surveys within the BSA.

## **5.5 THRESHOLDS OF SIGNIFICANCE**

Thresholds for significant biological resource impacts are based on State CEQA Guidelines Appendix G and City policies and regulations. A significant impact would occur if the proposed project would:

- Have a substantial adverse effect either directly or through habitat modifications on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations or by the USFWS or CDFG.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the USFWS or CDFG.
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with provisions of an adopted HCP, NCCP, or other approved state, regional, or local HCP.

## **6.0 IMPACT ANALYSIS**

### **6.1 DIRECT IMPACTS**

Direct impacts are immediate impacts resulting from the permanent removal of habitat. The project's direct impacts were quantified for the project by overlaying the limits of grading on the biological resources map (Figures 4a and 4b).

#### **6.1.1 Vegetation Communities**

Implementation of the proposed project would result in direct impacts to 1.3 acres of sensitive vegetation communities, including 0.3 acre of coast live oak woodland (including disturbed), 0.6 acre of Diegan coastal sage scrub (including disturbed), and 0.4 acre of non-native grassland (Figures 4a and 4b; Table 5). It should be noted that the impacts to Diegan coastal sage scrub occur entirely within the County. No impacts to Diegan coastal sage scrub occur within the City.

Impacts to non-sensitive communities would total 4.7 acres and include direct impacts to 0.7 acre of agriculture, 0.4 acre of disturbed habitat, and 3.6 acres of developed land. Impacts to sensitive vegetation communities are considered significant, while impacts to non-sensitive vegetation communities are not considered significant.

**Table 5**  
**SUMMARY OF IMPACTS TO VEGETATION COMMUNITIES**  
**WITHIN THE BSA (acre[s])<sup>1</sup>**

<b>VEGETATION COMMUNITY†</b>	<b>City of Escondido</b>	<b>County of San Diego</b>	<b>Total</b>
Southern coast live oak riparian forest (including disturbed; 61310)	0.00	0.00	0.00
Willow riparian woodland (62000)	0.00	0.00	0.00
Riparian scrub (63000)	0.00	0.00	0.00
Coast live oak woodland (including disturbed; 71160)	0.1	0.2	0.3
Diegan coastal sage scrub (including disturbed; 32510) <sup>3</sup>	0.0	0.6	0.6
Non-native grassland (42200)	0.2	0.2	0.4
Non-native vegetation (11000)	0.0	0.0	0.0
Agriculture (orchards; 18100)	0.0	0.7	0.7
Disturbed habitat (11300)	0.3	0.1	0.4
Developed (12000)	1.5	2.1	3.6
<b>TOTAL</b>	<b>2.1</b>	<b>3.9</b>	<b>6.0</b>

<sup>1</sup>Vegetation categories and numerical codes are from Holland (1986) and Oberbauer (2008)

<sup>2</sup>Wetland acreages are rounded to the nearest 0.01, while upland acreages are rounded to the nearest 0.1; thus, totals reflect rounding

<sup>3</sup>Impacts to Diegan coastal sage scrub are completely within the County. No impacts to Diegan coastal sage scrub within the City would occur.

### **6.1.2 Plant Species**

No impacts to sensitive plant species are anticipated as none were observed within the BSA.

### **6.1.3 Animal Species**

No direct impacts to sensitive animal species are anticipated upon project implementation as no sensitive animal species were observed within the BSA. The 3 sensitive animal species (turkey vulture, western bluebird, and barn owl) observed during site visits were flying near the BSA or overhead. Removal of any suitable habitat during the coastal California gnatcatcher breeding season (February 15 through August 31) or tree-nesting raptor breeding season (February 1 through September 15) could potentially be considered significant.

As discussed above, the MBTA is generally protective of migratory birds, but does not actually stipulate the type of protection required. In common practice, the MBTA is now used to place restrictions on disturbance of active bird nests during the nesting season (generally February 1 to July 31). As such, grading between February 1 and July 30 would result in a significant impact to species covered under the MBTA. Any impacts to species covered under the MBTA would be significant.

Although implementation of the proposed project would impact habitat typically used by a listed species (coastal California gnatcatcher), this species was not observed within the BSA during site visits and its potential to occur within the BSA is low given the small amount of marginal habitat along edges of Diegan coastal sage scrub within the linear BSA. As such, the proposed project would not reduce the likelihood of survival and recovery of listed species in the wild.

No suitable habitat for arroyo toad occurs within the BSA. As such, no impacts to arroyo toad aestivation or breeding habitat are anticipated from project implementation.

Potential for the golden eagle (*Aquila chrysaetos*) to forage or nest within the BSA is low as this species typically requires solitude and is usually found at a distance from human habitation. The BSA is likely too urbanized for this species. As such, no impacts to golden eagle foraging or nesting habitat are anticipated. In addition, no take of eagles, eagle eggs, or any part of an eagle pursuant to the Bald and Golden Eagle Protection Act is anticipated given the low potential for this species to occur within the BSA.

#### **6.1.4 Jurisdictional Areas**

No impacts to Corps or CDFG jurisdictional areas or County RPO wetlands are anticipated (Figures 5a, 5b, 6a, 6b, 7a, and 7b). In addition, orange blaze construction fencing would be installed adjacent to all jurisdictional areas and County RPO wetlands to prevent any potential errant construction impacts, as shown on Figures 6a, 6b, 8a, and 8b.

#### **6.1.5 Wildlife Corridors/Core Wildlife Areas**

As stated above, the BSA is outside any Biological Core and Linkage Areas as identified in the Draft Escondido Subarea Plan. A small portion of the BSA is within the PAMA, which meets the criteria of a BRCA. A small portion of an unnamed tributary to Cloverdale Creek potentially acts as a local wildlife corridor. However, impacts to riparian habitat (Figure 5a) with the potential to act as a local wildlife corridor would be less than significant.

#### **Local Policies or Ordinances**

As previously stated, County lands within the BSA are within the Metro-Lakeside-Jamul Segment of the County's MSCP Subarea. Although impacts to Diegan coastal sage scrub would occur upon implementation of the proposed project (within the unincorporated County only), these impacts would not exceed the County's 5-percent habitat loss threshold as defined by the NCCP. Mitigation for these impacts is proposed as discussed below. As such, the project would mitigate coastal sage scrub habitat loss in accordance with Section 4.3 of the NCCP Guidelines.

The proposed project would not preclude or prevent the preparation of the subregional NCCP. The MHCP Subregional Plan was approved March 28, 2003 and the City of Escondido circulated a Draft Oceanside Subarea Plan for public review in June 2001, but it has not yet been approved. The County's MSCP Subarea Plan was approved in 1997.

There is no Habitat Management Plan or Special Areas Management Plan applicable to the project. The project would conform to the goals and requirements of the San Dieguito and Carlsbad Watershed Urban Runoff Management Programs.

The project would conform to the goals and requirements as outlined in an applicable HCP (e.g., Draft Escondido Subarea Plan and County's MSCP Subarea Plan). Project implementation would impact a relatively small area of the PAMA. Construction and maintenance of public facilities such as a water pipeline are covered activities under the County's MSCP. As a result, this is not considered a conflict. The portion of the BSA considered a PAMA is also a BRCA. Given that the project consists of installation of water pipelines (linear feature) and the project has been designed to minimize impacts to the BRCA to the maximum extent practicable, no significant impact to BRCA would occur.

The project would maintain existing wildlife corridors and/or habitat linkages and would not preclude connectivity between areas of high habitat values, as discussed above.

No County Rare, Narrow Endemic Species were observed within the BSA. In addition, the BSA is not known to support a core population of any County Rare, Narrow Endemic species.

The proposed project would not reduce the likelihood of survival and recovery of listed species in the wild as no listed species were observed within the BSA.

To ensure compliance with the MBTA, clearing of native vegetation shall occur outside the breeding season of migratory birds (February 1 to July 31). As such, the project would not result in the killing of migratory birds or destruction of active nest.

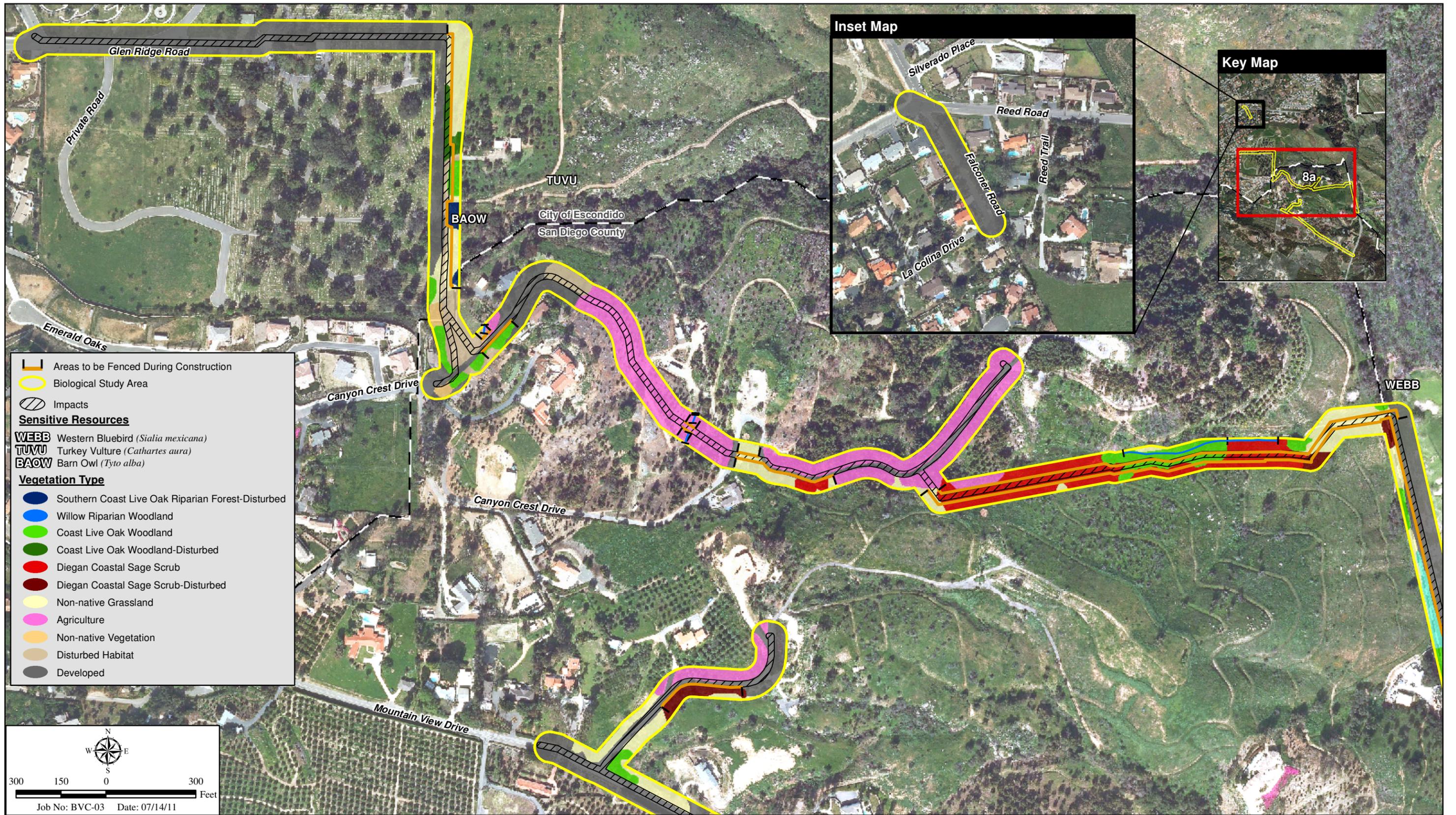
As discussed above, no impacts to golden eagle are anticipated.

## **6.2 INDIRECT IMPACTS**

Indirect impacts are impacts to the biological resources that occur over short or long periods of time as a result of the project. Although biological resources may not initially be directly impacted, over time they may be affected indirectly due to the relative proximity of development. Potential indirect impacts from project construction could include decreased water quality (i.e., through sedimentation, contaminants, or fuel release), fugitive dust, colonization of non-native plant species in previously undisturbed areas, habitat fragmentation/edge effects, construction noise, night lighting, and human activity. A discussion of potential indirect impacts follows.

### **6.2.1 Water Quality**

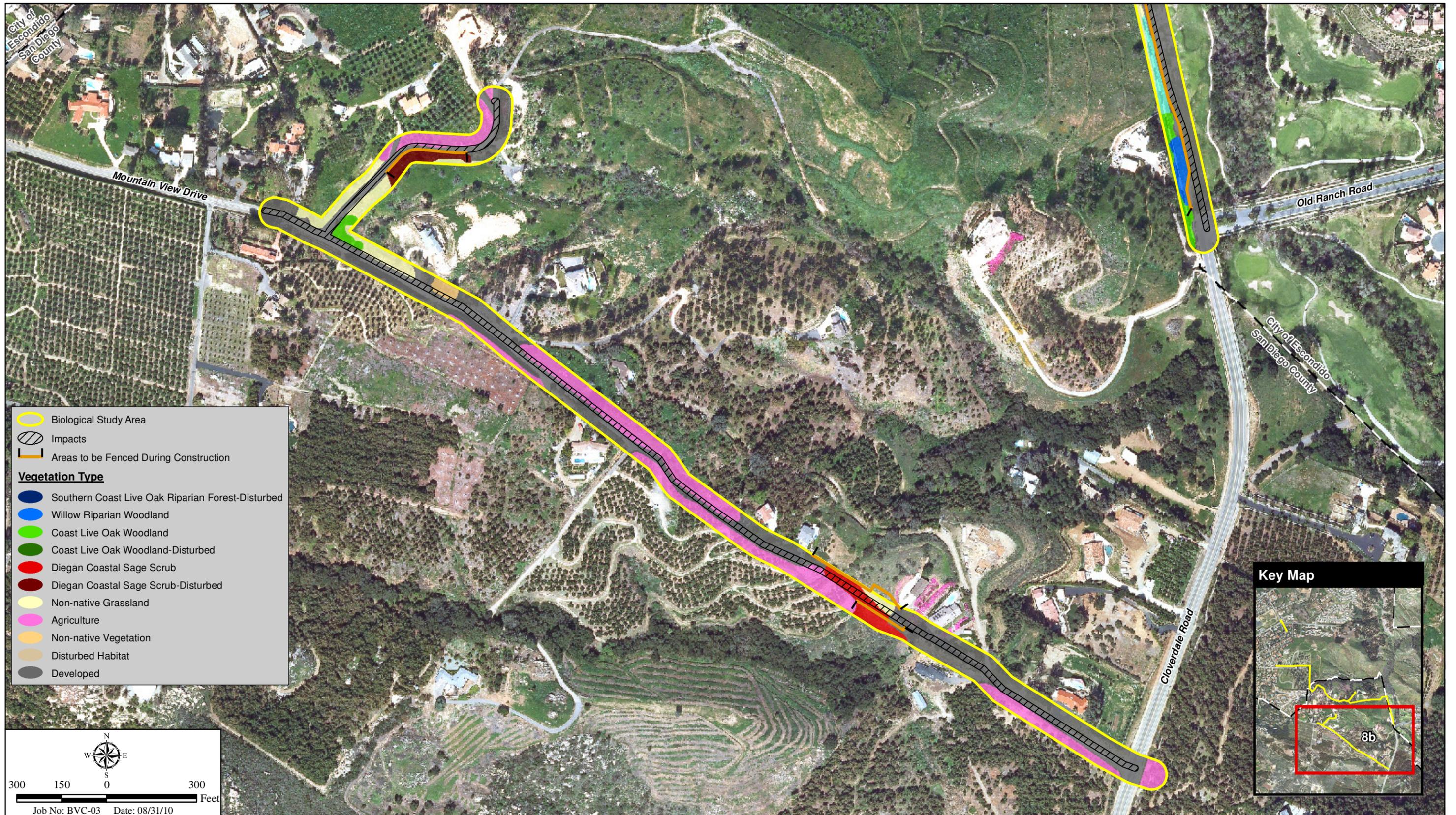
Water quality in riparian areas can be adversely affected by potential surface runoff and sedimentation during construction. The use of petroleum products (fuels, oils, and/or lubricants) and erosion of cleared land during construction could potentially contaminate surface water. Temporarily diminished water quality could adversely affect vegetation, aquatic animals, and terrestrial wildlife that depend upon these resources.



## Construction Fencing Locations

CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT

Figure 8a



- Biological Study Area
  - Impacts
  - Areas to be Fenced During Construction
- Vegetation Type**
- Southern Coast Live Oak Riparian Forest-Disturbed
  - Willow Riparian Woodland
  - Coast Live Oak Woodland
  - Coast Live Oak Woodland-Disturbed
  - Diegan Coastal Sage Scrub
  - Diegan Coastal Sage Scrub-Disturbed
  - Non-native Grassland
  - Agriculture
  - Non-native Vegetation
  - Disturbed Habitat
  - Developed

### Construction Fencing Locations

CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT

During construction, project design measures would be implemented to control erosion, sedimentation, and pollution that could impact water resources within the project impact area and downstream off site. The proposed project would comply with Section 33 of Article 55 (Grading and Erosion Control) of the City's Municipal Code, which requires erosion control measures for construction areas within the City. The project also would comply with Sections 87.414 and 87.417 of Division 7 (Excavation and Grading) of the San Diego County Zoning and Land Use Regulations, which require erosion control measures for construction areas within the County. Prior to the commencement of grading, a Notice of Intent would be filed with the RWQCB for a National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit; NPDES No. CAS000002, State Water Resources Control Board [SWRCB] Order 2009-0009-DWQ). Specific NPDES Construction General permit requirements include implementation of an approved Storm Water Pollution Prevention Plan (SWPPP), which require best management practices (BMPs) for construction-related water quality concerns including erosion/sediment control, hazardous material use/storage, debris generation, and disposal of extracted groundwater. The SWPPP would fulfill the requirements of NPDES No. CAS000002, SWRCB Order 2009-0009-DWQ by using BMPs to eliminate and/or minimize stormwater pollution prior to and during construction. While specific BMPs would be determined during the SWPPP process based on site-specific characteristics, they would likely include the following types of standard industry measures and guidelines contained in sources such as the NPDES Construction Permit text, related City and County regulations, and the Project Storm Water Mitigation Plan (SWMP).

Erosion and Sediment Control. Specific construction-related erosion and sediment control BMPs would likely include: (1) seasonal/areal grading restrictions and enhanced protection during precipitation events; (2) use of temporary silt fences, fiber rolls, gravel bags, slope stabilization, street sweeping/vacuuming, inlet/outlet protection, stockpile/solid waste management, dust control, stabilized ingress/ egress points and paving/grinding controls; (3) appropriate employee training in BMP installation/maintenance; and (4) implementation of applicable monitoring, reporting and maintenance efforts.

Construction-related Hazardous Materials. Specific BMPs for construction-related hazardous materials such as vehicle/equipment fuels would likely include: (1) minimizing the use of hazardous materials; (2) proper storage, location, containment, inventory documentation and disposal of all hazardous materials; (3) appropriate employee training in hazardous material use/handling; and (4) implementation of applicable monitoring, reporting and maintenance efforts.

Demolition Debris Generation and Disposal of Extracted Groundwater. Specific measures related to construction-related debris generation and groundwater disposal would likely include: (1) erosion/sediment controls as noted above; (2) proper disposal and (if applicable) recycling of construction materials; (3) implementation of appropriate sampling/analysis and worker protection programs; and (4) applicable testing, treatment and disposal of potentially hazardous debris and extracted groundwater.

Given the aforementioned project design measures, no significant impacts to biological resources related to diminished water quality are anticipated during construction of the proposed project.

### **6.2.2 Fugitive Dust**

Dust produced by construction could disperse onto native vegetation adjacent to construction areas. A continual cover of dust could reduce the overall vigor of individual plants by reducing their photosynthetic capabilities and increasing their susceptibility to pests or disease. This in turn could affect animals dependent on these plants (e.g., seed-eating rodents). Dust also could make plants unsuitable as habitat for insects and birds.

Dust dispersal during project construction would be controlled by standard measures such as applications of water 3 times per day or use of chemical palliatives, covering haul vehicles (if any), replanting disturbed areas as soon as practical, and restricting vehicle speeds on unpaved roads up to 25 miles per hour or less, to control fugitive dust. Because active construction areas and unpaved surfaces would be watered pursuant to City and County grading permit requirements to minimize dust generation, impacts on biological resources would be less than significant for the proposed project.

### **6.2.3 Colonization of Non-native Plant Species**

Non-native plants could colonize areas disturbed by construction and could potentially spread into adjacent native habitats. Many non-native plants are highly invasive and can displace native vegetation (thereby reducing native species diversity), potentially increase flammability and fire frequency, change ground and surface water levels, and adversely affect native wildlife dependent on the native plant species. It should be noted that non-native plant colonization is already a significant issue as a result of existing agricultural activities and residential uses within the BSA. Landscaping restrictions are discussed in Section 5.3.3, above. In addition, any landscape plan would be submitted to the City and County for review and approval prior to issuance of any clearing or grading permit. As such, impacts to native habitat from invasive plants within the BSA would be less than significant.

### **6.2.4 Habitat Fragmentation/Edge Effects**

Removal of existing native habitats within the BSA would result in some habitat fragmentation and an increase in associated edge effects. Fragmentation is the breaking up of larger, contiguous parcels of habitat into smaller, discontinuous patches. Potential edge effects from such fragmentation could include the invasion of non-native plant species in what was unfragmented, native habitat and access by predators (native and non-native) to prey that would otherwise be protected in an unfragmented parcel of habitat.

Although implementation of the propose project would impact 1.3 acres of sensitive habitat, the majority of these impacts would occur along a narrow pipeline corridor, with the majority of the impacts occurring within existing roadways, an existing cemetery, agricultural areas, and residential areas. As such, impacts resulting from habitat fragmentation/edge effects would be less than significant.

### **6.2.5 Construction Noise**

Noise from such construction-related sources as grubbing, clearing, and grading, as well as construction-related vehicular traffic would impact local wildlife. Noise-related impacts would be considered significant if sensitive species (such as coastal California gnatcatchers or raptors) were displaced from their nests and failed to breed. Birds nesting within any area impacted by noise exceeding 60 dB  $L_{eq}$  or ambient levels (if ambient is greater than 60 dB  $L_{eq}$ ) may be significantly impacted.

### **6.2.6 Night Lighting**

Night lighting has the potential to spill over into adjacent native habitats, which could both interfere with wildlife movement and provide nocturnal predators with an unnatural advantage over their prey. Such indirect effects could cause an increased loss in native wildlife. Existing outdoor lighting sources within the BSA include those associated with residential uses and are generally of low wattage. Any proposed project-related lighting would be required to adhere to Section 33-711 of Article 35 (Outdoor Lighting) of the City's Municipal Code as described in Section 5.3.3, above, and with Division 9 of the San Diego County Light Pollution Code. Short-term construction lighting within the proposed project footprint adjacent to preserved habitat would be of the lowest illumination allowed for human safety, selectively placed, shielded, and directed away from preserved habitat. As such, no significant impacts from night lighting would occur.

### **6.2.7 Human Activity**

Increases in human activity in the area could result in degradation of sensitive vegetation through habitat fragmentation, formation of additional edges through unauthorized road or trail creation, removal of existing vegetation, or illegal dumping. Given that the project consists of installation of water pipelines, no increase in human activity in adjacent undeveloped areas is anticipated. Regardless, impacts from human activity could potentially result in a significant impact.

## **7.0 MITIGATION MEASURES**

Implementation of the proposed project would result in impacts to sensitive vegetation communities and species, as described above. Implementation of the following mitigation measures would meet the standards of the Draft Escondido Subarea Plan and County's MSCP Subarea Plan and would reduce impacts to biological resources to below a level of significance. Mitigation ratios were taken from Table 5-2 of the Draft Escondido Subarea Plan for vegetation communities within the City and from Appendix M of the County's BMO for vegetation communities within the County.

## 7.1 SENSITIVE VEGETATION COMMUNITIES

*Impact 7.1.1* Implementation of the proposed project would result in impacts to 0.3 acre of coast live oak woodland (including disturbed), 0.6 acre of Diegan coastal sage scrub (including disturbed), and 0.4 acre of non-native grassland (Figures 4a and 4b; Table 6). These impacts would be considered significant.

No mitigation is required for impacts to non-sensitive habitats, including agriculture, disturbed habitat, and developed land.

VEGETATION COMMUNITY <sup>2</sup>	HABITAT GROUP/TIER <sup>3</sup>	IMPACT		RATIO		TOTAL MITIGATION
		City of Escondido	County of San Diego	City of Escondido	County of San Diego	
Southern coast live oak riparian forest (including disturbed; 61310)	A/I	0.00	0.00	3:1	3:1	0.00
Willow riparian woodland (62000)	A/I	0.00	0.00	3:1	3:1	0.00
Riparian scrub (63000)	A/I	0.00	0.00	3:1	3:1	0.00
Coast live oak woodland (including disturbed; 71160)	B/I	0.1	0.2	2:1 <sup>4</sup>	2:1 <sup>4</sup>	0.6
Diegan coastal sage scrub (including disturbed; 32510) <sup>5</sup>	C/II	0.0	0.6	1:1 <sup>4</sup>	1.5:1 <sup>4</sup>	0.9
Non-native grassland (42200)	E/III	0.2	0.2	0.5:1 <sup>4</sup>	0.5:1 <sup>4</sup>	0.2
Non-native vegetation (11000)	--	0.0	0.0	--	--	0.0
Agriculture (orchards; 18100)	F/IV	0.0	0.7	--	--	0.0
Disturbed habitat (11300)	F/IV	0.3	0.1	--	--	0.0
Developed (12000)	F/IV	1.5	2.1	--	--	0.0
<b>TOTAL</b>	<b>--</b>	<b>2.1</b>	<b>3.9</b>	<b>--</b>	<b>--</b>	<b>1.7</b>

<sup>1</sup>Wetland acreages are rounded to the nearest 0.01, while upland acreages are rounded to the nearest 0.1; thus, totals reflect rounding

<sup>2</sup>Vegetation categories and numerical codes are from Holland (1986) and Oberbauer (2008)

<sup>3</sup>Habitat Groups taken from the Draft Escondido Subarea Plan and Tiers taken from the County's BMO

<sup>4</sup>Mitigation ratio assumes that impacts within the County are within the BRCA and that mitigation would occur within areas meeting BRCA criteria (see Attachment M of the County's BMO for more information). Also assumes that impacts within the City are outside the City's FPA (See Table 5-2 of the City's Draft HCP for more information).

### *Mitigation Measure (MM) 7.1.1*

Mitigation for impacts to coast live oak woodland (including disturbed) within the City and County shall occur at a 2:1 ratio through creation and enhancement of suitable habitat at an approved mitigation bank or through acquisition of suitable habitat credits at an approved mitigation bank in consultation with the City, County, and resource agencies prior to clearing, grubbing, or grading (Table 6). Mitigation banks within the North County area include Daley Ranch, Heights of Palo Mesa Conservation Bank, Pilgrim Creek Mitigation Bank and North County Habitat Bank.

Mitigation for impacts to Diegan coastal sage scrub (including disturbed) within the County shall occur at a 1.5:1 ratio while impacts to non-native grassland within the City and County shall be mitigated at a 0.5:1 ratio through creation and enhancement of suitable habitat or acquisition of suitable credits at an approved mitigation bank in consultation with the County and resource agencies prior to clearing, grubbing or grading. Mitigation banks within the project vicinity include Daley Ranch, Heights of Palo Mesa Conservation Bank, Pilgrim Creek Mitigation Bank and North County Habitat Bank. No impacts to Diegan coastal sage scrub (including disturbed) is anticipated within the City.

## **7.2 JURISDICTIONAL AREAS**

No impacts to Corps or CDFG jurisdictional areas or County RPO wetlands are anticipated. Therefore, no mitigation is required.

## **7.3 SENSITIVE PLANT SPECIES**

No impacts to sensitive plant species are anticipated as none were observed within the BSA. Therefore, no mitigation is required.

## **7.4 SENSITIVE ANIMAL SPECIES**

No impacts to sensitive animal species are anticipated as none were observed within the BSA. As previously stated, although implementation of the proposed project would impact habitat typically used by a listed species (coastal California gnatcatcher), this species was not observed within the BSA during site visits and its potential to occur within the BSA is low given the small amount of marginal habitat along edges of Diegan coastal sage scrub within the linear BSA. Regardless, mitigation is recommended as if present.

*MM 7.4.1* Indirect impacts to sensitive animal species (through loss of habitat) shall be mitigated through implementation of MM 7.1.1, above. Evidence that this mitigation measure has been implemented shall be provided to the City and County prior to issuance of any grading permit.

## 7.5 INDIRECT IMPACTS

*Impact 7.5.1* Any removal of occupied habitat during the coastal California gnatcatcher breeding season (February 15 to August 31) or tree-nesting raptor breeding season (February 1 through September 15) would be a significant impact. Any grading activity within 500 feet of an active coastal California gnatcatcher or tree-nesting raptor nest also would be a significant impact.

*MM 7.5.1* No grubbing, clearing, or grading within 500 feet of occupied Diegan coastal sage scrub during the gnatcatcher breeding season (February 15 through August 31) or tree-nesting raptor breeding season (February 1 through September 15) shall occur. As such, all grading permits, improvement plans, and the final map shall state the same.

If grubbing, clearing, or grading would occur during the gnatcatcher and/or raptor breeding season, a pre-grading survey shall be conducted within 3 days prior to grading to determine if these species occur within the areas directly impacted by grading or indirectly impacted by noise. If there are no gnatcatchers or raptors nesting (includes nest building or other breeding/nesting behavior) within this area, development shall be allowed to proceed. However, if any of these birds are observed nesting or displaying breeding/nesting behavior within the area, construction shall be postponed until (1) all nesting (or breeding/nesting behavior) has ceased or until after September 15; or (2) a temporary noise barrier or berm shall be constructed at the edge of the development footprint to reduce noise levels below 60 dB  $L_{eq}$  or ambient (if ambient is greater than 60 dB  $L_{eq}$ ). Alternatively, the duration of construction equipment operation could be controlled to keep noise levels below 60 dB  $L_{eq}$  or ambient in lieu of or in concert with a wall or other sound attenuation barrier.

To ensure compliance with the MBTA, clearing of native vegetation shall occur outside of the breeding season of most avian species (February 1 to July 31). Clearing during the breeding season of MBTA-covered species (migratory birds that are native to the U.S. or its territories) could occur if it is determined that no nesting birds (or birds displaying breeding or nesting behavior) are present within 3 days prior to clearing. As described above, a pre-grading survey shall be conducted to determine if breeding or nesting avian species occurs within areas directly affected by grading or indirectly affected by noise. If any of these birds are observed nesting or displaying breeding/nesting behavior within the area, construction shall be postponed until (1) the nest is abandoned or the young have fledged or (2) after July 31.

*Impact 7.5.2* Human activity such as grading or clearing beyond the proposed construction limits could impact sensitive vegetation communities or species.

*MM 7.5.2* The construction and staging area limits shall be clearly demarcated with temporary construction (orange blaze) fencing (Figures 8a and 8b) under the

supervision of a qualified biologist to ensure that construction activity remains within the defined limits of work. This fencing shall be erected prior to commencement of brushing or grading activities and shall demarcate areas where human and equipment access and disturbance from grading are prohibited adjacent to sensitive habitats. A qualified biologist shall monitor all site preparation near the construction/sensitive habitat interfaces during construction activities. A qualified biologist also shall inspect the demarcated areas during regularly scheduled construction monitoring visits.

## **8.0 SUMMARY OF PROJECT IMPACTS AND MITIGATION**

Implementation of the proposed project would directly and/or indirectly exceed significance thresholds relative to sensitive vegetation communities, sensitive wildlife species, construction noise, and human activity. Mitigation of direct impacts to sensitive vegetation communities would occur through off-site acquisition of mitigation credits, or creation and/or restoration of appropriate habitat in consultation with the City, County, and resource agencies. Mitigation measures for indirect impacts also would be implemented. The proposed mitigation measures would reduce project-related impacts to below a level of significance.

## 9.0 CERTIFICATION/QUALIFICATION

The following individuals contributed to the fieldwork and/or preparation of this report.

Sarichia Cacciatore*	M.S., Environmental Science and Policy, Johns Hopkins University, 2002 B.A., Geography/Certificate Urban Planning, California State University San Bernardino, 1997
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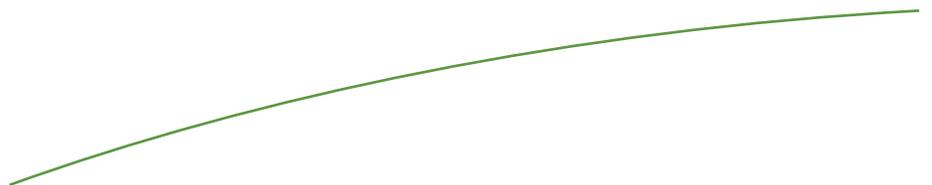
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Appendix A

PLANT SPECIES OBSERVED



**Appendix A**  
**PLANT SPECIES OBSERVED**  
**CEMETERY AREA WATER PIPELINE REPLACEMENT**

<u>FAMILY</u>	<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>HABITAT</u> ‡
<b>CONIFER</b>			
Pinaceae	<i>Pinus</i> sp.	pine	NNV
<b>MONOCOTS</b>			
Arecaceae	<i>Phoenix canariensis</i>	Canary Island date palm	SCLORF, WRW, CLOW
Asparagaceae	<i>Washingtonia robusta</i>	Mexican fan palm	SCLORF, AG
	<i>Asparagus asparagoides</i>	bridal creeper	NNG, CLOW, SCLORF
Cyperaceae	<i>Cyperus involucratus</i>	umbrella plant	SCLORF
Iridaceae	<i>Sisyrinchium bellum</i>	blue-eyed grass	DCSS
Poaceae	<i>Avena</i> sp.	oats	NNG
	<i>Bromus diandrus</i>	common ripgut grass	NNG, AG, DCSS
	<i>Bromus madritensis</i>	foxtail chess	NNG, DCSS
	<i>Cortaderia selloana</i>	pampas grass	CLOW, WRW
	<i>Piptatherum miliaceum</i>	smilo grass	CLOW
Themidaceae	<i>Dichelostemma capitatum</i>	blue dicks	NNG
Typhaceae	<i>Typha</i> sp.	cattail	SCLORF
<b>EUDICOTS</b>			
Adoxaceae	<i>Sambucus mexicana</i>	blue elderberry	DCSS, CLOW
Anacardiaceae	<i>Malosma laurina</i>	laurel sumac	NNG, DCSS, SCLORF
	<i>Toxicodendron diversilobum</i>	poison oak	CLOW, NNG, DCSS
Apocynaceae	<i>Vinca major</i>	greater periwinkle	SCLORF, AG
Asteraceae	<i>Ambrosia dumosa</i>	white bursage	RS
	<i>Ambrosia psilostachya</i>	western ragweed	RS
	<i>Artemisia californica</i>	California sagebrush	DCSS
	<i>Baccharis salicifolia</i>	mule fat	RS, WRW
	<i>Centaurea melitensis</i>	star thistle	NNG
	<i>Conyza canadensis</i>	horseweed	CLOW
	<i>Eriophyllum confertiflorum</i>	golden-yarrow	DCSS
	<i>Gnaphalium californicum</i>	California everlasting	NNG
	<i>Hazardia squarrosa</i> var. <i>grindelioides</i>	saw-toothed goldenbush	DCSS

**Appendix A (cont.)**  
**PLANT SPECIES OBSERVED**  
**CEMETERY AREA WATER PIPELINE REPLACEMENT**

<u>FAMILY</u>	<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>HABITAT</u> ‡
<b>EUDICOTS (cont.)</b>			
Asteraceae (cont.)	<i>Picris echioides</i>	bristly ox-tongue	WRW
	<i>Silybum marianum</i>	milk thistle	NNG, CLOW
Boraginaceae	<i>Amsinckia menziesii</i> var. <i>intermedia</i>	rancher's fiddleneck	DCSS
	<i>Cryptantha</i> sp.	cryptantha	NNG
Brassicaceae	<i>Alyssum</i> sp.	alyssum	NNG
	<i>Hirschfeldia incana</i>	perennial mustard	NNG
	<i>Raphanus sativus</i>	wild radish	NNG, CLOW
Convolvulaceae	<i>Calystegia macrostegia</i>	morning-glory	DCSS
Crassulaceae	<i>Crassula connata</i>	pygmy-weed	DCSS
Cucurbitaceae	<i>Marah macrocarpus</i>	wild cucumber	CLOW, DCSS, NNG
Cuscutaceae	<i>Cuscuta californica</i>	dodder	DCSS
Euphorbiaceae	<i>Ricinus communis</i>	castor-bean	CLOW, NNG
Fabaceae	<i>Lathyrus vestitus</i>	sweet pea	DCSS
	<i>Lotus scoparius</i>	deerweed	DCSS, NNG
	<i>Lupinus bicolor</i>	miniature lupine	NNG
	<i>Medicago polymorpha</i>	bur-clover	AG
Fagaceae	<i>Quercus agrifolia</i> var. <i>agrifolia</i>	coast live oak	NNG, CLOW, SCLORF, DCSS, WRW, AG
Geraniaceae	<i>Erodium cicutarium</i>	red-stem filaree	AG, DCSS
Hydrophyllaceae	<i>Phacelia parryi</i>	Parry's phacelia	DCSS
	<i>Pholistoma racemosum</i>	San Diego fiesta flower	DCSS
Lamiaceae	<i>Salvia apiana</i>	white sage	DCSS
Lauraceae	<i>Persea americana</i>	avocado	AG
Malvaceae	<i>Malacothamnus fasciculatus</i>	chaparral mallow	DCSS
	<i>Malva parviflora</i>	cheeseweed	NNG, AG
Myrtaceae	<i>Eucalyptus</i> sp.	eucalyptus	EucW
	<i>Mirabilis laevis</i> ssp. <i>crassifolia</i>	wishbone bush	DCSS
Nyctaginaceae			
Oleaceae	<i>Fraxinus uhdei</i>	evergreen ash	SCLORF, CLOW
Onagraceae	<i>Oenothera elata</i> ssp. <i>hirsutissima</i>	great marsh evening- primrose	DCSS, RS

**Appendix A (cont.)**  
**PLANT SPECIES OBSERVED**  
**CEMETERY AREA WATER PIPELINE REPLACEMENT**

<u>FAMILY</u>	<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>HABITAT</u> ‡
<b>EUDICOTS (cont.)</b>			
Oxalidaceae	<i>Oxalis pes-caprae</i>	Bermuda-buttercup	NNG, CLOW, SCLORF, AG
Papaveraceae	<i>Eschscholzia californica</i>	California poppy	NNG
Phrymaceae	<i>Mimulus aurantiacus</i>	monkey-flower	DCSS
Plantaginaceae	<i>Plantago erecta</i>	dwarf plantain	DCSS
	<i>Plantago lanceolata</i>	English plantain	NNG
Polygonaceae	<i>Eriogonum fasciculatum</i>	buckwheat	NNG, DCSS
Portulacaceae	<i>Claytonia perfoliata</i> ssp. <i>perfoliata</i>	miner's lettuce	CLOW, AG, DCSS
	Primulaceae	<i>Anagallis arvensis</i>	scarlet pimpernel
Rosaceae	<i>Eriobotrya japonica</i>	loquat	NNV
Rutaceae	<i>Citrus</i> sp.	citrus	AG
	<i>Fortunella margarita</i>	kumquat	CLOW
Salicaceae	<i>Salix gooddingii</i>	Goodding's black willow	SCLORF
	<i>Salix laevigata</i>	red willow	RS, WRW
	<i>Salix lasiolepis</i>	arroyo willow	SCLORF, RS
Solanaceae	<i>Nicotiana glauca</i>	tree tobacco	NNG, SCLORF
Urticaceae	<i>Urtica dioica</i> ssp. <i>holosericea</i>	stinging nettle	WRW, RS
	<i>Urtica urens</i>	dwarf nettle	NNG

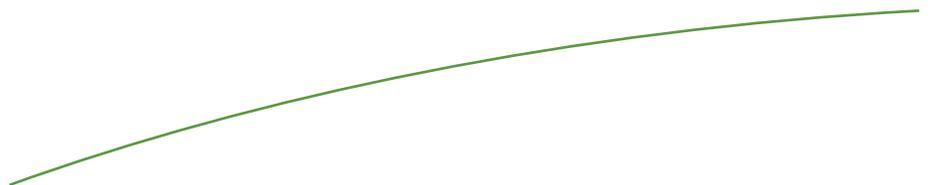
‡Habitat acronyms: AG=agriculture, CLOW=Coast live oak woodland, DCSS=Diegan coastal sage scrub, EucW=eucalyptus woodland, NNG=non-native grassland, NNV=non-native vegetation, RS=riparian scrub, SCLORF= Southern coast live oak riparian woodland, WRW=willow riparian scrub

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## Appendix B

# ANIMAL SPECIES OBSERVED OR DETECTED



**Appendix B**  
**ANIMAL SPECIES OBSERVED OR DETECTED**  
**CEMETERY AREA WATER PIPELINE REPLACEMENT**

**SCIENTIFIC NAME**

**COMMON NAME**

**INVERTEBRATE**

Lepidoptera – Butterflies and Moths

*Anthocharis sara*

*Nymphalis antiopa*

Sara orangetip

mourning cloak

**VERTEBRATES**

**Amphibian**

Hylidae – Tree Frogs

*Pseudacris regilla*

Pacific tree frog

**Reptile**

Phrynosomatidae – Earless, Spiny,  
 Tree, Side-blotched, and Horned Lizards

*Uta stansburiana*

side-blotched lizard

**Birds**

Accipitridae – Hawks, Old World  
 Vultures, Kites, Harriers, and Eagles

*Buteo jamaicensis*

red-tailed hawk

Aegithalidae – Bushtit

*Psaltriparus minimus*

bushtit

Cathartidae – New World (American)

Vultures

*Cathartes aura*†

turkey vulture

Columbidae – Doves and Pigeons

*Zenaida macroura*

mourning dove

Corvidae – Jays, Magpies, and Crows

*Aphelocoma coerulescens*

western scrub jay

*Corvus brachyrhynchos*

American crow

*Corvus corax*

common raven

Emberizidae – Sparrows,

Longspurs, and Emberiza Buntings

*Melospiza melodia*

song sparrow

*Pipilo crissalis*

California towhee

*Pipilo maculatus*

spotted towhee

*Spizella passerine*

chipping sparrow

*Zonotrichia leucophrys*

white-crowned sparrow

**Appendix B (cont.)**  
**ANIMAL SPECIES OBSERVED OR DETECTED**  
**CEMETERY AREA WATER PIPELINE REPLACEMENT**

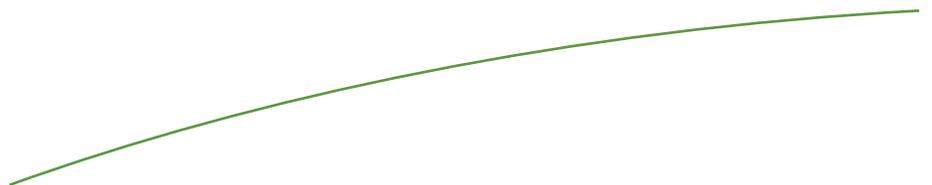
<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>
<b>VERTEBRATES (cont.)</b>	
<b><u>Birds</u> (cont.)</b>	
Fringillidae – Finches	
<i>Carpodacus mexicanus</i>	house finch
<i>Carduelis psaltria</i>	lesser goldfinch
Meleagrididae – Turkeys	
<i>Meleagris gallopavo</i>	wild turkey
Mimidae – Mimic Thrushes	
<i>Mimus polyglottos</i>	northern mockingbird
Parulidae – Songbirds and Warblers	
<i>Dendroica coronata</i>	yellow-rumped warbler
<i>Sturnella neglecta</i>	western meadowlark
Picidae – Woodpeckers	
<i>Colaptes auratus</i>	northern flicker
<i>Melanerpes formicivorus</i>	acorn woodpecker
Ptilogonatidae – Silky Flycatchers	
<i>Phainopepla nitens</i>	phainopepla
Regulidae – Old World warblers	
<i>Regulus calendula</i>	ruby-crowned kinglet
Trochilidae – Hummingbirds	
<i>Calypte anna</i>	Anna’s hummingbird
Troglodytidae – Wrens	
<i>Troglodytes aedon</i>	house wren
Turdidae – Thrushes	
<i>Sialia Mexicana</i> †	western bluebird
Tyrannidae – Flycatchers	
<i>Sayornis nigricans</i>	black phoebe
<i>Sayornis saya</i>	Say’s phoebe
Tytonidae – Owls	
<i>Tyto alba</i> †	barn owl
<b><u>Mammals</u></b>	
Canidae – Foxes, Wolves, and Relatives	
<i>Canis latrans</i>	coyote
Geomyidae – Gophers	
<i>Thomomys</i> sp.	pocket gopher
Sciuridae – Squirrels, Chipmunks, and Marmots	
<i>Spermophilus beecheyi</i>	California ground squirrel

†Sensitive species



## Appendix C

# EXPLANATION OF STATUS CODES FOR PLANT AND ANIMAL SPECIES



**Appendix C**  
**EXPLANATION OF STATUS CODES FOR PLANT AND ANIMAL SPECIES**

**FEDERAL AND STATE CODES**

**U.S. Fish and Wildlife Service (USFWS)**

FE	Federally listed endangered
FC	Federal candidate species (discussed in more detail, below)
FT	Federally listed threatened
BCC	Birds of Conservation Concern (discussed in more detail, below)

**California Department of Fish and Game (CDFG)**

SE	State listed endangered
ST	State listed threatened
SSC	State species of special concern
Fully Protected	Fully Protected species refers to all vertebrate and invertebrate taxa of concern to the Natural Diversity Data Base regardless of legal or protection status. These species may not be taken or possessed without a permit from the Fish and Game Commission and/or CDFG.

**OTHER CODES AND ABBREVIATIONS**

**USFWS Federal Candidate (FC) Species**

Federal candidate species are those for which the USFWS has on file “sufficient information on biological vulnerability and threats to support a proposal to list as endangered or threatened, but for which preparation and publication of a proposal is precluded by higher-priority listing actions. [The USFWS] maintain[s] this list for a variety of reasons: to notify the public that these species are facing threats to their survival; to provide advance knowledge of potential listings that could affect decisions of environmental planners and developers; to provide information that may stimulate conservation efforts that will remove or reduce threats to these species; to solicit input from interested parties to help us identify those candidate species that may not require protection under the [Endangered Species Act] or additional species that may require the Act’s protections; and to solicit necessary information for setting priorities for preparing listing proposals” (Federal Register 70:90 [May 11, 2005]).

**USFWS Birds of Conservation Concern (BCC)**

This report from 2002 aims to identify accurately the migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent USFWS’ highest conservation priorities and draw attention to species in need of conservation action. USFWS hopes that by focusing attention on these highest priority species, the report will promote greater study and protection of the habitats and ecological communities upon which these species depend, thereby ensuring the future of healthy avian populations and communities. The report is available online at <http://migratorybirds.fws.gov/reports/bcc2002.pdf>.

**Appendix C (cont.)**  
**EXPLANATION OF STATUS CODES FOR PLANT AND ANIMAL SPECIES**

**OTHER CODES AND ABBREVIATIONS (cont.)**

**Multiple Habitat Conservation Program (MHCP) Covered Species (City of Escondido)**

Species listed as MHCP covered species indicate that these species would receive formal protection and take authorization upon MHCP approval under the federal and state and Endangered Species acts.

**MHCP Narrow Endemic**

Narrow Endemic is a sensitivity rating given by the MHCP to indicate “those species considered so restricted in distribution and abundance that substantial loss of their populations or habitat might jeopardize the species’ continued existence or recovery.”

**County of San Diego**

**Plant Sensitivity**

- Group A     Plants rare, threatened, or endangered in California and elsewhere
- Group B     Plants rare, threatened, or endangered in California but more common elsewhere
- Group C     Plants that may be quite rare but need more information to determine true rarity status
- Group D     Plants of limited distribution and are uncommon but not presently rare or endangered

**Animal Sensitivity**

- Group 1     Animals that have a very high level of sensitivity either because they are listed as threatened or endangered or because they have very specific natural history requirements.
  
- Group 2     Animal species that are becoming less common, but are not yet so rare that extirpation or extinction is imminent without immediate action. These species tend to be prolific within their suitable habitat types.

**Multiple Species Conservation Program (MSCP) Covered**

Multiple Species Conservation Program covered species for which the County has take authorization within MSCP area.

**Appendix C (cont.)**

**EXPLANATION OF STATUS CODES FOR PLANT AND ANIMAL SPECIES**

**OTHER CODES AND ABBREVIATIONS (cont.)**

**California Native Plant Society (CNPS) Codes**

**Lists**

**List/Threat Code Extensions**

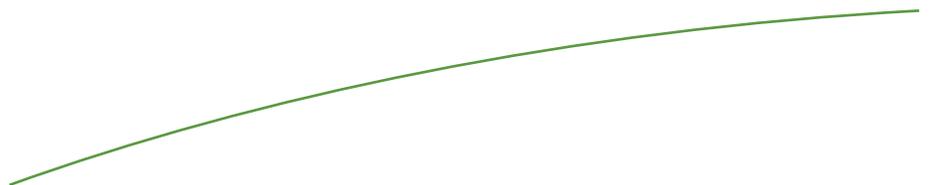
1A = Presumed extinct.	.1 = Seriously endangered in California (over 80 percent of occurrences threatened/high degree and immediacy of threat)
1B = Rare, threatened, or endangered in California and elsewhere. Eligible for state listing.	.2 = Fairly endangered in California (20 to 80 percent occurrences threatened)
2 = Rare, threatened, or endangered in California but more common elsewhere. Eligible for state listing.	.3 = Not very endangered in California (less than 20 percent of occurrences threatened, or no current threats known)
3 = Distribution, endangerment, ecology, and/or taxonomic information needed. Some eligible for state listing.	A CA Endemic entry corresponds to those taxa that only occur in California.
4 = A watch list for species of limited distribution. Needs monitoring for changes in population status. Few (if any) eligible for state listing.	All List 1A (presumed extinct in California) and some List 3 (need more information; a review list) plants lacking threat information receive no threat code extension. Threat Code guidelines represent only a starting point in threat level assessment. Other factors, such as habitat vulnerability and specificity, distribution, and condition of occurrences, are considered in setting the Threat Code.

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Appendix C

CULTURAL RESOURCES SURVEY REPORT



**CULTURAL RESOURCES SURVEY REPORT  
FOR THE CEMETERY AREA WATER PIPELINE  
REPLACEMENT PROJECT,  
ESCONDIDO, SAN DIEGO COUNTY, CALIFORNIA**

**Prepared for:**

**Helix Environmental Planning  
7578 La Mesa Boulevard  
La Mesa, California 91941**

**Submitted to:**

**City of Escondido  
Utilities Department, Water Division  
201 North Broadway  
Escondido, California 92025**

**Prepared by:**

**Affinis  
Shadow Valley Center  
847 Jamacha Road  
El Cajon, California 92019**

**Mary Robbins-Wade, RPA  
Director of Cultural Resources**

**July 2011**

**Affinis Job No. 2372**

**USGS quadrangle: Valley Center and Escondido (7.5' series)  
Acreage: 2.4 miles, 100 ft wide  
Keywords: City of Escondido, San Diego County; inland; negative  
archaeological survey; Oak Hill Memorial Park, historic  
cemetery, significant historic resource; T12S, R1W,  
unsectioned**

## NATIONAL ARCHAEOLOGICAL DATA BASE INFORMATION

Authors: Mary Robbins-Wade  
Consulting Firm: Affinis, 847 Jamacha Road, El Cajon, California 92019  
Report Date: July 2011  
Report Title: Cultural Resources Survey Report for the Cemetery Area Water Pipeline Replacement Project, Escondido, San Diego County, California.  
Submitted to: City of Escondido, Utilities Department, Water Division, 201 North Broadway, Escondido, California 92025  
Contract number: Affinis Job No. 2372  
USGS quadrangle: Valley Center and Escondido (7.5' series)  
Acreage: 2.4 miles, 100 ft wide  
Keywords: City of Escondido, San Diego County; inland; negative archaeological survey; Oak Hill Memorial Park, historic cemetery, significant historic resource; T12S, R1W, unsectioned

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**APPENDIX**

- A Historic Resources Report by Susan D. Walter

**CONFIDENTIAL APPENDIX**

- A Record Search Maps



## MANAGEMENT SUMMARY

The Cemetery Area Water Pipeline Replacement Project area is located in the City of Escondido and in unincorporated portions of the County of San Diego, in northern San Diego County. The existing pipelines to be abandoned are City infrastructure, and the City is the CEQA lead agency for this project. The proposed project consists of the abandonment of approximately 17,500 linear ft (lf), or 3.3 miles, of existing potable water pipeline in the eastern portion of the City's Water Division service area. The existing pipelines would be capped and abandoned in place following construction and implementation of the proposed replacement pipelines, or removed if required to make room for new pipeline segments. The four new proposed pipeline alignments would support approximately 12,600 lf (2.4 miles) of potable water transmission and distribution lines consisting of steel, ductile iron, polyvinylchloride (PVC), or high-density polyethylene (HDPE) pipe material, with PVC or copper pipes installed as service laterals. In addition to the proposed potable water lines, the project would include construction of an approximately 2,545-foot long, 20-inch diameter HDPE recycled water pipeline. A pressure-reducing station in the form of an approximately 10-ft by 20-ft structure on a concrete pad also would be constructed as a part of the proposed project, in the southeast corner of the project area. The project would replace aging water transmission and distribution lines.

The cultural resources portion of the project consists of an archaeological survey to determine whether the project would affect cultural resources and a historic study of the Oak Hill Memorial Park (referred to hereinafter as 'the cemetery' or 'Oak Hill Memorial Park'). This report addresses the methods and results of the cultural resources survey and historic study.

An archaeological survey was conducted in March 2010 by Affinis archaeologists and a Native American monitor. A portion of the proposed alignment was shifted slightly, and this revised area was surveyed by an Affinis archaeologist and two Native American monitors (one Kumeyaay and one Luiseno) in June 2010. The survey area covered 50 ft on each side of the proposed centerline of the replacement pipeline. The Native American Heritage Commission was contacted for a search of their Sacred Lands File. Interested parties identified by the Native American Heritage Commission were contacted regarding the project. Affinis coordinated with Kumeyaay and Luiseño representatives.

A historic study of Oak Hill Memorial Park was conducted by Walter Enterprises and included as Appendix A of this report. The study included review of archival material from numerous sources, field visits to the cemetery, and oral interviews.

The Native American Heritage Commission conducted a check of their Sacred Lands File and indicated that no Native American cultural resources are recorded within ½ mile of the project area but Native American cultural resources are known in proximity to the project.

No archaeological or historic resources, other than Oak Hill Memorial Park, were identified during the current survey. Therefore, no impacts to archaeological resources are anticipated. However, there are numerous archaeological sites recorded in the vicinity. Due to the cultural sensitivity of this area, monitoring is recommended during ground disturbing activities, as addressed under Mitigation Measures.

Oak Hill Memorial Park is a historic cemetery serving the Escondido community since the late 1880s. A number of prominent Escondido citizens and members of pioneer families are buried there. The cemetery is a significant cultural resource, meeting the criteria for significance under the California Environmental Quality Act (CEQA), as well as federal guidelines. Replacement of the existing water line for the current project would not effect any interments, structures, or features of the cemetery. Based on this, the project would have no direct impacts to the cemetery. However, the cemetery is a sensitive area, and monitoring is recommended to ensure that no impacts to the cemetery occur inadvertently. Monitoring recommendations are detailed under Mitigation Measures.

## **I. INTRODUCTION**

### **PROJECT LOCATION**

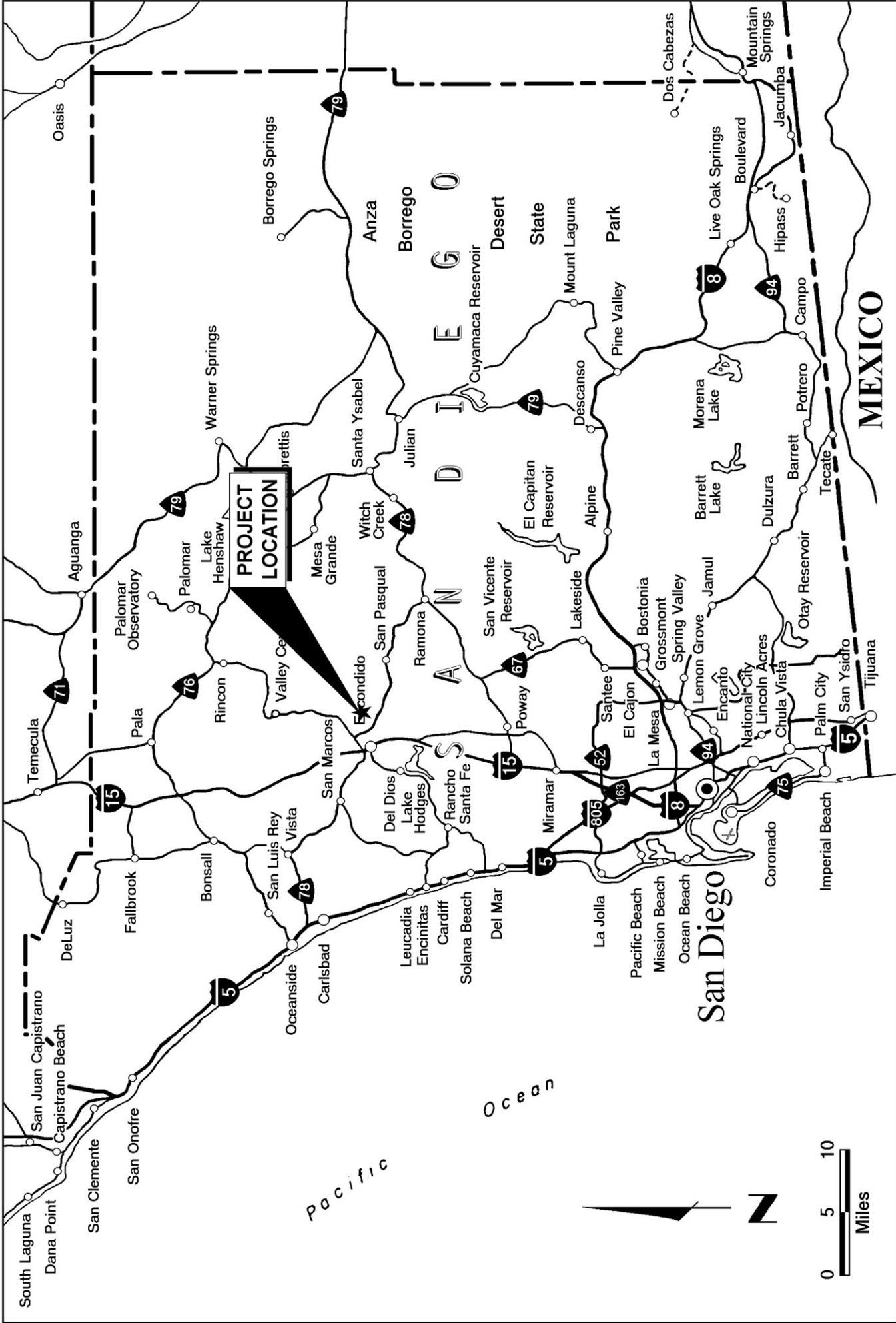
The Cemetery Area Water Pipeline Replacement Project area is located in the City of Escondido (City) and in unincorporated portions of the County of San Diego (County), in northern San Diego County (Figure 1). Regionally, the project is east of Interstate 15 (I-15); it is east of Bear Valley Parkway and Orange Glen High School (Figure 2). Replacement pipelines would cross the Oak Hill Memorial Park and would be located within existing public roads and access roads, including Mountain View Drive and Cloverdale Road (Figures 2 and 3). The project area is in an unsectioned portion of Township 12 South, Range 1 West, on the USGS 7.5' Valley Center and Escondido quadrangles, part of the Rincon del Diablo land grant (Figure 2).

### **PROJECT DESCRIPTION**

The existing pipelines to be abandoned or removed are City infrastructure, and the City is the CEQA lead agency for this project. The project area covers approximately 32 acres within the East Grove, Reed, and Hogback water pressure zones of the City's Utilities Department, Water Division (Water Division). The project area is generally bound by Reed Road on the north, Cloverdale Road on the east, Mountain View Drive on the south and Whispering Highlands Drive on the west, and includes land within the City and unincorporated County (Figure 3).

The proposed project consists of the abandonment of approximately 17,500 linear ft (lf), or 3.3 miles, of existing 12-in. and 18-in. diameter concrete-lined steel potable water pipeline in the eastern portion of the City's Water Division service area. The existing pipelines would be capped and abandoned in place following construction and implementation of the proposed replacement pipelines, or removed if required to make room for new pipeline segments. The four new proposed pipeline alignments (i.e., Ra, Rb, Ha and Hb) would support approximately 12,600 lf (2.4 miles) of potable water transmission and distribution lines consisting of steel, ductile iron, polyvinylchloride (PVC), or high-density polyethylene (HDPE) pipe material, with PVC or copper pipes installed as service laterals. A pressure-reducing station in the form of an approximately 10-ft by 20-ft structure also would be constructed as a part of the proposed project, in the southeast corner of the project area. The project would replace aging water transmission and distribution infrastructure and increase potable water delivery capacity and pressure. The primary objective of any increase in pressure or capacity that would result from the proposed project is to improve the flow of water to existing property owners during a fire-related emergency, not to allow for increased density or development in the project area.

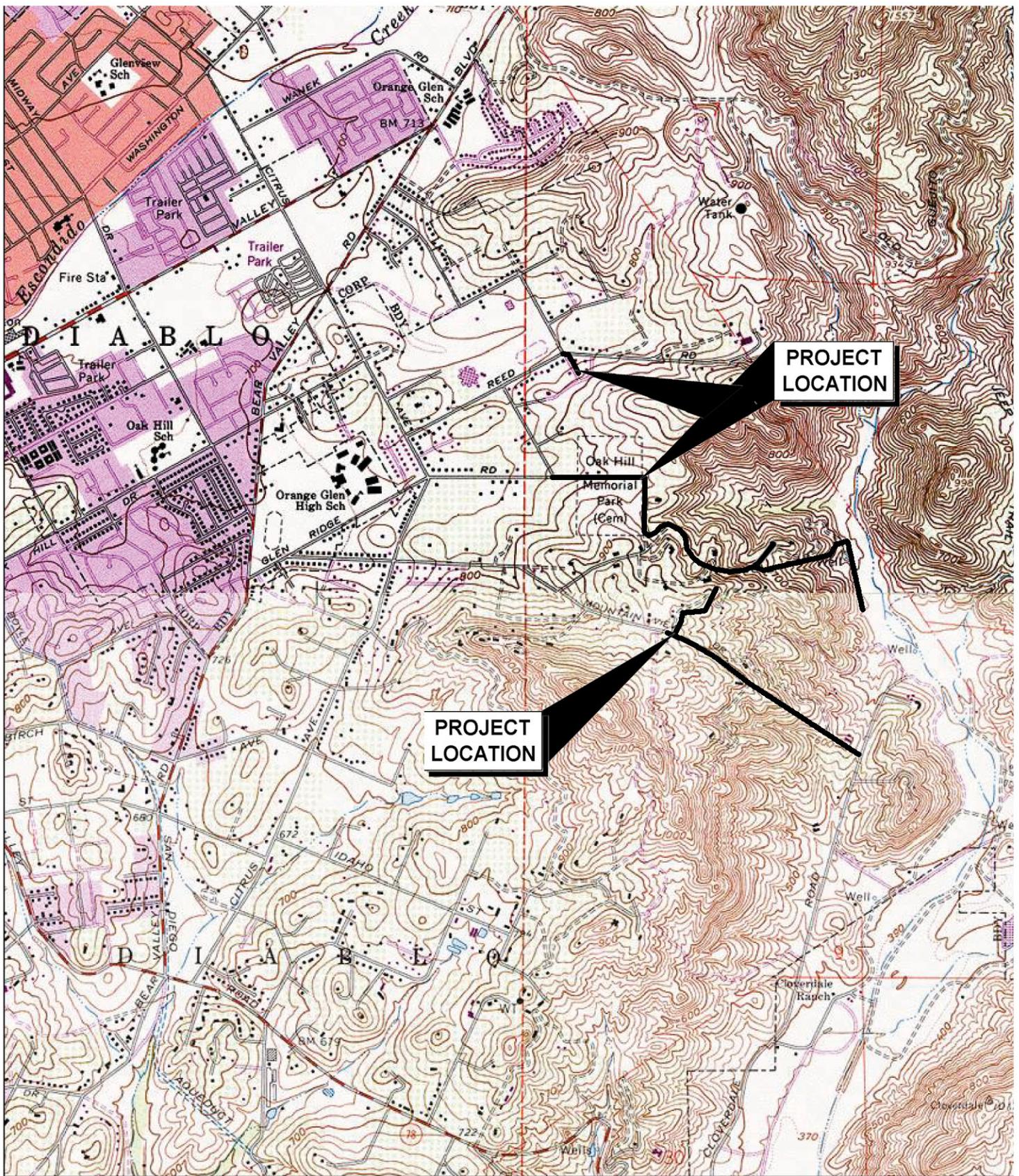
New lateral lines and new meters also would be constructed and, in some cases, existing meters would be relocated as part of the project. The locations of the proposed lateral



**Affinis**  
 Shadow Valley Center  
 847 Jamacha Road  
 El Cajon, CA 92019

Regional Location in San Diego County

Figure 1



TN MN  
13°

0 5 1 MILE  
0 1000 FEET 0 500 1000 METERS

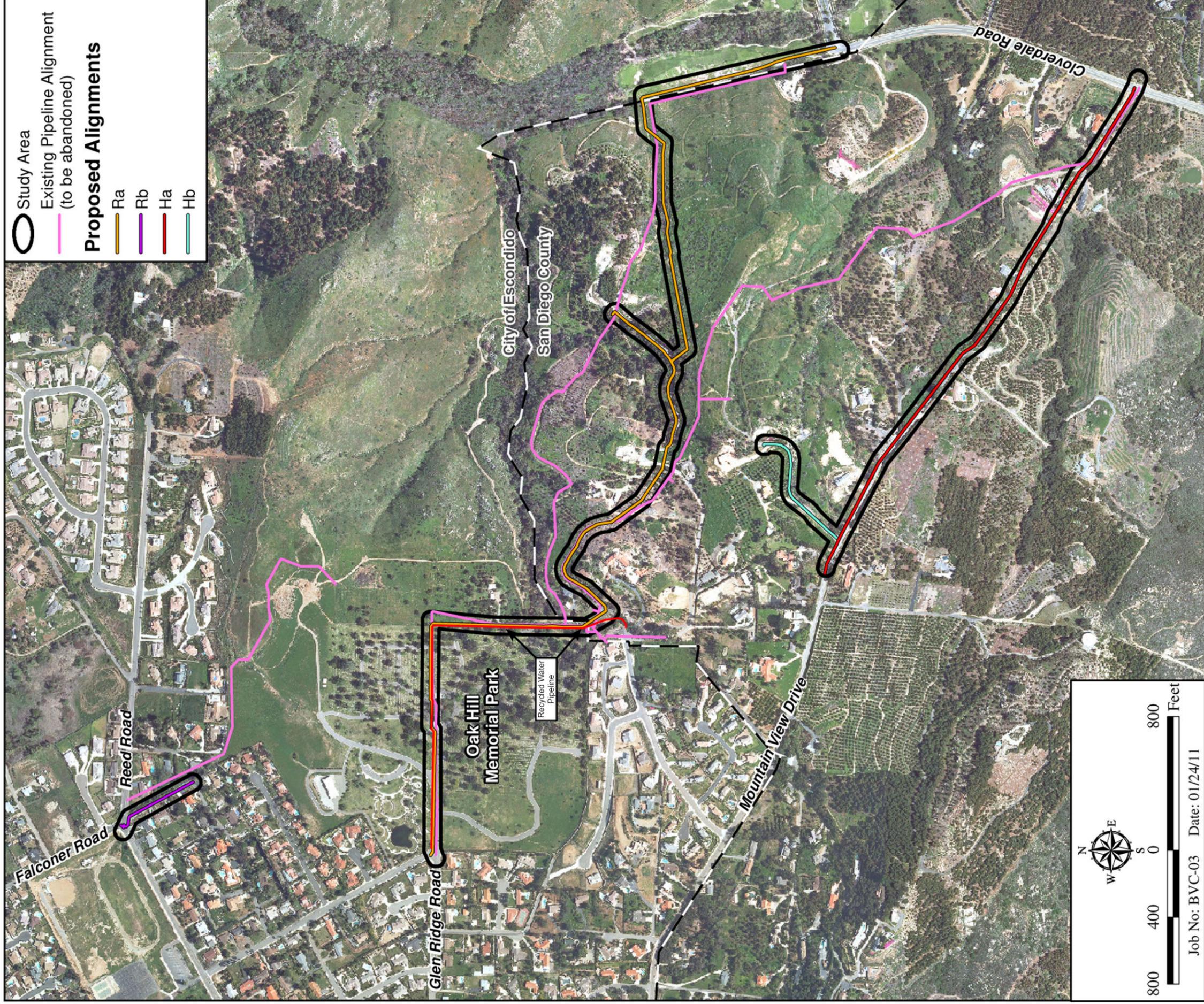
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**Affinis**

Shadow Valley Center  
847 Jamacha Road  
El Cajon, CA 92019

Project location on USGS 7.5'  
Valley Center and Escondido quadrangles

Figure 2



Source: Helix, 2011

## Affinis

Shadow Valley Center  
847 Jamacha Road  
El Cajon, CA 92019

Project Alignment

Figure 3

lines and meters would occur within existing disturbed driveways or private roadways and existing meters would be relocated to the public right-of-way.

In addition to the proposed potable water lines, the project would include construction of an approximately 2,545-foot long, 20-inch diameter recycled water pipeline. The recycled water line alignment initially would parallel a portion of the Ra potable water alignment; thereafter, it would deviate from the Ra alignment for a brief distance before terminating within the Canyon Crest Drive right of way south of the Cemetery. Specifically, the recycled water alignment would start at the beginning (west end) of the Ra alignment, traverse the Cemetery, then turn south and travel alongside Oak Hill Memorial Park. Near the southeast corner of the Cemetery, the Ra alignment changes from a due south orientation to a more southeast orientation; where this directional shift occurs, the recycled water alignment exits the Ra alignment and continues in a southerly direction until it nears Canyon Crest Drive. At that point, the recycled water alignment turns to the west and terminates at the east end of Canyon Crest Drive. Unlike the proposed potable water lines which would be put into service immediately, the recycled water pipeline would be installed at the time of the potable water lines, but not activated until some point in the future.

The cultural resources portion of the project consists of an archaeological survey to determine whether the project would affect cultural resources and a historic study of the Oak Hill Memorial Park. Mary Robbins-Wade served as the project manager/project archaeologist. This report addresses the methods and results of the cultural resources survey and historic study.

## **II. ENVIRONMENTAL SETTING**

### **PHYSICAL ENVIRONMENT**

The project area is in the foothills of northern San Diego County, where the climate is characterized as Mediterranean hot summer (Griner and Pryde 1976:Figure 3.4). Temperature ranges from an average January minimum of about 40° F (Griner and Pryde 1976:Figure 3.2) to an average July high of about 85° F (Griner and Pryde 1976:Figure 3.1). The project area is mainly underlain by Mesozoic granitic rocks, with areas of Jurassic/Triassic metavolcanic rocks (Santiago Peak Volcanics) as well (Rogers 1965). Several soils types are mapped in the project area, all of them sandy loams: Fallbrook sandy loam, 15 to 30 percent slopes, eroded; Cienega coarse sandy loam 30 to 65 percent slopes, eroded; Vista coarse sandy loam, 15 to 30 percent slopes, eroded; Fallbrook-Vista sandy loams, 9 to 15 percent slopes; and Placentia sandy loam, thick surface, 2 to 9 percent slopes (Bowman 1973). The project area is at the base of the mountains, above the valley of Escondido. Much of the project area consists of steep topography, but there are benches and knolls throughout. The western end of the project is in rolling hills, and the north-easternmost portion is in a finger of San Pasqual Valley (Figure 2). Water would have been available in this canyon, as well as other drainages in the vicinity.

Native vegetation supported by these soil types includes oak or broadleaf chaparral, chamise, flat-top buckwheat, California sagebrush, annual grasses and forbs, and oaks (Bowman 1973). These plants and others in their vegetation communities are known to have been used by Native peoples for food, medicine, tools, shelter, ceremonial and other uses (Bean and Shipek 1978; Christenson 1990; Hedges and Beresford 1986). These habitats would have provided Native populations with a variety of plant resources, as well as a range of animal species (small and large mammals, birds, reptiles).

## **CULTURAL ENVIRONMENT**

### **General Culture History**

Several summaries discuss the prehistory of San Diego County and provide a background for understanding the archaeology of the general area surrounding the project. Moratto's (1984) review of the archaeology of California contains important discussions of Southern California, including the San Diego area, as does a relatively new book by Neusius and Gross (2007). Bull (1983, 1987), Carrico (1987), Gallegos (1987), and Warren (1985, 1987) provide summaries of archaeological work and interpretations, and a relatively recent paper (Arnold et al. 2004) discusses advances since 1984. The following is a brief discussion of the culture history of the San Diego region.

Carter (1957, 1978, 1980), Minshall (1976) and others (e.g., Childers 1974; Davis 1968, 1973) have long argued for the presence of Pleistocene humans in California, including the San Diego area. The sites identified as "early man" are all controversial. Carter and Minshall are best known for their discoveries at Texas Street and Buchanan Canyon. The material from these sites is generally considered nonartifactual, and the investigative methodology is often questioned (Moratto 1984).

The earliest accepted archaeological manifestation of Native Americans in the San Diego area is the San Dieguito complex, dating to approximately 10,000 years ago (Warren 1967). The San Dieguito complex was originally defined by Rogers (1939), and Warren published a clear synthesis of the complex in 1967. The material culture of the San Dieguito complex consists primarily of scrapers, scraper planes, choppers, large blades, and large projectile points. Rogers considered crescentic stones to be characteristic of the San Dieguito complex as well. Tools and debitage made of fine-grained green metavolcanic material, locally known as felsite, were found at many sites that Rogers identified as San Dieguito. Often these artifacts were heavily patinated. Felsite tools, especially patinated felsite, came to be seen as an indicator of the San Dieguito complex. Until relatively recently, many archaeologists felt that the San Dieguito culture lacked milling technology and saw this as an important difference between the San Dieguito and La Jolla complexes. Sleeping circles, trail shrines, and rock alignments have also been associated with early San Dieguito sites. The San Dieguito complex is chronologically equivalent to other Paleoindian complexes across North America, and sites are sometimes called "Paleoindian" rather than "San Dieguito". San Dieguito material underlies La Jolla complex strata at the C. W. Harris site in San Dieguito Valley (Warren, ed. 1966).

The traditional view of San Diego prehistory has the San Dieguito complex followed by the La Jolla complex at least 7000 years ago, possibly as long as 9000 years ago (Rogers 1966). The La Jolla complex is part of the Encinitas tradition and equates with Wallace's (1955) Millingstone Horizon, also known as Early Archaic or Milling Archaic. The Encinitas tradition is generally "recognized by millingstone assemblages in shell middens, often near sloughs and lagoons" (Moratto 1984:147). "Crude" cobble tools, especially choppers and scrapers, characterize the La Jolla complex (Moriarty 1966). Basin metates, manos, discoidals, a small number of Pinto series and Elko series points, and flexed burials are also characteristic.

Warren et al. (1961) proposed that the La Jolla complex developed with the arrival of a desert people on the coast who quickly adapted to their new environment. Moriarty (1966) and Kaldenberg (1976) have suggested an in situ development of the La Jolla people from the San Dieguito. Moriarty has since proposed a Pleistocene migration of an ancestral stage of the La Jolla people to the San Diego coast. He suggested this Pre-La Jolla complex is represented at Texas Street, Buchanan Canyon, and the Brown site (Moriarty 1987).

Since the 1980s, archaeologists in the region have begun to question the traditional definition of San Dieguito people simply as makers of finely crafted felsite projectile points, domed scrapers, and discoidal cores, who lacked milling technology. The traditional defining criteria for La Jolla sites (manos, metates, "crude" cobble tools, and reliance on lagoonal resources) have also been questioned (Bull 1987; Cárdenas and Robbins-Wade 1985; Robbins-Wade 1986). There is speculation that differences between artifact assemblages of "San Dieguito" and "La Jolla" sites reflect functional differences rather than temporal or cultural variability (Bull 1987; Gallegos 1987). Gallegos (1987) has proposed that the San Dieguito, La Jolla, and Pauma complexes are manifestations of the same culture, with differing site types "explained by site location, resources exploited, influence, innovation and adaptation to a rich coastal region over a long period of time" (Gallegos 1987:30). The classic "La Jolla" assemblage is one adapted to life on the coast and appears to continue through time (Robbins-Wade 1986; Winterrowd and Cárdenas 1987). Inland sites adapted to hunting contain a different tool kit, regardless of temporal period (Cárdenas and Van Wormer 1984).

Several archaeologists in San Diego, however, do not subscribe to the Early Prehistoric/Late Prehistoric chronology (see Cook 1985; Gross and Hildebrand 1998; Gross and Robbins-Wade 1989; Shackley 1988; Warren 1998). They feel that an apparent overlap among assemblages identified as "La Jolla," "Pauma," or "San Dieguito" does not preclude the existence of an Early Milling period culture in the San Diego region, whatever name is used to identify it, separate from an earlier culture. One problem these archaeologists perceive is that many site reports in the San Diego region present conclusions based on interpretations of stratigraphic profiles from sites at which stratigraphy cannot validly be used to address chronology or changes through time. Archaeology emphasizes stratigraphy as a tool, but many of the sites known in the San

Diego region are not in depositional situations. In contexts where natural sources of sediment or anthropogenic sources of debris to bury archaeological materials are lacking, other factors must be responsible for the subsurface occurrence of cultural materials. The subsurface deposits at numerous sites are the result of such agencies as rodent burrowing and insect activity. Recent work has emphasized the importance of bioturbative factors in producing the stratigraphic profiles observed at archaeological sites (see Gross 1992). Different classes of artifacts move through the soil in different ways (Bocek 1986; Erlandson 1984; Johnson 1989), creating vertical patterning (Johnson 1989) that is not culturally relevant. Many sites, which have been used to help define the culture sequence of the San Diego region, are the result of just such nondepositional stratigraphy.

The Late Prehistoric period is represented by the Cuyamaca complex in the southern portion of San Diego County and the San Luis Rey complex in the northern portion of the county. The Cuyamaca complex is the archaeological manifestation of the Yuman forebears of the Kumeyaay people. The San Luis Rey complex represents the Shoshonean predecessors of the ethnohistoric Luiseño. The name Luiseño derives from Mission San Luis Rey de Francia and has been used to refer to the Indians associated with that mission, while the Kumeyaay people are also known as Ipai, Tipai, or Diegueño (named for Mission San Diego de Alcalá). Agua Hedionda Creek is often described as the division between the territories of the Luiseño and the Kumeyaay people (Bean and Shippek 1978; White 1963). The project area is in a transitional area between the traditional territories of the Kumeyaay (or Diegueño) and the Luiseño peoples.

Elements of the Cuyamaca and San Luis Rey complexes include small, pressure-flaked projectile points (e.g., Cottonwood and Desert Side-notched series); milling implements, including mortars and pestles; *Olivella* shell beads; ceramic vessels; and pictographs (True 1970; True et al. 1974). Of these elements, mortars and pestles, ceramics, and pictographs are not associated with earlier sites. True noted a greater number of quartz projectile points at San Luis Rey sites than at Cuyamaca complex sites, which he interpreted as a cultural preference for quartz (True 1966). He considered ceramics to be a late development among the Luiseño, probably learned from the Diegueño. The general mortuary pattern at San Luis Rey sites is ungathered cremations.

The Cuyamaca complex also differs from the San Luis Rey complex in the following points:

1. Defined cemeteries away from living areas;
2. Use of grave markers;
3. Cremations placed in urns;
4. Use of specially made mortuary offerings;
5. Cultural preference for side-notched points;
6. Substantial numbers of scrapers, scraper planes, etc., in contrast to small numbers of these implements in San Luis Rey sites;
7. Emphasis placed on use of ceramics; wide range of forms and several specialized items;
8. Steatite industry;

9. Substantially higher frequency of milling stone elements compared with San Luis Rey;
10. Clay-lined hearths (True 1970:53-54).

### **Project Vicinity**

The project area is in a transitional area between the traditional territories of the Kumeyaay (or Diegueño) and the Luiseño peoples. The area is of importance to both the Kumeyaay and the Luiseño people.

### **Historic Background**

The first non-Indian settlement of this area was in 1834, when Juan Bautista Alvarado received a land grant he called Rancho Rincon del Diablo, "Devil's Corner Ranch". Alvarado built an adobe residence, and he raised cattle on the rancho. In 1868, John, Matthew, and Josiah Wolfskill and Edward McGearey bought the rancho land for raising sheep. The property changed ownership in 1883, and the primary land use had switched to growing grapes. In 1886, the five Thomas brothers established the Escondido Land & Town Company. They platted a town site and sold properties. The brothers planted grapes and began the citrus orchards in the area. Escondido was incorporated as a city in 1888, with 249 residents (Walter and Van Wormer 2010). The Escondido region continued as a major citrus producing area in San Diego County until 1950 (Van Wormer 2005). As the community grew, a formal cemetery was needed, and Oak Hill Memorial Park (formerly called Oak Hill Cemetery) was established in 1889. The cemetery is addressed in detail in Appendix A.

### **III. PREVIOUS RESEARCH**

Records searches were obtained from the South Coastal Information Center (SCIC) at San Diego State University for the project area and ½ mile radius around it. Twenty-two archaeological resources have been recorded within ½ mile: 19 archaeological sites, two isolates, and one historic structure. Fourteen of these sites included bedrock milling features, ranging from a single milling slick or mortar to complexes of milling features with a variety of artifacts and midden soil (probable habitation sites). At 10 of the sites with milling features no artifacts were observed. Three of the sites that lack milling features included only a few flakes, and one site was recorded as a Pauma Complex camp with flakes and a mano. The two isolated artifacts are both flakes. The historic structure is the Escondido Gravity Float Line, the original portions of which were constructed in the 1880s.

#### **IV. RESEARCH METHODS**

Records searches obtained from the South Coastal Information Center for the project area and a ½ mile radius were reviewed prior to the field survey. Historic maps and aerial photographs were also reviewed. The Native American Heritage Commission was contacted for a search of their Sacred Lands File. Interested parties identified by the Native American Heritage Commission were contacted regarding the project. Affinis coordinated with Kumeyaay representative Clint Linton of Red Tail Monitoring and Research and with Cami Mojado of Saving Sacred Sites and the San Luis Rey Band of Luiseño Mission Indians. Native American monitors from Red Tail Monitoring and Research (Kumeyaay) and Saving Sacred Sites (Luiseno) were included in the field survey.

An archaeological survey was conducted on March 10, 2010 by Affinis archaeologists and a Native American (Kumeyaay) monitor. The survey area covered 50 ft on each side of the proposed centerline of the replacement pipeline. Subsequent to this survey a portion of the proposed alignment was shifted somewhat. This new alignment was surveyed for cultural resources by an Affinis archaeologist and two Native American monitors (Kumeyaay and Luiseno) on June 10, 2010. The recycled water pipeline is within areas surveyed for the proposed potable water pipelines or, in some areas, it is entirely within existing paved roadways; so, no additional survey was required for this pipeline.

A historic study of Oak Hill Memorial Park was conducted by Walter Enterprises and included as Appendix A of this report. The study included review of archival material from numerous sources, field visits to the cemetery, and oral interviews.

#### **V. RESULTS**

No archaeological or historic resources, other than Oak Hill Memorial Park, were identified during the current survey. Much of the project area is in areas of steep topography, where archaeological resources would not be anticipated, but the proposed pipelines also cross benches and knolls, and there are areas of rolling topography. Some segments of the project are within existing paved or graded dirt roads (see Figure 3).

The Native American Heritage Commission conducted a check of their Sacred Lands File and indicated that no Native American cultural resources are recorded within ½ mile of the project area but Native American cultural resources are known in proximity to the project.

Historic maps and aerial photographs showed no structures within or adjacent to the project area other than those at Oak Hill Memorial Park.

Oak Hill Memorial Park is a historic cemetery serving the Escondido community since the late 1880s. A number of prominent Escondido citizens and members of pioneer families are buried there. The history and significance of Oak Hill Memorial Park are addressed in

the historic study included as Appendix A to this report. As addressed below, the cemetery is a significant cultural resource, meeting the criteria for significance under the California Environmental Quality Act (CEQA), as well as federal guidelines. The following is an excerpt from the historic study:

Oak Hill Memorial Park is highly significant, particularly in terms of local history. Established by the original developers of the town site of Escondido, in response to the death of one of those five developer brothers, it is significant also for constant community participation from its earliest days to the present. Members of the community were involved with clearing the land, managing the site, donating water, providing upkeep, and a myriad of other contributions. Members of the community also participated in the regular attendance of public events most notably Decoration/Memorial Day activities and now also the current Echoes of the Past history programs.

With 22,000 interments, persons of importance and interest range from the simple placements in the old Potters Field through business magnets, war veterans, representatives of ethnic groups, and epidemic victims, to nationally known personalities.

As a public cemetery administered by the North County Cemetery District, which followed in the footsteps of the Oak Hill Cemetery Association, the stated policy is of accepting for burial only those who have either paid taxes to the district or are blood relatives of those already buried there. The concentration of 22,000 people with that common attribute in itself is significant.

Coupling all the above with the long use of the site for burial purposes – actually predating its official establishment in 1889 – a span of years now pushing a century and a quarter, plus the beauty of the grounds and feeling of restful peace that is felt anywhere on the property, the magnitude of the significance of this magnificent cemetery cannot be denied.

## **VI. IMPACTS, SIGNIFICANCE, AND MITIGATION MEASURES**

### **SIGNIFICANCE CRITERIA**

The cultural resources were evaluated using the significance criteria of CEQA and the National Historic Preservation Act (NHPA).

Under CEQA, any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be a historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of

Historical Resources (Pub. Res. Code §5024.1, Title 14 CCR Section 4852) including the following:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with the lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values, or:
4. Has yielded or may be likely to yield information important in prehistory or history.

The California Register includes resources listed in or formally determined eligible for listing in the National Register of Historic Places, as well as some California State Landmarks and Points of Historical Interest. Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the California Register and are presumed to be significant resources for purposes of CEQA, unless a preponderance of evidence indicates otherwise (Public Resource Code §5024.1, 14 CCR §4850).

Under NHPA, impacts to historic or archaeological resources are considered significant environmental effects if the resource meets the criteria for nomination to the National Register of Historic Places, making it a "historic property". In order to be eligible for the National Register when evaluated within its historic context a property must be demonstrated to be significant under one or more of the following criteria (National Park Service 1991:12-21):

A: Is associated with an event, or series of events that have made a significant contribution to the broad pattern of history.

B: Has an unequivocal association with the lives of people significant in the past.

C: Embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction.

D: Has yielded or may be likely to yield information important in prehistory or history.

An additional requirement for the National Register is the retention of integrity or "the ability of a property to convey its significance". Assessment of integrity includes seven criteria, which are: location, design, setting, materials, workmanship, feeling, and association (National Park Service 1991:45).

## **IMPACTS AND SIGNIFICANCE**

No archaeological resources have been identified within or adjacent to the project area. Therefore, no impacts to archaeological resources are anticipated. However, there are numerous archaeological sites recorded in the vicinity. Due to the cultural sensitivity of this area, monitoring is recommended during ground disturbing activities, as addressed below, under Mitigation Measures.

The Oak Hill Memorial Park meets the significance criteria and integrity criteria for listing on the National Register of Historic Places and the California Register of Historical Resources. So, impacts to this resource would constitute significant effects. However, replacement of the existing water line for the current project would not effect any interments, structures, or features of the cemetery. Based on this, the project would have no direct impacts to the cemetery. Again, the cemetery is a sensitive area, and monitoring is recommended to ensure that no impacts to the cemetery occur inadvertently.

## **MITIGATION MEASURES**

No significant impacts are anticipated from the proposed pipeline replacement project, but due to the cultural sensitivity of the area, a monitoring program should be implemented for the project. The monitoring program would include the following elements:

- Prior to implementation of the monitoring, a pre-excavation agreement shall be developed between the appropriate Native American Tribes and the Water Division. Due to the location of the project, both Kumeyaay and Luiseño representatives should be included;
- The qualified archaeologist and the Native American representatives shall attend the pre-grading meeting with the contractors to explain the requirements of the program;
- An archaeologist and Native American monitors shall be on-site during all brushing and clearing, as well as during grading, trenching, and other ground-disturbing activities that occur within the first three feet below grade, unless otherwise agreed upon by the archaeological Principal Investigator, the Native American representatives, and Water Division staff. During the initial monitoring phase, the archaeological Principal Investigator shall re-evaluate the proposed alignments and identify those disturbance areas that are either in paved roads outside of alluvial areas; on very steep slopes without bedrock outcrops; or in bedrock, and therefore less likely to contain cultural resources. Decisions will be made in the field as to which areas do not require monitoring by an archaeologist. Native American monitors, however, shall be on site during all brushing, clearing, and other ground-disturbing activities, as noted above;
- If cultural resources are encountered, the monitors shall have the authority to temporarily halt or redirect grading/trenching while the cultural resources are documented and assessed. If significant resources are encountered, appropriate mitigation measures must be developed and implemented;

- If any human remains are discovered, the County Coroner shall be contacted. In the event that the remains are determined to be of Native American origin, the Most Likely Descendant, as identified by the Native American Heritage Commission, shall be contacted in order to determine proper treatment and disposition of the remains;
- Recovered artifactual materials shall be cataloged and analyzed;
- A report shall be completed describing the methods and results of the monitoring and data recovery program;
- Artifacts collected (if any) shall be curated with accompanying catalog to current professional repository standards or the collection will be repatriated to the appropriate Native American Tribe(s), as specified in the pre-excavation agreement.

## VII. INDIVIDUALS AND AGENCIES CONSULTED

Bennae Calac	Pauma Valley Band of Luiseño Indians
Ron Christman	Kumeyaay Cultural Historic Committee
Paul Cuero	Kumeyaay Cultural Heritage Preservation
Nick Doose	South Coastal Information Center
Shasta Gaughen	Kupa Cultural Center (Pala Band)
Johnny Hernandez	Santa Ysabel Band of Diegueño Indians
Allen E. Lawson	San Pasqual Band of Mission Indians
Clint Linton	Red Tail Monitoring and Research
Carmen Lucas	Kwaaymii Laguna Band of Mission Indians
Cami Mojado	Saving Sacred Sites
Carmen Mojado	San Luis Rey Band of Luiseño Mission Indians
Rebecca Osuna	Inaja Band of Mission Indians
Russell Romo	San Luis Rey Band of Mission Indians
Mark Romero	Mesa Grande Band of Mission Indians
Dave Singleton	Native American Heritage Commission
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## VIII. PERSONNEL

The following persons participated in the preparation of this report:

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Gabe Kitchen    Native American Monitor

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### **Saving Sacred Sites:**

Cami Mojado    Native American Monitor

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**APPENDIX A**  
**HISTORIC STUDY**

**Always a Work in Progress:**

**A History of Oak Hill Memorial Park**

April 2010

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## INTRODUCTION

Oak Hill Memorial Park is located at 2640 Glenridge Road in Escondido, California. The entrance is easy to find with a straight in access and well marked gates. The office is directly in front of the entrance, a slight distance in. Parking is available. It is a beautiful setting of rolling hills with a backdrop of undeveloped land towards the rear. A variety of mature trees grace it. Since it has been in existence for well over a century, it has a great many interments, a variety of markers, and several well established physical features and plantings.

The gates are open from 8:00 am to 4:00 pm every day, and there is staff onsite to help visitors with their needs.

Like any specialized field, places of burial have a specialized terminology. For instance, at Oak Hill, the preferred word to designate the informational objects at each interment is "marker." However, in this report, "gravestone" and "headstone" may be used interchangeably as well. The term "burial" in the trade, may refer specifically only to a body placed in the ground, but in this report it may also refer to cremations that are buried in the ground. The preferred catchall term at Oak Hill is "interment," which includes burials and cremations in all their various dispositions. The word that designates cremated remains is "cremains." Use of "population" "decedent" and "resident" is also appropriate to refer to all the interments at this facility, and "disinterment" is preferred to "exhumations" (Shepard and Ausmus 2010).

One notable feature of this project was recognition of the constant work of building and improvement that goes on at an actively used cemetery like Oak Hill. The title of this report was paraphrased from a comment by another researcher that recognized this effort as well (Stott 2008).

## HISTORY OF OAK HILL

### OAK HILL BURIAL GROUNDS

The first non Indian settlement of the area occurred in 1834, when Juan Bautista Alvarado received a land grant, which he named Rancho El Rincon del Diablo (Devil's Corner Ranch) (Figure 1). He built a residence of adobe, and raised cattle. In 1868 brothers John, Matthew and Josiah Wolfskill and Edward McGearey bought the land, raising sheep there. The property changed ownership in 1883, with the predominant land use now devoted to growing grapes.

Seeing an opportunity, in 1886 a family of 5 brothers named A. Richard, William W., John R., George V., and Charles E. Thomas established the Escondido Land & Town Company (EL&TCo). They platted a town site and proceeded to sell properties, planted more grapes and began the citrus orchards of the area. The city of Escondido was incorporated October 8, 1888, with 249 residents.

Wherever there are people, there are deaths. "Until the late nineteenth century, most Americans died in their homes and were prepared for burial by their kin" (Yalom 2008:48). Locally, "Early residents of Escondido buried their dead in handmade boxes on their ranches. As the community grew, a burial spot was selected in the east end of the valley, with the first interment recorded on November 11, 1878" (Escondido History Center clipping, July 1, 1984).

### ESTABLISHMENT OF OAK HILL CEMETERY: 1880s - 1899

The unexpected death of Charles Thomas in the spring of 1889 resulted in the need for an official cemetery for the area. The Escondido Land & Town Company donated 34 undeveloped acres at the southeast corner of the town for the purposes of burial, and Charles Thomas was the first "official" burial at the grounds (Figure 2).

In regards to burials, Escondido is an example of American frontier expansion that resulted in cemeteries that accepted all people regardless of religion or ethnicity; transporting a corpse to a far off church or other sanctified burial site was "impractical". Usually the land chosen for mass burial locations was not prime for agriculture, was away from inhabited areas, and in many cases somewhat difficult to access, or otherwise inconvenient for other use (Caterino 2005:8).

Following the pattern described above, the "new" cemetery was located outside of the major planned development area of Escondido. Opened formally in November 1889, it was administered by the Oak Hill Cemetery Association, a voluntary group, which had been formed the previous month (Oak Hill Minutes, Book1:1-4) (Figure 3).

Ramon Montiel cleared the land, with horse drawn equipment. Later the local blacksmith Albert Bandy was contracted to construct a decorative archway for the entry gate. The graceful arch still exists (Caterino and Mallios 2008:107) (Figure 4). "The

original cemetery plan was wheel-shaped with roadpaths radiating as spokes from the hub center" (Ryan and Ryan 1970:111). Sections were designated for the following entities: Catholics were buried at the Saint Mary's section, colloquially referred to as Catholic Hill; Civil War Veterans had an area administered by the Grand Army of the Republic (GAR); and areas were set aside for Mennonites, Masons, and Odd Fellows (*Los Angeles Times, San Diego County Edition* October 29, 1992) (Figure 5). The Masons' section was marked with a concrete five pointed star, and the Catholic Hill featured a large wooden cross. Both of these landmarks are now gone (California Special Districts Association 2008).<sup>1</sup>

According to various visitors, though, most of the earliest burials were "located close together on a gentle hill, beneath enormous trees that swa(y) in the gentle breeze" (*North County Times* October 25 & 27, 2004).

Another early need was space allocated for indigents who could not pay for their burials. An area for the pauper burials, also referred to as the "Potter's Field," was located at the extreme northeast corner of the property, outside Saint Mary's Hill, the Catholic section.

Originally there was not a caretaker, so "neighbors dug graves and people cleaned and decorated their family plots" (*Los Angeles Times, San Diego County Edition* October 29, 1992) (Figure 6). Pete Sauer, a resident at Reidy Canyon, was a regular grave digger for local deaths; he even had a special "grave-digging shovel" (Ryan and Ryan 1970:110). Nearby ranchers donated water for grounds maintenance. Many of the earliest markers and graveside furniture were wooden. These "redwood" markers, crosses, and fencing on the "pioneer plots" have all disappeared, as they were destroyed by fires, but the oldest stone markers still remain (Ryan and Ryan 1970:111).

Interest in the burial area had resulted of the formation of the Oak Hill Cemetery Association. Those present at this first meeting were: A.K. Cravath, W.H. Baldrige, W.W. and G.V. Thomas, R.D. Symington, R. Hawthorne, James Townsell, and S.P. Abel (Oak Hill Minutes Book 1:1). These men were pillars of the community. R.D. Symington had a very direct interest in the cemetery, as he owned a furniture store that also supplied coffins (Ryan and Ryan 1970:110).

After elections and organizing themselves, with deed in hand from the Escondido Land and Town Company, the Association planned to survey and improve the property once sufficient funds were obtained. Fees to join the Association were \$1.00, payable to Secretary R.D. Symington (*Times-Advocate* June 19, 1890).

A copy of the "Rules and Regulations" from Mount Hope Cemetery in San Diego provided guidance for the Association, who amended it to better suit their purposes (Oak

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<sup>1</sup> On the current locator map handed out to visitors, the original Mason's area is Section 1, the G.A.R. Veterans were Section 8, and the Mennonites were in Section 14. Catholic Hill to the north is designated with SM for Saint Mary's, and there are sections numbered 1, 2, 3, 4, 6 and 8 with the SM suffix (Figure 43).

Hill Minutes, Book1:4). The complete "Rules and Regulations of the Oak Hill Cemetery Association" were published in the *Times-Advocate* on November 27, 1890:

1. All internments in lots in Oak Hill Cemetery shall be restricted to the members of the families and to relatives of the proprietors thereof, except by written permission from the Superintendent or Secretary.
2. All lots sold within the bounds of this cemetery shall be used for no other purpose than the interment of the human dead; and the same shall be kept in good order by the owners.
3. The owner of each lot shall have a right to enclose the same with a wall not exceeding 2 feet, 6 inches in height above the surface of the ground, or with an iron railing, or posts and chains, or with wooden fence.
4. The owners of the lots shall not allow interments to be made in their grounds for remuneration.
5. No dis-interments (*sic*) shall be made without written permission from the Superintendent.
6. Every lot owner shall have the right to erect any proper stones, monuments or sepulchral structures upon his ground; but no vault shall be built partially or entirely above ground, without permission of the Superintendent or Secretary; also to cultivate the shrubs and plants on same.
7. All the lots shall be held subject to the rules and regulations that may be adopted from time to time by the Oak Hill Cemetery Association for the improvement and preservation of the Cemetery grounds, and to manage and control the same.
8. If any monument, effigy, or any structure whatever, or any inscription be placed in or upon any lot, which the Directors consider offensive, improper, or injurious to the surrounding lots of ground, it shall be their duty to remove such offence, or cause the same to be removed at the expense of the owner.
9. All vaults are to be constructed, lots to be enclosed, monuments to be erected, and other improvements to be made by lot owners, are subject to the general directions of the Directors, through their Secretary or Superintendent.
10. No sale or transfer or burial lot in this Cemetery shall be valid, unless an entry of such sale or transfer shall be made upon the records of the Cemetery Association.
11. The control and general supervision of the cemetery grounds are subject to a Superintendent appointed by the Directors.
12. No lot can be used for burial purposes until paid for.
13. Prices of lots: 5 to 10 cents per square foot, according to location.
14. Undertakers will be held strictly responsible for all lots used under their direction and all dues from them must be paid by the first of each month.

Directors – W.R. Hawthorne, G.V. Thomas, James Townsell, S.P. Abell.

R.D. Symington,

Secretary and Superintendent

(*Times-Advocate* November 27, 1890)

Early work on the grounds described in the Minutes included, in 1891, "digging (*sic*) a well and blasting stone" and "locating lots." January of 1893 saw hiring a surveyor to "stake out a potters field" and finding another worker to "have the well...sunk

deeper" (Oak Hill Minutes, Book1:9, 16, 17). The potter's field was located at the extreme northeast corner of the property (Ausmus 2010). The first of regular notations for the need "to get some one to clean up the Cemetery and restake and number the plots" occurred in May that year. Plans were also made to "procure bids for Wind mill, Tank and pipeing (*sic*)" (Oak Hill Minutes, Book1:19). Late in 1894, work was contemplated "to plow and fence the...grounds" (Oak Hill Minutes, Book1:22). More was accomplished through 1895 with 400 trees purchased "and set around the...grounds," a gate installed at the Cemetery entrance, and the "street and circle" was graded, among a number of other tasks (Oak Hill Minutes, Book1:23, 24). An early photograph taken at Oak Hill shows family plots surrounded by low concrete copings surrounding the perimeters that were permissible then. These improvements, though, would have been supplied by private family funds, not by Association monies.<sup>2</sup> The landscape is barren of grass and only planted to trees and some shrubbery (Figure 7).

In town, there were businesses that supported needs of families burying their dead at Oak Hill. Coffins, as previously mentioned, were available at the local furniture store. There was also an urgent necessity for caring for the bodies that filled them. The earliest undertaker's parlor in Escondido was established by J.H. Sampson in the 1890s. Sampson' undertaking parlor was in a room in the local bank. He transported the caskets "in a stylish 'dead wagon'" that was driven "by a top-hatted driver of a jet black team" (Figure 8). Later, Frank G. Thompson bought Sampson's business, and relocated it to Lime Street (now Broadway). Thompson's hearse was kept at the Palace Livery Stable on Grand Avenue, which he also owned. In home body preparation still occurred by the local populace that could not afford undertaking fees (Ryan and Ryan 1970:110).

The presence of the cemetery resulted in the town's annual tradition of observing Decoration Day.<sup>3</sup> In 1895 there were 43 GAR participants for Decoration Day ceremonies at Oak Hill, accompanied by the Women's Relief Corps (WRC) members. On that day, according to Frances Ryan "...a lone mocking bird, perched high in the branches of a gnarled, ancient oak, warbled a plaintive tune" as "loving hands tenderly laid blossoms on the graves of comrade soldiers already passed into the great beyond" and then Taps was played (Ryan and Ryan 1970:96).

The Association had been meeting the first Friday of every month beginning in November of 1891, but by 1895, they settled into regular annual meetings, held at the end of November, followed by a stockholders meeting in December. Still, special meetings were often held (Oak Hill Minutes, Book1:13, 26-28). Much work was done, ranging from dealing with bills for such needs as sharpening picks and shovels, and supplies including "powder and nails" (Oak Hill Minutes, Book1:18, 32), to dealing with deeds given to the G.A.R. (in 1893), the Masons (1900), and the Mennonites in (1909). A number of committees were appointed to study and report back to the Association on various issues (Oak Hill Minutes, Book1:29-36).

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<sup>2</sup> They have all been removed throughout the Memorial Park (Shepard 2010).

<sup>3</sup> Decoration Day is now known as Memorial Day.

## OAK HILL CEMETERY: TURN OF THE CENTURY – 1900 - 1910

Each of the 5 entities – the Masons, Veterans, Catholics, Mennonites, and Odd Fellows – as well as the Association, were allowed to sell plots and arrange burials for their respective sections. As mentioned, originally upkeep rested with the families of the plot owners and the groups contracting with them. Diligence on this wavered. By 1901, the Association had hired a man to clean the grounds and dig the graves; his rate of pay was \$40.00 per month (Oak Hill Minutes, Book1:37). To address the need for even more regular maintenance, in 1907 M.L. Culp was retained by the Escondido Cemetery Association to "build a small house for a sexton at Oak Hill Cemetery." It was to cost \$339.75. The duty of the sexton was to maintain the grounds (*Times-Advocate* March 22, 1907; Oak Hill Minutes, Book1:35). Payment for his work was expected to be covered by the fees imposed on the owners.

1913 saw anger expressed by the officers of the shareholders for the Oak Hill Cemetery Association: W.H. Baldrige, president; F.G. Thompson, vice president; G.V. Thomas, treasurer; and Leo Escher, secretary. Escher cited a lack of community interest in contributing funds earmarked for maintaining the grounds. He feared the sexton would have to be let go, and "the keep of this sacred place turned over to the rabbits and coyotes." By this time there were 225 gravesites (*Times-Advocate* November 21, 1913).

In 1914 Escondido staged a particularly memorable Decoration Day ceremony, with 27 Veterans and their Women's Relief Corps (W.R.C.) wives in attendance. Afterwards, the populace "honored the blue and gray" at Oak Hill Cemetery (Ryan and Ryan 1973:170).

By 1916, the Association, feeling cost constraints even more deeply "dispense(d) with the Sexton" and also had to "discontinue the telephone service" (Oak Hill Minutes, Book1:41).

R.E. Warren reported in an open letter to the paper in 1917 that the unkempt appearance of the cemetery was the result of the Cemetery Association's dismissal of the sexton due to "lack of funds and the disinterestedness of the owners in general." He continued, "From now on, only those who pay in proportion to the size of their lots will have any work done on them. This means a large number of the lots will go uncared for...." Unfortunately, also, the hoses had deteriorated, so watering was a problem. Warren suggested those who wished to improve their lots for the upcoming Decoration Day to contact the administrators and make payment in advance for repairs and maintenance (*Times-Advocate* April 5, 1917 1).

The Spanish flu pandemic of 1918 left its deadly mark at Oak Hill. John R., oldest of 5 sons serving in the Great War (WW I) of the Simpson family, died in France of "pneumonia." The vicious Spanish flu left its victims in a weakened state that resulted in death from pneumonia. His remains were returned and buried in Oak Hill (Ryan and Ryan 1977:172; Oak Hill Burial Records Book). The records of deaths in 1918 showed an increase of interments to 41, up from 27 in 1917. Since cause of death was not

included in the Oak Hill records for those years, cause of death – except for Simpson – is not known, but the Spanish flu did visit Escondido, and is a likely candidate for the following 2 years uptick in the death records.

A new patriotic group at Oak Hill Decoration Day ceremonies included the Escondido Branch of the American Legion, formed late in 1919. From them, other offshoots of patriotic organizations like the Veterans of Foreign Wars, Disabled Veterans, and Women's Auxiliary joined with the Grand Army of the Republic's Memorial Day rites at Oak Hill, expanding the number of participating patriotic groups (Ryan and Ryan 1977:174).

The issue of a sexton to care for the place was a constant headache. The Association minutes noted hiring and losing sextons nearly every year from at least as early as 1907, and incremental raises in pay to get them or keep them. Besides the house being offered for their residence, electricity was installed in it in 1926, and the kitchen repaired the following year. On July 6, 1928 a Mr. Dunbeigh had moved in, along with "his granite works" but he had left by September 13; this occasioned "considerable discussion." He was followed by Harry Reinhardt, who was hired on the condition that he also maintain a telephone line. The caretaker's cottage was enlarged in 1929 (Oak Hill Minutes, Book1:89, 119, 120, 124).

#### OAK HILL CEMETERY: THE 1920's

In 1921, the Association was "circulating a petition to organize a cemetery district." The hope was that by establishing such a district, taxes could be implemented that would help pay for the myriad needs of Oak Hill. A year later, the petition had been circulated, but in February 1924 the long drawn out effort results were that "it failed to meet the approval of the District Attorney and is hopeless. " In May, approval of raising costs for lots was implemented. This plan for a district was revisited in 1928 and 1929 (Oak Hill Minutes, Book1:50, 60-66, 121, 124).

A notation of unusual emotion was included, when:

Our coworker, G.V. Thomas was on the third day of October, 1922 called by death from our midst and whereas he was one of the first directors of the board of Oak Hill Cemetery Association and has continued as such from time to time during the remainder of his natural life, and for many acted as treasurer of the association and in that capacity made much unselfish sacrifice of time and labor: Now therefore be it resolved, that in his death the association and the whole community has sustained the loss of a careful, conscientious and faithful servant whose aim was always to do the right thing in the right way and at the right time (Oak Hill Minutes, Book1:51).

There was no similar sentiment for any single person noted in the minutes. G.V. Thomas is, fittingly, buried at Oak Hill.

Another issue raised its head in 1926 when "the matter of proper regulation of grave digging was presented." Depths of 5 feet were to be expected for all graves, except those with a "cement vault enclosure." The next year a decision was made to allow only flat markers in a new section being opened up, and they were to be uniform in size (Oak Hill Minutes, Book1:82, 105).

New improvements at the cemetery were also reported in the local newspapers. The Grand Army of the Republic headstones "arrived from the government and (were) in place" early in 1908 (*Times-Advocate* March 13, 1908 5:1). Nearly 2 decades later the Wohlford family's "beautiful" new monument, of white Italian marble, featuring a carved cross design was installed. It commemorated the late A.W. Wohlford and Mary Wohlford King. The monument was made by the A.N. Teft Monument Works of Riverside (*Times-Advocate* October 16, 1925 21:4) (Figure 9). The newspaper included a brief description of a monument for the Carroll plot in the Catholic "St. Mary's cemetery" in 1925. It was of Rock of Ages granite "from the famous Vermont quarries" in a cross design entwined with lilies. The Carroll monument was also made by Teft Monument Works (*Times-Advocate* October 19, 1925 2:3). Soon after, "two more fine monuments" were brought by the same manufacturer to Oak Hill. One was "for the Giberson-Kettenberg plot, made of white California granite. The other is for the Lorenzo Slocum lot, made of Vermont granite" (*Times-Advocate* November 20, 1925 1:5).

Throughout Oak Hill's existence, special events were noted and activities were planned for them. For instance, W.W. Werner, of Veterans of Foreign Wars, John R. Simpson Post 1513, listed all the names of the "honored soldier dead" in both Oak Hill and San Marcos cemeteries (as well as the cemeteries of Rincon Indians, Palomar Mountain, Poway, and Valley Center). The enumeration included the name of the deceased, which unit they served in, and the war they participated in (*Times-Advocate* May 14, 1929 1:1). Annual Decoration Day activities and other regular events were duly observed at Oak Hill by the nearby living population.

#### OAK HILL MEMORIAL PARK: DURING THE DEPRESSION – 1930s

Because the grounds required upkeep that the public was not supporting adequately, finally – after much work – on May 9, 1930 - the Escondido Cemetery District was formed. Its purpose was to provide tax supported maintenance of the grounds (*Times-Advocate* July 11, 1977; Escondido History Center manuscript). The second book of minutes, beginning in 1930, proudly begins with the by laws of "Oak Hill Memorial Park" as it was now named, of the Escondido Cemetery District. The taxes raised through the district were helping to pay for 2 new restrooms, street work, telephone service, a barbed wire fence, and miscellaneous other needs. The tally was \$6,049.00 (Oak Hill Minutes, Book 2:1, 23).

In 1931, Oak Hill formally began to purchase back the deeds for the Catholic, Mennonite, Masonic, G.A.R. and Odd Fellows sections (Figure 10). Previously, these groups individually issued deeds and cared for their own sections, but the cemetery began to take on those responsibilities after January of that year (*Times-Advocate* March 18,

1979). The deed to St. Mary's, the Catholic section, arrived in 1934, but the "unanimous decision" at the time "was not to accept it pending ascertaining whether Oak Hill has sufficient help to maintain the increased amount of work." Estimated costs for that work was about \$2,000.00 (Oak Hill Minutes, Book 2:33). Funding was secured later when the district applied for and received the government sponsored State Emergency Relief Administration (SERA) monies.<sup>4</sup> The SERA funds paid for an "Engineer-Surveyor and sufficient men to remove brush, rock" and other work. It also paid for "iron pipe, sprinklers and connections, seed, fertilizer, cement pipe for culverts and cement stakes" (Oak Hill Minutes, Book 2:47, 59-61).

Growth of Oak Hill and planning for its future by the district included construction of 1,000 permanent concrete corner posts that were contracted to J.A. Simmons in 1933. They marked the boundaries of burial plots, and were low enough to be mowed over (*Times-Advocate* March 13, 1931 10:4). Another improvement that year was noted in the paper when eleven veteran's graves received "regulation headstones" from the U.S. War Department. The committee placing them were local members of the Spanish War Veterans and Veterans of Foreign Wars (*Times-Advocate* January 27, 1932 1:6).

Two years later, in early 1935, the comfort of visitors was being discussed, with Mr. Whited's suggestion that tents be purchased "for use at funerals in rainy or very hot weather." Mr. Whited was the supervisor at that time (Oak Hill Minutes, Book 2:29-30, 49). Near the end of 1935, Oak Hills' Association members were discussing the new California State mandates regarding "The Perpetual Care Fund" (Oak Hill Minutes, Book 2:53-57).

In 1936, the district entertained the idea of building a crematorium, but "no action was taken" then. There were changes in costs in the Potter's Field; now the "opening and closing of adult graves" charge was \$8.00.

Two years later, a change occurred in the Minutes that although not directly mentioned by the Secretary, had a profound effect on the appearance of the records of this book: All minutes were now typed. Apparently the new method was a bit confusing to them as the page for this record had been removed from the book, typed, and reinserted upside down. A new Toro Lawn mower, fertilizer, applicator, more Eugenia hedge plants, and "iron pipe standars (*sic*) to hold tree roses in place" were among the purchases in 1938 (Oak Hill Minutes, Book 2:63, 77-78).

#### OAK HILL MEMORIAL PARK: 1940s to 1960

The decade of the 1940s included more building construction, beginning with "specifications in triplicate" from an architect. First a comfort station went in, in 1941,

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<sup>4</sup> During the Depression, government agencies began a series of programs that awarded unemployment relief money for public needs. Some of the various iterations were the Civil Works Administration (CWA), the Federal Emergency Relief Administration (FERA), the State Emergency Relief Administration (SERA), and finally by the Works Progress Administration (WPA).

and this was followed by the proud notation that "The Escondido Cemetery Board met at the new office located in Oak Hill Memorial Park" (Oak Hill Minutes, Book 2:82B). Workers were paid 60c per hour in 1942, 70c in 1943, and 80c in 1944, and in that year all workers were being required to log into and out of a time book. Corresponding increases occurred in charges for opening and closing graves, probably to offset the larger wages. Other improvements included road construction using seven tons of "pre-mix." The increased activity was met in 1944 by hiring Lenore Richter as a clerk to help with "keeping the records of the District" (Oak Hill Minutes, Book 2:86, 101, 117, 131, 133).

Several issues, from a local mortuary, were brought up that needed immediate attention from the Board: "Communication from the Carl E. Palm Mortuary regarding operating policies of the Cemetery setting forth many criticisms and stating many constructive suggestions." It is unknown if the subsequent flurry of activity regarding the denial of "use of wooden boxes in graves," and specifications for sizes and prices for slabs and vaults was related to that "Communication." However, the "pauper section" was later exempted from those various requirements (Oak Hill Minutes, Book 2:95, 101, 103). There was also a tightening up of the allowed "planting of trees, flowers, etc." and the roads were oiled, greatly improving their appearance. A neighbor, Mr. Junge, brought to the Board's attention that the tall gum trees that were growing along the mutual property line were damaging his orchard of young citrus. His offer to remove them himself "stump and all" was approved. The president of Oak Hill Cemetery Association at this time was a woman, Helen Hill (Oak Hill Minutes, Book 2:89, 113, 115, 123, 125).

The next major change occurred in 1956, which saw Oak Hill attain endowment status, meaning each burial was to be maintained in perpetuity (*Times-Advocate* March 18, 1979). No longer would there be separate contracts for maintenance; this care was now part of the burial "package."

#### OAK HILL MEMORIAL PARK: 1960s TO THE NEXT CHANGE OF THE CENTURY – 2000

The district serving Oak Hill continued to enlarge. In December 1960, property owners in 500 acres of south Escondido voted to annex to the Escondido Cemetery District (*Times-Advocate* December 12, 1960). The district's policy continued its original mandate: That only taxpayers as represented by local residents and property owners, and "those who own property in the district but reside elsewhere," or those related by blood to someone already buried at Oak Hill, were allowed to purchase burial space. The cost was \$200 (*Times-Advocate* July 11, 1977).

Plans archived at Oak Hill dating in the 1960s showed expansion of the office and a reflection pool to be built at the end of the circle in front of the office (Shepard 2010). Although the office was enlarged, the pool was not built.

In mid 1968, the cemetery district began a land acquisition campaign for Oak Hill that expanded the property from the original 34 acres deeded in 1889, to slightly greater than 76 acres (*Times-Advocate* March 18, 1979).

Controversy erupted in May 1972, when two Oak Hill employees, Roy Brown and George Brown (not related), attempted to unionize the workers. This effort led to their dismissal. After a lengthy court battle, in 1977 the court found in favor of the Browns. They were reinstated in their former positions and accrued back pay and benefits were awarded to them (*Times-Advocate* May 4, 1977).

A much nicer event occurred at Oak Hill during this same time: Recognizing a very specific population, the Babyland area was dedicated in 1973 (Escondido Cemetery District pamphlet n.d.).

In 1977, the staff included a secretary, superintendent and 8 men maintaining the grounds that were supervised by a "five member board of trustees appointed by the County Board of Supervisors." By that year, 35 acres of the 78 available acres of Oak Hill "were cultivated" with irrigated landscaping (*Times-Advocate* July 11, 1977).

Passage of Proposition 13 – officially titled the "People's Initiative to Limit Property Taxation" – in 1978 resulted in lower monies available to the cemetery. The result was raising fees for future residents to \$75 for gravesites, \$50 for non resident fees, and a perpetual fund deposit of \$75 (*Times-Advocate* January 11, 1980). Fee increases were needed to pay for increased costs for the cemetery. In 1979 the 10,000<sup>th</sup> interment occurred (*Times-Advocate* January 11, 1980).

In 1979 the boundaries of the district were defined as "all the properties within the exterior boundaries of the Escondido Elementary, the Orange Glen, the Oakdale and the Rincon school districts" and "in 1960, Del Dios annexed...and in 1961, the area south of the city, north of Lake Hodges, along both sides of present-day Interstate 15 before it swings away from Centre City Parkway was admitted" (*Times-Advocate* March 18, 1979).

By 1979 other improvements at Oak Hill included chain link fencing encircling the entire property, and the "ornamental brick and iron gates (were to) be moved...to the new western boundary along Moody Drive." A master plan was in the works to "include three chapels and a great deal of new construction." The possibility of inclusion of a mausoleum was entertained, if state law was ever changed so that public supported cemeteries could be legally entitled to house one (*Times-Advocate* March 18, 1979). None of the structures mentioned in the master plan, nor the mausoleum, were ever built.

During the next few years, various newspaper articles shed light on some of the realities of managing Oak Hill. Dewey Ausmus oversaw it during his nearly 20 year tenure as general manager, from 1979 to 2007. Interviews with him included the explanation that maintenance logistics included 3 days just for mowing, and the majority of the \$450,000 annual budget in 1984 went to watering costs (*Times-Advocate* March

18, 1979). At the time there were 500 trees growing there (Escondido History Center clipping, July 1, 1984). He explained that grave digging times depended upon the location; if in soil the time spent may take only 15 minutes with a backhoe operator, but graves located in rock may take 2 1/2 days and entail jackhammer usage. Interest by potential clients for use of the cemetery brought additional explanations, such as preparing for the future. Oak Hill, as a public cemetery, operated without pressure on people with inquiries about future needs. In other words, there was no stressful pre-need sales pitch, though pre-need information about pre-need programs was available if requested.<sup>5</sup> Reassuring Oak Hill's availability into the future, James Pledger, chairman of the district's board of directors, stated that though by 1984 the average yearly burial rate was 350, there was no problem then with lack of space, nor none anticipated for some time to come (*Times-Advocate* June 10, 1984 B 1).

On July 1, 1984 the Oak Hill and San Marcos Cemetery Districts merged to form the North County Cemetery District. This was to save costs. The new board was to consist of James Pledger, Patricia Conway, Ray McBride, and Charles Trombley of Oak Hill, and Kenneth Jensen of San Marcos (*Times-Advocate* June 10, 1984 B 1). Other employees included Wilma "Perk" Williams as superintendent's secretary, Herman Paulsen on weekends for security and information officer, and Jim Nessler, foreman of the nine member maintenance crew (*Times-Advocate* March 18, 1979).<sup>6</sup> The combination of the two entities, Oak Hill and San Marcos, went smoothly.

By 1984 there were at least 17,000 interments at Oak Hill (Escondido History Center manuscript). Still, there was plenty of room for growth, in 1987 estimates for "plenty of space" was projected for 50 years; this was partly due to the increased number of cremations (*Times-Advocate* November 1, 1987). The cemetery, in 1992 had "expanded to 40 developed acres of its total 76" (*Los Angeles Times, San Diego County Edition* October 29, 1992). Costs, in 1996, for cremation interments "start(ed) at" \$50.00, and "complete full burials" were "\$1,005.54" (North County Cemetery District flier n.d.).

A major addition to the grounds, the lake and niches, was added during the decade of the '80s. Roy Sieffert, a specialist in cemetery landscape, designed the entire area. His original drawings were prepared in 1985, with actual construction commencing in 1989. This was in response to the greater acceptance and use of cremation. The area was outside the original boundaries of the cemetery and formerly housed an orange grove, and a circular round reservoir that had collected and stored water there (Ausmus and Shepard 2010).

A "Special District Snapshot" article featured the North County Cemetery District in November 2008. It was reported the North County Cemetery District provided "internment rights for single interments, dual (stacked) interments, and cremated remains

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<sup>5</sup> The pre-need option is still (2010) available if requested.

<sup>6</sup> San Marcos was also a long used burial ground. It was established in 1894 when Nellie Littlefield, a pioneer family's matriarch, died in San Marcos. It is located on Mulberry Drive just north of Mission Avenue (California Special Districts Association 2008).

interments (in the ground, and in columbarium).<sup>7</sup> There are now over 20,000 interments at the Oak Hill Memorial Park, and over 2,500 interments at San Marcos." The Board of Trustees of the district, in 2008, received the Gold District Recognition award from the Special District Leadership Foundations for "excellence in local government" (California Special Districts Association 2008).

#### OAK HILL MEMORIAL PARK: CURRENT CONDITIONS AND HOW ITS PAST HAS SHAPED IT

Oak Hill Memorial Park is designated as a Category #4 cemetery, and one of San Diego County's "mega-cemeteries." Some of the defining attributes for inclusion in this category includes location near a major population center; and planned "gargantuan land tracts...filled with burials, then expanded through the purchase of adjacent properties. Roads divide the cemetery into sections, usually based on social organization. The majority of these cemeteries are privately owned enterprises" (Caterino 2005:13).

As noted above in the history section, Oak Hill based its structure upon the earliest of the mega cemeteries in San Diego County, Mount Hope. Mount Hope is the southern example of the same trend in cemetery philosophy, and Oak Hill is the northern example (Caterino 2005:14).

A list of all the category 4 cemeteries in San Diego County includes El Camino Memorial Park, Eternal Hills Memorial Park, Evergreen Cemetery, Glenn Abbey Memorial Park, Greenwood Memorial Park and Mortuary, Holy Cross Cemetery and Mausoleum, Mount Hope Cemetery, Oak Hill Memorial Park, and Singing Hills Memorial Park (Caterino 2005:16).

There are approximately 22,000 interments at Oak Hill as of 2010. This includes both burials and cremations. Due to the foresighted planning of the founders and subsequent managers of Oak Hill, there is space available for current and future needs. There are 15 employees now at Oak Hill (Shepard 2010).

According to one researcher, "Cemeteries are outgrowths of the communities that create them..." (Yalom 2008:28). This is obvious when looking at different cemeteries and noting their unique attributes. Oak Hill reflects some of the different attitudes of Escondido specifically, as well as adoption or lack thereof of various trends in cemetery history. For instance, although "Victorians spent as much as they could afford – and sometimes more – to ensure an ostentatious monument for the family patriarch, or a sentimental statue for a wife or child" (Yalom 2008:27), Oak Hill has always had a size limitation, which has kept the standing markers down to a size that keeps the viewsheds from being obliterated.

Oak Hill Memorial Park is a public owned cemetery, paid for by a specific population through their taxes. The North County Cemetery District administers this. Consequently, those allowed to be buried there are required to be from that specific area,

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<sup>7</sup> The columbarium referred to was not at Oak Hill. The San Marcos Cemetery has a columbarium.

or closely related to those people. And, actually, when a client purchases a plot it is not the land that is allotted, but "an irrevocable burial right" (Shepard 2010).

## LAYOUT

The setting and layout of Oak Hill reflects perceptions of death and burial contemporary with the turn of the nineteenth century. Cemeteries were purposely located away from the settled areas because of a belief that decomposing corpses exuded a "noxious vapor" or "miasma" that were infectious to the living. The rural site embodying "Nature's presence" also was believed to increase its spiritual significance; and there was a romanticized attitude towards death that found expression in Oak Hill's gently contoured roads and vistas. Yalom states "Instead of bleak grounds punctuated with stark slabs, the new cemeteries would have headstones and statues artfully inserted into garden settings of soothing grass, lush foliage, towering trees, and colorful flowers" (Yalom 2008:42-44). This philosophy is now referred to as the "rural cemetery movement" and was a park like environment that was soothing to the public (Caterino and Mallios 2008:107).

The Oak Hill cemetery is situated in gently rolling hills. Newer sections to be opened will include "a beautiful view" (Shepard 2010). His observation echoes the Yalom's comment that "To this day, certain sections of graveyards are considered better than others.... In secular cemeteries, the most desirable and expensive sites are situated on central pathways or on hills with a view. In cemeteries, as in real estate, location is everything" (Yalom 2008:27).

"In the early twentieth century, the area around Los Angeles was at the forefront of the memorial park concept, which has since influenced cemetery design throughout the nation" (Yalom 2008:225). This park like atmosphere and trend was possibly on the minds of the directors in the 1920s when they voted to install sections only with flat markers. There are numerous areas at Oak Hill featuring flat markers, but some are the result of changing land use. For instance, in some areas roads that were removed were subsequently filled with plots that feature only flush markers (Shepard 2010).

Roads are paved, and for the most part, fairly narrow and winding, particularly in the hillier terrain. A car parked by the curb, though, is not an impediment for through traffic. All roads are lined with curbs and gutters. As expected, some roadways have been added, realigned, or removed. This at times is reflected by burial patterns. One removed road, for instance, opened up a long linear area that is filled now with tightly aligned markers (Figure 11). Some road locations (and trees also) shorten the available burial space so that cremations can be buried but not caskets (Shepard 2010).

The original populations in the 5 original major areas have been somewhat obliterated by subsequent burials. As mentioned earlier, the Cemetery Association bought back the deeds from the various entities that originally held title to them. And the original Veterans section, for instance, includes now a number of recent markers of

people who have no connection to the earlier population as available open areas in the original areas were infilled with interments of varying types.

Another example of changing perspectives is that the former Potters Field is no longer designated for that purpose and is available for general use. Only the large concentration of early temporary markers, dating from the 1880s and 1890s, now gives a clue that this area housed "indigent" burials (Figure 12). Indigents were (and are) not unappreciated people. An archaeological examination of a Potter's Field in New Jersey found burial offerings indicating love and concern by those who placed the caskets in their graves, including various personal effects and valuable gold and silver jewelry, religious items and coins (Romey 2005:42-49).<sup>8</sup> Shepard added that now indigents interments, in California, are paid for by the County as required by State law, and are usually cremated (Shepard 2010).

There are, however, some specific areas adding their particular characteristics to the ambiance at Oak Hill. A remarkable one is the niche area for cremations. Immediately to the left at the entrance is a large lake surrounded on all sides by ranks of low mounds that encase curvilinear niche placements of cremated remains (Figure 13). The remains are actually placed in soil. The niches are fronted by a series of large black polished stone slabs segmented for individual cremains (Figure 14). Visitors leave floral offerings on the sidewalks at the base of these walls. The cement walkways are gently sloped with segments of stairs, but unlike the surrounding niches, they are sharply angular with a decided zigzag placement (Figure 15). Seating is built in at some of the angles. The lake itself is fed by rain runoff and a landscaped waterway runs downhill to it (Figure 16). The waterway is landscaped with minimal plantings and naturalistic boulders of varying size. The lake is irregularly shaped, fitting into the natural concave area of the topography. The shores, at least, are edged with concrete and small clusters of boulders enhance the naturalistic feel. Shepard and Ausmus both mentioned that herons or similar large birds are often there.

In this country, cremation has been one way of dealing with a dead body since at least late in the nineteenth century. Although some religions forbid cremation, and individuals may resist it, "city planners worried about limited space for corpses, citizens concerned about sanitation problems, and others wanting a quick, efficient, relatively inexpensive means to dispose of their own bodies eventually put cremation on the thanatological map." According also to Yalom, cremation is chosen by about one person in three here in the United States as the preferred option (Yalom 2008:271-272). Shepard and Ausmus agreed the probable number of cremations is about 40% of Oak Hill's current interments (Ausmus 2010; Shepard 2010).

To the east of the lake and niche area is the largest dedicated parking area in the grounds. It is crescent shaped, fitting in with the curvilinear forms of the lake area.

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<sup>8</sup> This New Jersey cemetery consisted of several thousand burials from the local poorhouse, penitentiary, lunatic asylum, three pest houses, and "donations" of indigents from several surrounding communities.

Another unique section in Oak Hill Memorial Park is Babyland, established in 1973 specifically for infant and young child interments. Previously, these decedents were buried throughout the grounds. The Babyland section entryway is graced with a monument inscribed with this gentle wish:

Warm summer sun, shine kindly here.  
 Green sod above lie light, lie light.  
 Good night, dear heart, good night, good night.

Babyland is located in a sheltered area towards the southeastern corner of the grounds, placed at the rise of a hill. The tiny sizes of the youngsters interred there is evident from the small lengths of row spaces (Figure 17).

Buildings are limited on the grounds. There are no religious structures, such as chapels, because as a public cemetery the California code does not allow them (Ausmus and Shepard 2010). Nor are there large, constructed monuments, nor a columbarium structure to house cremains. The most noticeable structures are the office and residence; both are at the end of the main entry drive. The office and residence are modest structures, fairly modern in appearance. Like the rest of the site, they are well maintained, and simply presented with a minimum of fuss. The office includes public restroom facilities.

The maintenance shed is visible also, to the north of the niche area. It is a large corrugated metal structure, housing the grounds equipment and similar needs. The protective vaults and liners for future needs, and supplies like sand, gravel, and so on, are stored behind and around it.

A small concrete block building is located between the lake and the exterior fence. This is the site housing the pump that circulates the water collected in the lake to water the rest of the grounds. The only other structure is a tiny concrete block building located at the top of the south hill property boundary. This houses a booster pump, also for the irrigation system.

## MARKERS

Oak Hill now (2010) presents a lovely vista with an interesting variety of different sizes, shapes and styles of markers. California State law specifies that public cemeteries like Oak Hill are not allowed to sell markers. This is the choice and duty of the decedent and / or the decedent's family.

Oak Hill has some restrictions regarding markers. For instance, there is a size and in some cases a style limit, and certain materials are no longer allowed. Formerly, wood, marble and cement were acceptable, but they are not now, as described further below. However, Oak Hill is open to a variety of individualized marker expressions, placing no restrictions, other than the early delineated need for good taste as enumerated by the Oak Hill Cemetery Association in 1890.

In the 1970s the North County Cemetery District board voted to require only flat markers in some of the newer areas – Sections 12 and 17 – being opened for burial. Flat markers, as opposed to those that protrude upwards, are much easier to deal with. Obviously, mowing and other landscape work is easier. But another issue with standing markers is that if a new burial is designated in an area with standing ones already in place, those standing markers will need to be moved out of the way to accommodate the earth moving machinery and for access for the new coffin, and then reset. This movement is time consuming, difficult, expensive, and potentially dangerous to the integrity of the older marker. Oak Hill policy, however, allows that if contracted when standing monuments were allowed, the new graves can still have a standing stone, and two of the newer sections – Sections 13 and 14 – are planned to accommodate both flat and standing markers (Shepard 2010).

Types of markers at Oak Hill varies widely. Every permanent marker at Oak Hill includes two vase holders for flowers. The majority of markers present are of stone, but the diversity of material is complex, and includes marble, granite, slate, and others, and in some cases a combination of different stones. Most of the stone markers are shaped, but there are also several that are in the form of boulders, left in their natural shape (Figure 18). A recent decision by the district to restrict marble was due to its fragility. Marble is a soft stone and friable. Water eventually dissolves it (Shepard 2010), and its granular surface can be further eroded by moss and similar plant growth.

Another type of marker that has been restricted is the flat full length slab. Only two were seen during the author's grounds examination. One is pictured in Figure 19; this one was pointed out by the operations foreman as an anomaly at Oak Hill (Gomez 2010).

Military markers are provided by the government, and now come in two different forms: white granite, and bronze. The earlier white marble ones are showing their age by degrading as described above (Figure 20). This is particularly noticeable where the originally sharply cut edges have rounded out. The bronze markers will eventually acquire a patina, and eventually the white granite may show some weathering, but both will be more permanent in appearance in the future than the earlier marble markers (Figure 21).

Concrete is another material comprising markers seen at Oak Hill. A few were planned as permanent markers, and these have degraded (Figure 22). Cement is no longer an acceptable material for permanent grave markers anywhere in the North County Cemetery District. Oak Hill sports a great many tiny cement markers, flush to the ground surface, measuring about a foot long and 4 or so inches wide, that are placed as temporary markers after a burial. They may include the name of the deceased, and pertinent dates, although some lack that if information isn't available (Figure 23). According to Dennis Shepard these temporary markers sometimes become permanent if the family doesn't get around to providing a replacement. He says the earliest "temporary" markers of this type date as old as 1909, and wryly added it isn't likely they

will be replaced. The very old ones often have lost their lettering as the surface degraded over time, but some have been more recently replaced (Shepard 2010).

Another restriction pertains to wooden markers. They are not present at either Oak Hill nor San Marcos, with a single exception: Serbian religious custom is to include a wooden cross for 6 months at the gravesite. The cross is blessed by their priest. After the time span is completed, the crosses are removed (Shepard 2010) (Figure 24).

Various metals are also used for markers, with bronze being the most prevalent. As previously mentioned, bronze is one of the two official government marker types for military burials. Another type of metal marker is a "hollow metal casting of a zinc-bronze alloy." They were constructed of several pieces, generally in a columnar format. At the end of the 1800s, they were sold as "an inexpensive alternative to marble or granite." These are considered rare in San Diego County. There is one example at Oak Hill (Caterino and Mallios 2008:108) (Figure 25).

A personalizing feature of some markers is the actual image of the decedent, which is permanently recorded on ceramic surfaces, and incorporated into the marker. Some of the more recent images are even in color. Ceramics are one of the most durable of materials, and when the image is protected under a glaze, it is destined to last for probably hundreds of years (Figure 26).

One thing noted in Oak Hill in general is the lack of the small lamb sculptures that were popular of child graves markers in earlier days. Typically carved of white marble, and seen in most cemeteries of Oak Hill's vintage, they just are not present anywhere in Oak Hill. The Babyland area postdates the popularity of lamb sculptures described above. The gravestones in Babyland do exhibit motifs traditional for infants, with, for example, depictions of young animals.

Sprinkled through the grounds are statuary markers. All of those at Oak Hill seem to be of white marble, a material now not accepted as permissible for new interments. All are religious in nature, depicting angels or the holy family. A concentration of statues is located in the Catholic section (Figure 27).

"The rural or garden cemetery was to the nineteenth century what the memorial park was to the twentieth. Although both emphasized landscape, they had different aims. The garden cemetery privileged nature as a sweet setting for the dead and a consolation for the living; the memorial park practically hides death altogether. Memorial parks are characterized by markers set flush with the ground, barely visible among the acres of lawn that encompass them" (Yalom 2008:47). As mentioned previously, there are now segments of Oak Hill that are either currently or planned to accept flat markers.

Oak Hill's markers exhibit diversity of appearance and the different placements reflect the needs not only of the cemetery but the population who is represented by them. Entire volumes exist regarding symbolism and iconography on gravestones; there is no need to elaborate on the meanings of, say, draped fabric, the various flowers depicted, et

cetera. However, for a detailed study on the changing tombstone styles of San Diego County, see Caterino 2005. He found the "column" marker type was the most common during Oak Hills' establishment in the 1880s, and now the most common type is the flush to the ground flat marker (Caterino 2005:160).

## LANDSCAPE

Trees are probably the most important vegetation found in cemetery landscapes, being the largest of plants, and they generally grow into a long lived fixture. Besides creating a beautiful and soothing appearance, trees also figure prominently in some people's choices as to burial locations. Not only are there personal preferences, but there are also cultural reasons to be placed near or far from foliage; for instance the Hmong prefer to be in sunlit areas, well away from any possible shadow. For this reason, Oak Hill has a policy of always replacing trees that die, preferably with those of the same species, and also never planting trees in sections that originally did not have them when burials were begun (Shepard 2010). The choice of trees depends upon their suitability not only for traditional or decorative purposes, but such considerations of leaf drop, flower litter, root structure and water tolerance, among others needs to be addressed.

Originally, the only trees present were the live oaks that the cemetery was named for, and several of them still exist. Adding to the total 820 trees present three decades ago were "pepper, Italian cypress, liquid amber, European sycamore, evergreen ash, cedar, holly oak, Monterey pine, pink and white oleander and one cork oak" (*Times-Advocate* March 18, 1979). There were probably other trees than those noted above, as a photograph includes palm trees in the landscape (*Times-Advocate* July 11, 1977). One very early exotic planting was a cork oak, still growing, with its deeply serrated bark stuffed with acorns (Figure 28). Eugenia was noted in the 1938 minutes, but qualified as for use in hedges (Oak Hill Minutes, Book 2:77-78). "Sweet gum" an older term for liquid amber, are described as presenting a particularly beautiful fall display of color, though they have been noted as having invasive roots and are a problematic tree at Oak Hill (Salisbury 2010, Shepard 2010). Another tree is the tipuana tipu, located in a cluster in front of the office. They display a profusion of yellow blossoms when in bloom (Shepard 2010). Other flowering trees, such as magnolias, are also present, in many different varieties (Ausmus 2010, Shepard 2010). See Figure 29 for a landscape photograph depicting some of the trees.

## CULTURAL ASPECTS

"Many cemeteries, or parts of cemeteries, become venues for religious practices and folk customs brought from foreign lands" (Yalom 2008:28). Death and burial customs are important to people, and a wide range of specific needs has to be addressed at the cemetery. The obvious one is often exhibited by the style or wording on the marker (Figure 30).

Engraved Masonic symbols, the Jewish Star of David, and non English script are just a few of these. Offerings are another issue that impacts the cemetery staff and

grounds. The stated policy is that only flowers in non glass containers are eligible to be left at a tomb. However, people leave many other things as well, including coins, food – particularly common is candy bars – burritos, and even an occasional dead chicken or pig's head; large quantities of alcoholic drinks, small stones, clothing especially shoes, and toys, balloons, and similar items. All nonfloral offerings are discarded by the groundskeepers (Ausmus 2010; Shepard 2010).

At two different gravesites, one of the commonest offerings, pebbles, were noted during the author's recent visit (Figure 31). They are traditional to several different cultures. Dennis Shepard pointed out these small stones can cause damage to markers when caught up in mechanized maintenance equipment, and injury to workers or bystanders.

In the earlier years, the dominant population of Escondido was Caucasian, with some minorities less represented until the later decades of the 1900s. Shepard and Ausmus, when queried about their knowledge of historical ostracism of minorities, denied that there was any evidence of it at Oak Hill. Oral interviews of some residents in Escondido did bring up the topic of local bigotry (Steigler, Van Wormer and Walter 2003). "Many private California cemeteries did not accept blacks and Asians until 1959, when they were required by law to do so" (Yalom 2008:29). It is clear from looking at the early records that Oak Hill accepted Asians, at least, from its inception, as seen below.

Sam Wing was one of Escondido's many Chinese residents. He was notable in Oak Hill's history for purchasing a cemetery lot for future use. He paid \$10 for it (Oak Hill Burial Record Book). This plot was used for 3 different Chinese burials: Lee Juan Pun in 1899, Lum Chun in 1901 and Hoy Tong in 1905. Funerals for these individuals featured traditional Chinese rites, and Sam regularly tended the gravesites in traditional Chinese manner (Figure 32). Sam Wing left Escondido in 1913, after having these 3 burials disinterred and shipped for proper permanent burial in China (Ryan and Ryan 1973:111).

Yalom, in her study of graveyards across the United States, had comments regarding all the entities originally deeded plots of land at Oak Hill. The Catholics "have always managed to take good care of their dead." She noted the popularity of religious statuary, and that is quite visible in Oak Hill's St. Mary's sections. The first two days of November are traditional days of remembrance for those who have passed on, and she says there is a corresponding influx of Catholic visitation then; Ausmus and Shepard concurred this was a factor at Oak Hill as well (Yalom 2008:29-30; Ausmus & Shepard 2010).

Yalom groups the Mennonites, along with the Amish and Moravians, as examples of Protestant religious movements that established religious settlements in the early 19<sup>th</sup> century, saying they exhibit "distinctive burial grounds" that "have been preserved by descendants faithful to the ways of their forebears in spite of myriad pressures to change" (Yalom 2008:36-37). Oak Hill's policy of respect has not intruded nor changed any of

the Mennonite area. To the current viewer, the old Mennonite area is lightly populated, and newer markers are blending into the section. Very few markers dating to the early Mennonite period are evident (Figure 33).

Regarding the Civil War burials, Yalom noted that in some cemeteries, Union and Confederate soldiers are not buried together, and some communities actively refused burial of decedents of the opposing side. The descendants of the deceased often shared this animosity, and they specifically designated separate resting places for their dead (Yalom 2008:259-260). The list of Civil War burials at Oak Hill drawn up in 1929 includes 4 with C.S.A. designating them as having their service in the Confederate States of America. Three were located, and it is notable that none of the 3 stones included any indication that the decedent was involved in the Civil War, nor were they in the original Grand Army of the Republic section (Figure 34).

The Masons and Odd Fellows both were (and still are) fraternal orders that provided burial insurance and assistance for their members and members' families. The Mason's most common symbol is the "plane and compass with the *G* for God in the center," and the Odd Fellows' identifying mark is three interlocking links of a chain, and sometimes the letters IOOF (Yalom 2008:188, 220). Many of these are visible throughout Oak Hill. Another group that provided burial assistance was the Woodmen of the World. Their markers often include some sort of representation of a tree, and a few are noticeable at Oak Hill (Figure 35).

#### VANDALISM

Gratefully, very little vandalism has occurred at Oak Hill. The manager mentioned "only 2 or 3 instances in the last 30 or so years" (Shepard 2010).

#### ANIMAL LIFE

Not surprisingly, given the size of the cemetery and its location near undeveloped lands, there is a myriad of creatures that visit and even live at Oak Hill. Animals listed by Shepard and Ausmus include coyote, deer, turkeys, fox, rabbit, opossum, and skunk. Ground dwellers include gophers and ground squirrels; they are a food source and attract snakes such as rosy boas, gopher snakes and rattlesnakes. The sky donates bats as well as numerous birds. Especially noticeable avians are owls, hawks, and even blue herons. A large flock of crows made their noisy presence several times when the author was prowling the grounds. Domestic cats and dogs make appearances as well, though visitors are not supposed to bring their pets to the grounds (Ausmus and Shepard 2010).

#### SELECTED INTERMENTS

There are currently approximately 22,000 interments at Oak Hill. Those individuals at Oak Hill range from unknowns to well known personalities, and the vast majority of them were local residents as required by the district guidelines and charter.

Various articles report the earliest burials were Lenna Abbie Hayes, Sam Brannan, and Charles E. Thomas (*Times-Advocate* October 12, 1985; *Los Angeles Times, San Diego County Edition* October 29, 1992). The historians at Escondido History Center have researched this. They believe that Lenna Abbie Hayes, less than 2 when she died, due to her very early death date – November 16, 1878 – may have been buried at the site prior to its actual designation as a cemetery. They also speculate, alternatively, that since other members of the family are buried there, the family may have simply included her name as part of the record and she may actually be buried elsewhere. Her name appears on a large gravestone along with several other family names (Figure 36).

Regarding Sam Brannon, his body was never buried at Oak Hill (Fox 2010). A former millionaire and prominent personage, he died a pauper and his remains resided in storage for 16 months prior to burial at San Diego's Mount Hope Cemetery. In 1959, controversy arose over rumors that his body was to be exhumed from Mt. Hope and reburied in Calistoga; but this did not occur (*Times-Advocate* March 31, 1959).

Charles E. Thomas is buried at Oak Hill. He was the youngest of the five brothers who established the Escondido Land and Town Company, and it was his unexpected early death that prompted the Escondido Land and Town Company to donate the property as a cemetery. He is the earliest of the well known individuals located in Oak Hill Cemetery (Fox 2010) (Figure 2). Charles' brother, George V. Thomas, is also buried at Oak Hill. George faithfully attended Oak Hill Association meetings from its inception in 1889 to his death in 1922.

Another burial of interest at this cemetery is William Beven. The Beven family is an important one to Escondido's history. William Beven, among many other activities, served on the Oak Hill Cemetery Association. He was also a stone mason, and he is known to have carved his own tombstone (*Los Angeles Times, San Diego County Edition* October 29, 1992).

The Wohlford family has many, many important connections to the region covered by the Escondido Cemetery District. One tragic story shows that the same tale is represented by both rich and poor. In the past a fairly common cause of death for women was complications due to childbirth. The monetary resources available for Mary Wohlford King could not save her life. She and her infant are buried together in one grave.

Rose Megget, a direct descendant of the earliest landowner in the area, Juan Bautista Alvarado, is buried at Oak Hill. Her great grandfather was Juan Bautista Alvarado, and he received title to what he named Rancho El Rincon del Diablo in 1834. Rose's father was Antonio Alvarado, who lived in San Pasqual. His father was Juan Maria Alvarado, son of Juan Bautista Alvarado. Some of Rose Marie Alvarado Megget's offspring are also buried there (Sweet 2010). Rose married at age 17. Her husband Cecil M. Megget, born in England, had emigrated around 1877. He grew grain and worked as a "general farmer" in Escondido in 1910 on San Pasqual Road in 1920 and Moosa Canyon Road in 1930. Rose was a busy mother; some of their children were Alice,

Florence, Helen, Anna, Georgia, Frank, and Annie (Census 1910, 1920, 1930) (Figure 37).

Sophie Hutching Cubbison was another notable person. A local resident, born and raised in San Marcos, she grew up cooking for family and field hands at the family's lima bean ranch. She attended college, married, and continued drawing raves for her cooking when she and husband opened a bakery. Sophie soon began packaging and marketing her recipe of Melba toasted turkey stuffing. This product, and others as well, is now sold throughout the country. Just looking at her name is enough to evoke a smile of contentment by the viewer while remembering family feasts that included her recipe (Wikipedia 2010).

Both Dewey Ausmus and Dennis Shepard agreed the most world famous personage interred at Oak Hill is probably Jim Londos. Born in Greece, his birth name was Christos Theofilou, which was later angelicized to Christopher Theophelus. During his heyday he was popularly called "The Golden Greek." He held the World Heavyweight, and National Heavyweight titles, among others, during his career. Londos was one of the most popular personalities during the Depression. A strikingly handsome man, he often matched himself with particularly unattractive opponents. In his later years he was devoted to various charities (Wikipedia 2010).

Frederick Einer Junior was just one of several men with the exact same name. On his tombstone he is eulogized as "The Gentle Giant." Fred was instrumental in business ventures and building activities benefiting particularly the northern part of San Diego County. His projects included such disparate items as swimming pools, a winery, a water bottling concern, and roads. What he referred to as an exciting job was when he worked at the Palomar Telescope for 3 years. He remembered when the first lens was driven up to the Palomar Observatory (Stiegler, Van Wormer, Walter).

Arie deJong and his energetic family emigrated from Holland, arriving to Escondido literally in wooden shoes. One of 10 children, he was part of the local dairy, pig raising, and garbage collection businesses, and made a success in all those endeavors. He recounted the mischievous Halloween prank of letting loose some pigs in downtown Escondido at the intersection of Grand and Broadway, much to the consternation of the populace. He and his cohorts were caught and made to wash to police cars as punishment (Stiegler, Van Wormer, Walter) (Figure 38).

Frank and Yolande Hopkins, buried side by side near the extreme south fence boundary, are examples of simple monuments representing tremendously interesting personal histories. They resided in what is now referred to as the Sikes Adobe, now part of the San Dieguito River Park. Some events, among their many interesting activities during their lives, included cowboy Hollywood stunt work, ranching while living at the Sikes place, and running an arsenic mine which was partly funded by the famed movie choreographer Busby Berkley (Figure 39).

Myrtle Agatep directly contributed to the diversity of Escondido's population. Of Norwegian heritage, she moved with her family to California because her father was tired of the cold climate of North Dakota. Falling in love here with a Filipino man, Alex Agatep, she and Alex courageously defied California's racist antimiscegenation laws of the time that forbade marriage between Caucasians with people of other races. Myrtle and Alex got married in Utah, and returned to work in Escondido's orchards and packinghouses, and raised a remarkable family (Stiegler, Van Wormer, Walter).

At 108 years of age, the temporary marker for "G. Holm" signifies the oldest person known buried at Oak Hill. Gladys Charlotte MacDonald Holm is buried with her spouse Eric Magnus Holm, who predeceased her in 1977. Born August 27, 1901, she died January 22, 2010. Her parents were Charles and Gertrude MacDonald. The family moved from Minnesota to California in 1914. Gladys entered the teaching profession, and was a third grade teacher for 34 years. During her long life, she was active in a number of professional, political, community, and social groups centered in Escondido (*North County Times* Obituary) (Figure 40).

To the surprise of the author of this report, she spotted the marker for Susie E. Walter while looking for another name. Of course, this discovery required some research. Susie E. had been born in Ohio in 1867. She married Robley D. Walter, a doctor and later pharmacist, in 1888 and they had 2 sons while living in Pennsylvania (Census 1900). The family moved to California. Oddly, it turned out that Susie E. Walter had lived for several years within a few blocks of Susan D. Walter's current home at 238 Second Avenue in Chula Vista. Susie, now widowed, and her son R. Donald Walter resided at 248 Third Avenue as early as 1922. They lived at different addresses but always the 200 block of Third Avenue as late as 1932 (Directories 1923-1937). Their connection to Escondido might have been R. Donald's employment with a feed and grain store that had a branch in Escondido. Susie is not yet known to be related to Susan (Figure 41).

The fact is, that with 22,000 interments, there are at least 22,000 interesting people, along with their long or short lifetimes filled with interesting stories. It is not just the markers that shed light on all these people. Record keeping is a necessity at any place that deals with interments, and Oak Hill has a prized collection of original books and documents that contains detailed data of interest. For instance, map books depicting the burial plots are a necessity for locating all those who reside in the cemetery. Figure 42 shows one page from the master book that, so to speak, shows the addresses of those residents. And below is a list from another written source at Oak Hill: the books of Burial Records. One ledger book includes records from the earliest years up to April 13, 1949. A few entries were selected to put in the tabulation below. They are in the order of death date, except the last one, which records a removal.

Table 1. Selected Death Records

name	age	gender	marital status	cause of death	death date	internment date	notes
Walter W. Adams	1	M	S	-	September 18, 1888	September 19, 1888	Lot owner Thomas A. Adams
Chinaman	-	M	-	-	August 1, 1895	August 4, 1895	No record of grave location; one \$10 grave
Nichols, Infant Boy	0	M	S	Stillborn	August 28, 1898	-	Nearest relative A. Ausmus
Nichols, Infant twins	0/0	M/M	S/S	Stillborn	September 2, 1899	-	Nearest relative S. Willard
P.S. Sparkman	50	M	-	Murdured [sic]	May 19, 1907	May 24, 1907	Lived at Rincon
Michael, Infant	0	M	S	Stillborn	March 27, 1913	-	In same box and grave as Donald Michael
Armstrong twins	0/0	M/M	S/S	-	October 27, 1914	October 27, 1914	Buried in one grave at Helen Murray's feet. Lot owner Maude Murray.
Michael, Donald	0	M	S	Stillborn	June 21, 1915	-	In same box and grave as Infant Michael
Elmer Lloyd Urschel	22	M	S	Concussion brain	August 4, 1915	August 7, 1915	Born in Almena Kansas; lived in Escondido; shipped from Uplands California; father was G.W. Urschel
Jacob Solomon Urschel	31	M	S	Cerebro [sic] spinal meningitis	November 26, 1918	November 26, 1918	Born in Beaver City Nebraska; lived in Escondido; died in France; shipped from France; W W I veteran; father was G.W. Urschel
John McVey	65	M	M	Auto Accident	July 28, 1927	August 2, 1927	Born in Iowa; lived in Coronado
Kidoo infant	0	F	S	Stillborn	August 7, 1927	August 8, 1927	Born & died in California; Raymond Kidoo, father
Miles Cecil	89	M	W	Broken hip	March 16, 1928	March 18, 1928	Buried in G.A.R.; was a veteran; lived in Escondido
Leo L. Parris	8	M	S	Scarlet fever	June 21, 1928	June 22, 1928	Born in Missouri, lived in Escondido; nearest relative or friend was N.J. Parris of Escondido; buried in Potter's Field
Fred Bryan	70	M	S	Suicide	July 21, 1928	August 5, 1928	-
Elmo A. Carpenter	52	M	M	Tetanus	March 30, 1929	April 2, 1929	Lived in Salona [sic] Beach
Curtis W. Robertson	8	M	S	Gunshot	December 19, 1929	December 21, 1929	Lived at Bear Valley
Joyce Fleming	2 months	F	S	Whooping cough	March 28, 1933	March 30, 1933	Of Escondido
Addie Thomas	70	F	-	-	1926	-	Cremation; ashes on Irene Williams Grave
Homer Gordon Clark	4	M	S	Drowning	October 21, 1923	October 21, 1933	Born in Vista; lived at Fanning Ranch in Vista
Audrey Fay Clark	1	F	S	Drowning	October 21, 1923	October 21, 1933	Born in Vista; lived at Fanning Ranch in Vista
Carrie Hoffman	60	F	M	Acute anemia	December 3, 1933	December 6, 1933	Lived in Escondido; Bear Valley
John Huston Risdon	33	M	S	Skull fracture	February 18, 1934	February 21, 1934	South grave; George Risdon father
Theo. James Risdon	27	M	S	Poisoning by cyanide	February 18, 1934	February 21, 1934	Center grave; George Risdon father
Joseph Perez	7 months	M	S	Measles	May 11, 1934	May 16, 1934	Buried in St. Marys
Carpenter triplets	0/0/0	M/M/M	S/S/S	Stillborn	July 22, 1934	-	-
Angel Contreras	19	M	S	Tuberculosis	October 9, 1934	October 13, 1934	Born in Mexico; buried in St. Marys
James Bradley	15	M	S	Ruptured appendix	September 19, 1935	September 23, 1935	-
Margaret Medlaris	24	F	M	-	1924	-	Disinterred, moved to Glenn Abbey Memorial Park in Chula Vista on September 10, 1936

Just looking at the 33 entries above elicits curiosity about the stories represented by these records: Recall there are literally thousands of similar entries. It also nudges the emotion of sympathy for the families' feelings during these simply recorded events.

### CURRENT EVENTS

Oak Hill continues their long established tradition of Memorial Day ceremonies. Oak Hill Memorial Park annually observes this national event with "a special service to honor all war dead...(which) features an Avenue of the Flags, Ritual of the Flowers, and Roll Call of the current year's deceased veterans" (California Special Districts Association 2008).

A newer event occurring in early October has been successful in attracting public interest to the site. Put on by the Escondido History Center, and called "Echoes of the Past," it has been a popular event for several years. The idea is to breathe life into memory, so to speak, by selecting some of the decedents and having actors portray them for visitors. It is important not only to plan for an interesting show, but the logistics of the route to be walked needs to take into account that many visitors are elderly so they need a short distance to travel and fairly stable footing (Shepard 2010).

Dressed in period clothing and coached in the facts of the character, the "Echoes" began in 2004. It is held in October, which fits in with the theme of death near Halloween and All Saints Day. Every year, a different section of the cemetery is highlighted. The actors include members of Patio Playhouse and the Escondido History Center, and Oak Hill staff; some of them are actual descendants of the person being depicted. The public was escorted in small groups, leaving every 15 minutes, and the entire tour takes about one hour.

Those brought "to life," so to speak, in 2004 included Andy Andreasen (first dogcatcher, electrical inspector, chief of police, mayor and much beloved member of the community), Rube and Blanche Nelson (proprietors of Rube's Fabulous Country Corner, a store), Doctor David Crise (longtime community physician arriving in 1887), Isaac Tabor (Civil War veteran), William and Emma Hoffmann (pastor and wife), Jim Londos (world famous wrestler), George Thomas (founder of Escondido), and Sallie Wohlford (founder of the Women's Club and "society matron"). The Escondido History Center, headed by Wendy Barker, who annually manages the event, receives the proceeds. (*North County Times* October 18, 2004, October 25 & 27, 2004; Pioneer Room clipping October 21, 2004).

The 2009 "Echoes" event, unfortunately, was cancelled due to a number of time and other event conflicts. However, there are plans afoot for its revival in 2010, with hopes for its continuance into the future (Fox 2010; Shepard 2010). This event not only brings the public to one of Escondido's lovely landmarks, but also ignites pride and interest in Escondido's unique historical heritage. See Appendix 2 for a list of all the "Echoes" subjects.

"Echoes" is part of a nationwide trend for public participation in events at cemeteries. Educational programs, and even "events commemorating various nontraditional subjects like suicides and bad guys, flash light accompanied night tours, film festivals, floral and plant tours, heritage tourism, (and) children's programs" are increasing in popularity (Yalom 2008:275-276).

## INTO THE FUTURE

A large burial site like Oak Hill Memorial Park is always a work in progress. In the past, copings surrounded family plots; all of these were removed. A windmill and reservoir is gone. Roads have been removed and changed. The lake and niche area and Babyland has been added (Figure 43). Similarly, besides keeping in mind future needs for expansion and cultural changes over time that result in changing needs for the disposition of the dead, plans are constantly in process. In the future, Oak Hill may acquire such features as a scattering garden for cremains, or possibly a committal center where rituals and ceremonies for families can be held (Shepard 2010).

## CONCLUSIONS

Oak Hill Memorial Park is highly significant, particularly in terms of local history. Established by the original developers of the town site of Escondido, in response to the death of one of those 5 developer brothers, it is significant also for constant community participation from its earliest days to the present. Members of the community were involved with clearing the land, managing the site, donating water, providing upkeep, and a myriad of other contributions. Members of the community also participated in the regular attendance of public events most notably Decoration / Memorial Day activities and now also the current Echoes of the Past history programs.

With 22,000 interments, persons of importance and interest range from the simple placements in the old Potters Field though business magnets, war veterans, representatives of ethnic groups, and epidemic victims, to nationally known personalities.

As a public cemetery administered by the Escondido Cemetery District, which followed in the footsteps of the Oak Hill Cemetery Association, the stated policy is of accepting for burial only those who have either paid taxes to the district, or are blood relatives of those already buried there. The concentration of 22,000 people with that common attribute in itself is significant.

Coupling all the above with the long use of the site for burial purposes – actually predating its official establishment in 1889 – a span of years now pushing a century and a quarter, plus the beauty of the grounds and feeling of restful peace that is felt anywhere on the property, the magnitude of the significance of this magnificent cemetery cannot be denied.

## CALIFORNIA REGISTER SIGNIFICANCE

The Oak Hill Cemetery was evaluated for significance using standards for listing on the California Register of Historic Resources. To qualify for these listings a property must meet at least one of the following four criteria:

- A That are associated with events that make a significant contribution to the broad patterns of our history; or
- B That are associated with the lives of persons significant in our past; or
- C That embody the distinctive characteristics of a type, period, or method of construction or represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D That have yielded, or may be likely to yield, information important in prehistory or history (National Park Service 1991; County of San Diego 2007).

In addition a property must retain sufficient integrity of its historic qualities to convey its significance. Integrity is assessed on seven distinct characteristics that include location, design, setting, materials, workmanship, feeling and association (National Park Service 1991).

### Significance Statement

The Oak Hill Cemetery is a historically significant resource eligible for listing on the California Register of Historic Resources. It is significant under Criterion A due to its importance in terms of local history. As stated above, the cemetery was established by the original developers of the town site of Escondido, in response to the death of one of those 5 developer brothers; it is significant also for constant community participation from its earliest days to the present. Members of the community were involved with clearing the land, managing the site, donating water, providing upkeep, and a myriad of other contributions. Members of the community also participated in the regular attendance of public events most notably Decoration / Memorial Day activities and now also the current Echoes of the Past history programs. Also, the vast majority of the people buried there were members of the cemetery district that has served the Escondido region and community throughout its nearly 125 year history.

The cemetery is also significant under Criterion C in that it retains the core layout of its original designers as well as original grave markers and original hand forged entryway. In addition the cemetery retains integrity of location, setting, design, materials, workmanship, feeling and association.

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## Appendix 1: LIST OF ILLUSTRATIONS

- Figure 1. 1872 map showing boundaries of Rancho de la Rincon del Diablo.
- Figure 2. Marker for Charles E. Thomas, whose death was the direct result of the formal designation of Oak Hill Cemetery.
- Figure 3. Page 1 of the Minutes from Oak Hill Cemetery's first record book.
- Figure 4. The decorative hand forged entryway at Oak Hill.
- Figure 5. A map showing the 34 acre cemetery.
- Figure 6. Artist's depiction of cemetery work party.
- Figure 7. Undated early photograph showing concrete copings surrounding a family plot.
- Figure 8. Artist's illustration of Sampson's "dead wagon" transporting a body to Oak Hill Cemetery.
- Figure 9. The Wohlford family's white Italian marble monument.
- Figure 10. An example of one of the documents showing Oak Hill's reacquisition of the deeds for the Catholic, Mennonite, Masonic, G.A.R. and Odd Fellows sections.
- Figure 11. An example of a burial pattern reflecting a removed road.
- Figure 12. A large concentration of early temporary markers, dating from the 1880s and 1890s, now gives a clue that this area originally housed "indigent" burials.
- Figure 13. View of the lake and niches for cremated remains.
- Figure 14. The niches are fronted by a series of large black polished stone slabs segmented for individual cremains.
- Figure 15. The cement walkways are sharply angular with a decided zigzag placement in contrast to the curvilinear placements of the niche walls.
- Figure 16. The landscaped waterway that runs downhill to the lake.
- Figure 17. Overview of a portion of Babyland.
- Figure 18. A natural boulder gravestone.
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- Figure 20. Several of the early military issue marble Veteran's markers are visible in this overview of the original Veteran's section.
- Figure 21. An example of one of the later military issued bronze markers.
- Figure 22. An example of a permanent concrete marker at Oak Hill showing degradation.
- Figure 23. Example of the concrete temporary markers Oak Hill places to mark a burial.
- Figure 24. A permissible example of the exception to wooden markers at Oak Hill.
- Figure 25. Rare in San Diego County, Mina Ward's hollow metal casting of zinc-bronze alloy is an example of this marker type at Oak Hill.
- Figure 26. An example of a ceramic image incorporated into a marker.
- Figure 27. One of Oak Hill's angel statues.
- Figure 28. Frances Ryan with the cork oak.
- Figure 29. Landscape view depicting some of the trees of Oak Hill, including cypress, queen palm, ash, elm, live oak, cork oak, and sycamore.
- Figure 30. An example of cultural affinity exhibited by the lettering type on a marker.
- Figure 31. A pebble offering.
- Figure 32. Sam Wing of Escondido, tending Chinese graves at Oak Hill.
- Figure 33. Very few markers dating to the early Mennonite period are still evident.
- Figure 34. One Oak Hill's Confederate burials, note the lack indication that the decedent was involved in the Civil War.
- Figure 35. A Woodmen of the World gravestone.

- Figure 36. The earliest known burial date is Lenna Abbie Hayes, 1878.
- Figure 37. Rose Megget, a direct descendant of the earliest landowner in the area, Juan Bautista Alvarado, is buried at Oak Hill.
- Figure 38. The simple marker for members of the deJong family who emigrated from Holland to Escondido.
- Figure 39. Frank and Yolande Hopkins, buried side by side near the extreme south fence boundary.
- Figure 40. The temporary marker for G. Holm signifies the oldest person known, at 108 years of age, buried at Oak Hill.
- Figure 41. The marker for Susie E. Walter.
- Figure 42. Example of a map book page depicting the location of the burial plots.
- Figure 43. The current locator map given to researchers of grave locations.

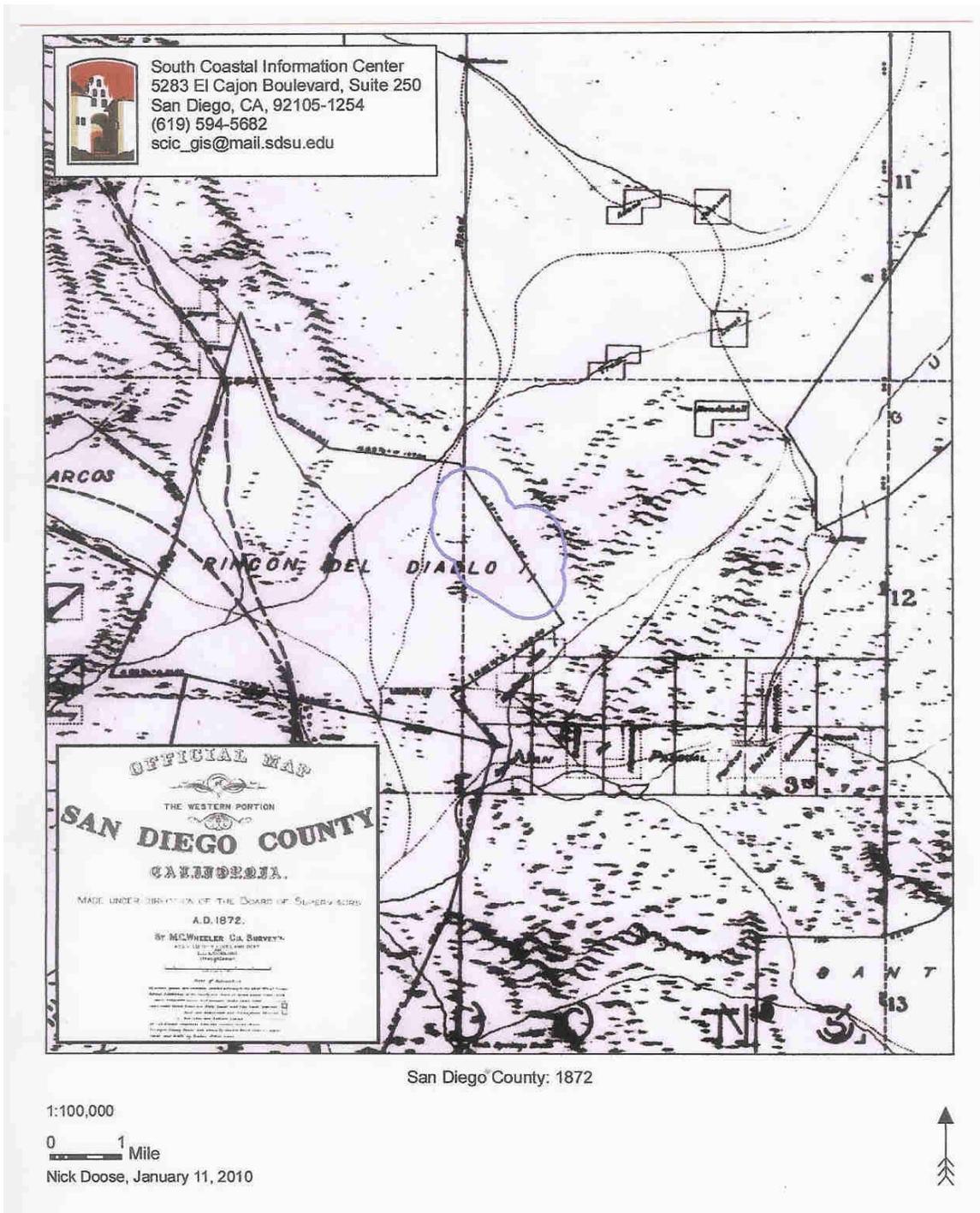


Figure 1.  
1872 map showing the boundaries of Rancho de la Rincon del Diablo.  
Blob shaped area in center indicates the general area of Oak Hill burial grounds.



Figure 2.

Marker for Escondido founder Charles E. Thomas, whose death was the direct result of the formal designation of Oak Hill Cemetery.

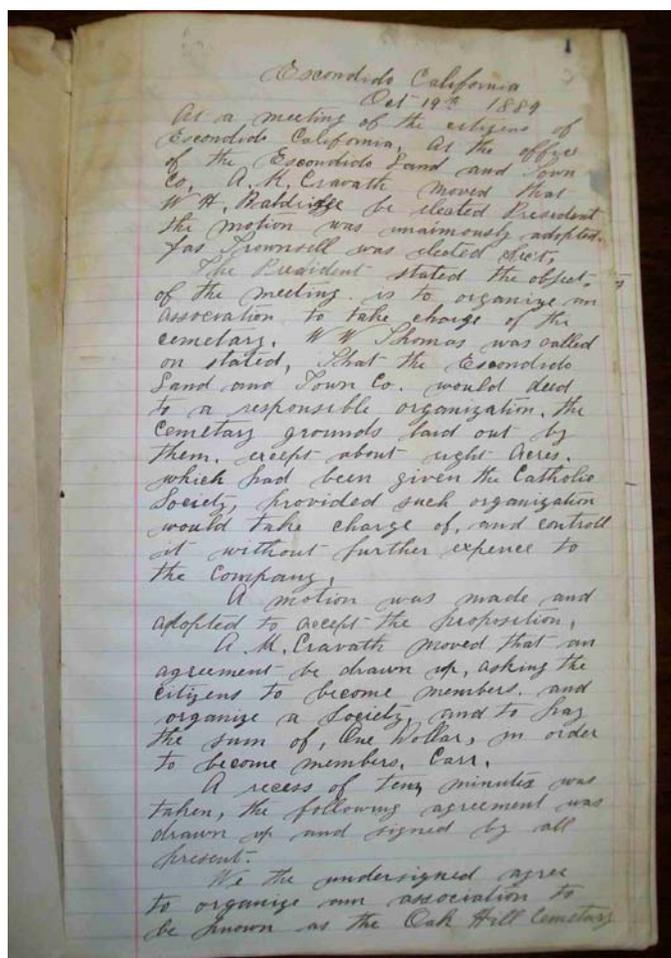


Figure 3.

Page 1 of the Minutes from Oak Hill Cemetery's first record book.



Figure 4.

The decorative hand forged entryway at Oak Hill.  
The street address hangs from the center.

Map of Oak Hill Memorial Park, Showing Drives and Burial Sections also known as Maps numbered from 1 to 20  
Escondido Cemetery District, 1969.

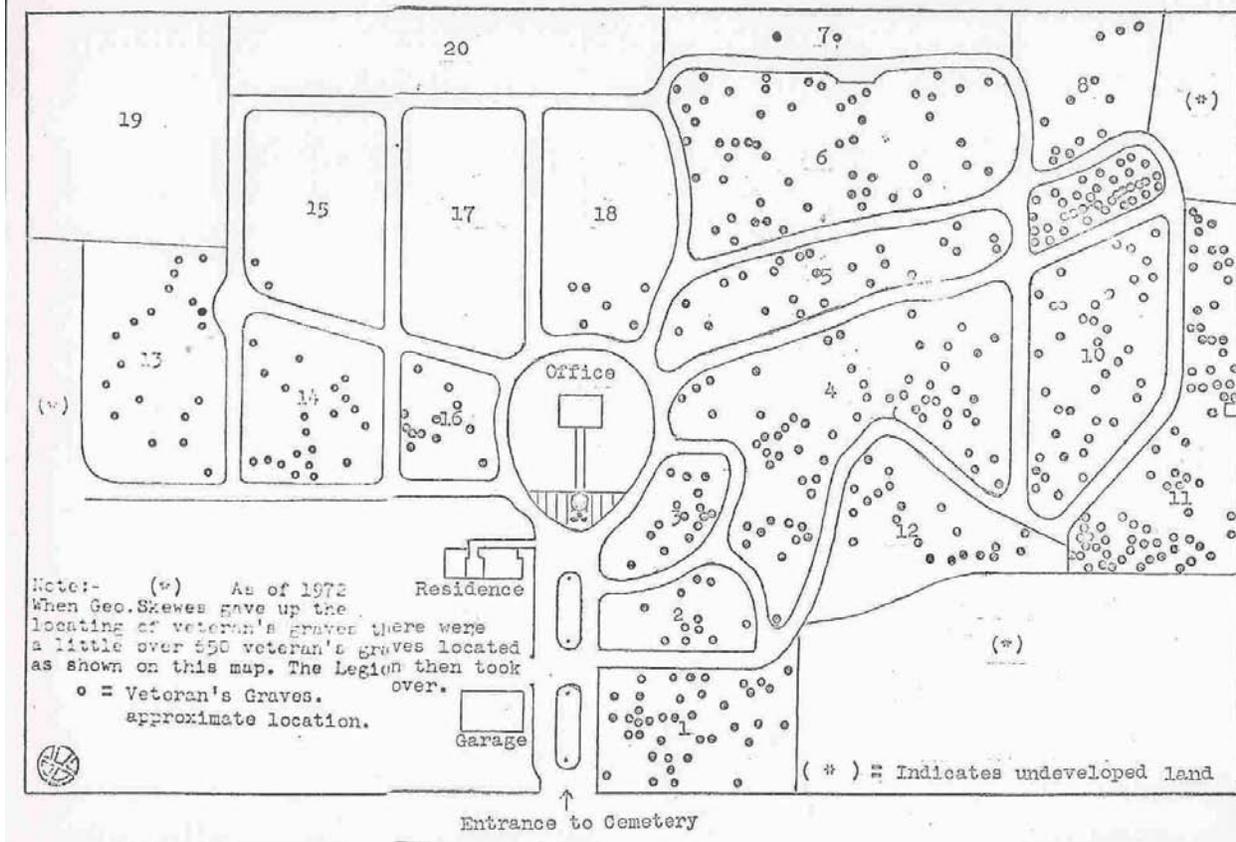


Figure 5.

A map showing one of the 34 acre cemetery's configurations.

Section 1 = Masons

Section 8 = Veterans

Sections 13, 14, 15, 16, 17 = Saint Mary's Catholic Hill

Section 20 = Mennonites

Part of Section 19 = Potter's Hill (indigent burials)

The small square in Section 11 next to the fenceline is the Pump House and still exists.

The small circles represent veteran's burials.

The undeveloped area in upper right angles towards the area that became Babyland.

The empty area to the lower left is a small part of the current niche and lake area.

Roads have been realigned, removed or added (compare to Figure 43).

The garage no longer exists.

The grounds are now considerably larger in 2010, with the entry further to the west.

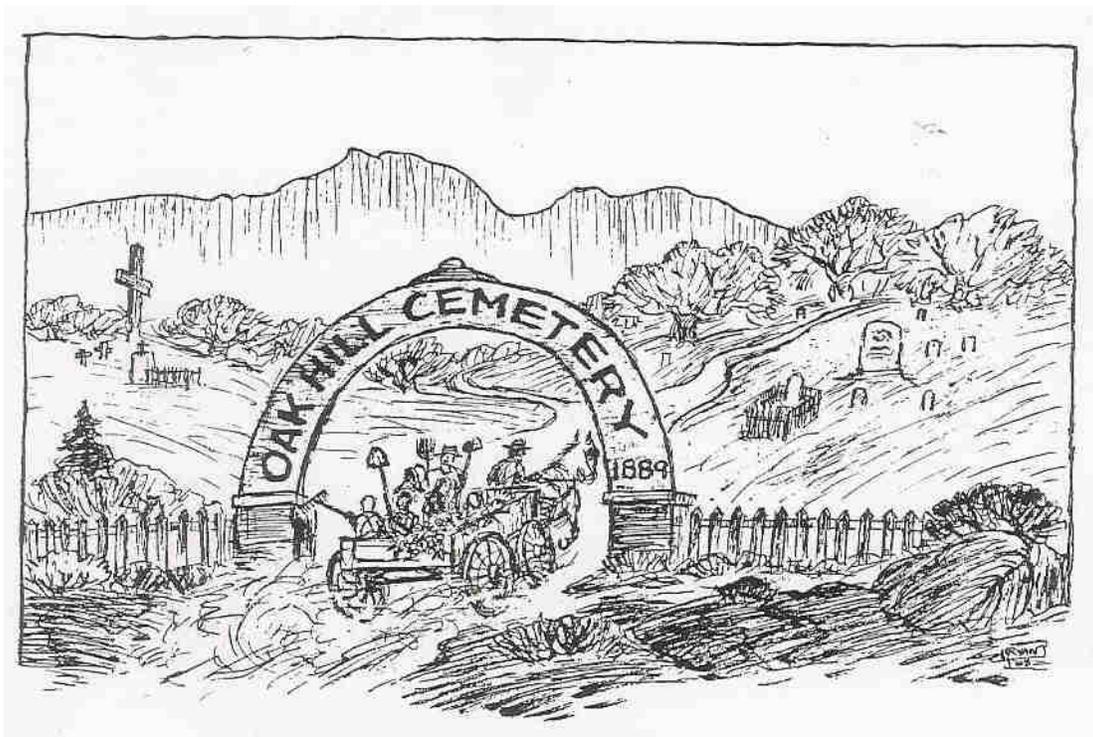


Figure 6.

Artist's depiction of cemetery work party.

Note large cross to left, designating Catholic Hill, which no longer exists,  
railings surrounding gravesites, now removed,  
and wooden exterior fence which burned up.

(Ryan and Ryan 1970)



Figure 7.

Undated early photograph showing concrete copings surrounding a family plot.  
All copings have now been removed from Oak Hill.  
(Courtesy Escondido Public Library, Pioneer Room, Frances Beven Ryan Collection)

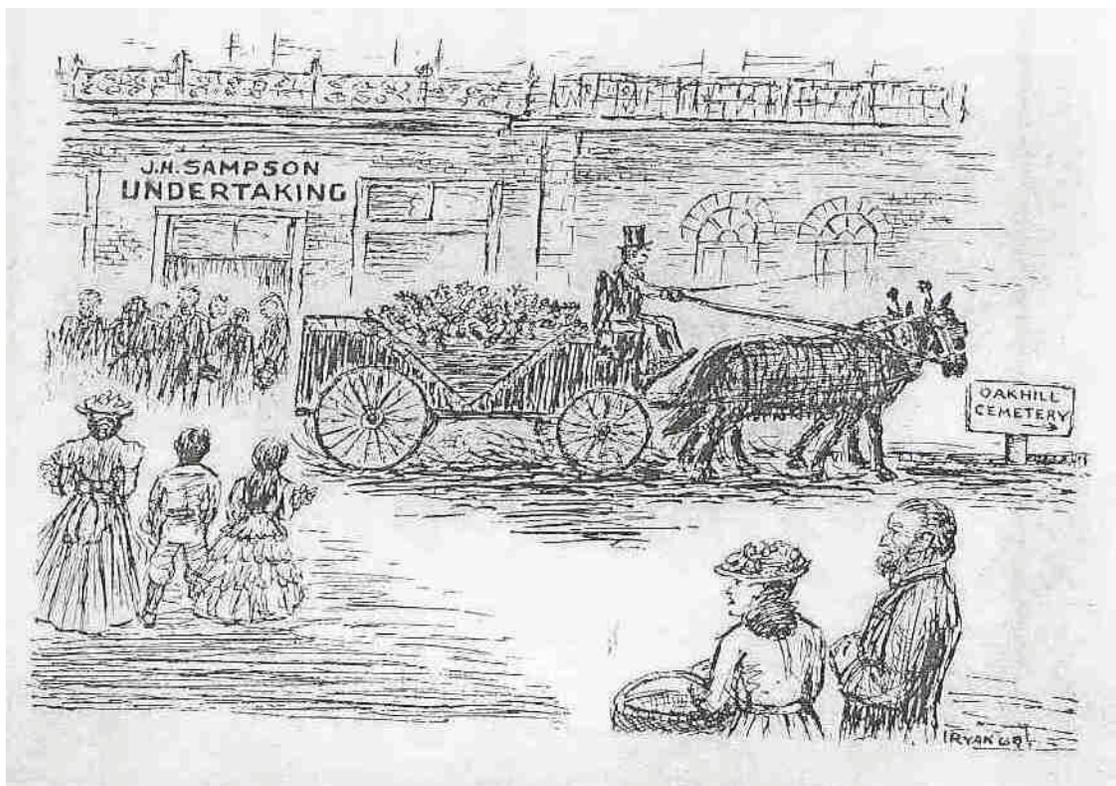


Figure 8.  
Artist's illustration of Sampson's "dead wagon" transporting a body to Oak Hill Cemetery.  
(Ryan and Ryan 1970)



Figure 9.  
The Wohlford family's white Italian marble monument.  
Manufactured by, and brought to Oak Hill, by Teft Monument Works of Riverside.

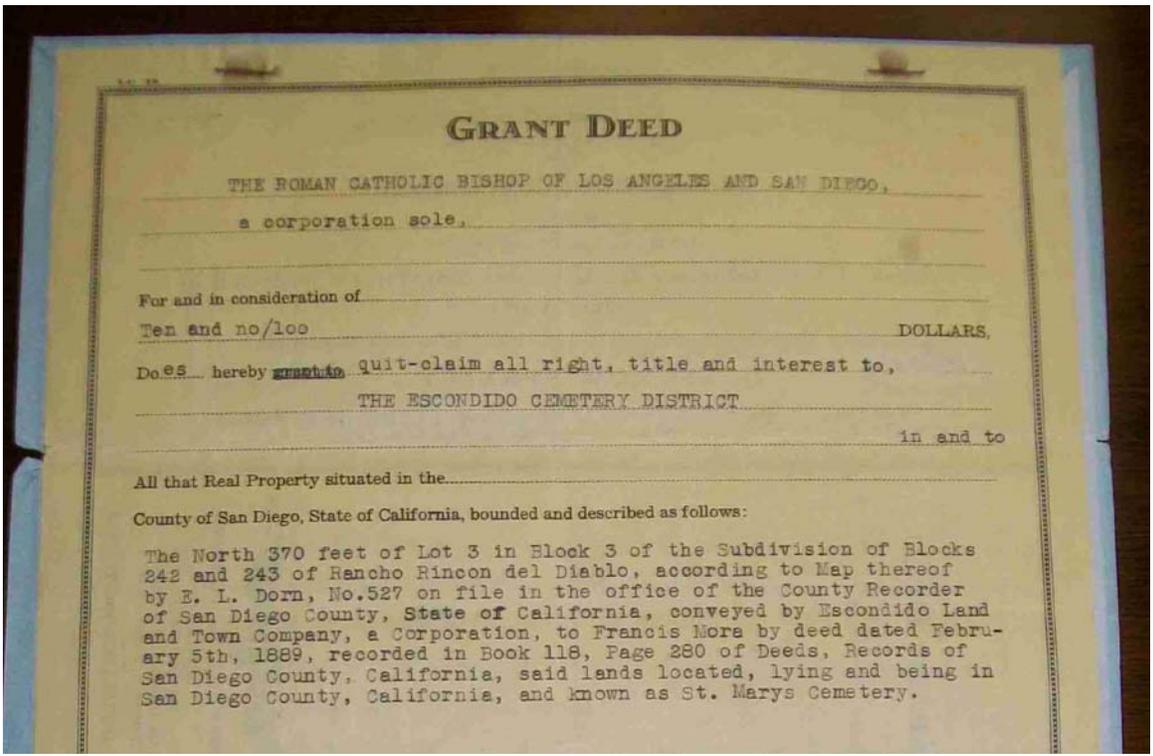


Figure 10.

An example of one of the documents showing Oak Hill's reacquisition of the deeds for the Catholic, Mennonite, Masonic, G.A.R. and Odd Fellows sections.

This one is for Catholic Hill, relinquishing title by the Roman Catholic Bishop of Los Angeles and San Diego.



Figure 11.  
An example of a burial pattern reflecting a removed road.



Figure 12.

A large concentration of early temporary markers, dating from the 1880s and 1890s, now gives a clue that this area originally housed "indigent" burials in the Potter's Field.



Figure 13.

View of the lake and niches for cremated remains. The 3 concrete surfaces in the foreground cap segments of the black fronted niche walls as seen in the background, and the cremains are placed in soil.



Figure 14.  
The niches are fronted by a series of large black polished stone slabs segmented inside for individual cremains.



Figure 15.  
The cement walkways in the niche area are sharply angular with a decided zigzag placement, in contrast to the curvilinear placements of the niche walls.

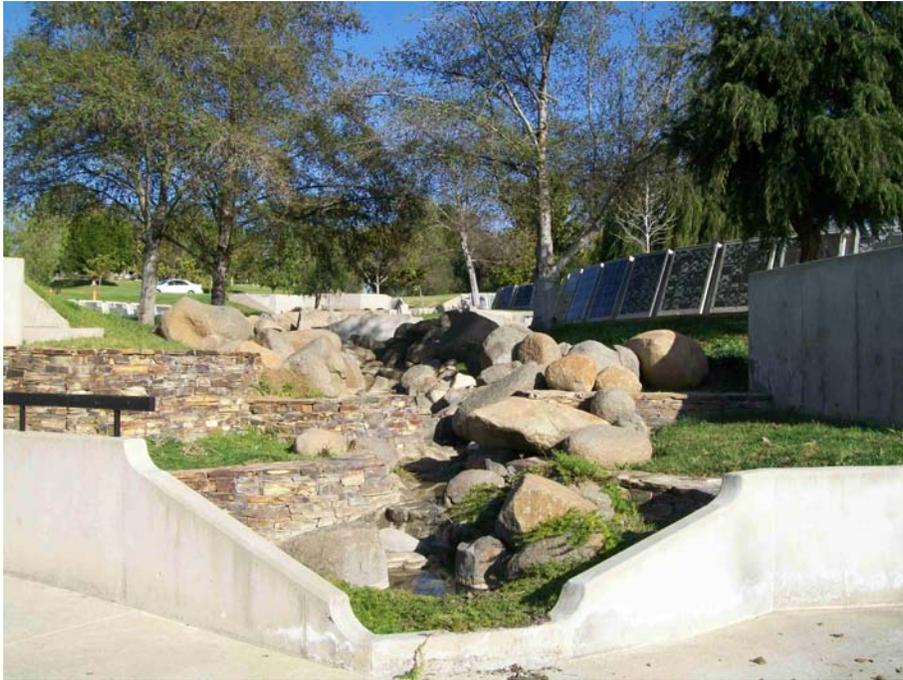


Figure 16.

View of the landscaped waterway that runs downhill to the lake.

Note also the use of rock in the surrounding retaining walls.

The car in the background is parked in the nearby large crescent shaped parking lot.

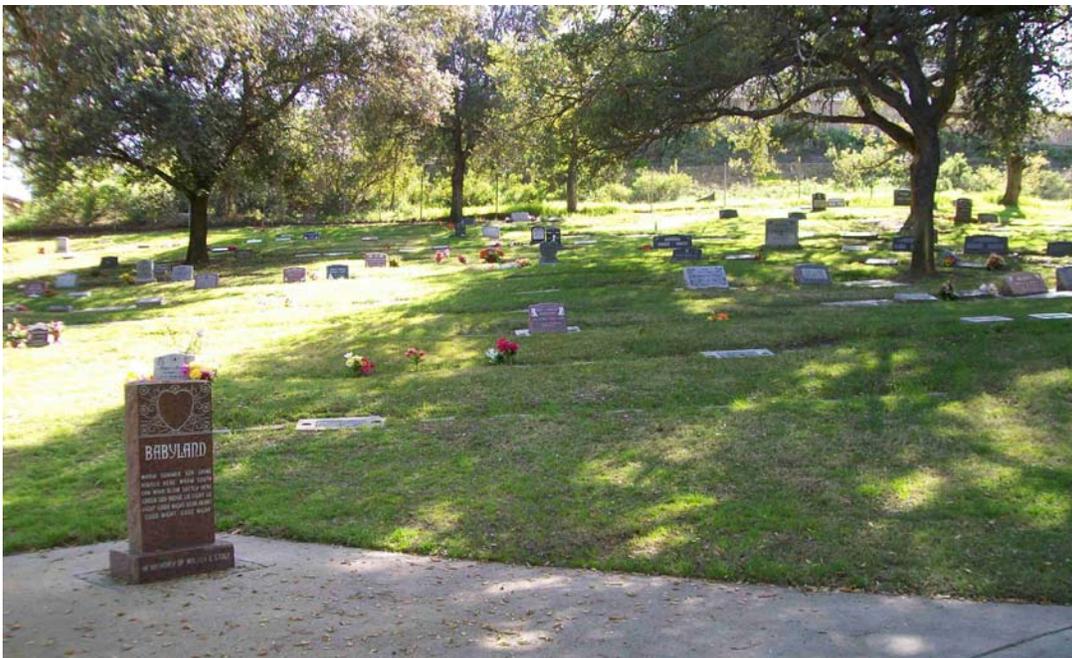


Figure 17.

Overview of a portion of Babyland, with the monument in the foreground.

Widths of burial lanes are narrow and reflect the smaller sizes of the population interred there.



Figure 18.  
A natural boulder gravestone.



Figure 19.  
A type of marker that has been restricted from Oak Hill is the flat full length slab.  
Very rare example at Oak Hill.



Figure 20.  
Several of the early military issue marble Veteran's markers are visible  
in this overview of the original Veteran's section.



Figure 21.  
An example of one of the later military issued bronze markers.



Figure 22.

An example of a concrete marker at Oak Hill showing degradation. Like marble, concrete is no longer an acceptable material for a permanent marker.



Figure 23.  
Example of the concrete temporary markers Oak Hill places to mark a burial.



Figure 24.  
A permissible example of the exception to wooden markers at Oak Hill.  
These wooden crosses are traditional to Serbian burial custom.  
After 6 months the wooden crosses are removed and a permanent marker installed.



Figure 25.

Rare in San Diego County, Mina Ward's hollow metal casting of zinc-bronze alloy is an example of this marker type at Oak Hill.

Mina Ward was one of the many subjects reenacted during Echoes of the Past.

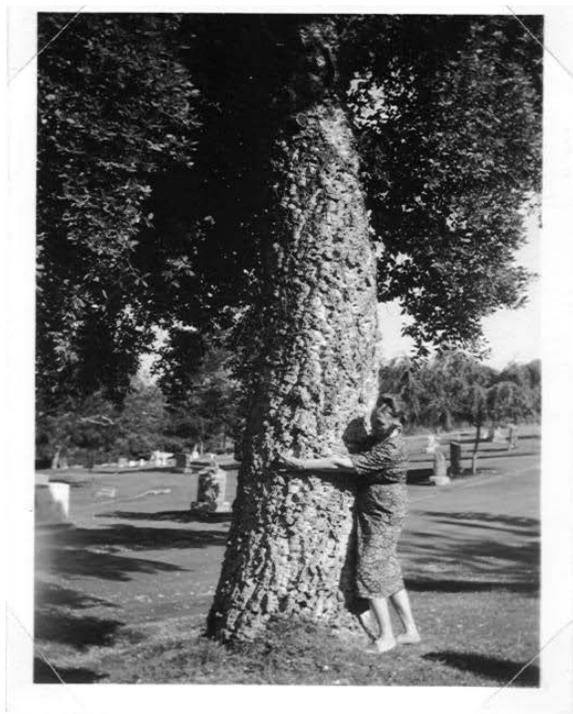


Figure 26.

An example of a ceramic image of the decedent, incorporated into the marker.  
This unique infant's portrait is further protected by a hinged cover.



Figure 27.  
One of Oak Hill's beautiful marble angel statues.



PC-91-178



Figure 28.

Frances Ryan with the cork oak.

In the lower image she is pointing to its deeply serrated bark stuffed with acorns.  
(Courtesy Escondido Public Library, Pioneer Room, Frances Beven Ryan Collection).



Figure 29.  
Landscape view depicting some of the trees of Oak Hill,  
including cypress, queen palm, ash, elm, live oak, cork oak, sycamore.



Figure 30.

An example of cultural affinity exhibited by the lettering type on a marker.



Figure 31.

A pebble offering.

Traditional to many cultures, sometimes the small stones are brought by the family to the cemetery and given to funeral participants to place at the gravesite.



Figure 32.

Sam Wing of Escondido, tending Chinese graves at Oak Hill.  
 These 3 burials were disinterred and shipped for proper permanent burial in China in 1913.  
 Photograph is not dated .

(Courtesy Escondido Public Library, Pioneer Room, Frances Beven Ryan Collection)



Figure 33.

Very few markers dating to the early Mennonite period are still evident.

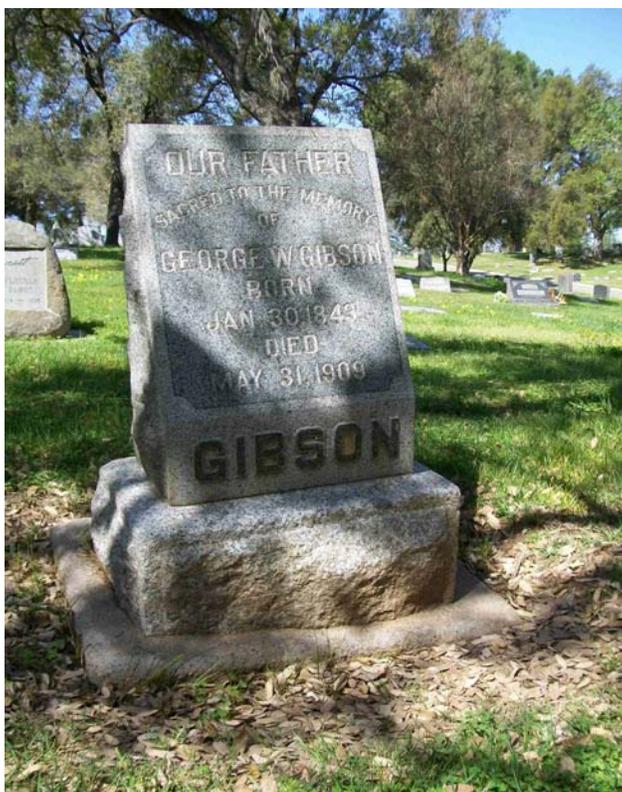


Figure 34.  
One Oak Hill's Confederate burials, note the lack indication that the decedent was involved in the Civil War.

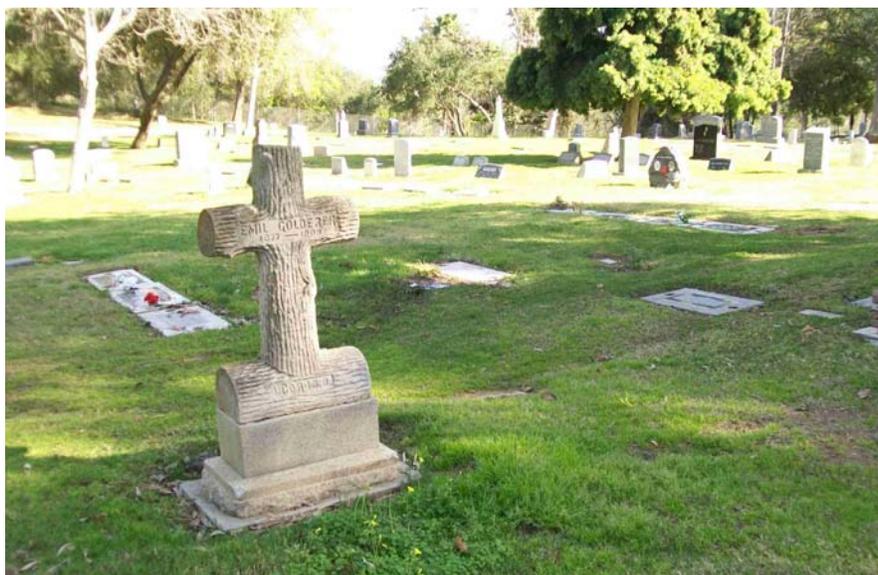


Figure 35.  
A Woodmen of the World gravestone.  
Their markers often include some sort of representation of a tree.

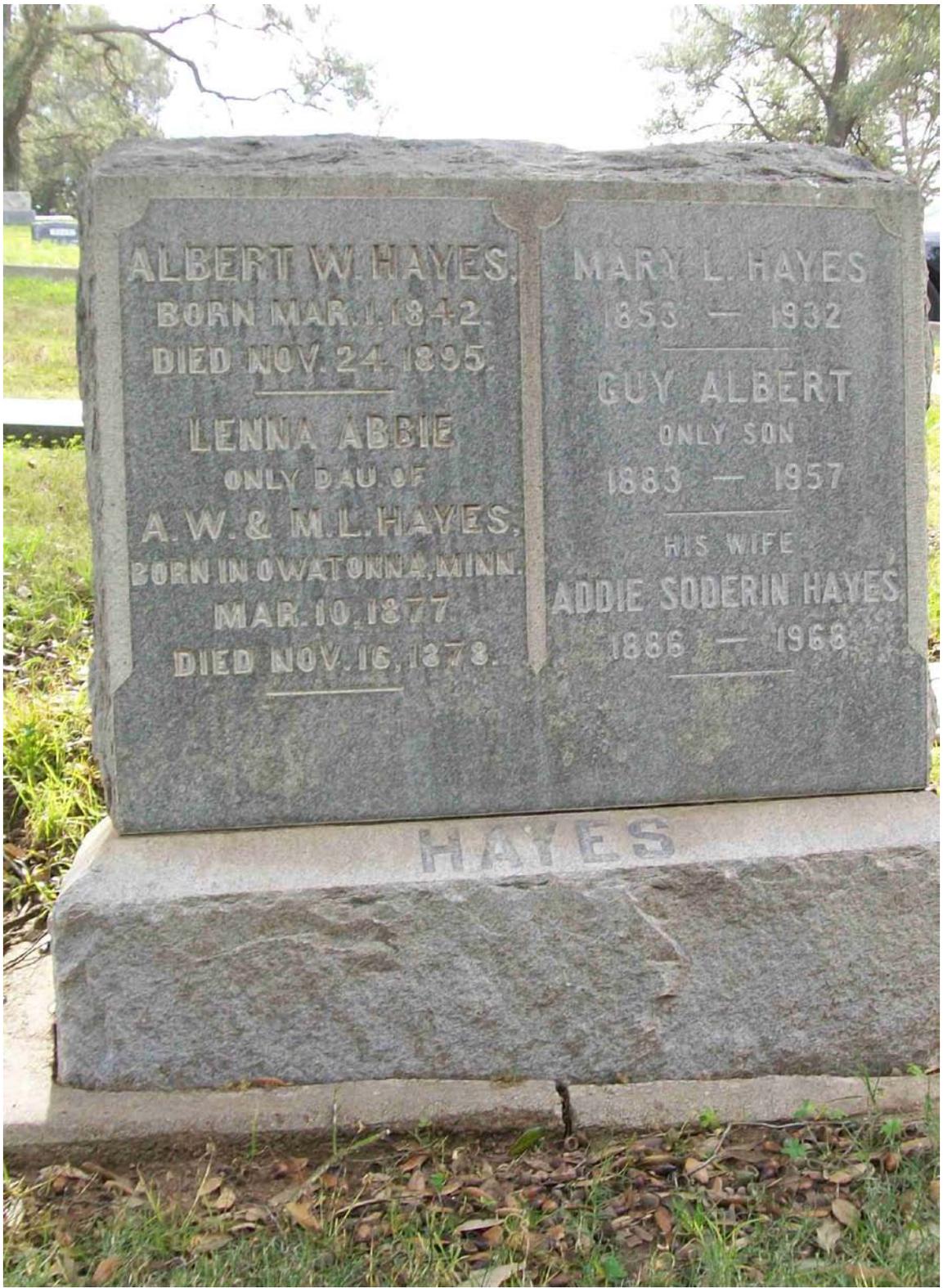


Figure 36.  
The earliest known burial date at Oak Hill is Lenna Abbie Hayes,  
November 16, 1878.



Figure 37.  
Rose Megget, a direct descendant of the earliest landowner in the area,  
Juan Bautista Alvarado, is buried at Oak Hill.



Figure 38.  
The simple marker for members of the deJong family  
who emigrated from Holland to Escondido.



Figure 39.  
Frank and Yolande Hopkins,  
buried side by side near the extreme south fence boundary.



Figure 40.  
The temporary marker for G. Holm signifies the oldest person known,  
at 108 years of age, buried at Oak Hill.



Figure 41.  
The marker for Susie E. Walter.



Figure 42.  
Example of Oak Hill's extensive record keeping.  
This is a map book page depicting the locations of the burial plots.

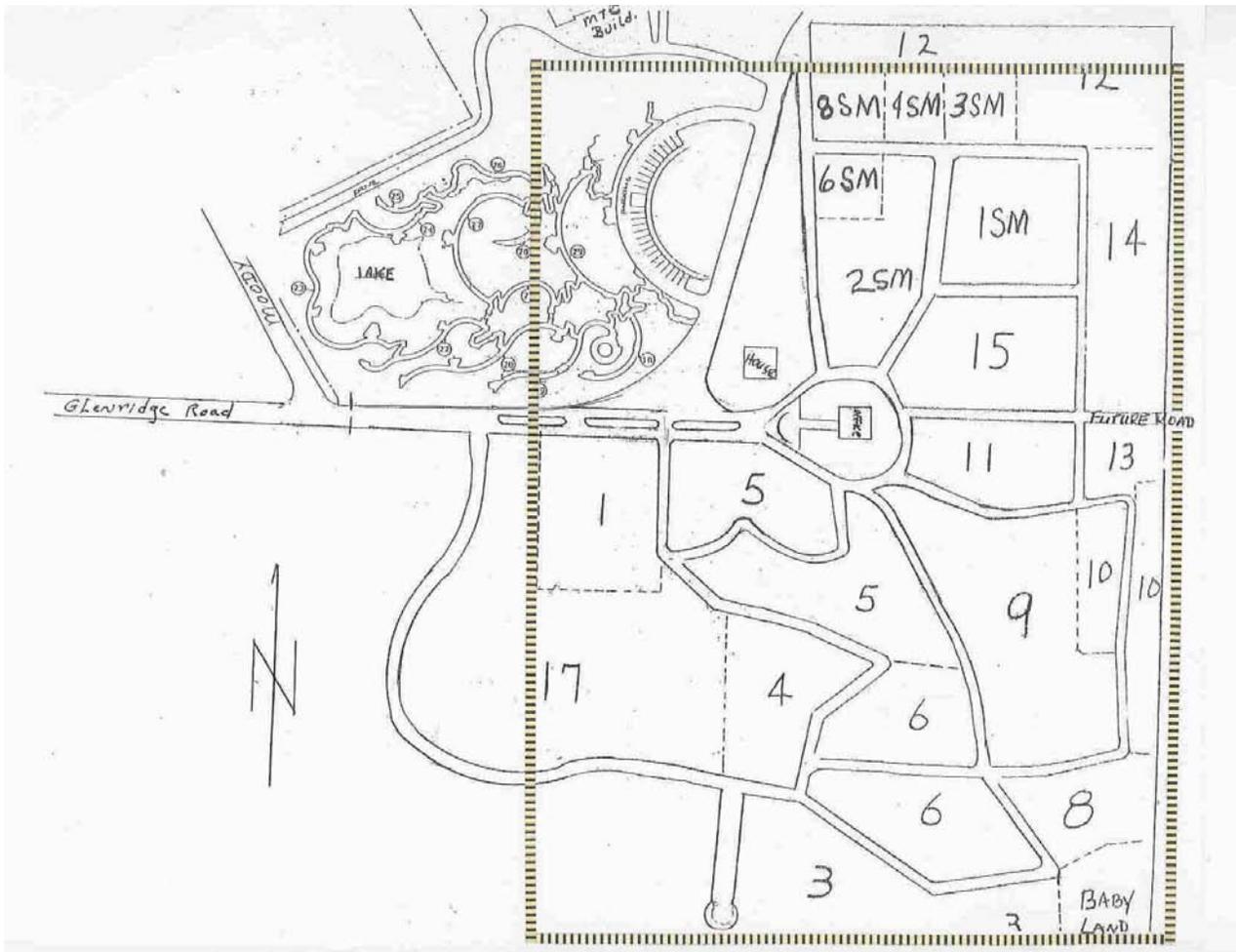


Figure 43.  
The current locator map given to researchers.  
The dashed line is the approximate original 34 acre cemetery boundary.  
Note how road changes have bisected some of the original numbered sections.  
"SM" indicates the Saint Mary's Catholic section.  
Compare to Figure 5.

## APPENDIX 2:

List of people recreated during Oak Hill's Echoes Of the Past; those for 2010 are planned.

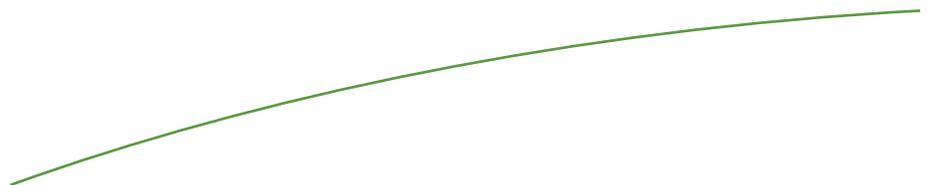
YEAR	PERSON	NOTES
2004	Andy Andreasen	First dogcatcher, electrical inspector, chief of police, mayor and much beloved member of the community
2004	Rube and Blanche Nelson	Proprietors of Rube's Fabulous Country Corner, a store
2004	Doctor David Crise	Longtime community physician arriving in 1887
2004	Isaac Tabor	Civil War veteran
2004	William and Emma Hoffmann	Pastor and wife
2004	Jim Londos	World famous wrestler
2004	George Thomas	Founder of Escondido
2004	Sallie Wohlford	Founder of the Women's Club and "society matron").
2005	Max Atilano	Musician and citrus foreman
2005	Honora and Teresa Carroll	Homesteaders where Lake Hodges now is
2005	Justine Fenton	Socialite
2005	Hank Henry	Race car driver
2005	Valentine Katzenberger	City builder
2005	Harry Sternberg	Artist
2006	Mary Bankhead	Community volunteer
2006	William "Billy" Bevan Harris	Silent film actor
2006	James B. Dixon	Water management pioneer
2006	Lucy Turrentine	Newspaper employee
2006	Eloise Perkins	Journalist and local historian
2006	Alonzo R. Moon	Meteorologist and store owner
2006	Byron and Mary Hinman	Pioneers and hotel owners
2008	Rose McGookin Culp	Escondido pioneer and suffragist
2008	Lloyd "Lefty" Mitchell	City manager, police chief and founder of the Boys Club
2008	Alvin Dunn	Founder of the <i>Escondido Advocate</i> newspaper
2008	Hetee Mallory Wade	Teacher
2008	William and Laetitia Wistar Prior	They planted the first avocado tree in San Diego County
2009	Event was cancelled	

<b>YEAR</b>	<b>PERSON</b>	<b>NOTES</b>
2010	Clarence Friend	World famous amateur astronomer
2010	Anna Von Seggern Engle	Early female lawyer who came from a pioneer family
2010	Graham Humphrey, Sr.	Owned a sheet metal shop also served in city government
2010	Dr. Anna Searing	Early female physician that came to Escondido in 1890 after her retirement
2010	William H. Baldrige	Escondido's second pharmacist, civic leader



Appendix D

GEOTECHNICAL INVESTIGATION



**GEOTECHNICAL EVALUATION  
CEMETERY AREA WATER PIPELINE  
REPLACEMENT PROJECT  
ESCONDIDO, CALIFORNIA**

**PREPARED FOR:**

Black & Veatch  
300 Rancheros Drive, Suite 250  
San Marcos, California 92069

**PREPARED BY:**

Ninyo & Moore  
Geotechnical and Environmental Sciences Consultants  
5710 Ruffin Road  
San Diego, California 92123

February 22, 2010  
(Revised March 4, 2010)  
Project No. 106513001

February 22, 2010  
(Revised March 4, 2010)  
Project No. 106513001

Mr. David Cover  
Black & Veatch  
300 Rancheros Drive, Suite 250  
San Marcos, California 92069

Subject: Geotechnical Evaluation  
Cemetery Area Water Pipeline Replacement Project  
Escondido, California

Dear Mr. Cover:

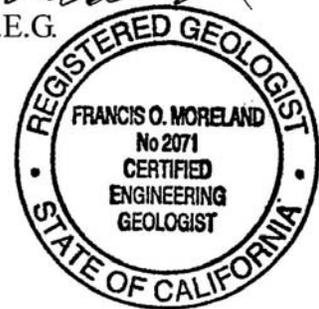
In accordance with your authorization, we have performed a geotechnical evaluation for the proposed Cemetery Area Water Pipeline Replacement project in Escondido, California. This report presents our geotechnical findings, conclusions, and recommendations regarding the proposed project. Our report was prepared in accordance with our proposal dated June 17, 2009. We appreciate the opportunity to be of service on this project.

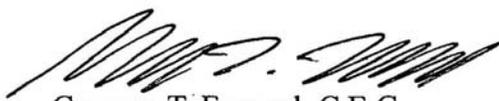
Sincerely,  
**NINYO & MOORE**

  
Chet E. Robinson, P.E., G.E.  
Project Engineer



  
Francis O. Moreland, C.E.G.  
Senior Geologist



  
Gregory T. Farrand, C.E.G.  
Principal Geologist

CER/FOM/AN/GTF/gg

Distribution: (5) Addressee

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**Figures**

Figure 1 – Site Location Map

Figure 2 – Boring and Seismic Refraction Location Map

Figure 3 – Fault Location Map

Figure 4 – Lateral Earth Pressures for Temporary Cantilevered Shoring

Figure 5 – Lateral Earth Pressures for Braced Excavation (Granular Shoring)

Figure 6 – Thrust Block Lateral Earth Pressure Diagram

**Appendices**

Appendix A – Boring Logs

Appendix B – Seismic Refraction Survey

Appendix C – Laboratory Testing

## **1. INTRODUCTION**

In accordance with your request and our proposal dated June 17, 2009, we have performed a geotechnical evaluation for the proposed Cemetery Area Water Pipeline Replacement project located in Escondido, California (Figure 1). This report presents our conclusions regarding the geotechnical conditions along the subject alignments and our recommendations for the design and construction of this project.

## **2. SCOPE OF SERVICES**

Ninyo & Moore's scope of services for this project included review of pertinent background data, performance of a geologic reconnaissance and subsurface evaluation, and engineering analysis with regard to the proposed project. Specifically, we performed the following tasks:

- Reviewing background data listed in the References section of this report. The data reviewed included geotechnical reports, topographic maps, geologic data, fault maps, and a site plan for the project.
- Marking the boring locations for clearance of utilities. Underground Service Alert (USA) was notified to mark the existing underground utilities at the boring locations.
- Performing a geologic reconnaissance of the proposed alignments, including the observation and mapping of geologic conditions and the evaluation of possible geologic hazards, which may impact the proposed project.
- Performing a subsurface evaluation consisting of drilling 13 exploratory borings to evaluate the subsurface conditions.
- Performing five seismic refraction traverses at selected locations along the alignments to evaluate subsurface conditions, particularly with respect to excavatability.
- Performing geotechnical laboratory testing on selected soil samples.
- Compiling and analyzing the data obtained.
- Preparing this report presenting our findings, conclusions, and recommendations regarding the geotechnical design and construction of the project.

### **3. PROJECT DESCRIPTION**

The Cemetery Area Water Pipeline Replacement Project consists of the replacement of approximately 12,000 LF of water pipelines. We understand the replacement water pipelines will range from 6 to 30 inches in diameter. The existing pipelines to be replaced largely cross natural hillside terrain or developed areas. According to our background review of the above mentioned reports and aerial photographs, portions of the alignment will be in regions with steeply sloping natural terrain.

### **4. ALIGNMENT DESCRIPTION**

The project alignments exist in areas that are currently developed and occupied by existing pipelines, in paved roads, through cemetery land, avocado groves, private driveways, and private land. Surface elevations along the pipeline alignment range from about approximately 440 feet above mean sea level (MSL) at the eastern end of the alignments near the Eagle Crest Golf Course to about 955 feet MSL at the alignment's western extent on Mountain View Drive. The eastern and southern areas of the alignments exist in areas of steep terrain, sloping down to the east to Santa Ysabel Creek. The western and northern areas of the alignments exist in gentle hilly terrain with gradual to moderate changes in elevation. Vegetation, in areas not covered by existing improvements, generally consists of a light to moderate growth of grass and brush.

### **5. SUBSURFACE EXPLORATION AND LABORATORY TESTING**

Our field exploration of the subject site included a geologic reconnaissance and subsurface exploration conducted on January 7 and 8, February 8, 2010. The subsurface evaluation consisted of drilling 13 exploratory borings to depths of up to approximately 16.5 feet and performing five seismic refraction traverses. The borings were drilled using a truck-mounted drill rig equipped with 8-inch diameter hollow-stem augers. The boring and seismic refraction traverse locations were selected based on the results of our background review and field reconnaissance, as well as with coordination with Black & Veatch and the City of Escondido. The approximate locations of the exploratory borings and seismic refraction traverses are presented on Figure 2. The boring logs are presented in Appendix A. The seismic refraction survey results are presented in Appendix B.

Laboratory testing of representative soil samples included in-situ dry density and moisture content, gradation, direct shear tests, and soil corrosivity. The results of the in-situ dry density and moisture content tests are presented on the boring logs in Appendix A. The results of the other laboratory tests performed are presented in Appendix C.

## **6. GEOLOGY AND SUBSURFACE CONDITIONS**

Our findings regarding regional and site geology and groundwater conditions at the subject site are provided in the following sections.

### **6.1. Regional and Geologic Setting**

The project area is situated in the Peninsular Ranges Geomorphic Province. This geomorphic province encompasses an area that extends approximately 900 miles from the Transverse Ranges and the Los Angeles Basin south to the southern tip of Baja California (Norris and Webb, 1990). The province varies in width from approximately 30 to 100 miles. In general, the province consists of rugged mountains underlain by Jurassic metavolcanic and metasedimentary rocks, and Cretaceous igneous rocks of the southern California batholith. The portion of the province in San Diego County that includes the project area is underlain by Cretaceous age granitic rock.

The Peninsular Ranges Province is traversed by a group of sub-parallel faults and fault zones trending roughly northwest. Several of these faults, which are shown on Figure 3, are considered active faults. The Whittier–Elsinore, and San Jacinto faults are active fault systems located northeast of the project area and the Rose Canyon, Agua Blanca–Coronado Bank and San Clemente faults are active faults located west of the project area. Major tectonic activity associated with these and other faults within this regional tectonic framework consists primarily of right-lateral, strike-slip movement. Further discussion of faulting relative to the site is provided in the Faulting and Seismicity section of this report.

## **6.2. Site Geology**

Geologic units encountered during our reconnaissance and subsurface evaluation included fill, alluvium, topsoil, decomposed granite and granitic rock. Generalized descriptions of the units encountered are provided in the subsequent sections. More detailed descriptions are provided on the boring logs in Appendix A.

### **6.2.1. Fill**

Fill materials were encountered in borings B-1, B-2, B-4, and B-5 from the ground surface to depths of up to approximately 5 feet below ground surface (bgs). As encountered, the materials generally consisted of brown to very dark brown and dark reddish brown, damp to moist, loose to medium dense, silty fine sand with a trace of clay to clayey fine sand. Scattered gravel and cobbles were present and some fill materials were micaceous.

### **6.2.2. Alluvium**

Alluvium was encountered in borings B-7 and B-8 from the ground surface to depths of up to approximately 16 feet bgs. As encountered, the materials generally consisted of reddish brown to very dark reddish brown and black, damp to wet, loose to medium dense, silty, clayey fine sand to clayey fine sand, with a trace of medium to coarse sand and gravel. Some organics were present and the material was micaceous.

### **6.2.3. Topsoil**

Topsoil was encountered in borings B-1, B-3, B-6, B-7, B-11, and B-12 from the ground surface, underlying fill, or alluvium to depths of up to approximately 5.5 feet bgs. As encountered, the materials generally consisted of reddish brown to very dark reddish brown, damp to moist, loose to medium dense, silty to clayey fine sand and damp, very dense, fine sandy silt. A trace of medium to coarse sand and scattered coarse gravel and cobbles up to 4 inches in diameter were encountered in the topsoil. Some material was micaceous. A gradational contact separated the topsoil and the underlying decomposed granite.

#### **6.2.4. Decomposed Granite**

Decomposed granite was encountered in borings B-1 through B-4, B-6, B-7, and B-9 through B-12 from the ground surface or underlying fill or topsoil to depths of up to approximately 9 feet bgs (the total depth explored in B-2). As encountered, the materials generally consisted of brown to dark brown and pale reddish brown to very dark reddish brown, damp to moist, loose to very dense, silty to clayey fine to coarse sand with scattered gravel. Refusal in the decomposed granite was met in boring B-2. A gradational contact separated the decomposed granite and the underlying granitic rock.

#### **6.2.5. Granitic Rock**

Granitic rock observed in numerous outcrops and was encountered in our borings along the proposed pipeline alignment. The granitic rock encountered is part of the southern California batholith and has been mapped as Granodiorite of Woodson Mountain. The granite is generally light gray and reddish brown, dry to damp, and weathered. Weathering of the granitic rock has resulted in numerous subrounded boulders being present at the surface along the subject alignment. The weathering decreases with depth. Based on our subsurface evaluation, fresh granitic rock, which will necessitate blasting or rock breaking equipment, should be anticipated at relatively shallow depths. Much of the rock can be classified as hard to very hard based on criteria of the U. S. Department of the Interior, Bureau of Reclamation (1989).

### **6.3. Rippability**

The excavatability of the pipeline along the portions underlain by fill and alluvium is such that it can be accomplished by conventional and heavy earth moving equipment. Portions of the pipeline underlain by granitic rock will necessitate special provisions including heavy ripping, rock breaking, and/or blasting.

### **6.4. Groundwater**

Based on our geologic reconnaissance and subsurface evaluation, we anticipate that the regional groundwater table is likely to be deeper than 50 feet beneath much of the proposed alignments. Although not encountered in borings B-7 and B-8, shallow groundwater may be

encountered during construction along the eastern most alignment (north and west of Old Ranch Road). Due to the location of this portion of the alignment in a valley bottom, groundwater will rise during wetter times of the year. Variations in groundwater level may occur due to variations in ground surface topography, subsurface geologic conditions and structure, rainfall, and other factors.

### **6.5. Geologic Hazards**

In general, hazards associated with seismic activity include ground surface rupture, strong ground motion, tsunamis, liquefaction, and landsliding. These considerations and other geologic hazards such as landsliding are discussed in the following sections.

## **7. FAULTING AND SEISMICITY**

The subject alignments are not located within a State of California Earthquake Fault Zone (formerly known as an Alquist-Priolo Special Studies Zone) (Hart and Bryant, 1997). However, the alignments are located in a seismically active area and the potential for strong ground motion in the project area is considered significant during the design life of the project. Figure 3 shows the approximate project location relative to the major faults in the region. The active Elsinore fault (Julian segment), with a maximum moment magnitude of 7.1, is located approximately 14 miles east of the project area. The active Rose Canyon fault, with a maximum moment magnitude of 7.2, is located approximately 19 miles west of the project area.

The principal seismic hazards at the subject site are surface fault rupture, ground motion, liquefaction, dynamic settlement, landslides, tsunamis and seiches. A brief description of these hazards and the potential for their occurrences on site are discussed below.

### **7.1. Surface Fault Rupture**

Based on our review of the referenced literature and our site reconnaissance, no active faults are known to cross the project site. Therefore, the probability of damage from surface fault

rupture is considered to be low. However, lurching or cracking of the ground surface as a result of nearby seismic events is possible.

## **7.2. Ground Motion**

The 2007 California Building Code (CBC) recommends that the design of structures be based on the horizontal peak ground acceleration (PGA) having a 2 percent probability of exceedance in 50 years which is defined as the Maximum Considered Earthquake (MCE). The statistical return period for  $PGA_{MCE}$  is approximately 2,475 years. The probabilistic  $PGA_{MCE}$  for the site was calculated as 0.46g using the United States Geological Survey (USGS) (USGS, 2009) ground motion calculator (web-based). The design PGA was estimated to be 0.31g using the USGS ground motion calculator. These estimates of ground motion do not include near-source factors that may be applicable to the design of structures on site.

## **7.3. Liquefaction and Seismically Induced Settlement**

Liquefaction is the phenomenon in which loosely deposited granular soils with silt and clay contents of less than approximately 35 percent and non-plastic silts located below the water table undergo rapid loss of shear strength when subjected to strong earthquake-induced ground shaking. Ground shaking of sufficient duration results in the loss of grain-to-grain contact due to a rapid rise in pore water pressure, and causes the soil to behave as a fluid for a short period of time. Liquefaction is known generally to occur in saturated or near-saturated cohesionless soils at depths shallower than 50 feet below the ground surface. Factors known to influence liquefaction potential include composition and thickness of soil layers, grain size, relative density, groundwater level, degree of saturation, and both intensity and duration of ground shaking.

Our background data review, previous experience in the project area, and subsurface exploration indicate that the proposed alignments are not underlain by a near-surface groundwater table. Therefore, the potential for liquefaction or seismically induced settlement along the project alignments is not a design consideration.

#### **7.4. Landslides**

The project area is not mapped as an area considered susceptible to landslides. Based on our review of the relevant geologic maps, aerial photographs, and our geologic reconnaissance, landslide hazards are not a design consideration for the project.

### **8. CONCLUSIONS**

Based on our review of the referenced background data, geologic field reconnaissance, subsurface exploration, and laboratory testing, it is our opinion that construction of the proposed project is feasible from a geotechnical standpoint provided the following geotechnical considerations are considered:

- Granitic rock materials requiring blasting, heavy ripping, or rock breaking equipment will be encountered during the excavation of the proposed pipeline. In addition, excavations in granitic rock may generate oversize materials that may not be suitable for use as backfill. Blasting should be performed by a licensed and qualified contractor and conducted in accordance with the U.S. Office of Surface Mining, Reclamation, and Enforcement Blasting Guidance Manual recommendations.
- Areas of adverse jointing and fracturing may be encountered during trench excavation which would necessitate the use of shoring or other methods of stabilization.
- Much of the excavation along the alignment is anticipated to generate significant quantities of rock clasts more than 3 inches in dimension. Disposal or crushing of this material should be anticipated. Deleterious material, such as trash, was generally not encountered during our reconnaissance or subsurface exploration.
- No active faults are reported underlying or adjacent to the site. The active Elsinore Fault zone has been mapped approximately 14 miles east of the site.

### **9. RECOMMENDATIONS**

Based on our understanding of the project, the following recommendations are provided for the design and construction of the proposed project.

## **9.1. Earthwork**

In general, earthwork should be performed in accordance with the recommendations presented in this report. Ninyo & Moore should be contacted for questions regarding the recommendations or guidelines presented herein.

### **9.1.1. Site Preparation**

Prior to excavation, the project site should be cleared of abandoned utilities (if present) and stripped of rubble, debris, vegetation, any loose, wet, or otherwise unstable soils, as well as surface soils containing organic material. Materials generated from the clearing operations should be removed from the site and disposed of at a legal dumpsite away from the project area.

### **9.1.2. Excavation Characteristics**

As described in the boring logs contained in Appendix A, and the seismic refraction lines included in Appendix B, the alignment of the proposed pipeline is underlain by shallow depths of fill, topsoil, and alluvium with varying thicknesses. The subsurface conditions revealed by the borings indicate that the relatively excavatable materials including fill, topsoil, and alluvium are highly variable and range from approximately a few inches to six feet below the ground surface. The alluvium encountered in boring B-8 was noted to approximately 16 feet. The results of our borings, including the blow counts recorded in our borings as well as the results of the seismic refraction survey, indicate the topsoil, fill, and alluvium is generally excavatable with conventional heavy equipment.

The blow counts and the seismic refraction survey results within the granitic rock indicate that excavation within the granitic rock will necessitate special construction considerations, including heavy ripping, rock breaking, and/or blasting. We recommend a specialty contractor with significant experience in pipelines be utilized to achieve the desired construction.

### **9.1.3. Materials for Fill**

On-site soils with an organic content of less than approximately 3 percent by volume (or 1 percent by weight) are suitable for use as fill. Fill material should generally not con-

tain rocks or lumps over approximately 4 inches, and generally not more than approximately 40 percent larger than  $\frac{3}{4}$ -inch. Utility trench backfill material should not contain rocks or lumps over approximately 3 inches. Soils classified as silts or clays should not be used for backfill in the pipe zone. Larger chunks, if generated during excavation, may be broken into acceptably sized pieces or disposed of off site. Imported fill material, if needed for the project, should generally be granular soils with a low expansion potential (EI of 50 or less as evaluated by the American Society for Testing and Materials [ASTM] D 4829). Import material should also be non-corrosive in accordance with the Caltrans (2003) corrosion guidelines. Materials for use as fill should be evaluated by Ninyo & Moore's representative prior to importing or use as backfill.

## **9.2. Temporary Excavations**

We recommend that trenches and excavations be designed and constructed in accordance with Occupational Safety and Health Administration (OSHA) regulations. These regulations provide trench sloping and shoring design parameters for trenches up to 20 feet deep based on the soil types encountered. Trenches over 20 feet deep should be designed by the Contractor's engineer based on site-specific geotechnical analyses. For planning purposes, we recommend that the following OSHA soil classifications be used:

<i>Fill, Topsoil, and Alluvium</i>	<i>Type C</i>
<i>Decomposed Granite and Granitic Rock</i>	<i>Type B</i>

Upon making the excavations, the soil/rock classifications and excavation performance should be evaluated in the field by Ninyo & Moore in accordance with OSHA regulations. Temporary excavations should be constructed in accordance with OSHA recommendations. For trench or other excavations, OSHA requirements regarding personnel safety should be met by using appropriate shoring (including trench boxes) or by laying back the slopes no steeper than 1.5:1 (horizontal:vertical) in fill or alluvium, and 1:1 in granitic rock. Temporary excavations that encounter seepage may need shoring or may be stabilized by placing sandbags or gravel along the base of the seepage zone. Excavations encountering seepage should be evaluated on a

case-by-case basis. Wet soils may be subject to pumping under heavy equipment loads. On-site safety of personnel is the responsibility of the contractor.

### **9.3. Shoring**

It is anticipated that the pipeline will be installed with conventional cut-and-cover trench methods. We anticipate that shoring systems with bracings will be installed for trenches over 4 feet deep. Shoring systems may be constructed through fill, alluvium, or granitic rock materials. The shoring system should be designed using the lateral earth pressures shown on Figure 4 for cantilevered shoring and Figure 5 for braced shoring. The recommended design pressures are based on the assumptions that the shoring system is constructed without raising the ground surface elevation behind the sheet piles, that there are no surcharge loads, such as soil stockpiles and construction materials, and that no loads act above a 1:1 plane extending up and back from the base of the sheet pile system. The contractor should include the effect of any surcharge loads on the lateral pressures against the sheet pile wall.

We anticipate that settlement of the ground surface will occur behind the shoring wall during excavation. The amount of settlement depends heavily on the type of shoring system, the shoring contractor's workmanship, and soil conditions. We recommend that structures/improvements in the vicinity of the planned shoring installation be reviewed with regard to foundation support and tolerance to settlement. To reduce the potential for distress to adjacent improvements, we recommend that the shoring system be designed to reduce the ground settlement behind the shoring system to ½-inch or less. Possible causes of settlement that should be addressed include settlement during shoring installation, excavations, construction vibrations, dewatering, and removal of the support system.

The contractor should retain a qualified and experienced engineer to design the shoring system, evaluate the adequacy of these parameters and provide modifications for the design. We recommend that the contractor take appropriate measures to protect workers. OSHA requirements pertaining to worker safety should be observed.

#### **9.4. Excavation Bottom Stability**

In general, we anticipate that the bottom of the excavations will be stable and should provide suitable support to the proposed improvements. Excavations that encounter seepage may be unstable. In general, unstable bottom conditions may be mitigated by overexcavating the excavation bottom to suitable depths and replacing with compacted fill. Recommendations for stabilizing excavation bottoms should be based on evaluation in the field by the geotechnical consultant at the time of construction.

#### **9.5. Lateral Pressures for Thrust Blocks**

Thrust restraint for buried pipelines may be achieved by transferring the thrust force to the soil outside the pipe through a thrust block. Thrust blocks may be designed using the lateral passive earth pressures presented on Figure 6. Thrust blocks should be backfilled with granular backfill material, and compacted in accordance with recommendations presented in this report.

#### **9.6. Modulus of Soil Reaction**

We anticipate some trenching will be used on this project. The modulus of soil reaction is used to characterize the stiffness of soil backfill placed at the sides of buried flexible pipelines for the purpose of evaluating deflection caused by the weight of the backfill above the pipe. For pipelines constructed in granular fill, alluvium, decomposed granite, and granitic rock, we recommend that a modulus of soil reaction of 1,500 pounds per square inch (psi) be used for design for 0 to 10 feet deep excavations and 3,000 psi for excavations exceeding 10 feet depth, provided that granular bedding material is placed adjacent to the pipe, as recommended in this report.

#### **9.7. Pipe Bedding**

We recommend that pipes be supported on 6 inches or more of granular bedding material such as sand with a Sand Equivalent (SE) value of 30 or more. Bedding material should be placed around the pipe and 12 inches or more above the top of the pipe in accordance with the recent edition of the Standard Specifications for Public Works Construction (“Greenbook”) or the contract documents, whichever is more stringent. Where wet and loose or soft

soil conditions are encountered, the trench excavation should be extended to approximately 1 foot or more below the pipe invert elevation and should be backfilled with gravel wrapped in filter fabric.

Special care should be taken not to allow voids beneath and around the pipe. Compaction of the bedding material and backfill should proceed up both sides of the pipe. Trench backfill, including bedding material, should be placed in accordance with the recommendations presented below.

### **9.8. Trench Backfill**

Fill material, including trench backfill and structure backfill, should consist of granular soil with low expansion potential that conforms to the latest edition of the Standard Specifications for Public Works Construction (“Greenbook”) for structure backfill. The clayey fill/alluvial materials are not considered suitable for usage as trench zone (intermediate) backfill. The contractor should be prepared to import soil to the site. The sandy fill/alluvial materials and the decomposed granite materials are considered suitable for re-use as structural fill material. Fill material should be comprised of low-expansion-potential granular soil and should be free of trash, debris, roots, vegetation, or deleterious materials. Fill should generally be free of rocks or hard lumps of material in excess of 4 inches in diameter. Rocks or hard lumps larger than about 4 inches in diameter should be broken into smaller pieces or should be removed from the site. Wet materials generated from on-site excavations should be aerated to a moisture content near the laboratory optimum to allow compaction.

On-site clayey and organic soils encountered during excavation should be selectively removed and stockpiled separately. The organic soils are not considered suitable for bedding material or structural fill and should be disposed of off site. Clayey soils should not be used for bedding material but may be used as backfill in unpaved and landscaped areas.

Imported materials should consist of clean, granular materials with a low expansion potential, corresponding to an expansion index of 50 or less as evaluated in accordance with ASTM D 4829. The corrosion potential of proposed imported soils should also be evaluated if structures will be in contact with the imported soils. Import material should be submitted

to the geotechnical consultant for review prior to importing to the site. The contractor should be responsible for the uniformity of import material brought to the site.

### **9.9. Fill Placement and Compaction**

Fill, structure backfill, and trench backfill should be compacted in horizontal lifts to 90 percent of their maximum dry density as evaluated by ASTM D 1557. Aggregate base and the upper 12 inches of subgrade beneath pavement areas should be compacted to 95 percent of their maximum dry density as evaluated by ASTM D 1557. Fill soils should be placed near their laboratory optimum moisture content as evaluated by ASTM D 1557. The optimum lift thickness of fill will depend on the type of compaction equipment used, but generally should not exceed 8 inches in loose thickness. Special care should be taken to avoid pipe damage when compacting trench backfill above the pipe.

### **9.10. Concrete Slabs**

We understand that above grade slab-on-grade structures with masonry block walls on three sides will be constructed as part of this project. We recommend that these structures include thickened edges for the slabs for the support of the CMU wall enclosures. From a geotechnical standpoint we recommend that the concrete slab be 5 inches thick and that the thickened edges be 12 inches thick. We recommend that concrete slabs be reinforced in accordance with the recommendations of the project structural engineer.

#### **9.10.1. Bearing Capacity**

Concrete slabs bearing on natural materials or compacted fill may be designed based on an allowable bearing capacity of 2,000 pounds per square foot (psf). The allowable bearing capacity value may be increased by one-third when considering loads of short duration such as wind or seismic forces.

#### **9.10.2. Lateral Earth Pressures**

For resistance of foundations to lateral loads, we recommend an allowable passive pressure exerted by an equivalent fluid weight of 250 pounds per cubic foot be used with a

value of up to 2,500 psf. For frictional resistance to lateral loads, we recommend a coefficient of friction of 0.30 be used between soil and concrete. The allowable lateral resistance can be taken as the sum of the frictional resistance and passive resistance provided the passive resistance does not exceed one-half of the total allowable resistance. The passive resistance values may be increased by one-third when considering loads of short duration such as wind or seismic forces.

### **9.11. Corrosion**

Laboratory testing was performed on representative samples of the on-site soils to evaluate pH and electrical resistivity, as well as chloride and sulfate contents. The pH and electrical resistivity tests were performed in accordance with the California Test (CT) 643 and the sulfate and chloride content tests were performed in accordance with CT 417 and 422, respectively. These laboratory test results are presented in Appendix B.

The results of the corrosivity testing indicated electrical resistivities ranging from 3,000 to 5,100 ohm-cm, soil pH values ranging from 7.2 to 7.4, chloride contents ranging from 120 to 125 parts per million (ppm), and sulfate contents ranging from 0.003 to 0.022 percent (i.e., 30 to 220 ppm). Based on the Caltrans (2003) criteria, the project site would not be classified as corrosive, which is defined as a site having soils with more than 500 ppm of chlorides, more than 0.2 percent sulfates or a pH less than 5.5.

### **9.12. Concrete**

Concrete in contact with soil or water that contains high concentrations of soluble sulfates can be subject to chemical deterioration. Laboratory testing indicated sulfate contents ranging from 0.003 to 0.022 percent for the tested samples. Based on the American Concrete Institute (ACI) criteria (2005), the potential for sulfate attack is negligible for water-soluble sulfate contents in soils ranging from about 0.0 to 0.10 percent by weight (0 to 1,000 ppm) and Type II cement may be used for concrete construction. However, due to the potential variability of site soils, consideration should be given to using Type V cement and concrete

with a water-cement ratio no higher than 0.45 by weight for normal weight aggregate concrete and a 28-day compressive strength of 4,500 psi or more for the project.

### **9.13. Pre-Construction Conference**

We recommend that a pre-construction meeting be held prior to commencement of construction. The owner or his representative, the agency representatives, the civil engineer, Ninyo & Moore, and the contractor(s) should be in attendance to discuss the plans, the project, and the proposed construction schedule.

### **9.14. Plan Review and Construction Observation**

The conclusions and recommendations presented in this report are based on analysis of observed conditions in widely spaced exploratory excavations. If conditions are found to vary from those described in this report, Ninyo & Moore should be notified, and additional recommendations will be provided upon request. Ninyo & Moore should review the final project drawings and specifications prior to the commencement of construction. Ninyo & Moore should perform the needed observation and testing services during construction operations.

The recommendations provided in this report are based on the assumption that Ninyo & Moore or a qualified geotechnical firm will provide geotechnical observation and testing services during construction. In the event that it is decided not to utilize the services of Ninyo & Moore during construction, we request that the selected consultant provide the client with a letter (with a copy to Ninyo & Moore) indicating that they fully understand Ninyo & Moore's recommendations, and that they are in full agreement with the design parameters and recommendations contained in this report. Construction of proposed improvements should be performed by qualified subcontractors utilizing appropriate techniques and construction materials.

## **10. LIMITATIONS**

The field evaluation, laboratory testing, and geotechnical analyses presented in this geotechnical report have been conducted in general accordance with current practice and the standard of care exercised by

geotechnical consultants performing similar tasks in the project area. No warranty, expressed or implied, is made regarding the conclusions, recommendations, and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be encountered during construction. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface evaluation will be performed upon request. Please also note that our evaluation was limited to assessment of the geotechnical aspects of the project, and did not include evaluation of structural issues, environmental concerns, or the presence of hazardous materials.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.

This report is intended for design purposes only. It does not provide sufficient data to prepare an accurate bid by contractors. It is suggested that the bidders and their geotechnical consultant perform an independent evaluation of the subsurface conditions in the project areas. The independent evaluations may include, but not be limited to, review of other geotechnical reports prepared for the adjacent areas, site reconnaissance, and additional exploration and laboratory testing.

Our conclusions, recommendations, and opinions are based on an analysis of the observed site conditions. If geotechnical conditions different from those described in this report are encountered, our office should be notified, and additional recommendations, if warranted, will be provided upon request. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no controls.

This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

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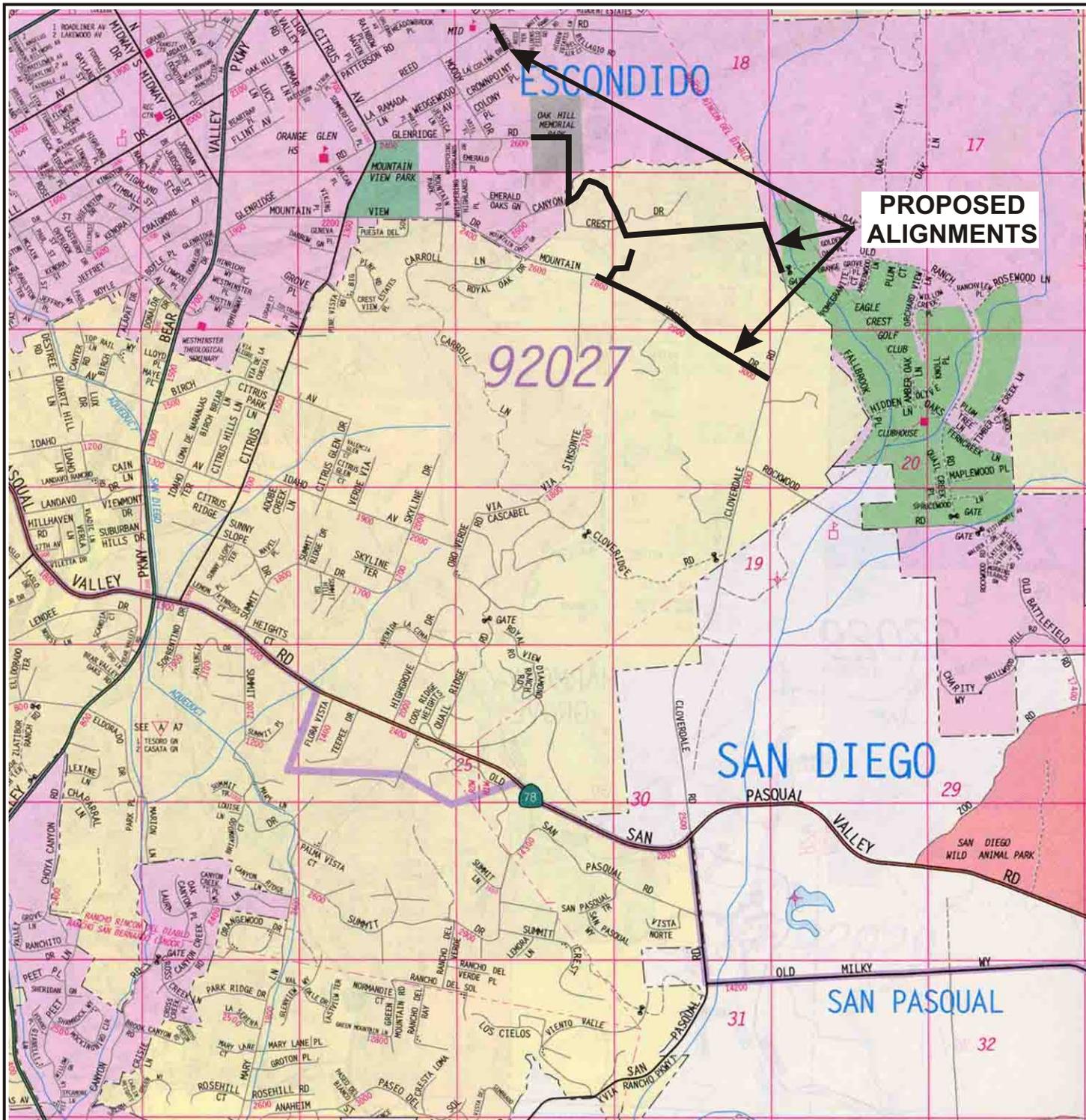
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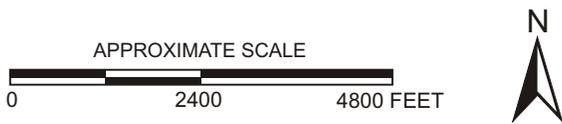
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<b>AERIAL PHOTOGRAPHS</b>				
<b>Source</b>	<b>Date</b>	<b>Flight</b>	<b>Numbers</b>	<b>Scale</b>
USDA	4-14-53	AXN-10M	33 and 34	1:20,000



REFERENCE: 2005 THOMAS GUIDE FOR SAN DIEGO COUNTY, STREET GUIDE AND DIRECTORY,



NOTE: ALL DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.  
Map © Rand McNally, R.L.07-S-129

**Ninyo & Moore**

**SITE LOCATION MAP**

FIGURE

PROJECT NO.

DATE

CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT  
ESCONDIDO, CALIFORNIA

**1**

106513001

2/10

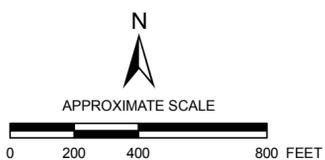
fig1 106513001 sim.cdr



SOURCE: AERIAL IMAGERY - ESRI Copyright © 2009 + updated

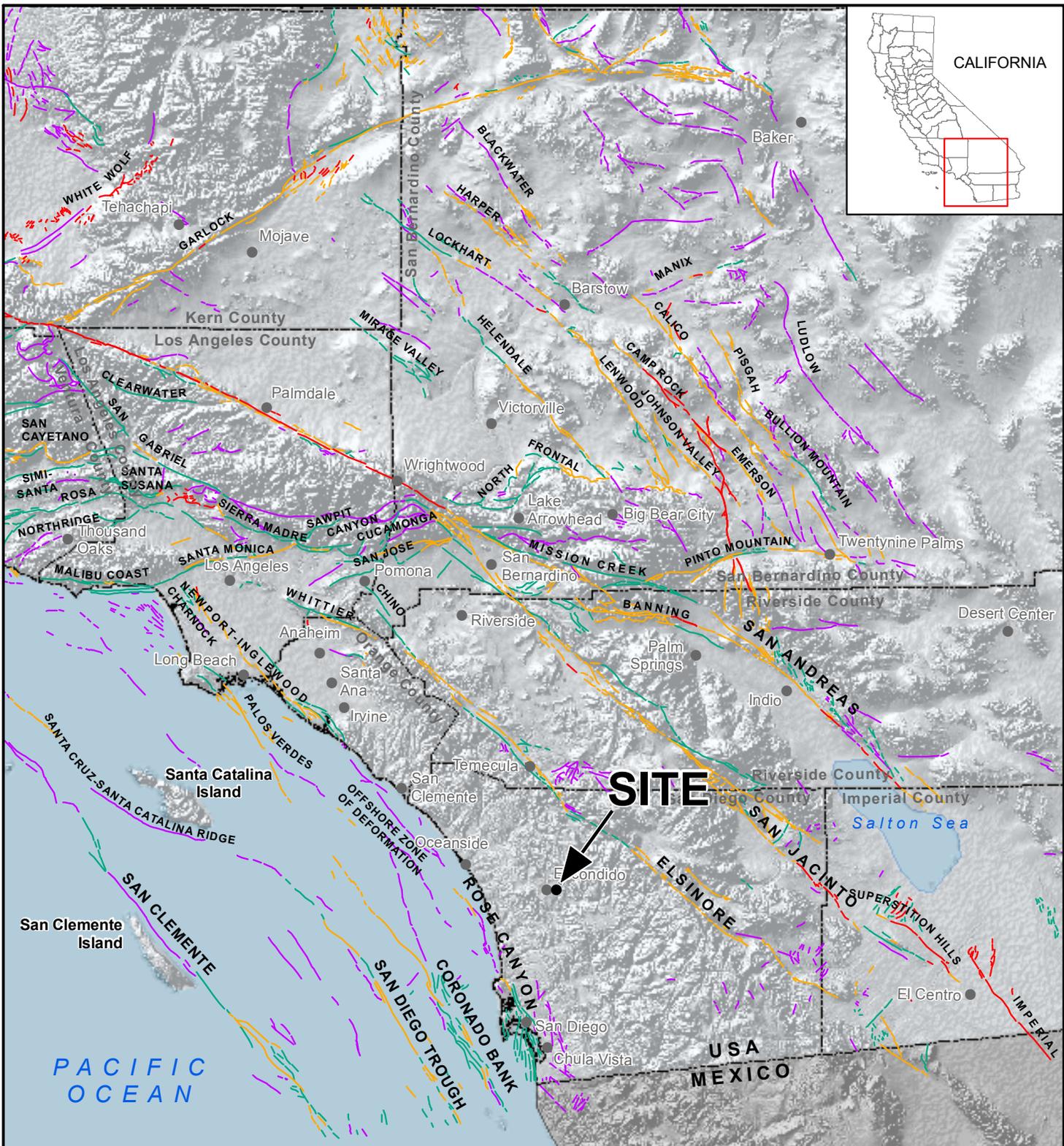
**LEGEND**

-  **B-13** APPROXIMATE LOCATION OF EXPLORATORY BORING
-  **T-5** SEISMIC REFRACTION TRAVERSE
-  PIPELINE ROUTE
-  PIPELINE CORRIDOR
-  PARCEL BOUNDARY



NOTE: ALL DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

<b>Ninyo &amp; Moore</b>		<b>BORING AND SEISMIC REFRACTION LOCATION MAP</b>	FIGURE  <b>2</b>
PROJECT NO. 106513001	DATE 2/10		



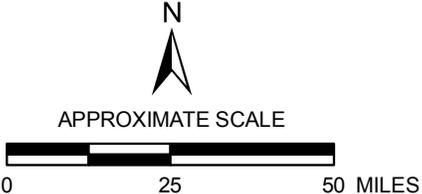
SOURCE: FAULTS - CA DEPT OF CONSERVATION, 2000; BASE - ESRI, 2008

**LEGEND**

**CALIFORNIA FAULT ACTIVITY**

- HISTORICALLY ACTIVE
- HOLOCENE ACTIVE
- LATE QUATERNARY (POTENTIALLY ACTIVE)
- QUATERNARY (POTENTIALLY ACTIVE)
- STATE/COUNTY BOUNDARY

NOTES: ALL DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE



**Ninyo & Moore**

**FAULT LOCATION MAP**

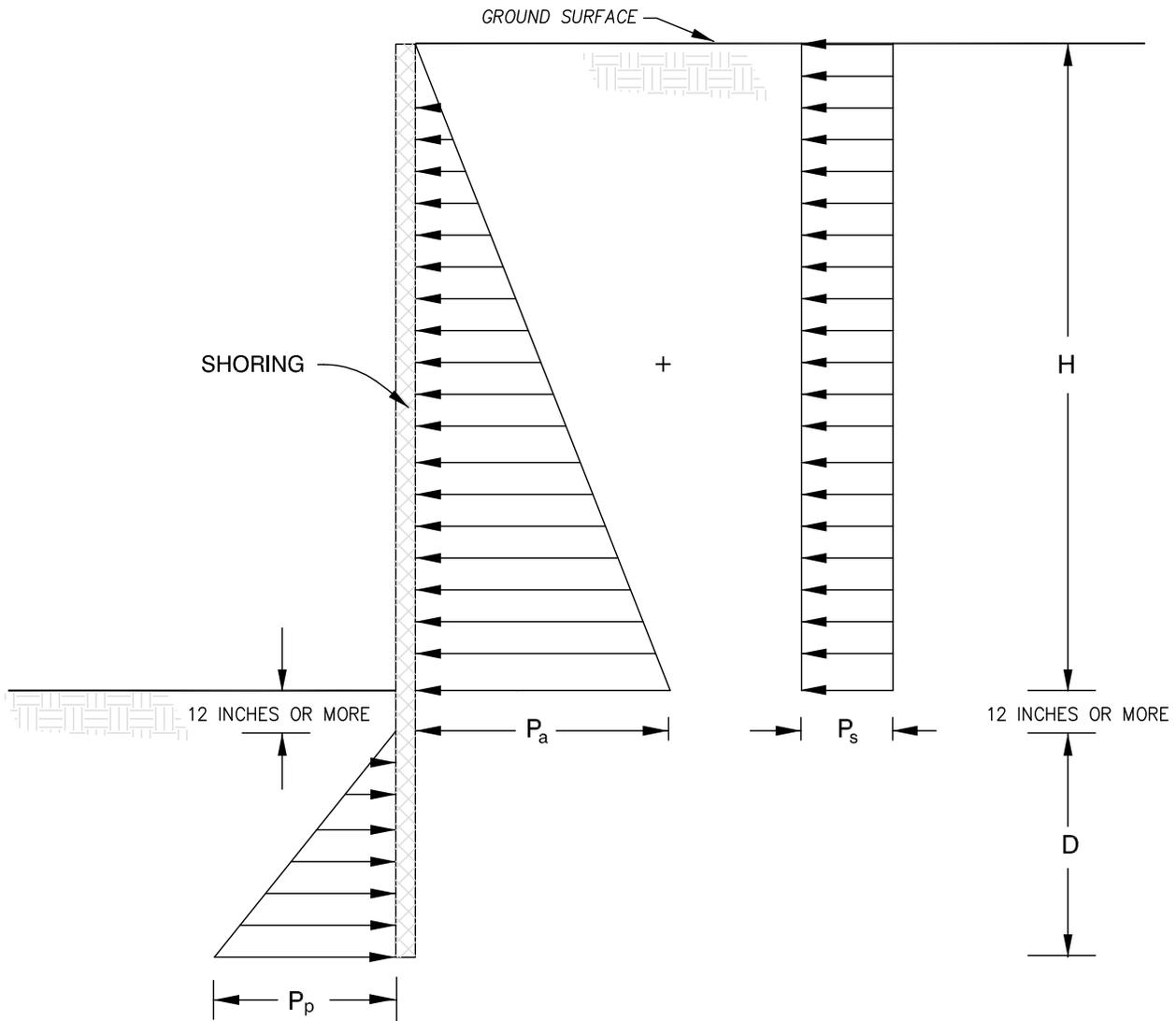
FIGURE

PROJECT NO.	DATE
106513001	2/10

CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT  
ESCONDIDO, CALIFORNIA

**3**

fig3\_106513001\_fault.mxd



NOTES:

1. ACTIVE LATERAL EARTH PRESSURE,  $P_a$   
 $P_a = 40 H$  psf
2. CONSTRUCTION TRAFFIC INDUCED SURCHARGE PRESSURE,  $P_s$   
 $P_s = 120$  psf
3. PASSIVE LATERAL EARTH PRESSURE,  $P_p$   
 $P_p = 350 D$  psf
4. ASSUMES GROUNDWATER IS NOT PRESENT
5. H AND D ARE IN FEET

NOT TO SCALE

fig4 106513001 cant.dwg

**Ninyo & Moore**

**LATERAL EARTH PRESSURES FOR TEMPORARY  
CANTILEVERED SHORING**

FIGURE

PROJECT NO.

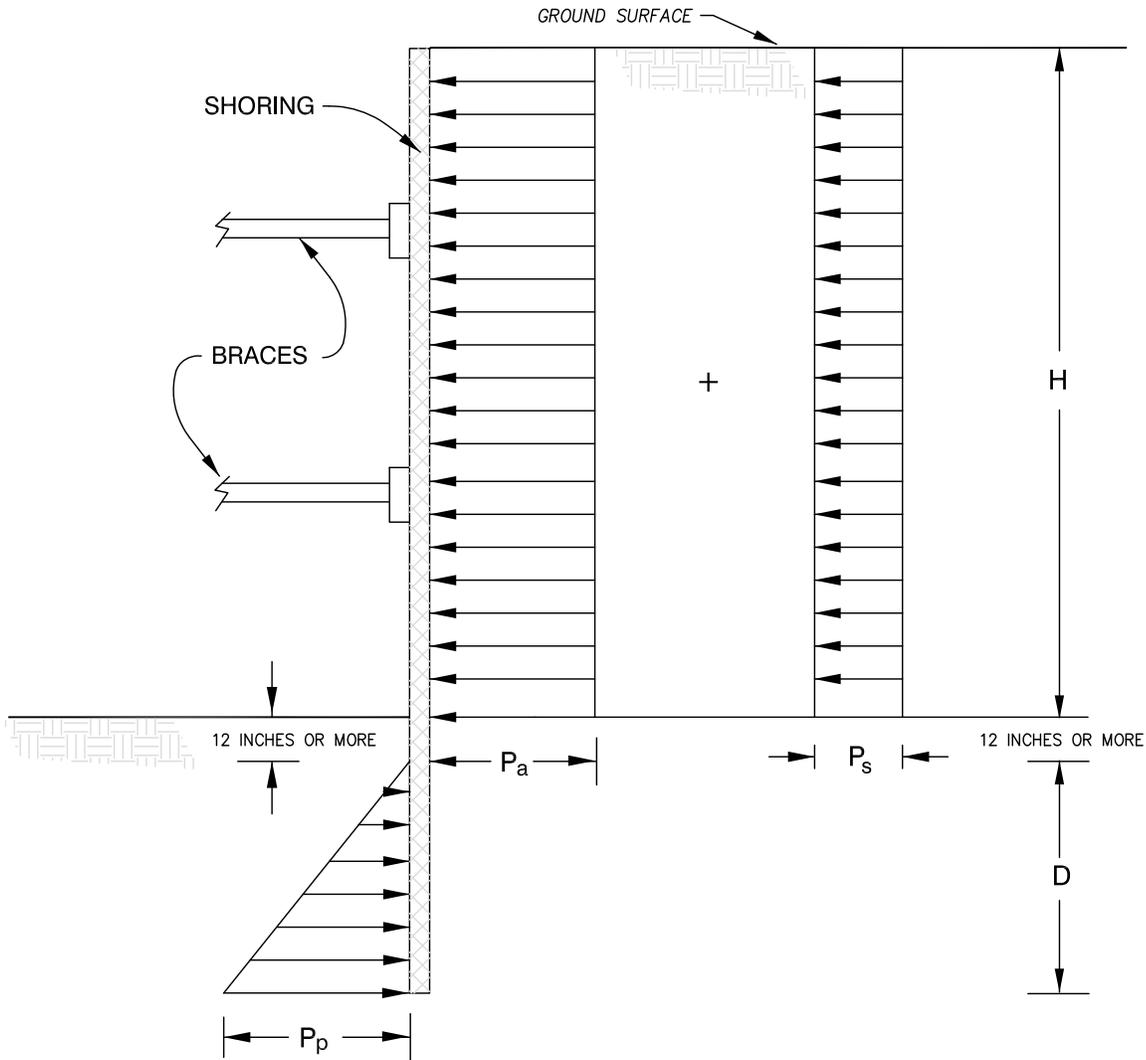
DATE

CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT  
ESCONDIDO, CALIFORNIA

106513001

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**4**



NOTES:

1. APPARENT LATERAL EARTH PRESSURE,  $P_a$   
 $P_a = 26 H$  psf
2. CONSTRUCTION TRAFFIC INDUCED SURCHARGE PRESSURE,  $P_s$   
 $P_s = 120$  psf
3. PASSIVE LATERAL EARTH PRESSURE,  $P_p$   
 $P_p = 350 D$  psf
4. ASSUMES GROUNDWATER IS NOT PRESENT
5. SURCHARGES FROM EXCAVATED SOIL OR CONSTRUCTION MATERIALS ARE NOT INCLUDED
6. H AND D ARE IN FEET

NOT TO SCALE

fig5 106513001 press.dwg

**Ninyo & Moore**

**LATERAL EARTH PRESSURES FOR  
BRACED EXCAVATION (GRANULAR SOIL)**

FIGURE

PROJECT NO.

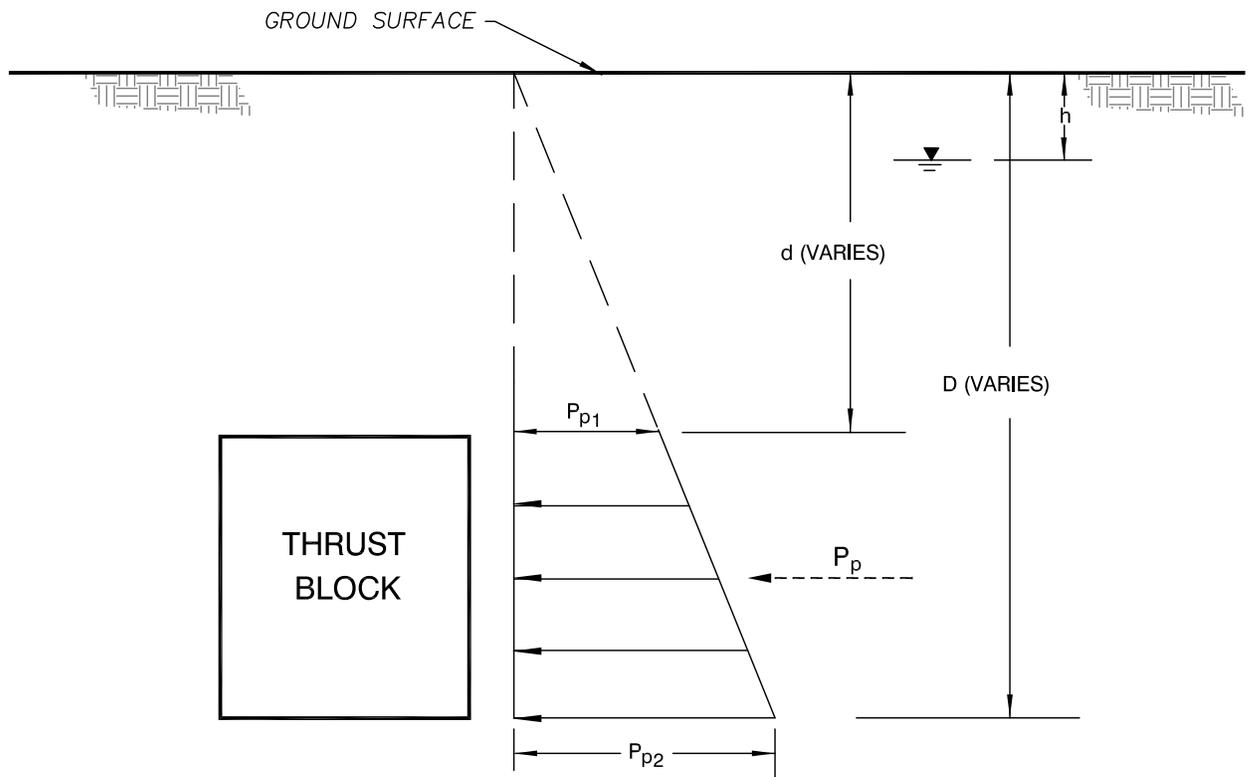
DATE

CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT  
ESCONDIDO, CALIFORNIA

106513001

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**5**



NOTES:

1. GROUNDWATER BELOW BLOCK  

$$P_p = 175(D^2 - d^2) \text{ lb/ft}$$
2. ASSUMES BACKFILL IS GRANULAR MATERIAL
3. ASSUMES THRUST BLOCK IS ADJACENT TO COMPETENT MATERIAL
4. D AND d ARE IN FEET
5. GROUNDWATER TABLE

NOT TO SCALE

fig6 106513001 thrust.dwg

<b>Ninyo &amp; Moore</b>		<b>THRUST BLOCK LATERAL EARTH PRESSURE DIAGRAM</b>	FIGURE
PROJECT NO.	DATE	CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT ESCONDIDO, CALIFORNIA	<b>6</b>
106513001	2/10		

## **APPENDIX A**

### **BORING LOGS**

#### **Field Procedure for the Collection of Disturbed Samples**

Disturbed soil samples were obtained in the field using the following methods.

##### **Bulk Samples**

Bulk samples of representative earth materials were obtained from the exploratory borings. The samples were bagged and transported to the laboratory for testing.

##### **The Standard Penetration Test (SPT) Sampler**

Disturbed drive samples of earth materials were obtained by means of an SPT sampler. The sampler is composed of a split barrel with an external diameter of 2 inches and an unlined internal diameter of 1 $\frac{3}{8}$  inches. The sampler was driven into the ground 12 to 18 inches with a 140-pound hammer free-falling from a height of 30 inches in general accordance with ASTM D 1586. The blow counts were recorded for every 6 inches of penetration; the blow counts reported on the logs are those for the last 12 inches of penetration. Soil samples were observed and removed from the sampler, bagged, sealed and transported to the laboratory for testing.

#### **Field Procedure for the Collection of Relatively Undisturbed Samples**

Relatively undisturbed soil samples were obtained in the field using the following methods.

##### **The Modified Split-Barrel Drive Sampler**

The sampler, with an external diameter of 3.0 inches, was lined with 1-inch long, thin brass rings with inside diameters of approximately 2.4 inches. The sample barrel was driven into the ground with the weight of a hammer in general accordance with ASTM D 3550. The driving weight was permitted to fall freely. The approximate length of the fall, the weight of the hammer, and the number of blows per foot of driving are presented on the boring logs as an index to the relative resistance of the materials sampled. The samples were removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

# BORING LOG EXPLANATION SHEET

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	
	Bulk	Driven						
0	■							<p>Bulk sample.</p> <p>Modified split-barrel drive sampler.</p> <p>No recovery with modified split-barrel drive sampler.</p> <p>Sample retained by others.</p> <p>Standard Penetration Test (SPT).</p> <p>No recovery with a SPT.</p> <p>Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.</p> <p>No recovery with Shelby tube sampler.</p> <p>Continuous Push Sample.</p> <p>Seepage.</p> <p>Groundwater encountered during drilling.</p> <p>Groundwater measured after drilling.</p>
5	■							<p>XX/XX</p>
10	■			  				
15							SM	<p>ALLUVIUM: Solid line denotes unit change. Dashed line denotes material change.</p> <p>Attitudes: Strike/Dip b: Bedding c: Contact j: Joint f: Fracture F: Fault cs: Clay Seam s: Shear bss: Basal Slide Surface sf: Shear Fracture sz: Shear Zone sbs: Sheared Bedding Surface</p>
20								<p>The total depth line is a solid line that is drawn at the bottom of the boring.</p>



## BORING LOG

### EXPLANATION OF BORING LOG SYMBOLS

PROJECT NO.

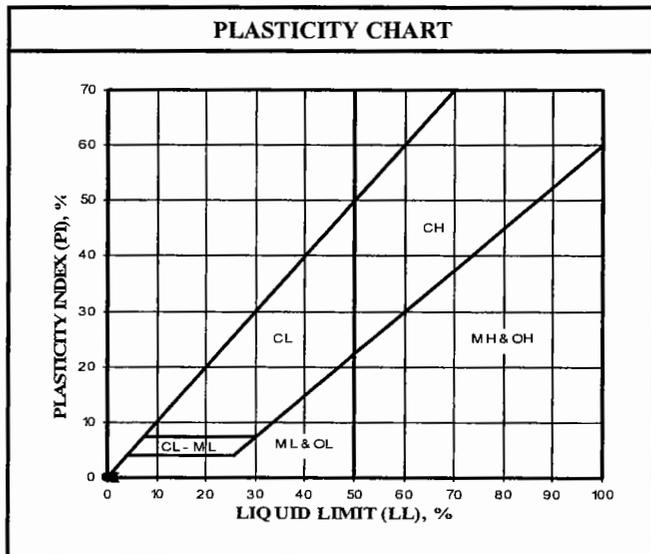
DATE  
Rev. 01/03

FIGURE

## U.S.C.S. METHOD OF SOIL CLASSIFICATION

MAJOR DIVISIONS	SYMBOL	TYPICAL NAMES	
<b>COARSE-GRAINED SOILS</b> (More than 1/2 of soil >No. 200 sieve size)	<b>GRAVELS</b> (More than 1/2 of coarse fraction > No. 4 sieve size)	GW	Well graded gravels or gravel-sand mixtures, little or no fines
		GP	Poorly graded gravels or gravel-sand mixtures, little or no fines
		GM	Silty gravels, gravel-sand-silt mixtures
	<b>SANDS</b> (More than 1/2 of coarse fraction <No. 4 sieve size)	GC	Clayey gravels, gravel-sand-clay mixtures
		SW	Well graded sands or gravelly sands, little or no fines
		SP	Poorly graded sands or gravelly sands, little or no fines
		SM	Silty sands, sand-silt mixtures
<b>FINE-GRAINED SOILS</b> (More than 1/2 of soil <No. 200 sieve size)	<b>SILTS &amp; CLAYS</b> Liquid Limit <50	SC	Clayey sands, sand-clay mixtures
		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean
	<b>SILTS &amp; CLAYS</b> Liquid Limit >50	OL	Organic silts and organic silty clays of low plasticity
		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silty clays, organic silts
<b>HIGHLY ORGANIC SOILS</b>		Pt	Peat and other highly organic soils

GRAIN SIZE CHART		
CLASSIFICATION	RANGE OF GRAIN SIZE	
	U.S. Standard Sieve Size	Grain Size in Millimeters
<b>BOULDERS</b>	Above 12"	Above 305
<b>COBBLES</b>	12" to 3"	305 to 76.2
<b>GRAVEL</b>	3" to No. 4	76.2 to 4.76
Coarse	3" to 3/4"	76.2 to 19.1
Fine	3/4" to No. 4	19.1 to 4.76
<b>SAND</b>	No. 4 to No. 200	4.76 to 0.075
Coarse	No. 4 to No. 10	4.76 to 2.00
Medium	No. 10 to No. 40	2.00 to 0.420
Fine	No. 40 to No. 200	0.420 to 0.075
<b>SILT &amp; CLAY</b>	Below No. 200	Below 0.075



Ninyo & Moore

U.S.C.S. METHOD OF SOIL CLASSIFICATION

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>1/7/10</u> BORING NO. <u>B-1</u>	
	Bulk	Driven						GROUND ELEVATION <u>760' ± (MSL)</u>	SHEET <u>1</u> OF <u>1</u>
METHOD OF DRILLING <u>8" Diameter Hollow Stem Auger (CME-55) (Scott's Drilling)</u>									
DRIVE WEIGHT <u>140 lbs. (Auto-Trip Hammer)</u> DROP <u>30"</u>									
SAMPLED BY <u>MJB</u> LOGGED BY <u>MJB</u> REVIEWED BY <u>FOM</u>									
<b>DESCRIPTION/INTERPRETATION</b>									
0							SM	<u>FILL:</u> Very dark brown, moist, loose to medium dense, silty fine SAND; trace clay; micaceous.	
							SC	Very dark reddish brown, moist, loose to medium dense, clayey fine SAND; micaceous; scattered coarse gravel and cobbles up to 4 inches in diameter from 2-1/2 to 3-1/2 feet.	
							SC	<u>DECOMPOSED GRANITE:</u> Very dark reddish brown, damp, very dense, clayey fine SAND.	
5			50/4"	5.2	117.4			Gradational contact.	
								<u>GRANITIC ROCK:</u> Light gray, reddish brown, and black, dry to damp, weathered GRANITIC ROCK.	
10			50/3"						
15			50/2"						
20								Total Depth = 15.2 feet. Groundwater not encountered during drilling. Backfilled shortly after drilling on 1/07/10.	
<u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.									



**BORING LOG**

CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT  
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FIGURE  
A-1

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>1/7/10</u> BORING NO. <u>B-2</u>		
	Bulk	Driven						GROUND ELEVATION <u>780' ± (MSL)</u>	SHEET <u>1</u> OF <u>1</u>	METHOD OF DRILLING <u>8" Diameter Hollow Stem Auger (CME-55) (Scott's Drilling)</u>
								DRIVE WEIGHT <u>140 lbs. (Auto-Trip Hammer)</u>	DROP <u>30"</u>	SAMPLED BY <u>MJB</u> LOGGED BY <u>MJB</u> REVIEWED BY <u>FOM</u>
								<b>DESCRIPTION/INTERPRETATION</b>		
0							SC	<u>ASPHALT CONCRETE:</u> Approximately 4 inches thick. <u>FILL:</u> Dark reddish brown, moist, loose to medium dense, clayey fine SAND; scattered gravel and cobbles.		
5			78/11"				SC	<u>DECOMPOSED GRANITE</u> Dark brown, moist, very dense, clayey fine SAND; scattered medium to coarse sand.  Refusal on hard rock.		
10								Total Depth = 9 feet. Groundwater not encountered during drilling. Backfilled and patched with concrete shortly after drilling on 1/07/10.  <u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.		
15										
20										



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FIGURE  
A-2

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>1/7/10</u> BORING NO. <u>B-3</u>	
	Bulk	Driven						GROUND ELEVATION <u>820' ± (MSL)</u>	SHEET <u>1</u> OF <u>1</u>
								METHOD OF DRILLING <u>8" Diameter Hollow Stem Auger (CME-55) (Scott's Drilling)</u>	
								DRIVE WEIGHT <u>140 lbs. (Auto-Trip Hammer)</u> DROP <u>30"</u>	
								SAMPLED BY <u>MJB</u> LOGGED BY <u>MJB</u> REVIEWED BY <u>FOM</u>	
								<b>DESCRIPTION/INTERPRETATION</b>	
0							SM	<u>TOPSOIL:</u> Dark reddish brown, moist, loose to medium dense, silty fine SAND; trace clay.	
								Gradational contact.	
							SM	<u>DECOMPOSED GRANITE:</u> Dark reddish brown, damp to moist, loose to medium dense, silty fine SAND; trace clay; scattered gravel.	
								Gradational contact.	
5			50/6"	7.8	121.5			<u>GRANITIC ROCK:</u> Light gray, reddish brown, and black (speckled), damp, weathered GRANITIC ROCK.	
10			50/5"					Refusal on hard rock. Total Depth = 10.5 feet. Groundwater not encountered during drilling. Backfilled shortly after drilling on 1/07/10.	
								Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.	
15									
20									



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FIGURE  
 A-3

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>1/7/10</u> BORING NO. <u>B-4</u>	
	Bulk	Driven						GROUND ELEVATION <u>840' ± (MSL)</u>	SHEET <u>1</u> OF <u>1</u>
								METHOD OF DRILLING <u>6" Diameter Hollow Stem Auger (CME-55) (Scott's Drilling)</u>	
								DRIVE WEIGHT <u>140 lbs. (Auto-Trip Hammer)</u> DROP <u>30"</u>	
								SAMPLED BY <u>MJB</u> LOGGED BY <u>MJB</u> REVIEWED BY <u>FOM</u>	
								<b>DESCRIPTION/INTERPRETATION</b>	
0							SM	<u>FILL:</u> Dark reddish brown, moist, loose to medium dense, silty fine SAND; trace clay; abundant fine to coarse gravel.	
			72/11"	5.9	125.7		SM	<u>DECOMPOSED GRANITE:</u> Dark reddish brown, damp, very dense, silty fine SAND; scattered fine to coarse sand. Gradational contact.	
			50/4"					<u>GRANITIC ROCK:</u> Light gray, reddish brown, and black (speckled), damp, weathered GRANITIC ROCK; granitic corestones at 3 to 3-12 feet, 6 to 7 feet, 9 to 11 feet.	
5									
10			50/4"						
15			50/3"						
								Total Depth = 15.3 feet. Groundwater not encountered during drilling. Backfilled shortly after drilling on 1/07/10.	
								<u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.	
20									



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FIGURE  
 A-4

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>1/8/10</u> BORING NO. <u>B-5</u>		
	Bulk	Driven						GROUND ELEVATION <u>820' ± (MSL)</u>	SHEET <u>1</u> OF <u>1</u>	METHOD OF DRILLING <u>6" Solid Stem Auger (Kubota) (Scott's Drilling)</u>
								DRIVE WEIGHT <u>70 lbs. (Manual)</u>	DROP <u>30"</u>	SAMPLED BY <u>BTM</u> LOGGED BY <u>BTM</u> REVIEWED BY <u>FOM</u>
								<b>DESCRIPTION/INTERPRETATION</b>		
0							SM	<u>FILL:</u> Brown, damp to moist, medium dense, silty SAND.		
5			50/1"					<u>GRANITIC ROCK:</u> Brown, damp, weathered, GRANITIC ROCK.		
15								Total Depth = 15 feet. Groundwater not encountered during drilling. Backfilled shortly after drilling on 1/08/10.		
20								<u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.		



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FIGURE  
A-5

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>1/7/10</u> BORING NO. <u>B-6</u>	
	Bulk	Driven						GROUND ELEVATION <u>780' ± (MSL)</u>	SHEET <u>1</u> OF <u>1</u>
								METHOD OF DRILLING <u>8" Diameter Hollow Stem Auger (CME-55) (Scott's Drilling)</u>	
								DRIVE WEIGHT <u>140 lbs. (Auto-Trip Hammer)</u> DROP <u>30"</u>	
								SAMPLED BY <u>MJB</u> LOGGED BY <u>MJB</u> REVIEWED BY <u>FOM</u>	
								<b>DESCRIPTION/INTERPRETATION</b>	
0							SM	<u>TOPSOIL:</u> Dark reddish brown, moist, loose to medium dense, silty fine SAND; trace clay.	
5			50/6"	5.0	123.4		SM	<u>DECOMPOSED GRANITE:</u> Brown, damp to moist, dense to very dense, silty fine SAND; some medium to coarse sand.  Gradational contact.	
10			50/5"					<u>GRANITIC ROCK:</u> Light gray, reddish brown, and black (speckled), damp, weathered GRANITIC ROCK.	
15			50/4"					Total Depth = 15.3 feet. Groundwater not encountered during drilling. Backfilled shortly after drilling on 1/07/10.  <u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.	
20									



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FIGURE  
 A-6

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>1/8/10</u> BORING NO. <u>B-7</u>	
	Bulk	Driven						GROUND ELEVATION <u>460' ± (MSL)</u>	SHEET <u>1</u> OF <u>1</u>
								METHOD OF DRILLING <u>8" Diameter Hollow Stem Auger (CME-55) (Scott's Drilling)</u>	
								DRIVE WEIGHT <u>140 lbs. (Auto-Trip Hammer)</u> DROP <u>30"</u>	
								SAMPLED BY <u>MJB</u> LOGGED BY <u>MJB</u> REVIEWED BY <u>FOM</u>	
								<b>DESCRIPTION/INTERPRETATION</b>	
0							SM	<u>ALLUVIUM:</u> Very dark reddish brown, moist, loose to medium dense, silty, fine SAND; micaceous.  Damp to moist; trace medium to coarse sand and gravel. Dark reddish brown.	
5			50/5"	14.6	106.9		SC	Dark reddish brown, moist, medium dense, clayey fine SAND.	
							ML	<u>TOPSOIL:</u> Reddish brown, moist, very dense, fine sandy clayey SILT. Gradational contact.	
							SP-SM	<u>DECOMPOSED GRANITE:</u> Reddish brown, damp, very dense, poorly graded SAND with silt; some gravel-size pieces of granitic rock. Gradational contact.	
								<u>GRANITIC ROCK:</u> Light and gray, reddish brown, and black (speckled), dry, weathered GRANITIC ROCK.	
10			50/6"						
15			50/5"						
20								Total Depth = 15.4 feet. Groundwater not encountered during drilling. Backfilled shortly after drilling on 1/08/10.  <u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.	



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FIGURE  
 A-7

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
	Bulk	Driven						
DATE DRILLED <u>1/8/10</u>		BORING NO. <u>B-8</u>		GROUND ELEVATION <u>440' ± (MSL)</u>		SHEET <u>1</u> OF <u>1</u>		METHOD OF DRILLING <u>8" Diameter Hollow Stem Auger (CME-55) (Scott's Drilling)</u>
DRIVE WEIGHT <u>140 lbs. (Auto-Trip Hammer)</u>		DROP <u>30"</u>		SAMPLED BY <u>MJB</u>		LOGGED BY <u>MJB</u>		REVIEWED BY <u>FOM</u>
0								<b>ASPHALTIC CONCRETE:</b> Approximately 4 inches thick.
5			35	8.1	123.6		SM	<b>ALLUVIUM:</b> Reddish brown, damp to moist, medium dense, silty fine SAND; trace coarse sand to gravel.
10			13					Black; includes organics.
15			13				SC	Reddish brown, wet, loose to medium dense, clayey fine SAND; trace medium to coarse sand.
20								<b>GRANITIC ROCK:</b> Reddish brown and black (speckled), dry, weathered GRANITIC ROCK. Total Depth = 16.5 feet. Groundwater not encountered during drilling. Backfilled and patched with concrete shortly after drilling on 1/08/10.
								<b>Note:</b> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.



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DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>1/7/10</u> BORING NO. <u>B-9</u>	
	Bulk	Driven						GROUND ELEVATION <u>885' ± (MSL)</u>	SHEET <u>1</u> OF <u>1</u>
								METHOD OF DRILLING <u>8" Diameter Hollow Stem Auger (CME-55) (Scott's Drilling)</u>	
								DRIVE WEIGHT <u>140 lbs. (Auto-Trip Hammer)</u> DROP <u>30"</u>	
								SAMPLED BY <u>MJB</u> LOGGED BY <u>MJB</u> REVIEWED BY <u>FOM</u>	
								<b>DESCRIPTION/INTERPRETATION</b>	
0							SM	<u>ASPHALT CONCRETE:</u> Approximately 2 inches thick. <u>DECOMPOSED GRANITE:</u> Reddish brown, damp, dense to very dense, silty, fine SAND; trace fine to coarse sand and gravel (pieces of granitic rock). Gradational contact. <u>GRANITIC ROCK:</u> Light gray, reddish brown, and black (speckled), dry, weathered GRANITIC ROCK.	
5			50/6"						
10			50/3"						
15			50/2"						
20								Total Depth = 15.2 feet. Groundwater not encountered during drilling. Backfilled and patched with concrete shortly after drilling on 1/07/10.  <u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.	



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FIGURE  
A-9

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>1/7/10</u> BORING NO. <u>B-10</u>	
	Bulk	Driven						GROUND ELEVATION <u>955' ± (MSL)</u>	SHEET <u>1</u> OF <u>1</u>
								METHOD OF DRILLING <u>8" Diameter Hollow Stem Auger (CME-55) (Scott's Drilling)</u>	
								DRIVE WEIGHT <u>140 lbs. (Auto-Trip Hammer)</u> DROP <u>30"</u>	
								SAMPLED BY <u>MJB</u> LOGGED BY <u>MJB</u> REVIEWED BY <u>FOM</u>	
								<b>DESCRIPTION/INTERPRETATION</b>	
0							SM	<b>ASPHALT CONCRETE:</b> Approximately 4-1/2 inches thick. <b>DECOMPOSED GRANITE:</b> Reddish brown, damp, very dense, silty fine SAND; trace medium to coarse sand and gravel (pieces of granitic rock).	
5			86	5.8	111.2			Gradational contact. <b>GRANITIC ROCK:</b> Light gray, reddish brown, and black (speckled), dry, weathered GRANITIC ROCK.	
10			50/6"						
15			50/4"					Total Depth = 15.3 feet. Groundwater not encountered during drilling. Backfilled and patched with concrete shortly after drilling on 1/07/10.  <u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.	
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FIGURE  
 A-10

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>1/8/10</u> BORING NO. <u>B-11</u>	
	Bulk	Driven						GROUND ELEVATION <u>900' ± (MSL)</u>	SHEET <u>1</u> OF <u>1</u>
								METHOD OF DRILLING <u>8" Diameter Hollow Stem Auger (CME-55) (Scott's Drilling)</u>	
								DRIVE WEIGHT <u>140 lbs. (Auto-Trip Hammer)</u> DROP <u>30"</u>	
								SAMPLED BY <u>MJB</u> LOGGED BY <u>MJB</u> REVIEWED BY <u>FOM</u>	
								<b>DESCRIPTION/INTERPRETATION</b>	
0							SM	<u>ASPHALT CONCRETE:</u> Approximately 5 inches thick.	
							SP-SM	<u>TOPSOIL:</u> Dark reddish brown, damp, loose to medium dense, clayey fine SAND; trace medium to coarse sand.	
			50/5"					<u>DECOMPOSED GRANITE:</u> Pale reddish brown, damp, very dense, poorly graded SAND with silt; some gravel-size pieces of granitic rock. Gradational contact.	
			50/5"					<u>GRANITIC ROCK:</u> Light gray, reddish brown, and black (speckled), dry, weathered GRANITIC ROCK; includes well-indurated granitic rock; included well-indurated granitic corestones.	
5									
			50/5"						
10									
			50/5"						
15									
			50/3"						
								Total Depth = 15.3 feet. Groundwater not encountered during drilling. Backfilled and patched with concrete shortly after drilling on 1/08/10.	
								<u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.	
20									



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FIGURE  
 A-11

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
	Bulk	Driven						
0							SM	DATE DRILLED <u>1/8/10</u> BORING NO. <u>B-12</u> GROUND ELEVATION <u>580' ± (MSL)</u> SHEET <u>1</u> OF <u>1</u> METHOD OF DRILLING <u>8" Diameter Hollow Stem Auger (CME-55) (Scott's Drilling)</u> DRIVE WEIGHT <u>140 lbs. (Auto-Trip Hammer)</u> DROP <u>30"</u> SAMPLED BY <u>MJB</u> LOGGED BY <u>MJB</u> REVIEWED BY <u>FOM</u>
			50/5"				SM	<b>TOPSOIL:</b> Reddish brown, damp to moist, loose to medium dense, silty fine SAND; trace medium to coarse sand and gravel-size pieces of granitic rock.
			50/5"				SM	<b>DECOMPOSED GRANITE:</b> Reddish brown, damp, loose to medium dense, silty fine to coarse SAND; trace gravel-size pieces of granitic rock.  Gradational contact.
5			50/5"					<b>GRANITIC ROCK:</b> Light gray, reddish brown, and black (speckled), dry, weathered GRANITIC ROCK.
10			50/5"					
15			50/6"					
20								Total Depth = 15.5 feet. Groundwater not encountered during drilling. Backfilled shortly after drilling on 1/08/10.  <u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.



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FIGURE  
A-12

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>1/8/10</u> BORING NO. <u>B-13</u>		
	Bulk	Driven						GROUND ELEVATION <u>825' ± (MSL)</u>	SHEET <u>1</u> OF <u>1</u>	METHOD OF DRILLING <u>6" Solid Stem Auger (Kubota) (Scott's Drilling)</u>
0								DRIVE WEIGHT <u>70 lbs. (Manual)</u> DROP <u>30"</u>		
5			70/11"					SAMPLED BY <u>BTM</u> LOGGED BY <u>BTM</u> REVIEWED BY <u>FOM</u>		
10								<b>DESCRIPTION/INTERPRETATION</b>		
15								<p><b>GRANITIC ROCK:</b>            Reddish brown, damp, weathered GRANITIC ROCK.</p> <p>Brown.</p> <p>Easier drilling.</p> <p>Grayish brown.</p> <p>@ 12': Harder drilling.</p> <p>Auger refusal on granitic rock.            Total Depth = 13 feet.</p> <p>Groundwater not encountered during drilling.            Backfilled shortly after drilling on 1/08/10.</p> <p><u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.</p>		
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**BORING LOG**

CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT  
 ESCONDIDO, CALIFORNIA

PROJECT NO.  
 106513001

DATE  
 2/10

FIGURE  
 A-13

**APPENDIX B**  
**SEISMIC REFRACTION SURVEY**

**SEISMIC REFRACTION SURVEY  
CEMETERY AREA WATERLINE REPLACEMENT  
ESCONDIDO, CALIFORNIA**

**PREPARED FOR:**

Ninyo & Moore  
5710 Ruffin Road  
San Diego, CA 92123

**PREPARED BY:**

Southwest Geophysics, Inc.  
8057 Raytheon Road, Suite 9  
San Diego, CA 92111

February 19, 2010  
Project No. 110010

February 19, 2010  
Project No. 110010

Mr. Frank Mooreland  
Ninyo & Moore  
5710 Ruffin Road  
San Diego, CA 92123

Subject: Seismic Refraction Survey  
Cemetery Area Waterline Replacement  
Escondido, California

Dear Mr. Mooreland:

In accordance with your authorization, we have performed a seismic refraction survey for the Cemetery Area Waterline Replacement project located in Escondido, California. Specifically, our survey consisted of performing five seismic refraction lines at the subject site. The purpose of the study was to develop a subsurface velocity profile of the study area and to evaluate the apparent rippability of the shallow subsurface materials. This data report presents our survey methodology, equipment used, analysis, and results.

We appreciate the opportunity to be of service on this project. Should you have any questions related to this report, please contact the undersigned at your convenience.

Sincerely,  
**SOUTHWEST GEOPHYSICS, INC.**



Patrick Lehrmann, P.G., R.Gp.  
Principal Geologist/Geophysicist



Hans van de Vrugt, C.E.G., R.Gp.  
Principal Geologist/Geophysicist

PFL/HV/hv

Distribution: Addressee (electronic)



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## **1. INTRODUCTION**

In accordance with your authorization, we have performed a seismic refraction survey pertaining to the Cemetery Area Waterline Replacement project located in Escondido, California (Figure 1). Specifically, our survey consisted of performing five seismic refraction lines at the subject site. The purpose of the study was to develop a subsurface velocity profile of the study area and to evaluate the apparent rippability of the shallow subsurface materials. This data report presents our survey methodology, equipment used, analysis, and results.

## **2. SCOPE OF SERVICES**

Our scope of services included:

- Performance of five seismic refraction lines at the project site.
- Compilation and analysis of the data collected.
- Preparation of this report presenting our results, conclusions, and recommendations.

## **3. SITE AND PROJECT DESCRIPTION**

The project site is situated just to the northwest of the intersection of Mountain View Drive and Cloverdale Road. Specifically, the study area includes five locations along an existing water line easement. The study area is mixed residential and fruit groves. Small rock outcrops and core stones were observed along the alignment. Figures 2 and 3 depict the general site conditions.

## **4. SURVEY METHODOLOGY**

A seismic P-wave (compression wave) refraction survey was conducted at the site to evaluate the rippability characteristics of the subsurface materials and to develop a subsurface velocity profile of the study area. The seismic refraction method uses first-arrival times of refracted seismic waves to estimate the thicknesses and seismic velocities of subsurface layers. Seismic P-waves generated at the surface, using a hammer and plate, are refracted at boundaries separating materials of contrasting velocities. These refracted seismic waves are then detected by a series of surface vertical component geophones, and recorded with a 24-channel Geometrics StrataView seismograph. The travel times of the seismic P-waves are used in conjunction with the shot-to-geophone distances to obtain thickness and velocity information on the subsurface materials.

Five seismic lines/profiles (SL-1 through SL-5) were conducted at the site. The locations of the lines, which were selected by your office, are depicted on Figure 2. Shot points were conducted at the ends of the lines, as well as at the midpoint.

The refraction method requires that subsurface velocities increase with depth. A layer having a velocity lower than that of the layer above will not be detectable by the seismic refraction method and, therefore, could lead to errors in the depth calculations of subsequent layers. In addition, lateral variations in velocity, such as those caused by core stones/outcrops, can also result in the misinterpretation of the subsurface conditions.

In general, seismic wave velocities can be correlated to material density and/or rock hardness. The relationship between rippability and seismic velocity is empirical and assumes a homogeneous mass. Localized areas of differing composition, texture, and/or structure may affect both the measured data and the actual rippability of the mass. The rippability of a mass is also dependent on the excavation equipment used and the skill and experience of the equipment operator.

The rippability values presented in Table 1 are based on our experience with similar materials and assumes that a Caterpillar D-9 dozer ripping with a single shank is used. We emphasize that the cutoffs in this classification scheme are approximate and that rock characteristics, such as fracture spacing and orientation, play a significant role in determining rock rippability. These characteristics may also vary with location and depth.

For trenching operations, the rippability values should be scaled downward. For example, velocities as low as 3,500 feet/second may indicate difficult ripping during trenching operations. In addition, the presence of boulders, which can be troublesome in a narrow trench, should be anticipated.

<b>Table 1 – Rippability Classification</b>	
<b>Seismic P-wave Velocity</b>	<b>Rippability</b>
0 to 2,000 feet/second	Easy
2,000 to 4,000 feet/second	Moderate
4,000 to 5,500 feet/second	Difficult, Possible Blasting
5,500 to 7,000 feet/second	Very Difficult, Probable Blasting
Greater than 7,000 feet/second	Blasting Generally Required

It should be noted that the rippability cutoffs presented in Table 1 are slightly more conservative than those published in the Caterpillar Performance Handbook (Caterpillar, 2004). Accordingly, the above classification scheme should be used with discretion, and contractors should not be relieved of making their own independent evaluation of the rippability of the on-site materials prior to submitting their bids.

**5. RESULTS**

Table 2 lists the average P-wave velocities and depths calculated from the seismic refraction traverses conducted during this evaluation. The approximate locations of the seismic refraction traverses are shown on the Seismic Line Location Map (Figure 2). Layer velocity profiles are included in Figures 4a through 4c. It should be noted that, as a general rule, the effective depth of evaluation for a seismic refraction traverse is approximately one-third to one-fifth the length of the refraction line. The lengths of the seismic refraction lines are listed with their interpretations in Table 2.

The results for the seismic lines revealed the presence of two distinct layers. In general, the layer velocities calculated for each line are relatively similar with the exception of SL-3, which is slightly higher. The average P-wave velocities are approximately 1,281 feet/second and 3,482 feet/second for Layers 1 and 2, respectively.

**Table 2 – Seismic Traverse Results**

<b>Traverse No. And Length</b>	<b>P-wave Velocity feet/second</b>	<b>Approximate Depth to Bottom of Layer in feet</b>	<b>Rippability*</b>
SL-1 120 feet	V1 = 1,275 V2 = 3,125	7 – 10 ---	Easy Moderate
SL-2 120 feet	V1 = 1,200 V2 = 3,475	5 – 9 ---	Easy Moderate
SL-3 120 feet	V1 = 1,325 V2 = 4,150	6 – 12 ---	Easy Difficult, Possible Blasting
SL-4 120 feet	V1 = 1,275 V2 = 3,350	3 – 7 ---	Easy Moderate
SL-5 120 feet	V1 = 1,350 V2 = 3,300	7 – 9 ---	Easy Moderate

\* Rippability criteria based on the use of a Caterpillar D-9 dozer ripping with a single shank

## 6. CONCLUSIONS

The results from our seismic survey revealed the presence of two distinct geologic layers in the shallow subsurface. Based on our site observations and discussions with you, the layers detected have been interpreted to be surficial soil overlying weathered granitic rock.

In general the results are consistent for the profiles with the exception of SL-3 where the velocity for Layer 2 was several hundred feet/second higher. The specific cause(s) of this difference is unknown.

During our site visit, we noted the presence of rock outcrops and core stones at and near the site. The presence of these features indicates differential weathering of the onsite bedrock materials. Furthermore, some scatter was noted in the first-arrivals indicating the presence of inhomogeneities in the subsurface materials. Accordingly, variability in the excavatability (including excavation depth) of the subsurface materials should be expected across the project area.

## 7. LIMITATIONS

The field evaluation and geophysical analyses presented in this report have been conducted in general accordance with current practice and the standard of care exercised by consultants per-

forming similar tasks in the project area. No warranty, expressed or implied, is made regarding the conclusions and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be present. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface surveying will be performed upon request.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Southwest Geophysics, Inc. should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document. This report is intended exclusively for use by the client. Any use or reuse of the findings and/or conclusions of this report by parties other than the client is undertaken at said parties' sole risk.

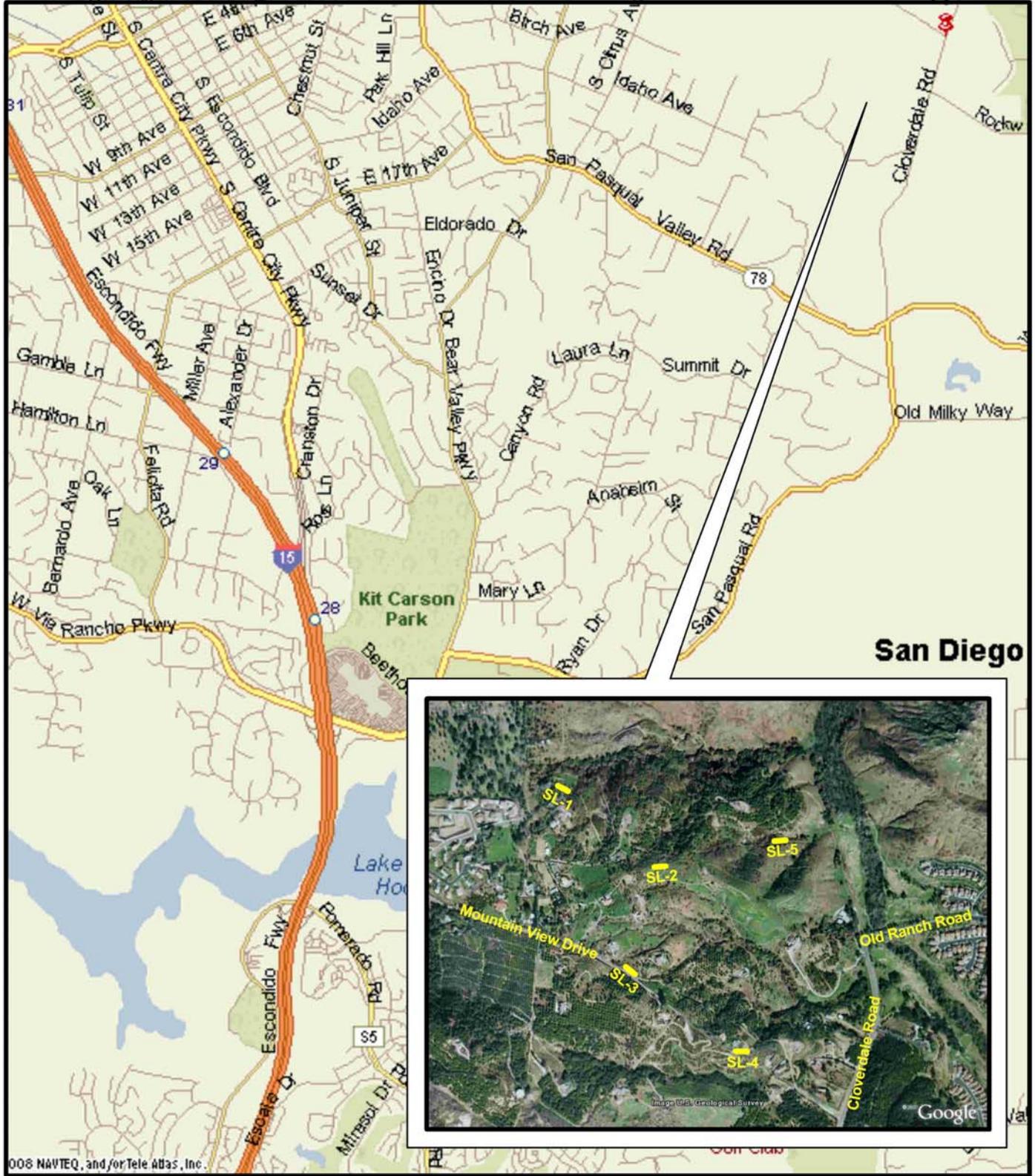
## **8. SELECTED REFERENCES**

Caterpillar, Inc., 2004, Caterpillar Performance Handbook, Edition 35, Caterpillar, Inc., Peoria, Illinois.

Mooney, H.M., 1976, Handbook of Engineering Geophysics, dated February.

Rimrock Geophysics, 2003, Seismic Refraction Interpretation Programs (SIPwin), V-2.76.

Telford, W.M., Geldart, L.P., Sheriff, R.E., and Keys, D.A., 1976, Applied Geophysics, Cambridge University Press.



# SITE LOCATION MAP



Cemetery Area Waterline Replacement  
Escondido, California

Project No.: 110010

Date: 02/10



Figure 1



**LEGEND**

Seismic Line



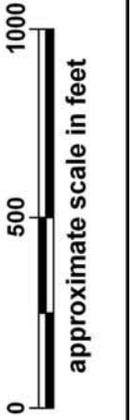
**SEISMIC LINE  
LOCATION MAP**

Cemetery Waterline Replacement  
Escondido, California

Project No.: 110010      Date: 02/10

**SOUTHWEST  
GEOPHYSICS INC.**

Figure 2





**SITE PHOTOGRAPHS**

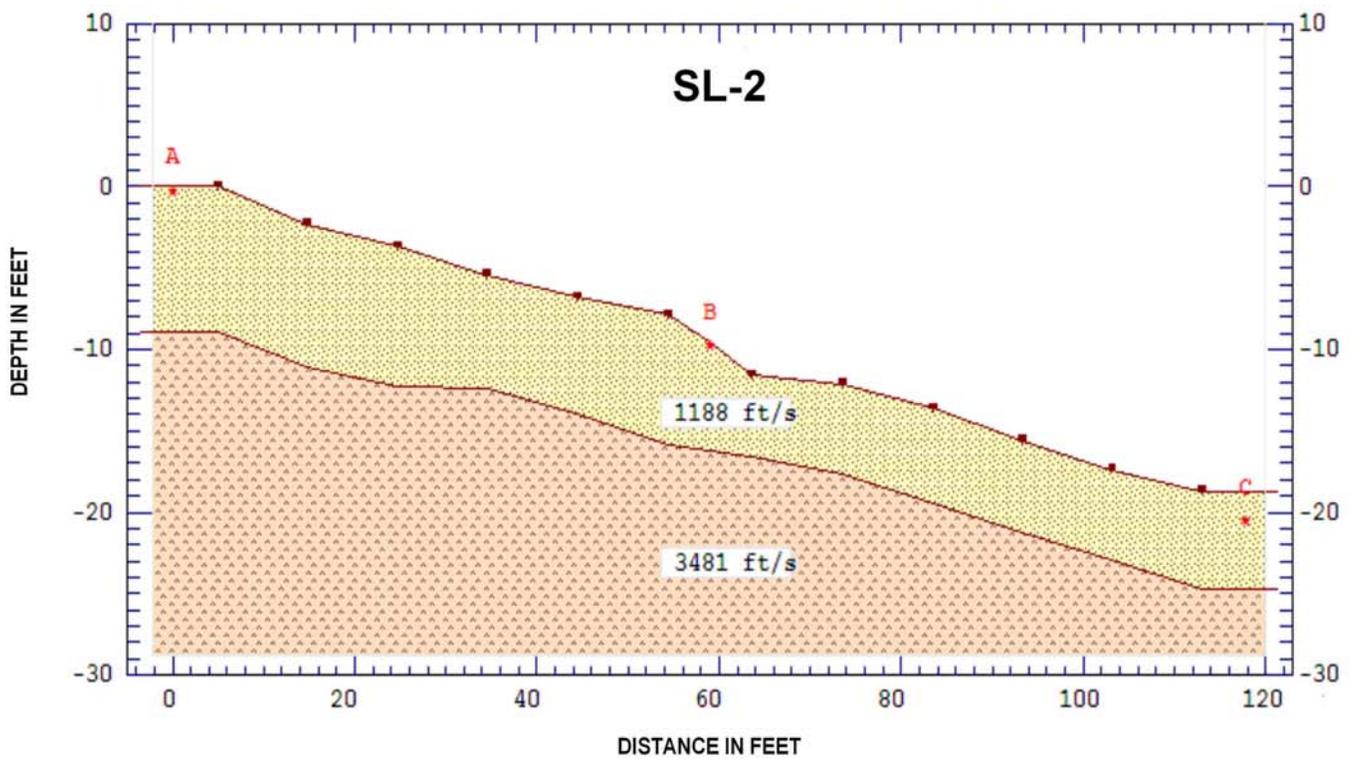
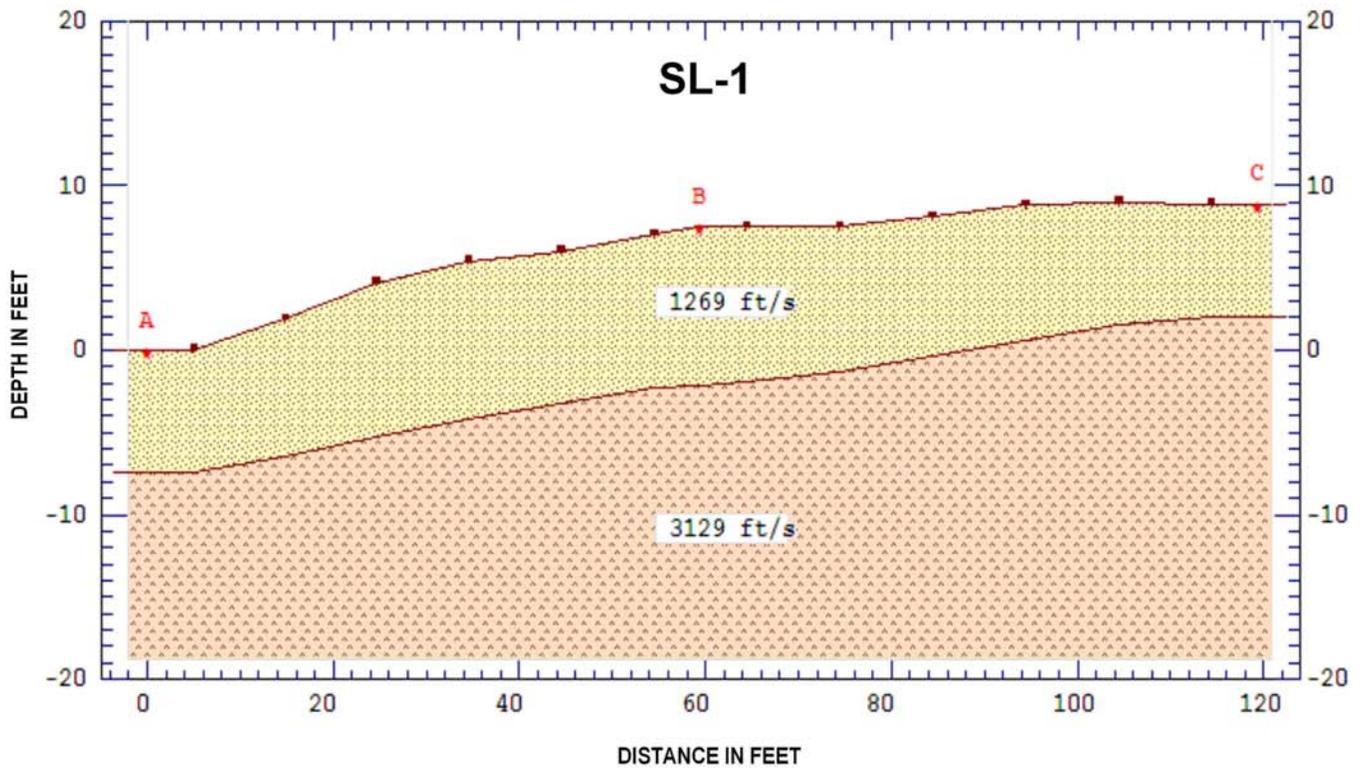
Cemetery Area Waterline Replacement  
Escondido, California



Figure 3

Project No.: 110010

Date: 02/10



**SEISMIC PROFILES,  
SL-1 AND SL-2**

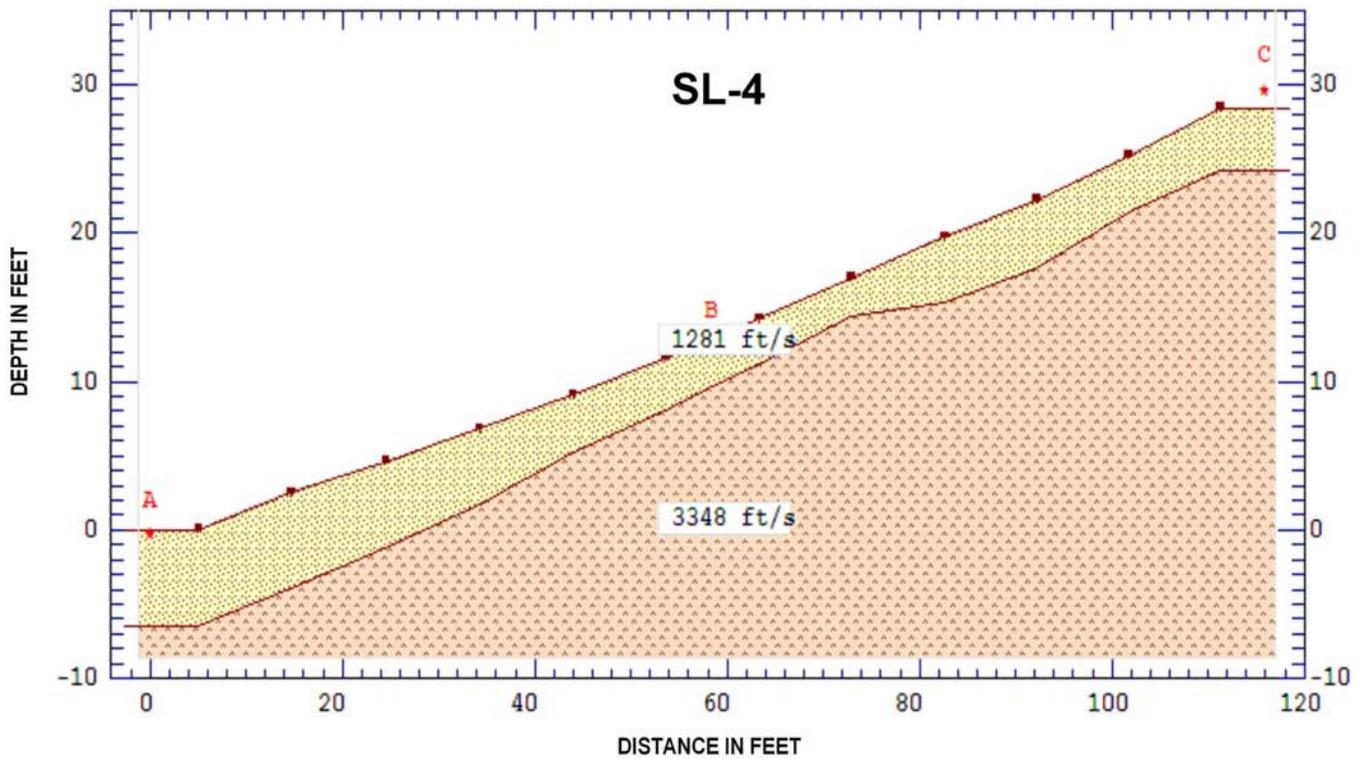
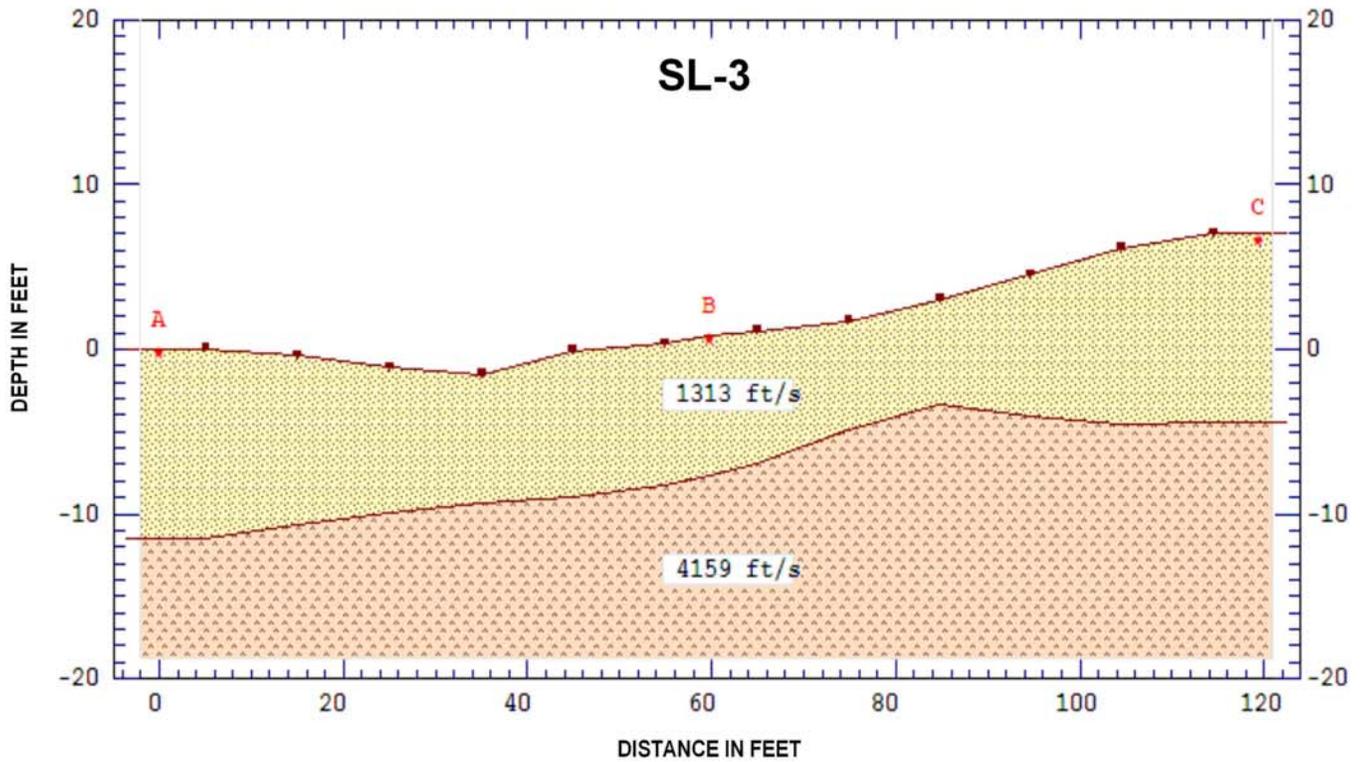
Cemetery Area Waterline Replacement  
Escondido, California

Project No.: 110010

Date: 02/10



Figure 4a



**SEISMIC PROFILES,  
SL-3 AND SL-4**

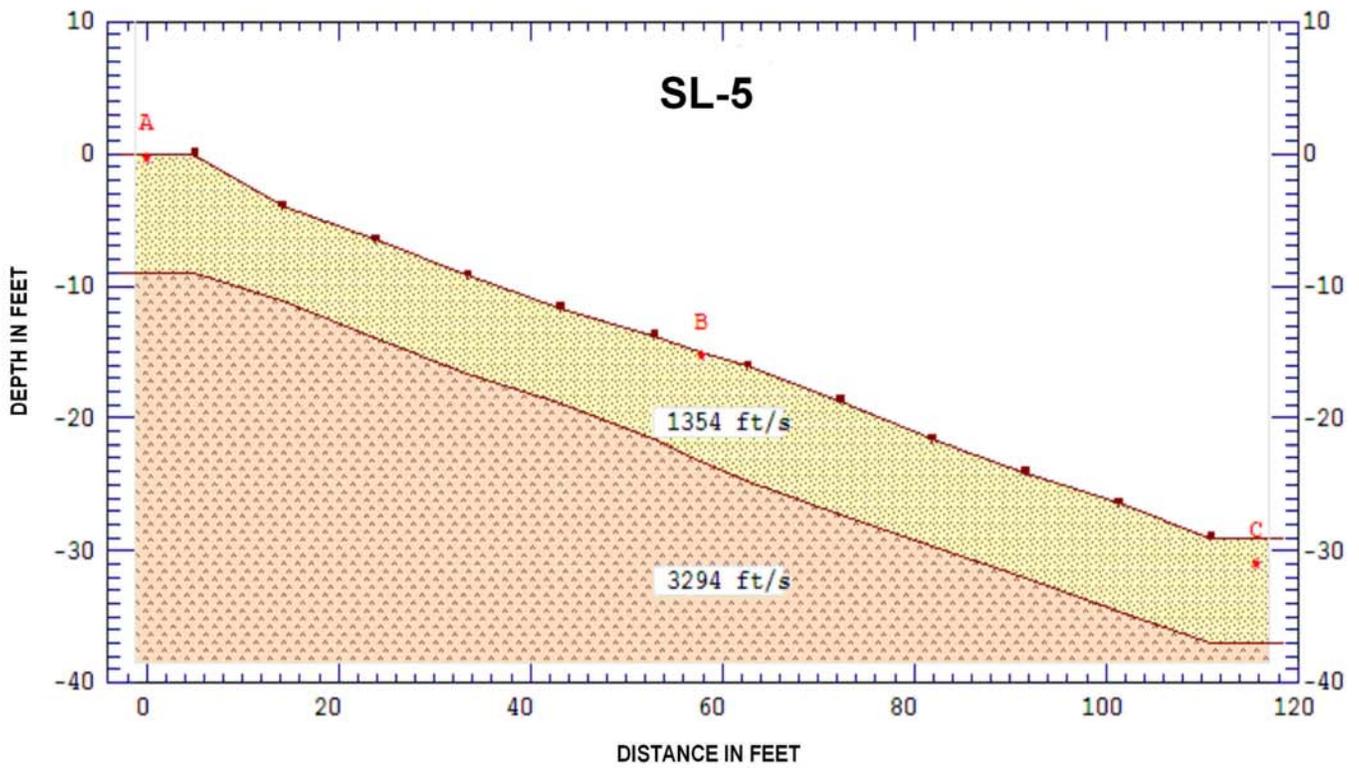
Cemetery Area Waterline Replacement  
Escondido, California

Project No.: 110010

Date: 02/10



Figure 4b



**SEISMIC PROFILE  
SL-5**

Cemetery Area Waterline Replacement  
Escondido, California

Project No.: 110010

Date: 02/10



Figure 4c

## **APPENDIX C**

### **LABORATORY TESTING**

#### **Classification**

Soils were visually and texturally classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D 2488. Soil classifications are indicated on the logs of the exploratory borings in Appendix A.

#### **In-Place Moisture and Density Tests**

The moisture content and dry density of relatively undisturbed samples obtained from the exploratory borings were evaluated in general accordance with ASTM D 2937. The test results are presented on the logs of the exploratory borings in Appendix A.

#### **Gradation Analysis**

Gradation analysis tests were performed on selected representative soil samples in general accordance with ASTM D 422. The grain-size distribution curves are shown on Figures C-1 through C-3. These test results were utilized in evaluating the soil classifications in accordance with USCS.

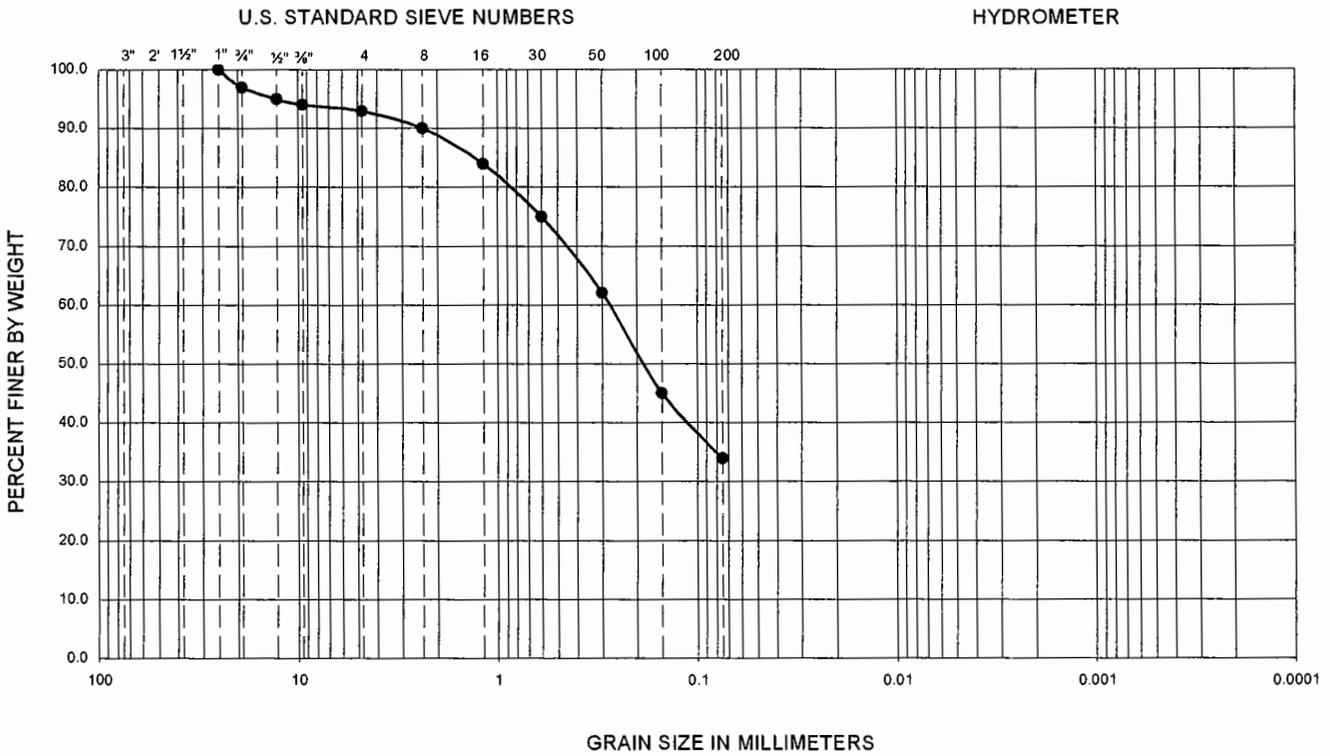
#### **Direct Shear Tests**

A direct shear test was performed on a relatively undisturbed sample in general accordance with ASTM D 3080 to evaluate the shear strength characteristics of selected material. The sample was inundated during shearing to represent adverse field conditions. The results are shown on Figure C-4.

#### **Soil Corrosivity Tests**

Soil pH, and resistivity tests were performed on representative samples in general accordance with CT 643. The soluble sulfate and chloride content of selected samples were evaluated in general accordance with CT 417 and CT 422, respectively. The test results are presented on Figure C-5.

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY

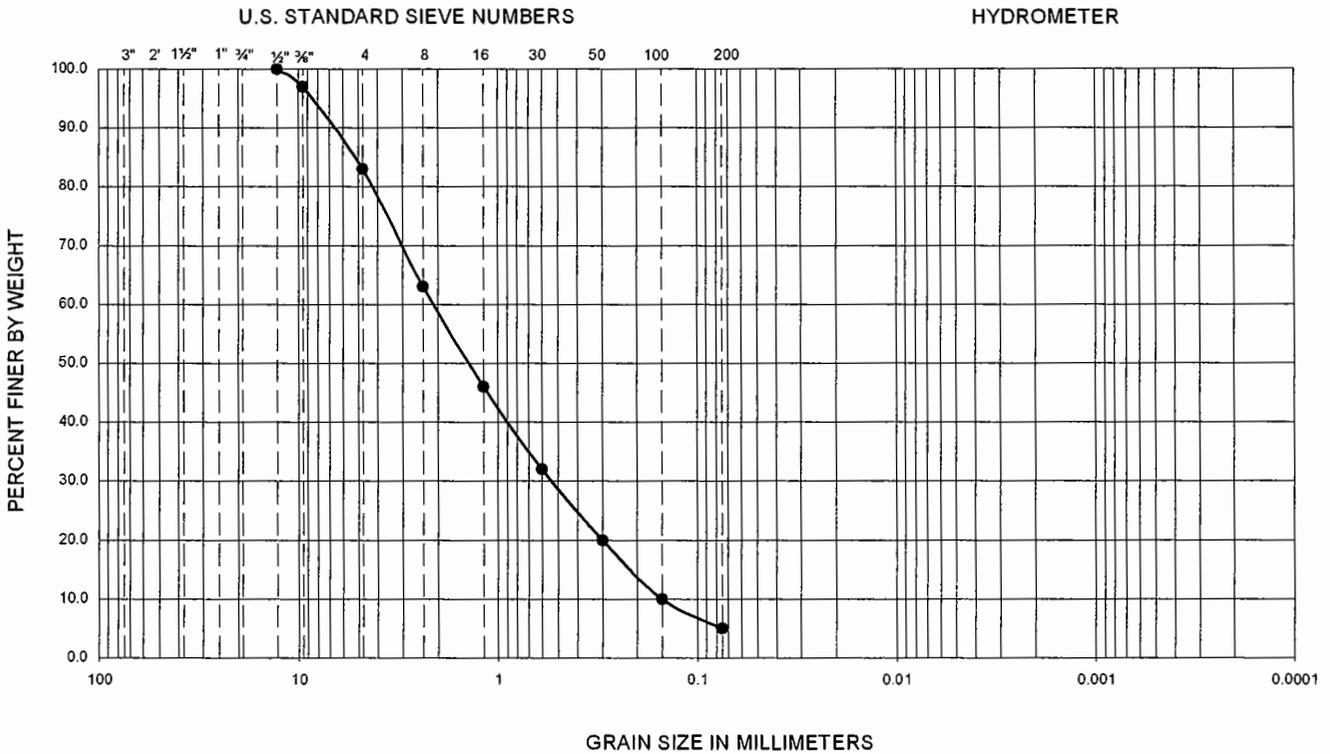


Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D <sub>10</sub>	D <sub>30</sub>	D <sub>60</sub>	C <sub>u</sub>	C <sub>c</sub>	Passing No. 200 (%)	USCS
●	B-2	0.4-5.0	--	--	--	--	--	--	--	--	34	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

<b>Ninyo &amp; Moore</b>		<b>GRADATION TEST RESULTS</b>	FIGURE
PROJECT NO.	DATE	CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT ESCONDIDO, CALIFORNIA	<b>C-1</b>
106513001	2/10		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY

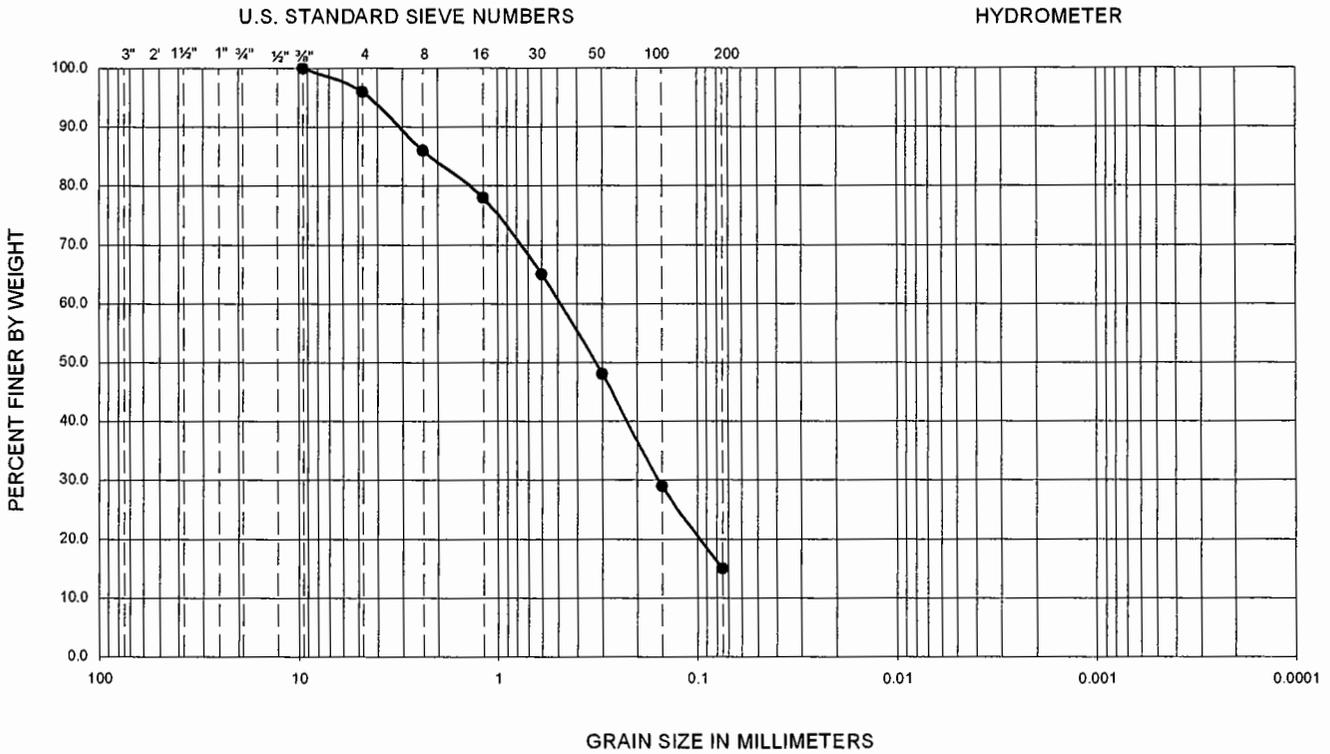


Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D <sub>10</sub>	D <sub>30</sub>	D <sub>60</sub>	C <sub>u</sub>	C <sub>c</sub>	Passing No. 200 (%)	USCS
●	B-11	2.5-2.9	--	--	--	0.15	0.52	2.10	14.0	0.9	5	SP-SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

<b>Ninyo &amp; Moore</b>		<b>GRADATION TEST RESULTS</b>		FIGURE <b>C-2</b>
PROJECT NO.	DATE	CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT ESCONDIDO, CALIFORNIA		
106513001	2/10			

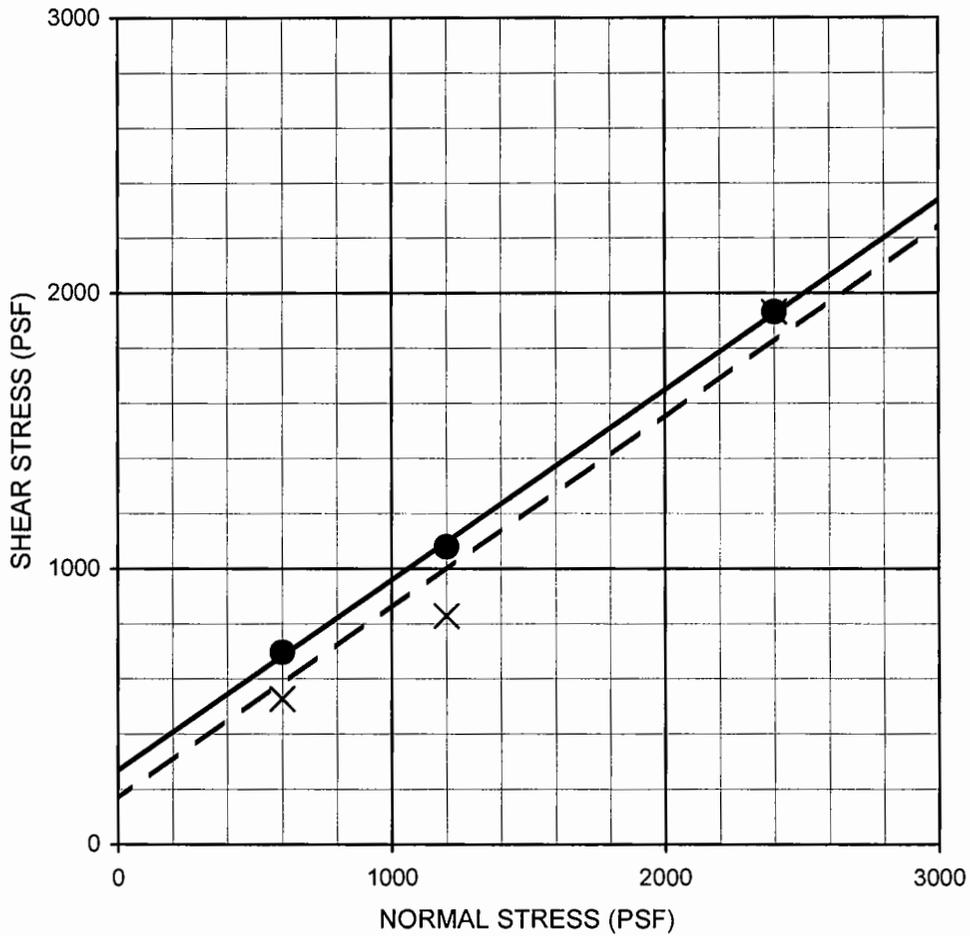
GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D <sub>10</sub>	D <sub>30</sub>	D <sub>60</sub>	C <sub>u</sub>	C <sub>c</sub>	Passing No. 200 (%)	USCS
●	B-12	2.5-2.9	--	--	--	--	--	--	--	--	15	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

<b>Ninyo &amp; Moore</b>		<b>GRADATION TEST RESULTS</b>		FIGURE <b>C-3</b>
PROJECT NO. 106513001	DATE 2/10	CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT ESCONDIDO, CALIFORNIA		



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion, c (psf)	Friction Angle, $\phi$ (degrees)	Soil Type
Silty SAND	—●—	B-8	5.0-6.5	Peak	270	35	SM
Silty SAND	- - X - -	B-8	5.0-6.5	Ultimate	170	35	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

<b>Ninyo &amp; Moore</b>		<b>DIRECT SHEAR TEST RESULTS</b>		FIGURE <b>C-4</b>
PROJECT NO.	DATE	CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT ESCONDIDO, CALIFORNIA		
106513001	2/10			

SAMPLE LOCATION	SAMPLE DEPTH (FT)	pH <sup>1</sup>	RESISTIVITY <sup>1</sup> (Ohm-cm)	SULFATE CONTENT <sup>2</sup>		CHLORIDE CONTENT <sup>3</sup> (ppm)
				(ppm)	(%)	
B-2	0.4-5.0	7.4	3,000	220	0.022	120
B-7	0.0-5.0	7.2	5,100	30	0.003	125

<sup>1</sup> PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 643

<sup>2</sup> PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 417

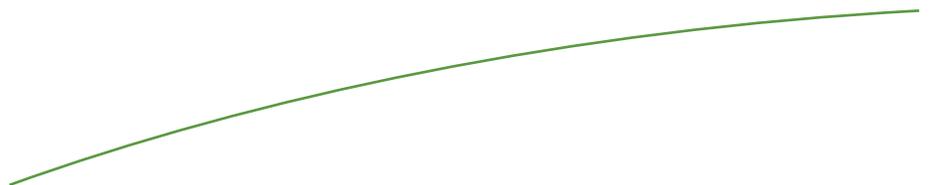
<sup>3</sup> PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 422

<b>Ninyo &amp; Moore</b>		<b>CORROSIVITY TEST RESULTS</b>	FIGURE
PROJECT NO.	DATE	CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT ESCONDIDO, CALIFORNIA	<b>C-5</b>
106513001	2/10		



# Appendix E

## SOIL CORROSIVITY INVESTIGATION



## Soil Corrosivity Investigation for the City of Escondido Cemetery Area Water Pipeline Replacement Project

Prepared for: Dave Cover, P.E., Black & Veatch Corporation

Prepared by: Ron Deal, V&A

Reviewed by: Brian Chapman P.E., V&A  
Manuel Najjar P.E., V&A

Date: January 28, 2010

---

### INTRODUCTION

V&A was retained by Black & Veatch Corporation to provide corrosion control design recommendations as part of the City of Escondido Cemetery Area Water Pipeline Replacement Project.

The scope of the project is to replace approximately 14,000 linear feet of piping that begins at the cemetery on Glen Ridge road. This technical memorandum will provide recommendations for corrosion protection for ductile iron and carbon steel piping and their associated metallic fittings.

The objectives of the soil corrosivity investigation were to:

- ❖ Perform field soil resistivity testing, laboratory soil resistivity testing and chemical analysis of selected soil samples.
- ❖ Evaluate the test results with respect to the potential corrosion of buried metallic piping and fittings.

The stray current analysis consisted of a review of available drawings and field observations to determine the potential risk of stray current corrosion. Stray current corrosion is caused by stray currents originating from between the project's pipeline and foreign sources.

### TEST METHODS

In attempting to predict corrosion problems associated with a particular type of structure prior to installation, it is necessary to investigate the soil conditions the structure will encounter. Since corrosion is an electrochemical process which is accompanied by current flow, the electrochemical characteristics of a soil are of primary importance when evaluating corrosivity. Test methods utilized during this investigation reflect the most current practices for evaluating soil corrosivity.

### Field Soil Resistivity Testing

Resistivity of the soil was measured at 11 locations along the proposed alignment on December 21, 2009. See Figure 1 for project vicinity and soil resistivity locations.

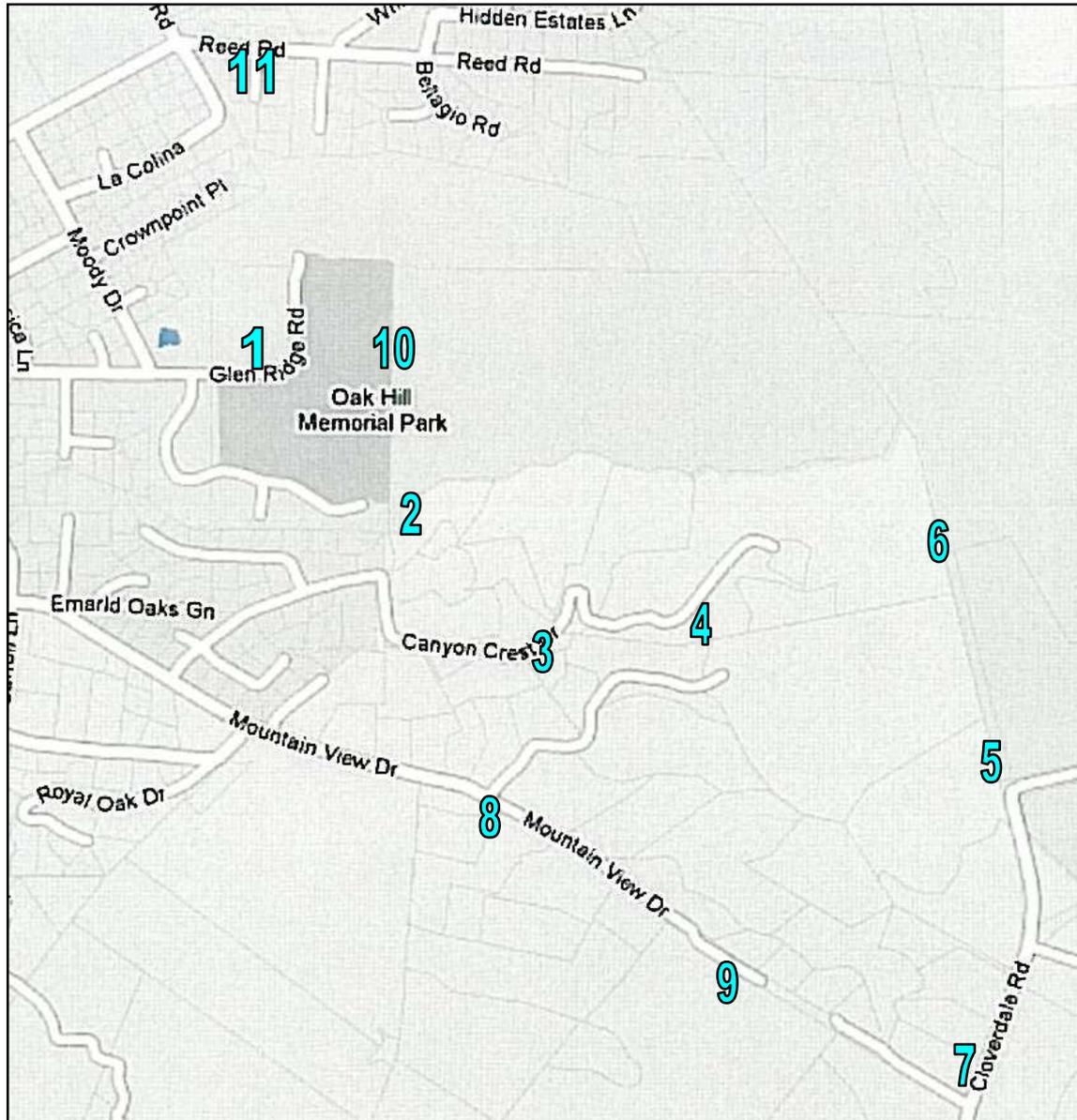
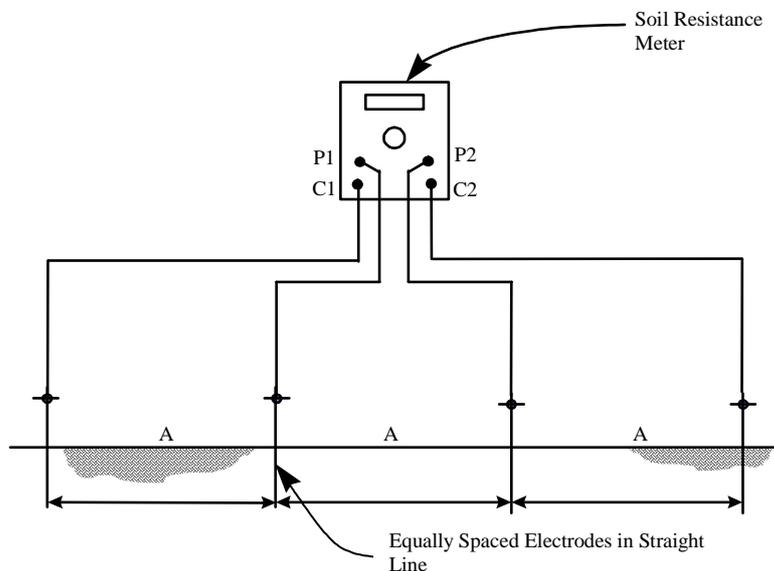


Figure 1. Project Vicinity & Soil Resistivity Locations<sup>1</sup>

<sup>1</sup> [www.google.com](http://www.google.com)

Soil resistivity measurements were conducted by the Wenner 4-pin method, utilizing a Soil Resistance Meter, (Model 400, manufactured by Nilsson Electrical Laboratory, Inc.). The Wenner method involves the use of four metal electrodes driven into the ground along a straight line, equidistant from each other, as shown in Figure 2.



**Figure 2. Soil Resistivity Measurement**

An alternating current from the Soil Resistance Meter causes a current to flow through the soil between the outside probes, C1 and C2. Due to the resistance of the soil, the current creates a voltage gradient, which is proportional to the average resistance of the soil mass to a depth equal to the distance between probes. The voltage drop is then measured across pins, P1 and P2. Resistivity of the soil is then computed from the instrument reading according to the following formula:

$$\rho = 2 \cdot \pi \cdot A \cdot R$$

Where:

$\rho$	=	soil resistivity (ohm-cm)
$A$	=	distance between electrodes (cm)
$R$	=	soil resistance, instrument reading (ohms)
$\pi$	=	3.14 (approx.)

Soil resistivity measurements were conducted at probe spacings of 2.5, 5, 10, 15, and 20 feet. The resistivity values obtained (see Table 1, Page 6) represent the minimum, maximum and average resistivity of the soil to a depth equal to the pin spacing. The resistivity of each layer of soil was then calculated using the Barnes Layer Method as follows:

### Barnes Layer Soil Resistivity Calculation

$$\rho_{b-a} = KR_{(b-a)}$$

and

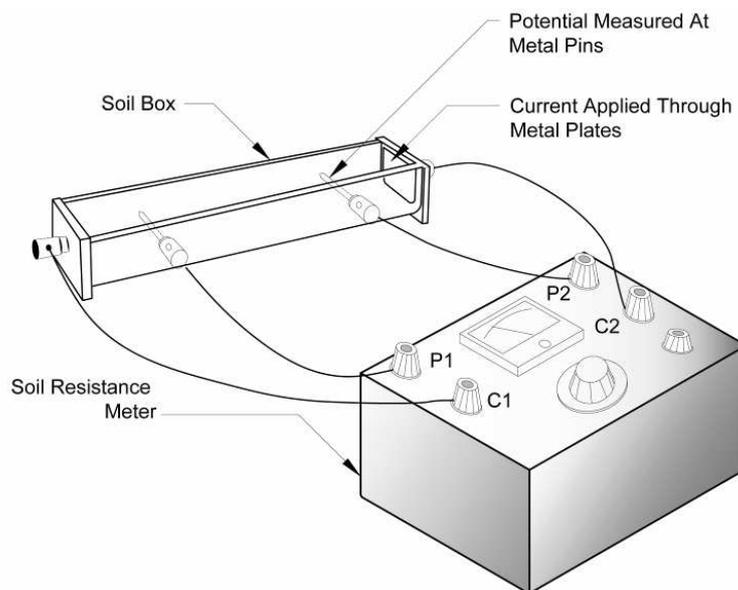
$$\frac{1}{R_{b-a}} = \frac{1}{R_a} - \frac{1}{R_b}$$

Where:

$\rho_{b-a}$	=	Soil resistivity of layer depth b-a (ohm-cm)
a	=	Soil depth to top of layer (feet)
b	=	Soil depth to bottom of layer (feet)
$R_a$	=	Soil resistance read at depth a (ohms)
$R_b$	=	Soil resistance read at depth b (ohms)
$R_{b-a}$	=	Resistance of soil layer from a to b (feet)
K	=	Layer constant (cm)
	=	60.96 $\pi$ (b-a)

### Laboratory Soil Analysis

To supplement the resistivity data obtained during field testing, soil samples were obtained from geotechnical investigations at selected locations for analysis of saturated soil resistivity using a soil box (see Table 3). The testing was performed in accordance with Caltrans California Test Method 643.



**Figure 3. Soil Resistivity Measurement Using the Soil Box Method**

This apparatus consists of a small plastic box with metal end plates for passing current through the soil sample packed tightly into the box. Current is passed through the sample, causing a voltage drop across the sample. The soil resistivity was determined from this known voltage drop utilizing a Soil Resistance Meter, as described earlier.

Soil samples were placed in the soil box and the soil resistivity measured in the "as-received" state. Distilled water was added to the soil sample and the resistivity measured after each watering. As the soil sample became more saturated, the soil resistivity decreased until the minimum soil resistivity was reached.

### Chemical Analysis of Soil

Soil borings collected by Ninyo & Moore were used to collect soil samples in order to conduct a corrosion analysis. The samples were tested for pH and resistivity as well as concentrations of water soluble chloride and sulfate by Ninyo & Moore. Standard analytical methods were utilized for determination of these chemical constituents.

### TEST RESULTS & DISCUSSION

Data obtained during this investigation has been summarized in tabular form for analysis and presentation.

Table 1 summarizes the results of the field soil resistivity measurements. Table 3 lists the "as-received" and minimum (saturated) soil resistivity for each sample collected as well as the chemical analysis of the sample.

Understanding how easily current will travel through a medium surrounding a metallic object is important in evaluating the corrosive environment. Resistivity is an inverse measure of the ability of a soil to conduct an electric current, with higher resistivity resulting in a lesser degree of current flow. Corrosion rate depends on current flow between a metal and the adjacent medium. Normally, the corrosion activity on metals in soil increases as soil resistivity decreases. Table 2 correlates resistivity values with degree of corrosivity. The interpretation of corrosivity correlation to soil resistivity varies somewhat among corrosion engineers. However, Table 2 is a generally accepted guide. Appendix A lists the results of the field soil resistivity measurements conducted at the site.

**Table 1.**  
**Summary of Field Soil Resistivity Data**

Depth	At Depth (ohm-cm)				Layer (ohm-cm)		
	5'	10'	15'	20'	5-10'	10-15'	15-20'
Minimum	2,059	2,490	3,619	3,600	3,148	3,090	2,105
Average	8,065	9,526	11,500	13,127	11,979	10,195	19,640
Maximum	20,586	40,407	58,025	78,515	38,827	19,573	74,800

**Table 2.**  
**Soil Corrosivity**

Soil Resistivity (ohm-cm)	Degree of Corrosivity
< 500	Very High
500 – 1,000	High
1,000 – 2,000	Moderate
2,000 – 10,000	Mild
> 10,000	Negligible

Soil resistivities at the pipeline invert depth of 5 feet ranged from 2,059 ohm-cm to 20,586 ohm-cm (see appendix A for all soil resistivities), which is considered mildly corrosive to negligibly corrosive to steel and ductile iron.

Laboratory analysis which includes soil resistivities, chloride and sulfate ion concentrations and pH was performed by Ninyo & Moore. A soil box test was performed to determine the minimum soil resistivity, which provides information about the soil during wet weather conditions. Soil resistivity is primarily dependent on the ion and moisture content of the soil. Higher levels of ions in the soil lower the soil resistivity. Additional moisture decreases the soil resistivity up to the point where the maximum solubility for the dissolved ionic compounds is achieved. Beyond this point, an increase in moisture increases the resistivity as the ions become more and more diluted. The decrease in soil resistivity is attributed to the presence of ions in the "as-received" soil going into solution and providing a less resistive path for current flow.

The saturated (minimum) soil resistivities ranged from 3,000 ohm-cm to 5,100 ohm-cm. These soil samples are considered mildly corrosive.

### Soil Chemical Analysis

Table 3 summarizes the results of the soil chemical analysis. A wide variety of water-soluble salts is typically found in soils. Two soils having the same resistivity may have significantly different corrosion characteristics, depending on the specific ions available. The major constituents which accelerate corrosion are chlorides, sulfates and the acidity (pH) of the soil. Chloride ions tend to break down otherwise protective surface deposits, and can facilitate corrosion of reinforcing steel in concrete structures. Sulfates in soil can be highly aggressive to portland cement by combining chemically with certain constituents of the concrete, principally tricalcium aluminate. This reaction is accompanied by expansion and eventual disruption of the concrete matrix.

**Table 3.**  
**Laboratory Soil Analysis Data**

Item No.	Boring No.	Approx. Depth (ft)	Soil Resistivity (ohm-cm)	Chemical Data		
				pH	Sulfate (ppm)	Chloride (ppm)
1	B-2	5	3,000	7.4	220	120
2	B-7	5	5,100	7.2	30	125

***Water-soluble Chloride***

Chloride ions found in soils tend to break down otherwise protective surface deposits, and can result in corrosion of buried metallic structures and reinforcing steel in concrete structures. Table 4 shows the effect of chloride ions on the corrosivity of the soil.

**Table 4.**  
**Effects of Chloride Ions on the Corrosivity of Soil**

Water-soluble Chloride Concentration (ppm)	Degree of Corrosivity
Over 5,000	Very High
1,500 - 5,000	High
500 - 1,500	Moderate
100 - 500	Mild
Below 100	Negligible

The water soluble chloride levels ranged from 120 ppm to 125 ppm. This range is considered mildly corrosive.

***Acidity***

Acidity, as indicated by the pH value, is another important factor of soil with respect to corrosivity. Lower pH (more acidic) will result in a greater degree of corrosivity with respect to buried metallic and concrete structures. When pH increases above 7.0 (the neutral value) the conditions become increasingly more alkaline. In alkaline environments, steel forms a protective layer on its surface. This is referred to as passivation. V&A developed Table 5, which correlates the effect of pH on the rate of corrosion for buried steel or concrete structures.

**Table 5.**  
**Effects of pH on the Corrosivity of Soil**

pH	Degree of Corrosivity
< 4.0	Very high
4.0 - 5.5	High
5.5 - 6.5	Moderate
6.5 – 7.0	Mild
> 7.0	Negligible

The pH of the tested boring samples ranged from 7.2 to 7.4. These levels are considered negligibly corrosive.

#### **Water-soluble Sulfates**

Soil with high levels of sulfates can chemically attack concrete structures. Table 6 correlates the effect of sulfates on the corrosivity of soil for concrete structures.

**Table 6.**  
**Effects of Sulfate Ions on the Corrosivity of Soil**

Water-soluble Sulfate Concentration (ppm)	Degree of Corrosivity
> 2,000	Severe
1,000 - 2,000	Moderate
< 1,000	Negligible

The water soluble sulfate levels ranged from 30 ppm to 220 ppm. This range is considered negligibly corrosive.

## **RECOMMENDATIONS**

Based on preliminary field data, it appears that the soil around the proposed pipeline is *mildly corrosive to negligibly corrosive* to metallic piping and fittings. A discussion of the corrosion control options recommended for each pipe material is presented below.

No sources of stray current were observed.

### **Buried Metallic Pipes**

Due to the high soil resistivities and low ion content it is recommended that the following corrosion control measures be taken for buried metallic piping and fittings:

## Ductile Iron Pipe

- ❖ Wrap polyethylene encasement conforming to AWWA C105.
- ❖ Verify continuity between all metallic piping.
- ❖ Install corrosion survey test stations.
- ❖ Isolate the pipeline from other metallic structures such as other metallic pipes, reinforced concrete, or where a change in piping or coating material occurs.

If the pipeline is constructed with DIP it is possible that the manufacturer will not warranty their product if an exterior spray applied coating is applied. In this case, polyethylene encasement would be the recommended option for an owner who chooses to retain the warranty.

## Steel Pipe

- ❖ Coat steel pipes with a bonded dielectric coating with 100% Solids Polyurethane or 100% Solids Epoxy.
- ❖ Verify continuity between all metallic piping.
- ❖ Install corrosion survey test stations.
- ❖ Isolate the pipeline from other metallic structures such as other metallic pipes, reinforced concrete, or where a change in piping or coating material occurs.

If polyethylene encasement is installed, V&A would highly recommend the installation of bond wires across every pipe joint on the exterior of the pipeline. The joint bond wires would allow for the installation of a cathodic protection system if it is deemed necessary in the future.

The cost for a spray applied coating such as a 100% solids polyurethane or epoxy is estimated at \$5 per square foot for both steel or DIP. The cost to apply a tape wrap system or polyethylene encasement is estimated at \$3 per square foot.

## Cement Mortar Coated Pipelines

Cement Mortar Coated Pipelines (CML&C) include AWWA C200, C205, and C209. Reinforced Concrete Cylinder Pipelines (RCP) include AWWA C300, C301, C302 and C303.

The joints, valves, and any other steel appurtenances in metallic contact with the pipe shell or steel reinforcement should be coated with a cementitious mortar to maintain an environment similar to that of the pipe. Mortar coating can be performed by grouting the joints with a diaper, backfilling with a controlled low strength material (CLSM) (pH > 10), or applying a cementitious mortar to the surfaces.

## APPENDIX A

**Table A1.  
Field Soil Resistivity Data**

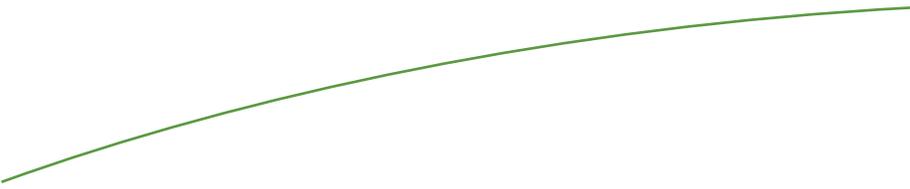
Site No.	Depth (feet)	Resistivity (ohm-cm)	Layer (feet)	Layer Resistivity (ohm-cm)
1	2.5	1,791	0 - 2.5	n/a
	5	2,059	2.5 - 5	2,521
	10	2,490	5 - 10	3,148
	15	3,619	10 - 15	39,210
	20	4,749	15 - 20	74,800
2	2.5	10,628	0 - 2.5	n/a
	5	20,586	2.5 - 5	n/a
	10	40,407	5 - 10	n/a
	15	58,025	10 - 15	n/a
	20	78,515	15 - 20	n/a
3	2.5	8,311	0 - 2.5	n/a
	5	8,847	2.5 - 5	9,457
	10	10,839	5 - 10	13,988
	15	16,775	10 - 15	n/a
	20	15,397	15 - 20	12,351
4	2.5	12,878	0 - 2.5	n/a
	5	19,342	2.5 - 5	38,827
	10	19,456	5 - 10	19,573
	15	19,906	10 - 15	20,872
	20	20,414	15 - 20	22,104
5	2.5	5,103	0 - 2.5	n/a
	5	7,028	2.5 - 5	11,283
	10	5,592	5 - 10	4,643
	15	6,262	10 - 15	8,237
	20	5,668	15 - 20	4,413
6	2.5	7,339	0 - 2.5	n/a
	5	9,326	2.5 - 5	12,788
	10	5,793	5 - 10	4,191
	15	4,481	10 - 15	3,090
	20	3,600	15 - 20	2,265
7	2.5	8,167	0 - 2.5	n/a
	5	5,573	2.5 - 5	4,229
	10	4,826	5 - 10	4,255
	15	4,797	10 - 15	4,741
	20	5,400	15 - 20	8,672

Site No.	Depth (feet)	Resistivity (ohm-cm)	Layer (feet)	Layer Resistivity (ohm-cm)
8	2.5	5,501	0 - 2.5	5,501
	5	6,329	2.5 - 5	n/a
	10	8,254	5 - 10	11,860
	15	8,244	10 - 15	8,226
	20	8,120	15 - 20	7,759
9	2.5	4,926	0 - 2.5	n/a
	5	6,224	2.5 - 5	8,449
	10	7,296	5 - 10	8,815
	15	5,774	10 - 15	4,074
	20	4,022	15 - 20	2,105
10	2.5	10,245	0 - 2.5	n/a
	5	7,086	2.5 - 5	5,415
	10	4,941	5 - 10	3,793
	15	5,802	10 - 15	8,911
	20	7,392	15 - 20	41,477
11	2.5	3,725	0 - 2.5	n/a
	5	4,385	2.5 - 5	5,331
	10	4,424	5 - 10	4,463
	15	4,309	10 - 15	4,096
	20	4,251	15 - 20	4,088



Appendix F

HAZARDOUS MATERIALS  
TECHNICAL STUDY



**HAZARDOUS MATERIALS  
TECHNICAL STUDY  
CEMETERY AREA WATER PIPELINE  
REPLACEMENT PROJECT  
ESCONDIDO, CALIFORNIA**

**PREPARED FOR:**

Black & Veatch  
300 Rancheros Drive, Suite 250  
San Marcos, California 92069

**PREPARED BY:**

Ninyo & Moore  
Geotechnical and Environmental Sciences Consultants  
5710 Ruffin Road  
San Diego, California 92123

February 19, 2010  
Project No. 106513002

February 19, 2010  
Project No. 106513002

Mr. David Cover  
Black & Veatch  
300 Rancheros Drive, Suite 250  
San Marcos, California 92069

Subject: Hazardous Materials Technical Study  
Cemetery Area Water Pipeline Replacement Project  
Escondido, California

Dear Mr. Cover:

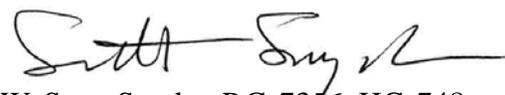
In accordance with our proposal P-8269 dated December 4, 2008, and your subconsultant agreement, Ninyo & Moore has performed a Hazardous Materials Technical Study (HMTS) for the above-referenced project in Escondido, California. The attached report presents our methodology, findings, opinions, conclusions, and recommendations regarding the environmental conditions at the site.

We appreciate the opportunity to be of service to you on this project.

Sincerely,  
**NINYO & MOORE**



Jeanette Ninyo  
Senior Staff Geologist



W. Scott Snyder, P.G. 7356, HG. 748  
Principal Geologist

JN/SLS/WSS/gg

Distribution: (2) Addressee

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Figure 1 – Project Area Location Map

Figure 2 – Project Area and Vicinity Map

**Appendices**

Appendix A – Photographic Documentation

Appendix B – Historical Topographic Maps

Appendix C – Environmental Database Report

## LIST OF ACRONYMS

AST	Aboveground Storage Tank
ASTM	American Society for Testing and Materials
bgs	Below ground surface
CCA	Chromated copper arsenate
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CIWMB	State of California, Integrated Waste Management Board
DEH	Department of Environmental Health
DTSC	California Department of Toxic Substances Control
EC	Engineering Control
EIR	Environmental Impact Report
ESA	Environmental Site Assessments
ERNS	Emergency Response Notification System
FUDS	United States Army Corps of Engineers, Formerly Used Defense Sites program
GIS	Geographic Information System
HMTS	Hazardous Materials Technical Study
IC	Institutional Control
LUST	Leaking Underground Storage Tank
MSL	Mean Sea Level
NFRAP	CERCLIS No Further Remedial Action Planned
NLR	RCRA No Longer Regulated
PCBs	Polychlorinated biphenyls
PERMITS	County of San Diego DEH Hazardous Materials Establishments
RCRA	Resource Conservation and Recovery Act
RCRA COR	RCRA Corrective Action Site
RCRA GEN	RCRA Large and Small Quantity Generators List
RCRA TSD	RCRA Treatment Storage and Disposal Facilities List
RECs	Recognized Environmental Conditions
ROW	Right-of-way
RWQCB	Regional Water Quality Control Board
SAM	County of San Diego Site Assessment and Mitigation Program
SDG&E	San Diego Gas and Electric
State Sites	DTSC Cal-Sites Program
State Spills-90	RWQCB Spills List
SWL	Solid Waste Landfill-Related Sites
SWRCB	State Water Resources Control Board
Track Info	Track Info Services, LLC
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground Storage Tank
VCP	DTSC Voluntary Cleanup Program Properties

## **1. INTRODUCTION**

This Hazardous Materials Technical Study (HMTS) for properties associated with the Cemetery Area Water Pipeline Replacement Project (“Cemetery Pipeline project”) was conducted by Ninyo & Moore in accordance with our proposal P-8269 dated December 4, 2008. The project involves proposed replacement of existing water pipelines located in the eastern portion of the City of Escondido’s jurisdiction, in the vicinity of Mountain View Drive and Oak Hill Memorial Park, generally west of Cloverdale Road, in the City of Escondido and County of San Diego, California. The existing pipelines to be replaced are located within a cemetery, avocado groves, and privately owned residential properties. The HMTS involved evaluation of properties along the proposed pipeline corridor herein referred to as the “project area”.

### **1.1. Purpose**

The purpose of this HMTS report was to provide a general overview of potential impacts related to hazardous materials and wastes associated with the implementation of the Cemetery Pipeline project. The scope of work for the historical and regulatory research for this report was in part based on the American Society for Testing and Materials (ASTM) E1527-05 guidance for Phase I Environmental Site Assessments (ESAs). However, the scope of work was not in strict compliance with the ASTM standard and was modified to accommodate the scope listed in our proposal to Black & Veatch, as it is our understanding that this report will be utilized to prepare an Environmental Impact Report (EIR). Therefore, the intent of the HMTS was not to identify Recognized Environmental Conditions (RECs) associated with the project area, as is typical of a Phase I ESA prepared to the ASTM standard, but rather to document areas potentially impacted with hazardous materials or wastes, which may impact the Cemetery Pipeline project.

The purpose of the HMTS was also to evaluate hazardous materials impacts from the project, and to develop potential mitigation measures. Potential impacts were considered with respect to the California Environmental Quality Act (CEQA).

## **1.2. Methodology**

Our scope of work for the HMTS consisted of the following tasks.

- Reviewed physical setting information, including topographic and geologic maps, and groundwater elevation data for the project area.
- Conducted a drive-by reconnaissance which documented facilities/areas of potential environmental concern within or adjacent to the project area, as observed. Due to the size of the project area and the fact that it passes through privately-owned properties, the project area was not accessed in its entirety. The reconnaissance did not include a visual survey of the interiors of buildings/structures. The visual observations were made from safely accessible vantage points on public rights-of-way (ROW) (e.g., roads, side-walks). Private properties were not accessed.
- Reviewed an environmental database search for the project area and properties within a specified radius of the project area. This review documented, for the purposes of the EIR, the quantity and/or general nature of sites with unauthorized releases of hazardous materials or wastes to soil and/or groundwater in the vicinity of the project area.
- Review of historical aerial photographs and historical topographic maps, to evaluate the presence of areas within the project area that may have been historically developed with uses indicative of potential environmental concerns, including, but not limited to, agricultural, commercial, and industrial facilities.
- Evaluated the findings with respect to Questions A, B, and D of Section 7, “Hazards and Hazardous Materials” within Appendix G, “Environmental Checklist Form” of the “Guidelines for Implementation of CEQA.”
- Preparation of this HMTS report documenting findings and providing opinions and recommendations regarding portions of the project area that may have a higher likelihood of being associated with soil and/or groundwater contamination, and potential impacts from hazardous materials or wastes from implementation of the pipeline project.

## **2. PROJECT AREA DESCRIPTION AND PHYSICAL SETTING**

The project area is located in the eastern portion of the City of Escondido’s jurisdiction, in the vicinity of Mountain View Drive and Oak Hill Memorial Park (a cemetery), generally west of Cloverdale Road, in the City of Escondido and County of San Diego, California (Figures 1 and 2). The existing water pipelines to be replaced are located within a cemetery, avocado groves, privately owned residential properties and road right-of-way. Landmarks and features of interest

(e.g., major roads, adjacent properties) are depicted on Figure 2. Adjacent properties primarily include residential, agricultural, golf course, and school facilities.

## **2.1. Topography**

Based on a review of the United States Geological Survey (USGS), Escondido and Valley Center, California 7.5-minute topographic quadrangle maps, elevations at the project area range from approximately 500 feet above mean sea level (MSL) in its eastern portion to approximately 900 feet above MSL in its western portion. Regional drainage is toward the east (USGS, 1968 [Photorevised 1975]).

## **2.2. Geology**

According to the California Department of Conservation Geologic Map of the Oceanside 30' x 60' Quadrangle, the project area is primarily underlain by granodiorite of Woodson Mountain (mid-Cretaceous), and partially underlain by granite (mid-Cretaceous), landslide deposits, undivided (Holocene and Pleistocene), and old alluvial floodplain deposits, undivided (late to middle Pleistocene). The granodiorite consists of massive coarse grained, leucocratic hornblende granodiorite and is considered to be part of the Woodside Mountain granodiorite. The granite consists of very fine-grained, sub-porphorytic, leucocratic biotite granite. The landslide deposits consist of highly fragmented to largely coherent landslide deposits. Unconsolidated to moderately consolidated material is indicative of the landslide deposits. The old alluvial floodplain deposits consist of fluvial sediments deposited on canyon floors. It consists of moderately well consolidated, poorly sorted, permeable, commonly slightly dissected gravel, sand, silt, and clay bearing alluvium (Kennedy and Tan, 2005).

## **2.3. Surface Waters**

According to the USGS Escondido and Valley Center, California 7.5-minute topographic quadrangle maps, the southeastern portion of the project area is located adjacent to an intermittent stream. Two wells are depicted to be located on, or adjacent to, the project area and

the intermittent stream. The purpose and/or use of the wells is not specified on the map reviewed (USGS, 1968 [Photorevised 1975]).

#### **2.4. Hydrogeology**

According to the Regional Water Quality Control Board (RWQCB) Water Control Plan for the San Diego Basin, the site is located within the Las Lomas Muertas Hydrologic Subarea (905.32) of the San Pasqual Hydrologic Area of the San Dieguito Hydrologic Unit. Existing beneficial uses for groundwater at the project area include municipal, agricultural, and industrial supply (RWQCB, 1994, amended 2007).

Depth to groundwater information for the project area or vicinity was not available for review; however, based on previous experience in the area, depth to groundwater is considered to be generally greater than 10 feet below ground surface (bgs). Based solely on topography, the direction of groundwater flow is anticipated to be to the east. Groundwater levels can fluctuate due to seasonal variations, groundwater withdrawal or injection, and other factors.

### **3. PROJECT AREA RECONNAISSANCE**

A field reconnaissance was conducted by Ms. Jeanette Ninyo on December 4, 2009 to document areas or features of potential environmental concern within or adjacent to the project area. The project area was viewed from vantage points on public ROW (e.g., sidewalks, streets), and the interiors of properties and/or structures were not accessed. Selected photographs are provided in Appendix A. Pertinent observations included the following:

- Several areas cultivated as agricultural groves were observed to be located on and around the project area.
- One maintenance shed associated with the cemetery was observed to be located approximately 500 feet north of the project area.

- A “Hog Back Pump Station” was observed at 2547 Mountain View Drive, approximately 1,000 feet west of the project area. The pump station is owned and operated by the City of Escondido and is used for potable water distribution.
- One aboveground storage tank (AST) associated with a residential dwelling approximately 700 feet west of the project area was observed along Mountain View Drive. The contents of the AST are unknown; however, it appeared to be a propane tank.
- Overhead power lines and utility poles were noted to run along the public ROW within the project area. Multiple pole-mounted electrical transformers were noted on the poles.

Evidence of hazardous materials usage/storage or hazardous waste generation was not noted within the project area.

#### 4. PROJECT AREA HISTORY

The following sections present the historical uses of the project area, as documented through our review of historical aerial photographs and topographic maps.

Based on aerial photographs and historical topographic maps reviewed, the project area appears to have been partially undeveloped and/or used for agricultural purposes (orchard farming) since as early as 1942. Topographic maps indicate that the Oak Hill Cemetery was present within the project area by this time. According to a representative of the Oak Hill Memorial Park, the cemetery has been in existence since approximately 1878.

##### 4.1. Historical Aerial Photograph Review

Historical aerial photographs of the project area were reviewed using online resources for selected years covering the period 1947 to 2005. A listing of the aerial photographs reviewed is provided in Table 1, followed by a summary of noted observations.

**Table 1 – Aerial Photographs Reviewed**

Date	Photograph Identification	Source
1947	www.historicaerials.com	A
1964	www.historicaerials.com	A
1968	www.historicaerials.com	A
1971	www.historicaerials.com	A

**Table 1 – Aerial Photographs Reviewed**

Date	Photograph Identification	Source
1980	www.historicaerials.com	A
1989	www.historicaerials.com	A
2003	www.historicaerials.com	A
2005	www.historicaerials.com	A
<b>Note:</b> A = Historicaerials.com		

Based on aerial photographs reviewed, the northern portion of the project area appeared to have been partially undeveloped and/or used for agricultural purposes (orchard farming) since as early as 1947. Based on information provided by a cemetery representative, some of these areas may correspond to grave sites associated with the cemetery and may not be "food bearing" agricultural activities. The southern portion of the project area appeared generally undeveloped.

In 1964, the northern portion of the project area appeared to be used primarily for agricultural and/or cemetery purposes. The southern portion of the project area appeared to be undeveloped and/or used for agricultural purposes.

In 1968, the agricultural orchard uses appeared to have decreased in the northern portion of the project area. The southern portion of the project area appeared generally to be undeveloped and used for agricultural purposes.

In 1971, the southern portion of project area appeared to be densely vegetated with some orchard farming remaining. The northern portion of the project area was not covered in the aerial photographs available for review.

By 1980, development around the northwestern portion of the project area appeared to have increased, and fewer agricultural areas were present. The southern portion of the project area appeared to be more densely vegetated with some orchard farming remaining.

By 1989, residential properties were developed in the northwestern portion of the project area. The southern portion of the project area appeared to be partially developed, densely vegetated in some areas, with several areas of agricultural use.

By 2003, the entrance of the cemetery appeared to be developed to its current configuration within the project area. Some portions of the project area continued to be used for agricultural purposes. The southern portion of the project area appeared generally similar to its present day configuration by this time. In the 2005 photograph, the project area appeared generally similar to its current configuration.

#### **4.2. Historical Topographic Maps**

Historical USGS maps dated 1893, 1901, 1942, 1949, 1968, 1975, and 1996 were reviewed for potential features of environmental concern at the project area. Pertinent features noted on the maps are discussed herein. Copies of historical topographic maps provided by Track Info are provided in Appendix B.

Roads were present within the project area as early as 1893. During this time, the project area appeared otherwise undeveloped with multiple intermittent streams. By 1901, roadway alignments appeared to have changed and be primarily present west of the project area.

By 1942, the Oak Hill Cemetery was depicted as present within the northern portion of the project area. Additional roads and scattered buildings appeared to have been constructed on the western and central portion of the project area. Agricultural uses are indicated within the project area.

The 1968 topographic map depicted the majority of the project area as being used for agricultural purposes. Development appeared to have increased in the project area vicinity by this time. Two wells were depicted on and/or nearby the project area, located north of the northern terminus of Cloverdale Road. The 1975 topographic map reviewed appeared generally similar to the 1968 map; however, additional structures appear to have been constructed within and nearby the project area.

By 1996, the project area appears to be generally similar to its current configuration; however, the residential dwellings currently located west and north of the project area do not appear to be depicted on the map.

## **5. RECORDS REVIEW**

Information obtained from a review of environmental record sources is summarized herein.

### **5.1. Environmental Database Review**

In order to evaluate the significance of properties on and in the vicinity of the project area with documented hazardous waste impacts, a search and review of federal, state, local, and regional environmental regulatory agency databases was conducted for facilities located within a specified radius of the project area. A computerized, environmental information database search was performed by Track Info. The associated database report dated December 2, 2009, is provided in Appendix C. The databases searched are generally consistent with those described in the ASTM standard. This section summarizes information obtained from Track Info regarding facilities of potential environmental concern listed on various databases, reported to be located on or in the vicinity of the project area.

The database review was conducted to evaluate whether properties within a specified radius of the project area have been documented as having experienced unauthorized releases of hazardous materials or wastes or other events with potentially adverse environmental effects. The location of each facility listed in the reports was evaluated relative to its potential impact to the project area, based on its reported distance from the project area, the nature of the database on which it was listed, and/or other details provided in the database report.

Generators of hazardous wastes and/or users of hazardous materials do not necessarily pose a significant threat to surficial or subsurface soil or groundwater. Facilities on these lists have not necessarily experienced an unauthorized release of hazardous materials or wastes to the subsurface. Facilities of this type are found on the following regulatory agency lists:

- United States Environmental Protection Agency (USEPA), Resource Conservation and Recovery Act (RCRA) Large and Small Quantity Generators List (RCRA GEN)
- County of San Diego Department of Environmental Health (DEH) Hazardous Materials Establishments (PERMITS)
- State Water Resources Control Board (SWRCB), underground storage tank (UST) and AST Registration Lists

Facilities with documented releases of hazardous materials or wastes may have impacted the subsurface soil or groundwater at the project area if such materials have migrated from these properties. These properties include those containing leaking USTs, hazardous materials spills, and hazardous waste sites. Properties of this type are found on the following regulatory agency lists:

- USEPA, National Priorities List (“Superfund List”)
- USEPA, Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) List
- RCRA Corrective Action Site – (RCRA COR)
- Emergency Response Notification System (ERNS) List
- California Department of Toxic Substances Control (DTSC) Cal-Sites (State Sites)
- Regional Water Quality Control Board (RWQCB) Spills List (State Spills-90)
- SWRCB Leaking Underground Storage Tank (LUST)

Other facilities of potential environmental concern include solid waste landfills and those permitted to store, treat, or dispose of hazardous waste. Properties of this type are found on the following regulatory agency lists:

- RCRA Treatment Storage and Disposal Facilities List (RCRA TSD)
- California Integrated Waste Management Board (CIWMB) Solid Waste Landfill-Related Sites (SWL)

Databases of properties with environmental liens, engineering controls (EC), or institutional controls (IC) (e.g., deed restrictions), include the following:

- USEPA Brownfields Management System, Federal Engineering and Institutional Controls (Federal EC/IC)
- DTSC Deed Restricted Sites (State/Tribal IC)
- DTSC Voluntary Cleanup Program Properties (State/Tribal VCP)

Databases of archived facilities, for which further regulatory action is generally not planned, include the following:

- CERCLIS No Further Remedial Action Planned (NFRAP)
- RCRA No Longer Regulated (NLR)

Several properties listed on various databases were reported to be located on and/or within approximately 1/2 mile of the project area. The listed properties are summarized in Table 2. Facilities interpreted to be located within approximately 1,500 feet of the project area are depicted on Figure 2. Records were reviewed on the SWRCB Geotracker website, DEH Site Assessment and Mitigation (SAM) Case Listing, and/or on the DEH Hazardous Materials Establishment Listing online databases, as applicable, to obtain additional information.

**Table 2 – Facilities Listed on Regulatory Databases**

Facility Description/Address in Database Report	Database(s) Listed	Summary of Release/Cleanup Information and Case Status
Windover Financial Property 1529 Cloverdale Road	UST/ PERMITS	This property is listed as being associated with a removed 550-gallon diesel single-walled UST. One permit was listed as being associated with the site. The status of the permit is “unknown”. Based on the fact that the UST is reported to have been removed, and the fact that this facility is not listed on an unauthorized release database, there is a low likelihood that it represents a significant environmental concern to the project.

**Table 2 – Facilities Listed on Regulatory Databases**

Facility Description/Address in Database Report	Database(s) Listed	Summary of Release/Cleanup Information and Case Status
Ray and Cuella Moye Trust 2633 Canyon Crest Drive	UST	This facility is listed as being associated with a removed 550-gallon regular unleaded single-walled UST. Based on the fact that the UST is reported to have been removed, and the fact that this facility is not listed on an unauthorized release database, there is a low likelihood that it represents a significant environmental concern to the project.
North County Cemetery District 2640 Glenridge Road	UST/ PERMITS	This facility is listed as being associated with two removed USTs, including one, 1,000-gallon single-walled leaded gasoline UST and one, 550-gallon single-walled diesel UST. This facility is also listed as having active permits related to hydrocarbon solvents. Hazardous Waste Manifest Inventory data were available in the environmental database report from 2002 through 2008. The maximum tonnage of hazardous waste produced per year during this interval was reported to be 0.13 tons. One additional permit listing had a “Not Reported” status, of which details were not available in the database report. Based on the fact that the USTs were reported to have been removed, and the fact that this facility is not listed on an unauthorized release database, there is a low likelihood that it represents a significant environmental concern to the project.
Rancho Ladeado 2682 Canyon Crest Drive	PERMITS	The status of this permit listing is “Not Reported,” and details regarding the permit were not available in the database report. However, based on the fact that this facility is not listed on an unauthorized release database, there is a low likelihood that it represents a significant environmental concern to the project.
Unknown 1510 Cloverdale Road	ERNS	According to the database report, illegal dumping of empty containers of Freon with “no leakage” was reported on October 26, 1988. The medium affected was land. The status of this case is listed as “Unknown.” Based on the information provided, the length of time that has occurred since the dumping, and the fact that this listing was geographically plotted on the east side of Cloverdale Road (not within or adjacent to the project area), there is a low likelihood that it represents a significant environmental concern to the project.
Escondido USD Hidden Valley Middle School 2700 Reed Road	RCRAGN	The middle school was listed as being a small-quantity generator of hazardous wastes. Violations were not listed in the database report. Based on the nature of the facility and the fact that this facility is not listed on an unauthorized release database, there is a low likelihood that it represents a significant environmental concern to the project.

**Table 2 – Facilities Listed on Regulatory Databases**

Facility Description/Address in Database Report	Database(s) Listed	Summary of Release/Cleanup Information and Case Status
City of Escondido - "Hog Back P" 2547 Mountain View Drive	PERMITS	Permit details were not available in the database report. However, based on the fact that this facility is not listed on an unauthorized release database, there is a low likelihood that it represents a significant environmental concern to the project.
Frey Nursery 3420 Reed Road	PERMITS	This facility was listed as having an inactive permit. Based on the permit status and the fact that this facility is not listed on an unauthorized release database, there is a low likelihood that it represents a significant environmental concern to the project.
Fixer Treatment Systems 2434 Mountain View Drive	RCRAGN	This listing was indicated as being associated with a "transporter" with hazardous waste listed as being silver. Based on the nature of the listing and the fact that it is not listed on an unauthorized release database, there is a low likelihood that it represents a significant environmental concern to the project.
Orange Glen High School 2200 Glenridge Road	LUST	This school was reported to be located 0.39-mile southwest of the project area. The database report indicates that the LUST case was related to a release of gasoline to a drinking water aquifer. The case status was indicated as being both closed and open; however, according to the September 2009 County of San Diego Site Assessment and Mitigation Case Listing, the case was issued closure in 2005. Based on the distance of this facility from the project area and its closed case status, there is a low likelihood that it represents a significant environmental concern to the project.

**5.2. Other Environmental Record Sources**

This section provides information obtained from a review of other environmental record sources, which were selected based on their likelihood of providing information useful to documenting potential environmental concerns at the project area.

**5.2.1. Online Regulatory Databases**

Online regulatory databases were reviewed to supplement the environmental database report, including the following databases:

- SWRCB Geotracker database,
- DTSC EnviroStor database, and

- United States Army Corps of Engineers, Formerly Used Defense Sites (FUDS) program Geographic Information System (GIS) website.

No properties of potential environmental concern under the jurisdiction of the SWRCB, DTSC, or FUDS program were documented as being located within or adjacent to the project area. The online County of San Diego DEH Hazardous Materials Establishment Listing was also consulted for information on facilities of potential environmental concern, and information is incorporated herein as applicable.

#### **5.2.2. Mines**

Review of the California Division of Mines and Geology, Mines and Mineral Resources of San Diego County book dated 1963, did not indicate the presence of mines and/or sand and gravel pits located within or adjacent to the project area (California Division of Mines and Geology, 1963).

#### **5.2.3. Oil, Gas, and Geothermal Fields**

No existing or abandoned wells were depicted on the State of California Department of Conservation, Regional Wildcat Map for the project area and vicinity (California Department of Conservation, 2007). No oil or gas wells were depicted within the project area on the State of California, Department of Conservation, DOGGR Online Mapping System (California Department of Conservation, 2009).

#### **5.2.4. Naturally-Occurring Asbestos**

Based on a review of the California Department of Conservation reference material, ultramafic rocks with a higher likelihood of containing naturally-occurring asbestos are generally not located in the vicinity of the project area (California Department of Conservation, 2000).

#### **5.2.5. Underground Pipeline**

According to the United States Department of Transportation, Pipeline and Hazardous Materials Safety Administration, National Pipeline Mapping System website, no gas

transmission pipelines, hazardous liquid pipelines, liquefied natural gas plants, or break out tanks are located within the project area.

## **6. OTHER POTENTIALLY HAZARDOUS CONDITIONS**

The following sections describe additional, non-ASTM environmental conditions that may be encountered. The potential presence of the environmental conditions described herein is not interpreted to be of significant concern to the project, with the incorporation of mitigation measures described in Section 8.

### **6.1. Potentially Hazardous Materials Associated with Cemeteries**

Metals such as lead, zinc, copper, and steel may leach from metal coffins buried at cemeteries. Arsenic, and in some cases, mercury-based embalming fluid was utilized from the Civil War through the early 1900s. Due to the time in which the cemetery was founded, arsenic and/or mercury may have been utilized to embalm the human remains present at the cemetery. Modern day embalming fluid contains a mixture of formaldehyde, glutaraldehyde, methanol, ethanol, and other solvents.

### **6.2. Aerially-Deposited Lead**

Based on the distance of the project area from the nearest major freeway, aerially-deposited lead as a result of emissions from vehicular exhaust prior to the elimination of lead from fuels in the mid-1980s is not interpreted to be of significant concern to the project.

### **6.3. PCB-Containing Transformers**

Multiple pole-mounted transformers were noted within the project area and appear to be owned and operated by San Diego Gas & Electric (SDG&E). SDG&E states that it is responsible for ensuring that its transformers comply with USEPA regulations and that it has not specified polychlorinated biphenyl (PCB) transformers for its electrical distribution system; however, some older (pre-1980) mineral transformers could have been inadvertently contaminated with PCBs by the manufacturer. Based on SDG&E's statistical sampling and testing

program, SDG&E states that it is unlikely that its transformers are PCB-contaminated. The only way to know with certainty is by actually obtaining and testing a sample of the fluid from the specific transformer, which may result in a fee from SDG&E. However, based on the fact that the transformers are the responsibility of SDG&E and the fact that evidence of significant releases from transformers was not noted during the project area reconnaissance, there is a low likelihood that potentially PCB-containing transformers represent a significant environmental concern to the project.

#### **6.4. Treated Wood**

Wooden infrastructure (e.g., guardrails, telephone poles, fencing) may be treated with chemical preservatives to prevent rotting due to mold, mildew, and insects. Chromated copper arsenate (CCA) contains arsenic, chromium, and copper and has been widely used in outdoor settings since the 1930s. As of 2003, CCA is being phased out for use in residential settings due to potential adverse health effects. CCA may leach from the wood into surrounding soil.

Other wood treatment alternatives, such as alkaline copper quaternary and copper azole, and other wood preservatives such as bis-(n-cyclohexyldiazoniumdioxy)-copper also contain copper and other chemical compounds. Acid copper chromate contains hexavalent chromium, which is a skin irritant and sensitizer and a known human carcinogen when inhaled.

Chlorinated phenols such as pentachlorophenol, tetrachlorophenol, and trichlorophenol are wood preservatives that have been in use since approximately the 1930s, with potentially toxic effects resulting from exposure due to inhalation and skin absorption. Creosote is a wood preservative containing polycyclic aromatic hydrocarbons.

Sampling and analysis of wood would be needed to confirm whether it has been treated. However, the presence of treated wood is not interpreted to be of significant concern to the project.

### **6.5. Asbestos-Containing Materials**

Commonly encountered potentially asbestos-containing materials in street ROWs include pipe insulation on natural gas lines and cementitious water lines (e.g., transite). The current water pipeline may be associated with suspect asbestos-containing materials. Other asbestos-containing materials/pipelines may be present within the project area.

### **6.6. Lead-Based Paint**

Painted curbs, poles, and roadway striping were noted in the street ROW and may contain lead-based paint. The Consumer Product Safety Commission banned the use of paint containing lead above certain thresholds for residential uses; however, it is possible that lead-based paint is used in industrial settings, such as for street improvements in the project area.

### **6.7. Railroad Components**

Potentially hazardous railroad components (e.g., creosote-containing railroad ties, railroad equipment) were not noted within or adjacent to the project area.

## **7. CEQA SIGNIFICANCE OF IMPACTS**

In accordance with the scope of work, the findings of this study were evaluated with respect to Questions A, B, and D of Section 7, “Hazards and Hazardous Materials” within Appendix G of the CEQA Guidelines. The project involves proposed replacement of existing water pipelines located in the eastern portion of the City of Escondido’s jurisdiction.

### ***A. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?***

The project’s proposed replacement of existing water pipelines is not anticipated to be associated with the routine transport, use, or disposal of hazardous materials or wastes. Based on the research activities described herein, the pipeline replacement project is not reasonably expected to disturb hazardous materials or wastes that may be present within the project area, including contaminated soil and/or groundwater. However, if hazardous materials or wastes within the project area are encountered during the project (e.g., contaminated soil, asbestos-containing pipelines), there is a low likelihood that the disturbance would create a significant hazard to the public or the environment, with incorporation of the mitigation measures described in Section 8.

***B. Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?***

Please refer to the answer provided to Question A, above. Based on the fact that hazardous materials or wastes are not anticipated to be associated with the proposed replacement of existing water pipelines, there is a low likelihood that upset and accident conditions related to hazardous materials or wastes would be associated with implementation of the proposed pipeline project. However, if hazardous materials or wastes within the project area are encountered during the project (e.g., contaminated soil asbestos-containing pipelines), there is a low likelihood that the disturbance would create a significant hazard to the public or the environment, with incorporation of the mitigation measures described in Section 8.

***D. Would the project be located on a site, which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment?***

According to the DTSC, Government Code Section 65962.5 requires that DTSC compile a list of facilities/properties in the categories discussed below (DTSC, 2009b).

- *Hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code* - The DTSC has designated two facilities in the state of California that fall under this category. These two facilities are located outside of San Diego County.
- *Land designated as “hazardous waste property” or “border zone property”* - The DTSC has indicated that no facilities or properties are listed under this provision because DTSC has not designated any hazardous waste property or border zone properties pursuant to the provisions cited in the Health and Safety Code.
- *Properties with hazardous waste disposals on public land* - The DTSC has indicated that it does not maintain separate records of reports that relate to public lands/properties.
- *Hazardous substance release sites selected for (and subject to) a response action* - The DTSC has specified that the list of sites that meet this criteria are listed on the “Cortese List.” Review of the Cortese List did not indicate properties located within the project area.
- *Sites included in the Abandoned Site Assessment Program* - The Abandoned Site Assessment Program was intended to include properties in “rural unsurveyed counties.” The program concluded in the early 1990s, and properties in the program were transferred to the Cal-Sites database, which has been incorporated into the DTSC’s current EnviroStor database. However, the EnviroStor database does not indicate whether a specific site was at one time included in the Abandoned Site Assessment Program and does not have a separate category for abandoned sites. No facilities on or adjacent to the project area were depicted on the DTSC EnviroStor database.

Based on the information provided above, the project area does not contain hazardous materials sites compiled pursuant to Government Code Section 65962.5.

## **8. SUMMARY AND MITIGATION MEASURES**

Based on the results of the assessment activities described herein, evidence of releases of hazardous materials and/or wastes was not documented within or adjacent to the project area. However, it is possible that regulated wastes, including soil which may be considered a waste, may be disturbed during the project. Based on historical and/or current agricultural land usage, it is possible that soil impacted with pesticides, herbicides, and/or other constituents of concern is present in the project area. In addition, components of embalmed human remains or related equipment (coffins, etc.) may have impacted soil at the cemetery.

There is the potential that subsurface disturbance (e.g., excavation, grading) may encounter environmental impacts (e.g., impacted soil, wastes) that would require additional evaluation and mitigation, such as characterization and disposal of regulated waste. The following mitigation measures could be used to reduce impacts from hazardous materials to public safety and the environment.

- A site and community health and safety plan and worker training should be implemented for subsurface excavation activities to manage potential health and safety hazards to workers and the public. Appropriate worker and community health and safety measures (e.g., dust control, air monitoring, stockpile management) should be implemented by the contractor, under the oversight of a qualified environmental professional, during subsurface disturbance activities in areas suspected of being associated with subsurface contamination.
- For project construction activities involving excavation, grading, or other subsurface disturbance, a soil and groundwater management plan should be prepared and implemented to address the possibility of encountering areas of potential environmental concern. The plan should be prepared by a qualified environmental consultant and should be implemented during subsurface disturbance activities by the contractor under the oversight of an environmental professional on behalf of the project proponent. The plan should address soil and groundwater monitoring, handling, stockpiling, characterization, on-site reuse, export, and disposal protocols. The objective of the plan is to assist the contractor in the excavation, notification, monitoring, segregation, characterization, handling, and reuse and/or disposal (as appropriate) of waste that may be encountered during earthwork activities.

- Appropriate references to the potential to encounter contaminated soils and/or groundwater should be included in construction specifications so that the contractor can consider various factors (e.g., soil disposal, dewatering costs) in their work.
- Soil and/or groundwater generated during construction activities (e.g., subsurface excavation) may require chemical characterization (e.g., analytical testing) by a qualified environmental professional prior to reuse, export, or disposal. Additional assessment (e.g., sampling of stockpiles) may be warranted to evaluate the nature and extent of impacts to soil and/or groundwater prior to reuse, export, or disposal.
- Further assessment is recommended to be performed by a qualified environmental professional if evidence of hazardous materials or wastes, soil or groundwater suggestive of contamination (e.g., discoloration, odors), or other potential environmental issues are encountered in the project area during project activities. If contamination/wastes are discovered, regulatory agencies may require additional environmental investigation and/or mitigation to be conducted, particularly if there is the potential to affect public health, safety, and/or the environment.
- Surveys should be conducted to evaluate the presence and location of potentially hazardous materials such as asbestos-containing materials, lead-based paint, and other materials falling under Universal Waste Rule requirements prior to disturbance of infrastructure with potentially hazardous materials. The surveys should be conducted by California Department of Public Health Certified Lead Inspector/Assessors, California Division of Occupational Safety and Health Certified Asbestos Consultants, and/or other appropriately qualified professionals in accordance with applicable local, state, and federal guidelines and regulations. Prior to removal or demolition of infrastructure, appropriate abatement measures should be implemented by a licensed abatement contractor using trained and certified workers and supervisors.

## 9. LIMITATIONS

The environmental services described in this report have been conducted in general accordance with current regulatory guidelines and the standard of care exercised by environmental consultants performing similar work in the project area. No warranty, expressed or implied, is made regarding the professional opinions presented in this report. Please note that this study did not include an evaluation of geotechnical conditions or potential geologic hazards. In addition, it should be noted that this assessment does not include analysis of the following: human health risk, asbestos-containing materials, methane gas, radon, lead-based paint, lead in drinking water, wetlands, regulatory compliance, cultural and historic resources, mold, industrial hygiene, health and safety, ecological resources, endangered species, indoor air quality including vapor intrusion, pipelines, and high-voltage power lines.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires any additional information or has questions regarding the content, interpretations presented, or completeness of this document.

Our findings, opinions, and conclusions are based on an analysis of the observed site conditions and the referenced literature. It should be understood that the conditions of a site can change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control. Ninyo & Moore cannot warrant or guarantee that not finding indicators of any particular hazardous material means that this particular hazardous material or any other hazardous materials do not exist on the site. Additional research, including invasive testing, can reduce the uncertainty, but no techniques now commonly employed can eliminate the uncertainty altogether.

## 10. REFERENCES

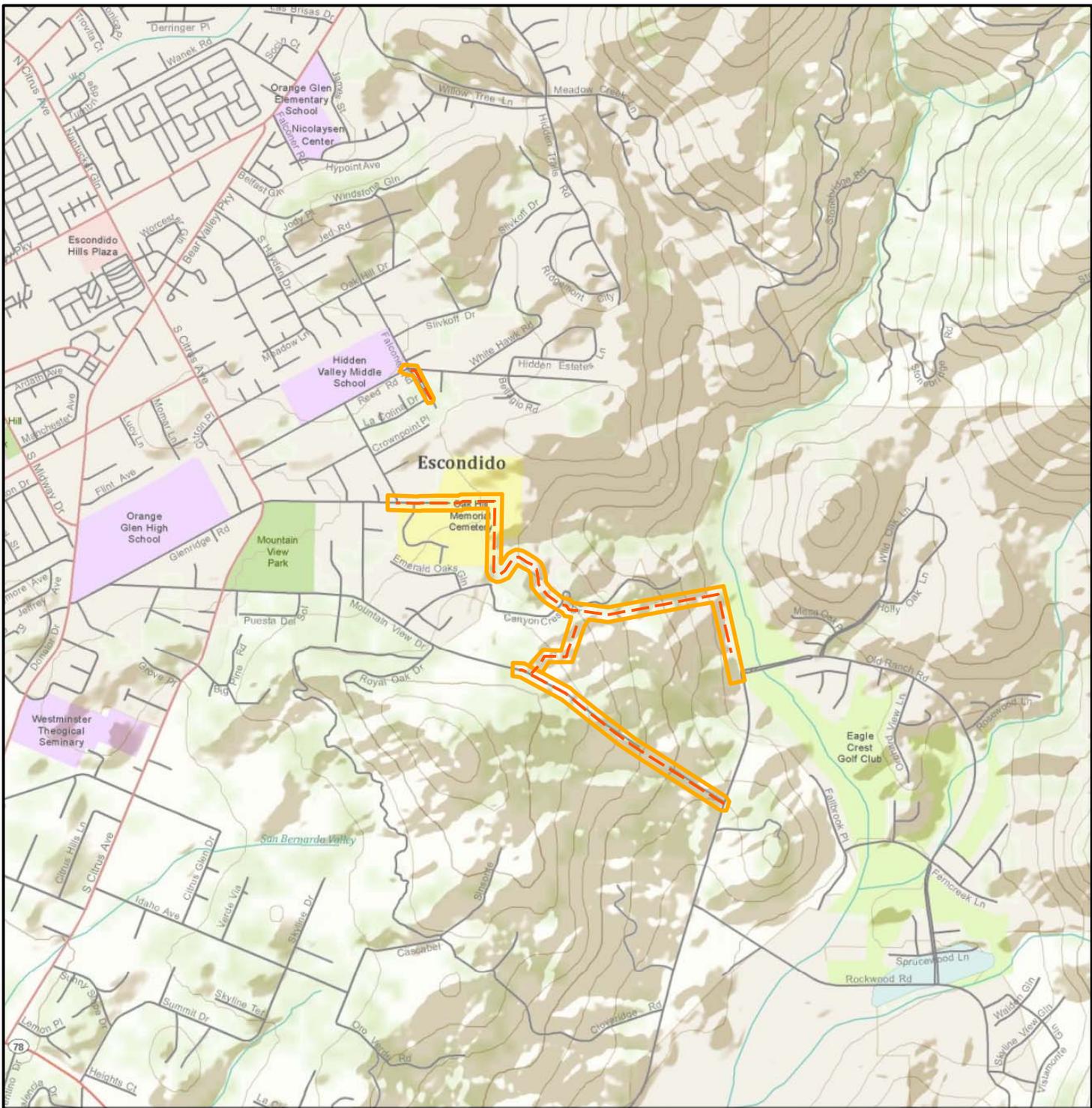
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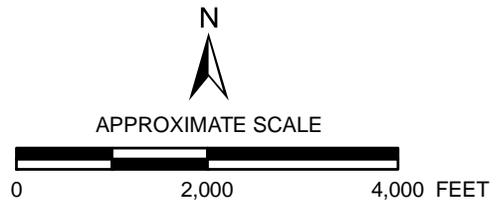
United States Geological Survey, 1968 (Photorevised 1975), Escondido Quadrangle, California: 7.5-minute series (topographic), Scale 1:24,000.

United States Geological Survey, 1968 (Photorevised 1975), Valley Center Quadrangle, California: 7.5-minute series (topographic), Scale 1:24,000.



SOURCE: BASE - ESRI; Sources: USGS, FAO, NPS, EPA, ESRI, DeLorme, TANA, other suppliers

- LEGEND**
-  PIPELINE ROUTE
  -  PROJECT AREA



NOTE: ALL DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE



**PROJECT AREA LOCATION MAP**

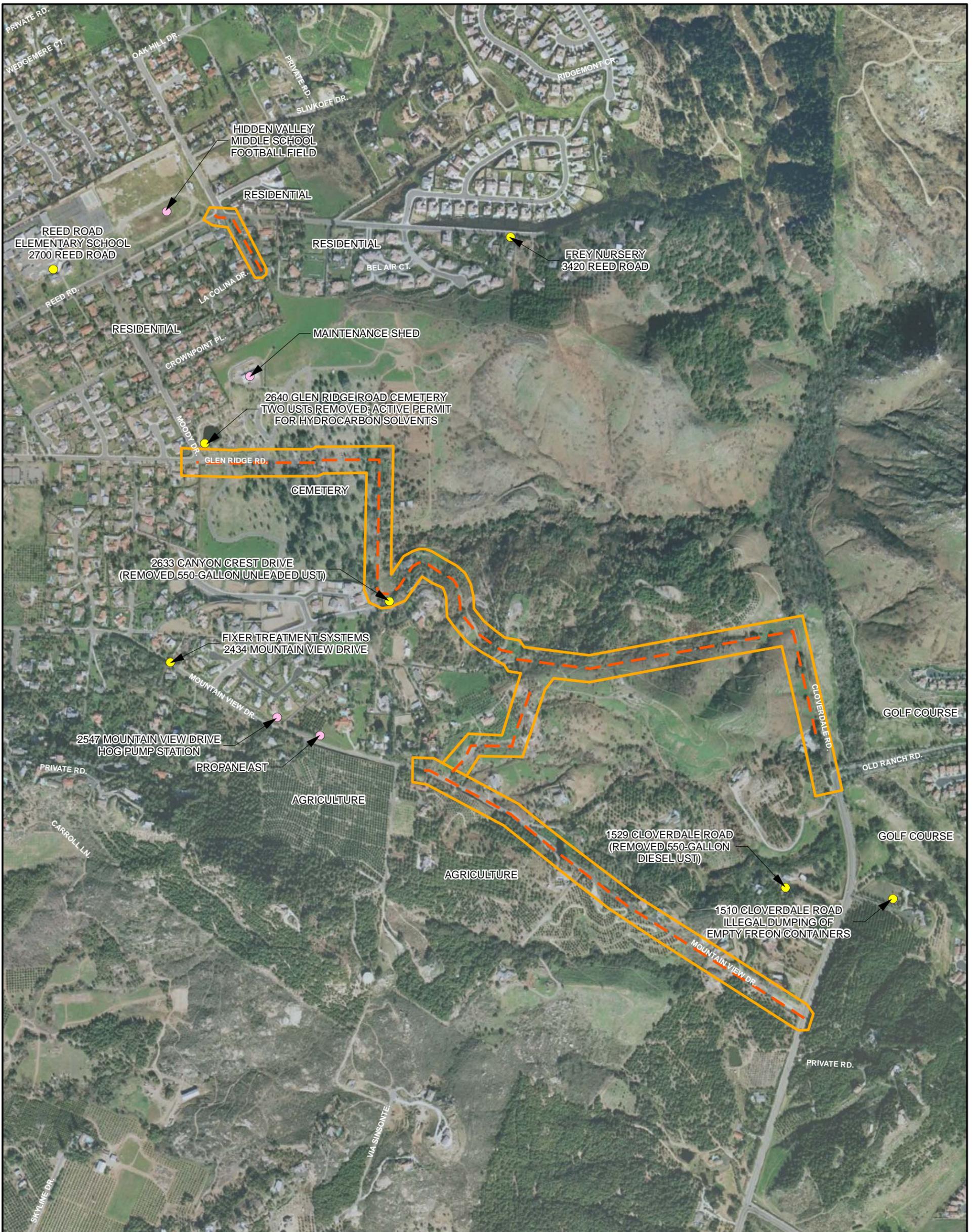
FIGURE

PROJECT NO.	DATE
106513002	2/10

CEMETERY AREA WATER PIPELINE REPLACEMENT PROJECT  
ESCONDIDO, CALIFORNIA

**1**

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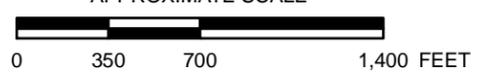
SOURCE: AERIAL IMAGERY - ESRI; Copyright © 2009 I-cubed

**LEGEND**

- FACILITY OBSERVED DURING SITE RECONNAISSANCE
- LISTING FROM DATABASE REPORT
- PIPELINE ROUTE
- PROJECT AREA



APPROXIMATE SCALE

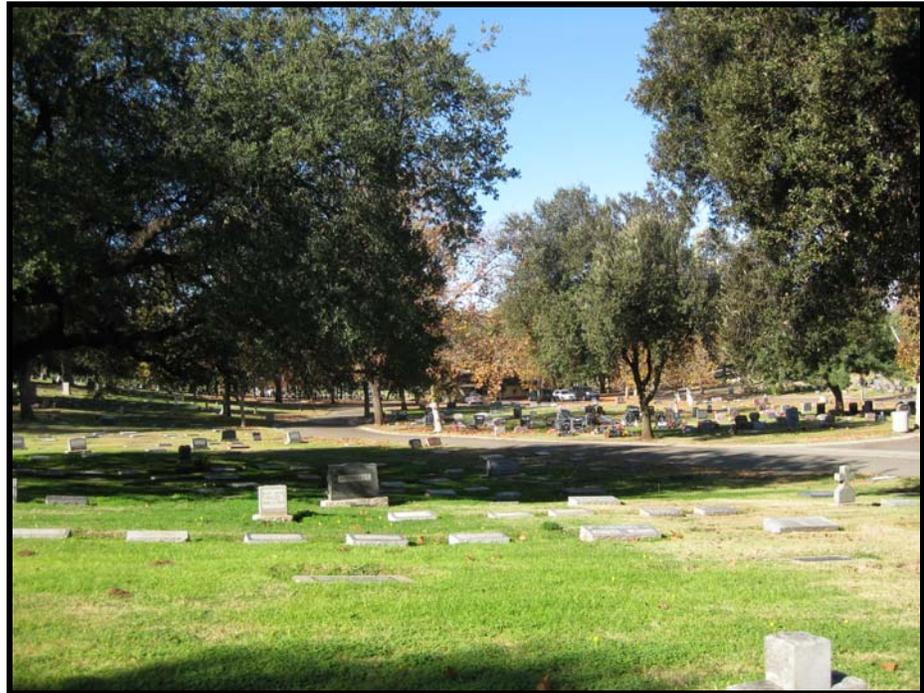


NOTES: DATABASE LISTING LOCATIONS WERE PLOTTED BY TRACK INFO SERVICES, LLC.  
ALL DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

<b>Ninyo &amp; Moore</b>		<b>PROJECT AREA AND VICINITY MAP</b>	FIGURE  <b>2</b>
PROJECT NO. 106513002	DATE 2/10		

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**APPENDIX A**  
**PHOTOGRAPHIC DOCUMENTATION**



**Photograph No. 1:** View of the cemetery grounds located in the northern portion of the project area.



**Photograph No. 2:** View of Mountain View Drive, located in the southern portion of the project area, facing southeast.



**Photograph No. 3:** View of the western portion of the project along Mountain View Drive, facing east.



**Photograph No. 4:** View of the maintenance shed associated with the cemetery grounds, facing northwest.



**Photograph No. 5:** View of a pole-mounted transformer located in the northern portion of the project area.



**Photograph No. 6:** View of the "Hog Back Pump Station" located at 2547 Mountain View Drive, approximately 1,000 feet west of the project area.



**Photograph No. 7:** View of the Hidden Valley Middle School athletic field adjacent to the north of the project area, facing north.



**Photograph No. 8:** View of the mountainous region adjacent to the eastern portion of the project area, facing northeast.



**Photograph No. 9:** View of orchard farming adjacent to the south of the project area, facing southeast.



**Photograph No. 10:** View of residential streets located west of the project area, facing west.

**APPENDIX B**  
**HISTORICAL TOPOGRAPHIC MAPS**

# Track Info Services, LLC

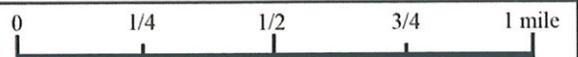
Historical Topographic Map

Site: 2618 Glen Ridge Road, Escondido, CA 92027

Quadrangle Year: 1996



- |                         |               |                 |           |
|-------------------------|---------------|-----------------|-----------|
| Building                | --- ■ ■ ■ ■ ■ | Railroad        | —+—+—+—+— |
| Topo Contour            | —6000—        | Tanks           | • ● ● ● ● |
| Depression              | ⊖             | Primary Highway | —         |
| Quarry or Open Pit Mine | ×             | Trail           | - - - - - |



Job Number: 106513002  
 Original Scale of Full Topo: 1:24,000  
 Quadrangle Name: Valley Center, CA  
 (South: Escondido, CA, 1996)

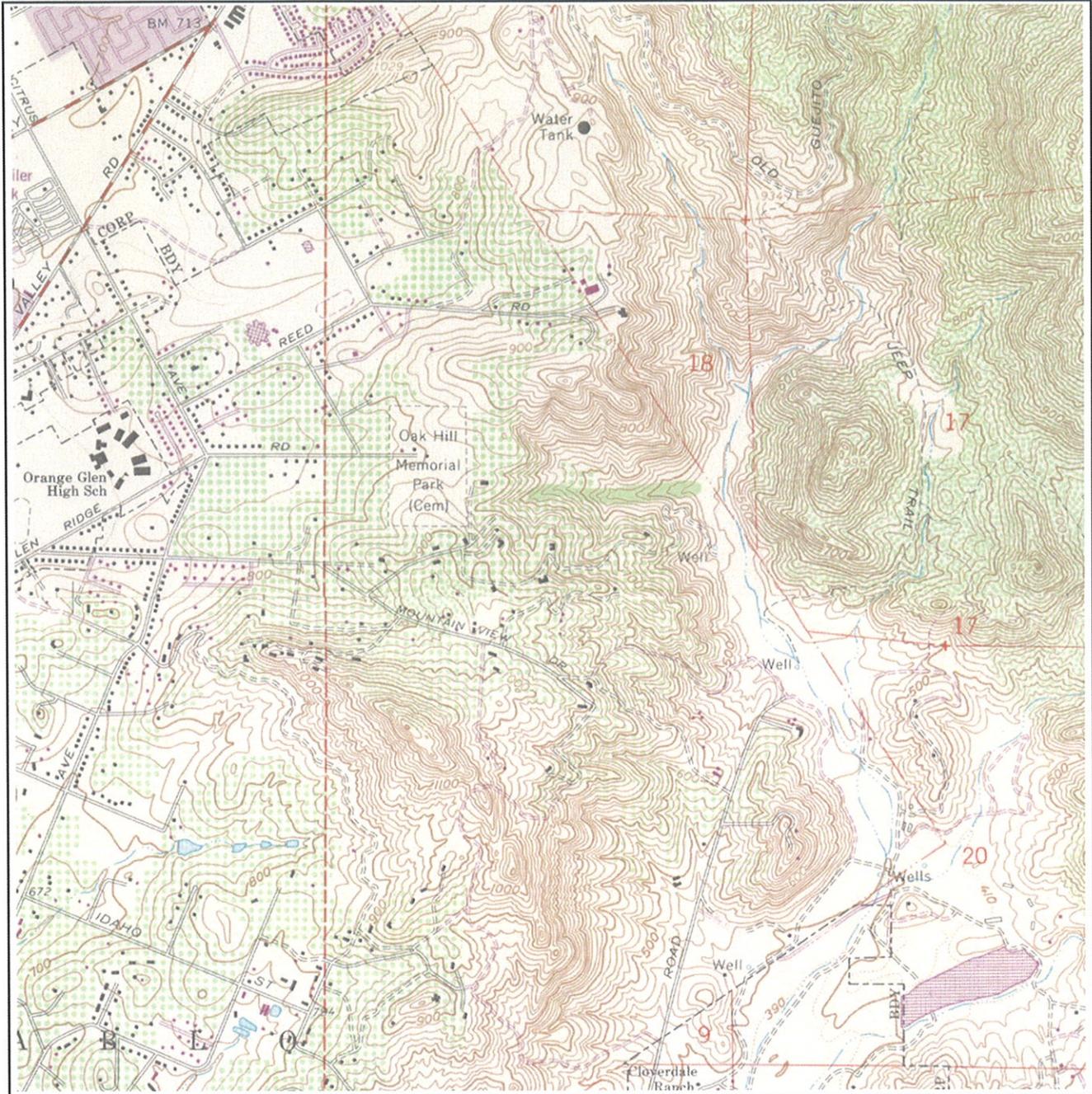


# Track Info Services, LLC

Historical Topographic Map

Site: 2618 Glen Ridge Road, Escondido, CA 92027

Quadrangle Year: 1975



- |                         |  |                 |  |
|-------------------------|--|-----------------|--|
| Building                |  | Railroad        |  |
| Topo Contour            |  | Tanks           |  |
| Depression              |  | Primary Highway |  |
| Quarry or Open Pit Mine |  | Trail           |  |



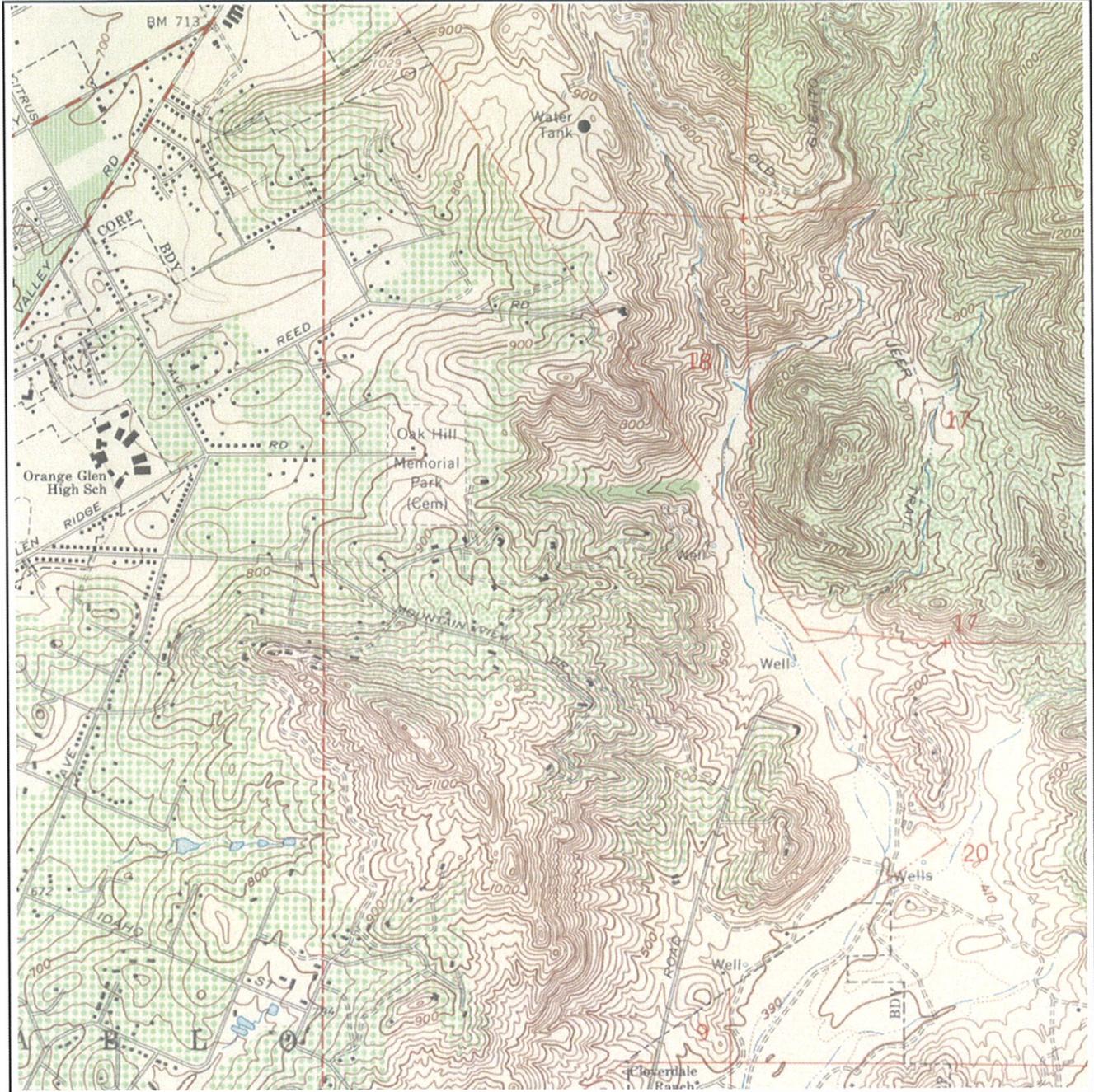
Job Number: 106513002  
Original Scale of Full Topo: 1:24,000  
Quadrangle Name: Valley Center, CA  
(South: Escondido, CA, 1975)

# Track Info Services, LLC

Historical Topographic Map

Site: 2618 Glen Ridge Road, Escondido, CA 92027

Quadrangle Year: 1968



- |                         |  |                 |  |
|-------------------------|--|-----------------|--|
| Building                |  | Railroad        |  |
| Topo Contour            |  | Tanks           |  |
| Depression              |  | Primary Highway |  |
| Quarry or Open Pit Mine |  | Trail           |  |



Job Number: 106513002  
Original Scale of Full Topo: 1:24,000  
Quadrangle Name: Valley Center, CA  
(South: Escondido, CA, 1968)

# Track Info Services, LLC

Historical Topographic Map

Site: 2618 Glen Ridge Road, Escondido, CA 92027

Quadrangle Year: 1949



- |                         |        |                 |         |
|-------------------------|--------|-----------------|---------|
| Building                | ■      | Railroad        | —+—+—   |
| Topo Contour            | —6000— | Tanks           | ●●●     |
| Depression              | ⊖      | Primary Highway | —       |
| Quarry or Open Pit Mine | ×      | Trail           | - - - - |



Job Number: 106513002  
 Original Scale of Full Topo: 1:24,000  
 Quadrangle Name: Valley Center, CA  
 (South: Escondido, CA, 1948)

# Track Info Services, LLC

Historical Topographic Map

Site: 2618 Glen Ridge Road, Escondido, CA 92027

Quadrangle Year: 1942



- |                         |  |                 |  |
|-------------------------|--|-----------------|--|
| Building                |  | Railroad        |  |
| Topo Contour            |  | Tanks           |  |
| Depression              |  | Primary Highway |  |
| Quarry or Open Pit Mine |  | Trail           |  |



Job Number: 106513002  
Original Scale of Full Topo: 1:62,500  
Quadrangle Name: Escondido, CA

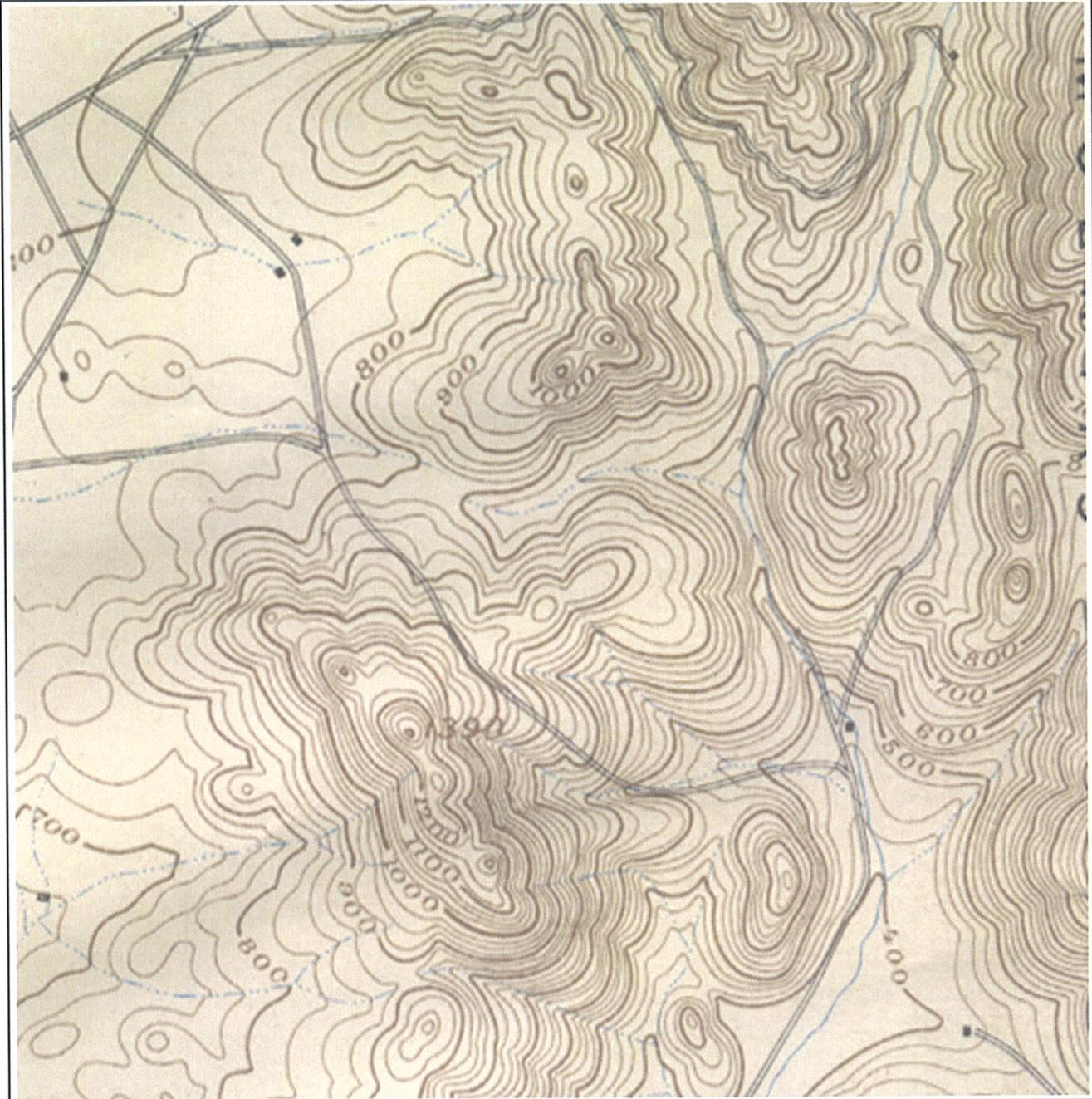


# Track Info Services, LLC

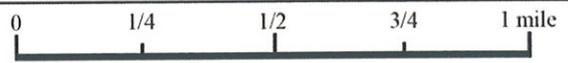
Historical Topographic Map

Site: 2618 Glen Ridge Road, Escondido, CA 92027

Quadrangle Year: 1893



- |                         |        |                 |           |
|-------------------------|--------|-----------------|-----------|
| Building                | ■      | Railroad        | —+—+—+—   |
| Topo Contour            | —6000— | Tanks           | ●●●       |
| Depression              | ⊖      | Primary Highway | —         |
| Quarry or Open Pit Mine | ×      | Trail           | - - - - - |



Job Number: 106513002  
Original Scale of Full Topo: 1:62,500  
Quadrangle Name: Escondido, CA

**APPENDIX C**  
**ENVIRONMENTAL DATABASE REPORT**

**TRACK ► INFO SERVICES, LLC**

# **Environmental FirstSearch™ Report**

Target Property: 106513002/Cemetery Pipeline

**2618 GLEN RIDGE ROAD**

**ESCONDIDO CA 92027**

Job Number: 106513002

**PREPARED FOR:**

Ninyo and Moore

5710 Ruffin Road

San Diego, CA 92123

12-02-09



*Tel: (866) 664-9981*

*Fax: (818) 249-4227*

# Environmental FirstSearch Search Summary Report

**Target Site:** 2618 GLEN RIDGE ROAD  
ESCONDIDO CA 92027

## FirstSearch Summary

Database	Sel	Updated	Radius	Site	1/8	1/4	1/2	1/2>	ZIP	TOTALS
NPL	Y	09-11-09	1.00	0	0	0	0	0	0	0
NPL Delisted	Y	09-11-09	0.50	0	0	0	0	-	0	0
CERCLIS	Y	10-01-09	0.50	0	0	0	0	-	0	0
NFRAP	Y	10-01-09	0.50	0	0	0	0	-	0	0
RCRA COR ACT	Y	10-14-09	1.00	0	0	0	0	0	0	0
RCRA TSD	Y	10-14-09	0.50	0	0	0	0	-	0	0
RCRA GEN	Y	10-14-09	0.25	0	1	1	-	-	0	2
RCRA NLR	Y	10-14-09	0.12	0	0	-	-	-	0	0
Federal IC / EC	Y	10-01-09	0.25	0	0	0	-	-	0	0
ERNS	Y	09-13-09	0.12	1	0	-	-	-	0	1
Tribal Lands	Y	12-01-05	1.00	0	0	0	0	0	0	0
State/Tribal Sites	Y	01-16-09	1.00	0	0	0	0	0	1	1
State Spills 90	Y	05-22-09	0.12	0	0	-	-	-	0	0
State/Tribal SWL	Y	04-27-09	0.50	0	0	0	0	-	0	0
State/Tribal LUST	Y	04-28-09	0.50	0	0	0	2	-	0	2
State/Tribal UST/AST	Y	05-13-09	0.25	3	0	0	-	-	0	3
State/Tribal EC	Y	NA	0.25	0	0	0	-	-	0	0
State/Tribal IC	Y	08-05-09	0.25	0	0	0	-	-	0	0
State/Tribal VCP	Y	01-16-09	0.50	0	0	0	0	-	0	0
State/Tribal Brownfields	Y	NA	0.50	0	0	0	0	-	0	0
State Permits	Y	08-19-09	0.25	3	1	2	-	-	0	6
State Other	Y	05-05-09	0.25	0	0	0	-	-	0	0
- TOTALS -				7	2	3	2	0	1	15

### Notice of Disclaimer

Due to the limitations, constraints, inaccuracies and incompleteness of government information and computer mapping data currently available to TRACK Info Services, certain conventions have been utilized in preparing the locations of all federal, state and local agency sites residing in TRACK Info Services's databases. All EPA NPL and state landfill sites are depicted by a rectangle approximating their location and size. The boundaries of the rectangles represent the eastern and western most longitudes; the northern and southern most latitudes. As such, the mapped areas may exceed the actual areas and do not represent the actual boundaries of these properties. All other sites are depicted by a point representing their approximate address location and make no attempt to represent the actual areas of the associated property. Actual boundaries and locations of individual properties can be found in the files residing at the agency responsible for such information.

### Waiver of Liability

Although TRACK Info Services uses its best efforts to research the actual location of each site, TRACK Info Services does not and can not warrant the accuracy of these sites with regard to exact location and size. All authorized users of TRACK Info Services's services proceeding are signifying an understanding of TRACK Info Services's searching and mapping conventions, and agree to waive any and all liability claims associated with search and map results showing incomplete and or inaccurate site locations.

***Environmental FirstSearch  
Site Information Report***

**Request Date:** 12-02-09  
**Requestor Name:** jeanette ninyo  
**Standard:** ASTM-05

**Search Type:** AREA  
0.58 sq mile(s)  
**Job Number:** 106513002  
**Filtered Report**

**Target Site:** 2618 GLEN RIDGE ROAD  
ESCONDIDO CA 92027

*Demographics*

<b>Sites:</b> 15	<b>Non-Geocoded:</b> 1	<b>Population:</b> NA
<b>Radon:</b> 0.7 PCI/L		

*Site Location*

	<u>Degrees (Decimal)</u>	<u>Degrees (Min/Sec)</u>		<u>UTMs</u>
<b>Longitude:</b>	-117.023129	-117:1:23	<b>Easting:</b>	497842.433
<b>Latitude:</b>	33.126779	33:7:36	<b>Northing:</b>	3665150.489
			<b>Zone:</b>	11

*Comment*

**Comment:**106513002

*Additional Requests/Services*

**Adjacent ZIP Codes:** 0 Mile(s)

**Services:**

<u>ZIP</u>				
<u>Code</u>	<u>City Name</u>	<u>ST</u>	<u>Dist/Dir</u>	<u>Sel</u>

	<u>Requested?</u>	<u>Date</u>
Sanborns	No	
Aerial Photographs	No	
Historical Topos	Yes	12-02-09
City Directories	No	
Title Search/Env Liens	No	
Municipal Reports	No	
Online Topos	No	

## Environmental FirstSearch Sites Summary Report

**Target Property:** 2618 GLEN RIDGE ROAD  
ESCONDIDO CA 92027

**JOB:** 106513002  
106513002

**TOTAL:** 15      **GEOCODED:** 14      **NON GEOCODED:** 1      **SELECTED:** 0

Page No.	DB Type	Site Name/ID/Status	Address	Dist/Dir	Map ID
1	UST	WINDOVER FINANCIAL PROPERTY HE17H38571	1529 CLOVERDALE RD ESCONDIDO CA 92027	0.00 --	1
2	UST	RAY and CUELLA MOYE TRUST HE17H32350	2633 CANYON CREST DR ESCONDIDO CA 92027	0.00 --	2
3	UST	NORTH COUNTY CEMETARY DIST. HE17H06039	2640 GLENRIDGE RD ESCONDIDO CA 92027	0.00 --	3
5	PERMITS	NORTH COUNTY CEMETERY DIST CAD981632474/ACTIVE	2640 GLENRIDGE RD ESCONDIDO CA 92027	0.00 --	3
6	PERMITS	NORTH COUNTY CEMETARY DIST. HE17106039/NOT REPORTED	2640 GLENRIDGE RD ESCONDIDO CA 92027	0.00 --	3
6	PERMITS	RANCHO LADEADO HE17199434/NOT REPORTED	2682 CANYON CREST DR ESCONDIDO CA 92027	0.00 --	4
7	ERNS	UNK 74252/UNKNOWN	1510 CLOVERDALE RD SAN DIEGO CA	0.00 --	5
7	PERMITS	WINDOVER FINANCIAL PROPERTY HE17138571/INACTIVE	1529 CLOVERDALE RD ESCONDIDO CA 92027	0.01 SE	6
8	RCRAGN	ESCONDIDO USD HIDDEN VALLEY MIDDLE CAD982008294/SGN	2700 REED RD ESCONDIDO CA 92027	0.12 NW	7
9	PERMITS	CITY OF ESCONDIDO - HOG BACK P HE17204161/NOT REPORTED	2547 MOUNTAIN VIEW DR ESCONDIDO CA 92027	0.14 SW	8
9	PERMITS	FREY NURSERY HE17199362/INACTIVE	3420 REED RD ESCONDIDO CA 92027	0.19 NE	9
10	RCRAGN	FIXER TREATMENT SYSTEMS CA0000240069/TRANSPORTER	2434 MOUNTAIN VIEW DR ESCONDIDO CA 92027	0.19 SW	10
11	LUST	ORANGE GLEN HIGH SCHOOL T0607302995/COMPLETED - CASE CLO	2200 GLENRIDGE RD ESCONDIDO CA 92027	0.39 SW	11
13	LUST	ORANGE GLEN HIGH SCHOOL HE17H20354/REMOVED	2200 GLENRIDGE RD ESCONDIDO CA 92027	0.39 SW	11

***Environmental FirstSearch  
Sites Summary Report***

**Target Property:** 2618 GLEN RIDGE ROAD  
ESCONDIDO CA 92027

**JOB:** 106513002  
106513002

**TOTAL:** 15      **GEOCODED:** 14      **NON GEOCODED:** 1      **SELECTED:** 0

<b>Page No.</b>	<b>DB Type</b>	<b>Site Name/ID/Status</b>	<b>Address</b>	<b>Dist/Dir</b>	<b>Map ID</b>
14	STATE	ROCKWOOD ROAD ELEMENTARY SCHOOL CAL37010004/NO ACTION - FOR CALM	ROCKWOOD ROAD SAN DIEGO CA 92027	NON GC	





























## Environmental FirstSearch Descriptions

**NPL: EPA NATIONAL PRIORITY LIST** - The National Priorities List is a list of the worst hazardous waste sites that have been identified by Superfund. Sites are only put on the list after they have been scored using the Hazard Ranking System (HRS), and have been subjected to public comment. Any site on the NPL is eligible for cleanup using Superfund Trust money.

A Superfund site is any land in the United States that has been contaminated by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment.

FINAL - Currently on the Final NPL

PROPOSED - Proposed for NPL

**NPL DELISTED: EPA NATIONAL PRIORITY LIST Subset** - Database of delisted NPL sites. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

DELISTED - Deleted from the Final NPL

**CERCLIS: EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS)**- CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL.

PART OF NPL- Site is part of NPL site

DELETED - Deleted from the Final NPL

FINAL - Currently on the Final NPL

NOT PROPOSED - Not on the NPL

NOT VALID - Not Valid Site or Incident

PROPOSED - Proposed for NPL

REMOVED - Removed from Proposed NPL

SCAN PLAN - Pre-proposal Site

WITHDRAWN - Withdrawn

**NFRAP: EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM ARCHIVED SITES** - database of Archive designated CERCLA sites that, to the best of EPA's knowledge, assessment has been completed and has determined no further steps will be taken to list this site on the National Priorities List (NPL). This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

NFRAP – No Further Remedial Action Plan

P - Site is part of NPL site

D - Deleted from the Final NPL

F - Currently on the Final NPL

N - Not on the NPL

O - Not Valid Site or Incident

P - Proposed for NPL

R - Removed from Proposed NPL

S - Pre-proposal Site

W – Withdrawn

**RCRA COR ACT: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES** - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

RCRAInfo facilities that have reported violations and subject to corrective actions.

**RCRA TSD: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM**

**TREATMENT, STORAGE, and DISPOSAL FACILITIES.** - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities that treat, store, dispose, or incinerate hazardous waste.

**RCRA GEN: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM GENERATORS** - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984. Facilities that generate or transport hazardous waste or meet other RCRA requirements.

LGN - Large Quantity Generators

SGN - Small Quantity Generators

VGN – Conditionally Exempt Generator.

Included are RAATS (RCRA Administrative Action Tracking System) and CMEL (Compliance Monitoring & Enforcement List) facilities.

**RCRA NLR: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES** - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities not currently classified by the EPA but are still included in the RCRAInfo database. Reasons for non classification:

Failure to report in a timely matter.

No longer in business.

No longer in business at the listed address.

No longer generating hazardous waste materials in quantities which require reporting.

**Federal IC / EC: EPA BROWNFIELD MANAGEMENT SYSTEM (BMS)** - database designed to assist EPA in collecting, tracking, and updating information, as well as reporting on the major activities and accomplishments of the various Brownfield grant Programs.

**FEDERAL ENGINEERING AND INSTITUTIONAL CONTROLS-** Superfund sites that have either an engineering or an institutional control. The data includes the control and the media contaminated.

**ERNS: EPA/NRC EMERGENCY RESPONSE NOTIFICATION SYSTEM (ERNS)** - Database of incidents reported to the National Response Center. These incidents include chemical spills, accidents involving chemicals (such as fires or explosions), oil spills, transportation accidents that involve oil or chemicals, releases of radioactive materials, sightings of oil sheens on bodies of water, terrorist incidents involving chemicals, incidents where illegally dumped chemicals have been found, and drills intended to prepare responders to handle these kinds of incidents. Data since January 2001 has been received from the National Response System database as the EPA no longer maintains this data.

**Tribal Lands: DOI/BIA INDIAN LANDS OF THE UNITED STATES** - Database of areas with boundaries established by treaty, statute, and (or) executive or court order, recognized by the Federal Government as territory in which American Indian tribes have primary governmental authority. The Indian Lands of the United States map layer shows areas of 640 acres or more, administered by the Bureau of Indian Affairs. Included are Federally-administered lands within a reservation which may or may not be considered part of the reservation.

**State/Tribal Sites: CA EPA SMBRPD / CAL SITES-** The California Department of Toxic Substances Control (DTSC) has developed an electronic database system with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), also known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at

properties that may have been affected by the release of hazardous substances. The SMBRPD displays information in six categories. The categories are:

1. CalSites Properties (CS)
2. School Property Evaluation Program Properties (SCH)
3. Voluntary Cleanup Program Properties (VCP)
4. Unconfirmed Properties Needing Further Evaluation (RFE)
5. Unconfirmed Properties Referred to Another Local or State Agency (REF)
6. Properties where a No Further Action Determination has been made (NFA)

Please Note: FirstSearch Reports list the above sites as DB Type (STATE).

Please Note: FirstSearch Reports list the above sites as DB Type (OTHER).

Each Category contains information on properties based upon the type of work taking place at the site. For example, the CalSites database is now one of the six categories within SMPBRD and contains only confirmed sites considered as posing the greatest threat to the public and/or the potential public school sites will be found within the School Property Evaluation Program, and those properties undergoing voluntary investigation and/or cleanup are in the Voluntary Cleanup Program.

CORTESE LIST-Pursuant to Government Code Section 65962.5, the Hazardous Waste and Substances Sites List has been compiled by Cal/EPA, Hazardous Materials Data Management Program. The CAL EPA Dept. of Toxic Substances Control compiles information from subsets of the following databases to make up the CORTESE list:

1. The Dept. of Toxic Substances Control; contaminated or potentially contaminated hazardous waste sites listed in the CAL Sites database. Formerly known as ASPIS are included (CAL SITES formerly known as ASPIS).
2. The California State Water Resources Control Board; listing of Leaking Underground Storage Tanks are included (LTANK)
3. The California Integrated Waste Management Board; Sanitary Landfills which have evidence of groundwater contamination or known migration of hazardous materials (formerly WB-LF, now AB 3750).

Note: Track Info Services collects each of the above data sets individually and lists them separately in the following First Search categories in order to provide more current and comprehensive information: CALSITES: SPL, LTANK: LUST, WB-LF: SWL

**State Spills 90:** *CA EPA* SLIC REGIONS 1 - 9- The California Regional Water Quality Control Boards maintain report of sites that have records of spills, leaks, investigation, and cleanups.

**State/Tribal SWL:** *CA IWMB/SWRCB/COUNTY* SWIS SOLID WASTE INFORMATION SYSTEM-The California Integrated Waste Management Board maintains a database on solid waste facilities, operations, and disposal sites throughout the state of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites. For more information on individual sites call the number listed in the source field..

Please Note: This database contains poor site location information for many sites in the First Search reports; therefore, it may not be possible to locate or plot some sites in First Search reports.

WMUDS-The State Water Resources Control Board maintained the Waste Management Unit Database System (WMUDS). It is no longer updated. It tracked management units for several regulatory programs related to waste management and its potential impact on groundwater. Two of these programs (SWAT & TPCA) are no longer on-going regulatory programs as described below. Chapter 15 (SC15) is still an on-going regulatory program and information is updated periodically but not to the WMUDS database. The WMUDS System contains information from the following agency databases: Facility, Waste Management Unit (WMU), Waste Discharger System (WDS), SWAT, Chapter 15, TPCA, RCRA, Inspections, Violations, and Enforcement's.

Note: This database contains poor site location information for many sites in the First Search reports; therefore, it may not be possible to locate or plot some sites in First Search reports.

ORANGE COUNTY LANDFILLS LIST- A list maintained by the Orange County Health Department.

**State/Tribal LUST:** *CA SWRCB/COUNTY* LUSTIS- The State Water Resources Control Board maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks. Information for this database is collected from the states regional boards quarterly and integrated with this database.

SAN DIEGO COUNTY LEAKING TANKS- The San Diego County Department of Environmental Health maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks within its HE17/58 database. For more information on a specific file call the HazMat Duty Specialist at phone number listed in the source information field.

**State/Tribal UST/AST:** *CA EPA/COUNTY/CITY* ABOVEGROUND STORAGE TANKS LISTING-The Above Ground Petroleum Storage Act became State Law effective January 1, 1990. In general, the law requires owners or operators of AST's with petroleum products to file a storage statement and pay a fee by July 1, 1990 and every two years thereafter, take specific action to prevent spills, and in certain instances implement a

groundwater monitoring program. This law does not apply to that portion of a tank facility associated with the production oil and regulated by the State Division of Oil and Gas of the Dept. of Conservation.

**SWEEPS / FIDS STATE REGISTERED UNDERGROUND STORAGE TANKS-** Until 1994 the State Water Resources Control Board maintained a database of registered underground storage tanks statewide referred to as the SWEEPS System. The SWEEPS UST information was integrated with the CAL EPA's Facility Index System database (FIDS) which is a master index of information from numerous California agency environmental databases. That was last updated in 1994. Track Info Services included the UST information from the FIDS database in its First Search reports for historical purposes to help its clients identify where tanks may possibly have existed. For more information on specific sites from individual paper files archived at the State Water Resources Control Board call the number listed with the source information.

**INDIAN LANDS UNDERGROUND STORAGE TANKS LIST-** A listing of underground storage tanks currently on Indian Lands under federal jurisdiction. California Indian Land USTS are administered by US EPA Region 9.

**CUPA DATABASES & SOURCES-** Definition of a CUPA: A Certified Unified Program Agency (CUPA) is a local agency that has been certified by the CAL EPA to implement six state environmental programs within the local agency's jurisdiction. These can be a county, city, or JPA (Joint Powers Authority). This program was established under the amendments to the California Health and Safety Code made by SB 1082 in 1994.

A Participating Agency (PA) is a local agency that has been designated by the local CUPA to administer one or more Unified Programs within their jurisdiction on behalf of the CUPA. A Designated Agency (DA) is an agency that has not been certified by the CUPA but is the responsible local agency that would implement the six unified programs until they are certified.

Please Note: Track Info Services, LLC collects and maintains information regarding Underground Storage Tanks from majority of the CUPAS and Participating Agencies in the State of California. These agencies typically do not maintain nor release such information on a uniform or consistent schedule; therefore, currency of the data may vary. Please look at the details on a specific site with a UST record in the First Search Report to determine the actual currency date of the record as provided by the relevant agency. Numerous efforts are made on a regular basis to obtain updated records.

**State/Tribal IC: CA EPA DEED-RESTRICTED SITES LISTING-** The California EPA's Department of Toxic Substances Control Board maintains a list of deed-restricted sites, properties where the DTSC has placed limits or requirements on the future use of the property due to varying levels of cleanup possible, practical or necessary at the site.

**State/Tribal VCP: CA EPA SMBRPD / CAL SITES-** The California Department of Toxic Substances Control (DTSC) has developed an electronic database system with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), also known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances.

The SMBRPD displays information in six categories. The categories are:

1. CalSites Properties (CS)
2. School Property Evaluation Program Properties (SCH)
3. Voluntary Cleanup Program Properties (VCP)
4. Unconfirmed Properties Needing Further Evaluation (RFE)
5. Unconfirmed Properties Referred to Another Local or State Agency (REF)
6. Properties where a No Further Action Determination has been made (NFA)

Please Note: FirstSearch Reports list the above sites as DB Type VC. Each Category contains information on properties based upon the type of work taking place at the site. The VC category contains only those properties undergoing voluntary investigation and/or cleanup and which are listed in the Voluntary Cleanup Program.

**RADON: NTIS NATIONAL RADON DATABASE -** EPA radon data from 1990-1991 national radon project collected for a variety of zip codes across the United States.

**State Permits: CA COUNTY SAN DIEGO COUNTY HE17 PERMITS-** The HE17/58 database tracks establishments issued permits and the status of their permits in relation to compliance with federal, state, and local regulations that the County oversees. It tracks if a site is a hazardous waste generator, TSD, gas station, has underground tanks, violations, or unauthorized releases. For more information on a specific file call the HazMat Duty Specialist at the phone number listed in the source information field.

**SAN BERNARDINO COUNTY HAZARDOUS MATERIALS PERMITS-** Handlers and Generators Permit Information Maintained by the Hazardous Materials Division.

**State Other: CA EPA/COUNTY SMBRPD / CAL SITES-** The California Department of Toxic Substances

Control (DTSC) has developed an electronic database system with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), also known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances.

The SMBRPD displays information in six categories. The categories are:

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5. Unconfirmed Properties Referred to Another Local or State Agency (REF)
6. Properties where a No Further Action Determination has been made (NFA)

Please Note: FirstSearch Reports list the above sites as DB Type (OTHER).

Each Category contains information on properties based upon the type of work taking place at the site. For example, the CalSites database is now one of the six categories within SMPBRD and contains only confirmed sites considered as posing the greatest threat to the public and/or the potential public school sites will be found within the School Property Evaluation Program, and those properties undergoing voluntary investigation and/or cleanup are in the Voluntary Cleanup Program.

LA COUNTY SITE MITIGATION COMPLAINT CONTROL LOG- The County of Los Angeles Public Health Investigation Compliant Control Log.

ORANGE COUNTY INDUSTRIAL SITE CLEANUPS- List maintained by the Orange County Environmental Health Agency.

RIVERSIDE COUNTY WASTE GENERATORS-A list of facilities in Riverside County which generate hazardous waste.

SACRAMENTO COUNTY MASTER HAZMAT LIST-Master list of facilities within Sacramento County with potentially hazardous materials.

SACRAMENTO COUNTY TOXIC SITE CLEANUPS-A list of sites where unauthorized releases of potentially hazardous materials have occurred.

**State Other:** *US DOJ* NATIONAL CLANDESTINE LABORATORY REGISTER - Database of addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the U.S. Department of Justice ("the Department"), and the Department has not verified the entry and does not guarantee its accuracy. All sites that are included in this data set will have an id that starts with NCLR.

## Environmental FirstSearch Database Sources

**NPL: EPA** Environmental Protection Agency

*Updated quarterly*

**NPL DELISTED: EPA** Environmental Protection Agency

*Updated quarterly*

**CERCLIS: EPA** Environmental Protection Agency

*Updated quarterly*

**NFRAP: EPA** Environmental Protection Agency.

*Updated quarterly*

**RCRA COR ACT: EPA** Environmental Protection Agency.

*Updated quarterly*

**RCRA TSD: EPA** Environmental Protection Agency.

*Updated quarterly*

**RCRA GEN: EPA** Environmental Protection Agency.

*Updated quarterly*

**RCRA NLR: EPA** Environmental Protection Agency

*Updated quarterly*

**Federal IC / EC: EPA** Environmental Protection Agency

*Updated quarterly*

**ERNS: EPA/NRC** Environmental Protection Agency

*Updated semi-annually*

**Tribal Lands: DOI/BIA** United States Department of the Interior

*Updated annually*

**State/Tribal Sites: CA EPA** The CAL EPA, Depart. Of Toxic Substances Control

Phone: (916) 323-3400

*Updated quarterly/when available*

**State Spills 90: CA EPA** The California State Water Resources Control Board

*Updated when available*

**State/Tribal SWL: CA IWMB/SWRCB/COUNTY** The California Integrated Waste Management Board

Phone:(916) 255-2331

The State Water Resources Control Board

Phone:(916) 227-4365

Orange County Health Department

*Updated quarterly/when available*

**State/Tribal LUST: CA SWRCB/COUNTY** The California State Water Resources Control Board

Phone:(916) 227-4416

San Diego County Department of Environmental Health

*Updated quarterly/when available*

**State/Tribal UST/AST: CA EPA/COUNTY/CITY** The State Water Resources Control Board

Phone:(916) 227-4364

CAL EPA Department of Toxic Substances Control

Phone:(916)227-4404

US EPA Region 9 Underground Storage Tank Program

Phone: (415) 972-3372

ALAMEDA COUNTY CUPAS:

\* County of Alameda Department of Environmental Health

\* Cities of Berkeley, Fremont, Hayward, Livermore / Pleasanton, Newark, Oakland, San Leandro, Union

ALPINE COUNTY CUPA:

\* Health Department (Only updated by agency sporadically)

AMADOR COUNTY CUPA:

\* County of Amador Environmental Health Department

BUTTE COUNTY CUPA

\* County of Butte Environmental Health Division (Only updated by agency biannually)

CALAVERAS COUNTY CUPA:

\* County of Calaveras Environmental Health Department

COLUSA COUNTY CUPA:

\* Environmental Health Dept.

CONTRA COSTA COUNTY CUPA:

\* Hazardous Materials Program

DEL NORTE COUNTY CUPA:

\* Department of Health and Social Services

EL DORADO COUNTY CUPAS:

\* County of El Dorado Environmental Health - Solid Waste Div (Only updated by agency annually)

\* County of El Dorado EMD Tahoe Division (Only updated by agency annually)

FRESNO COUNTY CUPA:

\* Haz. Mat and Solid Waste Programs

GLENN COUNTY CUPA:

\* Air Pollution Control District

HUMBOLDT COUNTY CUPA:

\* Environmental Health Division

IMPERIAL COUNTY CUPA:

\* Department of Planning and Building

INYO COUNTY CUPA:

\* Environmental Health Department

**KERN COUNTY CUPA:**

- \* County of Kern Environmental Health Department
- \* City of Bakersfield Fire Department

**KINGS COUNTY CUPA:**

- \* Environmental Health Services

**LAKE COUNTY CUPA:**

- \* Division of Environmental Health

**LASSEN COUNTY CUPA:**

- \* Department of Agriculture

**LOS ANGELES COUNTY CUPAS:**

- \* County of Los Angeles Fire Department CUPA Data as maintained by the Los Angeles County Department of Public Works

- \* County of Los Angeles Environmental Programs Division

- \* Cities of Burbank, El Segundo, Glendale, Long Beach/Signal Hill, Los Angeles, Pasadena, Santa Fe Springs, Santa Monica, Torrance, Vernon

**MADERA COUNTY CUPA:**

- \* Environmental Health Department

**MARIN COUNTY CUPA:**

- \* County of Marin Office of Waste Management

- \* City of San Rafael Fire Department

**MARIPOSA COUNTY CUPA:**

- \* Health Department

**MENDOCINO COUNTY CUPA:**

- \* Environmental Health Department

**MERCED COUNTY CUPA:**

- \* Division of Environmental Health

**MODOC COUNTY CUPA:**

- \* Department of Agriculture

**MONO COUNTY CUPA:**

- \* Health Department

**MONTEREY COUNTY CUPA:**

- \* Environmental Health Division

**NAPA COUNTY CUPA:**

- \* Hazardous Materials Section

**NEVADA COUNTY CUPA:**

- \* Environmental Health Department

**ORANGE COUNTY CUPAS:**

- \* County of Orange Environmental Health Department

- \* Cities of Anaheim, Fullerton, Orange, Santa Ana

- \* County of Orange Environmental Health Department

**PLACER COUNTY CUPAS:**

- \* County of Placer Division of Environmental Health Field Office

- \* Tahoe City

- \* City of Roseville Roseville Fire Department

**PLUMAS COUNTY CUPA:**

- \* Environmental Health Department

**RIVERSIDE COUNTY CUPA:**

- \* Environmental Health Department

**SACRAMENTO COUNTY CUPA:**

- \* County Environmental Mgmt Dept, Haz. Mat. Div.

**SAN BENITO COUNTY CUPA:**

- \* City of Hollister Environmental Service Department

**SAN BERNARDINO COUNTY CUPAS:**

- \* County of San Bernardino Fire Department, Haz. Mat. Div.

- \* City of Hesperia Hesperia Fire Prevention Department

- \* City of Victorville Victorville Fire Department

**SAN DIEGO COUNTY CUPA:**

- \* The San Diego County Dept. of Environmental Health HE 17/58

**SAN FRANCISCO COUNTY CUPA:**

- \* Department of Public Health

**SAN JOAQUIN COUNTY CUPA:**

- \* Environmental Health Division

**SAN LUIS OBISPO COUNTY CUPAS:**

\* County of San Luis Obispo Environmental Health Division

\* City of San Luis Obispo City Fire Department

**SAN MATEO COUNTY CUPA:**

\* Environmental Health Department

**SANTA BARBARA COUNTY CUPA:**

\* County Fire Dept Protective Services Division

**SANTA CLARA COUNTY CUPAS:**

\* County of Santa Clara Hazardous Materials Compliance Division

\* Santa Clara County Central Fire Protection District (Covers Campbell, Cupertino, Los Gatos, & Morgan Hill)

\* Cities of Gilroy, Milpitas, Mountain View, Palo Alto, San Jose Fire, Santa Clara, Sunnyvale

**SANTA CRUZ COUNTY CUPA:**

\* Environmental Health Department

**SHASTA COUNTY CUPA:**

\* Environmental Health Department

**SIERRA COUNTY CUPA:**

\* Health Department

**SISKIYOU COUNTY CUPA:**

\* Environmental Health Department

**SONOMA COUNTY CUPAS:**

\* County of Sonoma Department Of Environmental Health

\* Cities of Healdsburg / Sebastopol, Petaluma, Santa Rosa

**STANISLAUS COUNTY CUPA:**

\* Department of Environmental Resources Haz. Mat. Division

**SUTTER COUNTY CUPA:**

\* Department of Agriculture

**TEHAMA COUNTY CUPA:**

\* Department of Environmental Health

**TRINITY COUNTY CUPA:**

\* Department of Health

**TULARE COUNTY CUPA:**

\* Environmental Health Department

**TUOLUMNE COUNTY CUPA:**

\* Environmental Health

**VENTURA COUNTY CUPAS:**

\* County of Ventura Environmental Health Division

\* Cities of Oxnard, Ventura

**YOLO COUNTY CUPA:**

\* Environmental Health Department

**YUBA COUNTY CUPA:**

*Updated quarterly/annually/when available*

**State/Tribal IC: CA EPA** The California EPA Department of Toxic Substances Control.

*Updated Updated quarterly/annually/when available*

**State/Tribal VCP: CA EPA** The California EPA Department of Toxic Substances Control.

*Updated Updated quarterly/annually/when available*

**RADON: NTIS** Environmental Protection Agency, National Technical Information Services

*Updated periodically*

**State Permits: CA COUNTY** The San Diego County Depart. Of Environmental Health

Phone:(619) 338-2211

San Bernardino County Fire Department

*Updated quarterly/when available*

**State Other: CA EPA/COUNTY** The CAL EPA, Depart. Of Toxic Substances Control  
Phone: (916) 323-3400

The Los Angeles County Hazardous Materials Division

Phone: (323) 890-7806

Orange County Environmental Health Agency

Phone: (714) 834-3536

Riverside County Department of Environmental Health, Hazardous Materials Management Division

Phone:(951) 358-5055

Sacramento County Environmental Management Department

*Updated quarterly/when available*

**State Other: US DOJ** U.S. Department of Justice

*Updated when available*

***Environmental FirstSearch***  
***Street Name Report for Streets within .25 Mile(s) of Target Property***

**Target Property:** 2618 GLEN RIDGE ROAD  
ESCONDIDO CA 92027

**JOB:** 106513002  
106513002

<b>Street Name</b>	<b>Dist/Dir</b>	<b>Street Name</b>	<b>Dist/Dir</b>
Alamitos Pl	0.17 NW		
Amberwood Ln	0.25 SE		
Braemar Green	0.20 SE		
Canyon Crest Dr	0.00 --		
Carroll Ln	0.18 SW		
Cloverdale Rd	0.00 --		
Colony Pl	0.00 --		
Crownpoint Pl	0.00 --		
Emerald Pl	0.05 SW		
Falconer Rd	0.00 --		
Fallbrook Pl	0.20 SE		
Glen Abbey Green	0.16 SE		
Glen Ridge Rd	0.00 --		
Hazeltine Green	0.12 SE		
Hidden Estates Ln	0.11 NE		
Hidden View Ln	0.18 NE		
Jonah Rd	0.25 NW		
La Colina	0.00 --		
Meadow Grove Pl	0.13 NW		
Moody Dr	0.00 --		
Mountain Park Pl	0.17 SW		
Mountain View Dr	0.00 --		
Oak Hill Dr	0.23 NW		
Old Ranch Rd	0.00 --		
Orange Grove Pl	0.14 SE		
Pomegranite Ct	0.20 SE		
Reed Rd	0.00 --		
Reed Ter	0.00 --		
Royal Oak Dr	0.13 SW		
S Hayden Dr	0.21 NW		
Slivkoff Dr	0.06 NW		
Valley Meadow Pl	0.16 NW		
Wedgewood Ave	0.05 NW		
Whispering Highlands	0.05 SW		
White Hawk Rd	0.06 NE		
Wild Oak Ln	0.24 SE		

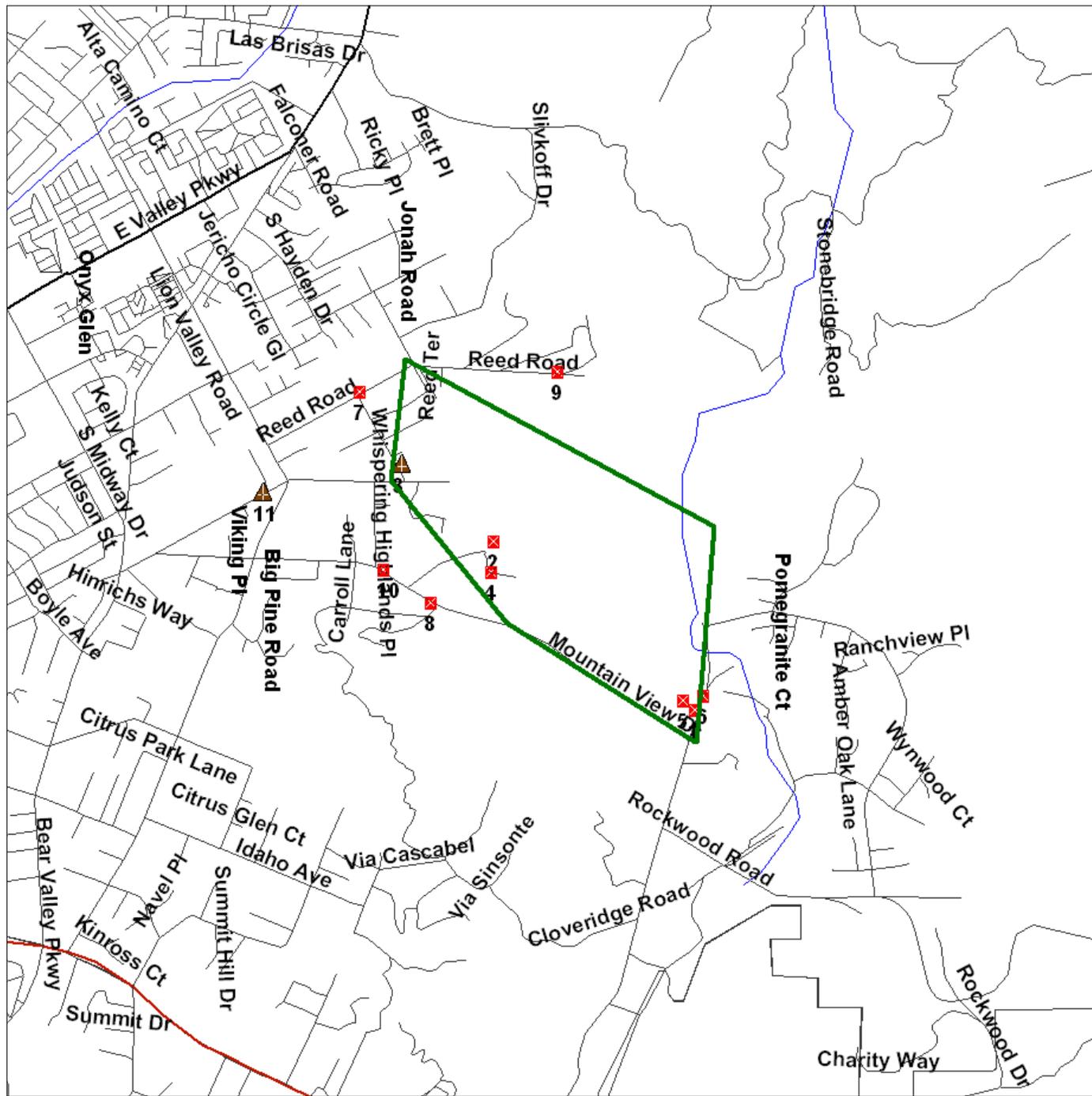


# Environmental FirstSearch

1 Mile Radius from Area  
Single Map:



**2618 GLEN RIDGE ROAD, ESCONDIDO CA 92027**



Source: U.S. Census TIGER Files

- Area Polygon ..... 
- Identified Site, Multiple Sites, Receptor .....   
- NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste ..... 
- Triballand ..... 
- Railroads ..... 

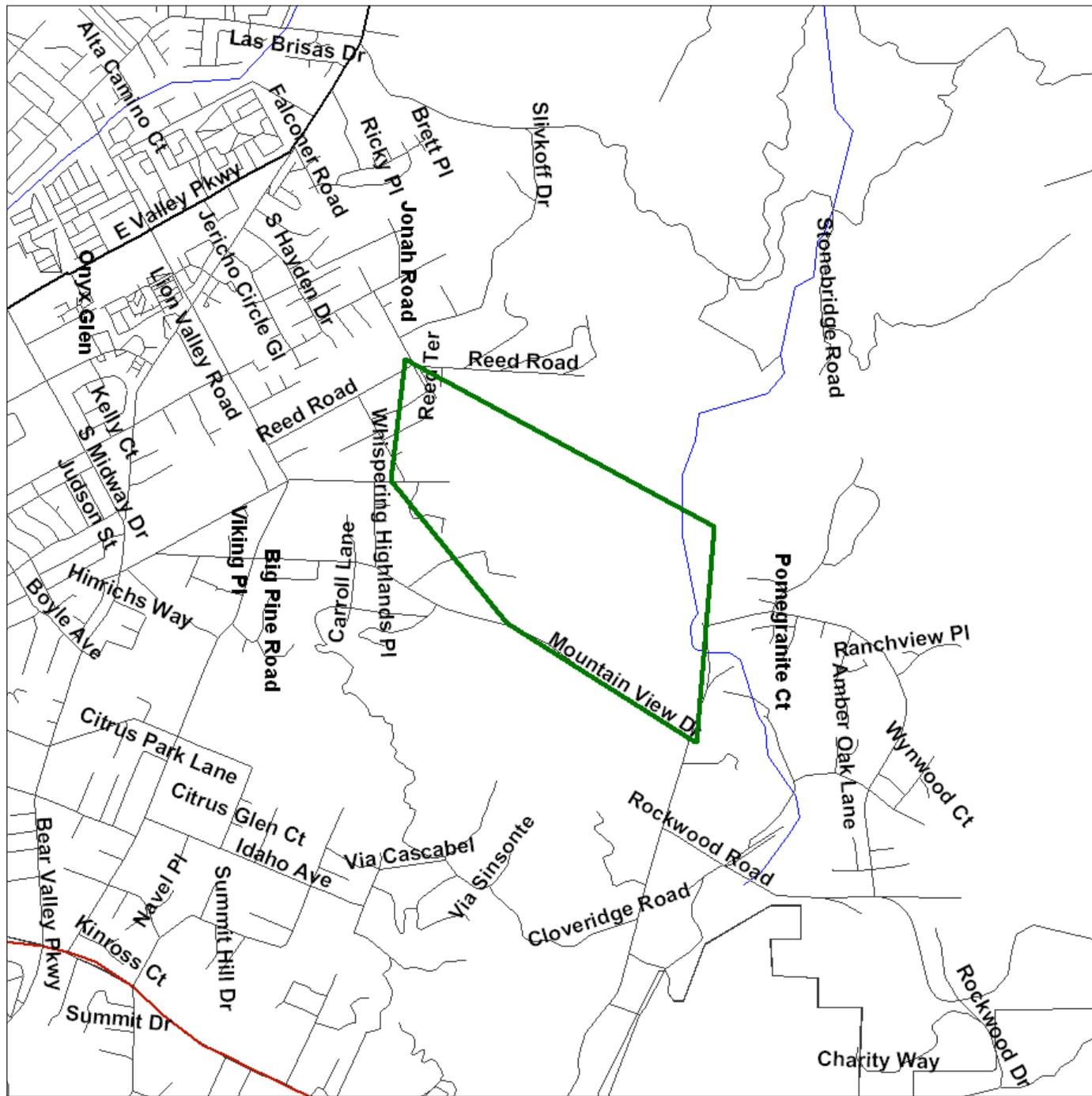


# Environmental FirstSearch

1 Mile Radius from Area  
ASTM-05: NPL, RCACOR, STATE

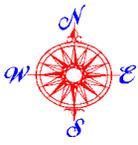


## 2618 GLEN RIDGE ROAD, ESCONDIDO CA 92027



Source: U.S. Census TIGER Files

- Area Polygon ..... 
- Identified Site, Multiple Sites, Receptor .....   
- NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste ..... 
- Triballand ..... 
- Railroads ..... 

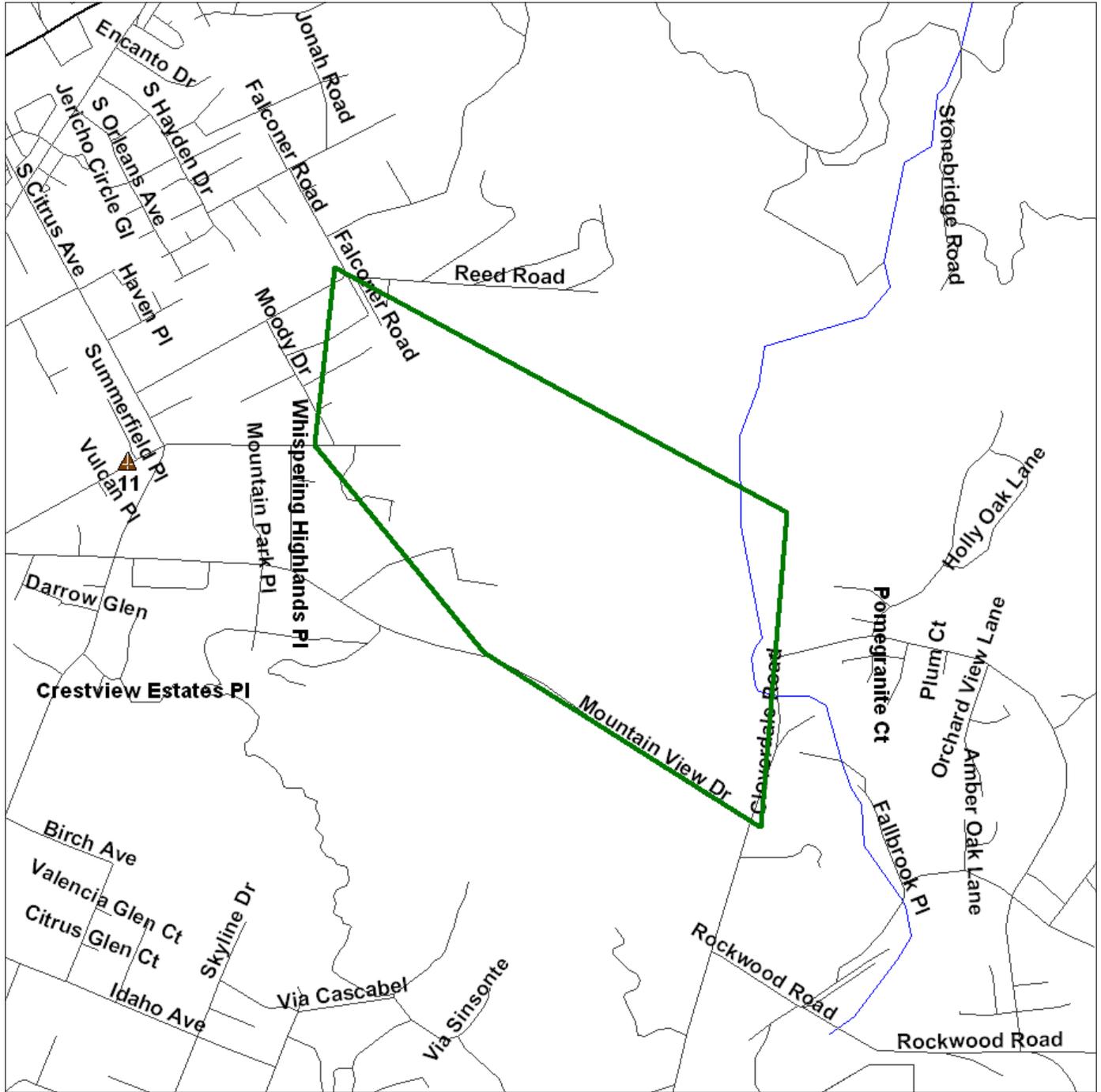


# Environmental FirstSearch

.5 Mile Radius from Area  
ASTM-05: Multiple Databases



## 2618 GLEN RIDGE ROAD, ESCONDIDO CA 92027



Source: U.S. Census TIGER Files

- Area Polygon ..... 
- Identified Site, Multiple Sites, Receptor .....   
- NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste ..... 
- Triballand ..... 
- Railroads ..... 

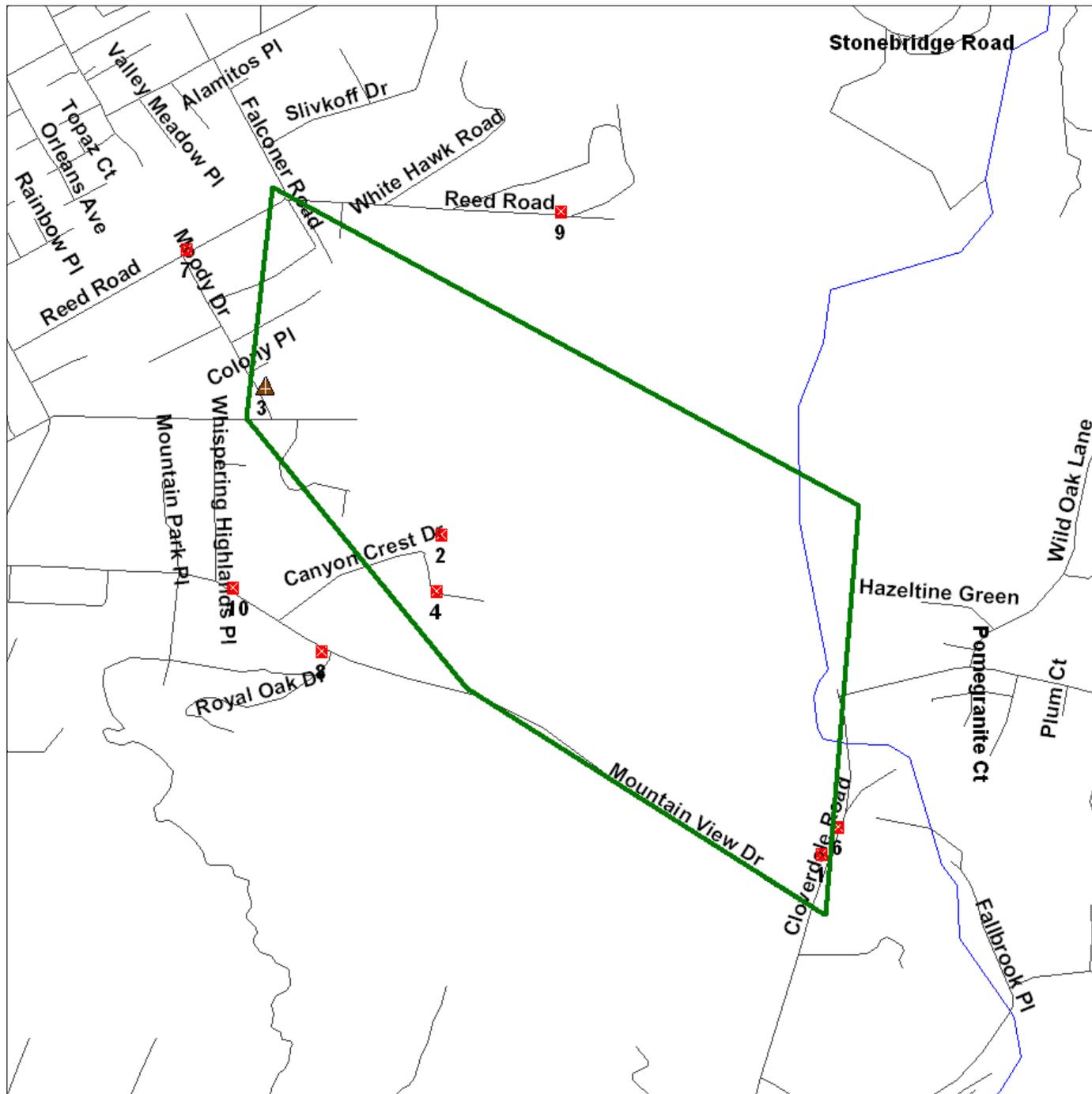


# Environmental FirstSearch

.25 Mile Radius from Area  
ASTM-05: RCRA GEN, UST, PERMITS, OTHER



## 2618 GLEN RIDGE ROAD, ESCONDIDO CA 92027



Source: U.S. Census TIGER Files

- Area Polygon .....
- Identified Site, Multiple Sites, Receptor .....
- NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste .....
- Triballand .....
- Railroads .....



# Environmental FirstSearch

.12 Mile Radius from Area  
ASTM-05: SPILLS90, ERNS, RCRANLR



## 2618 GLEN RIDGE ROAD, ESCONDIDO CA 92027



Source: U.S. Census TIGER Files

Area Polygon .....	
Identified Site, Multiple Sites, Receptor .....	
NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste .....	
Triballand.....	
Railroads .....	