Section 3.8
Cultural Resources

3.8 Cultural Resources

3.8.1 Introduction

This section describes the affected environment and regulatory setting for cultural resources. It also describes the impacts on cultural resources that would result from implementation of the project alternatives, and mitigation measures that would reduce those impacts. This assessment of cultural resources includes evaluation of the potential for the project to affect paleontological resources.

Cumulative impacts are discussed in Chapter 4, *Other CEQA Analyses*.

3.8.1.1 Summary of Impacts

Tables 3.8-1 summarizes project impacts on cultural resources and mitigation measures that would reduce those impacts. See Section 3.8.7, *Impacts*, and Section 3.8.8, *Mitigation Measures*, for a detailed discussion of all impacts and mitigation measures.

Table 3.8-1. Summary of Significant Cultural Resources Impacts

Impact	Applicable Alternative	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Impact CUL-1: Change in Significance of Historical Architectural Resources	No Project Alternative	Less than Significant	None required	—
	All Action Alternatives	Potentially Significant	CUL-MM-1, Determine Presence of Historical Resources; CUL-MM-2, Avoid Damage to Historical Resources; CUL-MM-3, Record Historical Resources	Less than Significant
Impact CUL-2: Change in Significance of Archaeological Resources	All Alternatives	Potentially Significant	CUL-MM-4, Evaluate Archaeological Resource; CUL-MM-5, Avoid Damaging Archaeological Resources; CUL-MM-6, Evaluate Archaeological Resources	Less than Significant
Impact CUL-3: Potential Disturbance of Buried Human Remains	All Alternatives	Potentially Significant	CUL-MM-7, Comply with State and County Procedures	Less than Significant
Impact CUL-4: Direct or Indirect Destruction a Unique Paleontological Resource	All Alternatives	Potentially Significant	CUL-MM-8, Preconstruction Paleontological Resource Evaluation, Monitoring, Resource Recovery, and Curation	Less than Significant

3.8.2 Regulatory Setting

Federal and state laws and regulations protect significant cultural resources. As discussed below, the National Historic Preservation Act (NHPA) and the CEQA statute and guidelines include procedures for identifying, analyzing, and addressing potential impacts on cultural resources. Although the project does not directly require compliance with the NHPA, a description of the NHPA and its requirements is discussed and the project's relationship to potential future compliance is provided. CEQA takes into account federal laws and regulations that pertain to paleontological, archaeological, and historic resources. CEQA also takes into account the laws and procedures of local California jurisdictions, such as San Bernardino County, that pertain to cultural resources.

3.8.2.1 Federal Regulations

National Historic Preservation Act of 1966

The NHPA was enacted to encourage the preservation and wise use of the country's historic resources, and establishes the policy of the U.S. government regarding historic preservation. The NHPA defines historic preservation to include "the protection, rehabilitation, restoration, and reconstruction of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, or culture." The NHPA includes several key provisions, including the establishment of the National Register of Historic Places (NRHP). Federal involvement in a local project through permitting, approval, or funding requires project compliance with Title 36 of the Code of Federal Regulations, Part 800 (Protection of Historic Properties).

National Register of Historic Places

The NHPA authorized the U.S. Department of the Interior to establish, maintain, and expand the NRHP. The NRHP is the official federal list of significant historic resources. The National Park Service administers the NRHP in conjunction with the state historic preservation officers. The NRHP includes buildings, structures, sites, objects, and districts that possess historic, architectural, engineering, archaeological, or cultural significance at the national, state, or local level (Title 36 Code of Federal Regulations Part 60).

The NRHP identifies four criteria under which a structure, site, building, district, or object can be considered significant for listing:

A. The resource is associated with events that have made a significant contribution to the broad patterns of our history.

B. The resource is associated with the lives of persons significant in our past.

C. The resource embodies the distinctive characteristics of a type, period, or method of construction; represent the work of a master; possess high artistic values; or represent a significant and distinguishable entity whose components may lack individual distinction.

D. The resource has yielded or may likely yield information important in prehistory or history.

Resources can be listed individually on the NRHP or as contributors to a historic district.

A resource may be considered eligible for listing in the NRHP if it meets one or more of the above-listed criteria for significance and possesses historic integrity. Historic properties must retain

sufficient historic integrity to convey their significance. The assessment of historic integrity must be grounded in an understanding of the resource's physical features and how they relate to its significance. The NRHP recognizes seven aspects or qualities that define historic integrity:

- **Location.** The place where the historic property was constructed or the place where the historic event occurred.
- **Design.** The combination of elements that create the form, plan, space, structure, and style of a property.
- **Setting.** The physical environmental of a historic property.
- **Materials.** The physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property.
- **Workmanship.** The physical evidence of the crafts of a particular culture or people during any given period in history or prehistory.
- **Feeling.** A property's expression of the aesthetic or historic sense of a particular period of time.
- **Association.** The direct link between an important historic event or person and a historic property.

Resources that meet the criteria and are listed on or have been determined eligible for the NRHP are considered under Section 106 of the NHPA when an undertaking utilizing federal funds or requiring federal permits is proposed. Section 106 of the NHPA "requires Federal agencies to take into account the effects of their undertakings on historic properties, and afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment." (Advisory Council on Historic Preservation 2010)

Applicability to the Project

Due to the expansion of the plume, portions of the project area now include BLM-managed lands. In order to monitor and address the expanded plume, PG&E expects that some actions may be necessary on federal land and is planning to apply for encroachment permits to the BLM for such activity. Thus, the project will be subject to NHPA Section 106 requirements for the portion of the project relevant to federal lands. Based on recent coordination, the Water Board and BLM concur that BLM would act as the lead federal agency for potential future NHPA Section 106 compliance. The Water Board will provide information to enable BLM to complete NHPA Section 106 documentation and the required environmental review under NEPA, which might involve consultation with the State Historic Preservation Office (SHPO).

Compliance with other federal regulations governing cultural resources will also be required including the American Indian Religious Freedom Act, and executive orders concerning cultural resources management.

Antiquities Act

The Antiquities Act of 190610 was enacted with the primary goal of protecting cultural resources in the United States. As such, it prohibits appropriation, excavation, injury, or destruction of "any historic or prehistoric ruin or monument, or any object of antiquity" located on lands owned or controlled by the federal government, without permission of the secretary of the federal department

with jurisdiction. It also establishes criminal penalties, including fines or imprisonment, for these acts, and sets forth a permit requirement for collection of antiquities on federally owned lands.

Neither the Antiquities Act itself nor its implementing regulations (43 C.F.R. 3) specifically mentions paleontological resources. However, several federal agencies—including the National Park Service, U.S. Bureau of Land Management—have interpreted objects of antiquity as including fossils. Consequently, the Antiquities Act represents an early cornerstone for efforts to protect the nation's paleontological resources.

3.8.2.2 State Regulations

California Environmental Quality Act

CEQA applies to all discretionary projects undertaken or subject to approval by the state's public agencies (California Code of Regulations, Title 14, 15002(i)). CEQA states that it is the policy of the State of California to:

> take all action necessary to provide the people of the state with…historic environmental qualities…and preserve for future generations examples of the major periods of California history (California Public Resources Code Section 21001(b), (c)). A project with an effect that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment, (California Code of Regulations, Title 14, Section 15064.5(b))

CEQA requires that historical resources, which include architectural resources and prehistoric and historic-era archaeological resources, be taken into consideration during the CEQA planning process (California Code of Regulations, Title 14, Section 15064.5; Public Resources Code Section 21083.2). If feasible, adverse effects on historical resources must be avoided or the effects mitigated (California Code of Regulations, Title 14, Section 15064.5(b)(4)). The significance of a historical resource is impaired when a project demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for the California Register of Historical Resources (CRHR). CEQA also requires that "unique archaeological resources" be taken into consideration as a separate class of resource from historical resources. If the cultural resource in question is an archaeological site, CEQA requires that the lead agency first determine if the site is a historical resource as defined in Title 14 of the California Code of Regulations, Section 15064.5(a). If the site qualifies as a historical resource, potential adverse impacts must be considered in the same manner as an architectural resource. If the archaeological site does not qualify as a historical resource but does qualify as a unique archaeological site, then the archaeological site is treated in accordance with Public Resources Code Section 21083.2. Unique archaeological resources are defined under the California Public Resources Code section below.

California Register of Historical Resources

The CRHR is a guide to cultural resources that must be considered when a government agency undertakes a discretionary action subject to CEQA. The CRHR helps government agencies identify and evaluate California's cultural resources, and indicates which properties are to be protected, to the extent prudent and feasible, from substantial adverse change (Public Resources Code 5024.1[a]). Any resource listed or eligible for listing in the CRHR is to be considered during the CEQA process. Resources listed in or formally determined eligible for listing in the NRHP are automatically listed in the CRHR.

A cultural resource is evaluated under four CRHR criteria to determine its historical significance. A resource must be significant in accordance with one or more of the following criteria (Title 14[3] California Code of Regulations Section 15064.5[a][3]):

A. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.

B. Is associated with the lives of persons important in our past.

C. Embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of an important creative individual; or possesses high artistic values.

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

CRHR criteria are tied to CEQA; any resource that meets the above criteria and retains sufficient historic integrity is considered a historical resource under CEQA.

In addition to meeting one or more of the above criteria, the CRHR requires that sufficient time must have passed to allow a "scholarly perspective on the events or individuals associated with the resource." A general estimate of the time needed to understand the historical importance of a resource is usually 50 years (California Code of Regulations, Title 14, Section 4852(d)(2)). The state Office of Historic Preservation recommends documenting and taking into consideration in the planning process any cultural resource that is 45 years or older (Office of Historic Preservation 1995).

The CRHR also requires an eligible resource to possess integrity, which is defined as "the authenticity of a historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association."

Resources that are significant, meet the age guidelines, and possess integrity will generally be considered eligible for listing in the CRHR.

California Public Resources Code

As part of the determination made pursuant to Public Resources Code Section 21080.1, the CEQA lead agency determines whether the project may have a significant effect on archaeological and paleontological resources.

Several sections of the Public Resources Code protect paleontological resources, including Section 5097.5, which concerns paleontological features on public lands, and Section 30244, which requires reasonable mitigation for impacts on paleontological resources that occur as a result of development on public lands.

The Public Resources Code and the CEQA Guidelines recognize two categories of important archaeological resources: ones that meet the definition of "historical resources" in Guidelines Section 15064.5(a) and "unique archaeological resources." Archaeological resources that are not historical resources may be unique archaeological resources as defined in Public Resources Code Section 21083.2.

CEQA defines a unique archaeological resource as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets one or more of the following criteria:

- Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information.
- Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

CEQA further defines a historical resource as one that meets any of the following criteria:

- A resource listed in or determined to be eligible for listing in the CRHR.
- A resource listed in a local register of historical resources, as defined in Public Resources Code Section 5020.1(k).
- A resource identified as significant (e.g., rated 1–5) in a historical resource survey meeting the requirements of Public Resources Code Section 5024.1(g).
- A resource determined to be a historical resource by a project's lead agency.
- Any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource (California Code of Regulations, Title 14 Section 15064.5(a)(3)).

Applicability to the Project

The project is subject to state cultural resources laws and regulations under CEQA as project actions would require approval and permits from the Water Board.

3.8.2.3 Local Regulations

The County's General Plan Conservation Element has several policies and programs relevant to cultural resources. In general, the county's policies apply to all land within the county's jurisdiction (i.e., lands outside city limits that are not state or federal lands). However, as described in Section 3.2, *Use, Agriculture, Population, and Housing,* there is a preemption of local land use power for certain PG&E facilities (refer to Section 3.2.2.3, *San Bernardino County General Plan*, in Section 3.2). Therefore, activities associated with the Compressor Station and associated gas pipelines are under CPUC authorization and exempt from local regulation. However, remedial actions associated with the chromium cleanup are not exempt, unless such exemption is obtained through the Water Board's authority, which it is not.

Policy CO 3.1: Identify and protect important archaeological and historic cultural resources in areas of the County that have been determined to have known cultural resource sensitivity.

Programs:

1. Require a cultural resources field survey and evaluation prepared by a qualified professional for projects located within the mapped Cultural Resource Overlay area.
2. Mitigation of impacts to important cultural resources will follow the standards established in Appendix K of the California Environmental Quality Act Guidelines, as amended to date.

Policy CO 3.2: Identify and protect important archaeological and historic cultural resources in all lands that involves disturbance of previously undisturbed ground.

Programs:

1. Require the Archaeological Information Center at the San Bernardino County Museum to conduct a preliminary cultural resource review prior to the County's application acceptance for all land use applications in planning regions lacking Cultural Resource Overlays and in lands located outside of planning regions.
2. Should the County's preliminary review indicate the presence of known cultural resources or moderate to high sensitivity for the potential presence of cultural resources, a field survey and evaluation prepared by a qualified professional will be required with project submittal. The format of the report and standards for evaluation will follow the "Guidelines for Cultural Resource Management Reports" on file with the San Bernardino County Land Use Services Department.

Policy CO 3.3: Establish programs to preserve the information and heritage value of cultural and historical resources.

Policy CO 3.4: The County will comply with Government Code Section 65352.2 (SB 18) by consulting with tribes as identified by the California Native American Heritage Commission on all General Plan and specific plan actions.

Programs:

1. Site record forms and reports of surveys, test excavations, and data recovery programs will be filed with the Archaeological Information Center at the San Bernardino County Museum, and will be reviewed and approved in consultation with that office.
    a. Preliminary reports verifying that all necessary archaeological or historical fieldwork has been completed will be required prior to project grading and/or building permits.
    b. Final reports will be submitted and approved prior to project occupancy permits.
2. Any artifacts collected or recovered as a result of cultural resource investigations will be catalogued per County Museum guidelines and adequately curated in an institution with appropriate staff and facilities for their scientific information potential to be preserved. This shall not preclude the local tribes from seeking the return of certain artifacts as agreed to in a consultation process with the developer/project archaeologist.
3. When avoidance or preservation of an archaeological site or historic structure is proposed as a form of mitigation, a program detailing how such long-term avoidance or preservation is assured will be developed and approved prior to conditional approval.
4. In areas of potential but unknown sensitivity, field surveys prior to grading will be required to establish the need for paleontologic monitoring.
5. Projects requiring grading plans that are located in areas of known fossil occurrences, or demonstrated in a field survey to have fossils present, will have all rough grading (cuts greater than 3 feet) monitored by trained paleontologic crews working under the direction of a qualified professional, so that fossils exposed during grading can be recovered and preserved. Fossils include large and small vertebrate fossils, the latter recovered by screen washing of bulk samples.
6. A report of findings with an itemized accession inventory will be prepared as evidence that monitoring has been successfully completed. A preliminary report will be submitted and approved prior to granting of building permits, and a final report will be submitted and

approved prior to granting of occupancy permits. The adequacy of paleontologic reports will be determined in consultation with the Curator of Earth Science, San Bernardino County Museum.
Policy CO 3.5: Ensure that important cultural resources are avoided or minimized to protect Native American beliefs and traditions.

Programs:

1. Consistent with Senate Bill 18, (SB 18) regarding Traditional Tribal Cultural Places, as well as possible mitigation measures identified through the CEQA process, the County will work and consult with local tribes to identify, protect and preserve "traditional cultural properties" (TCPs). TCPs include both human-made sites and resources and natural landscapes that contribute to the cultural significance of areas.
2. The County will protect confidential information concerning Native American cultural resources with internal procedures, per the requirements of SB 922, an addendum to SB 18. The purpose of SB 922 is to exempt cultural site information from public review as provided for in the Public Records Act. Information provided by tribes to the County shall be considered confidential or sacred.
3. The County will work in good faith with the local tribes, developers/applicants and other parties if the local affected tribes request the return of certain Native American artifacts from private development projects. The developer is expected to act in good faith when considering the local tribe's request for artifacts. Artifacts not desired by the local tribe will be placed in a qualified repository as established by the California State Historical Resources Commission. If no facility is available, then all artifacts will be donated to the local tribe.
4. The County will work with the developer of any "gated community" to ensure that the Native Americans are allowed future access, under reasonable conditions, to view and/or visit known sites within the gated community. If a site is identified within a gated community project, and preferably preserved as open space, the development will be conditioned by the County allow future access to Native Americans to view and/or visit that site.
5. Because contemporary Native Americans have expressed concern over the handling of the remains of their ancestors, particularly with respect to archaeological sites containing human burials or cremations, artifacts of ceremonial or spiritual significance, and rock art, the following actions will be taken when decisions are made regarding the disposition of archaeological sites that are the result of prehistoric or historic Native American cultural activity:
    a. The Native American Heritage Commission and local reservation, museum, and other concerned Native American leaders will be notified in writing of any proposed evaluation or mitigation activities that involve excavation of Native American archaeological sites, and their comments and concerns solicited.
    b. The concerns of the Native American community will be fully considered in the planning process.
    c. If human remains are encountered during grading and other construction excavation, work in the immediate vicinity will cease and the County Coroner will be contacted pursuant to the state health and Safety Code.
    d. In the event that Native American cultural resources are discovered during project development and/or construction, all work in the immediate vicinity of the find will cease and a qualified archaeologist meeting U.S. Secretary of Interior standards will be hired to assess the find. Work on the overall project may continue during this assessment period.

e. If Native American cultural resources are discovered, the County will contact the local tribe. If requested by the tribe, the County will, in good faith, consult on the discovery and its disposition with the tribe.

Based on a review of the project site and vicinity provided by San Bernardino County staff, the project site does not fall within the County's cultural resource overlay map which is limited to the Phelan/Oak Hills area south of Victorville (San Bernardino County 2007).

3.8.3 Environmental Setting

The project is situated in Hinkley Valley, within the Mojave Desert geomorphic and natural region (Schoenherr 1992: Figures 1.1, 1.2). As described in Section 3.7, *Biological Resources*, the project area is located in the area dominated by all-scale scrub, saltbush scrub, and creosote bush scrub.

This environmental setting section is based on the following research and surveys.

ICF conducted background research to arrive at a general understanding of the history of the Hinkley Valley area of San Bernardino County, with a focus on exploration, settlement, and development. Research was undertaken at the California History Room in the California State Library and the ICF cultural staff library.

ICF conducted a windshield survey of the project area on January 19, 2011. The purpose of the survey was to verify the presence and current conditions of known historical resources and to make a cursory identification of unrecorded historical resources. An ICF historian drove the project area to note and document using digital photography any buildings or structures that appeared to be 45 years old or older. According to guidance published by the Office of Historic Preservation (1995:2), any "physical evidence of human activities over 45 years old may be recorded for purposes of inclusion in the [Office of Historic Preservation's] filing system." In other words, physical evidence of human activities more than 45 years old is considered a cultural resource.[1] Some portions of the project area were not surveyed due to the inaccessibility of some roads and the setback of some buildings.

The Water Board contracted with Albion Environmental Inc. (Albion) to conduct a cultural resources survey of approximately 470 acres within OU1 and OU2 in 2005 (Lahontan Regional Water Quality Control Board 2008). PG&E contracted with Far Western Anthropological Research Group (FWARG) and JRP to conduct historical research. FWARG also conducted intensive pedestrian surveys of PG&E-owned properties in Hinkley Valley. Based on the above-mentioned research and surveys, this environmental setting section includes a description of prehistoric, ethnographic, and historic setting; identified cultural resources; Native American consultation; and paleontological resources.

3.8.3.1 Prehistoric Setting

The chronological framework most often used in the Mojave Desert is that developed by Warren (Warren 1984; Warren and Crabtree 1986) and adapted from Leach-Palm (2012). It divides the sequence into five periods: Lake Mojave, Pinto, Gypsum, Saratoga Springs, and Protohistoric (Table 3.8-2).

[1] However, mere age does not define a "significant" cultural resource under CEQA or an eligible resource under the CRHR or the NRHP. Instead a resource must meet the definitions noted above.

Table 3.8-2. Mojave Desert Chronology

Period Name	Dates	Diagnostic Projectile Points
Protohistoric	800 BP-Contact	Cottonwood and Desert Side-notched arrow points
Saratoga Springs	1500–800 BP	Smaller Rose Spring and Eastgate-series arrow points
Gypsum	4000–1500 BP	Elko, Humboldt, Gypsum dart points
Pinto	7500–4000 BP	Pinto dart points
Lake Mojave	~10,000–7500 BP	Stemmed Lake Mojave and Silver Lake dart points

Source: Leach-Palm 2012

Although some researchers have argued for occupations as early as 40,000 BP (see Moratto 1984:75-114 for a detailed review), well-documented occupation in the Mojave Desert began sometime between 10,000 and 7500 BP, a time frame referred to as the Lake Mojave period. The Lake Mojave archaeological assemblages include percussion-flaked cores and flake-based tools, pressure-flaked bifaces, stemmed Lake Mohave and Silver Lake projectile points, and flaked stone crescents. Flaked stone technology focused on fine-grained basalts and metavolcanics (Basgall and Hall 1994b). Ground stone may have been part of the cultural assemblage but is not as well documented for this period. Sites occur on flat areas, mesas, and terraces adjacent to larger washes, and along the edges of pluvial lakes.

Recent research, drawing on faunal remains and proxy data, indicates that subsistence orientation reflected a more generalized adaptive strategy (Basgall and Hall 1992, 1994b) with periodic seasonal use of lacustrine or riparian resources (Warren 1967a, 1994). Much remains to be resolved regarding the interplay between settlement patterns, subsistence orientation, and regional interaction during the early Holocene.

The Pinto period (7500–4000 BP) has traditionally been defined by the presence of projectile points with characteristic shoulders and concave bases (Harrington 1957; Vaughan and Warren 1987). Warren and Crabtree (1986) note a correlation between Pinto sites and perennial springs, and therefore propose a middle Holocene settlement shift toward these locations in response to environmental desiccation. In contrast, Basgall and Hall (1992) argue that in the Mojave region, Pinto sites are found in a wide variety of environmental settings, similar to earlier occupations, and that the mobile, wide-ranging, and generalized land-use pattern of the early Holocene continued through this period, as evidenced by the continuing high level of curation of flaked stone tool kits. Pinto period sites contain millingstones and other tools indicating an increase in the use of plants, specifically small seeds, suggesting an association with the greater Millingstone Horizon patterns developing in the southern and central California region during this period (e.g., Hale 2001; Warren 1967b). Sites assigned to this time period (particularly the latter portion) are uncommon in the general region, suggesting a sparse population (Warren and Crabtree 1986). Accelerator Mass Spectrometry (AMS) dating of shell beads from sites with Pinto points has raised the possibility of occupation prior to 7000 BP, during the time frame traditionally classified as the Lake Mojave period (Basgall and Hall 1994a; Fitzgerald et al. 2005;). These new data reinforce the importance of absolute age-based chronological constructs, and, if correct, call into question many reconstructions of early to middle Holocene occupation in the region (see Basgall and Hall 2000).

During the subsequent Gypsum period (4000–1500 BP), the subsistence system appears to have broadened. A greater exploitation of hard seeds is inferred by a higher frequency of millingstones that often include portable handstones and millingstones (Basgall and Hall 1994c), while the

presence of mortars and pestles may indicate exploitation of mesquite beans (Warren 1984). Flaked stone assemblages include a higher frequency of microcrystalline raw material (often from non-local sources), a greater use of pressure-flaking, and the presence of medium to large Elko, Humboldt, and Gypsum dart points. In addition, obsidian apparently traveled during this period to locations far from quarries via direct procurement (Gilreath and Hildebrandt 1997) and hunting-oriented rock art proliferated throughout the region (Hildebrandt and McGuire 2002).

Basgall and Hall (1992) suggest a continued generalized pattern of land use during the Gypsum period, with a full complement of flaked, ground, and battered stone tools, as well as diverse faunal assemblages. They argue that this reflects a wide-ranging settlement system similar to that of earlier intervals, geared to recurrent, short-term occupation of broad areas rather than specific locations. More recently, Hildebrandt and McGuire (2002) and McGuire and Hildebrandt (2005) use evolutionary ecology to argue that big game hunting intensified during this period because of male "show-off" behavior focusing on long-range logistical hunting. This behavior, though apparently inefficient from an immediate, cost-benefit standpoint (in that the caloric benefit was likely less than the energy expended doing the hunting), ostensibly conferred an adaptive advantage to the males who participated in it by increasing their prestige within the group and enhancing their access to mating partners).

After about 1500 BP, culture change became more regional. Smaller Rose Spring and Eastgate-series points, generally considered to represent the onset of bow-and-arrow technology (Yohe 1992), are the hallmark of the Saratoga Springs period (1500–800 BP). Basgall and Hall (1992) note more diversified tool kits and a narrowing in the spatial range of raw material sources, indicating declining foraging territories. Artifact assemblages include a range of milling equipment, ceramics (including extra-local trade items), and non-subsistence items such as ornaments and ritual objects.

Several large Saratoga Springs period sites with rich middens have been documented in the Mojave area (Rector et al. 1983; Wallace and Taylor 1959), and some have been interpreted as village sites representing a collector-based settlement organization (Warren 1984). Other localities appear to have had more transitory, loosely based settlement systems characterized by considerable residential mobility focused on reliable springs (Basgall and Hall 1992; Warren 1988). Regional trade networks were increasingly diverse during this time, and turquoise from nearby Halloran Springs (northeast of the study area) was traded to the Anasazi or possibly acquired directly by Southwestern agriculturalists (Leonard and Drover 1980; Warren 1984). It should be noted that packrat middens near Salt Springs at the northern end of Silurian Valley reveal more mesic conditions and higher water tables from around 1400-700 BP (Koehler and Anderson 1988).

The end of the local prehistoric sequence (800 BP-Contact) is defined by the presence of Cottonwood and Desert Side-notched arrow points. It also includes various rough brownware ceramics, as well as small steatite and shell beads and large, unshaped milling implements (Warren 1984; Warren and Crabtree 1986). These assemblages are generally equated with the entry of Numic or Shoshonean groups into the region (Sutton 1996). In the central Mojave, Anasazi influence appears to have lessened during this period, while Hakatayan or Colorado River influence may be reflected in the presence of Colorado Buff Ware ceramics in the region (Warren 1984; Warren and Crabtree 1986).

In the period just before contact between native and non-native peoples in the Mojave region (ca. AD 1770) the Hinkley vicinity was occupied by the Vanyumé Serrano. While their Chemehuevi and Kawaiisu neighbors spoke Numic languages, the Vanyumé Serrano were Takic speakers. These

hunting and gathering groups were highly mobile, generally traveled in small family groups, and exploited a wide range of desert plant and animal resources (Bean 1972; Earle 2004; Kroeber 1925; Steward 1938). Group size and composition varied greatly during the year and from one year to the next depending on environmental fluctuations and seasonal availability of resources. The distribution of populations was largely influenced by the location of plant resources. These populations appear to have lived in small, mobile groups, bands of bilateral relatives with flexible membership, who followed seasonal plant resources as they became available. Leadership was centered around the male head of the family, whose responsibilities focused on food procurement. When groups congregated to procure a rich seasonal resource, a well-connected but informal headman was appointed who, based on his ability, organized the group foraging activities.

A group's territory was as flexible as its membership. Groups of 25 to 50 people formed at locations of seasonally productive resources, and then broke into smaller family units when food was less concentrated in space or time. Bands also came together for game drives. Settlement often focused on a reliable water source, frequently at the boundary of different ecozones, where food was stored, and from which smaller parties traveled to gather seasonal foods.

The nature of Native American occupation of the western Mojave Desert after Contact is difficult to reconstruct, owing to low initial population densities that quickly dropped even lower before the time of formal ethnographic interviews in the early twentieth century (Kroeber 1925; Park et al. 1938). Beginning about AD 1850, the indigenous inhabitants of the region were directly and indirectly affected by the incursion of non-native peoples and their technology, economy, and culture. After a brief period of resistance, many native people turned to farming and de facto ranching around developed springs. Others moved to towns and found employment (paid at times in cast-off clothing or food) in the mines or in associated support industries. The result of these changes drastically altered the highly mobile, family-centered settlement patterns and social organization of native Mohave people as they adapted to more settled lives and at least peripheral participation in a capitalist and cash-based economic system.

3.8.3.2 Ethnographic Setting

The project area was inhabited by the Vanyume. The Vanyume were one of two large divisions of the Serrano Indians. The term *Serrano* refers to an ethno-linguistic group that occupied the San Bernardino Mountains east of the Cajon Pass, at the base and north of these mountains in the desert near Victorville, eastward as far as Twentynine Palms, and south to and in the Yucaipa Valley. The Vanyume specifically held a tract of land along the Mojave River from the vicinity of Victorville eastward toward Barstow (Bean and Smith 1978:570, Figure 1; Kroeber 1976:614). The relationship of the Vanyume language to the Serrano language is uncertain (Bean and Smith 1978:570; Kroeber 1976:611, 614; Sutton 2010: Table 2), although it is historically regarded as a Serrano dialect, part of the Takic family of the Uto-Aztecan linguistic stock (Shipley 1978:88, 90).

The majority of Vanyume settlements were located along the Mojave River (Bean and Smith 1978:570; Kroeber 1976:614). They seasonally traveled to the foothills to collect nuts (pinyon and acorns), hunt large game (primarily mountain sheep), and trade desert products (honey mesquite, yucca roots, cactus fruits, and small game) with foothill Serrano for resources unavailable in the desert (Bean and Smith 1978:571). It is possible that the Vanyume subsistence settlement pattern was one of seasonal exploitation of desert and upland environments, rather than being strictly desert hunter-gatherers.

Vanyume structures are expected to resemble those of the Serrano, of which there are six known types. The family dwelling was a circular domed structure made from tule thatching over a willow frame. Family dwellings had a central fire pit and served as sleeping and storage space for a nuclear or small extended family. A similar structure was occasionally constructed in the mountains for individual use. A ramada, an unwalled construction consisting of four wooden supports and a willow thatch roof, was used for shaded outdoor workspace. Large ceremonial houses were present at most major villages, which served as the religious center for the clan and residence of the clan head. Sweathouses were earth-covered, semi-subterranean, circular structures, supported by willow-pole frames and located next to streams or springs where possible. The Serrano also built granaries, which were basketry storage units on raised poles. (Bean and Smith 1978:571.)

The Vanyume made most items from wood, stone, shell, bone, animal fur, and plant fibers: rabbit-skin blankets, bows and arrows, stone pipes, fire drills, awls, arrow shaft straighteners, musical instruments (deer-hoof rattles, tortoise and turtle shell rattles, flutes, bone whistles), mats, storage bags, cordage, nets, and feathered costumes (Bean and Smith 1978:571).

Vanyume lifeways were affected little by the Spanish presence in southern California until about 1819 when an *asistencia*, or mission outpost, was established near Redlands. After this time, most of the western Serrano, likely including many Vanyume, were removed to Mission San Gabriel. Depredations to eastern groups were reportedly less severe, and many Serrano escaped into the desert, eventually residing at the Morongo Reservation, which was established in 1877. By 1975, the majority of Serrano lived on the Morongo and San Manuel reservations. (Bean and Smith 1978:573.)

3.8.3.3 Historic Setting

The project area is located in the Hinkley Valley, an unincorporated portion of the Mojave Desert just northwest of Barstow, in San Bernardino County. San Bernardino County was organized in 1853 of territory originally part of Los Angeles and San Diego counties. The county received its name from the Spanish word for St. Bernardine of Siena. In 1893 the county was reduced in size when portions were transferred to Riverside County; still it remains the largest county in the United States. The city of San Bernardino is and always has been the county seat (Beck and Haase 1974:62, 64; Hoover et al. 2002:320–321).

The San Bernardino area was first traversed by Europeans during the late eighteenth century when early explorers and missionaries, including Pedro Fages, who entered in search of deserting soldiers (1772), and Father Francisco Garces (1776), entered the region. During the early 1800s, fur trappers and hunters such as Jedediah Strong Smith in 1826 and 1827 entered the San Bernardino region using the trail established by Garces. By the 1840s several Mexican land grants were established in the San Bernardino area, including Rancho Muscupiabe, Santa Ana del Chino, and San Bernardino. Many of these grants were used for ranching. In 1851 the San Bernardino area was settled by a group of Mormons, originally from Salt Lake City, who established the area's first irrigation system to support their agricultural production (Beck and Haase 1974).

The following describes the historical trends of Hinkley in terms of population growth and development through the 19th and 20th century, including the establishment of PG&E facilities (JRP 2011). The decade of the 1880s marked the first period of rapid population growth in the Mojave River Valley, and most of this was a direct result of construction of two trunk lines of the Atchison, Topeka & Santa Fe Railway (ATSF), often referred to as the "Santa Fe." Railroad service first came to what would become the town of Hinkley in 1882 with the arrival of the Mojave-Needles Branch of the Southern Pacific Railroad, Colorado Division. While neighboring Barstow boomed during the late

1880s, Hinkley Station remained unpopulated throughout the remainder of the nineteenth century. For many years its chief function was as a water stop and pumping station for ATSF steam engines, using water procured from a company well located adjacent to the tracks. Around 1908 the railroad company built a section house for railroad operations, and it was about this time that the town of Hinkley gradually began to grow.

Settlement of Hinkley Valley began in earnest during the first decade of the 1900s, when the need for surface water was alleviated with the introduction of motorized pumping equipment around 1906. This was about the same time that the first permanent settlers arrived in the valley. Gradually, more and more settlers came to the Hinkley area, many of whom acquired tracts of land under the favorable terms of various government land acts, including the Homestead Act of 1862 and the Desert Homestead Act of 1877.

By the mid 1910s the nucleus of a small town had emerged along the rail line, in the vicinity of the ATSF section house west of Hinkley Road. The section house also served as a post office. In 1912, a small new school building was built in 1912 to replace the one-room building used since 1908 and also served double-duty as a de facto community center and gathering place. In 1919, electricity was established in the area. By the early 1920s, the town had grown to include a small store and gasoline station that provided food and services to locals and travelers along the Mojave-Barstow Road (today's Santa Fe Avenue and predecessor to modern SR 58). Farmers, railroad workers, miners, and ranchers populated the Hinkley area. Hinkley Valley had emerged as a productive alfalfa growing district with several hundred acres under cultivation. Most of the alfalfa was grown on family-owned farms of 50 acres or less and shipped to markets outside of the valley, although some was sold locally for animal feed.

Beginning about the 1940s, commercial dairying began to emerge as Hinkley Valley's second principal agricultural industry. The increasing demand for milk was one of several factors driving the growth of the dairy industry in the Mojave River Valley, where prior to the war dairying had been practiced on a limited basis. Enticements for the dairy farmers included relatively easy access to the reliable supply of groundwater along the river bottom lands and incentives offered by a large milk distributor in San Bernardino.

Following broader national trends, the Mojave River Valley entered a period of unprecedented expansion and development during and in the aftermath of the Second World War. The regional population continued to grow into the post-war era as many servicemen and civilians moved to the desert for affordable housing. Highway improvement projects and the construction of new freeways into Barstow and Kramer Junction made the journey that much faster and easier. By the mid 1950s residential developments were built throughout the region, and dozens of new subdivisions and housing areas dotted the landscape, including several in Hinkley Valley.

Also during the 1950s, Hinkley's town center began to move east, away from the "old town" surrounding the station to an area north of the tracks and along Hinkley Road. Much of the original townsite had been long grown over with sage brush and greasewood by this time, and the era of Hinkley as a railroad stop ended in January 1951 with the closure of Hinkley Station. The first major building project in the new development area was the construction of a new school on Hinkley Road just north of the rail line. Between 1953 and 1956, a residential subdivision was established just north of the school between Alcudia and Manacor Roads. While this neighborhood quickly became the most concentrated area of residential housing in Hinkley, the surrounding valley was also experiencing a modest burst of housing construction. Homes were typically modest and built in popular styles of the post-war period such as Ranch and Minimal Traditional, and many were constructed of concrete block. The increasing population was reported to be as high as 2,500 by 1957.

It was also during this period that PG&E built a large Compressor Station in southeastern Hinkley Valley, on an eight-acre site on the south side of Community Boulevard. Completed in 1952, the Hinkley Compressor Station was the largest of three such facilities along the company's "Super Inch" California pipeline. The largest diameter high-pressure natural gas transmission line of its time, the pipeline extended 502 miles from Needles to the San Francisco Bay Area in California, and was a link in a 1,600-mile system that brought natural gas from Texas to California markets by way of New Mexico and Arizona. The pipeline was built between June 1949 and January 1951 and crossed through lower Hinkley Valley from southeast to northwest. Construction of the Compressor Station, which was needed to boost the pressure of the Super Inch line to a steady rate of transmission at 800-pounds per square inch, began the following spring. At the peak of construction, there were nearly 300 workers at the site.

The mixed agricultural and residential character of Hinkley Valley persisted throughout the decade of the 1980s, but since then the agricultural use has fallen into steep decline. Most of the land use in the area is devoted to single family dwellings, which are situated on parcels varying in size from small lots to tracts of several acres or more. A large proportion of the building stock appears to date to the second half of the twentieth century.

The transition of land use from agricultural to residential accelerated in the 1990s, and in recent years citizens have begun to leave the valley in greater numbers.

3.8.3.4 Identified Cultural Resources

Records Search and Literature Review

A records search and literature review was conducted for the expanded project area in January 2012. This search was conducted at the San Bernardino Archaeological Information Center (SBAIC) of the California Historical Resources Information System (CHRIS), which serves as the repository for historical resources in San Bernardino County. In order to obtain the most accurate possible picture of the known archaeological and historical resources located in and within a half-mile of the project area, the following resources/databases were reviewed.

- Previously recorded sites
- Reports of previous studies
- California Historical Landmarks
- The NRHP
- The CRHR
- The OHP Historic Properties Directory

The following references were also reviewed.

- County historical maps
- *Historic Spots in California* (Hoover et al. 2002)

Previous Cultural Resources Studies

The SBAIC records search identified 49 area-specific survey reports for the project area and six general area overviews (area overviews do not include pedestrian surveys and are not able to be mapped). The area-specific survey reports provide an important record of land disturbances that have occurred and that may have affected cultural resources potentially present in the regional

vicinity. The general area overviews that were identified provide an important record of information on the general history of cultural resources located within and in the general vicinity of the project area. In addition, six previously recorded area-specific studies were also identified (as listed below) within the project area, specifically in OU1.

- 1063187: S. Hammond and D. Bricker. 1994. *Second Supplemental: Historic Property Survey Report for the Realignment of SR 58 Between Hinkley & Barstow, San Bernardino County*. This was a linear study in the vicinity of SR 58.
- 1061449: J. Weisbord and E. R. Blakley. 1984. *Cultural Resources Literature Search, Records Check and Sample Field Survey for the California Portion of the Celeron/All American Pipeline Project.* This was a linear study following a pipeline running roughly parallel, and to the south of, Community Boulevard.
- 1061979: New Mexico State University. 1989. *Cultural Resources Report for the All American Pipeline Project: Santa Barbara, California to McCamey, Texas and Additional Areas to the East Along the Central Pipeline Route in Texas.* This was another linear study following another pipeline running roughly parallel, and south of, Community Boulevard, ending at the Compressor Station.
- 1062233: V. Clay and L. Hause. 1990. *An Archaeological Inventory of Two Proposed PG&E Pipeline Corridor Segments: Newberry Springs to Hinkley, 29.6 Miles by 200 Ft, San Bernardino County and Arvin to Kern River 25.2 Mi by 200 Ft, Kern County*. This was another linear study extending east from the Compressor Station along the same alignment as 1061979, above.
- 1062593: L. Glover and E. Wohlgemuth. 1992. *A Cultural Resources Inventory of the Hinkley Lateral (PG&E) in San Bernardino County, CA.* This study covered the area just west of the Compressor Station and followed a pipeline extending south from that station.
- 1066792: D. Glentis. 2010. *Archaeological Survey Report for So. California Edison Company's Replacement of 21 Deteriorated Power Pole Structures Located on the Daisy 12KV and Lockhart 33KV Distribution Circuits, Hinkley & West of Hinkley, San Bernardino County*. This was a site-specific study adjacent to the Compressor Station.

Albion conducted a cultural resources survey of approximately 470 acres within OU1 and OU2 in 2005 (Lahontan Regional Water Quality Control Board 2008).

Previously Identified Prehistoric and Historic Archaeological Resources

The records search at the SBAIC identified 46 previously recorded archaeological resources in the project area and an additional 38 resources were identified within a 0.5 mile search radius of the project area. Of the 46 previously recorded archaeological resources within the project area, one has been evaluated and determined to be eligible for listing on the NRHP and/or CRHR; five have been evaluated as not eligible for the NRHP and/or CRHR; and all other identified resources have not been evaluated for NRHP or CRHR eligibility.

- P-36-000189/ CA-SBR-189 is an extensive Native American village site adjacent to the Mojave River. This site may coincide with the ethnographic Rancheria of Susugina mentioned in the diary of Friar Joaquin Pasqual Nuez. The site has surface indications of hearths, house pits, and human cremations, and subsurface material beneath the dunes is believed to be extensive (Wedding 2001a). This resource was determined eligible by the Keeper of the National Register in 1982. This resource is located in the southern part of the project area.

In 2005, Albion conducted a cultural resources survey of approximately 470 acres within OU1 and OU2, and no prehistoric or historic-era archaeological resources were discovered (Lahontan Regional Water Quality Control Board 2008). In addition, the soils in these areas were described as generally homogeneous, with no evidence of culturally produced stratigraphy. However, the report noted that there are previously recorded prehistoric-era and historic-era sites in the vicinity of OU1 and OU2, including the prehistoric village site near the Mojave River described above.

In 2011, PG&E contracted with FWARG to conduct surveys of PG&E owned parcels (the Albion survey area was not included in this survey area). Of the 1,477 acres designated for survey, 1,342 acres (90.9%) were examined through intensive pedestrian survey, and 134 acres (9.1%) were under cultivation and avoided by surveyors. Surface visibility was good to excellent. FWARG recorded 53 resources, including: 39 historic-period sites with 88 features, mostly refuse scatters or elements of water/irrigation systems; one dual-component site (historic-era refuse plus a small prehistoric flake scatter); a portion of a prehistoric flaked stone debris scatter; and 12 isolated finds (ten historic and two prehistoric). FWARG also analyzed that potential for buried sites within the Hinkley USGS quadrangle. Within the survey blocks, only 4% of the landscape is considered highly sensitive for buried sites, 69% as moderate, and 27% as low or very low.

Previously Identified Historic Architectural Resources

Based on prior evaluation, one known historic architectural resource has been determined to be eligible for the NRHP and CRHR:

- P-36-006693/CA-SBR-6693H is a segment of the Atchison, Topeka & Santa Fe (ATSF) Railroad. The segment of the railroad is located in all three OUs (it bisects the project area from west to east). Some segments of this resource have been found eligible for the NRHP through a consensus determination by the ADOE, EPA, or BLM and the State Historic Preservation Officer. Other segments have been found ineligible for the NRHP through a consensus determination by the ADOE or BLM. The portion of this resource that lies within the study area has not been evaluated for eligibility to the NRHP or CRHR.

During the windshield survey ICF conducted as part of this study, ICF noted the previously recorded segment of the ATSF Railroad[2], and a small number of residential buildings that appear to be 45 years old or older. ICF also noted that agricultural properties within the project area may contain buildings 45 years old or older, though this could not be verified due to limited access.

Research and the windshield survey results indicate that in addition to the railroad segment, it is likely that the types of architectural properties found in the project area date to the early to mid-twentieth century, (ca. 1910–1968). However, the vast majority of these buildings will fall into the 1950s–1960s era. These properties are related to agricultural development, including farmsteads with multiple buildings such as residential buildings, barns, outbuildings and utilitarian structures, and landscape vegetation in the form of wind breaks and tree allees (trees lining both sides of a path). Roads and water conveyance structures such as ditches, canals, and wells are built historical resources and are located in the project area. ICF noted 56 buildings, one unimproved road, one canal, and one railroad that appeared to date between 1920 and 1956 (refer to Table 3.8-3). PG&E's study of OU1 and OU2 found 34 buildings that were older than 45 years, with construction dates

[2] It should be noted that in 1996 ATSF merged with Burlington Northern and became Burlington, Northern & Santa Fe Railway (BNSF).

ranging from 1922 to 1968. Sixty percent to these date to the 1950s, and nearly forty percent date to the 1930s and 1940s.

A recent search of County records by PG&E (2011) identified structures on PG&E owned parcels that are over 45 years of age, which are summarized in Table 3.8-4. These structures have not been recorded or evaluated.

3.8.3.5 Native American Consultation

ICF contacted the California Native American Heritage Commission (NAHC) on May 14, 2012 to identify any areas of concern within the project area that may be listed in the NAHC's Sacred Land File. The NAHC responded on May 15, 2012, stating that "based on the USGS coordinates provided, Native American cultural resources were identified in the project area of potential effects." No additional information was provided on where or what these resources are.

Table 3.8-3. ICF Identified Historic Architectural Resources in the Project Area

Resource Type	Circa Year
5 buildings	ca. 1956
1 building	ca. 1920/1932
unimproved road	ca. 1920/1932
6 buildings	ca. 1956
Canal	ca. 1920/1932
Railroad	ca. 1921
2 buildings	ca. 1956
2 buildings	ca. 1920/1932
10 buildings	ca. 1956
4 buildings	ca. 1956
1 building	ca. 1956
3 buildings	ca. 1956
7 buildings	ca. 1920/1932
6 buildings	ca. 1956
2 buildings	ca. 1920/1932
2 buildings	ca. 1956
2 buildings	ca. 1920/1932
3 buildings	ca. 1956

Table 3.8-4. PG&E Identified Historic Architectural Resources

APN	Year Constructed	OU
0495-031-29	1955	3
0494-011-15, 16	1957	3
0494-051-12	1950	3
0494-031-40	1945	1/3
0494-211-11 & 0494-221-15	1952	2
0495-041-04	1950	2

NAHC also provided a list of 11 Native American contacts that might have information pertinent to this project, or have concerns regarding the proposed actions. A letter explaining the proposed project, along with maps depicting the project area, was sent to all 11 contacts listed by the NAHC on May 17, 2012. The letter also solicited responses from each of the contacts, should they have any questions, comments, or concerns regarding the proposed project.

To date, no responses have been received. Consultation with the Native American contacts is ongoing.

3.8.3.6 Paleontological Resources

Paleontological resources include the fossilized remains of vertebrate and invertebrate organisms, fossil tracks and trackways, and plant fossils present in geologic formations. The regional geology of the project area is described in Section 3.4, *Geology and Soils.*

The sensitivity of the project area for paleontological resources focused only on the area of potential physical disturbance within Operable Units OU1, OU2 and OU3. The surface geological units within the project area were identified based on available geological mapping (Rogers 1967), and the potential for paleontological resources was identified based on the age and origin of the different geological units and literature concerning prior fossil discoveries.

As shown in Table 3.8-5, within OU1, OU2, and OU3, wherein the project will have ground disturbance, the majority of the Hinkley Valley is dominated by surface geology consisting of recent (Holocene) alluvial sediments, non-marine deposits, dune sand, and lake deposits. Because these areas are recent in origin they have low sensitivity for fossils. However, these areas may overlie older (Pleistocene) deposits that may have a higher potential for fossils than the younger surficial deposits.

Table 3.8-5. Paleontological Sensitivity within Surface Geological Units in Areas Potentially Disturbed by Project (OU1/OU2/OU3)

Abbreviation	Rock Type	Rock Age	Sensitivity	Site Location
Qal	Alluvium	Holocene	Low sensitivity because of Holocene age. May locally overlie more sensitive units in the subsurface.	Hinkley Valley/most of site
Qc	Non-marine deposits	Holocene	Low sensitivity because of Holocene age. May locally overlie more sensitive units in the subsurface.	Along Hinkley Road south of SR 58 to the Mojave River
Qs	Dune Sand	Holocene	Low sensitivity because of Holocene age. May locally overlie more sensitive units in the subsurface.	Along Mojave River
Ql	Lake Deposits	Holocene	Low sensitivity because of Holocene age. May locally overlie more sensitive units in the subsurface.	North of Lenwood road mostly east of Dixie Road
C	Carboniferous marine	Paleozoic	Undetermined; potentially high. Reported to be fossiliferous by Stewart (1980).	Outcrops near Desert View Dairy, hills east and west of the Valley; small area along Community Blvd. west of Hinkley Road
Ti	Intrusive (Rhyolite)	Tertiary	Not sensitive-igneous rock	Redhill; Mt. General
gr(t)	Tonalite/ diorite	Mesozoic	Not sensitive-igneous rock	Small area along Alcudia east of central wash; hills east of Valley
gr(g)	Granodiorite	Mesozoic	Not sensitive-igneous rock	Hills east and west of the Valley
gr(a)	Andesite	Mesozoic	Not sensitive-igneous rock	Hills east and west of the Valley

Sources:

(1) Geological Units from Rogers, T.H., 1967, Geologic map of California: San Bernardino sheet: California Division of Mines and Geology, scale 1:250000.

(2) Stewart, John H., 1980, Geology of Nevada: Nevada Bureau of Mines and Geology Special Publication 4, 136 p.

There are several rock outcrops, north of the Desert View Dairy, along Community Blvd west of Hinkley Road, and east and west of the Valley floor that contain geological units that consist of Paleozoic carboniferous marine rock which could contain fossils. These areas are considered potentially sensitive for paleontological resources.

The hills to the east and west of Hinkley Valley mostly consist of intrusive and extrusive igneous rocks such as andesite and rhyolite, diorite and granodiorite that are not sensitive for paleontological resources as these rocks are formed from magma or lava, which does not allow for the formation of fossils.

3.8.4 Significance Criteria

The State CEQA Guidelines Appendix G (California Code of Regulations, Title 14, Section 15000 *et seq.*) identifies significance criteria to be considered when determining whether a project could have significant effects on historical resources within the project area. For this analysis, an impact pertaining to cultural resources was considered significant under CEQA if it would:

- Cause a substantial adverse change in the significance of a historical resource as defined in State CEQA Guidelines Section 15064.5.

- Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to State CEQA Guidelines Section 15064.5.
- Disturb any human remains, including those interred outside formal cemeteries.
- Directly or indirectly destroy a unique paleontological resource or site or unique geological feature.

3.8.5 Methodology

The entire project area was considered as the limits of physical disturbance in relation to the geographical extent of where remedial actions could be implemented. Potential effects on significant cultural resources (archaeological and architectural resources, eligible for the NRHP or CRHR and significant paleontological resources) were evaluated based on: the background research and literature review conducted for the project area, a review of the project alternatives and the locations of proposed new facilities compared with the location of previously recorded and identified cultural resources, and direct field observation in the form of field and/or windshield surveys conducted throughout the project area. The results of those field surveys as they pertain to known cultural resources as described in Section 3.8.3.4, *Identified Cultural Resources*.

Particular attention was paid to those previously recorded resources that have been determined eligible for listing on the NRHP and CRHR and/or are California Historical Landmarks (CHLs), and their proximity to known and proposed remediation activities. Because the federal NRHP and the state's CRHR evaluation criteria for cultural resources are generally consistent, the application of the state's CRHR set of criteria essentially conforms to the other NRHP. All properties listed on, or determined eligible for listing on, the NRHP are also eligible for listing on the CRHR. However, resources eligible for listing on the CRHR may not be eligible for listing on the NRHP.

As discussed above, under CEQA Guidelines Section 15064.5, the impact analysis focuses on impacts to historic resources and "unique archeological resources." For this reason, non-unique archaeological resources need not be given in depth consideration; a lead agency can simply record its existence.

3.8.6 Impacts

This section provides the impact analysis and mitigation measures related to significant cultural resources. The impacts are organized by topic, which correspond with the significance criteria described in Section 3.8.4, *Significance Criteria*.

3.8.6.1 Historical Architectural Resources

Impact CUL-1: Change in Significance of Historical Architectural Resources (Less than Significant, No Project Alternative; Less than Significant with Mitigation, All Action Alternatives)

Overview of Impact

There is the potential that the project could result in a change in the significance of a historical architectural (built environment) resource. As discussed in Section 3.8.3, *Environmental Setting*, one architectural property (P-36-006693/CA-SBR-6693H, the eligible portion of the ATSF railroad) has been recorded within all three OUs. Additionally, research and windshield surveys conducted by ICF

and PG&E in 2011 identified architectural structures over 45 years of age within the project area (Tables 3.8-3 and 3.8-4). These structures and constructed landscapes are likely related to agricultural development, including farmsteads with multiple buildings such as residential buildings, barns, outbuildings and utilitarian structures, and landscape vegetation in the form of wind breaks and tree allees (trees lining both sides of a path). Roads and water conveyance structures such as ditches, canals, and wells that could be associated built resources may also be found in the project area. While such structures may be over 45 years of age, it is unlikely that the structures would be eligible for listing in the NRHP or CRHR based on the requirements of those statutes. Accordingly, such structures likely would not qualify as historical resources for the purposes of CEQA. In addition, given the size of the project area, remediation activities should be able to avoid any historic architectural resources and thus the potential for significant impacts on architectural historical resources low. Field study, as well as the acquisition of additional parcels by PG&E as the plume expands, could uncover other undiscovered architectural resources. If construction and operation and maintenance activities cannot avoid historic architectural resources, they have the potential to significantly impact such resources, as discussed below.

Construction

Because the No Project Alternative would be limited to the existing authorized area of remedial activity, the No Project Alternative would not directly or indirectly affect the ATSF Railroad because none of the treatments included in this alternative would occur above ground near the ATSF. Additionally, the No Project Alternative would not require additional property acquisition because it would not include new agricultural treatment units or above-ground treatment facilities, and proposed infrastructure would be limited in scale. Therefore, no impacts on architectural historical resources are expected as a result of construction associated with the No Project Alternative.

For the action alternatives, it is unlikely that construction would directly or indirectly affect the ATSF Railroad because remedial actions would likely not require any substantial alteration to the railroad. Wells, pumps, and treatment facilities would not be located within the railroad right of way. Piping may need to cross under the railroad but could be installed without harming the resource.

In other areas, construction of new wells and all associated infrastructure (e.g., well pads, extraction pumps, pipelines, in-situ treatment equipment such as pumps and dosing equipment, fencing to secure equipment areas), and new access roads would occur under all action alternatives. Additionally, construction of above-ground treatment facilities (Alternatives 4C-3 and 4C-5 only) and new agricultural treatment units (all action alternatives) would require land clearance, trenching, paving, concrete laying, and crop planting. In general, most of these activities can be implemented to avoid impacts to resources. However, if these activities cannot avoid resources or if future activities cannot avoid unknown resources, they may result in damage to or the destruction of architectural historical resources.

Construction of new agricultural treatment units would have the greatest potential to damage or destroy architectural historical resources. Alternative 4B could require up to 264 new acres of agricultural treatment, which could likely be accommodated within PG&E-owned areas within OU1 and OU2; it is possible that agricultural unit development might require acquisition of privately owned properties that could contain architectural historical resources. Alternatives 4C-2, 4C-3, and 4C-5 could require up to 392 acres of new agricultural treatment, which could be largely accommodated on PG&E-owned lands, but could require acquisition of other lands that might have

potential historical resources. Acquisition of properties would have the most significant impact under Alternative 4C-4 because it could require up to 1,212 acres of new agricultural treatment land, the entirety of which might not be located within PG&E-owned areas. The amount of properties and other structures cannot be precisely estimated at this time. The most likely areas of property acquisition are within OU1 and OU2 (PG&E currently owns most of these areas already); but also in areas underlying the plume to the east and north of OU1/OU2 for agricultural treatment units to address the expanded plume. If land acquisitions require removal of structures or alteration of properties that are determined eligible for listing on the NRHP or CRHR, this could result in a potentially significant impact.

This impact is significant for all action alternatives, but implementation of **Mitigation Measures CUL-MM-1**, **CUL-MM-2**, and **CUL-MM-3** would reduce this impact to a less than significant level for all alternatives by determining if significant historical architectural resources exist and, if found, avoiding the resources and/or adequately recording resources if they cannot be avoided.

Operation and Maintenance

Operation and maintenance activities would be similar to current, ongoing activities and would be similar across all alternatives for new wells and in-situ treatment. There would be more operation and maintenance activities associated with the action alternatives because they include new agricultural treatment units, and Alternatives 4C-3 and 4C-5 also include new above-ground treatment facilities in already disturbed areas. Operations would generally be constrained to footprints of built infrastructure, and therefore new damage or destruction of potentially eligible historic architectural properties would not be expected beyond any initial impacts during construction.

3.8.6.2 Archaeological Resources

Impact CUL-2: Change in Significance of Archaeological Resources (Less than Significant with Mitigation, All Alternatives)

Overview of Impacts

There is the potential that the project could result in a change in the significance of historic or prehistoric archaeological resource (both considered "historical resources" as defined under CEQA) or unique archaeological resource. As described in Section 3.8.3.4 *Identified Cultural Resources*, there are known archaeological resources in the project area.

FWARG recorded 53 resources during their survey of PG&E owned parcels: 39 historic-period sites with 88 features, mostly refuse scatters or elements of water/irrigation systems; one dual-component site (historic-era refuse plus a small prehistoric flake scatter); a portion of a prehistoric flaked stone debris scatter; and 12 isolated finds (ten historic and two prehistoric). These site types are likely an accurate representation of the types of sites that will be found across the project area. FWARG recommended that, due to lack of association and integrity, the historic-period resources be considered not eligible to the California and National registers. FWARG also suggested that it is unlikely that the flaked stone scatters will have substantial subsurface deposits. FWARG also analyzed the potential for buried sites within the Hinkley USGS quadrangle. Within the survey blocks, only 4% of the landscape is considered highly sensitive for buried sites, 69% as moderate,

and 27% as low or very low. FWARG recommended that no further archaeological identification efforts are necessary for areas with moderate or lower sensitivity.

None of the known historic-era archaeological resources that have been identified in OU1 are considered significant or have been determined eligible for the NRHP or the CRHR. No known prehistoric-era or historic-era archaeological resources have been identified to date in OU2.

P-36-000189/CA-SBR-189, a Native American village site that is most likely the ethnographic Rancheria of Susugina (Wedding 2001) is located within the southern part of the project area. This site is the only known prehistoric site listed as NRHP eligible out of the 43 archaeological resources that has been identified to date as occurring in the surveyed area.

In addition to the records search and literature review, a review and comparison of historic maps to recent topographic maps and Google Earth aerial imagery indicate that a number of buildings and structures were once present in the project area (but have been leveled). Locations of prior buildings and structures have the potential to contain structural remnants and archaeological materials that could qualify as historical resources for the purposes of CEQA.

Since all areas of potential ground disturbance have not been surveyed for cultural resources, some portions of the project area are sensitive for archaeological resources, and there is a potential to encounter heretofore unidentified buried cultural resources, potential ground disturbance from construction and operations and maintenance could result in a significant impact. Implementing **Mitigation Measures CUL-MM-4, CUL-MM-5, and CUL-MM-6** would reduce this impact to a less than significant level by determining if unique or historical archaeological resources exist and, if found, avoid damaging the resource through project modification or developing and implementing a recovery plan if they cannot be avoided.

Construction Impacts

As described under Impact CUL-1, construction of all alternatives would involve new wells and all associated infrastructure (i.e., well pads, extraction pumps, pipelines, in-situ treatment equipment such as pumps and dosing equipment, fencing to secure equipment areas, new access roads). Additionally, the action alternatives include new agricultural treatment units would require land clearance, trenching, paving, concrete laying, and crop planting. Alternatives 4C-3 and 4C-5 also include new above-ground treatment facilities. These activities involve the presence of construction workers, use of large construction vehicles and equipment, and ground disturbance that could result in damage to or the destruction of archaeological resources. Such damage could be a significant impact under CEQA, if the resources were determined to be eligible for the NRHP or CRHR or qualified as a unique archaeological resource under PRC 21083.2. Although impacts would be similar under all alternatives, the potential for the most significant construction impacts would be under Alternative 4C-4, due to the large area of land that would be disturbed to construct the new agricultural units. All alternatives would have potentially significant impacts on cultural resources, if and where encountered. As described above, implementing **Mitigation Measures CUL-MM-4, CUL-MM-5, and CUL-MM-6** would reduce this impact to a less than significant level.

Operation and Maintenance

Operation and maintenance activities would generally be constrained to the footprints of built infrastructure; therefore, new damage or destruction would not be likely because these areas would

have already been disturbed. In the event that ground-disturbing activities requiring earthwork are required in order to implement any maintenance activities (such as routine replacement of piping or other underground infrastructure, or during an emergency situation where new, temporary underground infrastructure would be required to maintain operations), there is the potential for significant impacts on previously known and potentially unknown archaeological resources.

The potential or degree of risk would vary among the alternatives which have different intensity and scale of remediation, as described under Impacts CUL-1. The No Project Alternative would have the least potential because it would be constricted spatially to the 2010 plume boundary and would not expand agricultural treatment or add above-ground facilities, but it could still require disruption to maintain/repair facilities. Alternative 4C-4 would have the greatest potential impact due to the scale of ground disturbance proposed, particularly due to agricultural treatment. Implementing **Mitigation Measures CUL-MM-4, CUL-MM-5, and CUL-MM-6** would reduce this impact to a less than significant level.

3.8.6.3 Human Remains

Impact CUL-3: Potential Disturbance of Buried Human Remains (Less than Significant with Mitigation, All Alternatives)

No known Native American artifacts or evidence of human remains have been recorded in OU1 or OU2 (Lahontan Regional Water Quality Control Board 2007, 2006). Of the prehistoric archaeological resources identified in OU3, three sites are known to contain and a fourth site might contain human remains. As described in Section 3.8.3.5, *Native American Consultation*, consultation with the NAHC identified the potential for presence of known Native American cultural resources in the project area of potential; however, no additional information was provided regarding the location or character of the resources. Additionally, in portions of OU3 that have not been surveyed for the presence of cultural resources, and in some surveyed areas, existing ground cover might obscure surface indications of potentially present human remains.

The construction of additional wells, pipelines, or other infrastructure requiring work underground could result in damage to human remains associated with potentially present but unrecorded archaeological deposits. The potential or degree of risk would vary among the alternatives which have different intensity and scale of remediation, as described under Impacts CUL-1a and CUL-1b. The No Project Alternative would have the least potential because it would be constricted spatially to the 2010 plume boundary and would not expand agricultural treatment or add above-ground facilities, but it could still require disruption to maintain/repair facilities. Alternative 4C would have the greatest potential impact due to the scale of ground disturbance proposed, particularly due to agricultural treatment.

Operation and maintenance activities would generally be constrained to the footprints of built infrastructure; therefore, new damage or destruction would not be likely because these areas would have already been disturbed. In the event that ground-disturbing activities requiring earthwork are required in order to implement any maintenance activities (such as routine replacement of piping or other underground infrastructure, or during an emergency situation where new, temporary underground infrastructure would be required to maintain operations), there is the potential for significant impacts on previously known and potentially unknown archaeological resources.

Although no prehistoric archaeological sites were identified within OU1 and OU2, the cultural sensitivity of the OU3 area (especially in those areas that have not been surveyed and are located in

the vicinity of areas identified as having potential for human remains) could indicate that ground-disturbing activities in the project area could have the potential to uncover as-yet undiscovered human remains. According to the California Health and Safety Code, six or more human burials at one location constitute a cemetery (Section 8100), and disturbance of a Native American cemetery is a misdemeanor (Section 7050.5(a)). Such disturbance would be considered a significant impact. Implementing **Mitigation Measure CUL-MM-7** would ensure this potential impact would remain less than significant by requiring that human remains encountered during excavation activities would be protected until the San Bernardino County Coroner determines their status per Public Resources Code Section 5097.98.

3.8.6.4 Paleontological Resources

Impact CUL-4: Direct or Indirect Destruction of Unique Paleontological Resource (Less than Significant with Mitigation, All Alternatives)

Within most of the Hinkley Valley, the surface geology consists of Holocene era deposits that are too young to contain significant paleontological resources. Thus, in most of the project area, surface excavation for installing remedial infrastructure likely has limited potential to disturb paleontological resources. However, there may be more sensitive geological units below Holocene surfaces such as Pleistocene sedimentary deposits that may contain paleontological resources. In addition, it is possible that older sedimentary deposits may have been exposed by erosion in certain parts of the project study area that are not mapped in geological maps of the area.

In addition, in several areas, such as the hills north of the Desert View Dairy, there are outcrops of Mesozoic carboniferous marine deposits that may contain significant fossils. There is less likelihood that remedial activities will disturb rocky outcrops and thus a low potential that disturbance of paleontological resources in these areas will occur.

Construction disturbance for agricultural treatment units, installation of wells, pipelines, and above-ground treatment facilities that occurs within geological deposits which are highly sensitive for paleontological resources could disturb significant resources. This is considered a potentially significant impact that would be reduced to a less than significant level with implementation of **Mitigation Measure CUL-MM-8**, which requires a pre-disturbance evaluation by qualified personnel of proposed disturbance where it may have potential for paleontological resources. If a geological unit is determined to be sensitive for paleontological resources, then a qualified monitor shall be present during all ground disturbance in a geological unit that is sensitive for paleontological resources and any encountered paleontological resources shall be recovered and curated as appropriate.

Although there is the possibility for deep wells to affect deeply buried paleontological resources, such resources are not accessible to scientific research and evaluation. Because they would not be available to scientific evaluation under any circumstances, deeply buried resources are not considered significant resources as they would not otherwise have the potential to contribute to scientific knowledge. Thus, while surficial disturbance associated with wells or other infrastructure is considered to potentially have a significant impact on paleontological resources, subsurface drilling is not considered to have a significant impact because any effects, if they occurred, would be limited to non-recoverable paleontological resources.

3.8.7 Mitigation Measures

Mitigation Measure CUL-MM-1: Determine Presence of Historical Resources as Defined by CEQA

Prior to construction, PG&E will retain a qualified architectural historian to conduct a survey to determine if historical resources, as definite in State CEQA Guidelines Section 15064.5, exist within the project area. The survey will be conducted and written according to standards set forth in the Historic Structures Report Format from the Office of Historic Preservation (Office of Historic Preservation 2003). The survey will be provided to the Water Board (and to the BLM for federal lands if required by BLM) for review prior to construction.

The qualified architectural historian also will evaluate the resources identified during the Architectural Resources Survey and will consult with the Water Board to determine if they are eligible for the CRHR or otherwise meet the definition of a historical resource under CEQA. If it meets the definition, the architectural historian will determine if the construction or operation of the proposed remediation activities would affect the qualities of the resource that contribute to the eligibility for listing on the CRHR, and will evaluate if the potential change(s) to the resource is considered significant. The evaluation will be documented in a report will be written according to standards set forth in the Historic Structures Report Format from the Office of Historic Preservation (Office of Historic Preservation 2003). The report will be provided to the Water Board for review prior to construction.

Mitigation Measure CUL-MM-2: Avoid Damage to Historical Resources Located in Project Areas through Project Modification

If the PG&E designed remediation elements (including construction and staging) are likely to significantly impact qualities of a historical resource as identified by a professionally qualified architectural historian (per Mitigation Measure CUL-MM-1), PG&E will consult with a qualified architectural historian to redesign, reroute, or relocate the proposed elements in such a way that will not result in significant impacts to the resource. Barrier fencing or another visual cue may be installed around identified resources as required to protect against inadvertent damage during construction. PG&E will document the avoidance measures prior to construction and submit the report to the Water Board (and to the BLM for federal lands if required by BLM) to demonstrate compliance.

Mitigation Measure CUL-MM-3: Record Historical Resources

If historical resources are identified and cannot be avoided through Mitigation Measure CUL-MM-2, PG&E will retain a professionally qualified architectural historian to conduct research and to adequately record the resources. Adequate recordation of a built environment resource will include:

- Development of site-specific history and appropriate contextual information regarding the particular resource, in addition to archival research and comparative studies;
- Accurate mapping of the noted resources, scaled to indicated size and proportion of the structures;
- Architectural descriptions of the structures;

- Photo documentation of designated resources; and
- Recordation utilizing measured architectural drawings.

Mitigation of a built environment resource may also take place in the form of preservation or reuse of a building or structure. The preservation and/or reuse of an eligible structure will include abiding by the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation.

If the architectural historic resource is eligible for the CRHR under Criteria A (association with important events in history), B (association with important people in history), or D (has yielded or may be likely to yield information important in prehistory or history), PG&E will attempt to physically retain the building or structure. If the building or structure cannot physically be retained, then PG&E, in coordination with a qualified architectural historian, will pursue ways that the memory of the resource is retained and made easily available. To this end, educational resources such as web media, static displays, interpretive signs, use of on-site volunteer docents, or informational brochures can supplement HABS/HAER. PG&E will submit a mitigation report to the Water Board upon complete implementation of the approved mitigation measures to document compliance.

Mitigation Measure CUL-MM-4: Evaluate Archaeological Resources to Determine if Historical Resources under CEQA or Unique Archaeological Resources under PRC 21083.2

Prior to construction start, PG&E will retain qualified archaeologists to conduct a pedestrian archaeological survey to determine the pre-historic, ethnographic, and historic archaeological resources within the project area. The survey and report will be conducted and written according to standards set forth by the Office of Historic Preservation (Office of Historic Preservation 2003). The report will be provided to the Water Board for review prior to construction.

In accordance with CEQA Guidelines and PRC 21083.2, PG&E will retain qualified archaeologists to evaluate the resources identified during the Archaeological Resource Survey to determine if they are eligible for the CRHR or meets the definition of a unique archaeological resource. Evaluation of an archaeological resource will likely consist of historical research and/or physical excavations of the site to determine site content and integrity. Evaluations will be documented in a report written according to standards set forth by the Office of Historic Preservation (Office of Historic Preservation 2003). PG&E will submit this document to the Water Board for concurrence on eligibility determinations.

Mitigation Measure CUL-MM-5: Avoid Damaging Archaeological Resources through Redesign of Specific Project Elements or Project Modification

If the PG&E-designed remediation elements (including construction and staging) disturb prehistoric-era or historic-era archaeological resource as identified by the qualified archaeologist (per Mitigation Measure CUL-MM-4), PG&E will consult with a professionally qualified archaeologist to determine if the proposed remediation activities would affect the qualities of the archaeological historical resource that contribute to the eligibility for listing in the CRHR. If the proposed activities are likely to significantly impact those qualities, PG&E will consult with a professionally qualified archaeologist to redesign, reroute or relocate the proposed element in such a way that will not result in significant impacts to the resource, because preservation in place is the preferred manner of mitigating impacts to archaeological

sites under CEQA. Barrier fencing or another visual cue will be installed around identified resources to protect against inadvertent damage during construction if the resources cannot be seen from at least 5 feet away or heavy machinery will be used within 15 feet of the resources. PG&E will document the avoidance measures prior to construction and submit the report to the Water Board (and to the BLM for federal land) to demonstrate compliance.

Mitigation Measure CUL-MM-6: Evaluate Archaeological Resources and, if Necessary, Develop and Implement a Recovery Plan

If archaeological resources cannot be avoided (per Mitigation Measure CUL-MM-5), PG&E will retain a professionally qualified archaeologist to evaluate the resource for its eligibility on the NRHP and CRHR. If the resource is determined to be a historical resource, a data recovery plan (California Code of Regulations, Title 14, Section 15126.4(b)(3)(C)), will be developed and implemented. The data recovery plan will include background research, physical excavation, lab analysis, and a report summarizing results. This mitigation measure will minimize loss of information by procuring, processing, and analyzing a suitable sample of materials from the affected portions of the sites. It will also address the impacts of damage to the sites hindering or eliminating the resources' potential to yield information about the prehistory and history of the Hinkley area. PG&E is responsible for implementing the physical excavation portion of the data recovery program prior to construction.

In some cases, data recovery excavation might not provide an adequate mitigation measure to reduce impacts to a less than significant level and might not be an appropriate mitigation measure for some resources, particularly when the archaeological historic resource is eligible for the CRHR under Criteria A (association with important events in history), B (association with important people in history), or C (embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of an important creative individual; or possesses high artistic values). Mitigation will capture the history of a resource and share it with the public so that the public can continue to feel a connection with common heritage. If the archaeological site cannot physically be retained, then PG&E, in coordination with a qualified archaeologist, will pursue ways that the memory of the resource is retained and made easily available. To this end, educational resources such as web media, static displays, interpretive signs, use of on-site volunteer docents, or informational brochures can supplement data recovery excavations.

If the archaeological resource qualifies as a unique archaeological site but does not qualify as a historical resource under CEQA, the site will be treated in accordance with the provisions of Section 21083.2. Other than avoidance, mitigation measures will include deeding archaeological sites into permanent conservation easements, capping or covering archaeological sites with a layer of soil before building on the sites, or planning parks, green space, or other open space to incorporate archaeological sites.

PG&E will submit all mitigation plans to the Water Board for concurrence prior to mitigation implementation. PG&E will submit a mitigation report to the Water Board upon complete implementation of the approved mitigation measures to document compliance.

Mitigation Measure CUL-MM-7: Comply with State and County Procedures for the Treatment of Human Remains Discoveries

If human remains are found as a result of ground disturbance, PG&E will notify the Water Board and the San Bernardino County Coroner (and BLM if on federal land). If human remains are discovered, State Health and Safety Code 7050.5 states that further disturbances and activities will cease in the area and nearby areas, and the County Coroner will be contacted immediately. Pursuant to PRC 5097.98, if the coroner determines that the remains are of Native American origin, the coroner must contact the NAHC within 24 hours (California Health and Safety Code 7050(c)). The NAHC will identify and notify the most likely descendants (MLDs) of the interred individuals, who then will make a recommendation for means of treating or removing, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code 5097.98. Further provisions of Public Resources Code 5097.98 will be implemented as applicable. Under these provisions, MLDs will have at least 48 hours from completing their examination of the remains in which to make recommendations for the disposition of the remains. If the NAHC is unable to identify an MLD, if the identified MLD fails to make a recommendation, or if the landowner rejects the MLD's recommendation, the landowner will inter the human remains and associated grave goods with appropriate dignity on the property in a location not subject to further and future subsurface disturbance.

In the event that human remains are discovered, a PG&E qualified archaeologist and the Water Board will be contacted immediately. If the discovery is on federal land, BLM will also be notified upon discovery and included in any determinations for the disposition of remains.

Mitigation Measure CUL-MM-8: Conduct Preconstruction Paleontological Resource Evaluation, Monitoring, Resource Recovery, and Curation

Prior to construction, PG&E will confirm all geologic units potentially affected by each segment of the project, including Quaternary and bedrock units. This information will be used to guide mitigation requirements on a site-specific basis during construction and during maintenance activities that require ground disturbance.

All ground-disturbing construction and maintenance activities will require Measure 8a (although this measure will likely only need to be implemented once during project design), and Measures 8b, 8c, 8d, and 8e.

All ground-disturbing construction activities that affect geologic units identified as highly sensitive for paleontological resources and all maintenance activities that involve new or extended ground disturbance in highly sensitive units will require Mitigation Measure CUL-MM-8f.

Measure 8a: Further Evaluation of Geologic Units with "Undetermined" Sensitivity. Before ground-disturbing activities begin, PG&E will retain a qualified paleontologist as defined by the SVP (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995) or other appropriate personnel (e.g., California licensed professional geologist with appropriate experience and expertise) to conduct further literature review and discussion with subject area experts to resolve the paleontological sensitivity of the geologic units identified in Table 3.8-5 as "undetermined." If site-specific geologic or geotechnical studies for the project identify additional units likely to be affected by project construction and not included in Table 3.8-5, they will also be evaluated for paleontological sensitivity under this measure. The results of the evaluation conducted for this mitigation measure will be used to guide the application of mitigation during project construction and maintenance activities. The evaluation will be provided to the Water Board (and to BLM for federal lands) prior to construction.

Measure 8b: Evaluation of Site-Specific Impact Potential in Areas of Holocene Substrate. PG&E will retain appropriately qualified and licensed personnel (e.g., California licensed professional geologist with appropriate experience and expertise) to evaluate the potential for impacts on paleontologically sensitive strata across the project area. The evaluation will be based on available geologic and geotechnical information; project design; proposed construction and/or maintenance methods, including anticipated depth of disturbance; and existing site conditions, including pre-existing disturbance, if any. In areas where highly sensitive strata will be involved in project-related ground disturbance, Measures 8c, 8d, 8e, and 8f will apply and will be implemented. The evaluation will be provided to the Water Board (and to BLM for federal lands) prior to construction.

Measure 8c: Preconstruction Meeting and Worker Awareness Training. PG&E will ensure that all construction and maintenance personnel receive paleontological resources awareness training that includes information on the possibility of encountering fossils during construction; the types of fossils likely to be seen, based on finds in the site vicinity; and proper procedures in the event fossils are encountered. Worker training will be prepared and presented by a qualified paleontologist as defined by the SVP (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995) or other appropriate personnel (e.g., California licensed professional geologist with appropriate experience and expertise) experienced in teaching non-specialists. It may be delivered at the same time as other pre-planned construction worker education, or it may be presented separately.

Measure 8d: Paleontological Monitoring. Paleontological monitoring will be conducted for all ground-disturbing activities in portions of the proposed disturbance with substrate materials identified as highly sensitive for paleontological resources (see Table 3.8-5). Monitoring may also be required where Holocene materials overlie highly sensitive strata and site-specific investigations have identified the potential for project activities to involve the underlying sensitive strata. A trained paleontological monitor will oversee all ground-disturbing activities that affect highly sensitive substrate materials, including vegetation removal, site preparation, construction grading and excavation. Monitoring may be required for any initial land clearing or grading for well installation in sensitive areas but is not required for well drilling itself. Paleontological monitoring will consist of observing operations and periodically inspecting disturbed, graded, and excavated surfaces. The monitor will have authority to divert grading or excavation away from exposed surfaces temporarily in order to examine disturbed areas more closely, and/or recover fossils. The responsible paleontologist will coordinate with the construction manager to ensure that monitoring is thorough but does not result in unnecessary

delays. If additional personnel are needed for effective monitoring, the responsible paleontologist may train other consultant or in-house staff in paleontological monitoring. Once training is complete, individuals trained by the qualified paleontologist may then monitor the proposed project construction independently, and will have the same responsibilities as described above. Annual reporting will be provided to Water Board (and to BLM for federal lands, if required by BLM) documenting compliance with this measure.

Measure 8e: Stop Work Requirement. If fossil materials are discovered during any project-related activity, including but not limited to project grading and excavation, all ground-disturbing work in the vicinity of the find will stop immediately until the responsible paleontologist can assess the nature and importance of the find and recommend appropriate treatment. Assessment will occur in a timely manner, and recommendations for treatment will be consistent with SVP guidelines (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995). Treatment may include preparation and recovery of fossil materials so that they can be housed in an appropriate museum or university collection, and may also include preparation of a report for publication describing the finds. If no report is required, PG&E will nonetheless ensure that information on the nature, location, and depth of all finds is readily available to the scientific community. The responsible paleontologist and all paleontological monitors will be empowered to temporarily halt or redirect the excavation equipment away from fossils to be salvaged.

Measure 8f: Fossil Recovery and Curation. If fossil materials are discovered during project-related activities, the responsible paleontologist will determine whether recovery and curation is warranted, and will be empowered to confer with local area experts as needed to arrive at a determination. All materials warranting recovery will be stabilized on the site and then salvaged consistent with currently accepted procedures and the prevailing standard of care for paleontological excavations. The responsible paleontologist will coordinate with the construction manager to ensure that specimen recovery proceeds in a timely manner. Recovered fossils will be prepared for identification consistent with currently accepted procedures and the prevailing standard of care. They will then be identified by competent specialists, potentially including, but not necessarily limited to, the responsible paleontologist. If possible, identification will include genus, species, and, if applicable, subspecies. If species-level identification is not feasible, the maximum feasible level of specificity will be provided. The fossil assemblage will then be analyzed by stratigraphic occurrence and any other applicable parameters (size, taxa present, and/or taphonomic conditions). A faunal list will be developed.

Any specimens (fossils) of paleontological significance found during construction will be temporarily housed in an appropriate museum or university collection. If curation is required, the responsible paleontologist will develop appropriate curation agreements, consistent with applicable protocols and the prevailing standard of care.

The responsible paleontologist will prepare a final report that includes at least the following components:

- information on site geology and stratigraphy, including a stratigraphic column;
- a description of field and laboratory methods;
- a faunal list, with stratigraphy ranges/occurrences for each taxon;
- a concise discussion of the significance of the site and its and relationship to other nearby and/or similar fossil localities;

- a list of references consulted during the project, including published geologic maps for the site and vicinity; and
- a complete set of field notes, field photographs, and any new geologic maps developed for or during the project.

Full copies of the final report, including any appended materials, will be put on file with any repository institution(s). Depending on the nature of the materials recovered, it may also be appropriate to prepare a report for publication in an appropriate peer-reviewed professional journal. Such publication will be at the discretion of the responsible paleontologist.

Section 3.9
Utilities and Public Services

3.9 Utilities and Public Services

3.9.1 Introduction

This section describes the affected environment and regulatory setting for utilities and public services. This section focuses only on those utilities (natural gas, telecommunications, electricity, wastewater, solid waste) and public services (emergency police and fire) that could be affected by remediation activities. Potential for cumulative utility and public service impacts associated with the project are discussed separately in Chapter 4, *Other CEQA Analyses*.

3.9.1.1 Summary of Impacts

Table 3.9-1 presents a summary of the impacts on utilities and public services. Section 3.9.6, *Impacts,* provides a detailed impact analysis.

Table 3.9-1. Summary of Utilities and Public Services Impacts

Impact	Applicable Alternative	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
UPS-1a: Disruption to Utility Lines during Trenching, Excavation, and Earthwork	All Alternatives	Less than Significant	None Required	–
UPS-1b: Increased Electricity Consumption	All Alternatives	Less than Significant	None Required	–
UPS-1c: Increased Contributions to Local Landfills Beyond Allowable Capacity	All Alternatives	Less than Significant	None Required	–
UPS-2: Disruption to Emergency Services	All Alternatives	Less than Significant	None Required	–

As discussed in the impact analysis, the primary project impacts to utilities would occur due to the potential for disruption to underground and overhead utilities during project construction at initial buildout and in subsequent phases to build additional new infrastructure. While there would be potential for contributing to increased electricity consumption and generation of solid waste, the relative amounts would be readily accommodated by utility service providers.

The project impacts to public services are limited to the potential disruption to emergency services, which would be less than significant due to the temporary nature of construction activities and the small amount of vehicular trips needed for commuting employees, materials delivery, and off-site transportation during operations. Other public services would not be affected because the project does not include development of facilities that would generate additional population and thus increased demand for police or fire service, schools, parks, or other public services.

3.9.2 Regulatory Setting

3.9.2.1 Federal Regulations

No federal regulations related to the utilities and public services apply to the project.

3.9.2.2 State Regulations

California Integrated Waste Management Act

The California Integrated Waste Management Act (Assembly Bill 939), adopted in 1989, established an integrated waste management program that, in order of importance, consists of source reduction, recycling, composting, and land disposal of solid waste. The law also required that each county prepare a new integrated waste management plan. The act further required each city and county to prepare a Source Reduction and Recycling Element (SRRE) by July 1, 1991 in their general plans. This regulation applies to the project in relation to the potential for generating solid waste during construction and operation and maintenance activities. Section 3.9.2.3, *Local Regulations*, describes the County's solid waste management system, which has the responsibility of implementing requirements under Assembly Bill 939.

California Occupational Health and Safety Administration Construction Safety Orders

General excavation activities that could affect utilities are regulated through the California Occupational Health and Safety Administration Construction Safety Orders under Title 8, Section 1541 (Excavation, Trenching and Earthwork).

Contractors working in the vicinity of utilities, both below- and above-ground, are required by Article 2 of the California Government Code Section 4216 to contact a regional notification center at least 2 days prior to the excavation of any subsurface installations. In California, there are two regional notification centers: Underground Service Alert of Northern California (USA North) and Underground Service Alert of Southern California (also known as DigAlert). DigAlert handles nine Southern California Counties including San Bernardino County. Underground Service Alert members include private companies and public agencies that have underground lines or facilities. DigAlert receives planned excavation reports from public and private excavators and transmits those reports to participating members. Calls to the center are free for all homeowners, excavators and professional contractors who are digging, blasting, trenching, drilling, grading, excavating, or otherwise moving earth. After receiving notification, DigAlert notifies utilities that might have lines buried within 1,000 feet of the excavation. Members mark or stake their facility, provide information, or give clearance to dig. The excavator is required to probe and expose underground facilities by hand prior to using power equipment for trenching and excavation.

3.9.2.3 Local Regulations

San Bernardino County General Plan

The project area is located in the Desert Region of the County, one of three distinct regions discussed in the County's General Plan (San Bernardino County 2007). The County's General Plan has a set of county-wide and region-specific goals and policies. Key goals and policies, listed below, are applicable to the project.

Conservation Element

The Conservation Element provides direction regarding the conservation, development, and use of the County's natural resources. Natural resources include water, energy, land, biodiversity, minerals, natural materials, recyclables, viewsheds, and air, among others. The following Conservation Element policy is applicable to the project.

- **Policy CO 8.7.** Utilize source reduction, recycling and other appropriate measures, to reduce the amount of solid waste disposed in landfills.

Circulation and Infrastructure Element

The Circulation and Infrastructure Element directs and promotes the development of a coordinated, multi-modal countywide transportation system and infrastructure capacity to meet the needs of those living, working, or visiting the county. The following Circulation and Infrastructure Element policies and goals are applicable to the project.

- **Policy CI 14.1.** Utilize a variety of feasible processes, including source reduction, transfer, recycling, land filling, composting, and resource recovery to achieve an integrated and balanced approach to solid waste management.
- **Goal D/CI 3**. Encourage property maintenance to enhance regional aesthetics with the promotion of water and soil conservation, recycling and proper solid waste disposal.
- **Goal D/S 1**. The County's emergency evacuation routes…will ensure adequate access of emergency vehicles to all communities.
    - **Policy D/S 1.1**. Designate the following roads and highways as evacuation routes in the Desert Region: Interstates 15 and 40, U.S. 95 and 395 and State Highways 18, 58, 62, 127, 138, 178 and 247.

San Bernardino County Building Code

The County regulates general performance standards under the County's Development code to limit or avoid any electrical disturbances. Per Title 8 of the County's Development Code (Chapter 83.01, Section 83.01.050):

> No activity, land use, or process shall cause electrical disturbance that adversely affects persons or the operation of equipment across lot lines and that does not conform to the regulations of the Federal Communications Commission. Existing or proposed uses that generate electrical disturbances that are be considered hazardous or a public nuisance shall be contained, modified, or shielded to prevent disturbances.

3.9.3 Environmental Setting

This section describes the existing conditions in the project area and vicinity related to utilities and public services evaluated in this section.

3.9.3.1 Utilities

Natural Gas

Southwest Gas Corporation provides natural gas to the project area and much of the County. According to the Circulation and Infrastructure Background Report for the San Bernardino County General Plan (San Bernardino County 2006), two 34-inch PG&E natural gas pipelines run parallel to

SR 58 and enter the Compressor Station from the east; gas is discharged from the Compressor Station into two 34-inch pipelines that exit the station to the west. The 42-inch Kern River gas transmission pipeline is located south of SR 58.

Aside from the natural gas transmission that originates at the Compressor Station, natural gas is not directly used for implementation of remediation activities under existing conditions. If the above-ground treatment facilities required internal heating, natural gas might be used in those facilities.

Telecommunications

Telecommunications providers in the project area and vicinity are Verizon and Sprint for telephone services and Time Warner Cable for digital phone, Internet, and cable services. All providers maintain utility lines in the project area.

Electricity

Southern California Edison provides electricity to the project area and vicinity. Southern California Edison has a service territory of approximately 50,000 square miles and serves, on average, more than 14 million people in central and southern California daily (Southern California Edison 2010). Southern California Edison maintains utility lines in the project area. The Compressor Station contains an electrical generation plant.

Electricity from both the Southern California Edison electrical grid and the supply from the Compressor Station's plant are used to operate the major mechanical equipment for existing remediation activities. Utility agreements prevent PG&E from using the power generated at the Compressor Station outside the immediate area of the station (i.e., source area). The source area and the existing freshwater extraction well (PG&E-14), which are both within the Compressor Station grounds, are connected to the station's electrical supply. The remaining major equipment (including but not limited to extraction well pumps, IRZ dosing equipment and controls and the Desert View Dairy operations) is powered by the electric grid (PG&E 2011).

Wastewater

The majority of residential properties in the project area and nearby vicinity are on private sewage treatment (septic) systems.

The Barstow Water Reclamation Facility, a municipal water and wastewater treatment facility, currently processes 2.7 million gallons per day (mgd) and has an overall capacity of 4.5 mgd (San Bernardino County 2006). It serves the City of Barstow and some of the surrounding areas.

Currently, there are no remediation facilities that generate sewage waste requiring wastewater treatment at an off-site reclamation facility.

Solid Waste

San Bernardino County's Solid Waste Management Division is responsible for the management and operation of the County's solid waste disposal system. This system consists of six regional landfills, eight transfer stations, and five community collection centers (San Bernardino County 2010). San Bernardino County contracts with Burrtec Waste Industries for disposal site operations and maintenance.

Solid waste management in unincorporated County areas is the responsibility of the County (San Bernardino County 2006). According to the Circulation and Infrastructure Background Report, the County has nine landfills in the Valley and the Desert Region's of the County (six of which are County owned) and 21 transfer stations. All nine landfills and 13 of the transfer stations are owned and operated by the County and have drop-off sites for recyclable materials (San Bernardino County 2006).

The Barstow Sanitary Landfill, located in Barstow is the closest landfill to the project area and has an 80,354,500-cubic-yard capacity.[1] The Barstow Sanitary Landfill accepts agricultural, construction/demolition, industrial, mixed municipal, biosolids (sludge), and other designated waste. The Barstow Sanitary Landfill is expected to reach capacity by 2071 (California Department of Resources Recycling and Recovery 2010). Solid waste generated by proposed remediation activities would be disposed of at the Barstow Sanitary Landfill as under existing conditions (Vetack pers. comm.).

The Waste Management Kettleman Hills Facility, located approximately 200 miles northwest of the project site, is the closest Class I landfill permitted to accept hazardous wastes as authorized under Title 27 of the California Code of Regulations. Current in-situ and agricultural treatment do not generate hazardous wastes as defined by Title 27, nor will they do so under the project. There is currently no above-ground treatment, and therefore no chromium contaminated residual by-product is generated under existing remediation activities. However, above-ground treatment, as included in several of the action alternatives, might generate hazardous wastes containing chromium that would require disposal in a Class I facility.

3.9.3.2 Public Services

As stated in the introduction, this section focuses on emergency public services.

San Bernardino County Sheriff-Coroner's Department

The San Bernardino County Sheriff-Coroner's Department (County Sheriff-Coroner's Department) Barstow Station provides law enforcement to the project area (Underwood pers. comm.). The County Sheriff-Coroner's Department Barstow Station serves the unincorporated areas around the City of Barstow, including Hinkley, Lenwood, Grandview, Yermo, Daggett, Newberry Springs, Trona, Baker, Red Mountain, Kramer Junction, Helendale, Fort Irwin, and Ludlow. This station also has resident deputy substations in Trona and Baker. The Barstow Station's jurisdiction encompasses more than 10,000 square miles, just over half the total square miles of the county.

Because of the large area the deputies cover, they regularly work with the California Highway Patrol, the Barstow Police Department, and the BLM Rangers. They also work closely with the Provost Marshal's Office and the Criminal Intelligence Division investigators at Fort Irwin and the Marine Corps Logistics Base, both located within the Barstow Station jurisdiction (San Bernardino County Sheriff's Department 2010).

[1] San Bernardino County previously operated the Lenwood-Hinkley landfill that stopped receiving municipal solid waste in 1997.

San Bernardino County Fire Department

The San Bernardino County Fire Department's North Desert Division is responsible for fire protection within the project area and surrounding vicinity. The San Bernardino County Fire Department's North Desert Division covers an area of 10,884 square miles and serves approximately 150,000 people in 19 different communities and cities in the County. There are currently 20 fire stations in the division (San Bernardino County Fire Department 2009). Hinkley Station 56, the fire station nearest to the project area, is located in the town of Hinkley and serves the project area (San Bernardino County Fire Dispatch pers. comm.).

Station 56 is staffed on an on-call basis with paid-call firefighters. Station 56 serves the Hinkley community, provides assistance to the City of Barstow, and responds to the I-15 corridor north and south of Barstow as well as the unincorporated areas west to the County line near Boron. Station 56 has one Type 1 structure engine, one Type 4 brush patrol with 4-wheel drive, one water tender, which provides additional water for rural areas, and a squad containing specialized support equipment. (San Bernardino County Fire Department 2010.)

3.9.4 Significance Criteria

The State CEQA Guidelines Appendix G (Title 14 California Code of Regulations Section 15000 et seq.) have identified significance criteria to be considered when determining whether a project could have significant effects on existing utilities or public services within a project area.

3.9.4.1 Utilities

For this analysis, an impact pertaining to utilities was considered significant under CEQA if it would:

- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- Result in insufficient available water supplies serving the project from existing entitlements and resources, or require new or expanded entitlements.
- Result in a determination by the wastewater treatment provider that serves or would serve the project that it has inadequate capacity to serve the project's anticipated demand in addition to the provider's existing commitments.
- Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs.
- Result in non-compliance with federal, state, or local statutes and regulations related to solid waste.
- Require or result in the construction of utility facilities or expansion of existing utility facilities, the construction of which could cause significant environmental effects.
- Disrupt the operation of or require the relocation of regional or local utilities.

Some of the significance criteria are not applicable to the project because there is no potential for the impact to occur or the applicable environmental resource does not occur within the project area.

In-situ and agricultural treatment do not require new water supply or wastewater service systems because all water needed for operation would be satisfied by extracting groundwater; once treated, this water would be either directly reinjected into the aquifer or treated and reinjected into the aquifer. The proposed above-ground treatment (Alternatives 4C-3 and 4C-5 only) would generate a minimal demand for potable water, and generate minimal amounts of non-process and non-laboratory wastewater (sewage waste). Potable water would be supplied by PG&E. The non-process and non-laboratory wastewater would be would be treated on the site in newly constructed septic systems. The other process and laboratory wastewater generated during ex-situ treatment would be collected and treated within the above-ground treatment system.

No existing stormwater facilities exist in the project area. Remediation activities would occur in geographically flat areas where most of the drainage would likely percolate into underlying groundwater aquifers rather than being transported as sheet flow. In some cases (i.e., along roadways), there could be small drainage ditches. The project would result in a minor amount of additional impervious area due to wellhead pads and the impervious surface areas within new above-ground treatment facilities and associated paved access roads. Permit requirements would require PG&E to comply with the County's building code to address management of new sources of stormwater.

Therefore, potential impacts associated with water, wastewater, and stormwater infrastructure issues as they relate to the stated criteria are not considered further in this section. Impacts related to other water issues are addressed in Section 3.1, *Water Resources and Water Quality*.

3.9.4.2 Public Services

An impact pertaining to public services was considered significant under CEQA if it would result in:

- Substantial adverse physical impacts associated with the provision of or need for new or physically altered facilities to maintain acceptable service ratios, response times, or other performance objectives for fire protection, police protection, schools, parks, and other public facilities.

Because the project does not include development of facilities that would generate additional population, increased demand for police or fire service, schools, parks, or other public services are not evaluated. Therefore, potential impacts associated with these issues are not considered further in this section except for potential disruption for emergency police and fire service.

3.9.5 Methodology

The potential impacts associated with the proposed remediation activities under the various alternatives were evaluated by comparing the level, quality, and regulatory compliance of utilities and services before and after implementation of the project. In addition, the amount of related infrastructure currently required in the project area was compared to that required during and after project construction. General information on public services and utilities was obtained from the County General Plan and relevant agencies and service providers.

3.9.6 Impacts

Impact discussions are organized by topics that correspond with the applicable significance criteria described in Section 3.9.4, *Significance Criteria*. For each impact, an overview is followed by a general discussion of the impact and the significance determination, and then a discussion of how the impact differs for each of the alternatives. In cases where an impact would not differ between all alternatives, a single discussion of the impact and the significance determination is presented.

3.9.6.1 Utilities

Impact UPS-1a: Disruption to Utility Lines during Trenching, Excavation, and Earthwork (Less than Significant, All Alternatives)

Overview of Impact

Construction activities would require ground disturbance, including excavation, trenching, and earthwork (i.e., grading, land clearance, paving, concrete pouring) for installation of wells, pipelines, above-ground structures, new utilities (i.e., septic, electrical, and telecommunications) and new access roads. These ground-disturbing activities have the potential to occur in proximity to existing underground utilities and could require interruption of service (e.g., planned shutdowns, accidental rupture) to existing customers. Once facilities are built and operating, ground-disturbing activities could be required for periodic maintenance of subsurface infrastructure to conduct repairs or replace infrastructure.

The project also has the potential to disrupt aerial utility and transmission lines for electricity, telecommunications, and possibly other aerial lines and facilities in the project area during construction and operations and maintenance activities. Construction activities have the potential to disrupt aerial electrical lines in order to construct new lines for use in operating new well pumps and above-ground treatment facilities (as proposed under Alternatives 4C-3 and 4C-5). During construction activities, localized planned temporary electrical and telecommunications outages may be necessary to tie into the electrical lines, which would result in short-term loss of power for utility users in the local area. Once built and operating, disruption to aerial utilities is not anticipated, but repairs to electrical lines serving project operations could be necessary. However, under existing remediation activities, PG&E has stated that they have had limited need for planned outages and typically implement new tie-ins as live connections that do not require any disruptions to service (Pacific Gas and Electric 2011).

As described in Section 3.9.2, *Regulatory Setting*, any general ground-disturbing activities that could affect utilities are regulated by the state. State regulations require contractors working in the vicinity of utilities, both below and above ground, to implement standard procedures to prevent accidental ruptures of utility infrastructure and loss of service. In addition, contractors are required to comply with provisions of the County's Development Code to prevent disturbances to electrical uses and services. Because any ground-disturbing project activities are required to comply with state and local regulations to prevent impacts on utility infrastructure and utility services, this impact is considered less than significant compared to existing conditions.

All Alternatives

All alternatives would require similar construction and operation and maintenance activities, as described in the overview of impacts, to construct and operate infrastructure and implement remediation in the project area. The impacts to existing below- and above-ground utility infrastructure and services would be the same as those described in the overview of impacts. All activities would be required to comply with state and local regulations to prevent accidental ruptures and service interruptions to existing utilities. The only differences in impacts between the alternatives and compared to existing conditions would be the extent of area and level of activity that would occur, with the severity of impact being the least under the No Project Alternative in comparison to the action alternatives. As a result, these impacts are considered less than significant for all alternatives in comparison to existing conditions.

Impact UPS-1b: Increased Electricity Consumption (Less than Significant, All Alternatives)

Overview of Impacts

The project would require increased electricity consumption during construction and operations and maintenance activities. During construction, a minor increase in electricity consumption is anticipated in order to power construction equipment; this increase would likely be provided through a diesel-powered or other type of generator and would not require tie-ins to the existing electrical grid.

Once project facilities are built and operating, additional electricity would be required to power additional well pumps under all alternatives. The power to each well pump would come from tie-ins to the existing Southern California Edison transmission lines in the project area. Future equipment (i.e., new agricultural treatment units, extraction wells, above-ground treatment facilities) will continue to be operated from the electric grid in a manner similar to that of existing equipment and, to the extent possible, proposed remediation south of Community Boulevard would be powered by the electricity generated at the Compressor Station's plant. Diesel-powered generators are also proposed as a backup electricity supply in the event of disruption of grid electricity.

Overall, the increase in electricity consumption under all project alternatives would be low relative to that of the entire County, for which Southern California Edison provides the majority of electricity. The electricity consumption was calculated for the action alternatives as part of the assessment of greenhouse gas emissions (see Section 3.5, *Air Quality and Climate Change*). The highest annual electricity use for one of the action alternatives would be approximately 12 million kilowatts per hour (kWh) (Alternative 4C-4). In comparison, the total electricity consumption in San Bernardino County in 2010 was 13,213 million kWh (California Energy Commission 2012). The 0.09%increase in electricity consumption is not likely to result in the need for new regional generation or transmission facilities.

As described in Section 3.9.3, *Environmental Setting,* Southern California Edison is one of the largest providers of electricity in the United States and has the infrastructure and capacity to provide electricity to more than 14 million people in a 50,000–square mile area. It is unlikely that any new power needs would raise electricity usage to a level that would adversely affect Southern California Edison's provision of utilities in the project area or require substantial new facilities to provide service (other than line extensions and connections for tying in to the existing electric grid). As a result, this impact is considered less than significant.

All Alternatives

The amount of electricity consumption will vary between the alternatives due to the varying intensity in use and scale of proposed infrastructure. The No Project Alternative would require the least amount of increased electricity usage in comparison to existing conditions and the action alternatives. Of the action alternatives, only Alternatives 4C-3 and 4C-5 would require electricity consumption for above-ground treatment facilities. Alternatives 4C-3 and 4C-4 would have the highest pumping rates for agricultural treatment and associated electricity consumption for pumping. Based on the data developed for the greenhouse gas emissions analysis (see Table 3.5-9 in Section 3.5, *Air Quality and Climate Change*), Alternative 4C-4 would have the highest amount of electricity consumption and the No Project Alternative would have the lowest. However, as noted, project-related power needs would be small in comparison to local and regional usage. Further, PG&E would use current power generated by the Compressor Station to the extent possible to implement remediation within the areas located in the Compressor Station compound and diesel-powered generators when necessary to limit consumption from the electric grid. With the relatively small magnitude of future power needs and infrastructure, in addition to availability of backup power sources, there would be no significant impacts to electricity consumption under all alternatives compared to existing conditions. This impact would be less than significant.

Impact UPS-1c: Increased Contributions to Local Landfills Beyond Allowable Capacity (Less than Significant, All Alternatives)

Overview of Impacts

Construction of the project would generate solid wastes (e.g., construction/demolition, industrial, pavement when excavating in roadways, and limited earthen materials) from excavation, grading, trenching, land clearing, and demolition of structures. Spoils generated by ground disturbance would be backfilled or reused and would not be hauled off the site (see Section 3.3, *Hazards and Hazardous Materials*, for the discussion of impacts related to potential for encountering contaminated soils). The other solid wastes generated during construction would be hauled off the site to the Barstow Sanitary Landfill. The Barstow Sanitary Landfill is expected to reach capacity by 2071. The majority of project construction would occur during the initial buildout phase, which would be the phase with the potential to generate the largest amount of solid waste. Initial buildout would occur within the next 5 years, which is approximately 50 years from the estimated date of capacity at the Barstow Sanitary Landfill. Due to the long lifespan of the project, subsequent phases could occur in years after the Barstow Sanitary Landfill has reached capacity. However, all solid waste generated by the project would be required to comply with Assembly Bill 939 and the County's waste reduction requirements. Waste recycling has been used increasingly throughout the state to divert wastes from entering landfills, and the provisions of both Assembly Bill 939 and the County's waste reduction regulations include requirements and guidelines for managing and implementing waste recycling. Also, because the intensity of construction would decrease over the course of future project phases, it is anticipated that the overall amount of solid waste generated by project construction would not substantially decrease the existing lifespan of the landfills near the project area.

Solid wastes generated during operations and maintenance would be similar to those generated during construction activities, particularly in regard to replacement of infrastructure (i.e., well casings, pipes, etc.) for the duration of project remediation. As described in Section 3.3, *Hazards and Hazardous Materials*, proposed above-ground treatment of contaminated groundwater would

generate residual by-products of chromium, which could be considered hazardous waste and would be required to be disposed of at a Class I landfill in accordance with the requirements of Title 27. The Waste Management Kettleman Hills Facility, located approximately 200 miles northwest of the project site, is the closest Class I landfill to the project area. Similar to construction impacts, the intensity of above-ground treatment would decrease over the course of future project phases. Above-ground treatment of groundwater contamination would be most aggressive in the initial phases to remove or convert the areas of greatest chromium contamination, and would decrease over the course of future project phases.

Agricultural treatment activities could be required for as long as 75 years (Alternative 4C-4) to 95 years (Alternative 4B) to treat to the average background Cr[VI] level of 1.2 ppb (the maximum background level of 3.1 ppb would be reached much earlier), which is beyond the lifetime of the Barstow Sanitary Landfill. However, in the later years of the project, only minor waste from agricultural treatment and monitoring would be generated and it is probable that San Bernardino County will have developed new landfills or other methods of waste disposal in accordance with state and local laws that will be available to the project and the Hinkley area at the time.

Due to the availability of landfill capacity, the decreasing potential for solid waste generation over time, and requirements to comply with state and local regulations, the project would not result in significant impacts on local landfills compared to existing conditions. This impact is considered less than significant.

All Alternatives

The same impacts as those described in the overview of impacts would occur under all alternatives in relation to general construction and operation and maintenance activities. However, the potential to generate hazardous residual by-products from groundwater treatment requiring disposal in a Class I facility would occur only under Alternatives 4C-3 and 4C-5. While there would be an additional source of waste under these alternatives, the overall impact of increased solid wastes under all project alternatives would be considered less than significant in comparison to existing conditions due to the availability of appropriate facilities with remaining capacity to handle the project's solid wastes.

3.9.6.2 Public Services

Impact UPS-2: Disruption to Emergency Services (Less than Significant, All Alternatives)

Overview of Impact

Project construction would generate additional vehicular traffic to the project area in the form of commuting workers and equipment and material deliveries. Approximately 3–6 workers would be required on-site per day for installation and development of a well, and approximately 15 workers per day would be required for pipeline installation. There would be approximately 5–19 workers on site during construction of the above-ground treatment facilities. Therefore, there could be up to 40 workers commuting to the project area during the buildout of remediation facilities. The addition of 40 vehicle trips to local highways and roads would not constitute a significant increase in traffic that could impede emergency access (police, fire, medical) to the project area or its vicinity. Once at the construction location, vehicles would be parked off public roads in staging areas on the PG&E property or other staging area directly on the project site. Material and equipment delivery is

anticipated to occur periodically, and could potentially require the use of large, slow-moving trucks if oversized equipment is transported. However, the majority of the project area is in a rural setting with little traffic, and accessibility to the project area is available from multiple access roads. Further, construction-related increases in traffic would be temporary. Therefore, the impact on emergency service during construction would be less than significant compared to existing conditions.

Once built, project operation and maintenance would require a small number of additional repair, maintenance, and delivery vehicles traveling to and from the project site, in addition to employees commuting to the project area. Approximately 2–4 additional workers would be needed for well operations, 1–3 additional workers would be needed for agricultural treatment operations, and 1–3 workers would be needed for above-ground facility operations. Neither worker vehicle trips nor truck trips for material and equipment deliveries under operation and maintenance would constitute a significant increase in traffic that could impede emergency access to the project area or its vicinity. Therefore, operation and maintenance impacts on emergency services in the project area would be less than significant compared to existing conditions.

All Alternatives

All activities would have the same impacts as those described in the overview in relation to disruption of emergency services. The only differences in impacts between the alternatives compared to existing conditions would be the level of activity that would occur during construction, with the severity of impact being the least under the No Project Alternative compared to the action alternatives. As a result, impacts on emergency services would be less than significant for all alternatives compared to existing conditions.

Section 3.10
Transportation and Traffic

3.10 Transportation and Traffic

3.10.1 Introduction

This section describes the affected environment and regulatory setting for transportation and traffic. It also describes the impacts on transportation and traffic that would result from implementation of the project and mitigation measures that would reduce those impacts. Growth-inducing and cumulative impacts associated with transportation and traffic are discussed separately in Chapter 4, *Other CEQA Analyses*.

3.10.1.1 Summary of Impacts

Table 3.10-1 presents a summary of the impacts on transportation and traffic. All potentially significant impacts would be reduced to a less-than-significant level with mitigation measures. See Section 3.10.6, *Impacts*, and Section 3.10.7, *Mitigation Measures*, for a detailed discussion of all impacts and mitigation measures.

Table 3.10-1. Summary of Transportation and Traffic Impacts

Impact	Applicable Alternative	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
TRA-1a: Increase in Traffic Volumes or Roadway Congestion from Construction	All Alternatives	Potentially Significant	TRA-MM-1: Implement Traffic Control Measures during Construction	Less than Significant
TRA-1b: Increase in Traffic Volumes or Roadway Congestion from Operations and Maintenance	All Alternatives	Less than Significant	None required	—
TRA-2a: Create Significant Roadway Hazards from Construction Truck Traffic	All Alternatives	Potentially Significant	TRA-MM-1	Less than Significant
TRA-2b: Impede Emergency Access during Construction	All Alternatives	Potentially Significant	TRA-MM-1	Less than Significant

The primary transportation and traffic impacts under project implementation would occur during construction because of the presence of slow-moving trucks, which could affect roadway operations, introduce new roadway hazards, or impede emergency access. The primary roadways are shown in Figure 3.10-1.

3.10.2 Regulatory Setting

3.10.2.1 Federal Regulations

Surface Transportation Assistance Act

The federal Surface Transportation Assistance Act (STAA) regulates oversized semitrailers on federal highways and on access routes that are designated by Caltrans or local authorities. As the primary roadway, SR 58 provides regional access to the project area and would be used by oversized semitrailers for project implementation. SR 58 is a designated STAA route; therefore, it must meet safety standards to allow oversized semitrailers.

3.10.2.2 State Regulations

California Department of Transportation

State highway standards are implemented in California by Caltrans, which is responsible for planning, designing, constructing, operating, and maintaining all state-owned roadways in the project area. Caltrans enforces various policies and regulations related to modification of, or encroachment on, state-owned roadways. Caltrans's construction practices require temporary traffic control planning any time the normal function of a roadway is suspended. Caltrans is also responsible for permitting uses and encroachments on state roads and highways. Oversized loads also are subject to permitting requirements. As described above, SR 58 is the primary state-owned roadway that would be used for access to the project area.

Intermodal Corridor of Economic Significance Act

The Intermodal Corridor of Economic Significance Act established the Intermodal Corridors of Economic Significance (ICES) system, as described in Sections 2190–2191 of the California Streets and Highways Code. The ICES system comprises significant transportation arteries in the state that connect major ports, nationwide railway systems, airports, and interstate and intrastate highway systems, thereby serving as an intermodal corridor of economic significance. SR 58, which connects Bakersfield and Barstow, is part of the ICES system and includes the portion that passes through the project area.

3.10.2.3 Local Regulations

San Bernardino County General Plan

The project area is located in the Desert Region of San Bernardino County, which is one of three distinct regions discussed in the County's general plan (San Bernardino County 2007b). The County's general plan has a set of countywide and region-specific goals and policies. The following countywide traffic-related goals and policies are applicable to the project.

Countywide Circulation and Infrastructure Element

The Circulation and Infrastructure Element directs and promotes the development of a coordinated, multi-modal countywide transportation system and infrastructure capacity to meet the needs of those living, working, or visiting the county. The following Circulation and Infrastructure Element policies and goals are applicable to the project:

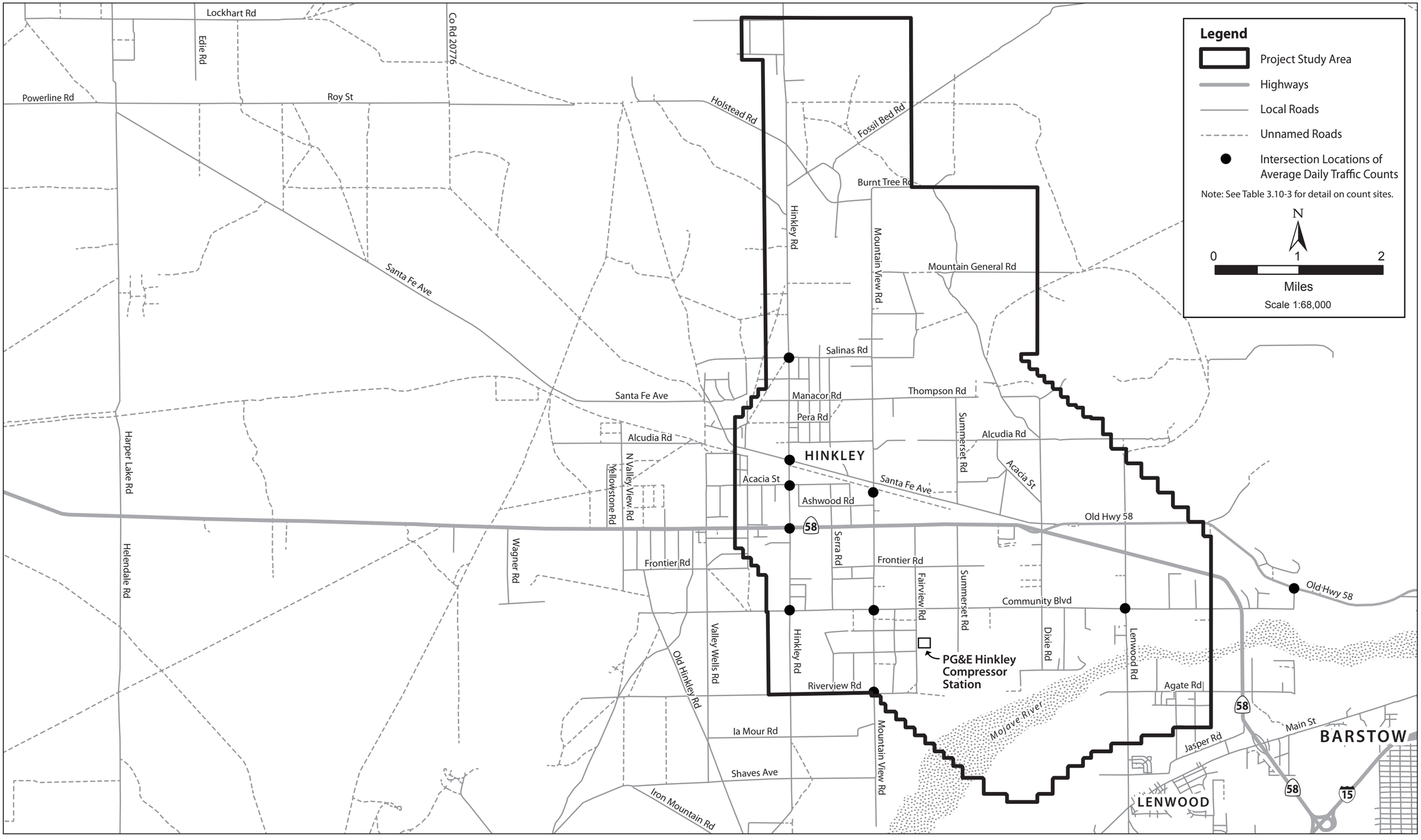

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Figure 3.10-1
Project Area Roadways

- **Goal CI 4.** The County will coordinate land use and transportation planning to ensure adequate transportation facilities to support planned land uses and ease congestion.
    - **Policy CI 4.1:** Ensure appropriate legal and physical access to land prior to final approval of land divisions or new development.
- **Goal CI 5:** The County's road standards for major thoroughfares will complement the surrounding environment appropriate to each geographic region.
    - **Policy CI 5.2:** Protect and increase the designed roadway capacity of all vehicular thoroughfares and highways.

      Programs:

      1. Use current and develop new innovative traffic engineering practices to increase roadway capacity and safety such as:

         b. Limit access to all categories of major and secondary highways and controlled-/limited-access collectors from intersecting streets; direct access from abutting properties will only be where no reasonable alternatives exist.

         h. Establish no-parking zones

         j. Block or dead-end existing access roads to main highways.

         l. Limit truck traffic on certain roads and at specified hours.
    - **Policy: CI 5.3:** Limit, where feasible, access along all roads intersecting major and secondary highways for a distance of 600 feet from the centerline of said highways to the maximum extent possible.
    - **Policy: CI 5.6:** For privately maintained roads, the minimum width should be (a) no less than 24 feet wide (paving, curbs, and gutters) with no parking allowed, (b) 30 feet wide (paving, curbs, and gutters) with parking allowed on one side, or (c) a 36 feet wide (paving, curbs, and gutters) with parking allowed on both sides.

The following Desert Region goals and policies of the Circulation and Infrastructure Element are applicable to the project:

- **Goal D/CI 1:** Ensure a safe and effective transportation system that provides adequate traffic movement while preserving the rural desert character of the region.
    - **D/CI 1.5:** Along the highways, encourage shared driveways for industrial and commercial uses on adjacent properties to minimize turning movements and traffic congestion.

San Bernardino County Traffic Impact Study Guidelines

The County Traffic Impact Study guidelines require that all County roadways operate at Level of Service (LOS) D conditions or better.

3.10.3 Environmental Setting

This section discusses the existing conditions related to transportation and traffic in the project area and in the vicinity.

3.10.3.1 Regional Roadways

SR 58 (also called the Mojave-Barstow Highway and the Barstow/Bakersfield Highway) is the primary regional roadway in the project area. It originates east of the project area in Barstow at Interstate 15 (I-15) and extends west to Mojave and Bakersfield. Regionally, SR 58 provides a connection between Barstow, Mojave and Bakersfield. Locally, SR 58 is the main access route to the community of Hinkley from both the east and west. In the vicinity of the project area, SR 58 is a two-lane highway with 11- to 12-foot lanes and 6- to 8-foot-wide shoulders. It also has several driveways and intersecting cross streets. The speed limit for the portion of the highway that runs through the project area is 60 miles per hour (San Bernardino County 2007a). Within the project area, the only SR 58 intersection that is signalized is at Lenwood Road; other locations are stop-sign controlled. Table 3.10-2 shows average annual daily traffic (AADT) on SR 58 in the vicinity of the project area.

Table 3.10-2. Annual Average Daily Traffic on SR 58 in the Project Vicinity

Highway	Cross Street	Back AADT	Ahead AADT
SR 58	Harper Lake Road[a]	9,700	10,000
SR 58	Lenwood Road[b]	10,000	11,300

Source: California Department of Transportation 2011.

AADT = annual average daily traffic (total traffic volume for the year divided by 365 days).

Back AADT = traffic south or west of the count location.

Ahead AADT = traffic north or east of the count location.

[a] Located approximately 8 miles west of Hinkley Road.

[b] Located approximately 0.25 miles east of OU3; within the project study area.

In 2009, CPUC (CPUC 2010) estimated that the level of service (LOS) at the intersections of SR 58/Harper Lake Road was LOS of B/C (~12,100 AADT) and at SR 58/Lenwood Road was LOS A (12,100 AADT). Traffic levels in 2011 were lower than those studied by CPUC in 2009. These levels of service are better than the County and Caltrans standard of LOS D.

3.10.3.2 Local Roads

Access to existing remediation sites (wells, in-situ facilities, and agricultural treatment units) within the project area is primarily from public streets (paved, two lanes) and secondary dirt roads (unpaved, single lane). Emergency access to the project area is from existing surface streets.

Table 3.10-3 summarizes average daily traffic volumes on the largest local roads that would provide access to the project area, which include Hinkley Road, Community Boulevard, and Mountain View Road. As shown in Table 3.10-3, the existing roadway is not highly congested because of the rural nature of the project area. For example, an average daily traffic volume of 633 vehicles was recorded at Hinkley Road and North SR 58 in the project area compared with an average annual daily traffic volume of 10,200 vehicles at SR 58 and Harper Lake Road west of the project area.

Table 3.10-3. Average Daily Traffic on Local Access Roads

Road	Count Site	ADT
Hinkley Road	North SR 58	633
	South SR 58	282
	North Santa Fe	868
	North Salinas	187
	South Acacia	601
Community Boulevard	East Hinkley Road	321
	East Lenwood Road	976
	South SR 58	905
Mountain View Road	North Riverview Road	60
	North Community Boulevard	101
	South Santa Fe Railroad Crossing	187

Source: San Bernardino County 2012.
ADT = average daily traffic.

Other local roads that provide access to existing remediation areas include Summerset Road, Alcudia Road, Frontier Road, Fairview Road, Acacia Street and Thompson Road. Local roads that could provide access to future remediation and monitoring areas include Mulinax Road, Dixie Road, Salinas Road, Sonoma Street, Mountain General Road, Burnt Tree Road, Sierra Road, Serra Road, and other local roads.

3.10.3.3 Railways

Two Class I freight railroads operate lines in the project area. BNSF and the Union Pacific Railroad use a track that runs adjacent to Santa Fe Avenue through the project area (Burlington Northern Santa Fe Corporation 2010). The line connects Mojave to Barstow. No commuter lines are located in the vicinity of the project area.

3.10.3.4 Airports

There are no airports or airfields in the vicinity of the project area. The closest airport or airfield is Barstow Daggett Airport, located approximately 20 miles southeast of the project area (San Bernardino County 2007a).

3.10.4 Significance Criteria

The State CEQA Guidelines, Appendix G (14 CCR 15000 et seq.), have identified significance criteria to be considered when determining whether a project could have significant effects on existing transportation and traffic conditions. For this analysis, an impact pertaining to transportation and traffic was considered significant under CEQA if it would:

- Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system
- Exceed, either individually or cumulatively, a level of service standard established by the County congestion management agency for designated roads or highways

- Result in a change in air traffic patterns that results in substantial safety risks
- Substantially increase hazards because of a design feature
- Result in inadequate emergency access
- Result in inadequate parking capacity

As previously described, there are no airports or airfields in the vicinity of the project area. Therefore, potential project impacts on air traffic patterns are not considered further.

The project does not include new design features or modifications to existing roadway configurations. Vehicles used for project construction and operations and maintenance would be similar to vehicles that currently use the roadway (i.e., passenger cars, heavy-duty trucks, and delivery trucks). Project vehicles would be compatible with existing roadway infrastructure, which would continue to accommodate passenger vehicles and trucks as under existing conditions. Therefore, project implementation would not have the potential to create or substantially increase any traffic hazards and would not change the design of existing roadway configurations. Potential impacts on safety are not considered further.

The project would not affect parking capacity because the areas where remediation activities would occur are areas where parking is not needed for other uses. Parking demand during construction and operations and maintenance could be accommodated by using local streets within the project area. Therefore, potential project impacts on parking capacity are not considered further.

3.10.5 Methodology

Potential traffic impacts of the project were evaluated by comparing existing traffic conditions with future conditions expected with project implementation. The impact analysis considers both construction and operations and maintenance impacts, where applicable.

3.10.6 Impacts

This section provides the impact analysis and mitigation measures related to transportation and traffic. The impacts are organized by topic, which correspond with the significance criteria described in Section 3.10.4, *Significance Criteria*. For each impact, an overview with a general discussion of the impact and the significance determination is followed by a discussion of how the impact differs for each of the alternatives. In cases where an impact would not differ between all alternatives, a single discussion of the impact and the significance determination is presented.

3.10.6.1 Traffic Increases

Impact TRA-1a: Increase in Traffic Volumes or Roadway Congestion from Construction (Less than Significant with Mitigation)

Overview of Impacts

Construction of wells, agricultural treatment units, above-ground treatment facilities, and all associated infrastructure would generate temporary increases in traffic. Such increases would be associated with construction workers traveling to construction sites and materials and equipment being delivered to the project area.

As described above in Section 3.10.3, *Environmental Setting,* the primary access roads in the project area are SR 58, Hinkley Road, Community Boulevard, and Mountain View Road in addition to other local roads. These would be the main roads that would be used for project area access. As described in Section 2.9, *Construction, Operation and Maintenance*, it is estimated that approximately three to six workers per day would be required for installation and development of a well, approximately 15 workers per day for pipeline installation, and approximately five to 19 workers for construction of above-ground treatment facilities. Construction activities would be phased over the course of project implementation, with the majority of construction occurring during initial build out. Most of the new wells and agricultural treatment units would be constructed as part of the initial buildout but some wells and agricultural treatment may be built over time. Construction of the above-ground treatment facilities would also occur during initial build out. During construction, if the maximum number of workers should be present at any one time, approximately 40 workers would be traveling to the project area.

As indicated in 3.10.3, *Existing Setting* above, the local roadways have very low volumes and thus operate well above the County's LOS standard of LOS D. SR 58 intersections (at Harper Lake Road and Lenwood Road) had LOS levels that were better than the LOS D standard in 2009 with 1,000 or more daily trips than in 2011. Thus, an additional 40 vehicular trips, when considered with existing traffic in the project area, would constitute only an incremental increase in traffic on local roads and SR 58 and would not degrade level of service for local roads or SR 58 below county or Caltrans LOS standards (LOS D).

Other construction-related traffic would be from trucks that would haul materials and equipment to the project area. These trucks would use SR 58 and the local surface streets. Typically, the majority of construction-related truck traffic occurs during the initial phases of construction when materials and equipment are dropped off and stored on-site or at the end of construction when all equipment and materials are hauled off-site. As discussed in Section 3.10.2, *Regulatory Setting*, SR 58 is a designated STAA route and part of the ICES system. As such, the road is already heavily traveled by trucks. Similar to traffic associated with construction workers traveling to the project area, truck traffic would constitute an incremental increase in traffic on local roads and SR 58.

Although there would be only incremental increases in traffic volumes due to construction workers traveling to the project area, increases in construction-related truck traffic over the course of project build out has the potential to worsen traffic operations and increase congestion because of slow-moving trucks. The existing roadway is not highly congested, and free-flowing conditions currently exist. Therefore, vehicle speeds often exceed the 60 mph speed limit on SR 58. Additionally, there is only one signalized intersection (Lenwood Road) along the segment of SR 58 that crosses the project area. As a result, slow-moving trucks making turns from SR 58 may cause vehicles to line up on county roads and highways, thereby impeding the free-flowing conditions that currently exist, particularly if numerous trips occur during the morning or afternoon peak traffic periods. This would affect mostly SR 58 because the surrounding surface streets in the project area are rural two-lane roads with very little traffic.

The increase in traffic volumes would be minor, spread over time, and in relatively remote locations, affecting streets with low traffic volumes. However, because of the speed of vehicular traffic and unprotected turning movements on SR 58, there is the potential for significant impacts to occur as a result of increased congestion from construction-related truck traffic on SR 58. Implementation of **Mitigation Measure TRA-MM-1** would ensure that the potential for traffic congestion would be minimized during construction by requiring alternate routes for trucks and implementing traffic

control measures. Therefore, this impact would be less than significant with implementation of **Mitigation Measure-MM-TRA-1**.

All Alternatives

Construction-related traffic impacts are considered potentially significant under all alternatives. The impacts would be the same as those described under the overview. The main difference would be in the intensity and scale of impacts, with the No Project Alternative having the least amount of impact compared with both existing conditions and the action alternatives. Among the action alternatives, Alternatives 4C-3 and 4C-5 would have the greatest impact compared with existing conditions because they would include above-ground treatment facilities that would require more construction workers, a longer initial buildout phase, and more equipment and materials than all other alternatives. Therefore, there would be potentially significant construction-related traffic impacts under all alternatives. Implementation of **Mitigation Measure TRA-MM-1** would reduce this impact to a less-than-significant level.

Impact TRA-1b: Increase in Traffic Volumes or Roadway Congestion from Operations and Maintenance (Less than Significant)

Overview of Impact

Traffic associated with operations and maintenance activities would be generated by new employees who travel to the project area to conduct daily operations and maintenance activities, periodic truck trips for bulk deliveries (e.g., ethanol) and pickups (e.g., waste disposal), periodic trips for monitoring activities at wells (quarterly, semi-annually. or annually [sometimes more frequently when new wells are developed]), material transport for pump and pipeline repairs, and crop maintenance at agricultural treatment units. Approximately two to four new employees would operate and maintain the new wells and associated infrastructure, one to three new employees would operate and maintain new agricultural treatment units, and one to three new employees would operate and maintain new above-ground treatment facilities. Existing access roads would continue to be used, with the exception of the new paved roads to the above-ground treatment facilities, which would be constructed off primary surface streets and used only for accessing these facilities.

Increases in traffic volumes and congestion under operations and maintenance would be considered incremental because the addition of up to 10 new employees and associated vehicle trips to the project area would not substantially increase the number of vehicles on local roads. Potential traffic impacts from truck trips related to operations and maintenance (e.g., material and equipment deliveries, waste pickup) would also be incremental. Such trips would occur periodically and be scheduled on an as-needed basis. Additionally, there is sufficient capacity on local roads to accommodate new project-related traffic because of the rural and relatively remote location of the project area and the low traffic volumes on existing roads. Overall, the incremental increase in traffic from project operations and maintenance activities would not significantly decrease roadway capacity or cause congestion on local or surrounding roadways. The existing uncongested and free-flowing traffic conditions would remain. This impact is considered less than significant.

All Alternatives

Potential traffic impacts related to operations and maintenance would be the same as those described under the overview of impacts for all alternatives. Compared with existing conditions, there would not be a substantial increase in the number of employees or trucks traveling to the project area, and there would continue to be sufficient capacity on local roads to accommodate new project-related traffic. New traffic volumes would be slightly higher under Alternatives 4C-3 and 4C-5 because these alternatives would result in the generation of solid wastes that would require off-site hauling. However, the additional trips would not constitute a substantial increase in traffic. Furthermore, they would be accommodated by existing roads. Therefore, potential traffic impacts related to operations and maintenance would be less than significant under all alternatives.

3.10.6.2 Safety

Impact TRA-2a: Create Significant Roadway Hazards from Construction Truck Traffic (Less than Significant with Mitigation)

Overview of Impact

As described under Impact TRA-1a, above, increases in construction-related truck traffic over the course of project build out have the potential to increase the number of slow-moving trucks on access roads leading to the project area. Although SR 58 becomes congested at times as the number of lanes reduces from four to two through Hinkley and vehicles slow behind slow-moving traffic in the 2-lane segment, vehicle speeds often exceed the 60 mph speed limit in the two-lane segment. Additionally, there are no stop-controlled or signalized intersections along the segment of SR 58 that crosses the project area. As a result, slow-moving trucks making turns from SR 58 may create a safety hazard and increase the risk of accidents, particularly if numerous trips occur during the morning or afternoon peak traffic periods. This would affect mostly SR 58; the surrounding surface streets in the project area are rural two-lane roads with very little traffic. Because of the current roadway configuration and operations on SR 58, the introduction of new safety hazards would be considered a potentially significant impact. Implementation of **Mitigation Measure TRA-MM-1** would ensure that the potential for the project to increase roadway safety hazards would be minimized during construction by requiring alternate routes for trucks and implementation of traffic control measures. Therefore, this impact would be less than significant with implementation of Mitigation Measure TRA-MM-1.

All Alternatives

This impact would be considered potentially significant under all alternatives compared with existing conditions and the same as described under the impact overview above. Implementation of **Mitigation Measure TRA-MM-1** would reduce this impact to a less-than-significant level.

Impact TRA-2b: Impede Emergency Access during Construction (Less than Significant with Mitigation)

Overview of Impact

Construction would generate additional vehicular traffic in the project area in the form of commuting workers and equipment and material deliveries. As described above under Impact TRA-1a, there could

be an additional 40 vehicular trips on local highways. These would be associated with construction workers who travel to the project area. There would also be an increase in truck traffic, which could slow down traffic on local roadways, particularly on SR 58. Although the majority of the project area is in a rural setting with little traffic and accessibility is available from multiple access roads, there is still the potential for a significant impact from the presence of slow-moving trucks because they could impede emergency vehicles traveling on SR 58. Implementation of **Mitigation Measure TRA-MM-1** would reduce this impact to a less-than-significant level.

All Alternatives

This impact would be considered potentially significant under all alternatives compared with existing conditions and the same as described under the impact overview above. Implementation of **Mitigation Measure TRA-MM-1** would reduce this impact to a less-than-significant level.

3.10.7 Mitigation Measures

The following measure is proposed to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate) potentially significant impacts of each action alternative.

Mitigation Measure TRA-MM-1: Implement Traffic Control Measures during Construction

To minimize impacts on traffic along SR 58 and surface streets in the project area, PG&E will ensure that construction contractors implement the following traffic control measures during construction of the remediation facilities and associated infrastructure. These measures include:

- Re-route delivery trucks with materials or equipment to use the signalized intersection at Lenwood Road to access project area roads from and to SR 58 wherever feasible. To the southern part of the project area, access can be from Lenwood Road to Community Road and then to other local roadways. To the northern part of the project area, access can be from Lenwood Road to Santa Fe Road to Mountain View Road and other local roadways.
- Notify emergency personnel, including the San Bernardino County Sheriff-Coroner's Department (Barstow Station) and the San Bernardino County Fire Department (North Desert Division), of the construction schedule when it involves vehicles that could slow or block traffic.
- Use personnel as necessary to direct traffic and prevent vehicles from lining up on county roads and highways during construction.

Section 3.11
Aesthetics

3.11 Aesthetics

3.11.1 Introduction

This section describes the affected environment and regulatory setting for aesthetics. It also describes the impacts on aesthetics that would result from implementation of the project, and mitigation measures that would reduce those impacts. Growth-inducing and cumulative impacts are discussed separately in Chapter 4, *Other CEQA Analyses*.

Following is a summary of the impacts and a description of the concepts and terminology used for the aesthetics analysis.

3.11.1.1 Summary of Impacts

Table 3.11-1 presents a summary of the impacts on aesthetics. All potentially significant impacts would be reduced to a less-than-significant level with mitigation measures. See Section 3.11.6, *Impacts*, and Section 3.11.7, *Mitigation Measures*, for a detailed discussion of all impacts and mitigation measures.

Table 3.11-1. Summary of Aesthetics Impacts

Impact	Applicable Alternative	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
AES-1a: Degradation of Visual Character or Quality from Construction	All Alternatives	Less than Significant	None Required	–
AES-1b: Permanent Degradation of Visual Character or Quality from Wells, In-Situ Treatment, and Agricultural Treatment	All Alternatives	Less than Significant	None Required	–
AES-1c: Permanent Degradation of Visual Character or Quality from Above-ground Treatment Facility	Alternatives 4C-3 and 4C-5	Potentially Significant	AES-MM-1: Screen Above-Ground Treatment Facilities from Surrounding Areas AES-MM-2: Use Low-Sheen and Non-Reflective Surface Materials on Visible Remediation Facilities	Less than Significant
	All Other Alternatives	No Impact	None Required	–
AES-2: New Source of Light or Glare	All Alternatives	Potentially Significant	AES-MM-1 AES-MM-2 AES-MM-3: Apply Light Reduction Measures for Exterior Lighting	Less than Significant

3.11.1.2 Terminology and Concepts

The term *aesthetics* typically refers to the perceived visual character of an area, such as of a scenic view, open space, or architectural façade. The aesthetic value of an area is a measure of its *visual character* and *visual quality* combined with *viewer response* (Federal Highway Administration 1988). Therefore, the aesthetics analysis is a process to assess the change to the visual character or quality from the project and the viewer response to that change.

First, the existing visual character and quality is established by identifying the visual features of the local landscape; assessing the character and quality of those visual features relative to those of the overall region; and identifying the importance or sensitivity of those features to people (viewers).

Once the existing conditions are established, the project is evaluated for how it would change the existing conditions (e.g., buildings constructed at a height that obstructs views, hillsides cut and graded, open space changed to an urban setting) and the degree of effect, which depends on the magnitude of change to the visual feature (i.e., visual character and quality) and on viewers' responses to and concern for those changes.

Viewer sensitivity or concern is based on the visibility of features in the landscape, viewer perception of the feature as a visual resource (i.e., something of value), viewer proximity, the frequency and duration of views, the number of viewers, and the types and expectations of individuals and viewer groups.

The criteria for identifying importance of views (or visual sensitivity) are related in part to the position of the viewer relative to the feature. An area of the landscape that is visible from a particular location (e.g., an overlook) or series of points (e.g., a road or trail) is called a *viewshed*. To identify the importance of views of a feature, a viewshed can be broken into distance zones of foreground, middleground, and background. Generally, the closer a resource is to the viewer, the more dominant it is and the greater its importance is to the viewer. Although distance zones in viewsheds can vary between different geographic regions or types of terrain, a commonly used set of criteria identifies the foreground zone as 0.25–0.5 mile from the viewer, the middleground zone as extending from the foreground zone to 3–5 miles from the viewer, and the background zone as extending from the middleground zone to infinity (U.S. Forest Service 1995).

Visual sensitivity also depends on the number and type of viewers and the frequency and duration of views. Generally, visual sensitivity increases with an increase in total numbers of viewers, the frequency of viewing (e.g., daily or seasonally), and the duration of views (i.e., how long a scene is viewed). Also, visual sensitivity is higher for views seen by people who are driving for pleasure; people engaging in recreational activities such as hiking, biking, or camping; and homeowners. Sensitivity tends to be lower for views seen by people driving to and from work or as part of their work (U.S. Forest Service 1995; U.S. Soil Conservation Service 1978; Federal Highway Administration 1988). Views from recreation trails, recreation areas, scenic highways, and scenic overlooks generally are assessed as having high visual sensitivity.

For the analysis of project impacts on aesthetics, the methods used to evaluate impacts is adapted from the Federal Highway Administration's visual impact assessment system (Federal Highway Administration 1988), in combination with other established visual assessment systems, which identifies:

- Relevant policies and concerns for protection of visual resources.
- Visual resources of the region, the immediate project area, and the project site.
- Important viewing locations (e.g., roads) and the general visibility of the project area and site using descriptions and photographs.
- Viewer groups and their sensitivity.
- Potential effects.

3.11.2 Regulatory Setting

3.11.2.1 Federal Regulations

No federal regulations related to aesthetics apply to the project on private lands, which dominate the project.

For the BLM portions of the project, the National Environmental Policy Act of 1969 as amended (NEPA) does not specify regulatory requirements or standards related to the evaluation of visual resources. However, individual federal agencies have developed their own guidelines to address topics related to the visual environment. The BLM has published guidance documents setting forth standards and procedures to be used in the evaluation of a project's potential visual impacts. The most critical to this evaluation are Manual 8400 (Visual Resource Management) and Manual H-8431 (Visual Resource Contrast Rating). These documents set forth criteria which foster BLM's stewardship of the visual character of government lands.

Most of the BLM lands within the project area are designated Multiple-Use Class L (Limited Use) in the California Desert Conservation Area Plan. This Class protects sensitive, natural, scenic, ecological, and cultural resource values. Public lands designated as Class L are managed to provide for generally lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished.

3.11.2.2 State Regulations

CEQA establishes that it is the policy of the state to take all action necessary to provide the people of the state "with…enjoyment of aesthetic, natural, scenic and historic environmental qualities" (PRC Section 21001[b]).

The California Scenic Highway Program, which is managed by Caltrans, provides a process for protecting highway corridors that reflect the state's natural scenic beauty. State Route (SR) 58, which extends through the project area, is eligible for but not officially designated a State Scenic Highway (California Department of Transportation 2012).

3.11.2.3 Local Regulations

San Bernardino County General Plan

Goals and policies in the San Bernardino County General Plan relevant to the project are described in the following section. No roadways in the project area are County-designated scenic highways.

Conservation Element

The Conservation Element of the San Bernardino General Plan provides direction regarding the conservation, development, and use of the County's natural resources. Natural resources include water, energy, land, biodiversity, minerals, natural materials, recyclables, viewsheds, and air, among others. The following goals and policies of the Conservation Element are applicable to the project.

- **Goal D/CO[1] 1.** Preserve the unique environmental features and natural resources of the Desert Region, including native wildlife, vegetation, water, and scenic vistas.
    - **Policy D/CO 1.2**. Require future land development practices to be compatible with the existing topography and scenic vistas, and protect the natural vegetation.
- **Goal D/CO 3.** Preserve the dark night sky as a natural resource in the Desert Region communities.
- **Policy D/CO 3.2.** All outdoor lighting…shall be provided in accordance with the Night Sky Protection Ordinance, which requires all new lighting for new construction to be shielded so it doesn't stray onto adjacent properties…

Circulation and Infrastructure Element

The Circulation and Infrastructure Element directs and promotes the development of a coordinated, multimodal County-wide transportation system and infrastructure capacity to meet the needs of those living, working, or visiting the County. The Circulation and Infrastructure Element includes the following goal applicable to visual resources and the project.

- **Goal D/CI 3**. Encourage property maintenance to enhance regional aesthetics with the promotion of water and soil conservation, recycling and proper solid waste disposal.

San Bernardino County Development Code

Chapter 83.07 of the County Development Code regulates glare and outdoor lighting. Standards for the Mountain and Desert Region, provides standards for outdoor lighting. New permitted lighting for new construction, unless exempt in compliance with § 83.07.040(e) is required to be compliance with the requirements outlined in Table 83-7 (Shielding Requirements for Outdoor Lighting in the Mountain Region and Desert Region), in order to preclude light pollution or light trespass on adjacent property; other property within the line of sight (direct or reflected) of the light source; or members of the public who may be traveling on adjacent roadways or rights-of-way.

3.11.3 Environmental Setting

This section discusses the existing conditions related to aesthetics in, and in the near vicinity of the project area.

3.11.3.1 Visual Features and Views

The project area is located in the northwestern area of unincorporated San Bernardino County, in the western Mojave Desert and in the Mojave River watershed. The southern boundary of the project study area is approximately 1 mile south of the Mojave River but the project construction

[1] "CO" for these policies refers to the Conservation Element of the General Plan.

and operational areas would be located north of the Mojave River. The Mojave River has only intermittent and ephemeral flow along nearly its course adjacent to the project. The main developed area is the Hinkley community, which is located in the western portion of the project area. Barstow is approximately 6 miles east of the Compressor Station, with a small portion of the southeastern project study area extending into Barstow city limits (Figure 2-2e). Project operations would not take place within the City of Barstow.

The description of visual features of the project area is based on direct field observation conducted in January 2011 and January 2012, from public vantage points, including public property and roadways. Photographs were taken during the field observation to document the existing visual features of the project area and relative landscape. Prior to field observation, key viewpoint locations and orientations were chosen for their representation of views and affected viewers (see Figure 3.11-1). Representative photographs associated with each key viewpoint are shown in Figure 3.11-2.

The project area is relatively flat and consists primarily of rural residential areas and agricultural land, with undeveloped, disturbed desert scrub land interspersed (Figure 3.11-2, Photos 1, 2, and 3). More intensive uses of land within the project area include the PG&E Compressor Station (Figure 3.11-2, Photo 4) and the Desert View Dairy (Figure 3.11-2, Photo 5). Desert View Dairy is located in the center of the project area, immediately south of Alcudia Road on Mountain View Road. The PG&E Compressor Station is located in the southern portion of OU1, just north of Highcrest Road. Located on this property are several industrial-type buildings and industrial waste ponds. Desert View Dairy is currently used for remediation through agricultural treatment. Existing irrigated agricultural fields on the Gorman, Cottrell, and Ranch properties are also actively used for remediation. Other intensive land uses in the project area include the Hinkley School (north of the railroad along Hinkley Road), a convenience store and gas station (along Hinkley Road south of the railroad), several businesses along Santa Fe Avenue west of Lenwood Road; and agricultural areas west of Lenwood Road south of SR 58.

SR 58 runs east-west through the center portion of the project area, less than 1.5 miles north of the Compressor Station. As noted in Section 3.11.2.2, State, of the *Regulatory Setting* section (Section 3.11.2), although no portion of SR 58 is an officially designated scenic highway, the segment of SR 58 between US 395 and I-15 has been classified as being an eligible scenic highway by Caltrans. A segment of the Atchison, Topeka & Santa Fe Railroad line (Santa Fe Railroad) crosses the project north of SR 58 and runs northwest-southeast.

The project viewshed includes distant views of the mountains and their related ridgelines (Figure 3.11-1, Photo 6), as well as rare occasional views of mature Joshua trees and yucca trees, and foreground views of old tree rows, agricultural fields, and areas of undeveloped land with undisturbed native vegetation. Including Desert View Dairy, approximately 182 acres of existing agricultural treatment fields exist in the northern portion of project area (Figure 2-2e). These fields are composed of fodder crops (primarily Bermuda grass and alfalfa). Other vegetation in the project area is sparse and consists primarily of scrub and ruderal[2] vegetation. There are larger areas of agriculture (approximately 1,000 acres total) located east of the PG&E Compressor Station and west of Lenwood Road.

[2] Plants growing in rubbish, poor land or waste places, like along roadsides or in rubbish (i.e., weeds).

The viewshed in the northwestern portion of the project area in OU3 includes views of rural homes with undeveloped, disturbed desert scrubland interspersed (Figure 3.11-1, Photo 7-8). The project viewshed in this area is also characterized by an expansive and distant view of mountains and hills and overhead utility lines with native scrub and ruderal vegetation in the immediate foreground (see Figure 3.11-1, Photo 9).

The most prominent landform features visible from the project area and vicinity are the distant mountains and hills beyond vast expanses of gently rolling hills or flat desert terrain. The predominant colors within the viewshed are provided by the bare soil and range from tan/brown-gray to reddish brown depending on the moisture level at different times of year. Vegetation in the area ranges from light tan and gray to pale green. The scrub growth creates a coarse visual texture of great continuity and minimal diversity. In general, these landscape characteristics are homogenous and typical of this part of the region.

Additionally, there are a small number of single-story commercial, residential, and agricultural buildings in the viewshed, allowing full and clear views across the flat landscape of the distant mountains. Development in the area is predominately light colored (e.g., beige, light yellow, off-white). Because of the single-story, low-scale, and dispersed character of development in Hinkley, buildings blend into the tan/light gray-green, flat terrain of the surrounding landscape.

3.11.3.2 Viewer Groups and Viewer Response

Residents

There are many single-family residences located within the project area and near vicinity (within 0.25 mile). Concentrations of residences are found north of the Hinkley School and along Flower Street, but remaining residences are highly dispersed across the project area. These residents have direct views of the project area primarily because the terrain is flat. These viewers could have a moderate sensitivity to visual changes in the project area because the view of the project area is not obscured and for many is the primary view.

Roadway Users

Viewers traveling on SR 58 and local roadways in and immediately surrounding the project area are likely to possess generally low visual sensitivity to their surroundings. The passing landscape becomes familiar for local roadway users, and their attention typically is not focused on the passing views. At standard roadway speeds, views are of short duration; and roadway users are fleetingly aware of surrounding traffic, road signs, and other visual features. Travelers on the segment of SR 58 that runs through the project area would be traveling at high rates of speed (typically 60–70 miles per hour). As previously described, SR 58 is not a designated scenic highway, and the visual setting of the project area and near vicinity through which SR 58 passes lacks significant visual resources other than views of distant mountain ridgelines and hills; these views would continue to be available to viewers were the project to be implemented. Therefore, these viewers are considered to have low sensitivity to visual changes in the project area.

Recreational Users

As discussed in Section 3.2, *Land Use, Agriculture, Population, and Housing,* the project area has lands on which recreation is allowed, but there are no formal recreation facilities. The closest municipal parks are Jasper Park and Lenwood Park, located approximately 2 miles southeast of the project area in the city of Barstow. There are federal lands under the jurisdiction of the BLM located near

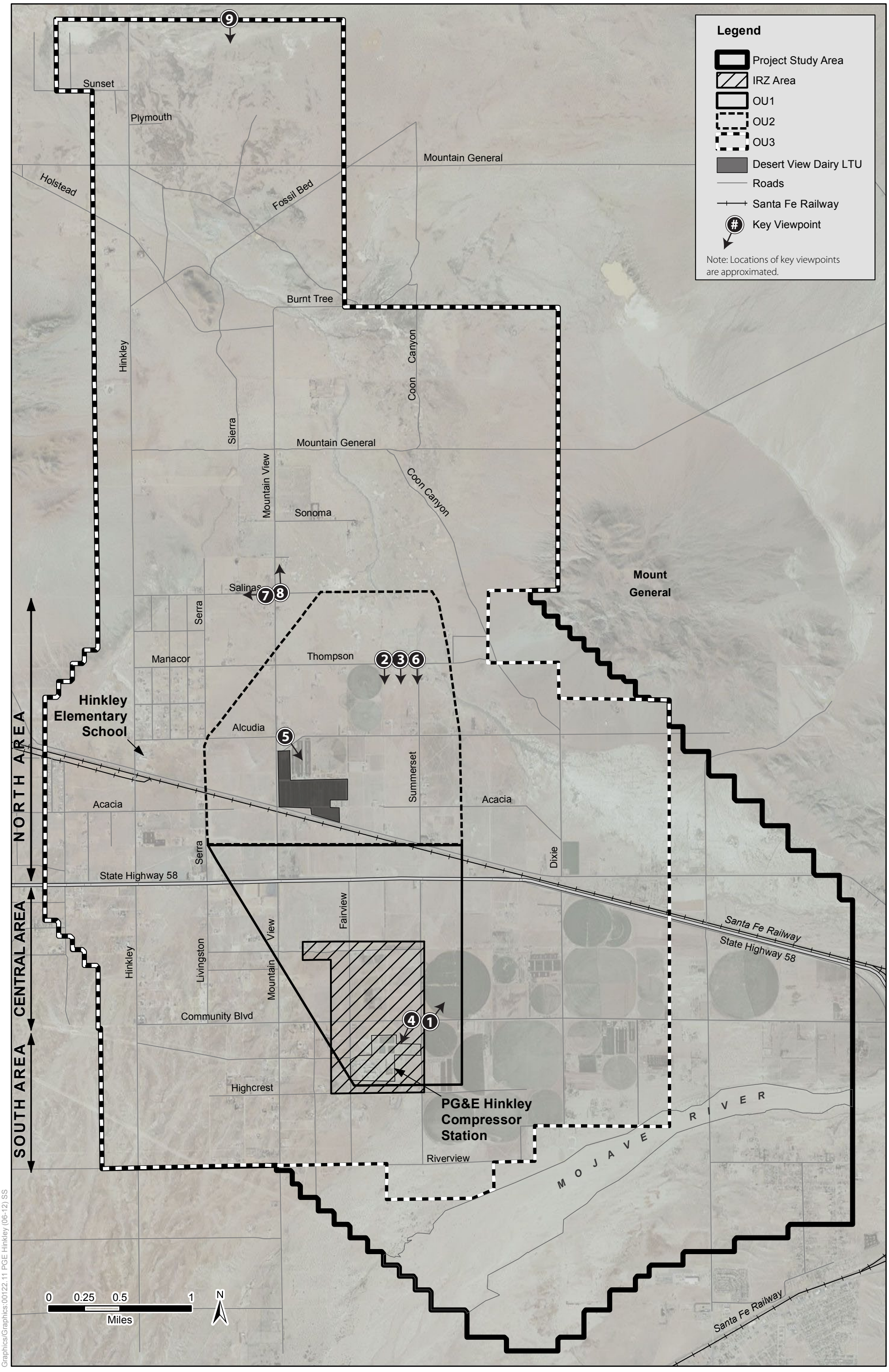

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Figure 3.11-1
Locations and Orientations of Key Viewpoints

Photo 1: View from Community Boulevard (near Summerset Ave.) facing northeast (Viewpoint 1)

Photo 2: View from Thompson Road facing south (Viewpoint 2)

Figure 3.11-2
Representative Views

Photo 3: View from Thompson Road facing south showing well rig in project area (Viewpoint 3)

Photo 4: PG&E Compressor Station from Community Boulevard facing southwest (Viewpoint 4)

Figure 3.11-2
Representative Views

Photo 5: Desert View Dairy facing southeast (Viewpoint 5)

Photo 6: View from Summerset Road and Thompson Road facing south (Viewpoint 6)

Figure 3.11-2
Representative Views

Photo 7: View facing west from Mountain View Road near Tindall Street (Viewpoint 7)

Photo 8: View facing North from Mountain View Road near Tindall Street (Viewpoint 8)

Figure 3.11-2
Representative Views

Photo 9: View facing South from the Northern edge of the Project Area Boundary (Viewpoint 9)

Figure 3.11-2
Representative Views

Hinkley that can be used for recreation, such as hiking, but there are no designated recreational areas or areas of intense recreational use on the federal lands in the project area. Therefore, although recreational users typically have moderate to high sensitivity to views, these viewers in the project area are considered to have low sensitivity to visual changes in the project area.

3.11.4 Significance Criteria

The State CEQA Guidelines Appendix G (14 CCR 15000 et seq.) have identified significance criteria to be considered when determining whether a project could have significant impacts on existing aesthetics within a project area. For this analysis, an impact pertaining to aesthetics was considered significant under CEQA if it would affect aesthetic resources in any of the following ways:

- Having a substantial adverse effect on a scenic vista.
- Substantially damaging scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway.
- Substantially degrading the existing visual character or quality of the site and its surroundings.
- Creating a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.

As previously described, no portion of SR 58 is an officially designated scenic highway, and the project site is not located within, or in the vicinity of, a scenic vista or designated scenic resources; therefore, potential project impacts on scenic vistas, scenic resources, or designated scenic highways are not analyzed further.

Potential degradation of the existing visual character or quality of the area and the creation of new light and glare are evaluated for construction and operation of proposed remediation activities.

3.11.5 Methodology

The methodology is described in Section 3.11.1.2, *Terminology and Concepts*.

3.11.6 Impacts

This section provides the impact analysis relating to aesthetics. The impacts are organized by topics that correspond with the significance criteria described in Section 3.11.4, *Significance Criteria*. For each impact, an overview with a general discussion of the impact and the significance determination is followed by a discussion of how the impact differs for each of the alternatives. In cases where an impact would not differ between all alternatives, a single discussion of the impact and the significance determination is presented.

3.11.6.1 Visual Character and Quality

Impact AES-1a: Degradation of Visual Character or Quality from Construction (Less than Significant, All Alternatives)

Construction of new wells and associated infrastructure for in-situ treatment, agricultural treatment, and above-ground treatment would occur for all action alternatives. Construction would take place in phases, with the majority of construction occurring under the initial buildout, under all

alternatives. Construction of additional agricultural treatment units and associated infrastructure would occur only under the action alternatives.

All alternatives would require the installation of new groundwater extraction wells and associated infrastructure (well pads, extraction pumps, transmission pipelines); in-situ treatment equipment (such as pumps, dosing equipment and fencing to secure equipment areas), and new access roads. Additionally, all the action alternatives include new agricultural treatment units, and Alternatives 4C-3 and 4C-5 include above-ground treatment facilities. The construction activities are described in Section 2.9, and the construction equipment to be used is listed in Table 2-9 in Chapter 2, *Project Description.*

The largest areas of land disturbance are associated with agricultural treatment units. Of the action alternatives, Alternative 4B would have the least amount of new disturbance from new agricultural treatment units (up to 262 acres) and Alternative 4C-4 would have the most amount of new disturbance from new agricultural treatment units (up to 1,212 acres).

Construction of the above-ground treatment facilities would involve site preparation through grading and excavation, paving and concrete pouring for building foundations, and construction of the treatment facility and other structures. New utilities including power and telecommunication connections (and back up diesel generators) and septic systems (for non-process and non-lab wastewater) would also be installed. These activities would introduce heavy equipment and associated vehicles (e.g., dozers, graders, scrapers, and trucks), staging areas, and construction crews into the viewshed. Introduction of these features has the potential to temporarily change the visual character of the project area. The changes would be greatest during the initial buildout when the majority of construction would occur under all alternatives. However, because remediation activities are already occurring and are mostly located in OU1 and OU2, the temporary changes would be most noticeable when they occur in OU3 (particularly the portions north of Thompson Road) due to the largely undeveloped and open nature of the landscape. The proposed locations for the above-ground treatment facilities are directly adjacent to the Desert View Dairy (Alternative 4C-3 only) and adjacent to the PG&E Compressor Station (Alternative 4C-3 and 4C-5) and thus construction for these facilities would occur in areas of existing intensive activity.

Residents would be most sensitive to construction-related changes in the viewshed depending on the proximity of construction activities, equipment and staging areas to residential properties. However, viewer groups in and near the project area are accustomed to seeing heavy equipment and vehicles in the project area that are associated with existing remedial activity and other existing agricultural operations unrelated to remediation.

Roadway users would have views of short duration and would be fleetingly aware of equipment, vehicles or other disruptions. As a result, viewer sensitivity to such activities would be low.

Although there is potential for the overall visual character to be degraded due to construction activities, this change would be temporary in nature, and the intensity of the changes would decrease once initial buildout is complete. Further, upon completion of construction, all equipment would be removed and construction staging areas and other areas that are temporarily disturbed would be returned to pre-project conditions. Therefore, potential degradation in the visual character or quality of the project area associated with construction would be less than significant compared to existing conditions.

Impact AES-1b: Permanent Degradation of Visual Character or Quality from Wells, In-Situ Treatment, and Agricultural Treatment (Less than Significant, All Alternatives)

Permanent changes in visual character and quality would be associated with the presence of new infrastructure and introduction of new operation and maintenance activities throughout the project area.

Under all alternatives, wells and in-situ infrastructure would consist of small-scale infrastructure (including well pumps, concrete foundation pads, mixing tanks, and surrounding 12-foot high security fencing,) similar to existing remedial infrastructure located throughout the project area (refer to photos 2 and 3 in Figure 3.11-2). Larger in-situ remediation compounds would include equipment, tanks, and wells, with footprint of no more than 100 by 200 feet in area and 20 feet in height. Smaller in-situ remediation above-ground compounds (with approximately 20 by 20 feet footprint) would be required for extraction wells. Fences would be a maximum of 12 feet high and could be topped with three-strand barbed wire. The fencing would have brown privacy slats to hide the equipment contained inside. Permanent conveyance pipelines would be installed below ground.

Agricultural treatment units would be at-grade agricultural fields similar in design to existing agricultural units. Aside from associated extraction wells, the main feature would be farm equipment that would be used during agricultural operations (refer to photo 1 in Figure 3.11-2). The same types of farm equipment would be used for all alternatives as under existing conditions. Agricultural treatment units would be identical in appearance and aesthetics as existing agricultural areas and would not be visual elements that would be anomalous to the Hinkley Valley.

This type of infrastructure and agricultural land currently exists in the project area, and viewer groups in and near the project area are accustomed to their presence. Therefore, viewer response would be considered low in sensitivity. Because proposed well equipment, fencing, agricultural treatment units, and operational equipment would be consistent with the existing visual character or quality of the project area and viewer response would not be significantly different compared to existing conditions and there would be a less than significant impact related to degradation of the visual character and quality in the project area.

Operation and maintenance activities associated with wells would primarily involve routine checks of equipment and well operations, well rehabilitation or replacement (including pipelines), cleaning of equipment, adjusting pumping operations, collection of groundwater samples, and delivery of equipment and other supplies. Viewer response to the presence of workers conducting operational or maintenance activities would be the same as that described under construction impacts: with low sensitivity to views because similar activity is already occurring in the project area. While the area of remediation would be increased, the types of operational activities would be limited to the footprint of where new facilities are located and the overall operation and maintenance activities would not be different from what is currently occurring. Additionally, operation and maintenance activities would occur intermittently.

As a result, the potential for permanent degradation of visual character or quality of the project area due to new wells and agricultural treatment units or their associated operation and maintenance would be considered less than significant compared to existing conditions for all alternatives.

Impact AES-1c: Permanent Degradation of Visual Character or Quality from Above-ground Treatment Facility (Less than Significant with Mitigation, Alternatives 4C-3 and 4C-5; No Impact, All Other Alternatives unless Ex-Situ Treatment used as Contingency)

The main infrastructure with potential to permanently degrade the visual character or quality is the above-ground treatment facilities proposed under Alternatives 4C-3 and 4C-5. The other alternatives do not include above-ground treatment facilities under normal conditions. However, all alternatives include a contingency plan in the event that agricultural treatment units do not function as expected, in which case it is possible that other alternatives could be required to utilize above-ground ex-situ treatment. In that case, the impacts of such facilities would be the same as disclosed for Alternatives 4C-3 and 4C-5 and the mitigation for such alternatives would also apply to any ex-situ treatment facilities.

Under Alternative 4C-3, one above-ground treatment facility would be located directly north of the Compressor Station in OU1, and a second facility would be located north of the Desert View Dairy in OU2. Under Alternative 4C-5, there would be only one above-ground treatment facility near the Compressor Station (same as Alternative 4C-3).

As described under *Operations and Maintenance Activities* in Section 2.9 of Chapter 2, *Project Description*, each treatment facility would be a completely fenced compound that is approximately 40,500 square feet in size3. The facilities would primarily include a 35-foot tall process building and an office/laboratory. The majority of infrastructure would be enclosed within these buildings (including pumps, pipes, reactors, filters, and other equipment for treatment; and office spaces, a control room, restrooms, and a laboratory). Aerial utility lines would be extended to the facilities. The area within the compound would be paved, would include a concrete loading dock for outgoing waste and incoming materials, and would include exterior floodlighting. Water tanks and other appurtenant structures could be housed outside of the process and office/laboratory buildings in the compound areas. The security fencing around the compound would be 12-feet high and have brown privacy slats.

As described for Impact LU-1b (incompatibility with or disruption of surrounding land uses), the above-ground treatment facilities could be considered a quasi-industrial or hazardous waste land use that, given the limited amount of industrial uses in the project area, could contrast with and be nominally out of character with the existing rural residential and agricultural setting. However, the locations of both facilities are proposed to be constructed adjacent to existing disturbed or developed areas (Desert View Dairy to the north, and the Compressor Station to the south).

As discussed in Section 3.11.3, *Environmental Setting*, the project area is visible from adjacent roads and SR 58, which is eligible for, but not a designated State Scenic Highway. The north above-ground treatment station (Alternative 4C-3 only) would be about 1mile north of SR 58; the south above-ground treatment (Alternative 4C-3 and 4C-5) would be more than 1.25 miles south of SR 58. Existing facilities at the Desert View Dairy and the PG&E Compressor Station are not readily observed by highway drivers due primarily to their distance from the roadway. Similar to views of other proposed infrastructure, the viewer experience for roadway users of SR 58 would be fleeting and the new above-ground treatment facilities would primarily be in the background and interspersed among existing developed features of the landscape. The above-ground facilities will be viewed from closer distance from roadway users on nearby roads and residences (Mt. View Road

[3] The precise size of the treatment facility depends on the alternative.

provides the closest view of the proposed location at the Desert View Dairy and Community Boulevard provides the closest view of the proposed location at the PG&E Compressor Station). However, the viewer exposure would still be within the context of the existing disturbed/developed landscape where the facilities are proposed to be located. Furthermore, the expansive nature of the project area also provides opportunity for both facilities to be well buffered from adjacent residential uses. The types of operation and maintenance activities that would be implemented at the above-ground treatment facilities would largely be similar to in-situ and agricultural treatment but with more traffic for equipment deliveries and waste removal. Most operation and maintenance activities would occur within the enclosed process buildings and the office/laboratory buildings, within the compound surrounded by 12-foot high security fending; thus, there would be minimal changes to the surrounding visual character.

However, because these facilities still represent new developed features compared to the existing agricultural and rural character of the project area, this impact could be considered potentially significant. Implementation of **Mitigation Measure AES-MM-1** would require screening from view to ensure the new above-ground structures do not contrast substantially with the surrounding rural residential and agricultural character of the project area. Implementation of **Mitigation Measure AES-MM-2** would require use of low-sheen and non-reflective surface materials on visible remediation facilities and infrastructure (e.g., the 35-foot tall process building) to reduce potential visual contrast. Recent studies have shown that painting structures two to three shades darker than the color of the general surrounding area creates less of a visual impact than matching or lighter hues (U.S. Bureau of Land Management 2008). With implementation of these mitigation measures, this impact would be less than significant.

There are no above-ground treatment facilities proposed under any of the other project alternatives under normal circumstances. However, as noted above, the other alternatives all include a contingency plan for agricultural unit operations, which may include above-ground ex-situ facilities in the event that agricultural treatment units do not function as expected. If above-ground ex-situ facilities are used as a contingency, then the No Project Alternative or Alternatives 4B, 4C-2 and 4C-4 would have similar impacts as described above for Alternatives 4C-3 or 4C-5 and the same mitigation would apply.

3.11.6.2 Light and Glare

Impact AES-2: Create a New Source of Light or Glare (Less than Significant with Mitigation, All Alternatives)

Overview of Impact

Construction activities would be limited to daytime hours, typically between the hours of 7 a.m. and 7 p.m., and would not create a new source of substantial lighting that would affect nighttime views in the area. There is potential for new sources of glare from sun reflecting off metal construction equipment and vehicles, but the impact would be less than significant because it would be temporary and because most of the heavier construction equipment and vehicles would be well within PG&E properties and near the Compressor Station, the Desert View Dairy and current remediation activities and well off public streets and away from homes and thus would not adversely affect surrounding land uses and viewer groups.

Once built and operating, wells and agricultural treatment areas would require little or no lighting. Potential nighttime security lighting could be used to illuminate fenced-off areas. The potential exists for introduction of nighttime lighting if emergency activities occur during nighttime hours at the affected facilities. Under all alternatives, wells and agricultural treatment areas are not expected to result in new sources of glare because normal operation and maintenance activities at these areas would primarily occur during daytime hours; only emergency activities have the potential to introduce nighttime lighting.

Above-ground treatment facilities as proposed under Alternatives 4C-3 and 4C-5 would include exterior floodlighting of all buildings to accommodate the 24-hour-a-day operation of these facilities. These facilities would have the greatest potential to generate new sources of light and glare due to the size of new structures that would be constructed on the compounds.

For any new sources of light, there is potential to negatively affect drivers on adjacent roadways and adjacent rural residences due to spillover lighting (and residual glare), as well as a general increase in ambient lighting at above-ground facilities. New project lighting would be required to comply with the San Bernardino County General Plan (Conservation Element Policy D/CO 3.2) and applicable provisions of the County's development code. However, the impact of increased light and glare is considered potentially significant because the area where new infrastructure is proposed to be located would be greater compared to existing conditions. Implementing **Mitigation Measures AES-MM-1, AES-MM-2, and AES-MM-3** would reduce potential project impacts from light and glare on daytime or nighttime views in the area to a less-than-significant level.

All Project Alternatives

Impacts under all alternatives would be the same as those described in the impact overview. These impacts could be the most significant under Alternatives 4C-3 and 4C-5 compared to existing conditions and all other alternatives because they include the above-ground treatment facilities, which are the major new sources of light and glare. All other alternatives would have minimal potential for new sources of light and glare as a result of both construction and operation and maintenance activities; however, that potential would be more than that identified for existing conditions, and with Alternatives 4B, 4C-2 and 4C-4 it would occur over a much larger area than that occurring under existing conditions.

3.11.7 Mitigation Measures

The following measures are proposed to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate) potentially significant impacts of each project alternative.

Mitigation Measure AES-MM-1: Screen Above-Ground Treatment Facilities from Surrounding Areas

PG&E will install security fencing with privacy slats, as currently proposed, and/or landscaping around the major above-ground treatment facilities. The privacy slates will be neutral shades of brown to minimize landscape intrusion from remediation infrastructure. Any landscaping would be drought-tolerant, native and in adequate abundance to screen the facility from distant views. Additionally, PB&E will design structures to include architectural features that reduce the bulk and scale.

Mitigation Measure AES-MM-2: Use Low-Sheen and Non-Reflective Surface Materials on Visible Remediation Facilities and Infrastructure

PG&E will ensure that visible, above-ground remediation facilities and infrastructure (e.g., a 35-foot tall process building) will be designed and constructed to use a low-sheen and non-reflective surface material. Wall finishes will have low-sheen and non-reflective surfaces to reduce potential for glare. The use of smooth-trowelled surfaces and glossy paint will be avoided. At a minimum, infrastructure materials will be non-reflective, such as earth-toned concrete or galvanized steel that would naturally oxidize a short time after installation and would not cause reflective daytime glare. The paint type will have a dull, flat, or satin finish only and will ensure long-term durability of the painted surfaces to the extent practicable. The paint color will be two to three shades darker than the general surrounding area. PG&E will maintain the paint color over time. (This measure does not apply to the agricultural irrigation infrastructure that is consistent with existing uses and aesthetics in the Hinkley area.)

Mitigation Measure AES-MM-3: Apply Light Reduction Measures for Exterior Lighting

PG&E will apply the following light reduction measures.

- Exterior lights will be installed at the lowest allowable height and will use the low-pressure sodium lamps with the lowest allowable wattage (less than 2,000 lumens [150 watts]).
- Exterior lights will be shielded and directed downward.
- The amount and duration of nighttime light use will be minimized to the greatest degree possible (i.e., minimal amount needed to provide required security).

Section 3.12
Socioeconomics

3.12 Socioeconomics

3.12.1 Introduction

CEQA is focused on physical impacts. Socioeconomic (i.e., social and economic) impacts are not impacts under CEQA unless they result in physical impacts over the baseline. Socioeconomic impacts due to the plume itself are not the subject of this EIR, as they are part of the baseline. However, there could be secondary physical impacts from project-related socioeconomic effects, which are impacts under CEQA and addressed in this section.

3.12.1.1 Summary of Impacts

Table 3.12-1 presents a summary of the physical impacts related to socioeconomic conditions. See Section 3.12.6, *Impacts,* and Section 3.12.7, *Mitigation Measures*, for a detailed discussion of all impacts and mitigation measures.

Table 3.12-1. Summary of Socioeconomic Impacts

Impact	Applicable Alternative	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
SE-1: Secondary Physical Impacts due to Project-Related Socioeconomic Effects	No Project Alternative	Less than significant	N/A	Less than Significant
	All Action Alternatives	Potentially Significant	SE-MM-1: Manage Vacant Lands, Residences, and Structures to Avoid Physically Blighted Conditions; WTR-MM-1 to 8	Less than Significant

The action alternatives could involve additional land acquisition for agricultural treatment units, disruption of water supply wells and land uses due to groundwater drawdown in certain areas, and temporary degradation of water quality in local wells and disruption of land uses due to remedial byproduct generation. These secondary effects could result in people leaving the community, resulting in vacant lots and homes and physical deterioration or *blight*. Potential physical blight due to land acquisition could be mitigated through proper property management, such as removal of purchased buildings that could be targets for vandalism or squatters. The effects of remedial groundwater drawdown and water quality impairment can be mitigated such that water supplies are not disrupted as identified in Section 3.1, *Water Resources and Water Quality*.

CEQA is limited to addressing direct and indirect physical impacts on the environment; thus, the physical effects of blight could be considered significant impacts on the environment. Purely economic effects of potential blight due to prior contamination or future remedial activities are outside the jurisdiction of CEQA (refer to discussion in Section 3.12.3, *Significance Criteria*, below).

3.12.1.2 Background

Hinkley, like some other communities in the San Bernardino County region, has been economically depressed for decades. The lack of economic growth in the area is the result of several factors. Hinkley historically has been an agricultural community that has depended heavily on irrigation to create productive farmland. By the beginning of the 1950's, the Mojave River groundwater basin had begun to experience a serious overdraft, a condition in which water is taken from the ground faster than it is naturally replenished. In 1990, litigation concerning water rights was initiated; and in January 1996, the California Superior Court issued a judgment that set forth water production rights in the Mojave Basin Area. This adjudication mandated a significant reduction of water use to mitigate the overdraft conditions that were the result of agricultural use in the area. The decrease in allowed water use contributed to a significant reduction in agricultural and industrial activity in the Mojave Basin, including in Hinkley.

In addition, in recent years, the national economic downturn has greatly decreased property values and hastened the decline of the job market in the region. As a consequence of the recent economic downturn, San Bernardino County has experienced some of the highest foreclosure and jobless rates in the country.

These factors, in combination with direct and/or perceived effects of groundwater contamination, have contributed to the decline of the Hinkley economy as well as a reduction in Hinkley's population. Some community members have expressed concerns that the remediation project could further reduce the population because some residents who desire to leave will have the opportunity to sell their property to PG&E.

Additional information on the historic growth and trends of Hinkley's population and economy are described in Section 3.8, *Cultural Resources* (refer to Section 3.8.3.3, *Historic Setting*).

3.12.2 Regulatory Setting

3.12.2.1 Federal Regulations

Executive Order 12898—Environmental Justice

On February 11, 1994, President Clinton signed EO 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." The EO followed a 1992 report by the EPA indicating that "[r]acial minority and low-income populations experience higher than average exposures to selected air pollutants, hazardous waste facilities, and other forms of environmental pollution." This EO requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their actions on minorities and low-income populations and communities. The federal agency must ensure that its activities do not discriminate against persons or groups on the basis of race, national origin, or income. Additionally, the President issued a memorandum to heads of all (federal) agencies and departments accompanying EO 12898, to underscore certain provisions of existing law in order to ensure environmental justice. These environmental and civil laws included Title VI of the Civil Rights Act of 1964, NEPA, the Clear Air Act, and public information laws, among others.

This EIR is being prepared in accordance with state law (CEQA) as part of the Water Board's consideration of new cleanup and abatement order for the PG&E remediation. As such, the actions of

the Water Board are the actions of a state, not a federal agency. Federal agencies are obligated to comply with Executive Order 12898. As described in Section 3.2, *Land Use, Agriculture, Population and Housing,* some of the project may encroach on federal land under the jurisdiction of the BLM. The BLM is responsible to comply with the National Environmental Policy Act (NEPA) for issuance of federal permits for use of BLM land. As such, when it conducts NEPA compliance, BLM would also need to comply with Executive Order 12898.

Water Resource and Water Quality Regulations

As the secondary effects of groundwater drawdown and water quality degradation are discussed in this section, the reader is referred to Section 3.1, *Water Resources and Water Quality,* for a discussion of federal regulations related to these subjects.

3.12.2.2 State Regulations

There are no relevant state regulations requiring analysis of socioeconomics in CEQA. As described below under Significance Criteria, CEQA does not require analysis of purely social or economic impacts, unless they are related to a physical impact of the environment. As such, this section only focuses on potential effects of the remediation project on conditions that could lead to physical blight in the project area.

As the secondary effects of groundwater drawdown and water quality degradation are discussed in this section, the reader is referred to Section 3.1, *Water Resources and Water* Quality, for a discussion of state regulations related to these subjects.

The California Environmental Protection Agency (Cal-EPA) is conducting a strategic planning process that includes reviewing programs, policies and activities to identify and address any gaps that may impede the achievement of environmental justice. Environmental justice is defined in California law (Government Code section 65040.12) as "the unfair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws and policies". The Water Board strives to address these concerns through property purchases with willing buyers and with Whole-House Replacement Water order (described in Section 2.4.2 *Whole-House Replacement Water* in Chapter 2, *Project Description*).

3.12.2.3 Local Regulations

There are no specific local regulations concerning socioeconomics or environmental justice.

As described in Section 3.2, *Land Use, Agriculture, Population, and Housing*, there are several population and housing goals and policies from the San Bernardino County General Plan, Housing Element (San Bernardino County 2007) that may be relevant to the project. The reader is referred to that section for discussion of these goals and policies.

3.12.3 Environmental Setting

A description of the existing land uses, population, and housing in the area is included in Section 3.2, *Land Use, Agriculture, Population, and Housing* (refer to Section 3.2.3, *Environmental Setting*). This section focuses on the economy, property values, and trends of people leaving the area and vacating property.

Properties values in Hinkley and other parts of San Bernardino County have suffered a significant decline due to long term trends associated with the reduction of the agriculture economy of the Mojave River basin. In addition, property values have declined significantly throughout California and markedly in San Bernardino County due to the recent economic downturn. Some residents in the unincorporated community of Hinkley have reported negative economic effects that they attribute to the on-going chromium contamination. During scoping meetings for this EIR and other public meetings on the project, some residents reported that the chromium contamination has resulted in a depression of property values when the plume reached near or under their properties. Some residents have reported that properties beyond the chromium plume also may have been negatively affected with depressed property values. At one of the scoping meetings, one business owner reported difficulties obtaining commercial loans and insurance for his business in the area which he asserted was related to the chromium plume, and several local residents at the scoping meeting expressed their concern that food grown in Hinkley is not commercially viable due to perceptions and concerns of buyers about chromium contamination. In addition to other longer term economic factors, the on-going concern about chromium contamination has reportedly caused some residents to leave the area.

The statements of local residents are an argument for the possibility that the concerns about chromium contamination by property owners, businesses, banks, insurers, and potential buyers of property, businesses, and goods, may have had a negative effect on property value and economic growth in Hinkley. The most recent economic downturn, which has had severe, negative impacts on many of California's communities and across San Bernardino County, has also likely contributed to a decline in property values and economic growth in Hinkley.

PG&E has purchased extensive properties and residences overlying and near the chromium plume (Figure 3.2-4), and consequently razed or left the residences and associated structures in place to implement remediation activities. Several years ago, PG&E encountered vandalism at some of the vacant lots and unoccupied housing units that it had acquired. For this reason, PG&E began to provide security for any empty structure that it owns to prevent vandalism. This program has improved conditions over prior conditions. There are a number of other abandoned buildings in the area that are unassociated with PG&E property acquisition that are likely related to the recent economic downturn and general decline of agriculture feasibility in Hinkley Valley.

3.12.4 Significance Criteria

CEQA does not require a discussion of socioeconomic impacts except where they would result in physical changes, and states that social economic impacts will not be treated as significant.

- CEQA Guidelines Section 15064 (f)(6): Evidence of economic and social impacts that do not contribute to or are not caused by physical changes in the environment is not substantial evidence that the project may have a significant effect on the environment.
- CEQA Guidelines Section 15131(a): Economic or social effects of a project shall not be treated as significant effects on the environment. An EIR may trace a chain of cause and effect from a proposed decision on a project through anticipated economic or social changes resulting from the project to physical changes caused in turn by the economic or social changes. The intermediate economic or social changes need not be analyzed in any detail greater than necessary to trace the chain of cause and effect. The focus of the analysis shall be on the physical changes.

Thus for this EIR, the focus of analysis of socioeconomic impacts is on the potential for remedial actions to result in socioeconomic effects that result in secondary physical effects on the environment. Impacts on socioeconomic conditions were determined to be significant if the project would result in the following.

- Cause substantially adverse physical changes in the environment due to socioeconomic changes (such as an increase in abandoned properties, devaluation of properties, and loss of economic growth) resultant from remedial activities.

3.12.5 Methodology

Socioeconomic impacts were evaluated by comparing the relative changes between existing conditions and those that would occur with project implementation.

3.12.6 Impacts

Impact SE-1: Secondary Physical Impacts due to Project-Related Socioeconomic Effects (Less than Significant, No Project Alternative; Less than Significant with Mitigation, All Action Alternatives)

The project could create blighted conditions that could result in secondary physical impacts due to land and water rights acquisition to facilitate remedial actions. The project could also disrupt, hinder or otherwise discourage existing residential and other land use due to effects of groundwater drawdown and water quality changes from remedial actions that might result in blighted conditions and associated secondary physical impacts. These potential impacts are discussed below.

Effects of Property Purchase to Facilitate Remediation

The action alternatives could involve property purchase, which could include acquisition of existing residences and structures, to facilitate remediation. Refer to Impact LU-3: Population and Housing Changes due to Remedial Activities in Section 3.2, *Land Use, Agriculture, Population, and Housing*. If not properly secured and maintained, these structures could deteriorate over time, degrading local physically and potentially attracting vandalism, illegal occupation, and other criminal activity. Unsecured or unmaintained structures could result in physical hazards to individuals who might access such structures and be exposed to unsafe construction, lead-based paint, asbestos, or other physical hazards. Such structures could also be subject to arson, which could result in fires that could affect neighboring areas and residents.

The No Project Alternative would not require additional property acquisition because it would not include new agricultural treatment units, and proposed new in-situ remedial infrastructure would be limited in scale and there would be no impact on creating physical blight over existing conditions. PG&E's land acquisition program, which is a private initiative that is not mandated by the Water Board, has been ongoing for many years and has resulted in the acquisition of many properties overlying the chromium plume. PG&E may continue its land acquisition program for areas overlying the chromium plume as a private initiative. However, this EIR is concerned with the impacts of future remedial actions related to comply with a new Water Board cleanup order and thus PG&E's separate private actions are not part of the "project" being analyzed in this document.

Of the action alternatives, Alternative 4B would involve the least amount of acquisition. Alternative 4B could involve up to 264 new acres of agricultural treatment, which could likely be accommodated

in PG&E-owned areas in OU1 and OU2, but it is possible that acquisition might cause the sellers of the acquired properties to move to another community. Alternatives 4C-2, 4C-3, and 4C-5 could involve up to 392 acres of new agricultural treatment, which could be largely accommodated on PG&E-owned lands, but could involve acquisition of other lands that might have rural residences. Acquisition of properties would be the most significant impact under Alternative 4C-4 because it could involve up to 1,212 acres of new agricultural treatment land, which may not all be located within PG&E-owned areas. The number of properties that may need to be acquired cannot be precisely estimated at this time, although acquired properties, as discussed under Impact LU-3 in Section 3.2, *Land Use, Agriculture, Population, and Housing*, are likely to be 50 or fewer.

To avoid the creation of physical risks due to blight, PG&E will be required to manage and secure all property it acquires, including taking actions to remove litter, demolish or maintain structures, prevent unauthorized access, and maintain or restore landscape per **Mitigation Measure SE-MM-1.** With implementation of this measure, the physical impacts of blight from property acquisition would be reduced to a less-than-significant level.

Effects of Water Right Purchase to Facilitate Remediation

The No Project Alternative would not include new agricultural treatment areas; therefore, there would be no impact above existing conditions.

All action alternatives would include agricultural treatment, which could require the purchase of water rights from agricultural owners in the area using the water for agriculture. This could result in a decrease of local agricultural employment. However, PG&E would be acquiring water to operate the agricultural treatment units, which are agricultural in nature. Thus, a worst case scenario would be a shift of employment from existing agricultural areas to agricultural treatment units. The production of fodder crops for local dairy or livestock would continue such that one would not expect a substantial change in employment due to acquisition of water rights during the project. Thus, employment would not be substantially changed, and no indirect effects on physical conditions (like blight) would be expected from the acquisition of water rights. Under CEQA, this is considered a less than significant impact because it is not likely to result in physical impacts to the environment.

As discussed in Section 3.2, *Land Use, Agriculture, Population, and Housing*, where PG&E acquires water rights from current agriculturally active properties it will be required to record an agricultural easement over that property, so that in the long-term, potential conversion of the agricultural land to non-agricultural uses is avoided, so that agriculture's potential for the future could be preserved in Hinkley.

Effects of Groundwater Drawdown and Water Quality Changes from Remediation

All alternatives include remediation activities that could indirectly cause temporary groundwater contamination during remediation and/or groundwater drawdown, which could render water supply wells unusable during remediation (which will take decades at a minimum) and could disrupt existing residential, agricultural or other land uses which could result in departures from the area and potential blighted conditions.

As described in Section 3.1, *Water Resources and Water Quality*, per **Mitigation Measures WTR-MM-2 through WTR-MM-8**, PG&E would be required to provide alternative water supplies to affected homes, businesses, and agriculture where their wells may be affected by remedial activities

which should reduce the potential for movement away from Hinkley of residents and businesses due to water supply and water quality effects of remediation. Furthermore, this mitigation also requires PG&E to control remedial byproducts and to ultimately restore the aquifer for all beneficial uses so as to maintain the long-term viability of rural residential living, agriculture, and other land uses in Hinkley.

With mitigation, existing land uses will be able to continue and the remedial project would not contribute to further socioeconomic decline in the Hinkley that might otherwise result in abandoned property, blight, and associated secondary physical impacts.

Overall Conclusion

As described above, the restriction on water available to farms and the recent economic recession together with the concern surrounding chromium contamination may have affected property values of homes and businesses in Hinkley in and adjacent to the plume, and might have also affected certain business activities such as agricultural crop sales and the ability to obtain commercial loans and insurance. These economic effects might have resulted in some individuals choosing to move away from Hinkley, thus changing the character of the community. In some cases, these effects might have resulted in physical blight where residences and structures are abandoned. Although chromium contamination may have played a role in people's choice to leave their property, PG&E has taken steps to ensure that the properties sold to it are maintained in an unblighted condition. Adverse socioeconomic effects that might have contributed to blight would have happened as result of the chromium contamination combined with the area's depressed agricultural and industrial economy, which has been aggravated by the decrease in housing prices and jobs due to the recent economic recession, and not as a result of the remedial activities that have occurred to date.

Similarly, the remedial actions going forward are proposed to clean up the contaminated aquifer so that in the long term, impacts on the Hinkley community, including social or economic impacts of the contamination, would be alleviated. In the short term, the project also adds jobs to the community although they are limited in number. In the long term, the action alternatives would help improve property values and stabilize economic activity, although these long term beneficial effects are unlikely to be seen by the current adult generation living in Hinkley.

In conclusion, although the chromium contamination itself may be contributing to adverse socioeconomic effects in Hinkley that may have resulted in blight, the proposed remediation would not contribute to further physical blight and would have a less-than-significant impact on the physical changes related to socioeconomic changes with implementation of **Mitigation Measure SE-MM-1** (requiring management of acquired property to avoid blighted conditions) and **Mitigation Measures WTR-MM-2 through WTR-MM-8** (to avoid potential disruptions to land use or decline in socioeconomic conditions due to remedial effects on groundwater drawdown and local water quality.

3.12.7 Mitigation Measures

Mitigation Measure SE-1. Manage Vacant Lands, Residences, and Structures to Avoid Physically Blighted Conditions

If properties are acquired as part of project implementation, PG&E will ensure that existing buildings on these properties will be razed or maintained along with other properties in the

project area as part of the normal operations and maintenance activities. Retained structures will be secured to prevent unauthorized access. Litter and debris will be removed from vacant properties acquired by PG&E. PG&E will monitor structures to ensure that they are not used by trespassers or wildlife. Prior to proposed demolition of structures, PG&E will assess the structures for cultural resource significance (see Section 3.8, *Cultural Resources*) and follow all procedures for protection of significant cultural resources accordingly. For demolitions, PG&E will follow all state and federal requirements for addressing lead-based paint, asbestos, or other hazardous materials, including proper containment and disposal. PG&E will work with property sellers to ensure that all pets are removed from the property upon acquisition. If pets are abandoned on vacant properties, PG&E will work with San Bernardino County Animal Care & Control to remove such animals from the properties accordingly and place in animal shelters, where appropriate.