Final

Cultural Resources Technical Report

Historic Significance Evaluation of Tie Line 649

San Diego, California
Submitted: March 2015
Updated: May 2015

This page intentionally left blank

PREPARED FOR

San Diego Gas and Electric
8315 Century Park Court
San Diego, CA 92123

PREPARED BY

HDR, Inc.
8690 Balboa Avenue, Suite 200
San Diego, CA 92123

AUTHORS

Paul Weishar
Architectural Historian

Marjorie Nowick, M.A.
Architectural History Program Manager

Amy Gusick, PhD, RPA
Archaeology Program Manager

Kristin Tennesen, M.A., RPA
Project Director

CLIENT

San Diego Gas and Electric

Final
Cultural Resources Technical Report: Historic Significance Evaluation of Tie Line 649

San Diego, California

This page intentionally left blank

Contents

Acronyms iii

Management Summary v

1 Introduction 1
- 1.1 Project Description 1
- 1.2 Regulatory Setting 1
- 1.3 Project Personnel 2

2 Methods 5
- 2.1 Evaluation Methods 5
- 2.2 Field Methods 13
- 2.3 Research Methods 13

3 Historic Context 15
- 3.1 Overview History of Electrical Service in San Diego County 15
  - 3.1.1 Introduction 15
  - 3.1.2 Early Gas and Electric Company Formation, 1881-1904 15
  - 3.1.3 Expansion of Service 17
  - 3.1.4 Electrical Distribution Growth, 1916–1940 17
  - 3.1.5 San Diego Gas and Electric Company, 1940-Today 19
- 3.2 Historic Context of TL 649 Corridor 20
  - 3.2.1 Chula Vista and San Ysidro 20
  - 3.2.2 Otay Mesa 23
- 3.3 Identified Historic Context Themes and Periods of Significance 27
  - 3.3.1 Community Development, Early Power Line Development of San Diego County (1916–1930) 27
  - 3.3.2 Community Development, World War II and Post-War Power Line Development of San Diego County (1941–1964) 28
  - 3.3.3 Engineering, Early Twentieth Century Structural Innovations in Power Line Construction in San Diego County (1916–1930) 29

4 Architectural Description of TL 649 31

5 Evaluation Criteria 35
- 5.1 National Register of Historic Places 35
- 5.2 California Register of Historic Resources 36
- 5.3 Integrity 37
- 5.4 San Diego County Local Register of Historical Resources 38
- 5.5 County of San Diego Resource Protection Ordinance 38
- 5.6 California Environmental Quality Act 39

6 Eligibility Recommendations 41
- 6.1 Integrity 41
- 6.2 National Register of Historic Places Significance Evaluation 41
- 6.3 California Register of Historical Resources Significance Evaluation 42
- 6.4 San Diego County Local Register of Historical Resources Evaluation 42
- 6.5 County of San Diego Resource Protection Ordinance Evaluation 43

6.6 California Environmental Quality Act Significance Criteria Evaluation 43
7 References 45

Tables

Table 2-1. List of Poles Analyzed for the Significance Evaluation 5

Figures

Figure 1-1. General Project Location, San Diego County 3
Figure 1-2. Location of TL 649 and Substations 4
Figure 2-1. Portion of TL 649 showing pole numbers. Poles included in sub sample have red numbers. Poles are symbolized by decade installed and modification. 6
Figure 2-2. Portion of TL 649 showing pole numbers. Poles included in sub sample have red numbers. Poles are symbolized by decade installed and modification. 7
Figure 2-3. Portion of TL 649 showing pole numbers. Poles included in sub sample have red numbers. Poles are symbolized by decade installed and modification. 8
Figure 2-4. Portion of TL 649 showing pole numbers. Poles included in sub sample have red numbers. Poles are symbolized by decade installed and modification. 9
Figure 2-5. Portion of TL 649 showing pole numbers. Poles included in sub sample have red numbers. Poles are symbolized by decade installed and modification. 10
Figure 2-6. Portion of TL 649 showing pole numbers. Poles included in sub sample have red numbers. Poles are symbolized by decade installed and modification. 11
Figure 2-7. Portion of TL 649 showing pole numbers. Poles included in sub sample have red numbers. Poles are symbolized by decade installed and modification. 12
Figure 3-1. 1916 Pole Raising on Transmission Line Serving Otay Lakes (Engstrand and Crawford 1991:66). 21
Figure 3-2. 1916 Failure of the Lower Otay Dam (Hill 2002). 21
Figure 3-3. Otay Mesa, circa 1946 24
Figure 3-4. Detail of 1955 USGS Topographic Map, San Diego 25
Figure 3-5. R. Lavador (CFE) and Jose Amezcua (SDG&E) Share Congratulations after Linkup at Border, March 4, 1983 (Courtesy SDG&E). 26
Figure 4-1. Examples of Poles Analyzed for Significance Evaluation of TL 649 32
Figure 4-2. Substations Associated with TL 649 33

Appendices

Appendix A. Updated DPR Forms
Appendix B. Resumes of Key Personnel
Appendix C. List of Poles

Acronyms

ASM	ASM Affiliates, Inc.
CFE	Comision Federal de Electricidad
CNF	Cleveland National Forest
CEQA	California Environmental Quality Act
CRHR	California Register of Historic Resources
GIS	Geographic Information Systems
HDR	HDR Environmental, Operations and Construction, Inc.
LPOE	land point of entry
MSUP	Master Special Use Permit
NAAS	Navy Auxiliary Air Station
NPS	National Park Service
NRHP	National Register of Historic Places
PSA	Pacific Southwest Airlines
RPO	Resource Protection Ordinance
SCE	Southern California Edison Company
SCIC	South Coastal Information Center
SDCG&E	San Diego Consolidated Gas & Electric Company
SDG&E	San Diego Gas and Electric
SCCIC	South Central Coastal Information Center
SDSU	San Diego State University
TL	tie line
U.S.	United States
USGS	United States Geological Survey

This page intentionally left blank

Management Summary

This report presents a significance evaluation of San Diego Gas and Electric's (SDG&E) tie line (TL) 649. This evaluation includes historic research, analysis of a sub sample of 14 percent of the poles on the TL, and a significance evaluation in accordance with the California Environmental Quality Act (CEQA). This evaluation was completed in anticipation of the proposed replacement of a portion of the poles on the TL. Although only a portion of the poles will be impacted, this evaluation considers TL 649 in its entirety.

This significance evaluation involved extensive background research on the history of power within San Diego County, field visits to selected poles on and the substations connected to TL 649, and a full CEQA significance evaluation of TL 649. The historic context for the evaluation was developed from extensive background research at SDG&E, the South Central Coastal Information Center, the South Coastal Information Center, the San Diego History Center, the San Diego Central Library, and the San Diego State University) library. Documents referenced from these institutions include historic maps, historic photographs, newspaper articles, aerials, previous cultural resource management technical reports, and reference books.

Per the guidance for TL evaluation in *Draft Historic-Era Electrical Infrastructure Management Program* (SCE 2014), sub samples of poles were targeted for detailed evaluation. These poles are considered representative of the poles on the TL collectively and represent poles installed in each decade beginning in 1916 through to the 1980s.

Field crews documented 14 percent of the poles on the TL, focusing on poles that were installed over 50 years ago. Although the substations are not considered in the significance evaluation of TL 649, they were documented as related to the TL.

Based on the framework set forth by the Southern California Edison Company (SCE) report and the general history of electrification of San Diego County and formation of SDG&E set forth in previous reports, HDR Environmental, Operations and Construction, Inc. (HDR) structured a general history of the TL 649 corridor. Using this historic context, HDR evaluated TL 649 for eligibility and found it not eligible for the National Register of Historic Places , California Register of Historic Resources, the County of San Diego's Resource Protection Ordinance(, Local Register, or as a CEQA historic resource.

This page intentionally left blank

1 Introduction

This report presents a California Environmental Quality Act (CEQA) significance evaluation for San Diego Gas & Electric (SDG&E) Transmission Line (TL) 649 (Figures 1-1 and 1-2). SDG&E proposes to remove, replace, or reconfigure a portion of the poles on TL 649. The TL extends between Black Coral Way in the city of San Diego, east through the city of Chula Vista for approximately five miles, then south along Harvest Road.

1.1 Project Description

This evaluation was completed in anticipation of the proposed partial pole replacement on TL 649. Although only a portion of the poles will be impacted, this evaluation considers TL 649 in its entirety. The documentation and the evaluation of the power line included a historic context that was derived from a variety of sources. A previous power line evaluation conducted by ASM Affiliates, Inc. (ASM), *Historic Evaluation of Electrical Transmission and Distribution Lines in the Cleveland National Forest (CNF) for San Diego Gas and Electric's (SDG&E) Master Special Use Permit (MSUP),* has adequately documented the development of power within San Diego County and much of the general information on power within the county of San Diego is derived from this report (Gorman et al. 2014). Other resources used in development of the local historic context were gathered from various institutions around San Diego County, including SDG&E, the South Central Coastal Information Center (SCCIC), the South Coastal Information Center (SCIC) the San Diego History Center, the San Diego Central Library, and the San Diego State University (SDSU) library. Documents collected from these institutions include historic maps, historic photographs, newspaper articles, aerials, previous cultural resource management technical reports, and reference books.

The significance evaluation for TL 649 was guided by the framework of eligibility criteria for Southern California Edison (SCE) structures recently established by SCE in the *Draft Historic-Era Electrical Infrastructure Management Program* (SCE 2014). This guidance allows analysis of a representative sub set of the poles. TL 649 has 181 poles, 12 of these are undergrounded. Of the 169 standing poles, 23 (14 percent) were analyzed for the significance evaluation. This 14 percent sample includes poles with install dates from each decade from 1916 to 1980. These poles were field checked, documented, and photographed. TL 649 was recorded on a Department of Parks of Recreation (DPR-523) form and can be found in Appendix A.

1.2 Regulatory Setting

In compliance with CEQA, TL 649 located in southern San Diego County is considered for eligibility for the National Register of Historic Places (NRHP), the California Register of Historic Resources (CRHR), the County of San Diego's Resources Protection Ordinance (RPO), Local Register, and as CEQA historic resources.

CEQA Section 15064.5 Determining the Significance of Impacts to Archeological and Historical Resources, requires that all private and public activities not specifically exempted are evaluated against the potential for environmental damage, including effects to historical resources. Historical resources are recognized as part of the environment under CEQA. It defines historical resources as "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."

1.3 Project Personnel

The SDG&E point of contact was Ms. Rachel Ruston, Senior Cultural Resources Specialist. The HDR project team was led by Kristin Tennesen, M.A., archaeology project director. Amy Gusick, Ph.D. and James Whitaker conducted the field visits, and Margaret Diss, M.A. conducted historic research. All information was reviewed and the significance evaluation was developed by a qualified architectural historian, Paul Weishar. The significance evaluation and all related documentation were reviewed by Marjorie Nowick, M.A, architectural history program manager at HDR. Appendix B includes resumes of key personnel.

Figure 1-1. General Project Location, San Diego County

Figure 1-2. Location of TL 649 and Substations

2 Methods

2.1 Evaluation Methods

Per the guidance for TL evaluation in *Draft Historic-Era Electrical Infrastructure Management Program* (SCE 2014), sub samples of poles of TL 649 were targeted for detailed evaluation. These poles are considered representative of the poles on the TL collectively (Table 2-1) and represent poles installed in each decade beginning in 1916 through to the 1980s (Figures 2-1 to 2-7). While all poles on the line have been modified since their original install date, the grouping of poles into sub sets was based on original install date. General information on the poles was gathered from the pole cards provided by SDG&E. The poles cards noted installation date, modification date, height, number of wires and voltage capacity. A table of information for each pole on TL 649 is provided in Appendix C.

Table 2-1. List of Poles Analyzed for the Significance Evaluation

Pole Number	Year Installed/Modified	Height	Carrying
Z31766	1987,1992	65	69 KV "4"
Z31759	1987	65	69 KV, 4-12KVD
Z31755	unknown	unknown	unknown
Z31745	1987	70	69 KV "4", 6.12 KVDE, Z12KVNDE
Z82136	1916,1942,1962	40,75	69 KVD 10', 4-12 KVD, 6-12 KVD
Z82578	1925,1955,1976	40,75	69 KVD 10', 4-12 KVD, 6-12 KVD
Z81044	1938,1962	75	69 KV "Z", 6-12 KVD. 4-11 KVD
Z81053	1961, 1962	35,40,70	A-E, 4-12 KV, 69 KV 10', 6-12KV
Z81055	1952, 1962	35,40,75	A-D, 4-12 KVD, 69 KVD 10', 6-12KV
Z81058	1932,1962	35, 75	A-E, 69KV 10', 6-12KV
Z81063	1944,1962	35,40,75	A-E, 4-11KV,69KV 10', 6-12KV
Z81969	1916,1929,1962	30,40,75	A-W, 69KV 10', 6-12KV
Z81975	1916,1939,1962	30,75	A-W, 4-11 KV,69KV 10', 6-12KV
Z81104	1962	35,75	A-D, 69 KVD 10'
Z81116	1919,1961,1962	35,75	A-D,F-D,H-S, 69 KVD 10', 6-12KV, 4-12KVBD, 3-12 KVCD
Z188728	unknown	unknown	unknown
Z183542	1955	65	69KV
Z183543	1955	65	69KV
Z183545	1955,1971	70	69KV
Z183549	1955	70	69KV
Z183550	1955	65	69KV
Z188725	1962	70	69KV 10'
Z188720	1962	75	69 KV 10'

Figure 2-1. Portion of TL 649 showing pole numbers. Poles included in sub sample have red numbers. Poles are symbolized by decade installed and modification.

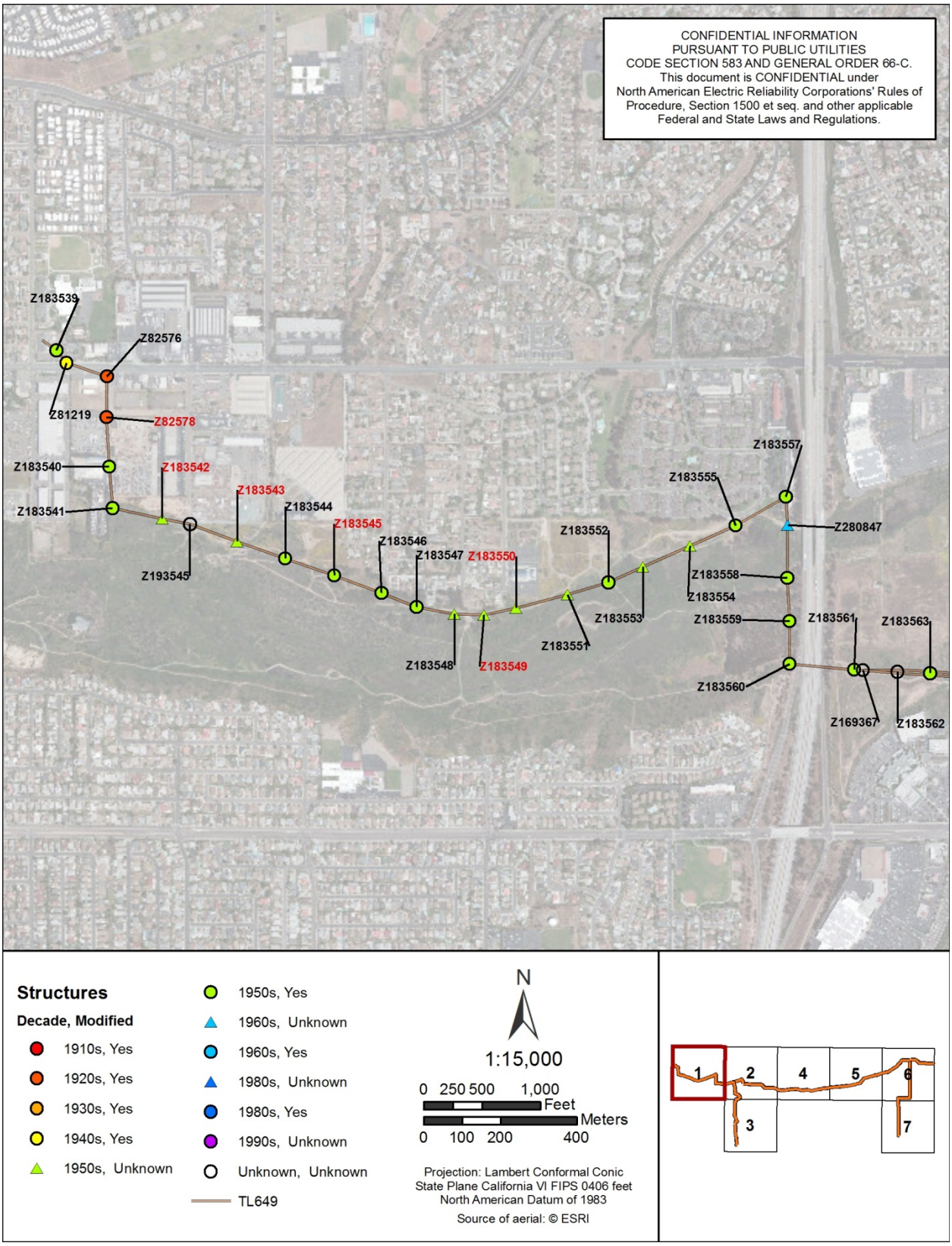


Figure 2-2. Portion of TL 649 showing pole numbers. Poles included in sub sample have red numbers. Poles are symbolized by decade installed and modification.

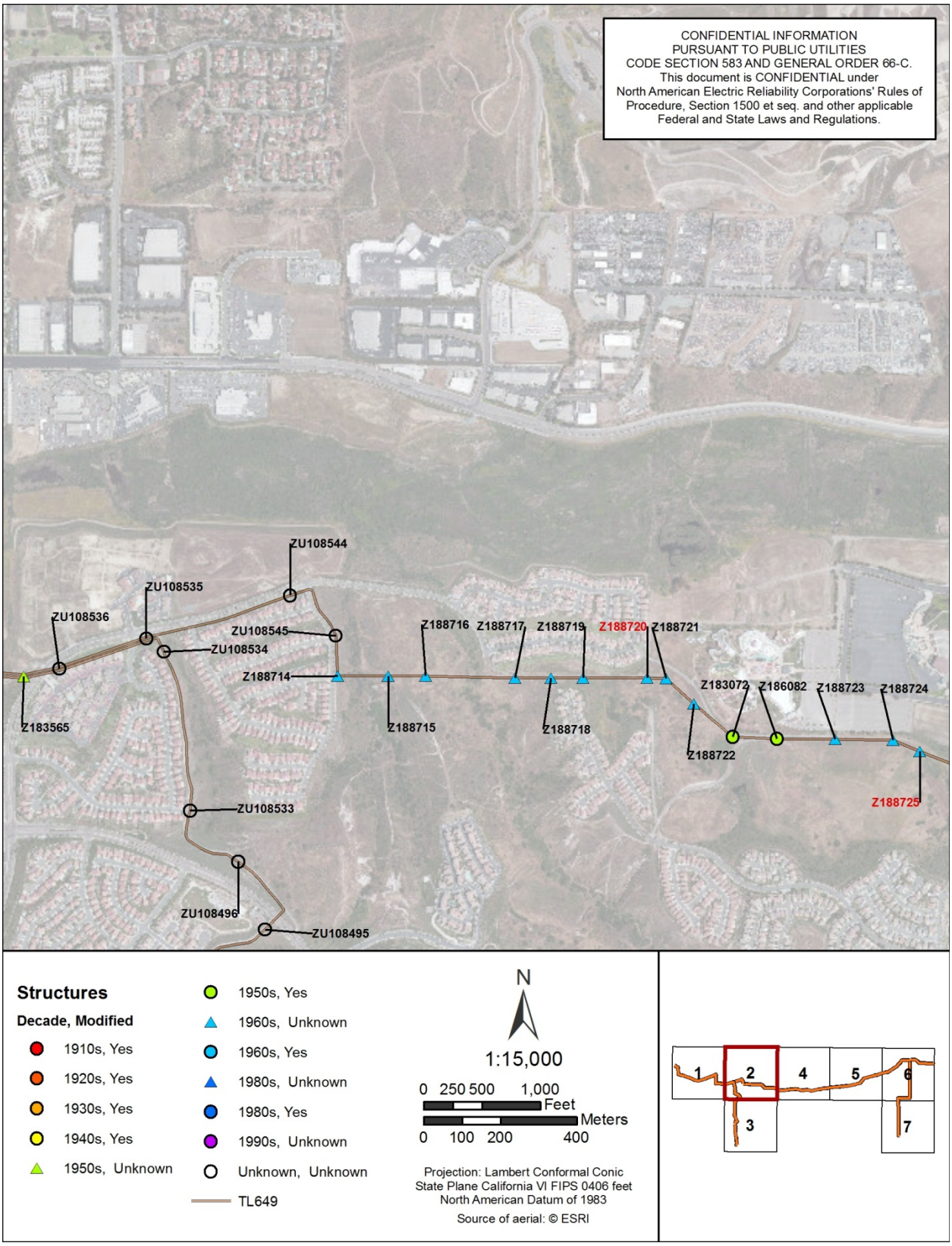


Figure 2-3. Portion of TL 649 showing pole numbers. Poles included in sub sample have red numbers. Poles are symbolized by decade installed and modification.

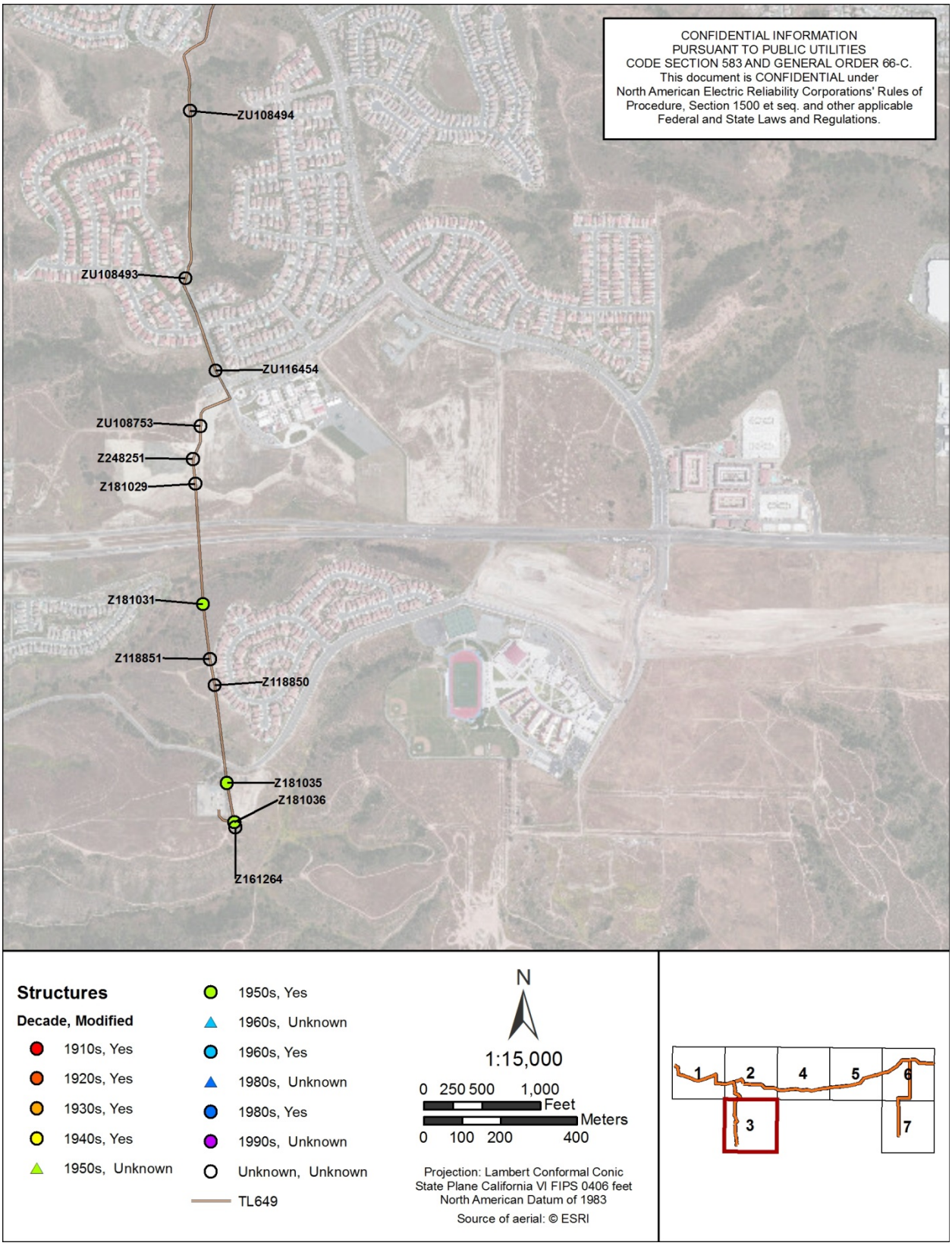


Figure 2-4. Portion of TL 649 showing pole numbers. Poles included in sub sample have red numbers. Poles are symbolized by decade installed and modification.

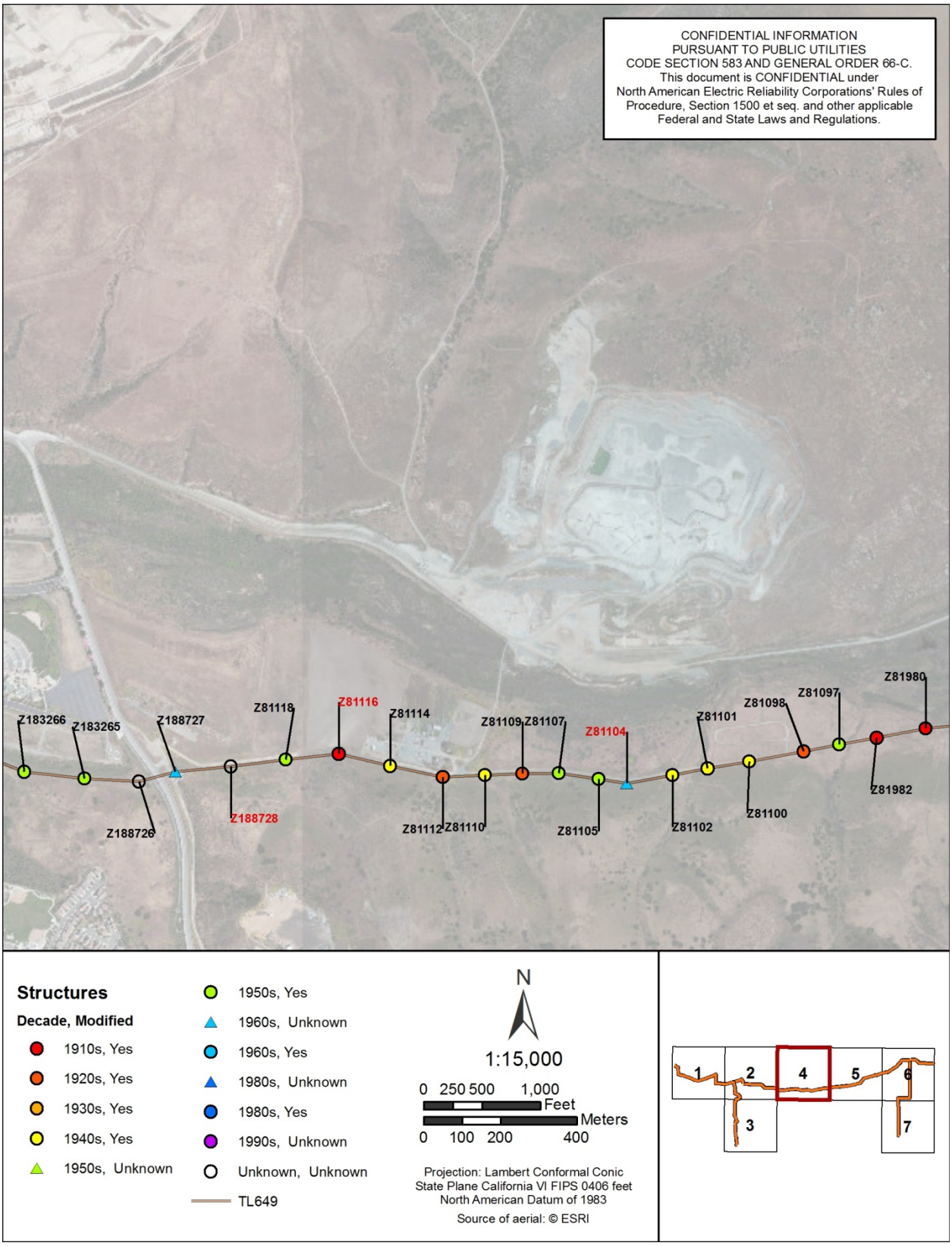


Figure 2-5. Portion of TL 649 showing pole numbers. Poles included in sub sample have red numbers. Poles are symbolized by decade installed and modification.

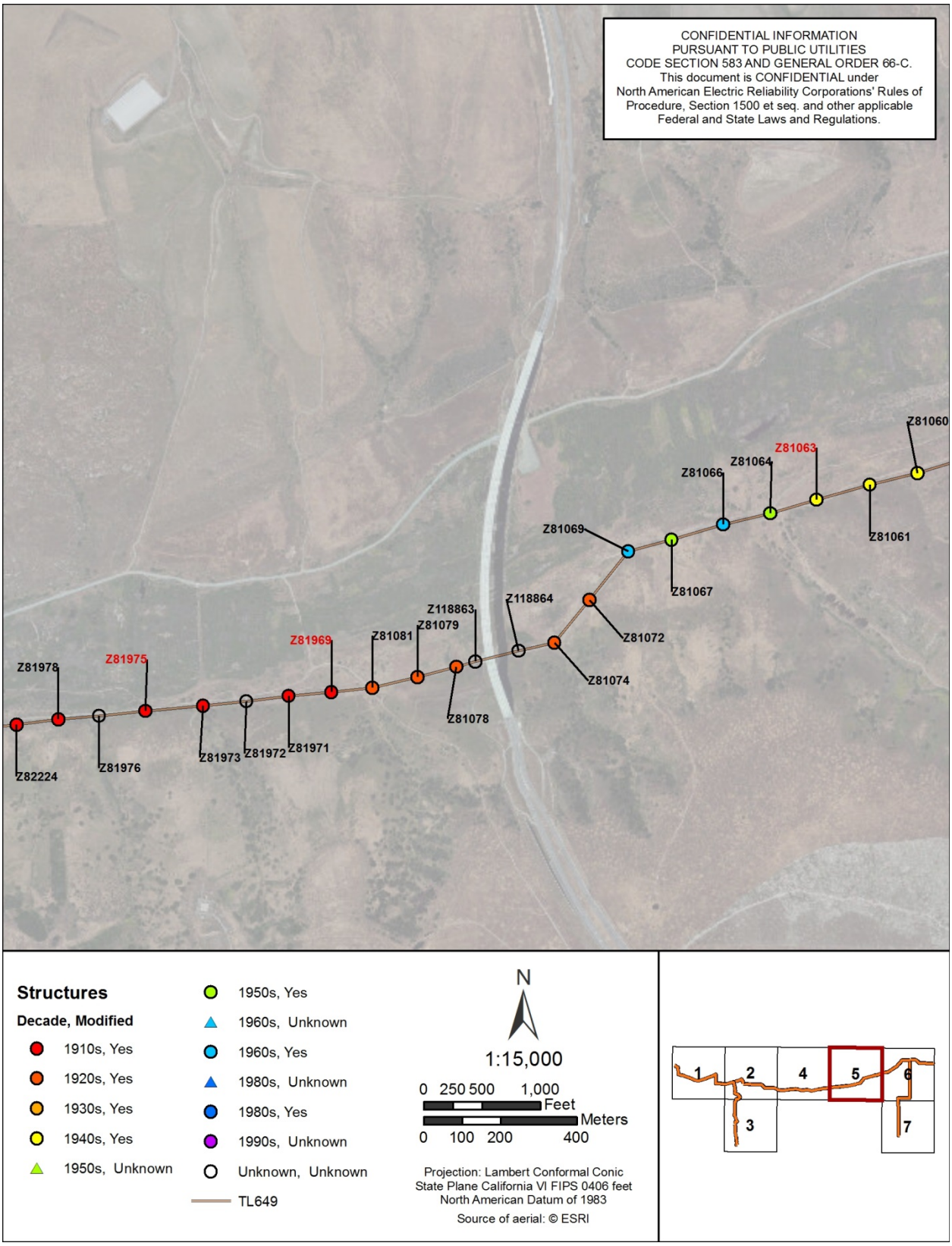


Figure 2-6. Portion of TL 649 showing pole numbers. Poles included in sub sample have red numbers. Poles are symbolized by decade installed and modification.

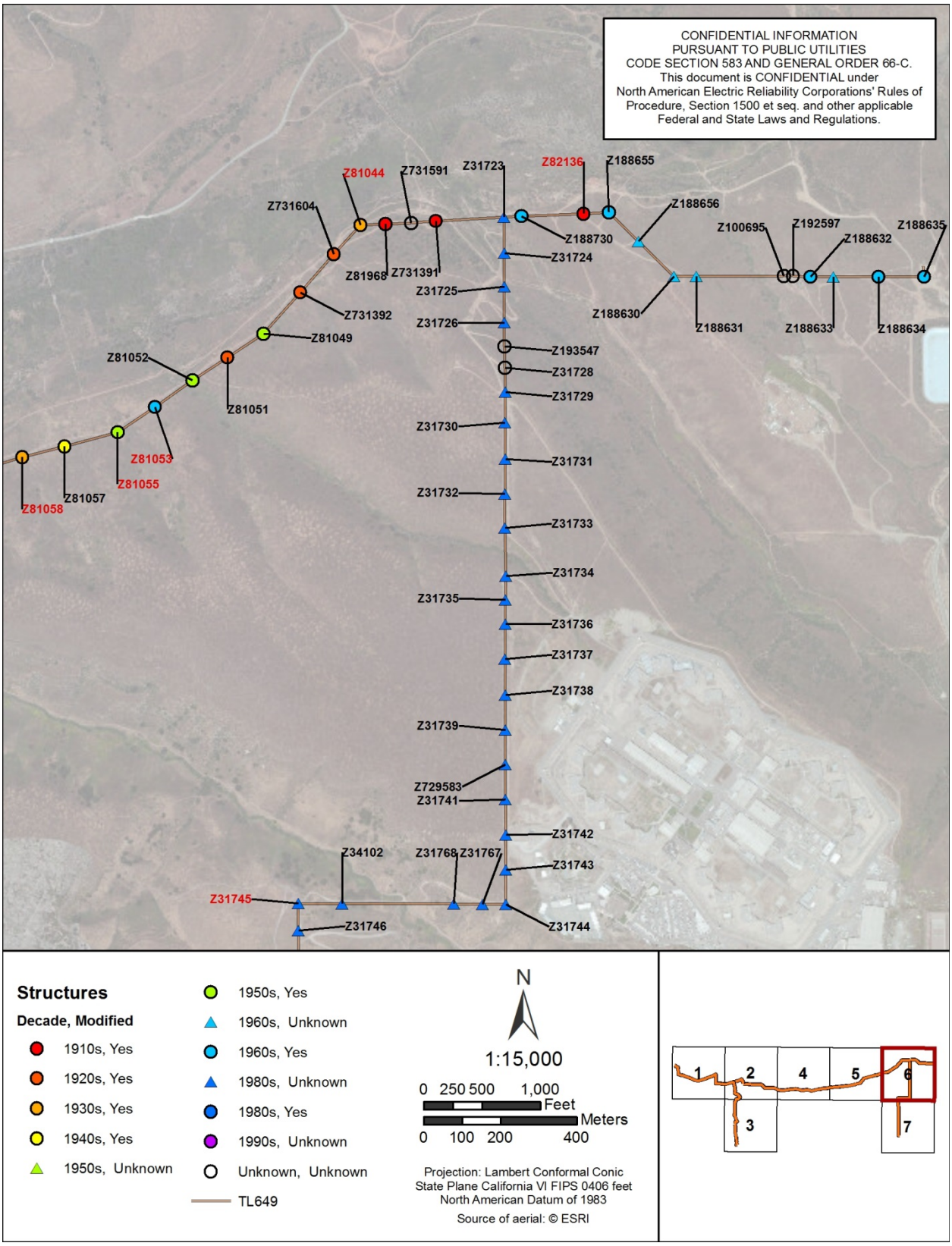
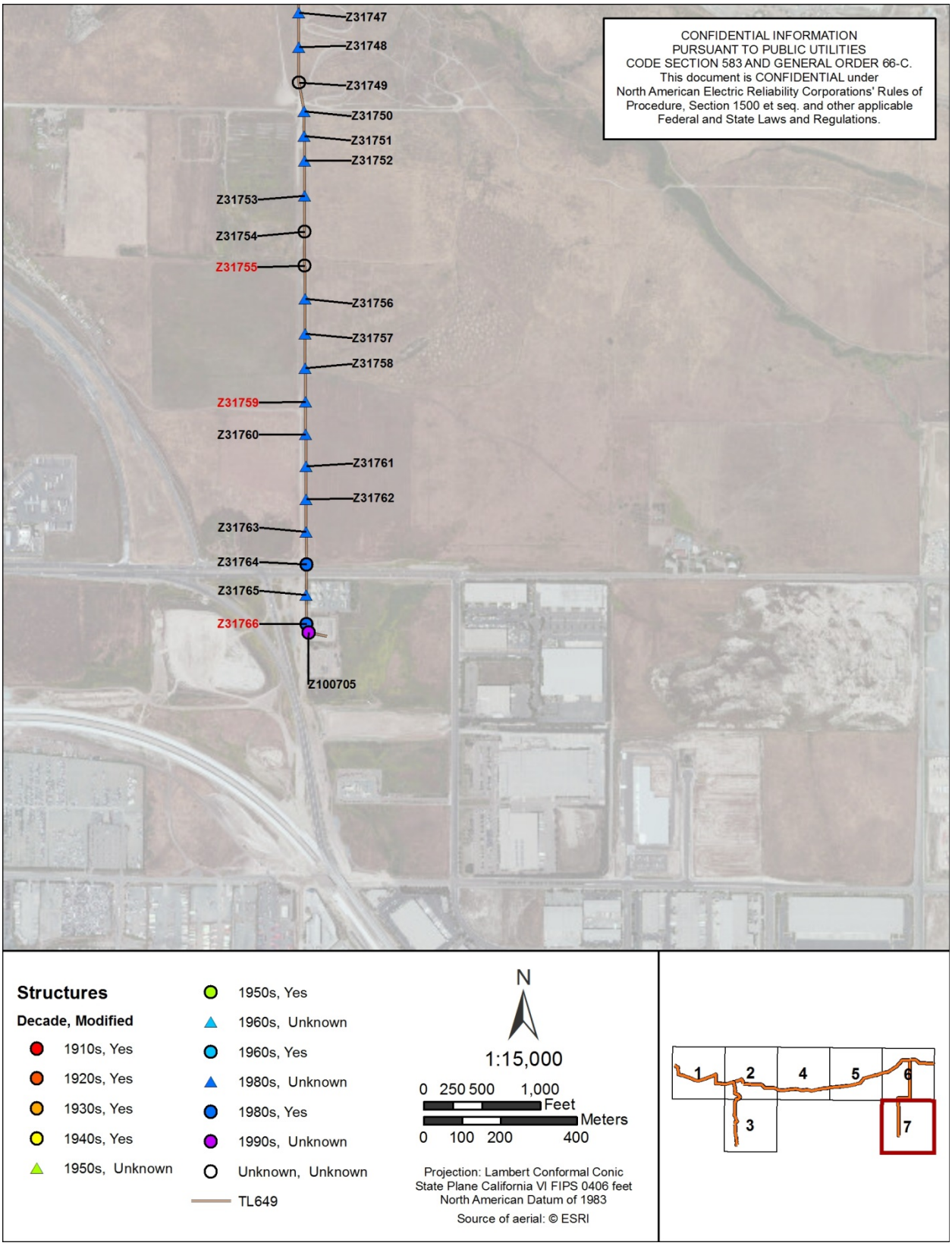


Figure 2-7. Portion of TL 649 showing pole numbers. Poles included in sub sample have red numbers. Poles are symbolized by decade installed and modification.



2.2 Field Methods

On March 9 and 23, 2015, HDR conducted field research to document the sub sample of poles and the associated substations on TL 649. Field crews documented 14 percent of the poles on the TL, focusing on poles installed over 50 years ago. Although the substations are not considered in the significance evaluation of TL 649, they were documented as related to the TL. Despite the fact none of the three substations on TL 649 were fully accessible, two of the substations, Otay Mesa and Border, were accessible outside the protective chain link fence that surrounds the site. Photographs were taken from outside the fence. One of the substations, San Ysidro, was completely inaccessible and no photographs were taken of the property. Multiple photographs were taken of the poles which document the pole number, date markers on the pole, arm configuration, and overall setting. These were considered in the integrity analysis of TL 649.

2.3 Research Methods

Research was conducted in a variety of locations prior to and following fieldwork. Initial background materials, consisting mainly of the *Historic Evaluation of Electrical Transmission and Distribution Lines in the Cleveland National Forest (CNF) for San Diego Gas and Electric's (SDG&E) Master Special Use Permit (MSUP)*, prepared by Jennifer Gorman, Shelby Castells, and Sinéad Ní Ghabhláin of ASM (2014), was provided to HDR by SDG&E prior to the fieldwork. Utility pole cards, historic photos, and utility maps were also provided by SDG&E.

Additional background and historical data, including historic maps and photographs, technical reports, newspaper and other media sources, and secondary sources such as books, newspapers, and journal articles, were gathered from local, state, and online sources. The San Diego Public Library was visited to collect further data on communities through which TL 649 passes through.

On March 4, 2015, HDR archaeologists began to compile the information off "pole cards" attained through SDG&E which included basic facts regarding the date of installation and carrying voltage of each pole in the TL. From this list a map was made by HDR Geographic Information Systems (GIS) analyst Nicholas Stadille showing the location and age of each pole. On March 5, 2015, HDR archaeologist Margaret Diss visited the SCIC to conduct a historic map and aerial records search. Historic United States Geological Survey (USGS) quadrangle maps of Otay Mountain, Otay Mesa, Imperial Beach, and San Ysidro for dates covering 1943–1975 were consulted and photocopied at the SCIC, along with Historic Aerials dating from the mid-1980s. The SDSU library's collection of academic journals and books was searched and books on the history of Otay Mesa were checked out or scanned into digital format. On March 6, 2015, a general internet search was performed to gain more information on the history of Otay Mesa and the exact location of the SDG&E substations. General history books on Otay Mesa, Chula Vista, San Ysidro, and San Diego's historic ranchos were checked out of San Diego's central library and digital copies of cultural resources management reports from the construction of the Otay Mesa Generating Plant were made. On 0March 6 and 7, 2015, Ms. Diss accessed and photocopied historic photographs from the "SDG&E Collection" at the San Diego History Center (formally known as the San Diego Historical Society) and from the general historic photograph collection, and consulted the Center's collection of historic newspaper articles.

Additional online research was conducted, including using the following sources:

- California State Military Museum (http://www.militarymuseum.org);
- Newspapers.com website (http://www.newspapers.com);

- Historicaerials.com website (http://historicaerials.com); and
- San Diego Air & Space Museum (http://www.sandiegoairandspace.org);
- San Diego History Center (http://www.sandiegohistory.org); and
- USGS Topographic Maps website (http://store.usgs.gov).

3 Historic Context

This historic context is divided into three parts: Overview History of Development of Electrical Service in San Diego, TL 649 Historic Context, and Identified Historic Themes and Periods of Significance.

3.1 Overview History of Electrical Service in San Diego County

The following Historic Context regarding the development of electrical service in San Diego County is excerpted from *Historic Evaluation of Electrical Transmission and Distribution Lines in the Cleveland National Forest (CNF) for San Diego Gas and Electric's (SDG&E) Master Special Use Permit (MSUP)*, prepared by Jennifer Gorman, Shelby Castells, and Sinéad Ní Ghabhláin of ASM Affiliates, Inc. (2014).

3.1.1 Introduction

Electrical service started in the City of San Diego in 1886 and has expanded to include service to the entire county across a power grid encompassing 4,100 square miles providing service to three million customers (SDG&E 2014a). In the 1880s, providing electricity to a municipality, in the form of street lighting, was still brand new. The technology of transmitting electricity on wires to street lamps developed into what we know of today as the power grid. The power grid transmits electricity from a power source through high voltage transmission lines to a power substation, where the voltage of the electricity is lowered and then disbursed through a distribution system to individual customers. Overhead electrical transmission lines were not in use until 1873 in Europe and 1886 in the United States (SCE 2014). The first transmission lines in Southern California were constructed by the San Bernardino Light & Power Company, and consisted of a 28-mile span that only conveyed 5,000 volts. The first alternating current transmission line was a 108-mile-long span in Frankfurt, Germany that held up to 33,000 volts. By 1904, transmission lines were becoming common place, and on average had a carrying capacity of 10,000 volts (SCE 2014). Technological advancements quickly increased the amount of voltage transmission lines could carry with the use of high tension transmission lines and suspension type insulators.

3.1.2 Early Gas and Electric Company Formation, 1881-1904

The City of San Diego's move from Old San Diego or Old Town to Horton's subdivision in New Town and the subsequent population boom, spurred a need for additional municipal resources, especially water, sewer, and gas services. During the 1870s, several gas distribution services were established only to fail quickly (Engstrand and Crawford 1991; Smythe 1908). Finally, in 1881, a group of City leaders, R. M. Powers, O. S. Witherby, Bryant Howard, James Gordon, and E. W. Morse, launched the San Diego Gas Company (Dyke 1956; Smythe 1908). The San Diego Gas Company filed articles of incorporation on April 18, 1881, and began work with a capital stock of $100,000. Later that year the San Diego Gas Company began construction on a gas plant at 10th and M (now Imperial) streets, for a cost of $30,000 (Smythe 1908). By June 2, 1881, the gas plant had been completed and three miles of gas mains had been constructed within Horton's Addition (Engstrand and Crawford 1991). The San Diego Gas Company began gas distribution to their initial 89

customers in the summer of 1881 (Smythe 1908). The City of San Diego quickly purchased 25 street lamp posts, bringing illumination to New Town San Diego for the first time, as was reported in The *San Diego Union* on July 30, 1881 (*San Diego Union* 1881). By 1882, the San Diego Gas Company was advertising both their gas distribution services and gas stoves for sale and gas lines were erected across San Diego. The San Diego Gas Company originally refined gas from crude petroleum, purchased from Peru and later Ventura, California (Dyke 1956; Engstrand and Crawford 1991). By April 1883 a coal gas plant was constructed. Rapid population growth within San Diego in the early 1880s prompted large increases in both gas production needs and new customers.

The modern day SDG&E power grid was initiated by the Jenney Electric Company, of Indianapolis, Indiana, in 1886. The City of San Diego requested bids for the construction of four electric street lights in 1884 (*San Diego Union* 1884). The Jenney Electric Company won the bid and constructed an electrical plant at 2nd and J streets, for approximately $30,000 (Engstrand and Crawford 1991; Smythe 1908). The electrical plant had two 100-horse-power boilers which were able to operate four 30-light direct current arc light generators. The City of San Diego was first illuminated by electricity in March of 1886 (*San Diego Union* 1886; *San Diego Sun* 1886). San Diego's first electric street lights were arc lamps mounted on steel towers, to a maximum extent of 125 feet in height (Dyke 1956). However, the Jenney Electric Company failed later in the fall of 1886 and its plant and properties were purchased by E. S. Babcock and H. L. Story.

Babcock and Story had started development on Coronado in 1880 and after the purchase of the Jenney Electric Company, the Coronado Gas and Electric Company was established in January of 1887, with the use of the Jenney Electric Company's modest infrastructure. They continued providing electricity to San Diego's street lamps and made plans to supply electricity and gas to Coronado. Due to financial pressures, the Coronado Gas and Electric Company consolidated with the San Diego Gas Company in the spring of 1887, becoming the San Diego Gas, Fuel, and Electric Light Company, incorporating on May 12, 1887 (Engstrand and Crawford 1991; Smythe 1908).

The San Diego Gas, Fuel, and Electric Light Company's customer base grew rapidly across downtown San Diego and it provided services to many of the early hotels and downtown businesses, such as to the enterprises of George Marston, Horton's Hotel, Hotel del Coronado, and the San Diego Union Newspaper (Engstrand and Crawford 1991). The Company continued to expand their infrastructure and built a new electric generating plant, later becoming known as Station A, at 10th and Imperial streets, next to their gas plant.

San Diego's population boom of the 1880s quickly crashed and the San Diego Gas, Fuel, and Electric Light Company's was left with more infrastructure and the ability to produce thousands more cubic feet of gas per day than needed. During the economic downturn, San Diego went from a high of 173 electric lights to 120 (Engstrand and Crawford 1991). Throughout the 1890s, the economic downturn and competition from other companies caused rate conflicts, a feature of the utility business that would continue indefinitely.

The San Diego Gas, Fuel, and Electric Light Company's rates were forced to drop further in 1902 when the City of San Diego began the process of acquiring and operating its own gas plant; which never came to fruition. Also the company was forced to terminate the original Westinghouse generators it acquired from the Jenney Electric Company, due to their age, and replace them with two alternating current generators (Smythe 1908). Even with the new generators the company could not meet the needs of the growing population of San Diego in 1903 and 1904, and the plant had to expand. In 1904, the San Diego Gas, Fuel, and Electric Light Company's prices had dropped from $5.00 per cubic feet in 1881 to $1.50 per cubic feet and they had constructed an electrical

distribution system of 30 miles of pole lines with a total of 1,374 utility poles and a gas distribution system of 41.2 miles (Engstrand and Crawford 1991).

3.1.3 Expansion of Service

In the early 1900s, the San Diego Gas, Fuel, and Electric Light Company was unable to raise enough capital to match the pace of growth in San Diego, and so in April of 1905 it was sold to H. M. Byllesby & Company of Chicago and incorporated as the San Diego Consolidated Gas & Electric Company (SDCG&E) (Dyke 1956; Lehman Brothers Collection 2012). Henry Marison Byllesby was an engineer and financier who owned utilities across the country. With an influx in funds the SDCG&E quickly began the needed expansions and provided gas and electric services to University Heights, La Jolla, Pacific Beach, Coronado, and National City.

While the SDCG&E provided gas and electric services to downtown San Diego, and the neighboring municipalities, other utility companies were established in population centers across the county, such as the Escondido Utilities Company, founded in 1910.

Further growth for SDCG&E continued in the 1910s, as did the expansion of their distribution services. In 1911, gas service reached Chula Vista and electrical services reached Grossmont, El Cajon, Lakeside, Santee, and Spring Valley. The following year gas service reached Lemon Grove and electrical service reached Sunnyside, Bonita, Nestor, and Palm City. Imperial Beach and San Ysidro were added in 1913 (Engstrand and Crawford 1991; Rush 1954). The expansion of the power grid to these communities increased their agricultural output providing an efficient way to pump water for irrigation and the beginning of the large chicken and turkey hatchery business in the County (Rush 1954). Gas and electric services also were established for some of the more rural areas of San Diego County in 1911, when SDCG&E sent engineers to tour back country areas, and to make demonstrations to rural residents about superiority of electric lights to gas or kerosene (Engstrand and Crawford 1991).

3.1.4 Electrical Distribution Growth, 1916–1940

The first of the SDCG&E's large scale transmission lines across the County was constructed in 1916, when the company bought Oceanside Electric and Gas Company and extended its transmission line from Del Mar to Oceanside for a total cost of $37,000. Later the same year they purchased the Escondido Utilities Company for $40,000 (Engstrand and Crawford 1991).

The first high voltage transmission line and the company's first direct link to another major electric utility company was construction in 1918. The transmission line spanned 75 miles from the City of San Diego through Del Mar and Oceanside to San Juan Capistrano to tie in with the transmission system of SCE.

In 1919, San Diego's City Council voted to contract with the company to build a power line for the construction of Barrett Dam, near Campo (*San Diego Sun* 1919). The additional growth of electric and gas distribution strained SDCG&E's production infrastructure and in 1920 they bought "Station B" at the southwest corner of Kettner and Broadway, a power plant constructed by the San Diego Electric Railway Company in 1911. Station B became the primary production plant for the company until the 1940s. In just 15 years, from the start of the Byllesby Group's control of SDCG&E in 1905 to 1920 it had grown exponentially. In 1920, SDCG&E served more than four times the number of customers than in 1905, providing 1,100 kilowatts of electricity daily with the ability to generate 11,750 kilowatts and to more than 8 million in infrastructure and property (Engstrand and Crawford 1991).

The addition of high voltage transmission lines and SDCG&E's connection with other major utility companies spanned upgrades across their system. They upgraded from horse drawn wagons to motor vehicles in the early 1920s and purchased all new machinery for Station B, with the goal of providing a 200 percent increase in output. The upgrades included five new steel encased Babcock & Wilcox boilers and a new turbine, the largest on the Pacific Coast.

In 1921, construction began on an additional power plant, Station C at 4th and Ash streets. Station C was finished in 1923 and was intended to furnish all commercial direct current within the city and alternating current to the underground and overhead district north of Broadway and West of Balboa Park.

In 1922, another high voltage transmission line was constructed to connect with another major utility, further safeguarding the power supply for the County. A 16-mile-long 88,000 volt transmission line from the Escondido Mutual Water Company's Power Plant on the Rincon Reservation was construction through the San Luis Rey River Canyon to the Henshaw Dam (Klauber 1925). This also marked the start of large scale expansion of services into the back country of San Diego County. The rough terrain across the backcountry was previously thought of as impassable, but Type – W poles, a light weight style of wooden poles, were used to aid construction across the seemingly inaccessible county. Also at Rincon in 1923, SDCG&E connected its transmission lines to the Southern Sierras Power Company in the Imperial Valley to provide protection of continuous service in the Imperial Valley (Cyr 1924; Lehman Brothers Collection 2012). The Southern Sierra Power Company, organized in 1911, brought transmission lines to agricultural territory across California, to supply electricity for water pumping, irrigation, and industrial needs. The Southern Sierras Power Company in 1914 was involved in the construction of the longest transmission line in the world, extending from Bishop Creek, California to Mexicali, Mexico for a distance of 425 miles. The transmission line passed through El Centro in Imperial County and could convey 55,000 volts (Gonden 1914).

In 1923, a total of $3,685,255 was spent on improvements across SDCG&E's territory which at that time reached Fallbrook, Henshaw Dam, Otay Dam, and Barrett Dam (Ayres 1924). Developments during the 1920s included: the construction of the Alpine Span in 1924, which stretched across 4,402 feet, and at the time broke records for a wooden terminal structure span (Ayres 1924); the construction of a 11,000-volt line from the San Pasqual Valley to Ramona in 1924; and the construction on a new line in the El Cajon Valley carrying 66,000 volts (Klauber 1925). Additional construction took place in 1927 as the El Cajon Substation was upgraded to 66,000 volts, to supply growth of services to the eastern side of San Diego County (Klauber 1927).

Concurrent with SDCG&E's growth in electrical and gas distribution, were sales of electrical and gas appliances to its customers. Six new appliance stores were opened in 1927. SDCG&E actively promoted all electrical and gas usages throughout the 1920s, including radio broadcasting, theater lighting, new businesses, and military presence (Engstrand and Crawford 1991).

To keep pace with the growth of customers, SDCG&E began construction on a new power plant, Station B, in 1928, which was planned to house a 28,000 kW electrical generator, the largest ever installed in San Diego (Raymond 1928a). In 1928, SDCG&E had more than 4,600 new electric customers, which equated to a 7.8 percent increase in demand for electricity (Raymond 1928b). During the end of the 1920s, SDCG&E began construction on new tie lines for transmission outside the city center and into more rural and remote parts of San Diego County. SDCG&E relocated the 66 kV transmission line between San Juan Capistrano and San Onofre, and extended existing transmission lines to include customers in Tijuana, and in El Monte (Klauber 1929). During the

beginning of 1929, prior to the financial collapse and the Great Depression, SDCG&E advertised that the currently serviced territory had increased faster than the population of San Diego County, and their electrical distribution was leading the way for backcountry development (Lawrie 1929).

Although the great depression curtailed some of SDCG&E's growth, they further expanded in 1930 by buying the South Coast Gas Company which had been serving Carlsbad and Oceanside. In 1931, SDCG&E initiated a project to lay 26 miles of transmission pipe to send gas from La Jolla to Carlsbad and Oceanside. To provide more electricity to San Diego, they purchased a share of the power produced by the Boulder Dam, now known as the Hoover Dam (Lehman Brothers Collection 2012).

During this period of expansion new technological advances in transmission poles were taking place. In 1930, the first steel poles were erected carrying a tie line between the power plants of Station B and Station F, located in east San Diego County. The galvanized steel poles held conduits carrying cables on the inside the pole, and were the largest steel poles ever fabricated, measuring 7 feet in circumference at the base and 65 feet high (Creveling 1930).

Further expansion into San Diego County's backcountry took place throughout the 1930s when a 23-mile, 66 kV transmission line between El Cajon and Escondido was completed in 1930 (Klauber 1930). In 1931, construction of a 21-mile, 11,000 volt transmission line from Ramona to Julian was begun. This line, which installed over 300 wooden poles, employed two crews of 15 men for construction due to the rough terrain and plethora of natural hazards in the backcountry (Creveling 1931; Krames 1931). Electricity reached Julian on January 16, 1932, from Ramona (Engstrand and Crawford 1991). SDCG&E also started work on a 35-pole extension of the electrical grid from Descanco to Pine Valley, and a 24-pole extension from the Descanso store to Descanso Junction (Krames 1932). This expansion of service became unusual as the Great Depression worsened over the early 1930s, and new distribution slowed considerably, as even a 13-pole extension became a large job for SDCG&E (Krames 1932).

The City of San Diego and SDCG&E's battle over prices continued and on December 6, 1931, the *San Diego Union* reported that the city thought the utility's prices were excessive and San Diego should began its own natural gas and electrical distribution (*San Diego Union* 1931). The city continued to contemplate municipal ownership of gas and electric service throughout the 1930s, but was ultimately unsuccessful (Engstrand and Crawford 1991).

3.1.5 San Diego Gas and Electric Company, 1940-Today

In 1935, the Public Utility Holding Act passed, which changed the ownership rules of holding companies and forced them to integrate and coordinate their utility systems. As a result SDCG&E's was forced to offer the sale of stock and was renamed the San Diego Gas & Electric Company (SDG&E).

SDG&E had been owned by Engineering and Management Company since 1905, and was sold in 1940 to the Standard Gas and Electric Company, a subsidiary of the Standard Power and Light Corporation. After the formation of SDG&E, the company became largely an independent organization, locally managed and mostly locally owned (Lehman Brothers Collection 2012).

While minimal growth took place in the 1930s, besides providing power to the backcountry areas that were previously without, the 1940s was a time of huge expansion for SDG&E, mainly due to San Diego's large military presence and the population surge it brought. Electrical sales in 1941 jumped 27 percent and SDG&E's electrical grid peaked at 24 percent above the year before

(Engstrand and Crawford 1991). During this time of growth the company faced a labor and materials shortage as they were limited by the war effort.

Maintenance across the system also fell behind during World War II as SDG&E did not have the staff to fill all positions needed. Maintaining a constant and reliable source of electricity became even more important for the utility during World War II and several new transmission lines were constructed to provide interconnections with SCE, to prevent a loss of power across southern California. Large connections were made with Boulder Dam's (Hoover Dam) power output and SDG&E was forced to purchase power from SCE throughout the 1940s during peak usage times.

Much of the growth of SDG&E's transmission and distribution system in the 1940s was focused on connecting new customers in outlying areas where SDG&E distribution lines had not yet reached. The government supported expanding the grid to the rural areas of the county as farming districts were encouraged to produce more food for the war effort, which increased the demand for electricity to support additional irrigation. In 1945, SDG&E earmarked $8 million dollars for expansion to update their generators, improve distribution lines, and extend distribution lines to rural areas, such as Borrego Springs. By the late 1940s, more than 1,741 miles of utility lines were added to SDG&E's distribution system, mainly in rural areas (Engstrand and Crawford 1991).

Through the 1950s, additional expansion took place on pace with the growth of population in San Diego County. Additional power stations were constructed, others updated, and the gas distribution system was expanded. SDG&E's rates were again contested and they requested and received a rate increase in 1954 (Lehman Brothers Collection 2012).

After the rapid expansion of service during the post-World War II period, SDG&E began research into alternative forms of energy from nuclear power in the 1960s, to solar and wind power in the 1990s (Lehman Brothers Collection 2012). From the post-war period onward SDG&E worked to modernize their power grid to meet increased electricity needs across San Diego County.

3.2 Historic Context of TL 649 Corridor

TL 649 extends approximately eight miles east-west through southern San Diego County with two spur lines extending south and running north-south, adding an additional four miles to the line. The transmission line extends east-west between the Otay Substation (constructed in 1947) located in southern Chula Vista and the Otay Lake Substation (constructed c. 1962) in northeast Otay Mesa. The two north-south spur lines extend north from the San Ysidro (constructed in 1971–1972) and Border (constructed in 1985) Substations located in central Otay Mesa (SDG&E 2014b). Although TL 649 is located in multiple San Diego communities, the stretch of land that it occupies shares a common history due to its route along a largely undeveloped corridor. Development at the beginning of the twentieth century precipitated the construction of the line to carry power between the burgeoning communities of Chula Vista and San Ysidro and the Lower Otay Dam. It wasn't until the middle of the twentieth century that development in Otay Mesa necessitated the expansion of TL 649 into central Otay Mesa.

3.2.1 Chula Vista and San Ysidro

Construction on TL 649 began in 1916 with the installation of at least 11 wooden utility poles extending from the Lower Otay Dam west through Otay Mesa (Figure 3-1). This line was integral to the continued development of the suburban communities south of San Diego and the improvement of the Lower Otay Dam. Plans for the transmission line began in 1915 when SDG&E proposed a

nine-mile, 11 kV, three-phase line extending from Otay Mesa to Lower Otay Dam to supply power to a new filtration plant (Electrical Review and Western Electrician 1915). The Lower Otay Dam was built in 1897 by the Southern California Mountain Water Company and connected to the City of San Diego's water system in 1906 (Painter 1985). The rock-fill with steel core dam was 125 feet tall. In 1916, the Lower Otay Dam failed, causing widespread destruction through most of southwest San Diego County (Figure 3-2). The dam was rebuilt in 1918.[1]

Figure 3-1. 1916 Pole Raising on Transmission Line Serving Otay Lakes (Engstrand and Crawford 1991:66).

Figure 3-2. 1916 Failure of the Lower Otay Dam (Hill 2002).

[1] The 1916 flood may have eclipsed the installation of additional utility poles, as the Lower Otay Dam was demolished. Likewise, more than the 11 poles documented on current pole utility cards may have been installed originally but are not extant.

For the remainder of the first half of the twentieth century, Otay Mesa remained a rural landscape through which TL 649 extended. The two spur lines into central Otay Mesa were not built until 1971–1972 and 1985, as demand for electrical service in Otay Mesa increased.

Otay Mesa, similar to many rural California communities, was settled in the late nineteenth century by farmers drawn to cheap land to raise livestock and grow myriad types of fruits and vegetables. The communities of Chula Vista and San Ysidro developed at approximately the same time, albeit with different initial ideas of grandeur and pleasure for its residents. Catalyst for this development was the construction of a series of dams in the region, specifically the Sweetwater River Dam (1888) and the Lower Otay Dam (1897), which made possible irrigation for much of the land south of San Diego, and the arrival of the National City and Otay Railroad which extended south from the dam to Tijuana, Mexico (Olivewood Gardens 2015). Many influential business executives knew that the construction of the dams was the only way to guarantee the successes of the hundreds of acres of citrus orchards they planned to plant adjacent to the new rail line. Indicative of the value placed on water in the arid locale, the Southern California Mountain Water Company was able to leverage their water service to secure almost one-third ownership of all the land to be serviced by the Lower Otay Dam (*San Francisco Chronicle* 1897). Citrus trees were identified by State Commissioner of Agriculture Frank Kimball as the most successful crop for the newly irrigated area. Kimball was one of the leading forces for the initial development of San Diego and the surrounding areas.

The project area is in the southern end of Chula Vista. As the end of the nineteenth century approached, much of the surrounding area was purchased by influential businessmen keen on transforming enormous ranches into country estates with large orchards. By 1888, 50 homes were in the newly platted Chula Vista. Designed by William Green Dickson, Chula Vista was laid out with 688 five-acre lots and streets 80-feet wide to attract wealthy landowners. Dickinson oversaw the installation of more than 10,000 orange and lemon trees the next year, lending Chula Vista the moniker “Lemon Capital of the World” (Schoenherr 2011:xii).

Droughts and a series of financial mishaps resulted in a community that was, by the start of the twentieth century, quite smaller than anticipated. By 1911, Chula Vista had rebounded and boasted hundreds of five-acre lemon orchards, elegant homes served by both gas and electric, churches, schools, and a yacht club. Between 1910 and 1920, the population of Chula Vista increased over 300 percent to 1,718. The town experienced major growth through the remainder of the middle of the twentieth century fueled by a major housing boom and the location of large defense and aerospace companies, most notably the Rohr Aircraft Corporation. Rohr employed upwards of 11,000 skilled workers who produced aircraft power units for the military, and at one point was the world’s largest producer of jet engine power plants (San Diego Air & Space Museum 2015).

Meanwhile, the smaller community of San Ysidro was taking root just to the south. In 1908, the area of San Ysidro was established by William E. Smythe as a utopian farming community where residents could escape the rigors of the ever-industrialized world and survive on an acre of land each. Smythe established San Ysidro and his colony of “Little Landers No. 1” out of three ranches spanning 550 acres (Engstrand and Crawford 1991:48). The community attracted 300 families, and with it, came supporting infrastructure and development stretching down to the United States (U.S.)-Mexico border (Zaragoza 2014:29). In 1913, the community was electrified by the SDG&E Company. Although the community enjoyed initial success, due to drought and the high cost of irrigation many of families fell on hard times and simply had to abandon their property.

On January 27, 1916, following years of drought, the region experienced a tremendous flood that caused the failure of the Lower Otay Dam. The effects were devastating, as much of San Diego

County experienced extensive damage to the land and the built environment. Farm land was wiped out, along with livestock and crops, as were bridges and countless miles of rail line. Many of San Ysidro's buildings were washed away, leaving 135 settlers homeless (Zaragoza 2014:43).

Following the 1916 flood and the highly-successful 1917 Tijuana Fair, the locale of San Ysidro began to redevelop and shed the memories of the Little Landers. As tourists flocked to Tijuana for entertainment dubbed "illegal" in California in droves, the employees supporting this boom in "Vice City", as Tijuana was known, often followed the tourists back north to reside in the much quieter San Ysidro. The earlier property owners of San Ysidro eagerly sold their property to the new influx of residents as laws prohibiting minorities from owning houses were dropped (Zaragoza 2014:45). As early as 1928, SDCG&E began extending transmission lines south across the border and providing power to Tijuana.

3.2.2 Otay Mesa

At the turn of the twentieth century, Otay Mesa located southeast of Chula Vista and east of San Ysidro, was the least developed of the three communities that TL 649 extends through. The primary reason for this was its relative remoteness to the markets of San Diego and National City. Travel was limited to dirt roads, and travel to San Diego normally took four hours each way. Typical of other small communities in San Diego County, the landscape was rural. Most of the farmers practiced dry farming, as water was scarce.

By 1900, as many as 28 families were living in Otay Mesa, most united socially, economically, and politically with social activities centered on the Alta School (1886) (USDOE 2001). Although the nearby railroad provided a faster route for the Otay Mesa farmers to get their crops to market, multiple factors stymied growth in the area. Population gradually declined in the area through the first half of the twentieth century due to a series of year-long droughts followed by multiple floods, a 1920s nationwide agricultural depression, the Great Depression, and lack of a viable water source. By the late 1940s, only a handful of families remained in Otay Mesa (Figure 3-3).

In 1961, the newly established Otay Water District installed a network of irrigation pipes in the area. Organized in 1956 by a plumber, a civil engineer, an attorney, a newspaper publisher, and two owners of large tracts of land in Otay Mesa, the company transformed the District's 125.5-square mile service area from a "mostly scrub and cactus-covered backcountry" into attractive farmland far removed from the pressures of the ever-expanding suburbs (Otay Water District 2015). As Chula Vista's farmland diminished due to development, interest in Otay Mesa's farms began to surge as truck farmers leased much of the land. Known for its bountiful tomato, celery, cabbage, bell pepper, zucchini, bush bean, and lettuce crops, farmers in Otay Mesa supplied the region with produce (Schoenherr 2011:124). Due to the installation of irrigation, farming sustained as the primary industry in Otay Mesa through much of the remainder of the twentieth century (City of San Diego 1981).

Brown Field and City Annexation

Any semblance of sustained development in Otay Mesa during the first quarter of the twentieth century centered around a small airstrip, a couple of miles north of the border and set amongst the sprawling agricultural fields, known as Brown Field. In 1918, the U.S. Army Signal Corps took over the airstrip and established East Field as an aerial gunnery and aerobatics school (City of San Diego 2015). The military intermittently utilized the airstrip through the 1920s and 1930s, adding maintenance and storage facilities (Robbins-Wade and Van Wormer 1999).

Figure 3-3. Otay Mesa, circa 1946

In 1943, the U.S. Navy began using the airstrip for training purposes and as a secondary landing spot for aircraft not able to land in San Diego due to fog. The U.S. Navy changed the name to Navy Auxiliary Air Station (NAAS) Otay Mesa, and shortly thereafter changed the name yet again to NAAS Brown Field. The U.S. Navy made the first wide-spread improvements to Otay Mesa when they built a "55-bed hospital, mess hall, galley, complete dispensary, barracks, ship's service, warehouse, and garages, many hangars, and a large operations building complete with modern control tower" set atop "lonely Otay mesa" (*San Bernardino County Sun* 1943).

The military sustained their presence during the final years of World War II; however, after the war the field was leased to San Diego County and saw limited activity. In 1946, the County leased a portion of the airfield for use as a chicken farm. Between 1947 and 1950, Chula Vista High School operated out of Quonset huts at Brown Field as the City built a new high school. Students were bused to Otay Mesa for several years "riding past hog farms and burning trash dumps" (Schoenherr 2011:83). To support the increased demand for electricity from points west and north, in 1947, SDG&E constructed the Otay Substation, forming the western terminus of TL 649.

At the start of the Korean War, the U.S. Navy reopened the airfield with the mission to provide facilities and support regular operations of fleet aircraft, assigned missile programs, and fleet carrier landing practice (City of San Diego 2015). The installation employed nearly 1,200 people, most of who chose to reside in Chula Vista (Schoenherr 2011:108). The U.S. Navy extended the east-west runway to 8,000 feet and positioned a utility squadron, two anti-submarine squadrons, and a Regulus air missile unit at the installation (Figure 3-4) (California State Military Museum 2015). In 1955, two years after the end of the Korean War, SDG&E once again upgraded TL 649 with the installation of 26 poles east of the Otay Substation. The placement of these upgraded poles east of Otay Substation to just northwest of NAAS Brown Field reflects the increased energy requirements placed on the system by ever-increasing activities, particularly the installation of high-technology, at

the airfield. In 1957, a parcel on the northeast side of NAAS Brown Field was selected as a site for a Vanguard Earth Satellite Tracking Station. This facility was part of the Minitrack Network, which was the first U.S. satellite tracking system (Robbins-Wade and Van Wormer 1999).

Figure 3-4. Detail of 1955 USGS Topographic Map, San Diego

The City of San Diego annexed Otay Mesa in 1956, and later in 1962, acquired NAAS Brown Field in an effort to relieve congestion at Lindbergh Field. As a result, the City changed the airfield from a military installation into a general aviation field, known today as Brown Field Municipal Airport. This was the catalyst for growth in Otay Mesa, as small businesses began locating to the area to take advantage of the airfield. Flying schools and aircraft maintenance shops built facilities at Brown Field, anchored by Pacific Southwest Airlines' (PSA) commercial pilot school and the Rohr Engine Test Facility (City of San Diego 2008). The Naval Space Surveillance System Receiver Site was built in 1961 on the northeast end of Brown Field.

In 1962, in response to the increased electrical demand in Otay Mesa, specifically surrounding Brown Field, SDG&E constructed the Otay Lake Substation at the eastern end of TL 649 and replaced a majority of the utility poles associated with TL 649. Save for two, all the poles dating from 1916 to 1950 were removed and replaced with taller versions and an additional new 23 poles were added to the system in 1962.

Otay Mesa Land Point of Entry and Commercial Development

SDG&E substantially added to the capability of TL 649 with the construction of the San Ysidro Substation in 1971–1972. Located southeast of the present-day I-805/Otay Mesa Freeway intersection, this substation was integrated with TL 649 via a line extending almost due north across undeveloped property. This substation was constructed concurrently with I-805, which provided a direct, high-speed route for traffic between San Diego and Tijuana via the San Ysidro land point of entry (LPOE). Another impetus for the expansion of TL 649 south into the undeveloped Otay Mesa area was the 1969 decision by officials in San Diego and Tijuana to begin planning a new border crossing east of San Ysidro LPOE in Otay Mesa. Initial planning called for the expansion of I-805 with a spur extending southeast to the new border crossing; however, this idea was tabled due to costs. The goal of the Otay Mesa crossing was to decrease wait times at the San Ysidro crossing and to spur economic development on both sides of the border. San Ysidro LPOE was, and remains,

the busiest U.S.-Mexico crossing. Despite the promise that development would transform Otay Mesa into an area reminiscent of Chula Vista, Otay Mesa remained an underdeveloped part of San Diego County well into the early 1980s. While growth in Otay Mesa during the planning phase was stagnant, Mesa de Otay in Tijuana developed at a rapid pace with the promise of the new border crossing. More than 35,000 people moved to Mesa de Otay, Mexico in the early 1980s, along with roughly 70 assembly plants owned by American, Mexican, and Japanese companies (*Santa Cruz Sentinel* 1985). The influx of businesses and residents in Mexico just south of Otay Mesa prompted officials to link the two countries' power grids.

In 1981, following issuance of Presidential Permit pp-68-2, SDG&E constructed the 230 kV Miguel-Tijuana transmission line (Figure 3-5). The line extended from SDG&E's Miguel Substation, approximately 10 miles north of the border, south into Tijuana, Mexico, where it interconnected with facilities operated by the Comision Federal de Electricidad's (CFE) Tijuana Substation (Federal Register 2001). The main line of TL 649 is connected to the Miguel-Tijuana transmission line at the Otay Lake Substation, just northwest of the San Diego Regional Firearms Training Center at 440 Alta Road.

In 1985, SDG&E began construction of the eastern spur line of TL 649. At the corner of Otay Mesa Road and Harvest Road the company built the Border Substation in response to the construction of the Otay Mesa LPOE and anticipated development that would follow.

Figure 3-5. R. Lavador (CFE) and Jose Amezcua (SDG&E) Share Congratulations after Linkup at Border, March 4, 1983 (Courtesy SDG&E).

Following years of delays due to financial obstacles, the Otay Mesa LPOE was opened in 1985 to and cost $8 million. The new border crossing, only a few miles southeast of Brown Field, sparked intense interest in Otay Mesa real estate. Shortly after the opening of the LPOE, the San Diego City Council approved the annexation of 3,956 acres in Otay Mesa and the rezoning of a majority of the property from agricultural to commercial-industrial. Otay Mesa grew rapidly during this period, with warehouses, distribution centers, and industrial parks near the Otay Mesa LPOE. Additionally, large manufacturing plants were built on both sides of the border. Known as dual-site plants, they promoted cross-national cooperation and job growth. Notable companies establishing themselves in Otay Mesa at this time included Panasonic and Sanyo (City of San Diego 2008). Mayor of San Diego, Roger Hedgecock, called of the industrialization of Otay Mesa the “last, great frontier in San Diego County” (Schoenherr 2014:5–11).

The State of California opened the Richard J. Donovan Correctional Facility in 1987 approximately two miles north of the Otay Mesa LPOE. Situated on 780 acres, the facility is the only state prison in San Diego County. The facility also supports the needs of multiple other law-enforcement agencies, including a federal correction facility, a county jail, a U.S. Immigration and Customs Enforcement detention facility, and a firearms training center used by local police, U.S. Customs and Border Protection, and the Federal Bureau of Investigation.

Rising to meet the increased power demands of the area, in 1987 SDG&E completed construction of the eastern spur line of TL 649. Composed of approximately 50 poles, the spur line spans between the main line northwest of the correctional facility south to the Border Substation. This substation relays power to the Donovan Correctional Facility.

More and more defined by the many large industrial, manufacturing, and distribution centers north and west of the few remaining agricultural fields, Otay Mesa now is home to more than 350 companies (Otay Mesa Chamber of Commerce 2015). Residential development started to augment the landscape beginning in the late twentieth century, most notably the Heritage Village community. Supplementing the residential growth and increased commercial development are the Otay Valley Amphitheatre (now known as the Sleep Train Amphitheatre Chula Vista) and a waterpark just south of the western stretch of the main line of TL 649.

3.3 Identified Historic Context Themes and Periods of Significance

3.3.1 Community Development, Early Power Line Development of San Diego County (1916–1930)

The infrastructure resources of SDG&E have the potential for association with important events that have made a significant contribution to the broad patterns of history in San Diego County. These events are related to the historic context theme of Engineering, and a sub-theme of Power Line Development of San Diego County with a period of significance from 1916 to 1930, beginning with the construction of the first large scale transmission lines and ending at the beginning of the Great Depression, which resulted in a decline in power line construction. During this period of significance, San Diego underwent large population growth that resulted in the expansion of power lines from prominent communities in the county.

Power lines eligible under this theme must have the ability to convey a strong association with this theme, such as the earliest or most significant/influential lines established. Eligible power lines under

this theme must also retain the essential physical features that made up their character or appearance during the period of significance. Eligible power lines should retain some features of all seven aspects of integrity, but most important are location, design, setting, feeling, and association. Two examples of power lines that are good representations of this theme are the 1916 Del Mar-Oceanside line and the first high voltage transmission line constructed in 1918 that spanned from San Diego through Del Mar and Oceanside to San Juan Capistrano. These power lines are potentially eligible for the NRHP, CRHR, and/or Local Register under Criteria A, 1, and/or 1, respectively.

Subsumed in this theme is the production and transmission of electricity from and from San Diego County across the border to Baja California, Mexico. Power facilities that crossed the border may be important to the settlement or development of an area or that represent U.S.-Mexico diplomatic achievements would be significant events under this theme. SDCG&E construction of south of San Diego to Mexico began as early as 1928, and continues to the present.

3.3.2 Community Development, World War II and Post-War Power Line Development of San Diego County (1941–1964)

The infrastructure resources of SDG&E also have the potential for association with events that have made a significant contribution to the broad patterns of history in San Diego County in the mid-twentieth century. These events are related to the same historic context theme of Engineering, but under a subtheme of Power Line Development of San Diego County with a period of significance from 1941 to 1964, beginning with the population boom that resulted from the increase of military presence in San Diego County causing a high demand for the expansion of power lines constructed in San Diego County and extending through the post-war population boom. The period of significance ends in 1964 following recommended guidance for closing a period of significance 50 years ago when activities continued to have importance, but no more specific date can be defined to end the historic period, and there is no justification for exceptional significance to extend the period of significance to an end date within the last 50 years (NRHP 1997). The power lines constructed during this time were instrumental in providing interconnections with SCE to prevent a loss of power across southern California. The expansion of these lines continued to the post-World War II population boom in San Diego County.

Power lines eligible under this theme must have the ability to convey a strong association with this theme, such as the earliest or most significant/influential lines established. Eligible power lines under this theme must also retain the essential physical features that made up their character or appearance during the period of significance. Eligible power lines should retain some features of all seven aspects of integrity, but most important are location, design, setting, feeling, and association. Examples of power lines that are good representations of this theme would be large-scale transmission lines that were constructed to service large populations in southern California, particularly those that were connected with the Hoover Dam's power output. Many of these lines were constructed along the coast of San Diego County. These associated power lines would be potentially eligible for the NRHP, CRHR, and/or Local Register under Criterion A, 1, and/or 1, respectively.

3.3.3 Engineering, Early Twentieth Century Structural Innovations in Power Line Construction in San Diego County (1916–1930)

The infrastructure resources of SDG&E also have the potential for association with technological advances in the engineering of transmission poles in the early twentieth century in San Diego County. These power lines could potentially be eligible for the NRHP, CRHR, and/or Local Register under Criterion C, 3, and/or 3, respectively, for embodying distinctive characteristics of a construction method for a power line that was considered technologically innovative during a period of significance 1916–1930, beginning with the construction of the first large scale transmission lines and ending at the beginning of the Great Depression, which resulted in a decline in power line construction.

Power lines eligible under this theme must have the ability to convey a strong association with this theme, such as the first application of new engineering technologies, or the best remaining example of a technologically innovative that was widely used. Eligible power lines under this theme must also retain the essential physical features that made up their character or appearance during the period of significance. Eligible power lines should retain some features of all seven aspects of integrity, but most important under this theme are design, workmanship, and materials. An example of a power line that is a good representation of this theme is the Alpine Span, which was constructed in 1924 and was the longest wooden terminal power line constructed in San Diego County in the 1920s, and during construction broke records for its span. Although typical wood transmission lines were not considered innovative by design, the Alpine Span broke records for its construction as the longest wood power line, making it an engineering feat in the 1920s. Another good representation of this theme is the first galvanized steel poles that were constructed in 1930 in San Diego County. These steel poles were between the power plants of Station B (in downtown San Diego) and Station F (in east San Diego County) and were 7 feet in circumference and 65 feet tall. They were considered innovative in design and construction at that time.

4 Architectural Description of TL 649

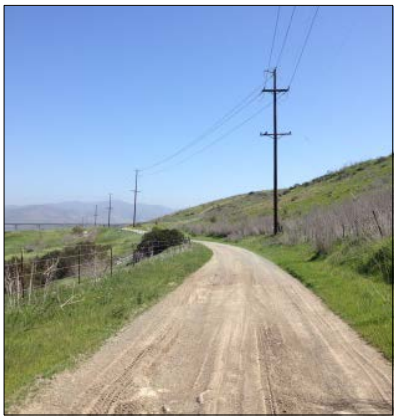
HDR previously surveyed the entirety of the TL 649 transmission line. There were 181 utility poles documented during the survey (Figure 4-1). TL 649 is approximately eight miles long and extends between the Otay Lake Substation northwest of the Richard J. Donovan Correctional Facility in Otay Mesa down the Otay River basin up to the Otay Substation at the intersection of Main Street and Albany Avenue in Chula Vista. This forms the main line of TL 649. Two spur lines extend south from TL 649, each approximately two miles in length, through Otay Mesa to the San Ysidro (west spur) and Border (east spur) substations.

Given the nature of transmission lines, TL 649 has been continually updated with replacement poles generally taller than the previous version to permit the support of higher-voltage lines and lines associated with different utilities such as telephone. Most of the poles associated with TL 649 have been either replaced or upgraded on multiple occasions as the transmission line has been upgraded and enlarged. As a result, the architectural description presents the findings of the survey in generalities regarding utility pole construction, height, and configuration.

According to SDG&E utility pole cards, the first poles associated with TL 649 were erected in 1916 along the main line. Between 1916 and 1970, the main line was the sole component of TL 649. The utility poles dating to 1916 were all wood construction and were between 30 and 45 feet in height. These poles are documented on the main line north and east of Brown Field. During the 1920s and 1930s, 15 additional poles were added to TL 649. These were 35 and 40 feet in height, constructed of wood, and generally adjacent to the 1916-era poles. Between 1940 and 1960, 50 poles were introduced into the transmission line; 26 of which were installed in 1955. This enhancement also included upgrading of line capacity. Pole height remained between 35 and 45 feet with a couple of poles reaching 65 feet. Further improvements to TL 649 came in 1947 with construction of the Otay Substation, forming the western terminus of the transmission line. In 1962 a majority of the poles dating to 1916, 1920s, 1930s, and 1940s were removed and replaced with taller versions. An additional 23 poles were also constructed. These new poles were significantly taller than their predecessors, reaching 75 feet in height. These poles comprise most of the main line and coincided with the construction of the Otay Lake Substation c. 1962.

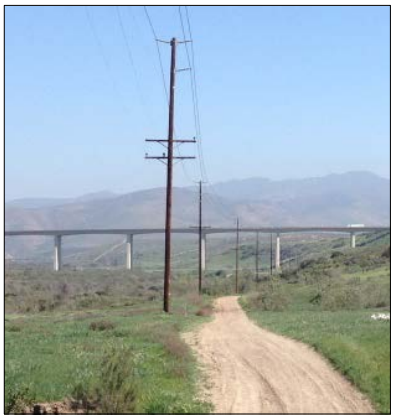
In 1971–1972, SDG&E built the San Ysidro Substation. This western spur line extends north from the San Ysidro Substation to join the main line. According to SDG&E utility pole cards, poles existed prior to the substation on this spur, even as early as 1951 and were subsequently altered in the 1970s. It is not known where these earlier poles were transferring power from nor where. Currently, most of the western spur line is underground, with only a few modern wood and steel poles. It is not known when the line was put underground.

Figure 4-1. Examples of Poles Analyzed for Significance Evaluation of TL 649

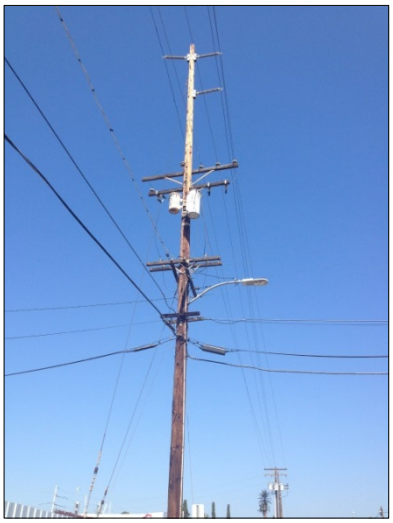


Main Line

Eastern Spur Line



Main Line



Pole 82575

Pole 82136

Pole 182543

Construction on the eastern spur of TL 649 started in 1985 with construction of the Border Substation. Two years later, SDG&E installed 42 new utility poles which served to connect the Border Substation with the main line. Most of these wood poles are 65 and 70 feet high, though two poles are 85 feet high, making them the tallest poles in the transmission line. These two poles are at the junction of the eastern spur and the main line.

The poles on TL 649 are predominately wood, with a few steel examples. The utility poles range in height from 60 to 85 feet. Most poles have one or two wood arms with metal or wood support braces. The arms carry both low- and high-voltage wires tied in with suspended, post-type, glass pin-type, anchored, or ridge strut insulators. Mounted transformers, street lamps, and telephone wires are also on utility poles on TL 649. The Otay, San Ysidro, and Border Substations are part of TL 649, though they are not evaluated for NRHP eligibility and are not considered under this evaluation effort (Figure 4-2). These are high-voltage electric facilities which aid in the distribution, regulating, and measuring of power through the transmission line.

Figure 4-2. Substations Associated with TL 649

Otay Substation (HDR 3/22/2015)

Otay Substation (Pictometry.com 12/24/2014)

Border Substation (HDR 3/22/2015)

Border Substation (Pictometry.com 12/24/2014)

Otay Lake Substation
(Pictometry.com 6/13/2006)

San Ysidro Substation
(Pictometry.com 12/24/2014)

This page intentionally left blank

5 Evaluation Criteria

In compliance with Section 106 and CEQA, TL 649 located in southern San Diego County is considered for eligibility for the NRHP, CRHR, the County of San Diego's RPO, Local Register, and as CEQA historic resources.

5.1 National Register of Historic Places

National Park Service (NPS) regulations and guidance documents (including NRHP Bulletins) outline the process for evaluating sites for NRHP eligibility. According to the NPS, the categories of sites that may be eligible for the NRHP are buildings, structures, sites, objects, or historic districts. Sites are evaluated for NRHP eligibility using the NRHP evaluation criteria, as listed in 36 CFR 60.4. To be listed in or eligible for the NRHP, a property should be 50 years or older, possess historic significance based on its related historic context, and retain historic integrity expressive of that significance. The property must be significant by meeting at least one of the four following criteria:

- Criterion A: The resource is associated with events that have made a significant contribution to the broad pattern of history.
- Criterion B: The resource is associated with the lives of people significant in the past.
- Criterion C: The resource embodies distinctive characteristics of a type, period, or method of construction; represents the work of a master; possesses high artistic value; or represents a significant and distinguishable entity whose components may lack individual distinction.
- Criterion D: The resource has yielded, or may be likely to yield, information important in prehistory or history.

Historic integrity refers to the authenticity of a resource's historic identity as evidenced by the survival of physical characteristics that it possessed in the past and its capacity to convey information about the basis for which the property is significant. There are seven aspects of historic integrity, the majority of which must be present and convey the significance of the property. Location refers to the place where an event occurred or a property was originally built. Design considers elements such as plan, form, and style of a property. Materials refer to the physical elements used to construct the property. Workmanship refers to the craftsmanship used by the creators of a property. Setting is the physical environment of the property. Feeling is the ability of the property to convey its historic time and place. Association refers to the link between the property and a historically significant event or person.

Sites or structures that may not be considered individually significant may be considered eligible for listing in the NRHP as part of a historic district. According to National Register Bulletin 15, *How to Apply the National Register Criteria for Evaluation*, a historic district possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects that are historically or aesthetically united by plan or physical development (NRHP 1997). The district represents a significant and distinguishable entity whose components may otherwise lack individual distinction.

A property meeting one or more special requirements or criteria considerations may be eligible for the NRHP even if not usually considered for listing in the NRHP. National Register Bulletin 15 explains:

Certain kinds of properties are not usually considered for listing in the NRHP: religious properties, moved properties, birthplaces or graves, cemeteries, reconstructed properties, commemorative properties, and properties achieving significance within the past fifty years. These properties can be eligible for listing, however, if they meet special requirements, called criteria considerations, in addition to meeting the regular requirements (that is, being eligible under one or more of the four criteria A–D and possessing integrity). The criteria considerations need to be applied only to individual properties. Components of eligible districts do not have to meet the special requirements unless they make up the majority of the district or are the focal point of the district.

National Register Bulletin 15 guidance outlines six criteria considerations that allow exceptions or elaborations on the reasons for which a property may be considered for NRHP eligibility:

Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the NRHP. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

a) A religious property deriving primary significance from architectural or artistic distinction or historical importance; or

b) A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or

c) A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his or her productive life; or

d) A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, from association with historic events; or

e) A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or

f) A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or,

g) A property achieving significance within the past 50 years if it is of exceptional importance.

5.2 California Register of Historic Resources

The CRHR program encourages public recognition and protection of resources of architectural, historical, archaeological, and cultural significance; identifies historical resources for state and local planning purposes; determines eligibility for state historic preservation grant funding; and affords certain protections under CEQA. The criteria established for eligibility for the CRHR are directly comparable to the national criteria established for the NRHP.

To be eligible for listing in the CRHR, a building must satisfy at least one of the following four criteria:

1. It is associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States.

2. It is associated with the lives of persons important to local, California, or national history.

3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values.
4. It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

Historical resources eligible for listing in the CRHR must meet one of the criteria of significance described above and retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. For the purposes of eligibility for CRHR, integrity is defined as "the authenticity of an historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance" (Office of Historic Preservation 1997). This general definition is strengthened by the more specific definition offered by the NRHP—the criteria and guidelines on which the CRHR criteria and guidelines are based upon.

5.3 Integrity

To be eligible for listing in the NRHP and CRHR, a property must retain sufficient integrity to convey its significance. The NRHP publication, *How to Apply the National Register Criteria for Evaluation, National Register Bulletin 15*, establishes how to evaluate the integrity of a property: "Integrity is the ability of a property to convey its significance" (NRHP 1997). The evaluation of integrity must be grounded in an understanding of a property's physical features, and how they relate to the concept of integrity. Determining which of these aspects are most important to a property requires knowing why, where, and when a property is significant.

To retain historic integrity, a property must possess several, and usually most, aspects of integrity:

1. **Location** is the place where the historic property was constructed or the place where the historic event occurred.
2. **Design** is the combination of elements that create the form, plan, space, structure, and style of a property.
3. **Setting** is the physical environment of a historic property, and refers to the character of the site and the relationship to surrounding features and open space. Setting often refers to the basic physical conditions under which a property was built and the functions it was intended to serve. These features can be either natural or manmade, including vegetation, paths, fences, and relationships between other features or open space.
4. **Materials** are the physical elements that were combined or deposited during a particular period or time, and in a particular pattern or configuration to form a historic property.
5. **Workmanship** is the physical evidence of crafts of a particular culture or people during any given period of history or prehistory, and can be applied to the property as a whole, or to individual components.
6. **Feeling** is a property's expression of the aesthetic or historic sense of a particular period of time. It results from the presence of physical features that, when taken together, convey the property's historic character.
7. **Association** is the direct link between the important historic event or person and a historic property.

5.4 San Diego County Local Register of Historical Resources

The County of San Diego maintains a Local Register that was modeled after the CRHR. Significance is assigned to districts, sites, buildings, structures, and objects that possess exceptional value or quality illustrating or interpreting the heritage of San Diego County in history, architecture, archaeology, engineering, or culture. Any resource significant at the national or state level is by definition also significant at the local level. The criteria for eligibility for the Local Register are comparable to the criteria for eligibility for the CRHR and NRHP, but significance is evaluated at the local level. Included are:

1. Resources associated with events that have made a significant contribution to the broad patterns of California or San Diego County's history and cultural heritage; or
2. Resources associated with the lives of persons important to our past, including the history of San Diego County or its communities; or
3. Resources that embody the distinctive characteristics of a type, period, region (San Diego County), or method of construction, or represent the work of an important creative individual, or possesses high artistic values; or
4. Resources that have yielded or are likely to yield, information important in prehistory or history.

Districts are significant resources if they are composed of integral parts of the environment that collectively (but not necessarily as individual elements) are exceptional or outstanding examples of prehistory or history.

The County also treats human remains as "highly sensitive." They are considered significant if interred outside a formal cemetery. Avoidance of impacts is the preferred treatment.

Under County guidelines for determining significance of cultural and historical resources, any site that yields information or has the potential to yield information is considered a significant site (County of San Diego 2007:16). Unless a resource is determined "not significant" based on the criteria for eligibility described above, it will be considered a significant resource. If it is agreed to forego significance testing on cultural sites, the sites will be treated as significant resources and must be preserved through project design (County of San Diego 2007:19).

5.5 County of San Diego Resource Protection Ordinance

The County of San Diego uses the CRHR criteria to evaluate the significance of cultural resources. In addition, other regulations must be considered during the evaluation of cultural resources. Specifically, the County of San Diego's RPO defines significant prehistoric and historic sites.

The County defines a significant prehistoric or historic site under its RPO as follows:

1. any prehistoric or historic district, site, interrelated collection of features or artifacts, building, structure, or object either:
    a. formally determined eligible or listed in the NRHP; or
    b. to which the Historic Resource (H designator) Special Area Regulations have been applied; or
2. one-of-a-kind, locally unique, or regionally unique cultural resources which contain a significant volume and range of data or materials; or

3. any location of past or current sacred religious or ceremonial observances which is either:
    a. protected under Public Law 95-341, the American Religious Freedom Act, or Public Resources Code Section 5097.9, such as burials, pictographs, petroglyphs, solstice observatory sites, sacred shrines, religious ground figures, or
    b. other formally designated and recognized sites which are of ritual, ceremonial, or sacred value to any prehistoric or historic ethnic group.

5.6 California Environmental Quality Act

CEQA Section 15064.5 Determining the Significance of Impacts to Archeological and Historical Resources requires that all private and public activities not specifically exempted are evaluated against the potential for environmental damage, including effects to historical resources. Historical resources are recognized as part of the environment under CEQA. It defines historical resources as "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."

Lead agencies have a responsibility to evaluate historical resources against the CRHR criteria prior to making a finding as to a proposed project's impacts to historical resources. Mitigation of adverse impacts is required if the proposed project will cause substantial adverse change to a historical resource. Substantial adverse change includes demolition, destruction, relocation, or alteration such that the significance of a historical resource would be impaired. While demolition and destruction are fairly obvious significant impacts, it is more difficult to assess when change, alteration, or relocation crosses the threshold of substantial adverse change. The CEQA Guidelines provide that a project that demolishes or alters those physical characteristics of an historical resource that convey its historical significance (i.e., its character-defining features) can be considered to materially impair the resource's significance. The CRHR is used in the consideration of historical resources relative to significance for purposes of CEQA. The CRHR includes resources listed in, or formally determined eligible for listing in, the NRHP, and 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 CRHR and are presumed significant resources for purposes of CEQA unless a preponderance of evidence indicates otherwise.

Generally, a resource shall be considered by the lead agency a "historical resource" if it:

1. Is listed in, or determined eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (PRC Section 5024.1, Title 14 CCR, Section 4850 et seq.).
2. Is included in a local register of historical resources, or is identified as significant in an historical resource survey meeting the requirements Section 5024.1(g) of the PRC.
3. Is a building or structure determined historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California.

This page intentionally left blank

6 Eligibility Recommendations

For the evaluation of TL 649, HDR drew on frameworks and approaches adopted for similar projects by SCE, notably SCE's *Draft Historic-Era Electrical Infrastructure Management Program* (SCE 2014) and a historic evaluation of electrical transmission and distribution lines in the Cleveland National Forest by ASM Affiliates for USDA Forest Service and SDG&E (2014). To assess eligibility of lines in the Cleveland National Forest, ASM developed a historic context and framework of eligibility criteria modeled after the context and eligibility criteria defined in SCE's *Draft Historic-Era Electrical Infrastructure Management Program* (SCE 2014). HDR followed the methods of the SCE report and the historic contexts developed in the ASM report to evaluate eligibility of TL 649. The SCE report identified specific power lines within the SCE power grid system as eligible for the NRHP and/or CRHR based on construction dates and as the best representative examples of power lines that were important in the electrification of southern California. The SCE report also found that distribution lines were by nature a commonplace property type, lacking in innovation in design or ingenuity in conveying low voltage electricity and were therefore not recommended eligible for the NRHP or the CRHR. Further, typical transmission lines that were constructed of wood poles were also considered commonplace and lacking innovative design or ingenuity as opposed to early galvanized steel pole lines that were considered innovative design for their time.

Based on the framework set forth by the SCE report and the general history of electrification of San Diego County and formation of SDG&E set forth in the ASM report, HDR structured a general history of the TL 649 corridor. Using this historic context, and the historic contexts developed by the ASM, HDR evaluated TL 649 for eligibility for the NRHP, CRHR, the County of San Diego's RPO, Local Register, and as CEQA historic resources.

6.1 Integrity

Assessing the integrity of TL 649 included consideration that power lines are a property type by nature designed to be perpetually upgraded and partially replaced. TL 649 has a high percentage of replacement poles, upgraded wires and arms, additions of modern transformer boxes, and two spur lines. Changes to the poles with in-kind replacements and upgrades to hardware are considered standard. However, a majority of the western spur of TL 649 is now underground, which has affected, but not compromised, the line's integrity. Furthermore, the original poles of the main line were between 30 and 40 feet tall but in 1962 were replaced with poles often more than twice that height. The east spur line was added in 1987, and is composed of 60–85 foot tall poles. Therefore, as a linear resource, TL 649 presents diminished integrity of design, materials, craftsmanship, location, setting, feeling, and association.

6.2 National Register of Historic Places Significance Evaluation

TL 649 is recommended not eligible for the NRHP under any of the applicable criteria. While this transmission line is associated with the historic theme of Community Development, sub-theme Early Power Line Development of San Diego County (1916–1930), as a power line that aided in connecting power and utilities to meet the demand of the growing community development in San Diego County, it is not a good representation of that theme in comparison to other power lines in San

Diego County history. For example, the first large-scale transmission lines across the county began with the Del Mar to Oceanside line in 1916. The earliest high voltage transmission line was constructed in 1918 and spanned from San Diego through Del Mar and Oceanside to San Juan Capistrano. These earliest and large-scale power lines in San Diego County history are a better representation of this theme since TL 649 retains no utility poles from this period. While some of the poles in this line were constructed or replaced during the period of significance for the historic theme of Community Development, sub-theme WWII and Post-War Power Line Development (1941–1964), this line was not found to be a large-scale power line that had a significant impact in the electrification of San Diego County during this time. Further, TL 649 does not represent a significant event in diplomatic history of the U.S. and Mexico as it was a side line to a line that ran to Tijuana in addition to earlier tie lines to Mexico. Therefore, TL 649 is recommended not eligible under Criterion A for the NRHP.

No significant individuals were found in association with TL 649. Therefore, TL 649 is recommended not eligible under Criterion B for the NRHP.

Distribution lines are a commonplace resource and lack innovation in design or ingenuity in conveying low voltage electricity. Further, they do not embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master. Additionally, wood transmission lines are a commonplace resource and lack innovation in design or ingenuity in conveying high voltage electricity. These types of transmission lines are a common property type. In comparison, transmission lines constructed during the early twentieth century that were constructed of galvanized steel were considered innovative methods of construction. However, TL 649 does not have galvanized steel towers of the period that would be considered innovative methods of construction. Further, TL 649 does not represent the work of a master. Therefore, TL 649 is recommended not eligible under Criterion C for the NRHP.

Finally, TL 649 is an example of a common property type that are unlikely to yield any information important in history or prehistory that cannot be found through historic research. Therefore, TL 649 is recommended not eligible under Criterion D for the NRHP.

6.3 California Register of Historical Resources Significance Evaluation

TL 649 is recommended not eligible for the CRHR listing under criteria 1, 2, 3, and 4, following the reasons outlined in the preceding section regarding eligibility under the comparable NRHP criteria.

6.4 San Diego County Local Register of Historical Resources Evaluation

TL 649 is recommended not eligible for the Local Register under criteria 1, 2, 3, and 4, following the reasons outlined in the preceding section regarding eligibility under the comparable NRHP criteria.

6.5 County of San Diego Resource Protection Ordinance Evaluation

TL 649 does not qualify as significant historic resources under the RPO, as it does not meet any of the definitions set forth by the RPO. This transmission line is not formally determined eligible or listed in the NRHP; has not been given an H designator; and is not one-of-a-kind, locally unique, or regionally unique cultural resource that contains a significant volume and range of data or materials. Further, the transmission line is not the location of past or current sacred religious or ceremonial observances which is either: protected under Public Law 95-341, the American Religious Freedom Act, or Public Resources Code Section 5097.9; or the location of a formally designated and recognized site which is of ritual, ceremonial, or sacred value to any prehistoric or historic ethnic group.

6.6 California Environmental Quality Act Significance Criteria Evaluation

TL 649 does not qualify as a historic resource under the terms of CEQA, as it does not meet any of the definitions set forth by CEQA. The TL 649 is not listed in, or determined eligible for listing, in the CRHR; is not included in a local register, or identified as significant as an historical resource; nor is it determined to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California.

This page intentionally left blank

7 References

Ayres, K. B.

1924 Delivering the Goods: Electric Distribution and its Link in the Service Chain. In *Glow*, William A. Cyr, editor. March 3(5).

California State Military Museum

2015 Naval Auxiliary Air Station, Brown Field. California State Military Museum. http://californiamilitaryhistory.org/NAASBrownField.html.

City of San Diego

1981 Otay Mesa Community Plan and Environmental Impact Report.

2008 Otay Mesa Community Plan Update. City of San Diego. http://www.sandiego.gov/planning/community/cpu/otaymesa/pdf/omcpuhistoriccontext110406.pdf

2015 Brown Field. City of San Diego. http://www.sandiego.gov/airports/brown/.

County of San Diego

2007 *Guidelines for Determining Significance, Cultural Resources: Archaeological and Historical Resources*. Department of Planning and Land Use, Department of Public Works.

Creveling, Ruth (editor)

1930 Innovation in Transmission Poles. In *San Diego Consolidated Gas and Electric Company News Meter*. January 4(1).

1931 Flawless Safety Record. In *San Diego Consolidated Gas and Electric Company News Meter*. December 7(12).

Cyr, William A.

1924 No Power Shortage in San Diego. In *Glow*, William A. Cyr, editor. March 3(5).

Dyke, Bill

1956 Seventy-Five Years of Light. *The Journal of San Diego History, San Diego Historical Society Quarterly.* July 2(3).

Electrical Review and Western Electrician

1915 Current Electrical News. In *Electrical Review and Western Electrician,* vol. 66, no. 12. March.

Engstrand, Iris and Kathleen Crawford

1991 *Reflections: A History of the San Diego Gas & Electric Company, 1881–1991*. The San Diego Historical Society and San Diego Gas & Electric, San Diego, California.

Federal Register

2001 “Application to Amend Presidential Permit San Diego Gas & Electric Company.” Federal Register. 2001 ed. Vol. 66, No. 39, 12504–12505.

Gonden, H. J.

1914 San Diego Public Service, Volume 16 Electronic document: http://books.google.com/books?id=cDAoAAAAYAAJ&dq=southern+sierra+power+company&source=gbs_navlinks_s, accessed October 15, 2014.

Gorman, Jennifer, Shelby Castells, and Sinéad Ní Ghabhláin

2014 *Historic Evaluation of Electrical Transmission and Distribution Lines in the Cleveland National Forest (CNF) for San Diego Gas and Electric's (SDG&E) Master Special Use Permit. Prepared by ASM, Affiliates for USDA Forest Service and the San Diego Gas & Electric Company*. October 2014.

Hill, Joseph

2002 Dry Rivers, Damned Rivers, and Floods. In *The San Diego Journal of History,* vol. 48. Winter.

Klauber, L. M.

1925 Expanding Service: 1924's Construction and the Plans for 1925. In *Glow*. February 4(4).

1927 Company Officials Review Achievements of the Past Year and Forecast Continued Progress and Prosperity. In *San Diego Consolidated Gas and Electric Company News Meter*. January and February 2(7&8).

1929 Company's Growth Rapid in 1928. In *San Diego Consolidated Gas and Electric Company News Meter*. January 4(1).

1930 Many Improvements will be Effected This Year. In *San Diego Consolidated Gas and Electric Company News Meter*. February 6(2).

Krames, T. D.

1931 Electric Distribution. In *San Diego Consolidated Gas and Electric Company News Meter*. December 7(12).

1932 Electric Distribution. In *San Diego Consolidated Gas and Electric Company News Meter*. February 8(2).

Lawrie, C.

1929 Only a Map. In *San Diego Consolidated Gas and Electric Company News Meter*. January 4(1).

Lehman Brothers Collection

2012 *San Diego Gas & Electric Collection.* Harvard Business School Baker Library, Lehman Brothers Collection – Contemporary Business Archives. Electronic Document:http://www.library.hbs.edu/hc/lehman/company.html?company=san_diego_gas_electric_company, accessed October 17, 2014.

National Register of Historic Places (NRHP)

1997 *How to Apply the National Register Criteria for Evaluation*. National Register Bulletin 15.

Office of Historic Preservation

1997 Instructions for Nominating Historical Resources to the California Register of Historical Resources, Sacramento.

Olivewood Gardens

2015 National City and the Railroad. Olivewood Gardens and Learning Center. http://olivewoodgardens.org/the-history-of-the-noyes-house/national-city-and-the-railroad/.

Otay Mesa Chamber of Commerce

2015 About. Otay Mesa Chamber of Commerce. http://www.otaymesa.org/about-2.

Otay Water District

2015 Otay's Past, Present and Future. Otay Water District. http://www.otaywater.gov/history/.

Painter, Susan Annette

1985 *Otay Mesa: A Study of the Impact of Water on Land Use Changes*.

Pictometry

2006 [2014] http://www.pictometry.com/.

Raymond, Forrest M. (editor)

1928a The Electrical Age. In *San Diego Consolidated Gas and Electric Company News Meter*. January 3(7).

1928b Growth Continues. In *San Diego Consolidated Gas and Electric Company News Meter*. March 3(9).

Robbins-Wade, Mary and Stephen Van Wormer

1999 Historic Properties Study for the Brown Field Master Plan Update Otay Mesa, San Diego California.

Rush, Philip S.

1954 Electricity Comes to San Diego County. In *The Southern California Rancher*. August.

San Bernardino County Sun

1943 Landing Field Opened Near Mexico Border. March 22, 1943:cover.

San Diego Air & Space Museum

2015 Rohr Aircraft Corporation. San Diego Air & Space Museum. http://www.sandiegoairandspace.org/calendar/story.php?id=254.

San Diego Gas & Electric (SDG&E)

2014a Company Facts. SDG&E Connected. http://www.SDG&E.com/aboutus.

2014b Pole Cards for TL649. SDG&E Archives.

San Diego Sun

1886 July 30, 1886.

1919 December 22, 1919.

San Diego Union

1881 July 30, 1881f

1884 Electric Light, Sealed Proposals. August 12, 1884.

1886 March 17, 1886.

1931 December 6, 1931.

San Francisco Chronicle

1897 Seven of California's Principal Cities. January 3, 1897:30.

Santa Cruz Sentinel

1985 After long wait, new Tijuana station scheduled to open. January 24, 1985:D-1.

Schoenherr, Steven

2011 *Chula Vista Centennial: A Century of People and Progress, 1911–2011*. Walsworth Print Group, Chula Vista, California.

2014 Historic Otay Mesa. In *South Bay Historical Society Bulletin*, no. 6. November 2014.

Smythe, William E.

1908 *History of San Diego 1542-1908 V1: An Account of the Rise and Progress of the Pioneer Settlement on the Pacific Coast of the United States; Old Town*. Kessinger Publishing, Whitefish, Montana.

Southern California Edison Company (SCE)

2014 *Draft Historic-Era Electrical Infrastructure Management Program: A Guidance Document for the Identification, Review, Exemption, and Treatment of Generating Facilities, Transmission Lines, Sub-transmission Lines, Distribution Lines, and Substations within the SCE Service Territory*. May 2014.

United States Department of Energy (USDOE)

2001 *Final Environmental Assessment: Amendment of Presidential Permit (PP-68) San Diego Gas & Electric Company.*

United States Geological Service (USGS)

1955 San Diego Topographical Map. http://store.usgs.gov/b2c_usgs/usgs/maplocator.

Zaragoza, Barbara

2014 *San Ysidro and the Tijuana River Valley*. Arcadia Publishing, Charleston, South Carolina.

Appendix A.
Updated DPR Forms

This page intentionally left blank

State of California X The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

Page 1 **of** 8 ***Resource Name or #:** (Assigned by recorder) San Diego Gas & Electric Tie Line 649
P1. Other Identifier:

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted**
***a. County** San Diego **and** (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad** Otay Mesa, Imperial Beach **Date** 2015 **T** ; **R** ; ☐ **of** ☐ **of Sec** ; **B.M.**
c. Address N/A City Various Zip Various
d. UTM: (Give more than one for large and/or linear resources) Zone See Page 2, L2b., mE/ mN
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, decimal degrees, etc., as appropriate)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Composed of 181 utility poles, Tie Line 649 (TL649) is a transmission line approximately 8 miles long that extends between the Otay Lake Substation northwest of the Richard J. Donovan Correctional Facility in Otay Mesa down the Otay River basin up to the Otay Substation located at the intersection of Main Street and Albany Avenue in Chula Vista. This forms the main line of TL649. Two spur lines extend south from TL649, each approximately two miles in length, through Otay Mesa to the San Ysidro (west) and Border (east) substations.

See Continuation Page 5.

***P3b. Resource Attributes:** (List attributes and codes) HP 39 Other/Utility Line

***P4. Resources Present:** ☐ Building ☒ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)
P5b. Description of Photo: (view, date, accession #) Overview of TL649 looking west. Photo taken on March 9, 2015
***P6. Date Constructed/Age and Source:** ☒ Historic ☐ Prehistoric ☐ Both

***P7. Owner and Address:**
San Diego Gas & Electric
8326 Century Park Ct.
San Diego, CA 92123
***P8. Recorded by:** (Name, affiliation, and address) HDR, 8690 Balboa Ave., Ste 200, San Diego, CA 92123

***P9. Date Recorded:** March 2015

***P10. Survey Type:** (Describe)
Intensive Pedestrian
***P11. Report Citation:** (Cite survey report and other sources, or enter "none.")
(Weishar et al. 2015) Cultural Resources Technical Report: Historic Significance Evaluation of Tie Line 649

***Attachments:** ☐NONE ☒Location Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☒Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☒Photograph Record ☐ Other (List):

L1. Historic Tie Line 649 **and/or Common Name:**

L2a. Portion Described: ☒ Entire Resource ☐ Segment ☐ Point Observation **Designation:**

b. Location of point or segment: (Provide UTM coordinates, decimal degrees, legal description, and any other useful locational data. Show the area that has been field inspected on a Location Map.)

UTM Coordinates:
A (Otay Substation) Zone 11S 494570E/3606430N;
B (San Ysidro Substation) Zone 11S 497491E/3602754N;
C (Border Substation) Zone 11S 505214E/3603204N;
D (Otay Lake Substation) Zone 11S 506843E/3606537N.

L3. Description: (Describe construction details, materials, and artifacts found at this segment/point. Provide plans/sections as appropriate.)

See Continuation Page 6.

L4. Dimensions: (In feet for historic features and meters for prehistoric features)

a. Top Width N/A
b. Bottom Width N/A
c. Height or Depth 50-85' tall
d. Length of Segment ~12 miles

L5. Associated Resources: Otay, Otay Lake, San Ysidro, and Border Substations (all not evaluated as part of this project) See Continuation Page 6.

L4e. Sketch of Cross-Section (include scale) Facing:

See Location Map and Photographs on Primary Form and Continuation Sheets.

L6. Setting: (Describe natural features, landscape characteristics, slope, etc., as appropriate.):
Tie Line 649 (TL649) extends east-west and roughly follows the Otay River through the River Bottom Reservoir. East of Interstate 895, the landscape is defined by moderate grassy hills set on either side of the river basin. West of Interstate 895, the landscape is generally more suburban, with residential neighborhoods and a dense built environment.

L7. Integrity Considerations: A majority of the poles were replaced in 1962 with examples more than twice the height of the original. The western spur has been placed underground.

L8b. Description of Photo, Map, or Drawing (View, scale, etc.)
Overview of TL649 looking west. Photo taken March 9, 2015.

L9. Remarks: None.

L10. Form Prepared by: (Name, affiliation, and address)
Paul Weishar,
Architectural Historian
HDR, Inc.
2600 Park Tower Drive
Vienna, VA 22180

State of California X The Resources Agency Primary #
DEPARTMENT OF PARKS AND RECREATION HRI#

BUILDING, STRUCTURE, AND OBJECT RECORD

*** Resource Name or #** San Diego Gas & Electric Tie Line 649 *** NRHP Status Code** 6Z

Page 3 **of** 8

B1. Historic Name: Unknown

B2. Common Name: San Diego Gas & Electric Tie Line 649

B3. Original Use: Utility Line

B4. Present Use: Utility Line

*** B5. Architectural Style:** None

*** B6. Construction History:** (Construction date, alterations, and date of alterations)

Tie Line 649 (TL649) was constructed as early as 1916, with replacement poles installed throughout the twentieth century. Replacement poles have been installed as recently as 1994. The west spur has been put underground.

*** B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** N/A **Original Location:** N/A

*** B8. Related Features:** Otay, San Ysidro, Border, and Otay Substations

B9a. Architect: N/A b. Builder: Unknown

*** B10. Significance: Theme** A) Community Development: Early Power Line Development of San Diego County; B) Community Development: WWII and Post-War Power Line Development **Area** San Diego County

Period of Significance 1916-1962 **Property Type** Transmission Line **Applicable Criteria** None (Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Assessing the integrity of TL649 included consideration that power lines are a property type that by nature are designed to be perpetually upgraded and partially replaced. TL649 has a high percentage of replacement poles, upgraded wires and arms, additions of modern transformer boxes, and two spur lines. Changes to the poles with in-kind replacements and upgrades to hardware are considered to be standard. However, a majority of the western spur of TL649 is now underground, which has affected the line's integrity. Furthermore, the original poles in the main line were between 30 and 40 feet tall but in 1962 were replaced with poles often more than twice that height. The east spur line was added in 1987, and is composed of 60-85 foot tall poles. Therefore, as a linear resource, TL649 presents diminished integrity of design, materials, workmanship, location, setting, feeling, and association.

See Continuation Page 7.

B11. Additional Resource Attributes: (List attributes and codes) None.

*** B12. References:** See Report.

B13. Remarks: None.

*** B14. Evaluator:** Paul Weishar, Architectural Historian

*** Date of Evaluation:** March 24, 2015

(Sketch Map with north arrow required.)

(This space reserved for official comments.)

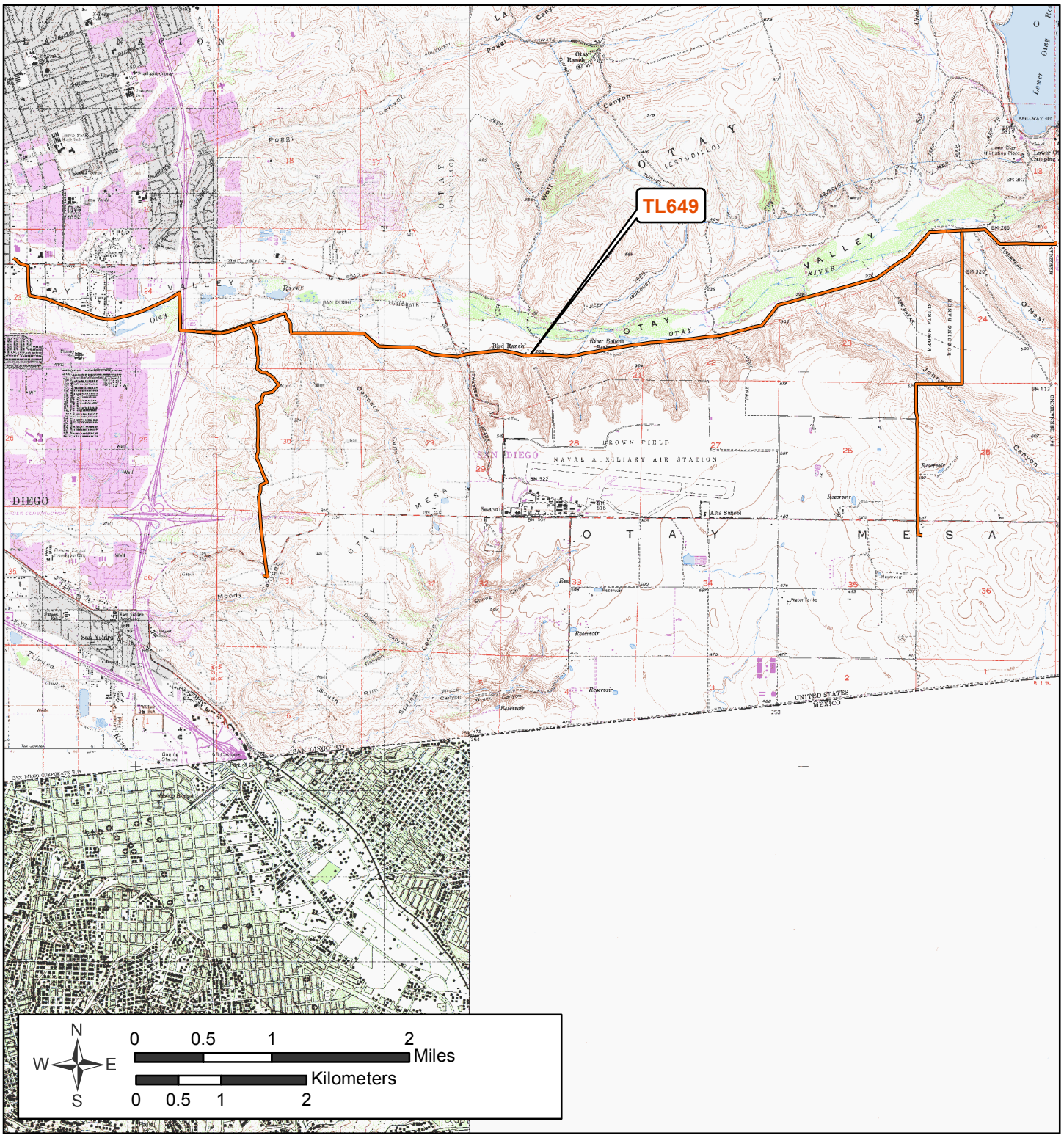
State of California -- The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

Primary #
HRI#
Trinomial:

Page 4 of 8 *Resource Name or #: SDG&E TL649

*Map Name: Otay Mesa and Imperial Beach, CA 7.5 min Quadrangles *Scale: 1:65,000 *Date of Map: 1975



DPR 523K (1/95)

*Required information

P3a. Description:
(Continued from Page 1)
Tie Line 649 (TL649) has been continually updated with replacement poles generally taller than the previous version to permit the support of higher-voltage lines as well as lines associated with other utilities such as telephone. Most of the poles associated with TL649 have been either replaced or upgraded on multiple occasions as the transmission line has been upgraded and enlarged. As a result, the architectural description presents the findings of the survey in generalities regarding utility pole construction, height, and configuration.

P5a. Photograph or Drawing:
(Continued from Page 1)


Pole 182543.


Pole 82575.


View of pole 188728.


Pole 82136

L3. Description: (Continued from Page 2)
According to SDG&E Utility Pole cards, the first poles associated with Tie Line 649 (TL649) were erected in 1916 along the main line. Between 1916 and 1970, the main line was the sole component of TL649. The utility poles dating to 1916 were all wood construction and were between 30' and 45' in height. These poles are documented to have been located on the main line north and east of Brown Field. During the 1920s and 1930s, 15 additional poles were added to TL649. These were 35' and 40' in height, constructed of wood, and generally located adjacent to the 1916-era poles. Between 1940 and 1960, 50 poles were introduced into the transmission line; 26 of which were installed in 1955. This enhancement also included upgrading of line capacity. Pole height remained between 35' and 45' with a couple of poles reaching 65'. Further improvements to TL649 came in 1947 with construction of the Otay Substation, forming the western terminus of the transmission line. In 1962 a majority of the poles dating to 1916, 1920s, 1930s, and 1940s were removed and replaced with taller versions. An additional 23 poles were also constructed. These new poles were significantly taller than their predecessors, reaching 75' in height. These poles comprise most of the main line and coincided with the construction of the Otay Lake Substation c. 1962.

In 1971-72, SDG&E built the San Ysidro Substation. This western spur line extends north from the San Ysidro Substation to join the main line. According to SDG&E Utility Cards, poles existed on this spur as early as 1951 and were subsequently altered in the 1970s. It is not known where these earlier poles were transferring power from nor where. Currently, most of the western spur line is underground, with only a few modern wood and steel poles.

Construction on the eastern spur of TL649 started in 1985 with construction of the Border Substation. Two years later, SDG&E installed 42 new utility poles which served to connect the Border Substation with the main line. Most of these wood poles are 65' and 70' in height, though two poles achieve 85' in height, making them the tallest poles in the transmission line. These two poles are located at the junction of the eastern spur and the main line.

Predominately wood, with a few steel examples, the utility poles range in height from 60-85 feet. Most poles have one or two wood arms with metal or wood support braces. The arms carry both low- and high-voltage wires tied in with suspended, post-type, glass pin-type, anchored, or ridge strut insulators. Mounted transformers, street lamps, and telephone wires are also located on utility poles in TL649.

The Otay, San Ysidro, and Border Substations are part of TL649, though they are not being evaluated for eligibility. These are high-voltage electric facilities which aid in the distribution, regulating, and measuring of power through the transmission line.

L5. Associated Resources: (Continued from Page 2)


Otay Substation, looking southeast. March23, 2015


Border Substation, looking southeast. March 23, 2015

B10. Significance
(Continued from Page 3)

Tie Line 649 (TL649) is not recommended eligible for the NRHP under any of the applicable criteria. While this transmission line is associated with the historic theme of Community Development, sub-theme Early Power Line Development of San Diego County (1916-1930), as a power line that aided in connecting power and utilities to meet the demand of the growing community development in San Diego County, it is not a good representation of that theme in comparison to other power lines in San Diego County history. For example, the first large-scale transmission lines across the County began with the Del Mar Oceanside line in 1916. The earliest high voltage transmission line was constructed in 1918 and spanned from San Diego through Del Mar and Oceanside to San Juan Capistrano. These earliest and large-scale power lines in San Diego County history are a better representation of this theme since TL649 retains no utility poles from this time period. While some of the poles in this line were constructed or replaced during the period of significance for the historic theme of Community Development, sub-theme WWII and Post-War Power Line Development (1941-1964), this line was not found to be a large-scale power line that had a significant impact in the electrification of San Diego County during this time. Further, TL649 does not represent a significant event in diplomatic history of the US and Mexico as it was a side line to a line that ran to Tijuana. Therefore, TL649 is not recommended eligible under Criterion A for the NRHP.

No significant individuals were found in association with TL649. Therefore, TL649 is not recommended eligible under Criterion B for the NRHP.

Distribution lines are a commonplace resource and lack innovation in design or ingenuity in conveying low voltage electricity. Further, they do not embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master. Additionally, wood transmission lines are a commonplace resource and lack innovation in design or ingenuity in conveying high voltage electricity. These types of transmission lines are a common property type. In comparison, transmission lines constructed during the early twentieth century that were constructed of galvanized steel were considered to be innovative methods of construction. However, TL649 does not have galvanized steel towers of the period that would be considered as innovative methods of construction. Further, TL649 does not represent the work of a master. Therefore, TL649 is not recommended eligible under Criterion C for the NRHP.

Finally, TL649 is an example of a common property type that is unlikely to yield any information important in history or prehistory that cannot be found through historic research. Therefore, TL649 is not recommended eligible under Criterion D for the NRHP.

California Register of Historical Resources Significance Evaluation
TL649 is not recommended as eligible for the CRHR listing under criteria 1, 2, 3, and 4, following the reasons outlined in the preceding section regarding eligibility under the comparable NRHP criteria.

San Diego County Local Register of Historical Resources Evaluation
TL649 is not recommended as eligible for the Local Register under criteria 1, 2, 3, and 4, following the reasons outlined in the preceding section regarding eligibility under the comparable NRHP criteria.

See Continuation Page 8.

B10. Significance
(Continued from Page 7)

County of San Diego Resource Protection Ordinance Evaluation
Tie Line 649 (TL649) does not qualify as significant historic resources under the RPO, as they do not meet any of the definitions set forth by the RPO. This transmission line is not formally determined eligible or listed in the NRHP; has not been given an H designator; and is not one-of-a-kind, locally unique, or regionally unique cultural resource that contains a significant volume and range of data or materials. Further, the transmission line is not the location of past or current sacred religious or ceremonial observances which is either: protected under Public Law 95-341, the American Religious Freedom Act, or Public Resources Code Section 5097.9; or the location of a formally designated and recognized site which is of ritual, ceremonial, or sacred value to any prehistoric or historic ethnic group.

California Environmental Quality Act Significance Criteria Evaluation
TL649 does not qualify as a historic resource under the terms of CEQA, as it does not meet any of the definitions set forth by CEQA. The tie line is not listed in, or determined to be eligible for listing, in the CRHR; is not included in a local register, or identified as significant as an historical resource; nor is it determined to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California.

Appendix B. Resumes of Key Personnel

This page intentionally left blank

Paul Weishar

Architectural Historian

Mr. Weishar has more than eight years of experience in history, architectural history, and historic preservation. He meets the Secretary of the Interior's Professional Qualification Standards (36 CFR 61) for Architectural History. His work has primarily focused on the identification, documentation, and evaluation of historic resources through architectural survey. Mr. Weishar has particular interest in conducting conditions assessments, preservation plans, and historic structures reports. He has completed individual and district National Register of Historic Places (NRHP) nominations, including multiple property documents, with an emphasis in the Mid-Atlantic region, including Virginia, Maryland, and the District of Columbia; he has also completed projects in California, Florida, Idaho, New Jersey, North Dakota, Minnesota, Mississippi, and Washington. He has experience with a wide variety of properties including suburban, urban, rural, residential, commercial, and military resources. In addition to his work in architectural history, Mr. Weishar has developed interpretive signs, held public presentations, and participated in multiple archaeological investigations.

EDUCATION

M.F.A., Historic Preservation, Savannah College of Art and Design, 2007

B.A., Historic Preservation, Mary Washington College, 2005

REGISTRATIONS

Federal Railroad Administration Roadway Worker Protection, e-RAILSAFE Contractor No. 071627401463, Expires 3/25/2016

PROFESSIONAL MEMBERSHIPS

National Trust for Historic Preservation

Society of Architectural Historians

Docomomo US

US/ICOMOS

INDUSTRY TENURE

8.5 years

HDR TENURE

2.5 years

OFFICE LOCATION

Vienna, VA

PUBLICATIONS

AWARDS

RELEVANT EXPERIENCE

Monument Bridge Rehabilitation/West Virginia Department of Transportation, Division of Highways, 2014-Present. Architectural Historian. Part of a team surveying cultural resources for the West Virginia Department of Highways (WV DOH) involving the rehabilitation of a stone arch bridge, originally constructed in 1817 on the National Road, on US Highway 41 near Wheeling, West Virginia. Includes a survey of Elm Grove with research, completion of West Virginia Division of Culture and History forms, and evaluation of NRHP eligibility of buildings, structures, and districts.

Department of Defense Legacy Resource Management Program, Aerial and Satellite Reconnaissance Historic Context and Inventory, Nationwide, 2014-Present. Architectural Historian. Under a Department of Defense (DoD) Legacy grant, HDR is producing a historic context on Cold War Aerial and Satellite Reconnaissance Programs and compiling an inventory of associated cultural resources. The project is using recently declassified research materials to identify significant themes, events, and persons related to the history of Cold War-era U.S. military and civilian reconnaissance programs to aid DoD and installation cultural resource managers in identifying and evaluating associated cultural resources under its stewardship. Mr. Weishar conducted archival research at National Archives and Records Administration (NARA).

Education Hill NRHP Historic District/District Department of Transportation, Washington, DC, 2014-Present. Architectural Historian. Survey and document four historic-age schools. Prepared NRHP historic district nomination for the school campus as part of mitigation for the construction of the Spingarn Car Barn for the H Street/Benning Road Streetcar.

Historic Buildings and Structures Survey and Evaluation, Naval Base Ventura County San Nicolas Island/Naval Facilities Engineering Command Southwest (NAVFAC), California, 2014-Present. Architectural Historian. Surveyed 71 buildings and structures on San Nicolas Island. Prepared architectural descriptions, completed photo documentation, conducted research, prepared cultural resources report, evaluated NRHP eligibility of surveyed resources.

Historic Buildings Survey and Evaluation at Naval Base Ventura County Port Hueneme (Seabee Survey)/Naval Facilities Engineering Command Southwest (NAVFAC), California, 2014-Present. Architectural Historian. Part of a team that surveyed 133 buildings and structures at Naval Base Ventura County Port Hueneme related to Seabee operations. Prepared architectural descriptions, completed photo documentation, conducted research, prepared cultural resources report, evaluated NRHP eligibility of surveyed resources.

Marine Corps Base Camp Pendleton (MCBCP) Building Survey/NAVFAC SW, Oceanside, California, 2014-Present. Architectural Historian. Part of a team that surveyed and documented more than 800 resources at MCBCP as part of Section 110 compliance. Conduct survey and research, complete photo documentation of the resources, prepare building descriptions, complete California SHPO's DPR 523 forms, and evaluate NRHP eligibility of buildings, structures, landscapes, and districts.

New Jersey Army National Guard (NJARNG) Architectural Survey of Selected Facilities/New Jersey Department of Military and Veterans Affairs (JDMVA), New Jersey, 2014-Present. Architectural Historian. Conduct architectural survey and NRHP evaluations of 58 resources at 23 NJARNG installations across the state in support of Section 110 compliance. Conduct research, complete requisite New Jersey Historic Preservation Office forms, prepare a report of findings, and relevant GIS datasets.

CSX Positive Train Control Tower Compliance/CSX Transportation, Maryland, 2014-Present. Architectural Historian. Coordinate with Maryland SHPO to identify historic properties and archaeological sites that may be affected by tower construction.

Killdeer Truck Bypass, Phases I and II/North Dakota Department of Transportation, Dunn County, Killdeer, ND, 2013-Present. Architectural Historian. As part of a team, conducted a Class III Cultural Resources inventory of nearly 17,000 acres in rural North Dakota. Recorded 21 properties, completed SHPO inventory forms, evaluated resources for NRHP eligibility, completed cultural resources report in support of Section 106 compliance.

Virginia Beach Transit Extension Study and EIS/Federal Transit Administration and Hampton Roads Transit, Virginia Beach, Virginia, 2013-Present. Architectural Historian. Conduct Section 106 consultation and compliance on behalf of the agency/client. Survey and document over 500 properties along an abandoned NRHP-eligible rail corridor in preparation for conversion to a light rail system. Evaluate surveyed resources for NRHP eligibility. Complete a survey report, including historic context of project area.

Cultural Resources Survey and Evaluation Gulfport Combat Readiness Training Center/Mississippi Air National Guard, 2013. Architectural Historian. Part of a team that surveyed the Gulfport Combat Readiness

Training Center to assist in compliance with Section 106 and 110 of the National Historic Preservation Act of 1966. Prepared architectural descriptions, completed photo documentation, conducted research, prepared cultural resources report, evaluated NRHP eligibility of surveyed resources. Mr. Weishar also assisted in the completion of the archaeological component of the project.

Great Plains Wind Energy Environmental Impact Statement/U.S. Fish and Wildlife Service, multiple locations, 2013. Mr. Weishar helped develop the cultural resources section and effects analysis for the project EIS.

New Jersey Army National Guard (NJARNG) Preservation Plan for Quarters One/New Jersey Department of Military and Veterans Affairs (JDMVA), New Jersey, 2013. Architectural Historian. Part of a team that prepared a Preservation Plan for Quarters One, a mid-nineteenth century house. Work included research, field work, documentation, as well as recommendations for future work on the structure.

Section 110 Compliance Support Project/U.S. Customs and Border Protection, Minnesota, Utah, and Washington, 2012-2013. Architectural Historian. Conducted architectural survey and research on eight Land Port of Entries (LPOE) along the northern border. Completed SHPO forms and made NRHP eligibility recommendations. Prepared survey reports to meet Section 110 for CBP and to streamline future Section 106 efforts.

MDX State Road 924 East Extension/Federal Highway Administration and Miami-Dade Expressway Authority, Miami, Florida, 2012-2013. Architectural Historian. Provided Section 106 consultation for a transportation project that provides a direct connection from I-95 to SR 924/Gratigny Parkway. Conducted an architectural survey of 159 historic-age resources in the corridor to identify, document, and evaluate historic resources in the APE. Completed one determination of eligibility form for Miami-Dade College North. Conducted research and prepared Florida Master Site File forms, a survey report and historic context, and an assessment of effects.

Defense Supply Center Richmond/Defense Logistics Agency Enterprise Support (DES) Richmond, 2012. Architectural Historian. Part of a team that prepared a Historic Structures Report (HSR) for Bellwood, a NRHP-listed house constructed circa 1804 that now functions as the installation's officers club.

H Street/Benning Road Streetcar Line, Phase 2/District Department of Transportation, Washington, DC, 2012-2013. Architectural Historian. Initiated local preservation process and consulted with the DC Historic Preservation Office on behalf of DDOT to install overhead catenary and construct a car barn, substations, and station stops for a new streetcar line. Conducted architectural survey, prepared historic context report, evaluated historic resources, assessed effects of the project on historic resources.

SR 390/Federal Highway Administration and Miami-Dad Expressway Authority, Panama City, Florida, 2012. Architectural Historian. Drafted architectural descriptions and SHPO forms.

NON-HDR EXPERIENCE

Architectural Survey of Prince George's County/ Maryland-National Capital Park and Planning Commission, Prince George's County, Maryland, 2007-2012. Architectural Historian. Directed the multi-year, multi-phase survey of more than 100 historic resources throughout Prince George's County. Surveys aimed to identify resources not yet identified in the architecturally-diverse county. Conducted reconnaissance surveys, archival research, interviews, and generated site plans, maps, and photographic documentation. Evaluated resources on applied criteria and assessed integrity.

Architectural Surveys of Capitol Hill/Capitol Hill Restoration Society and Office of Planning, DC Historic Preservation Office, Washington, DC, 2009-2012. Phase 1D, 2010-2011, Southeast Phase II, 2010, Southeast Phase I, 2009-2010, F & G Streets, N.E., 2009-2010, H Street, N.E., 2009. Architectural Historian and Surveyor. Directed and conducted the on-site reconnaissance-level survey and photographic documentation of more than 3,000 urban residential, commercial, industrial, and educational resources and oversaw the documentation of an additional 2,000 resources surveyed by volunteers. Assisted in writing the architectural descriptions, completing data entry, and preparing the final survey reports for each phase. Recommended properties for further review and landmark designation. Presented findings at community meeting.

Potomac Yard Historic Plaques/LandDesign Inc., Alexandria, Virginia, 2012. Historian. Researched and drafted text for the interpretive granite signs in the redeveloped area of Potomac Yard, Alexandria. The area known as Potomac Yard has been a transportation route for hundreds of years for myriad modes of transportation. Effort was part of the mitigation agreement between the City of Alexandria and the developer of Potomac Yard.

Coldstream-Homestead-Montebello Survey/Department of Housing and Community Development, Baltimore, Maryland, 2012. Architectural Historian. Conducted the survey of historic resources identified in Baltimore City. Conducted reconnaissance survey, archival research, and photographic documentation. Evaluated and applied criteria, and assessed integrity of the buildings.

Preliminary Information Form – Foxcroft Heights/Arlington County Department of Community Planning, Housing & Development, Arlington County, Virginia, 2011-2012. Architectural Historian. Prepared the Preliminary Information Form (DOE) for the mid-twentieth-century suburban neighborhood. One of two neighborhoods in Arlington with rowhouses. Conducted reconnaissance survey, archival research, and photographic documentation. Evaluated and applied criteria, assessed integrity of the district, and recommended boundaries for the historic district.

Preliminary Information Form – Streamline Moderne Houses in Arlington County, Virginia: 1936-1945/Arlington County Department of Community Planning, Housing & Development, Arlington County, Virginia, 2010. Architectural Historian. Prepared the Preliminary Information Form (DOE) for the nine extant Streamline Moderne dwellings in Arlington County.

Streamline Moderne Houses in Arlington County, Virginia: 1936-1945,

Multiple Property Document/ Arlington County Department of Community Planning, Housing & Development, Arlington County, Virginia, 2010. Architectural Historian. Authored the multiple property documentation form for nine extant Streamline Moderne dwellings in Arlington County.

Earle J. Micajah Residence, National Register Nomination/Arlington County Department of Community Planning, Housing & Development, Arlington County, Virginia, 2010. Architectural Historian. Conducted the intensive survey of a Streamline Moderne dwelling in Arlington County resulting in a National Register nomination. Dwelling is representative of the nine extant examples of the style in Arlington County.

Unison Battlefield Survey/Maral Kalbian, LLC, Loudoun and Fauquier Counties, Virginia, 2010. Architectural Historian and Surveyor. Conducted a survey of rural resources related to a Civil War battle in 1862. Completed reconnaissance-level survey, wrote architectural descriptions, and assessed and evaluated resources.

Arlington Update, Historic Architectural Surveys of Arlington County, Virginia/Arlington County Department of Community Planning, Housing & Development, Arlington County, Virginia, 2007-2010. Architectural Historian and Surveyor. Directed the survey and documentation of more than 3,500 historic resources in Arlington County, including residential, commercial, educational, religious, and industrial buildings. Processed the survey information, including architectural descriptions, data entry, site plans, survey maps, and photographic documentation. Prepared final survey reports.

Peirce Mill, National Register Amendment/National Park Service, Rock Creek Park, Washington, DC, 2009-2010. Architectural Historian. Responsible for preparing the National Register Amendment for Peirce Mil, a 1820s stone mill. Conducted intensive-level survey of the building and associated landscape.

Hollin Hills Historic District/Civic Association of Hollin Hills, Fairfax County, Virginia, 2007-2011. Architectural Historian. Assisted in the preparation of the National Register Historic District Nomination for Hollin Hills, a mid-twentieth-century suburban neighborhood designed by architect Charles M. Goodman and developer Robert C. Davenport. Labeled photographs, prepared architectural descriptions, and entered records into the SHPO database (DSS).

Berwyn Historic District/City of College Park, Prince George's County, Maryland, 2009. Architectural Historian and Surveyor. Assisted in the preparation of the National Register Historic District Nomination form for the Berwyn neighborhood. Aided the on-site survey (658 primary resources), digital photography, archival research, and map preparation.

Winchester Historic District Survey Update (Cost-share)/Virginia Department of Historic Resources, City of Winchester, and Preservation of Historic Winchester, Winchester, Virginia, 2008-2009 and 2011-2012. Architectural Historian and Surveyor. Directed the on-site survey and documentation of 414 properties as part of the first phase of multi-year historic district update. Completed digital and print photography, conducted research, wrote architectural descriptions, entered data into DSS, and prepared maps. Assessed individual resources in preparation for a

potential historic district amendment and boundary expansion.

Hillsboro Historic District Amendment and Boundary Expansion (Cost-share)/Virginia Department of Historic Resources and the Town of Hillsboro, 2008. Architectural Historian and Surveyor. Assisted in updating the Virginia Landmarks Register and National Register Historic District nominations for Hillsboro. Assessed individual resources as part of the historic district amendment and boundary expansion. Directed the on-site survey of 57 properties. Completed photography and data entry (DSS) for all resources, prepared maps, conducted research, prepared and presented findings at a public meeting.

Historic District Nominations/Arlington County Department of Community Planning, Housing & Development, Arlington County, Virginia, 2007-2012. Architectural Historian and Historian. Assisted in the preparation and completion of multiple National Register Historic District Nomination forms for residential neighborhoods and suburbs in Arlington County. This work included on-site architectural survey, photographic documentation, conducting research, assessing district boundaries, and producing the National Register nomination and associated maps. Historic District nominations include Aurora Highlands (600 resources), Highland Park-Overlee Knolls (405 resources), Glencarlyn (370 resources), and Monroe Courts (42 resources).

Cell Tower Reviews/Advantage Environmental Consultants, LLC, Washington, DC, Maryland and Virginia, 2007-2012. Architectural Historian/Consultant. Review existing documentation and specifications for proposed cell tower construction and collocations. Assess adverse affects and make recommendations concerning historic properties in the APE as part of the FCC's compliance with Section 106 review.

Numerous Projects/Maryland Department of Transportation, State Highway Administration, 2007-2008. Architectural Historian and Surveyor. Part of a team that surveyed properties and prepared appropriate documentation, including Maryland Inventory of Historic Property (MIHP) forms, Addendums, and Determination of Eligibility (DOE) forms, both short and regular. Associated products included extensive mapping, sketch site plans, digital and black-and-white 35mm photographs, biographical and land record research, and assessments of integrity. These include:

Project No. MO593A21, Bethesda BRAC Intersections: MD 185 at Jones Bridge Road and MD 355 at Cedar Lane, Montgomery County. Surveyed, photographed, researched, and assessed properties, sites, and structures in the preparation of four Determination of Eligibility Forms. Documented two historic suburban neighborhoods with two MIHP Forms and DOEs.

Project No. SM352A11, MD 5: MD 243 to MD 245, St. Mary's County. Conducted on-site survey of agricultural, residential, commercial, and industrial properties located in the APE along MD 5 in St. Mary's County, MD. Surveyed, photographed, researched, and assessed properties, sites, and structures along MD 5. Prepared regular and short DOE forms.

SAGE Systems Technologies, U.S. Coast Guard Headquarters, Washington, DC, 2005. Technical Writer. Provided editorial support and writing services in different departments within the agency. Projects included working with the U.S. Coast Guard Strategy for Maritime Safety, Security & Stewardship; Fishing Vessels Division; and Navigation Standards Division.

Part of a team composed of Coast Guard officers, lawyers, and subject-matter specialists drafting regulations effecting commercial vessel safety, port security, and right whale migration. Drafted regulatory amendments and codified Code of Federal Regulations.

SAGE Systems Technologies, U.S. Coast Guard Headquarters, Washington, DC, 2004. FOIA Analyst. Researched and analyzed data for release in response to requests received by the United States Coast Guard, Marine Safety Center. Researched case law and regulations when determining what information to redact from reports released under the provisions of the Freedom of Information Act (FOIA). Maintained a database of FOIA requests and prepared legal appeals from requesters who were denied information. Promoted to technical writer/editor at Coast Guard Headquarters.

NON-HDR TRAINING

Genesse and Wyoming Roadway Worker Protection, 2014.
FRA Bridge Worker Fall Protection, 2014.
HAZWOPER, 8-hour refresher, 2014.
HAZWOPER, 40-hour, 2013.
First Aid/CPR/AED, American Red Cross, expires November 14, 2014.
Advisory Council on Historic Preservation, Section 106 Essentials Training, Washington, D.C., June 2014.
CSX Contractor Safety and Roadway Worker Protection Training, April 2013, 2014.
Virginia Department of Historic Resources, Data Sharing System (DSS) Training, Richmond, VA, 2007, 2009.
Mount Vernon Estate and Gardens, Restoration Intern, Summer 2006.
Robert Gordon University Field School, Cromarty, Scotland, Summer 2003.
Kenmore Plantation, Restoration Intern, Spring 2003.
PADI Open Water Diver

COMMUNITY & CIVIC INVOLVEMENT

Historic Alexandria Foundation, Board of Trustees, 2012-2014.
Preservation Action, Virginia Coordinator, 2010-2011.
Hurricane Katrina Historic Structures Relief Effort, Savannah College of Art and Design, Biloxi, MS, Fall 2005.

Marjorie I. Nowick

Professional Experience

Education
M.Phil.(ABD), History/Historical Archaeology, New York University, 1991

M.S., Historic Preservation, Columbia University School of Architecture, 1979

B.A., Anthropology, University of California, Los Angeles, 1975

HDR Professional Awards
e^2M Distinguished Business Unit Award-2006, 2009

Senior Professional Associate, 2009

HDR Tenure
9 Years

Industry Tenure
25+ Years

Professional Experience

Ms. Nowick brings 25+ years of experience in historic preservation and cultural resources management specializing in regulatory compliance and the built environment (architecture and engineering resources). She meets the Secretary of the Interior's *Professional Qualification Standards* for architectural history and (historical) archaeology. Ms. Nowick has extensive experience in environmental compliance as it relates to cultural resources, particularly compliance with Section 106 of the National Historic Preservation Act (NHPA) and the National Environmental Policy Act (NEPA). For 17 years, Ms. Nowick served as program analyst at the Denver office of the Advisory Council on Historic Preservation (ACHP) where she assisted federal agencies to comply with the NHPA and the NEPA. She has successfully negotiated and developed numerous Section 106 agreement documents (Programmatic Agreements and Memoranda of Agreement). As a member of the National Association of Environmental Professionals (NAEP), she has given presentations on *Streamlining Section 106 and NEPA Compliance* and related topics, and has prepared cultural resources sections for more than 30 NEPA EISs and EAs.

Ms. Nowick also directs HDR's nationwide 6-person Historic Architecture and History Group and works on many architectural projects. She has conducted and led cultural resources surveys and evaluated properties for National Register of Historic Places (NRHP) eligibility, conducted State Historic Preservation Office (SHPO) file searches, conducted archival research, and documented properties to state-level and Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) standards. She has worked with architects and engineers to ensure that architectural work meets the Secretary of the Interior's *Rehabilitation Standards* and prepared many historic preservation treatment and mitigation plans. The following is a sampling of her experience.

HDR Project Experience

California and Infrastructure Projects

Tie Line 649 Replacement Project, San Diego Gas and Electric, (2015). Ms. Nowick was peer reviewer for this small project to evaluate an electrical tie line in southern San Diego for NRHP eligibility.

Metrolink Bridge No. CT062, Santa Clarita, (2015). Ms. Nowick was architectural historian for this small project to evaluate a 1936 former Union Pacific railroad bridge now on the Metrolink line for NRHP eligibility. She conducted historical research, completed DPR forms for the bridge, and evaluated the bridge for NRHP eligibility.

Marine Corps Base Camp Pendleton, Historic Building Update Survey (2014-2015). Ms. Nowick was project manager and architectural historian for this large project to survey and update the inventory of 850+ World War II-era and Cold War-era buildings and structures at Camp Pendleton. As part of a team, Ms. Nowick conducted field survey, historical research, and contributed to the project report and DPR forms.

LaPalma Avenue Safe Walk to School Project, Anaheim, California for City of Anaheim and Caltrans, (2014). Ms. Nowick was architectural historian for this small ROW improvement project. Four residential properties dating 1947-1950 were evaluated for NRHP eligibility and conformance with Property Type 7, Exemption 4 of the 2014 California FHWA/Caltrans Section 106 Programmatic Agreement. Properties were

transitional Postwar Minimal/Ranch residences.

Lake Norconian Club Historic District Maintenance Plan, Riverside County, California, (2013). Ms. Nowick was architectural historian and project manager for project to develop a maintenance plan for the Navy's NRHP-listed historic district of eight 1920s Spanish Colonial Revival former resort buildings and structures in Riverside County, CA. Project team included historical architect, structural engineer, code architect, and cost estimator. Conducted conditions assessments, identified character-defining features, deficiencies and proposed solutions, and prepared multi-volume report with solutions, guidelines, and cost estimates for maintaining the historic buildings in accordance with the Secretary of the Interior's *Standards for the Rehabilitation of Historic Properties*, and NPS Historic Preservation Briefs and other guidance. Contracted by NAVFAC SW.

Historic Buildings and Bridges Survey, Beale Air Force Base, California, (2013). Ms. Nowick was project manager and peer reviewer of small project to evaluate four Cold War-era buildings and two World War II-era bridges on Beale Air Force Base. Project included research at local and base repositories, development of a short memo/report, and preparation of DPR 523 forms.

Tappan-Zee Bridge HAER Documentation, New York, New York Thruway Authority, (2013 to present). Ms Nowick is project manager and architectural historian for this project to prepare Level I HAER documentation of the 1953 Tappan- Zee Bridge, which carries the New York Thruway across the Hudson River. Project documentation includes large format archivally prepared photographs, measured drawings, and a narrative report of the history and engineering of the bridge.

Oslo Railroad Bridge Documentation Project, Minnesota and North Dakota, (2012). Ms. Nowick was project manager and peer reviewer for this project to document the NRHP-eligible swing bridge spanning the Red River of the North on the historic Wheat Line between North Dakota and Minnesota. Canadian Pacific Railroad contracted HDR to complete Level I Minnesota Historic Resource Documentation including large-format photographs, historical research, and a historical narrative.

Burlington-Northern Railroad Bridges Security Upgrades, Missouri and Mississippi Rivers, (2012). Ms. Nowick was technical advisor and peer reviewer of the cultural resources project report and SHPO forms for the survey and NRHP eligibility evaluation of six large steel truss railroad bridges over the Missouri and Mississippi Rivers from North Dakota to Tennessee. Work was carried out for Section 106 compliance for FEMA-sponsored security upgrades to the bridges.

Northern Canal Documentation Project, Logan, Utah, U.S. Department of Agriculture, Logan, Utah, (2012). Ms. Nowick was peer reviewer for the task component of the project to document a mid-century modern residential property in Logan, Utah to be adversely affected by this emergency canal restoration project. Project included historical research including comparison of the current architecture with original architectural plans, photography of building interior and exterior with 35mm photography, and completion of a Utah SHPO intensive-level form and narrative.

Grand Coulee, John Keys Pump-Generating Plant Modernization Project, Bureau of Reclamation, (2011-2012). Ms. Nowick was project manager, architectural historian, and peer reviewer for this fast-paced project to identify and evaluate architectural and archaeological resources and traditional cultural property (TCPs) potentially affected by this large infrastructure upgrade project involving contributing elements of the NRHP-eligible Grand Coulee Dam Historic District. Ms. Nowick co-authored the architectural survey and evaluation report, peer reviewed the archaeological and TCP studies, wrote the project

cultural resources section of the environmental assessment, and wrote a draft Programmatic Agreement. The project was completed ahead of schedule, and received many compliments from the client.

Colorado Spaceport Project, Federal Aviation Administration and Front Range Airport Authority, (2013 to 2014). Ms. Nowick was architectural historian for this project to gain a FAA license for a commercial horizontal launch facility outside of Denver. The project includes an architectural survey of a ranch complex and National Register of Historic Places eligibility evaluation, development of a report and SHPO forms, and preparation of the cultural resources section of the EA. Project is unusual for requiring three different APEs for noise impacts, visual impacts, and ground-disturbing facilities construction.

Peak Period Shoulder Lane, Interstate 70 Project, Clear Creek County, Colorado Department of Transportation, (2013 to 2014). Ms. Nowick was architecture technical advisor, project manager, and peer reviewer for the architectural survey and evaluation of this interstate expansion project through the Colorado mountains. The project surveyed and evaluated 45 historic residential, mining, railroad, and commercial properties within the corridor. Project included architectural fieldwork, archival research, development of a historic context, and preparation of a project report and SHPO forms with National Register of Historic Places eligibility evaluations. Field data was entered directly into database on Ipads for preparation of SHPO forms.

Wadsworth Blvd Wheat Ridge, Colorado PEL Colorado Department of Transportation and City of Wheat Ridge, (2013 to 2014). Ms. Nowick was architecture technical advisor, and peer reviewer of the cultural resources technical report and SHPO forms for the PEL corridor study. Forty-three buildings 45 years of age or older were researched, surveyed, and evaluated for NRHP eligibility. The corridor included commercial properties and pre-1950s agricultural properties. Project included architectural fieldwork, archival research, development of a historic context, and preparation of a project report and SHPO forms. Report and forms integrated architectural and archaeological site data. Field data was entered directly into database on Ipads for preparation of SHPO forms.

Killdeer By-Pass Cultural Resources Survey and Evaluation, Dunn County, North Dakota Department of Transportation, (2013 to 2014). Ms. Nowick was architecture technical advisor, project manager, and peer reviewer of the cultural resources technical report and SHPO forms for this new truck by-pass road around Killdeer, North Dakota. The project surveyed and evaluated historic farmsteads within proposed corridors. Project included architectural fieldwork, archival research, development of a historic context, and preparation of a project report and SHPO forms. Report and forms integrated architectural and archaeological site data. Field data was entered directly into database on Ipads for preparation of SHPO forms.

South Dakota 100 Road Widening Project, Brandon, South Dakota Department of Transportation, (2013). Ms. Nowick was the architectural historian for the architectural survey and evaluation of road widening project in rural Minnehaha County, South Dakota. A historic farmstead with outbuildings, 1960s ranch house, and a bridge were surveyed and evaluated for National Register of Historic Places (NRHP) eligibility. Project included architectural fieldwork, archival research, development of a historic context, and preparation of a project report and SHPO forms with NRHP eligibility evaluations.

West 10th Street Corridor Improvement Project, Greeley, Colorado, City of Greeley and Colorado Department of Transportation, (2012). Ms. Nowick was principal investigator/architectural historian for this CDOT project to improve business and traffic access on W. 10th Street, between 23rd Avenue and 35th Street, Greeley. Project included records and file searches, historical research, field survey and documentation of buildings

older than 50 years, and preparation of a project report and SHPO forms.

Dickinson By-Pass Cultural Resources Survey, North Dakota Department of Transportation, (2012). Ms. Nowick was architecture technical advisor and peer reviewer of the cultural resources technical report and SHPO forms for this new truck by-pass road north of Dickinson, North Dakota. The project surveyed and evaluated historic farmsteads and eastern European ethnic stone architecture within five proposed corridors. Project included architectural fieldwork, archival research, development of a historic context, and preparation of a project report and SHPO forms. Report and forms integrated architectural and archaeological site data. Project was conducted during the height of winter, yet met project scope, schedule, and budget with compliments from the client.

U.S. Coast Guard, NRHP Nominations of Port Hueneme and San Francisco Bay and 11Other Lighthouses, (2008-2010). Ms. Nowick was project manager and peer-reviewer for the project to document and prepare NRHP nominations for six USCG lighthouses in Florida, one lighthouse and associated keeper structures in Puget Sound, one lighthouse base in San Francisco Bay, and one lighthouse at Port Hueneme, Ventura County. Deliverables included draft and final NRHP nomination forms, digital and black and white 35mm photographs, a database of archival materials, and coordination letters and a memo with local officials and Indian tribes. For 2009-2010, the USCG extended the project to include five additional lighthouses in Hawaii and US Virgin Islands.

Marin International Airport Air National Guard Base Cultural Resources Survey, Puerto Rico, (2010-2012). Ms. Nowick was project manager and architectural historian for this project to survey and evaluate buildings and structures on the installation, and to identify archaeological resources. No architectural sites were identified, no NRHP eligible buildings, but one structure, an aircraft apron showing evidence of a 1981 attack by the *Macheteros*, a Puerto Rican pro-nationalist group, and the largest attack on an Air Force base to date, was identified. The apron was determined NRHP eligible by the ANG with the concurrence of the SHPO. Project included extensive historic research and oral histories including Spanish-language sources, archaeological and architectural survey, preparation of a GIS dataset, and preparation of a project report and SHPO forms.

Jacksonville International Airport Air National Guard Base Cultural Resources Survey, Jacksonville, Florida. National Guard Bureau, Air National Guard Readiness Center, (2009-2010) Ms. Nowick was project manager and peer review on this cultural resources survey of the 390+ acre base in north Jacksonville, Florida. The project involved historical research for the historic context as well as a pedestrian architectural and archaeological survey. Cold War-era buildings are being surveyed and evaluated for National Register of Historic Places eligibility. Deliverables included a project survey and evaluation report, SHPO inventory forms, and a GIS dataset.

***It's a Cold World: The Air National Guard's Role in Defending America, 1946 to 1989 National Historic Context Project,* Air National Guard, Department of Defense Legacy Program, (2007-2010).** Ms. Nowick was project manager and architectural lead for the development of an agency-wide national historic context examining the role of the Air National Guard (ANG) in the Cold War, 1946-1989. Historical research for the historic context is being conducted at the ANG Readiness Center, National Archives, Army Corps of Engineers History Office, Air Force Research Agency at Maxwell AFB, and other repositories. The project surveyed historic resources located at 10 ANG installations based on themes and trends identified in the historic context and evaluated them for National Register of Historic Places (NRHP) eligibility. Deliverables included a report summarizing the historic context and historic resources survey, and a public interpretive product. This project was funded by DoD Legacy Resource Management Program with the National Guard Bureau, Air National Guard Readiness Center as sponsor under a cooperative agreement

with the Huntsville District, Army Corps of Engineers.

Tar Creek Heritage Study, Ottawa County, Oklahoma, (2006-2008). Ms. Nowick was project manager and architectural historian for this project to address the cultural resources of a 40-square mile historic lead and zinc mining area within lands of the Quapaw Tribe. Tasks included historical research, development of a historic context, field survey, NRHP eligibility guidelines, mitigation recommendations, and annotated bibliography. This project was contracted by the Tulsa District, Army Corps of Engineers.

Hawai'i Army National Guard Historic Resources Survey of Selected Facilities, (2008-2009). Ms. Nowick managed and served as peer reviewer for the survey of 88 facilities at 10 Hawaii ARNG installations on the islands of Oahu, Kauai, Hawai'i, and Molokai. Resources included Cold War-era readiness centers and associated facilities, 1910-1912 coastal batteries, and World War II-era facilities. Deliverables included a project survey report, SHPO forms, and GIS dataset.

Historic Resources Mitigation Projects for U.S. Department of Homeland Security, Customs and Border Patrol PF225 Tactical Infrastructure Project, Rio Grande Valley, Texas, 2008-2012. Ms. Nowick was project manager and architectural historian for eight projects to mitigate the adverse effects of the tactical infrastructure project on architectural and historic resources in Starr, Hidalgo, and Cameron counties, Texas. Projects include historic studies/HABS documentation of the Brulay Plantation which is listed in the NRHP; the Landrum House, a Recorded Texas Historic Landmark; HAER documentation the Los Ebanos Ferry, the last hand-drawn ferry on the border of the continental U.S.; HALS documentation of a riverside portion of the Roma National Historic Landmark District. Also included are interpretive programs for the Roma District; a bi-national shared experience heritage tourism interpretive publication/media; historical study of the RGV Rio Grande levee system; and a mitigation plan addressing affected irrigation resources. This project is a sub-contract of the Galveston District, Army Corps of Engineers.

Kulis Air National Guard Base Public Awareness Project (2009-2011). Ms. Nowick was project manager and peer reviewer for this project to develop a public education booklet regarding the history of the ANG installation in Anchorage, Alaska and its NRHP-eligible hangar as mitigation of adverse effects from the closure of the Kulis ANG base. Ms. Nowick consulted with the SHPO and ANG and developed a Memorandum of Agreement (MOA) that was signed by the SHPO, base commander, and Air National Guard Readiness Center. The MOA outlined mitigation measures for transfer/demolition of the Cold War-era twin hangar. This unusual building is eligible for the NRHP for its role in provisioning the remote Cold War-era DEW Line radar sites and in the rescue operations of the 1964 Alaska Earthquake. HDR researched and wrote the 26-page booklet that was professionally designed. This project was contracted by the National Guard Bureau, Air National Guard Readiness Center.

HABS Documentation of Building 21000, Andersen Air Force Base, Guam, 2008-2010. Ms. Nowick was architectural lead and project manager for the **Historic American Building Survey (**HABS) documentation of the 1947 Cold War-era main bachelor enlisted barracks/administration building for Andersen AFB, the first permanent building on the base. Documentation included historical report with historic context, architectural description, and physical history; large-format photographs; and large format “as-built” architectural drawings. This project was contracted by the Air Force Center for Excellence and the Environment.

HABS Documentation of Ketch Ranch, Fort Sill Military Reservation, Comanche County, Oklahoma, 2007-2008. Ms. Nowick was project manager and architectural historian for the HABS, Level III documentation of the 1924 Wichita Mountains cobblestone vernacular/Craftsman style Frank Ketch ranch house. Ms. Nowick served as the lead for historical research on pre-Ketch and the Ketch family history. Documentation included oral

history interviews with Lawrence Ketch, M.D. (grandson of Frank Ketch and a documentation report consisting of the historic context; history of the ranch and description of the house and setting; physical history; a site map and floor plans of house; reinterpretation of previous archaeological record; large format photographs of the house, site, and Ketch Lake; and the report catalogue. This project was contracted through the Tulsa District, Army Corps of Engineers

Documentation of Hangar 1, Yeager Airport Air National Guard Station, West Virginia, 2007-2008. Ms. Nowick was project manager and architectural historian for the documentation of the 1947 aircraft hangar at the Yeager Airport ANG Station to West Virginia state standards. The documentation included large format photographs of the hangar interior and exterior, archival processing of architectural drawings, a report of the history and architectural description of hangar, and report catalogue. The documentation was deposited in the West Virginia State Archives. This project was contracted by the National Guard Bureau, Air National Guard Readiness Center.

Environmental Studies, Environmental Assessments, and Environmental Impact Statements (selected examples)

EA, Mountain Home Air Force Base, Idaho, new housing and privatization of exiting housing projects, (2011). Ms. Nowick wrote the cultural resources affected environment, and impacts analysis sections of this draft and final EA for new housing construction and privatization of existing housing at Mountain Home AFB. Two NRHP-eligible officers' housing by architect Richard Neutra were affected by the proposed action.

EAs at Buckley Air Force Base, Colorado, for new construction (2008-2011). Ms. Nowick wrote the cultural resources affected environment, and impacts analysis sections for three draft and final EAs for various new facilities construction projects at Buckley AFB. Projects included analysis of visual impacts of the facilities on the NRHP-listed hangars and radomes. Ms. Nowick also consulted with the SHPO and prepared consultation letters for the Air Force.

EIS, cultural resources sections, Customs and Border Protection, PF225 Tactical Infrastructure Project, Lower Rio Grande Valley, Texas, (2008). Ms. Nowick wrote the cultural resources section for the draft and final EIS for this highly controversial project of 80 miles of non-continuous infrastructure (border fence) in Starr, Hidalgo, and Cameron counties, Texas. HDR team gathered information from the Texas SHPO, Texas Archaeological Research Laboratory, and numerous other sources and analyzed impacts of the project on cultural resources. Project crossed rural and highly urbanized areas and had visual impacts to standing structures including two National Landmark Districts, more than six NRHP-listed historic districts, numerous NRHP eligible and listed individual structures, and archaeological sites. Ms. Nowick authored the cultural resources sections, including affected environment, impacts analysis, and response to all cultural resources comments received from the SHPO, local governments and organizations, and the public.

Historic Preservation Studies, Maintenance Plans, Planning Studies, ICRMPs

Jefferson Barracks Air National Guard Station, Integrated Cultural Resources Management Plan (ICRMP), (2010-2012). Ms. Nowick was technical lead and project manager for the development of a two-volume ICRMP to address the ANG installation's 31 buildings and landscape features in the NRHP-listed Jefferson Barracks Historic District. The installation encompasses the key properties of the historic district including the historic parade ground, historic commander's house, historic stables, and other buildings contributing to the historic district. The first phase of the project was a building specific conditions assessment from which the preservation plan in the ICRMP was based. The preservation plan outlines maintenance needs for the buildings and sets forth priorities for maintaining the landscape and buildings of the historic district. This project was contracted

by the National Guard Bureau, Air National Guard Readiness Center.

Air National Guard Integrated Cultural Resources Management Plan Agency-Wide Template Update, National Guard Bureau, Air National Guard Readiness Center, (2012) Ms. Nowick was project manager and principal investigator/primary author for the update of the Air National Guard's template for Integrated Cultural Resources Management Plans. The project involves gathering information on historic preservation and other legal requirements, integrating them into a new template format, and coordinating with ANG personnel and others to ensure that the template is user-friendly, legally sufficient, and provides appropriate cultural resources management direction. This project is contracted by the National Guard Bureau, Air National Guard Readiness Center.

Fort Brown Earthworks Preservation Plan, U.S. Army Corps of Engineers, Galveston District, (2010-2012). As part of the Customs and Border Protection Rio Grande Valley PF 225 tactical infrastructure project, Ms. Nowick managed and contributed to development of a preservation plan for the Fort Brown Earthworks, a National Historic Landmark earthen fortification built for the 1846 Mexican-American War. An archaeological site, it is part of the Fort Brown Historic District in Brownsville, Texas. The project included historical research, compilation of historic materials, remote sensing of the site, and reconstruction of boundaries and features against current parcel uses and configurations. The preservation plan recommends expansion of the NHL boundaries to encompass the entire site, landscape maintenance recommendations, on-site landscape clues and interpretive signage, a site monitoring program, and other mechanisms.

Puerto Rico Air National Guard Integrated Cultural Resources Management Plan (ICRMP) with Preservation Plan, Memorandum of Agreement, and Documentation of Radome 4, Punta Salinas Radar Site, (2008-2010). Ms. Nowick developed an ICRMP to address the four ANG bases in Puerto Rico and the U.S. Virgin Islands. One base includes resources from World War II and the Cold War era as well as a probable 18th century Spanish fort. The ICRMP summarizes Commonwealth and Federal historic preservation requirements and provides a plan for the management of resources at Punta Salinas Radar Site and the other bases including standard operating procedures for various scenarios. The document includes an extensive Preservation Plan for the maintenance of three World War II coastal defenses and a Cold War-era radome, all eligible for the NRHP. The Preservation Plan assesses current conditions and materials, preservation needs, and outlines treatment solutions.

As part of project, Ms. Nowick completed Historic American Buildings Survey (HABS), Level III standards of a Cold War-era radome. Ms. Nowick negotiated and developed a Section 106 Memorandum of Agreement for demolition of the resource including consultation with the ACHP and Puerto Rico SHPO. Documentation includes a historical report with historic context for the Cold War-era Radar Site and Cold War-era communications in Puerto Rico, the physical history and description of the radome; large-format photographs of the radome; and archivally processed historic photos of the radome and radar site. This project is contracted by the National Guard Bureau, Air National Guard Readiness Center.

Des Moines Air National Guard Base Integrated Cultural Resources Management Plan (ICRMP), Air National Guard/National Guard Bureau, (2006-2007). Ms. Nowick prepared a base ICRMP for the Des Moines ANG Base. The ICRMP focuses on the base's 1943 Works Progress Administration Art Deco-style office complex/hangar, and provides recommendations for maintenance of its NRHP-eligible character-defining features, guidelines for a proposed building addition, and landscaping and security improvements. The ICRMP also provides archaeological assessment of the base, and includes standard operating procedures for maintenance of the historic hangar, new construction, and inadvertent discovery of archaeological resources and human remains. A Programmatic

Agreement was developed, based on the ICRMP, to facilitate streamlined section 106 compliance. Project contracted by the National Guard Bureau, Air National Guard Readiness Center.

Past Employment

Program Analyst, Advisory Council on Historic Preservation, 1980-1987; 1995-2005. At the Denver, Colorado office of the ACHP, Ms. Nowick assisted Federal agencies in complying with Section 106 of the National Historic Preservation Act (NHPA). She reviewed historical, architectural, and archaeological documentation, consulted with agencies and interested parties, and developed hundreds of Memoranda of Agreement and Programmatic Agreements for various Federal agencies. She also helped to develop and taught the Section 106 training course nationwide.

Architectural Historian/Historical Archaeologist and Acting Director of Paterson Archaeology Project, City of Paterson, New Jersey, Department of Community Development, 1978-1980. Ms. Nowick conducted historical research and a survey and data recovery of historical industrial sites in the Great Falls-S.U.M. National Historic Landmark District, America's first planned industrial city by Alexander Hamilton. She surveyed buildings and features including water runway system. She also oversaw project personnel including 2 architects, 1 historian, 3 archaeologists, and support staff. She authored site reports and peer reviewed reports written by the other project staff.

Historic Preservation Specialist/Urban Archaeologist, New York City Landmarks Preservation, 1993-1995. As staff of the NYCLPC, Ms. Nowick reviewed projects under the city of New York's historic preservation ordinance and state environmental quality act. She assisted in the development of survey and treatment plans for archaeological sites and served as the City's representative for archaeological contract work at the historic City Hall Park in Manhattan. She also reviewed and approved contractor archaeological work, including survey, testing, and data recovery reports.

Department of Transportation Certifications as Architectural Historian

North Dakota DOT and SHPO
Indiana DOT
Nebraska DOT
Colorado DOT and SHPO
South Dakota DOT and SHPO
Delaware DOT
Arizona DOT
Pennsylvania DOT

HDR Honors and Awards

HDR Senior Professional Associate, 2009
HDR|e^{2}M Distinguished Business Unit Award, 2009
e^{2}M Distinguished Business Unit Award, 2006

Industry Honors and Awards (prior to joining HDR|e^{2}M)

National Trust for Historic Preservation, 2005
Army Corps of Engineers, Omaha, 2005
U.S. General Services Administration, 2005
U.S. Environmental Protection Agency, 2003

Publications

Ms. Nowick is author of numerous project reports and other documents. A list of

publications is available upon request.

Ms. (Ingle) Nowick authored the book, **The Mayan Revival Style: Art Deco Mayan Fantasy**, Peregrine Smith/University of New Mexico Press, 1984/1989 This book analyzes the 1920s and 1930s architectural variant of the Art Deco that drew inspiration from the Mayan and Aztec ruins of Mexico and Central America and incorporated archaeological design elements into the building designs. The book was favorably reviewed in **Architectural Record**, **Saturday Review**, **Los Angeles Times**, and other publications.

Amy Gusick

Principal Investigator, Archaeology Program Manager

Dr. Gusick has over 9 years of experience in cultural resource management and specializes in the design, implementation, and direction of projects for federal clients, utility companies, and state agencies. Specific duties include proposal and budget development, project design and management, staff management, archival research, field preparation, research design development, direction of fieldwork, field evaluations, survey and excavations, and report writing. She has successfully initiated, conducted the field research, and managed projects reviewed under guidelines of the California Environmental Quality Act (CEQA) and guidelines specified with Sections 106 and 110 of the National Historic Preservation Act (NHPA). Prehistoric and historic cultural resources have been identified and, where necessary, evaluated for eligibility to the National Register of Historic Places (NRHP). Dr. Gusick's specialized skills include archaeological resource identification, lithic analysis, ichthyological analysis, prehistoric tool use, and project management. Mitigation programs include archaeological data recovery programs and historic data recovery programs. Cultural resource tasks or roles preformed include archaeological surveys, historical resources survey, historical resources evaluation/eligibility investigations, and archaeological monitoring.

RELEVANT EXPERIENCE

Sempra Energy/SDG&E, On Call Cultural Resources, San Diego County, 2012- 2018. Contract/Project Manager. Supported the undertakings of SDG&E for new construction, on-going maintenance, and repair projects by conducting cultural resources inventories for various projects throughout the company service territory. Coordinated with other cultural resources staff, clients, and their subcontractors to implement, organize, conduct, and complete numerous small- to large-scale projects with overlapping schedules for Sempra Energy/SDG&E. Examples of projects include: Value: $1,250,000

- Wood to Steel Pole Conversion TL 6910, San Diego County
- Wood to Steel Pole Conversion TL 6914, Marine Corps Base, Camp Pendleton
- Navy Hospital Primary Feed, Boring and Replacement of Transmission structures, Marine Corps Base, Camp Pendleton
- Los Coches Substation Expansion, Lakeside, San Diego County
- 4 Camp Pendleton Helicopter Platforms, Marine Corps Base, Camp Pendleton
- TCM Access Road Grading, San Diego County
- Pala Energy Storage Battery (500kW), Pala Substation, San Diego County
- Intrusive Inspections, 4206 Poles, SANT Subarea, San Diego County

Riverside County Public Utilities Department, Pellissier Ranch Solar Development Project EIR, Riverside County, CA, 2014-2015. Cultural Task Lead/Archaeological Principal Investigator/Native American Liaison.

EDUCATION

Ph.D., Anthropology (Archaeology), University of CA Santa Barbara, 2012

M.A., Anthropology (Archaeology), University of CA Santa Barbara, 2007

B.A, Communications, Seton Hall University, 1997

REGISTRATIONS

Register of Professional Archaeologists (RPA)

e-RAILSAFE Trained – RWP, BNSF, UPRR

Metrolink Roadway Worker Trained

PROFESSIONAL MEMBERSHIPS

Society for American Archaeology
Society for California Archaeology
The Society for Anthropological Sciences

INDUSTRY TENURE

10 years

HDR TENURE

2 years

OFFICE LOCATION

San Diego, CA

PUBLICATIONS

Articles

Amy E. Gusick, Gamble, Lynn H., "The Original Santa Barbara: Syuxtun", California Archaeology, Volume 5, Number 1, 12/2013

Amy E. Gusick, "Baja California in Context", Journal of California and

Great Basin Anthropology, Volume 30 Number 1, 1/2010

Amy E. Gusick, "Exploring Baja California's Submerged Landscapes", Journal of California and Great Basin Anthropology, Volume 30 Number 1, 1/2010

Books

Amy E. Gusick, "Early Maritime Hunter-Gatherer Occupation, Santa Cruz Island"

Amy E. Gusick, Faught, Michael K., "Submerged Prehistory in the Americas"

Amy E. Gusick, Faught, Michael K., "Prehistoric Underwater Archaeology: A Nascent Subdiscipline Critical to Understanding Early Coastal Occupations and Migration Routes"

Presentations

Amy E. Gusick, "Patterns of lithic reduction and mobility during the Early Holocene on Santa Cruz Island", 78th Annual Meeting of the Society for American, Honolulu, Hawaii, 4/3/2013

Theses

Amy E. Gusick, "Behavioral Adaptations and Mobility of Early Holocene Hunter-Gatherers, Santa Cruz Island, California"

AWARDS

HDR is working with Riverside PUD to complete an EIR and supporting studies for construction of a solar farm on a city owned parcel of land. Supporting studies include research on cultural resources and a historic archaeology Phase II study, wildlife surveys, and permitting activities. Value: $250,000

e.On, The Alamo Solar Project, 2014-2015. Cultural Task Lead/Archaeological Principal Investigator/Native American Liaison. HDR provided initial biological studies and archaeological and native monitoring services during construction of solar farm. Dr. Gusick is responsible for all Native American monitoring contract coordination and monitoring as well as all archaeological monitoring coordination, quality assurance for cultural/native/paleo aspects of project, worker training program development and implementation, and technical monitoring report development and review. Value: $227,000

Valley Center Water District, North Village Waste Water Infrastructure Project, Valley Center, CA, 2014. Cultural Task Lead/Archaeological Principal Investigator. HDR is working with VCWD to complete an EIR and supporting studies for construction of two lift stations and pipeline improvements. Cultural tasks included a Phase I study and a constraints analysis. Value: $15,000 (cultural study only)

City of Highland, 5th Street Improvement Project, Highland, CA, 2014. Archaeological Principal Investigator. HDR is working with the City of Highland to complete improvements culverts and pipelines in the City of Highland. The cultural task was to prepare an addendum to the existing report due to project modifications. Value: $6,000 (Cultural addendum only)

The City of Anaheim, La Palma Safe Routes to School, 2014. Cultural Task Lead/Archaeological Principal Investigator. Environmental study for a CalTrans Local Assistance Program focused on closing a sidewalk gap and constructing new sidewalk, curb, and gutter. Responsibilities included CalTrans coordination, field surveys, land, preparation of final report Value: $10,000

SANBAG, Downtown San Bernardino Passenger Rail Project, 2014. Cultural Task Lead/Archaeological Principal Investigator. HDR provided monitoring and field support. Dr. Gusick was responsible for contract and budget management, monitoring coordination for archaeology native monitoring, quality assurance for project, technical report review. Value: $10,000 (cultural monitoring only)

Riverside County Transportation Commission, Cultural Resources Monitoring in Support of the Perris Valley Line Construction Project, Riverside County, CA, 2013-2015. Cultural Monitoring Task Lead/Archaeological Principal Investigator/Native American Liaison. HDR EOC is providing all environmental monitoring for the construction project. Dr. Gusick is responsible for all Native American monitoring contract coordination and monitoring as well as all archaeological monitoring coordination. Value: $140,000 (cultural monitoring only)

NAVFAC LANT, EA Addressing Maintenance and Energy Upgrades at San Clemente Island, CA (Contract NO. N62470-09-D-2003-XE19, TO FZN4), 2013-2014. Cultural Resources Task Lead. HDR is working with NAVFAC SW through the NAVAFC LANT NEPA contract to complete an EA and supporting studies for an island-wide maintenance and energy upgrade

program. Supporting studies include research on cultural resources, large vegetation mapping and rare plant surveys, wetland delineations, wildlife surveys, and permitting activities. Value: $701,000

NAVFAC SW, Archaeological Testing and Evaluations for SDI-5514, -13967, and -13968 (Contract NO. N62473-11-D-2221, TO 0018), 2013-2014. Project Manager/Senior Archaeologist. Naval Base Coronado, California - Phase II evaluation on three sites undertaken in compliance with Section 110 of the National Historic Preservation Act (NHPA). Responsibilities included project and budget development, project management, work plan/research design development, field excavations, laboratory analysis, preparation of final report, and recommendations for site protection and National Register eligibility. Value: $49,000

NAVFAC SW, Archaeological Testing and Mitigation at SDI-14791 (Contract NO. N62473-11-D-2221, Task Order 0025), 2013-2014. Project Manager/Senior Archaeologist. Marine Corps Base Camp Pendleton - Phase II evaluation to determine if site locus was contributing element to National Register eligibility of site. Responsibilities included project and budget development, project management, work plan/research design development, field excavations, laboratory analysis, preparation of final report, and recommendations for site protection and National Register eligibility. Value: $142,000

NAVFAC SW, Archaeological Sites Special Studies (Contract NO. N62473-11-D-2221, Task Order 0029), 2013-1014. Project Manager/Senior Archaeologist. Marine Corps Base Camp Pendleton - Special study program focusing on a comparative analysis on samples from two Historic Resources to determine differential recovery rates and their effect on data analyses. Responsibilities included project and budget development, project management, work plan/research design development, field excavations, laboratory analysis, preparation of final report and treatment plan. Value: $45,252

Metrolink, Archaeological Survey Quartz Siding Project, Riverside County, 2013-2014. Project Manager. Phase I pre-construction survey to determine impacts to known archaeological sites and to determine if new archaeological sites are present within the APE. Responsibilities included survey design and budget development, project management, and technical report review. Value: $10,000 (cultural survey only)

NAVFAC SW, Archaeological Monitoring to Support the P-1014 Project (Truck Company Operations Complex) MCB Camp Pendleton San Diego County, California (Contract NO. N62473-11-D-2221, TO 0006), 2013-2014. Project Manager. HDR provided monitoring and field support. Dr. Gusick was responsible for contract and budget management, monitoring coordination for both archaeology and native monitoring, quality assurance for project, technical report review. Value: $249,930

NAVFAC SW, Archaeological Monitoring to Support the P-310 Project (Small Arms Magazine, Edson Range), MCB Camp Pendleton San Diego County, California (Contract NO. N62473-11-D-2221, TO 0008), 2013-2014. Project Manager. HDR provided monitoring and field support. Dr. Gusick was responsible for contract and budget management, monitoring coordination for both archaeology and native monitoring, quality assurance for project, technical report review. Value: $55,237

NAVFAC SW, Archaeological Monitoring to Support the Range 409A Improvements Project, MCB Camp Pendleton San Diego County, California (Contract NO. N62473-11-D-2221, TO 0010), 2013-2014. Project Manager. HDR provided monitoring and field support. Dr. Gusick was responsible for contract and budget management, monitoring coordination for both archaeology and native monitoring, quality assurance for project, technical report review. Value: $44,148

NAVFAC SW, Archaeological Monitoring to Support the P-1048 Project (Upgrades to Electrical Systems and Associated Facilities), MCB Camp Pendleton San Diego County, California (Contract NO. N62473-11-D-2221, TO 0009 & N62470-09-D-2003, TO FZN3), 2012-2014. Project Manager. HDR provided monitoring and field support. Dr. Gusick was responsible for contract and budget management, monitoring coordination for both archaeology and native monitoring, quality assurance for project, technical report review. Value: $1,231,452

Union Pacific Railroad, Kern Junction Interchange, Kern County, 2014. Project Manager. Phase I pre-construction survey to determine impacts to known archaeological sites and to determine if new archaeological sites are present within the APE. Responsibilities included survey design and budget development, project management, and technical report review. Value: $10,000 (cultural survey only)

NAVFAC SW, Archaeological Monitoring to Support the Ysidora Basin Mitigation Project, MCB Camp Pendleton San Diego County, California (Contract NO. N62473-11-D-2221, TO 0022), 2014. Project Manager. HDR provided monitoring and field support. Dr. Gusick was responsible for contract and budget management, monitoring coordination for both archaeology and native monitoring, quality assurance for project, technical report review. Value: $44,148

NAVFAC SW, Archaeological Testing and Evaluations for SR-1, CA-SDI-49, -12961, and -13894, Naval Base Point Loma, CA (Contract NO. N62473-11-D-2221, TO 0014), 2013. Project Manager/Senior Archaeologist. Phase II evaluation on four sites undertaken in compliance with Section 110 of the National Historic Preservation Act (NHPA). Responsibilities included project and budget development, project management, work plan/research design development, field excavations, laboratory analysis, preparation of final report, and recommendations for site protection and National Register eligibility. Value: $52,000

Kern County Planning and Community Development Department, Archaeological Survey for Orion Solar Project, Kern County, CA, 2013. Project Manager. Phase I pre-construction survey to determine impacts to known archaeological sites and to determine if new archaeological sites are present within the APE. Responsibilities included survey design and budget development, project management, and technical report review. Value: $8,000 (cultural survey only)

Private Client, Cultural Resource Mitigation and Monitoring for Spindrift Site, La Jolla, CA, 2012-2013. Project Manager. La Jolla, California. Managed Cultural Materials Inventory Program (CMIP) and Archaeological Data Recovery Program (ADRP) for property and landscaping improvements to an existing structure and demolition of an existing structure, construction of new two-story structure, construction of a

new swimming pool, and landscaping improvements within a known, significant archaeological site. Responsibilities included management of monitoring for ground disturbance activities, dry screening and wet screening, processing cultural material, identification of possible Native American human remains, and either collecting and cataloging or repatriating the recovered cultural material to Kumeyaay representatives in accordance with CEQA and City of San Diego Historical Resources Guidelines. Value: $1,000,000

NAVFAC SW, Cultural Resource Records Management per NHPA, MCB Camp Pendleton San Diego County, California (Contract NO. N62473-11-D-2221, TO 0002 & 0028), 2012-2013. Project Manager. HDR is overseeing GIS management, review, and organization of all cultural resource records from Camp Pendleton. Project includes development of GIS database for Camp Pendleton. Value: $250,236

NAVFAC SW, Archaeological Site Recordation, San Clemente Island, San Diego County, California (Contract NO. N62473-11-D-2221, TO 0015, 0030 & 0031), 2012-2013. Project Manager/Senior Archaeologist. HDR has been tasked with relocation, identification, and recordation of over 800 archaeological sites on San Clemente Island. Task also includes records review and analysis. Responsibilities include survey design, staffing and travel logistics, project and budget management, GIS data collection and management Value: $398,896

NAVFAC SW, Archaeological Monitoring to Support the P-109 Project (CNATT-Naval Aviation Training Complex), MCB Camp Pendleton San Diego County, California (Contract NO. N62473-11-D-2221, TO 0003), 2013. Project Manager. HDR provided monitoring and field support. Dr. Gusick was responsible for contract and budget management, monitoring coordination for both archaeology and native monitoring, quality assurance for project, technical report review. Value: $179,476

NAVFAC SW, Archaeological Monitoring to Support the P-1040 Geotechnical Boring Project (Wire Mountain Road/ Vandegrift Boulevard Intersection Improvements), MCB Camp Pendleton San Diego County, California (Contract NO. N62473-11-D-2221, TO 0003), 2013. Project Manager. HDR provided monitoring and field support. Dr. Gusick was responsible for contract and budget management, monitoring coordination for both archaeology and native monitoring, quality assurance for project, technical report review. Value: $322,736

NAVFAC SW, Archaeological Monitoring to Support the 62 and 63 Area Power Line Project, MCB Camp Pendleton San Diego County, California (Contract NO. N62473-11-D-2221, TO 0007), 2013. Project Manager. HDR provided monitoring and field support. Dr. Gusick was responsible for contract and budget management, monitoring coordination for both archaeology and native monitoring, quality assurance for project, technical report review. Value: $32,373

NAVFAC SW, Archaeological Monitoring to Support the P-1046 Geotechnical Boring Project (Northern Tertiary Treatment Plant) Project, MCB Camp Pendleton San Diego County, California (Contract NO. N62473-11-D-2221, TO 0012), 2013. Project Manager. HDR provided monitoring and field support. Dr. Gusick was responsible for contract and budget management, monitoring coordination for both archaeology and

native monitoring, quality assurance for project, technical report review. Value: $32,373

NAVFAC SW, Archaeological Monitoring to Support the P-1045 Geotechnical Boring Project (Connection of Northern and Southern Water Systems), MCB Camp Pendleton San Diego County, California (Contract NO. N62473-11-D-2221, TO 0013), 2013. Project Manager. HDR provided monitoring and field support. Dr. Gusick was responsible for contract and budget management, monitoring coordination for both archaeology and native monitoring, quality assurance for project, technical report review. Value: $97,981

NAVFAC SW, Archaeological Monitoring to Support the Wilcox Range Ditch Drainage Clearance Project, MCB Camp Pendleton San Diego County, California (Contract NO. N62473-11-D-2221, TO 0026), 2013. Project Manager. HDR provided monitoring and field support. Dr. Gusick was responsible for contract and budget management, monitoring coordination for both archaeology and native monitoring, quality assurance for project, technical report review. Value: $31,687

NON-HDR EXPERIENCE

County of Santa Barbara, Archaeological Testing and Evaluations for CA-SBA-27, City of Santa Barbara, CA, 2012-2013. Project Manager/Senior Archaeologist. Phase II evaluation to determine if site locus was contributing element to National Register eligibility of site. Responsibilities included project and budget development, project management, work plan/research design development, field excavations, laboratory analysis, preparation of final report, and recommendations for site protection and National Register eligibility. Value: $46,000

National Park Service, Archaeological Survey for Santa Rosa Island, Channel Islands National Park, CA, 2012. Project Manager/Senior Archaeologist. Inland and ridge top survey for relocation and assessment of known sites and identification of new archaeological or historic sites. Responsibilities included project development, budget management, survey design, staffing, supervisor for field survey and evaluation of located sites, recommendations for site stabilization. Value: $20,000

National Park Service, Archaeological Survey for Santa Miguel Island, Channel Islands National Park, CA, 2011. Project Manager/Senior Archaeologist. Island-wide survey for relocation and assessment of known sites and identification of new archaeological or historic sites. Responsibilities included project development, budget management, survey design, staffing, supervisor for field survey and evaluation of located sites, recommendations for site stabilization. Value: $10,000

National Park Service, Archaeological Testing and Evaluation for CA-SCRI-691, Channel Islands National Park, CA, 2011. Principal Investigator. Archaeological testing and evaluation on a 10,000 year old site. Responsibilities included proposal and research design development, supervisor/senior archaeologist for field survey, excavation, evaluation, and laboratory analysis, and technical report preparation.

National Park Service, Site Impact Evaluation for Communication Tower Installation, Santa Cruz Island, CA, 2011. Staff Archaeologist. Survey and evaluation for impacts to sites during installation of wireless

communication towers. Responsibilities included site relocation and mapping and recommendations for construction procedures and mitigation efforts.

National Park Service, Monitoring for Wetlands Restoration Project, Santa Cruz Island, CA, 2011. Staff Archaeologist. Cultural resource support during wetlands restoration project at Prisoner's Harbor, Santa Cruz Island. Responsibilities included monitoring and identification of sites that would be impacted by restoration.

National Park Service, GIS Update for Channel Islands National Park, 2010. Co-Project Manager. Project to update GIS database for the Channel Islands National Park to make consistent with state clearing house database. Responsibilities included collection and review of all existing GIS data, shape files, and reports produced on the Northern Channel Islands.

National Park Service, Archaeological Data Recovery and Research for Five Prehistoric Sites, Santa Cruz Island, CA, 2007-2011. Principal Investigator. Excavation and analysis of data from five Early Holocene sites for development of dissertation. Responsibilities included development of proposal, research design, field survey, excavation, evaluation, and laboratory analysis, and final report. Value: $25,000

Central Coast Information Center, 2007-2010. Assistant Coordinator. Managed archaeological site and survey information for Santa Barbara and San Luis Obispo counties and provided archaeological sensitivity and recommendations to governments and individuals with responsibilities under NEPA, NHPA, and CEQA. Maintained GIS database and mapped surveys and sites on USGS maps.

National Oceanic and Atmospheric Administration, Archaeological Data Recovery and Research for Submerged Prehistoric Sites, 2007-2012. Principal Investigator/Technical Director. Isla Espiritu Santo, Gulf of California, Baja California, Mexico. Underwater remote sensing and groundtruthing surveys for identification of inundated archaeological sites. Dr. Gusick was responsible for all aspects of project design, execution, and analysis, including operation and maintenance of remote sensing equipment. Value: $111,140

Santa Barbara Natural History Museum, Submerged Archaeological Survey Program for Identifying Geomorphological Context, 2009. Technical Director. Waters off the Northern Channel Islands, California. Underwater remote sensing survey for identification of inundated archaeological sites Supervisor for remote sensing data collection and survey execution. Value: $210,000

National Oceanic and Atmospheric Administration, Submerged Archaeological Survey Program, 2008. Team Member/Technical Assistant. Gulf of Mexico, Florida. Underwater remote sensing and groundtruthing surveys for identification of inundated archaeological sites. Technical assistant for remote sensing equipment. Value: $100,000

TEACHING

University of California Santa Barbara, Teaching Associate (2011-2012), Courses: Introduction to Archaeology, Seacoast in Prehistory
University of California Santa Barbara, Teaching Assistant (2012), Course: Field Methods in Archaeology
Lab Instructor, Anthropology Department (2009-2012), Taught: Faunal

analysis, lithic analysis , University of California, Santa Barbara
University of California, Santa Barbara, Field Supervisor (2011), Living with War Archaeological Field School - Eveland & CW Cooper Sites, Illinois
University of California, Santa Barbara, Instructor (2007-2010), Central Coast Information Center, Taught: GIS, Section 106, archaeological site and survey database management

ACHIEVEMENTS AND HONORS

Academic Honors & Research

Albert Spaulding/Elman Service Fellowship, University of California, Santa Barbara (2010-2012)

UC President's Dissertation Fellowship, University of California, Santa Barbara (2010-2011)

Research Collaborator, Paleocoastal Research Project, University of Oregon (2012)

Research Fellow, Pacific Slope Archaeological Laboratory, Oregon State University (2010)

Community & Civic Involvement

Volunteer Speaker, Partners in Education (2009-Present)

Other Activities

Guest, Voice America Internet Radio (2010) - Indiana Jones: Myth, Reality, and 21st Century Archaeology. Show concerning early peopling of the west coast of the New World

http://www.voiceamerica.com/episode/58312/indiana-jones-myths-realities-and-21st- century-archaeology

2010 National Oceanic and Atmospheric Association
Feature on my project “Exploring Baja California’s Submerged Landscapes”
http://oceanexplorer.noaa.gov/explorations/10cortez/welcome.html

2010 National Geographic Society Feature on my project “Exploring Baja California’s Submerged Landscapes”
http://www.nationalgeographic.com/field/projects/cortez-waitt-project

2010 Earth Magazine (February 2010, pp. 28-33) Archaeologists Head Out to Sea: new technologies aid in the offshore search for the first Americans.

PUBLICATIONS

Gusick, A.E., M. Glassow, and P. Paige
In press Prehistoric Fishing Practices on Santa Cruz Island: Evidence from CA-SCRI-195. Journal of California and Great Basin Anthropology.

Gusick, A.E.
2013 Early Maritime Hunter-Gatherer Occupation, Santa Cruz Island. In, Small Islands, Big Implications: The California Channel Islands and their Archaeological Contribution, edited by J. Perry and C. Jazwa, pp. 40-59. University of Utah Press.

Gusick, A.E. and L.H. Gamble
2013 The Original Santa Barbara: Syuxtun. California Archaeology,

5(1):143-150.

Faught, M.K. and A.E. Gusick
2011 Submerged Prehistory in the Americas. In, Submerged Prehistory: the Underwater Archaeology of Ancient Sites and Landscapes, edited by J. Benjamin, C. Bonsall, and C. Pickard, pp. 145-157. Oxbow Books, Oxford.

Gusick, A.E. and M.K. Faught
2011 Prehistoric Underwater Archaeology: A Nascent Subdiscipline Critical to Understanding Early Coastal Occupations and Migration Routes. In, Trekking the Shore: Changing Coastlines and the Antiquity of Coastal Settlement, edited by N. Bicho, J. Haws, L.G. Davis, pp. 27-50. Springer, New York.

Gusick, A.E.
2010 Baja California in Context. Journal of California and Great Basin Anthropology. 30(1):1-4.

Gusick, A.E. and L.G. Davis
2010 Exploring Baja California's Submerged Landscapes. Journal of California and Great Basin Anthropology. 30(1):35-50.

EDITORIAL SERVICE

Gusick, A.E. (Guest Editor)
2010 Journal of California and Great Basin Anthropology: Special Baja California Issue. 30 (1)

PROFESSIONAL PAPERS

Gusick, A.E.
2014 Isotopic Analysis and Seasonality during the Early Holocene, Santa Cruz Island, California. Paper will be presented at the 12th International Conference of Archaeozoology (ICAZ), San Rafael, Argentina.

Gusick, A.E.
2014 A Balancing Act: Energetic Yield Objectives and Non-Food Resources during the Early Holocene on Santa Cruz Island. Paper will be presented at the 79th Annual Meeting of the Society for American Archaeology, Austin.

Gusick, A.E.
2013 Patterns of lithic reduction and mobility during the Early Holocene on Santa Cruz Island. Paper presented at the 78th Annual Meeting of the Society for American Archaeology, Hawaii.

Gusick, A.E.
2012 A 10,000-year-old Site on Santa Cruz Island. Paper presented at the 77th Annual Meeting of the Society for American Archaeology, Saint Louis.

Vanderwarker, A., G. Wilson, K. Hoppa, and A. Gusick.
2012 Culture Contact, Earth Ovens, and Persistent Foodways: Archaeobotanical Analysis of a Failed Corn Roast from the C.W. Cooper Site in the Central Illinios Valley. Paper will be presented at the 77th Annual Meeting of the Society for American Archaeology, Saint Louis.

Gusick, A.E., M.A. Glassow, and P. Paige
2012 Let Them Eat Fish!: Fishing Intensification During the Middle and Late Periods on Santa Cruz Island. Paper will be presented at the 46th

Annual Society for California Archaeology Meeting, San Diego.

Gusick, A.E., K. Hoppa, G.W. Wilson and A.M. VanDerwarker
2011 The Form and Function of Early Mississippian Earth Ovens in the Central Illinois River Valley. Paper presented at the 68th Southeastern Archaeological Conference, Jacksonville.

Gusick, A.E. and M. K. Faught
2011 The State of Underwater Archaeology for CRMs and Industry in Northern America: A View from the Pacific Coast. Paper presented at the IKUWA 4 conference, Zadar, Croatia.

Gusick, A.E.
2011 Behavioral Adaptations and Mobility of Early Holocene Hunter-Gatherers, Santa Cruz Island, California. Part of dissertation presented at the 76th Annual Meeting of the Society for American Archaeology, Sacramento.

Gusick, A.E.
2010 Exploring Mexico's Submerged Coast. Invited speaking event, Fourth Annual Explorers Symposium at National Geographic Society, Washington DC (06/10/2010).

Gusick, A.E
2010 Punta Arena: The Early Years. Paper presented at the 75th Annual Meeting of the Society for American Archaeology, St. Louis.

Gusick, A.E. and L.G. Davis
2010 Mal de Mer no Mas: Discovery of an Underwater Site in the Sea of Cortez. Paper presented at the Annual Meeting of the Society for Underwater and Historic Archaeology, Amelia Island.

Gusick, A.E. and L.G. Davis
2009 Mal de Mer no Mas: Discovery of an Underwater Site in the Sea of Cortez. Paper presented at the 74th Annual Meeting of the Society for American Archaeology, Atlanta.

Gusick, A.E.
2008 Early Maritime Hunter-Gatherer Occupation, Santa Cruz Island, California. Paper presented at Southern Data Sharing Meeting, Society for California Archaeology, Camarillo.

Gusick, A.E.
2008 Prehistoric Fishing Practices on Santa Cruz Island. Paper presented at the 73rd Annual Meeting of the Society for American Archaeology, Vancouver, British Columbia.

Voorhies, B., A.E. Gusick, T.A. Wake and D.J. Kennett
2007 Subsistence Practices at Puerto Marqués Guerrero, Mexico During the Late Archaic Period. Paper presented at the 72nd Annual Meeting of the Society for American Archaeology, Vancouver, British Columbia.

Gusick, A.E.
2007 Early Maritime Hunter-Gatherer Occupation and the Initial Human Migration into the New World, Santa Cruz Island, California. Paper presented at the 4th Annual Mathias Symposium, Bodega Bay.

Gusick, A.E. and L.G. Davis
2007 Mal De Mar No Mas: Searching for Early Underwater Sites in the

Sea of Cortez. Paper presented at the 72nd Annual Meeting of the Society for American Archaeology, Austin.

Gusick, A.E., S. Delane and A. Jensen
2004 Correlation Between Beach Ridges and Sea Level Changes, St. Vincent Island. GIS project presented at poster section of Geological Society of America Southeastern Section Annual Conference, Biloxi.

Kristin Tennesen

Archaeology Project Director

Ms. Tennesen's experience includes many phases of project planning and execution including background/record checks, survey/excavation, management recommendations, report preparation, editing, and production. She has participated in numerous survey, testing, and mitigation level cultural resource projects (data recovery and monitoring) in compliance with various city requirements, county requirements, CEQA, CEQA-Plus, NEPA, NAGPRA, SB-18, and Sections 106 and 110 of the National Historic Preservation Act (NHPA) for federal, state, and local agencies throughout southern California. Through her previous work at the South Coastal Information Center, Ms. Tennesen gained knowledge of record search procedures and requirements, referencing USGS maps, and the processing of cultural resource investigation reports and archaeological site forms. She also has experience in local faunal analysis and the identification and exhumation of human remains.

EDUCATION

Master of Arts, Anthropology (Emphasis in Archaeology), San Diego State University, 2010

Bachelor of Arts, Anthropology (Minor in Chemistry), San Diego State University, 2007

REGISTRATIONS

Registered Professional Archaeologist, United States National Registration Issued: 02/21/2013

Bureau of Land Management (BLM) Certified Field Supervisor

e-RAILSAFE Trained – RWP, BNSF, UPRR

Metrolink Roadway Worker Trained

OSHA 10-Hour Construction Safety, United States National Registration Issued: 07/28/2010

CPR Certified by the American Red Cross, United States National Registration Issued: 09/19/2013, Expires: 09/19/2015

Standard First Aid - American Red Cross, United States National Registration Issued: 09/19/2013, Expires: 09/19/2015

PROFESSIONAL MEMBERSHIPS

Phi Kappa Phi Academic Honor Society

San Diego County Archaeological Society

Society for Historical Archaeology

INDUSTRY TENURE

9 years

HDR TENURE

RELEVANT EXPERIENCE

Riverside County Transportation Commission, Cultural Resources Monitoring in Support of the Perris Valley Line Construction Project, Riverside County, CA, 2014-2015. Staff Archaeologist. Provide on-site archaeological monitoring for the construction project. Assists with Native American monitoring contract coordination and monitoring as well as archaeological monitoring coordination.

Valley Center Municipal Water District, San Diego County, CA, September 2014. Project Director. CEQA-Plus level cultural resources study of proposed improvements within the Valley Center Municipal Water District including lift stations, reclamation systems, collection systems, and force main. Responsibilities included background record search, Native American consultation, and contributions to final report preparation.

Riverside County Public Utilities Department, Pellissier Ranch Solar Development Project EIR, Riverside County, CA, April 2014-September 2014. Project Director. Working with the Riverside PUD, completed an EIR and supporting studies for construction of a solar farm on a city owned parcel of land. Supporting studies include research on cultural resources and a historic archaeology Phase II study, wildlife surveys, and permitting activities.

The City of Anaheim, La Palma Safe Routes to School, April 2014 – August 2014. Project Director. CEQA level environmental study for a CalTrans Local Assistance Program focused on closing a sidewalk gap and constructing new sidewalk, curb, and gutter. Responsibilities included background record search, Native American consultation, field surveys, historical research, and preparation of final report.

Union Pacific Railroad, Kern Junction Interchange, Kern County, March 2014 - April 2014. Project Director. Phase I pre-construction survey to determine impacts to known archaeological sites and to determine if new archaeological sites are present within the APE. Responsibilities included

4 years

OFFICE LOCATION
San Diego, CA

PUBLICATIONS
No data has been entered.

AWARDS
No data has been entered.

background record search, leading the pedestrian survey, and technical report preparation.

San Diego Gas & Electric (SDG&E) On-Call Cultural Resources, San Diego County, 2010-Present. Project Director. Supported the undertakings of SDG&E for new construction, ongoing maintenance, and repair projects by conducting cultural resources oversight for various projects throughout the company service territory. As a project director, specific responsibilities included accounting, budgeting, cost proposals, records search review, survey, field excavations, CEQA site evaluations, preconstruction and construction meetings, preparation of final reports, and recommendations for resource significance and stewardship. Coordinated with other cultural resources staff, clients, and their subcontractors to implement, organize, conduct, and complete numerous small- to large-scale projects for Sempra Energy/SDG&E. Examples of projects include:

- Wood to Steel Pole Conversion TL 649, San Diego County
- Wood to Steel Pole Conversion TL 690c, Marine Corps Base, Camp Pendleton
- Wood to Steel Pole Conversion TL 698, San Diego County
- Wood to Steel Pole Conversion TL 6910, San Diego County
- Wood to Steel Pole Conversion TL 6914, Marine Corps Base, Camp Pendleton
- Palomar College Relocation, 4 areas, North of Pala Rd, San Diego County
- Los Coches Substation Expansion, Lakeside, San Diego County
- 4 Camp Pendleton Helicopter Platforms, Marine Corps Base, Camp Pendleton
- TCM Access Road Grading, San Diego County
- Pala Energy Storage Battery (500kW), Pala Substation, San Diego County
- Intrusive Inspections, 4206 Poles, SANT Subarea, San Diego County
- Long Span 4-Pole Replacement, Marine Corps Base, Camp Pendleton
- 5-Pole Replacement and Cross Arm Change Outs, Marine Corps Base, Camp Pendleton
- Circuit 237: P615374-P116565, Long Span, Ramona, San Diego County
- Remove from Service 5 poles, Install 5 new poles, Otay Mesa, San Diego County
- CMP Pole Replacement, 5 poles, Campo, San Diego County
- Path to 2 Poles, Ramona, San Diego County
- Anchor Rod Installation, Marine Corps Base, Camp Pendleton, San Diego County
- Remove and Replace San Mateo Creek Tower, Marine Corps Base, Camp Pendleton

Indefinite Delivery Indefinite Quantity for cultural resources related services at various locations in California, Arizona, Colorado, Nevada, New Mexico, and Utah, 2012-Present. Crew Chief and Project Director. Supported the undertakings of Naval Facilities Engineering Command Southwest (NAVFAC SW) for new construction, ongoing maintenance, and repair projects by conducting cultural resources oversight for various projects throughout the Naval Southwest Division. Responsibilities included preconstruction and construction monitoring, supervising a crew of

archaeologists, attending preconstruction and management meetings, creation of project work plans, leading an excavation project, and writing technical reports. Coordinated with other cultural resources staff, clients, and their subcontractors to implement, organize, conduct, and complete numerous large-scale projects with overlapping schedules. Examples of projects include:

- P-1040 – Wire Mountain Road/Vandegrift Boulevard Intersection Improvements, Marine Corps Base, Camp Pendleton
- P-1045 – Northern Region Tertiary Treatment Plant, Marine Corps Base, Camp Pendleton
- P-1046 – Connection of Northern and Southern Water Systems, Marine Corps Base, Camp Pendleton
- P-1048 – Upgrades to Electrical Systems and Associated Facilities, Marine Corps Base, Camp Pendleton
- National Register Eligibility Determinations for Three Prehistoric Sites, Silver Strand Training Complex, Naval Base Coronado
- Cultural Resource Investigation at CA-SDI-14791, Marine Corps Base, Camp Pendleton
- Significant Archaeological Sites Special Studies, Marine Corps Base, Camp Pendleton

Element High Desert Solar Project, Kern County, CA, August 2010. Staff Archaeologist. Performed Phase II testing in support of a proposal by Element Power for the installation of a solar facility. Responsibilities included subsurface testing, site mapping (manual and GPS), artifact inventory, site photos, drafting site update forms and submitting formal documentation.

Level 3 – BTOP – Archaeological Survey, California, August 2010. Staff Archaeologist. Class III intensive survey for portions of proposed state-wide utility improvements to fiber optics hardware. Responsibilities included conducting background research and a pedestrian survey.

Calexico Town Center, City of Calexico, Imperial County, August-September 2010. Staff Archaeologist. Phase I survey for a proposed road re-alignment and roadway improvements. Responsibilities included conducting background research and a pedestrian survey.

City of Los Angeles Solid Waste Plan, October 2010. Staff Archaeologist. Co-wrote the historical resources section for the Solid Waste Integrated Resources Plan developed by Recovering Energy, Natural Resources, and Economic Benefit from Waste for L.A. (RENEW L.A.). This section included discussion on the environmental setting, regulatory setting, existing conditions, thresholds of significance, and mitigation measures for the city of Los Angeles plus a 100-mile buffer zone.

Macho Springs Wind Energy, Luna County, New Mexico, November 2010. Staff Archaeologist. Phase I pedestrian survey for the proposed development of a utility scale wind energy project in Luna County, New Mexico.

Calexico Border Patrol Station, City of Calexico, Imperial County, November-December 2010. Staff Archaeologist. Phase I survey for proposed off-site improvements including sewer and water line improvements. Responsibilities included conducting background research, reviewing archaeological records search information, pedestrian survey, and

final report preparation.

Rowland Water District, County of Los Angeles, December 2010. Staff Archaeologist. Phase I survey in compliance with CEQA-Plus for the proposed recycled water infrastructure improvements in the City of Industry and unincorporated community of Rowland Heights, Los Angles County, California. Responsibilities included conducting background research, reviewing archaeological records search information, completed a pedestrian survey, and wrote the final report for the Rowland Water District's pipeline improvements.

Otay Mesa Tunnel Remediation, City of San Diego, California, February 2011. Staff Archaeologist. Monitored the Otay Mesa Tunnel Remediation project which consisted of drilling boreholes and filling with concrete two tunnels passing under the U.S.-Mexico border in the community of Otay Mesa.

Old Brulay Plantation, Cameron County, Texas, March 2011. Staff Archaeologist. Analyzed the faunal remains collected during the significance testing of a portion of the Old Brulay Plantation along the Rio Grande River in Texas. Animal remains were separated, identified, and analyzed. A report documenting the findings was presented to the project manager for inclusion in the final testing report.

ON Line, Nevada, March 2011-June 2011. Staff Archaeologist. One Nevada Transmission Line Project for NV Energy. Monitored the pre-construction and construction phases of a 250+ mile transmission line throughout the state of Nevada. These phases include the activities of structure staking, brush clearing, road grading, digging, drilling, and tower construction.

Lake Elsinore Boat Launch Facility Improvements, City of Lake Elsinore, California, August 2011-December 2011. Staff Archaeologist. Monitored the Lake Elsinore Boat Launch Facility Improvements project which consisted of vegetation clearing, tree removal and replanting, temporary fence installation, soil loading and hauling, and soil over-excavation and compaction in order to construct a boat launch ramp, dock system, parking lot, restroom facility, picnic area, and boarding floats in the City of Lake Elsinore.

Comprehensive Tactical Infrastructure Maintenance and Repair (CTIMR) Phase 2 NEPA Clearance Project, Yuma Sector, California, September 2011. Staff Archaeologist. Class III cultural resources survey for proposed maintenance and repair of existing access roads by U.S. Border Patrol along the U.S./Mexico international border near Andrade, California. Responsibilities included conducting background research, reviewing archaeological records search information, pedestrian survey, and final report preparation.

Dickinson Bypass, Dickinson, North Dakota, November 2011. Staff Archaeologist. Phase I pedestrian survey and Phase II testing for proposed roadway development in Dickinson, North Dakota.

Polo Club at Vista Valley Project, San Diego County, California, January 2011-January 2012. Staff Archaeologist. Class I cultural resources inventory and Class III intensive field survey for the proposed development of single-family residences in northern San Diego County. Responsibilities

included pedestrian survey, subsurface testing, site mapping (manual and GPS), artifact inventory, and site photos.

1900/1912 Spindrift Drive Project, March 2012-December 2012. Staff Archaeologist. Cultural Materials Inventory Program (CMIP) and Archaeological Data Recovery Program (ADRP) for property and landscaping improvements to an existing structure at 1900 Spindrift Drive and demolition of an existing structure, construction of new two-story structure, construction of a new swimming pool, and landscaping improvements at 1912 Spindrift Drive, within a known, significant archaeological site. Responsibilities included monitoring ground disturbance activities, dry screening and wet screening all disturbed soil, drying and sorting recovered cultural material, assisting in identification of possible Native American human remains, and either collecting and cataloging or repatriating the recovered cultural material to Kumeyaay representatives in accordance with CEQA and City of San Diego Historical Resources Guidelines.

Construction, Operation, and Maintenance of Tactical Infrastructure for Customs and Border Protection, San Diego Sector, California, April 2012. Staff Archaeologist. Monitored activities related to the maintenance of tactical infrastructure consisting of fencing, patrol roads, and access roads along the U.S./Mexico international border in southeastern San Diego County.

Survey and National Register Evaluation of Archaeological Sites on White Sands Missile Range, New Mexico, May 2013. Staff Archaeologist. Assisted in a Phase I pedestrian survey of over 12,000 acres within White Sands Missile Range, New Mexico.

Vincent Station Siding Extension and Second Platform Project, Acton, Los Angeles County, California, December 2013-February 2014. Project Archaeologist. Phase I cultural resources survey for proposed railroad improvements including siding extension and addition of a second platform. Responsibilities included background research, archaeological records search, leading the pedestrian survey, and preparation of final report.

NON-HDR EXPERIENCE

South Coastal Information Center, 2008-2010. Research Assistant. Processed archaeological survey reports and archaeological site forms in Access databases for San Diego and Imperial counties. Mapped surveys and sites on USGS maps. Assisted clients with record searches. Performed research for San Diego State University archaeology projects such as the Whaley House Historical Archaeology Project.

The Nate Harrison Historical Archaeology Project, San Diego County, CA, San Diego State University, 2007-2009. Crew member for excavation of a 19th century Palomar Mountain, San Diego County homestead. Responsibilities included excavation, identification of historic artifacts and buried features, faunal analysis, and soil chemistry analysis.

El Presidio de Santa Barbara Historical Archaeology Project, Santa Barbara, CA, Cal Poly San Luis Obispo, 2005. Crew member for excavation of the 18th century Santa Barbara Presidio. Responsibilities included excavation and identification of historic artifacts, stone walls, foundations, and buried features.

Appendix C.
List of Poles

this page intentionally left blank

Pole #	Type	Year, Modification	Height	Anchorage	Voltage	Location	Notes
Z183562	S						
Z183563	W	1955,1958	60	none	69KV	s/o Otay River	
Z31747	W	1987	70	none	69 KV, 4 12 KV, ^ 12 KVD	n/o Lone Star Road	
Z188730	W	1962,1981	75	A (2G)-E	69KVD 10', 6-12KVD		
Z31724	W	1987	65		69 KV		6:12 KVDE
Z731391	W	1916,1942,1962	45,50,75			Otay	45' pole removed in 1942, 50' pole removed in 1962
Z183561	W	1955,1958	65	none	69KV	s/o Otay River	
Z181029	W						
Z100705	W	1992	65	S-HG-W, S-A-S, A (2g)-S	69 KV Y		
Z31766	W	1987,1992	65	S-3 HG-W	69 KV "4"	s/o Otay Mesa Rd	6STRC7, Wire 3/69
Z31765	W	1987	65	H-G, anc-G-S	69 KV	s/o Otay Mesa Rd	
Z31764	W	1987,1988	65	Stub 30' W, HG-W	69KV, 4-12 KVD, 4-12KVBD	n/o Otay Mesa Rd	
Z31763	W	1987	65	none	69 KV, 4-12 KVD, SWI (2)	n/o Otay Mesa Rd	SWI 534-23
Z31762	W	1987	65	none	69 KV, 4-12KVD	n/o Otay Mesa Rd	
Z31761	W	1987	65	none	69 KV, 4-12KVD	n/o Otay Mesa Rd	
Z31760	W	1987	65	none	69 KV, 4-12KVD	n/o Otay Mesa Rd	
Z31759	W	1987	65	none	69 KV, 4-12KVD	n/o Otay Mesa Rd	
Z31758	W	1987	65	none	69 KV "X", 4-12 KVD	n/o Otay Mesa Rd	Dec 4 1993 by JGD

Pole #	Type	Year, Modification	Height	Anchorage	Voltage	Location	Notes
Z31757	W	1987	65	none	69 KV, 4-12 KVD	s/o Lonestar Rd	
Z31756	W	1987	65	none	69 KV, 4-12 KVD	s/o Lonestar Rd	
Z31755	W					s/o Lonestar Rd	
Z31754	W						
Z31753	W	1987	65	none	69 KV, 4-12 KVD	s/o Lonestar Rd	
Z31752	W	1987	65	none	69 KV, 4-12 KVD	s/o Lonestar Rd	
Z31751	W	1987	60	none	69 KV, 4-12 KVD	s/o Lonestar Rd	
Z31750	W	1987	75	anc-G-E (6.12 KVDE), anc-G-N (Z-12KVNDE)	69 KV, 2-12KVDE, 6-12 KVBD,6-12 KVD	@ Harvest Rd	
Z31749	W						
Z31748	W	1987	70	none	69 KV "wpi", 4 12 KV	n/o Lonestar Rd	
Z31746	W	1987	70	none	69 KV "wpi"		
Z31745	W	1987	70	anc-n (6.12 KVD), anc-w (Z-12KVNDE)	69 KV "4", 6.12 KVDE, Z12KVNDE	n/o Lonestar Rd	
Z34102	W	1987	65	none	69 KV "X", 4-12 KV	PPE n/o Lonestar Rd	Wire 4/C, 4/12
Z31768	W	1987	60	none	69 KV "X", 4-12 KV	PPE n/o Lonestar Rd	
Z31767	W	1987		none	69 KV "X", 4-12 KV	PPE n/o Lonestar Rd	
Z31744	W	1987	70	anc-e (6.12 KVDE), anc-n (Z-12KVNDE)	69 KV "4", 4.12 KVD	PPE n/o Lonestar Rd	TB Z2N D4 & 5

Pole #	Type	Year, Modification	Height	Anchorage	Voltage	Location	Notes
Z31743	W	1987	65		69 KV "wpi"		
Z31742	W	1987	65		69 KV "wpi"		
Z31741	W	1987	65		69 KV "wpi"		
Z729583	W	1987	65	none	69 KV "wpi"	Otay Mesa	
Z31739	W	1987	65		69 KV "wpi"		
Z31738	W	1987	65		69 KV "wpi"		
Z31737	W	1987	65		69 KV "wpi"		
Z31736	W	1987	65		69 KV "wpi"		
Z31735	W	1987	60		69 KV "wpi"		
Z31734	W	1987	65		69 KV "wpi"		
Z31733	W	1987	65		69 KV "wpi"		
Z31732	W	1987	65		69 KV "wpi"		
Z31731	W	1987	65		69 KV "wpi"		
Z31730	W	1987	65		69 KV "wpi"		
Z31729	W	1987	65		69 KV "X"		
Z31728	W						
Z193547	W						
Z31726	W	1987	75		69 KV "X"		
Z31723	W	1987	85		69 KV "Y", 612 KVD		
Z188635	W	1962,1986,1990	80	A-E, Anc G-S, A(2-G-E)T, A(2-G-S)	4-12KV, 4-12 KVBD		
Z188634	W	1962,1973,1974,1981	75	none	69KV 10', 4-12KV	Otay Substation	
Z188633	W	1962	75	none	69KVD 10',4-12KV	Otay Substation	
Z188631	W	1962	75	A (2-G)-W (T)	69 KVD 10', 6-12 KVD	Otay Substation	
Z188630	W	1962	75	A (26)-S/W, A-(T)-S/W, A (D) G-S/W	69KV, 4-12 KVD	Otay Substation	
Z188656	W	1962	75	none	69KVD 10', 4-12KV	Otay Substation to Otay Dam	

Pole #	Type	Year, Modification	Height	Anchorage	Voltage	Location	Notes
Z188655	W	1962,1992	75	A(2-G)-N/E, A-N/E, Anc G-N/E	69KV "Z", 4-12KVD	Otay Substation to Otay Dam	
Z82136	W	1916,1942,1962	40,75	S/W, S, S/E	69 KVD 10', 4-12 KVD, 6-12 KVD	Otay Dam Line	40' pole removed in 1942, 40' pole removed in 1962
Z183539	W	1955, 1974	40,75	A (36)-N, A (16)-E	69 KV	w/o Center	40' pole removed in 1975
Z81219	W	1949,1978	40,45,50	S-2HG-A(2-G) N	A-W, 6-12KVD, 8P, 6S	e/o Del Monte	40' pole removed in 1949, 45' pole removed in 1978
Z82576	W	1929,1955,1979	35,50,75	numerous	69 KVD 10', 4-12 KVD, 6-12 KVD	Otay Dam Line	35' pole removed in 1929, 50' pole removed in 1979
Z82578	W	1925,1955,1976	40,75	Anc W S W	69 KVD 10', 4-12 KVD, 6-12 KVD	Otay Dam Line	40' pole removed in 1955
Z183540	W	1955,1976, 1981,1992	70	none	6-12 KV	@ Center	70' pole replaced in 1976
Z183541	W	1955,1976	75	A (36)-S, A (36)-W, Anc S	69KV	@ Center	
Z731591	W						
Z81968	W	1916,1929,1962	30,40,70	none	A-W, 69KV 10', 6-12KV	Otay Dam Line	30' pole removed in 1929, 40' pole removed in 1962
Z81044	W	1938,1962	75	S & Guy, W-1931, HG, W-1938	69 KV "Z", 6-12 KVD. 4-11 KVD	Otay Dam Line	35' pole removed in 1938, 35' pole removed in 1962
Z731604	W	1929,1962	35,40,75	none	A-E, 69KV 10', 6-12 KV	Otay Dam Line	35' pole removed in 1929, 40' pole removed in 1962
Z731392	W	1929,1961,1962	35,75	none	A-E, 4-12 KV, 69 KV 10', 6-12KV	Otay Dam Line	35' pole removed in 1961 & 1962

Pole #	Type	Year, Modification	Height	Anchorage	Voltage	Location	Notes
Z81049	W	1952, 1962	35,40,75	A-S, A (26) S/E, Anc G S	4-12 KVD, 69 KVD 10', 6-12KV	Otay Dam Line	35' pole removed in 1952, 40' pole removed in 1962
Z81051	W	1929,1962	35,40,75	none	A E, 69 KV 12', 6-12KV	Otay Dam Line	35' pole removed in 1929, 40' pole removed in 1962
Z81052	W	1952, 1962	29,40,75	none	A-W, 4-12 KV, 69 KV 12', 6-12KV	Otay Dam Line	35' pole removed in 1952, 40' pole removed in 1962
Z81053	W	1961, 1962	35,40,70	none	A-E, 4-12 KV, 69 KV 10', 6-12KV	Otay Dam Line	35' pole removed in 1961, 40' pole removed in 1962
Z81055	W	1952, 1962	35,40,75	A (only), A (26) (T), Anc G (D)	A-D, 4-12 KVD, 69 KVD 10', 6-12KV	Otay Dam Line	35' pole removed in 1952, 40' pole removed in 1962
Z81057	W	1941, 1962	35, 75	none	A-W, B-W, 4-11KV, 69KV 10', 4-12KVL	Otay Dam Line	35' pole removed in 1941, 35' pole removed in 1962
Z81058	W	1932,1962	35, 75	none	A-E, 69KV 10', 6-12KV	Otay Dam Line	35' pole removed in 1932, 35' pole removed in 1962
Z81060	W	1941,1962	35, 75	none	A-E, 4-11KV,69KV 10', 6-12KV	Otay Dam Line	35' pole removed in 1941, 35' pole removed in 1962
Z81061	W	1941,1962	40,70	none	A-E, 4-11KV,69KV 10', 6-12KV	Otay Dam Line	40' pole removed in 1941, 40' pole removed in 1962
Z81063	W	1944,1962	35,40,75	none	A-E, 4-11KV,69KV 10', 6-12KV	Otay Dam Line	40' pole removed in 1944, 35' pole removed in 1962

Pole #	Type	Year, Modification	Height	Anchorage	Voltage	Location	Notes
Z81064	W	1956,1962,1974	40,75	none	A-D, 4-12KV,69KV 10', 6-12KV, 69KV WPI	e/o Maxwell Rd	40' pole removed in 1956, 40' pole removed in 1962
Z81066	W	1961, 1962	40,75	none	A-W, 4-12KV,69KV 10', 6-12KV	Otay Dam Line	40' pole removed in 1961, 40' pole removed in 1962
Z81067	W	1951, 1962	40,75	none	A-E, 4-12KV,69KV 10', 6-12KV	Otay Dam Line	40' pole removed in 1951, 40' pole removed in 1962
Z81069	W	1961, 1962	40,80	S-A-"HG", S-3 HG-A(26)	A-D, 4-12KVD,69KV "Z", 6-12KVD,	Otay Dam Line	40' pole removed in 1961, 40' pole removed in 1962
Z81072	W	1929, 1962	40, 75	none	AE, 69KV 10', 6-12KV	Otay Dam Line	40' pole removed in 1962
Z81074	W	1929, 1962	35,40,80	A, A (26)	A-D. 69 KV"Z", 6-12 KVD	Otay Dam Line	35' pole removed in 1929, 40' pole removed in 1962
Z81078	W	1929, 1962	40,75	none	A-W, 69KV 10', 6-12KV	Otay Dam Line	40' pole removed in 1962
Z81079	W	1929, 1962	40,75	none	A-W, 69KV 10', 6-12KV	Otay Dam Line	40' pole removed in 1962
Z81081	S	1929, 1962	30,40,75	A, (T) A-S	A-D, 69KV 10', 6-12KV	Otay Dam Line	40' pole removed in 1958, 45' pole removed in 1962
Z81969	W	1916,1929,1962	30,40,75	none	A-W, 69KV 10', 6-12KV	Otay Dam Line	30' pole removed in 1929, 40' pole removed in 1962
Z81971	W	1916,1941,1962	35,75	none	A-W, 4-11 KV,69KV 10', 6-12KV	Otay Dam Line	35' pole removed in 1941, 35' pole removed in 1962
Z81972	W					Otay Dam Line	

Pole #	Type	Year, Modification	Height	Anchorage	Voltage	Location	Notes
Z81973	W	1916,1941,1962	30,40,75	S-HG-A	A-W, 4-12 KVBD,69KV 10', 6-12KV, 4-12KVBD	Otay Dam Line	30' pole removed in 1929, 40' pole removed in 1962
Z81975	W	1916,1939,1962	30,75	A-S	A-W, 4-11 KV,69KV 10', 6-12KV	Otay Dam Line	30' pole removed in 1939, 30' pole removed in 1962
Z81976	W						
Z81978	W	1916,1939,1962	35,40,75	none	A-D, 69KV 10', 6-12KV	Otay Dam Line	35' pole removed in 1929, 40' pole removed in 1962
Z82224	W	1916,1943,1962	35,40,75	E	A-D, 69KV 12', 6-12KV	Otay Dam Line	35' pole removed in 1943, 40' pole removed in 1962
Z81980	W	1916,1952,1962	35,40,75	E,W,N,E,W	A-D, 4-12KV, 69 KVD 10', 6-12KV	Otay Dam Line	35' pole removed in 1952, 40' pole removed in 1962
Z81982	W	1916,1929,1962	35,40,75	S	A-E, 69KV 10', 4-12KV	Otay Dam Line	35' pole removed in 1929, 40' pole removed in 1962
Z81097	W	1958,1962	40,45,75	Anc N	A-W, B-W, 4-12KV, 69KV 10', 4-12KVD, 4-12 KVBD	Otay Dam Line	30' pole removed in 1929, 40' pole removed in 1962
Z81098	S	1929, 1962	35, 75	none	A-E, 69KV 10', 6-12KV	Otay Dam Line	35' pole removed in 1962
Z81100	W	1944,1962	30,75	none	A-E, 4-11KVD, 69KV 10', 6-12 KVD	Otay Dam Line	30' pole removed in 1944, 30' pole removed in 1962

Pole #	Type	Year, Modification	Height	Anchorage	Voltage	Location	Notes
Z81101	W	1941,1962	30,35,75	S-A-HG N	A-W, 4-11KV, 4-11KVBD,69KV 10', 6-12KVD, 4-12 KVBD	Otay Dam Line	30' pole removed in 1941, 35' pole removed in 1962
Z81102	W	1941,1962	30,35,75	none	A-E, 4-11KV, 69KV 10', 6-12 KV	Otay Dam Line	30' pole removed in 1941, 35' pole removed in 1962
Z81104	W	1962	35,75	(D) A, Anc G (D), A (26) (T) S	A-D, 69 KVD 10'	Otay Dam Line	35' pole removed in 1962
Z81105	W	1952,1961,1962	30,35,40,75	none	A, 4-12KV, 6-12KVDM, 69 KV 10', 6-12KV	Otay Dam Line	30' pole removed in 1952, 35' pole removed in 1961 & 1962
Z81107	W	1952,1962	35,40,75	S-A-HG N	A-D, 4-12KVD,69 KVD 10', 6-12KV	Otay Dam Line	35' pole removed in 1952, 40' pole removed in 1962
Z81109	W	1929, 1962	40,75	none	A-W, A-E, 4-11 KV, 69KV10', 6-12 KV	Otay Dam Line	40' pole removed in 1962
Z81110	W	1941,1962	30,35,75	none	A-E, 4-11KV, 69 KV 10', 69KV 10', 6-12KV	Otay Dam Line	30' pole removed in 1941, 35' pole removed in 1962
Z81112	W	1928,1962	35,40,75	A - S	A-D,B-D,H-S,4-12KVD, 69 KVD 10', 6-12KV, C.O. 8', 3W Rack	Otay Dam Line	35' pole removed in 1928, 40' pole removed in 1962
Z81114	W	1949,1962	30,35,75	none	A-E, 4-12KV, 69KV 10', 6-12KV	Otay Dam Line	30' pole removed in 1949, 35' pole removed in 1962

Pole #	Type	Year, Modification	Height	Anchorage	Voltage	Location	Notes
Z81116	W	1919,1961,1962	35,75	S	A-D,F-D,H-S, 69 KVD 10', 6-12KV, 4-12KVBD, 3-12 KVCD	Otay Dam Line	35' pole removed in 1962
Z81118	W	1950,1962	35,75	none	69KV 10',6-12KV	Otay Dam Line	35' pole removed in 1962
Z188728	W						
Z188727	W	1962	75	A-N	69KVD 10'	Otay to Otay Dam	
Z183542	W	1955	65	Anc	69KV	e/o Center	
Z193545	W						
Z183543	W	1955	65	none	69KV	e/o Center	
Z183544	S	1955,1978	70	none	69KV	e/o Center	70' pole replaced in 1978
Z183545	W	1955,1971	70	none	69KV	e/o Center	
Z183546	W	1955,1975,1977,1980	65	none	69KV	e/o Center	
Z183547	W	1955,1975,1980	65	Anc-S	69KV	e/o Center	
Z183548	W	1955	65	none	69KV	e/o Center	
Z183549	W	1955	70	A (36) S	69KV	e/o Center	
Z183550	W	1955	65	none	69KV	e/o Center	
Z183551	W	1955	65	none	69KV	e/o Center	
Z183552	W	1955, 1975	65	Anc-S	69KV	e/o Center	
Z183553	W	1955	65	none	69KV	e/o Center	
Z183554	W	1955	65	none	69KV	e/o Center	
Z183555	W	1955,1969,1975	65	A-S	69KV	e/o Center	
Z183557	W	1955,1969,1978,1979	75,70	A (2-G)-E	69KV	e/o Center	75' pole removed in 1969
Z280847	W	1969	75	Anc E, Anc W	69KV WPI	e/o Center	
Z183558	W	1955, 1969	70,75	none	69KV	e/o Center	75' pole removed in 1969
Z183559	W	1955, 1969	70,65	none	69KV	e/o Center	70' pole removed in 1969
Z183560	W	1955, 1969	70,80	A (26)-W,Anc-W	69KV	e/o Center	70' pole removed in 1969
Z188726	W						

Pole #	Type	Year, Modification	Height	Anchorage	Voltage	Location	Notes
Z183265	W	1955,1962	40,75	A-S	69KV 10'	w/o Otay Valley Rd	40' pole removed in 1962
Z183266	W	1955,1962	40,75	A (2G)-S	69KV 10'	w/o Otay Valley Rd	40' pole removed in 1962
Z188725	W	1962	70	none	69KV 10'	Otay to Otay Dam	
Z188724	W	1962	75	S-2HG-A-N	69KV 10'	Otay to Otay Dam	
Z188723	W	1962	75	none	69KV 10'	Otay to Otay Dam	
Z186082	W	1958,1962	50,75	none	69 KV 10'	e/o Otay	
Z183072	W	1954,1958,1962	40,75	Anc-W	69KV	Otay Mesa	40' pole replaced in 1962
Z188722	W	1962	70	none	69KV	Otay to Otay Dam	
Z188721	W	1962	75	A (3G)-N	69 KV "Z"	Otay to Otay Dam	
Z188720	W	1962	75	none	69 KV 10'	Otay to Otay Dam	
Z188719	W	1962	75	none	69 KV 10'	Otay to Otay Dam	
Z188718	W	1962	75	none	69 KV 10'	Otay to Otay Dam	
Z188717	W	1962	75	none	69 KV 10'	Otay to Otay Dam	
Z188716	W	1962	75	none	69 KV 10'	Otay to Otay Dam	
Z188715	W	1962	75	none	69 KV 10'	Otay to Otay Dam	
Z181031	W	1951,1970,1975,1993	60,75	Anc-E,A(3)-W, Anc -E	69KV	Otay Dam Line	60' pole removed in 1975
Z181035	W	1951,1970,1974	60	none	69KV	Otay Dam Line	60' pole removed in 1974
Z181036	S	1951,1970,1974	60	none	69KV	Otay Dam Line	60' pole removed in 1974
Z188714	S	1962	75	none	69KV 10'	Otay to Otay Dam	
Z118850	W						
Z118851	W						
Z161264	W						
Z118863	W						
Z118864	W						
Z31725	W	1987	85		69 KV "X", 69 XD (GW)		
ZU108545	U						
ZU116454	U						

Pole #	Type	Year, Modification	Height	Anchorage	Voltage	Location	Notes
ZU108493	U						
ZU108494	U						
ZU108495	U						
ZU108496	U						
ZU108533	U						
ZU108534	U						
ZU108536	U						
ZU108535	U						
ZU108544	U						
ZU108753	U						
Z192597	W						
Z188632	W	1962,1990	75	A(2-G)-E	69KVD 10',6-12KVD	Otay Substation	
Z169367	W						
Z183565	S	1955	60	none	69KV	s/o Otay River	
Z248251	S						
Z100695	S						