

5. EVALUATION OF ENVIRONMENTAL IMPACTS

5.1 INTRODUCTION

This Initial Study includes analyses of the 16 environmental issue areas listed below per section number. These issue areas incorporate the topics presented in the California Environmental Quality Act's (CEQA's) Environmental Checklist (identified in Appendix G to CEQA Guidelines (14 CCR 15000 et seq.)).

5.2	Aesthetics	5.10	Land Use and Planning
5.3	Agricultural Resources	5.11	Mineral Resources
5.4	Air Quality/Climate Change	5.12	Noise
5.5	Biological Resources	5.13	Population and Housing
5.6	Cultural Resources	5.14	Public Services
5.7	Geology/Soils	5.15	Recreation
5.8	Hazards and Hazardous Materials	5.16	Transportation/Traffic
5.9	Hydrology and Water Quality	5.17	Utilities and Service Systems

Explanations for the checklist findings are provided for each environmental issue area. Each issues area describes the environmental setting, regulatory setting, and environmental impacts.

5.1.1 Environmental Setting

The environmental setting sections present a description of the physical environment for each of the 16 environmental parameters analyzed for the proposed project. The discussion of environmental setting varies among the parameters. The content and level of detail of the environmental setting is relative to the parameter discussed and the extent of the potential impacts that could occur from project activities.

5.1.2 Regulatory Setting

Current regulatory settings are presented in the Regulatory Setting sections of the 16 environmental parameters. Federal, state, regional, and local regulations applicable to the project are identified.

5.1.3 Environmental Impacts

The results of the environmental analyses conducted for the proposed project are presented in these portions of Sections 5.2 through 5.18. Each of the environmental analysis discussions present:

- Significance criteria
- Impact discussion
- Levels of significance
- Mitigation measures.

The significance criteria are a benchmark for determining if a project would result in significant environmental impacts when evaluated against the baseline (i.e., existing conditions). Each of the environmental analysis sections presents discussions on the potential effects of the proposed project on the environment. Analyses are presented for each CEQA Environmental Checklist question, accompanied by a determination made as to whether or not the proposed project would result in a significant environmental impact based on the established thresholds of significance. Mitigation measures are identified, if warranted, that could reduce the impact to a less-than-significant level. The impact analyses are divided into the basic phases of the project (i.e., construction, operation, and maintenance) and further divided by component if warranted by the environmental parameter, significance criteria, or impact analysis.

5.2 AESTHETICS

<i>Would the project:</i>	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) <i>Have a substantial adverse effect on a scenic vista?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) <i>Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) <i>Substantially degrade the existing visual character or quality of the site and its surroundings?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) <i>Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5.2.1 Environmental Setting

Visual Character

The character of the project area is rural in nature and supports large-scale agriculture. The proposed project is located within the valley floor of Colusa County, which is a predominantly agricultural county within western Sacramento Valley. Within the project area the terrain is relatively flat, allowing for expansive views of the surrounding rural setting and distant views of the North Coast Ranges to the west, the Sutter Buttes to the southeast, and the Sierra Nevada Mountains to the east. The area has a gradual slope to the southeast toward the Sacramento River.

The local area is characterized by a country road network and agricultural facilities (Figure 5.2-1a, Photo 1). The majority of agricultural land within the project area is utilized as either rice fields or row crops. Immediately east of the eastern project boundary is SR-45, and beyond that is the Sacramento River. Views of the river from the project area are blocked by river levees and vegetation. With the exception of SR-45, which parallels the Sacramento River, the local roadway network consists of two-lane rural roads. Some of the local access roads are unpaved. The western end of the project, near the existing Delevan Compressor Station, is characterized by open nonnative grassland used as grazing land (Figure 5.2-1a, Photo 2).

Natural features that contrast with the overall agricultural setting include the Sacramento NWR located to the north, and the Delevan NWR located south of the proposed 14.7-mile pipeline alignment. The Sacramento NWR currently consists 10,819 acres, and the Delevan NWR consists of 5,877 acres (USFWS 2009). Both NWRs are comprised of managed and unmanaged wetlands predominately used for migrating waterfowl.

Compressor Station, Remote Well Pad, Observation Wells, and Saltwater Disposal Well

Viewer groups include local residences and travelers on SR-45 and on local, unpaved roads such as Paradise, Southam, Dodge, and McAusland roads. People in the town of Princeton would not have views of the project area due to orchards, landscaping, and distance that obscure views of the project facilities. Mobile viewers on SR-45 would intermittently experience views of the compressor station site and the remote well pad site from various locations (Figure 5.2-1b, Photo 3). In addition, mobile viewers traveling on rural roadways adjacent to project components would also be afforded views of these components (Figure 5.2-1b, Photo 4).

Metering Station

Views in the western portion of the project area where the metering station is proposed to be constructed are comprised of the existing Wild Goose metering station, the Delevan Compressor Station, and PG&E's Colusa Generating Station (under construction) (Figure 5.2-1c, Photo 5). These existing facilities are in open nonnative annual grassland and are surrounded by chain-link fences. The metering station is proposed to be located immediately south of the Wild Goose metering station. The closest residence is located over 1 mile to the southeast of the site, and I-5 is located over 3 miles east of the metering station site.

Connecting Pipelines

The area is primarily in agricultural use (Figure 5.2-1c, Photo 6). There are five rural residences within the natural gas storage reservoir boundary that are located to the east and southeast of the connecting pipelines in the area of the compressor station and remote well pad sites. Another residence is located immediately north of the 14.7-mile long gas pipeline route, just east of the Union Pacific Railroad (UPRR) and I-5. The 14.7-mile-long pipeline alignment traverses agricultural fields between the Sacramento and Delevan NWRs.

Light and Glare

Existing sources of light and glare in the immediate vicinity of the project area are generally related to residences and agricultural facilities in the area.

5.2.2 Regulatory Setting

The following plans and policies have been developed to preserve visual resources and protect scenic values within the project area.

Federal

There are no federal goals, objectives, or policies related to aesthetics that are applicable to the proposed project.

State

California Streets and Highway Code Section 263

Section 263 of the California Streets and Highway Code establishes the state scenic highway system. Administered by the California Department of Transportation (Caltrans), the state scenic highway program officially designates routes within California featuring important visual resources and protects these routes through special conservation treatment.



SOURCE: Dudek, Field Visit September 4, 2008

Photo 1: View looking south from Southam/McAusland Road intersection. (Proposed Remote Well Pad Site located in background south of silos.)



SOURCE: Dudek, Field Visit September 4, 2008

Photo 2: View looking southeast near proposed Metering Station Site. (Proposed Metering Station Site located south of Wild Goose Metering Station shown in foreground.)

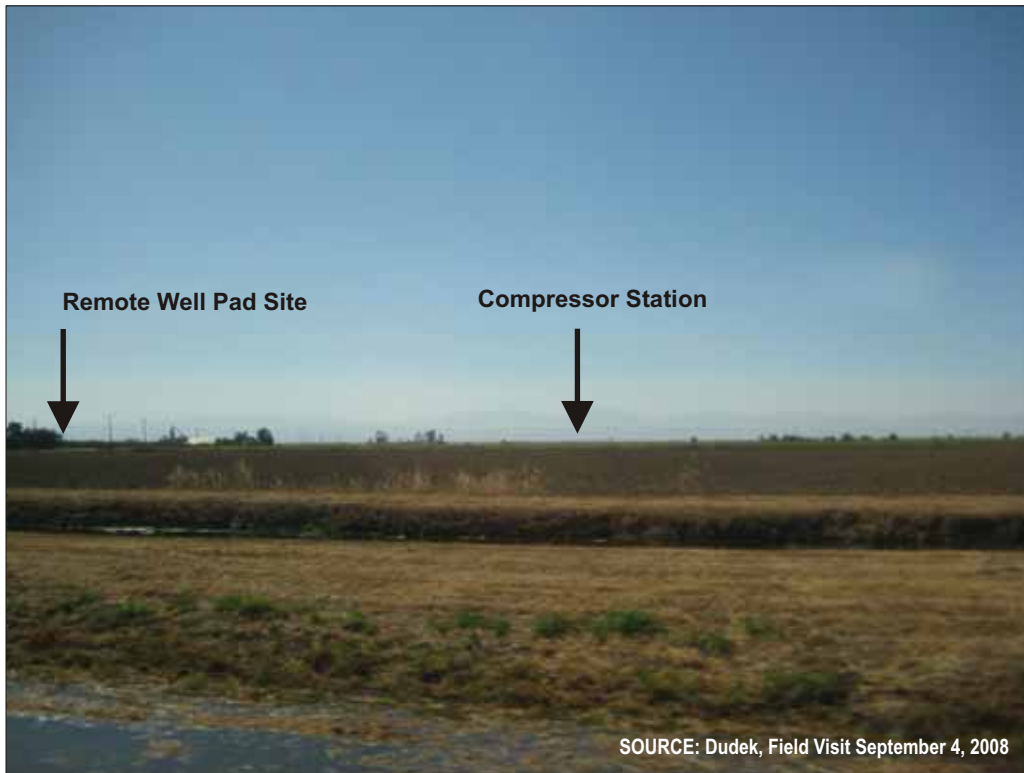
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Central Valley Gas Storage Project

**FIGURE 5.2-1a
Existing Site Photographs**

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SOURCE: Dudek, Field Visit September 4, 2008

Photo 3: View looking west from SR-45 toward Compressor Station and Remote Well Pad Sites.



SOURCE: ICF Jones & Stokes 2009

Photo 4: View looking west toward Compressor Station Site from Southam Road, east of McAusland Road.

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**FIGURE 5.2-1b
Existing Site Photographs**

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SOURCE: ICF Jones & Stokes 2009

Photo 5: View looking southwest toward proposed Metering Station, Wild Goose Metering Station, and Colusa Generating Station.



SOURCE: Dudek, Field Visit September 4, 2008

Photo 6: View looking south, east of McAusland Road and the Remote Well Pad Site.

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**FIGURE 5.2-1c
Existing Site Photographs**

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Caltrans Scenic Highway Program

Caltrans has implemented a statewide scenic highway program to protect and enhance the scenic beauty of California's highways and scenic corridors. Currently there are no officially designated State Scenic Highways or Historic Parkways in Colusa County. As stated in the Colusa County General Plan, SR-45 has been proposed for designation as a State Scenic Highway, yet it has not been officially designated by Caltrans as such.

Local

Colusa County General Plan

The Colusa County General Plan contains objectives and policies relevant to the preservation of aesthetic resources. The relevant objectives and policies applicable to the proposed project are listed below.

- **Land Use Objective (g):** To upgrade the visual appearance and quality of development on the approaches to Colusa and Williams and prevent development which degrades the aesthetic quality of scenic roadways elsewhere.
- **LU-7:** The proposed development pattern should protect the scenic values of Colusa County. More restrictive design standards should be developed within the communities to encourage visually attractive development and lessen the visual impact of existing non-conforming uses.
- **CIRC-49:** Any earthmoving or road reconstruction project should be followed by seeding and vegetation, which restores a natural appearance.
- **OS-13:** Views of regional focal points, such as the Sutter Buttes, the Sacramento River, Snow Mountain, and St. John Mountain should be preserved wherever possible.
- **OS-14:** To the maximum extent possible, the significant open space resources in Colusa County such as the foothills, Indian Valley, and Bear Valley should remain visually undisturbed.
- **OS-17:** All resource extraction activities should include mitigating measures, which ensure that their effect on scenic views is minimized.

5.2.3 Environmental Impacts

Significance Criteria

Appendix G of the CEQA Guidelines provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on aesthetics if the project would:

- a) Have a substantial adverse effect on a scenic vista
- b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway
- c) Substantially degrade the existing visual character or quality of the site and its surroundings
- d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area.

Impact Discussion

a) Have a substantial adverse effect on a scenic vista?

There are no designated scenic vistas within the vicinity of the project area. Since the area is generally flat, expansive views are afforded through the project area.

Views of the Sacramento and Delevan NWRs and travelers passing through the project area would be affected by temporary changes to the visual landscape of the area due to construction-related activities. Short-term visual impacts directly related to construction activities may be adverse but due to their temporary nature, would not significantly affect views of the Sacramento and Delevan NWRs, and would therefore be less than significant. As the pipeline would be underground, the project would not affect long-term views of the Sacramento and Delevan NWRs.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

The Colusa County General Plan recommends that the scenic highway designation be applied to SR-45 (from Yolo County to Glenn County) (Colusa County 1989). However, according to Caltrans' Scenic Highway Program, SR-45, located approximately 0.5 mile east of the proposed compressor station and remote well pad site, is not identified as an eligible or designated state scenic highway (Caltrans 2008). No scenic highways or historic buildings are present in the project area, and the facilities would be located in agricultural areas, primarily planted with rice, walnut, and row crops. Therefore, the proposed project would not result in substantial damage to scenic resources within any designated scenic highway and no impact would occur.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?

Construction

Compressor Station

Construction activities would involve a variety of actions including the following: site preparation, construction of building foundations, erection of perimeter fencing; erection of structures to house the compressors and associated control equipment; construction of an electrical distribution line; and installation of equipment and piping. Construction of the compressor station is estimated to take 12 months. Construction would generally occur between Monday and Saturday between the hours of 7:00 a.m. and 7:00 p.m.

Construction activities would be visible from the residences along Southam and Dodge roads to the east and southeast. The closest residence is located on Southam Road approximately 1,250 feet from the compressor station site boundary. Views toward the site from the residence located further east on Southam Road are partially obstructed by vegetation around the home. The homes along Dodge Road are more than 3,000 feet from the site and also have varying vegetation between them and the compressor station. The most visually prominent actions that could be noticed from the residences would be materials and equipment transport to the site along project access roads, as well as the presence of cranes used to erect buildings and compressor equipment. Based on the

distance from the residences, obstruction of some views by vegetation, the variability of construction actions at any one time, and the temporary presence of construction activities, visual impacts would be less than significant.

Remote Well Pad Site, Observation Wells, and Saltwater Disposal Well

The injection/withdrawal, observation wells, and saltwater disposal well would occupy several well pads interspersed throughout the natural gas storage area. The most prominent visual features during the temporary drilling and construction phase would be the drill rig. The drill rig would occupy well pads in sequence and would be present at each site for 24 hours per day over an approximately 2-week period. The entire drilling program for all new wells—including new well drilling and completion, and reworking and completion of existing wells—is anticipated to last approximately 3 months. The approximately 150-foot-tall rig mast would be visible from surrounding areas during both day and nighttime use. The nearest sensitive receptors to the proposed well pads are the residences along Southam and Dodge roads to the east and southeast of the nearest proposed well pad. Drilling of wells would occur at distances of greater than 600 feet for all wells, with the exception of Z-2, which would be 400 feet from the nearest sensitive receptor. The scale of the drill rig seen at these distances would be visually evident; however, impacts would be less than significant because of the temporary presence of the drill rig.

The drill rig would be directly visible to travelers on McAusland Road, which is located between the remote well pad site and proposed observation wells and saltwater disposal well, and intermittently from SR-45, which is located to the east of these project components. The view of the drill rig would be temporary to motorists on McAusland and Dodge roads as they travel past the construction sites. The scale of the drill rig seen from SR-45 would be visually insignificant. The temporary presence of a drill rig would not substantially degrade the visual character of the project area because drilling would occur over a 3-month period, and the duration at any one location would only be 2 weeks; therefore, visual impacts due to well construction would be less than significant.

Metering Station

The metering station would be located next to an existing site that has been developed with similar uses (i.e. the Wild Goose Storage metering station, the Delevan Compressor Station, and Colusa Generating Plant (under construction)). Construction would include a variety of activities, including site preparation, construction of an approximately 440-foot access road, perimeter fencing, erection of the control building and odor tank, and installation of equipment and piping. The nearest residence is located over 1 mile to the southeast of the site along Noel Evan Road, east of the Glenn-Colusa Canal. The construction is anticipated to last approximately 2–3 months.

The construction activities would also be noticeable to motorists traveling on nearby public roadways to the east. These roadways are primarily used by locals and are not heavily traveled. I-5 is located over 3 miles to the east, and construction activity seen at this distance would be visually insignificant. Due to the short-term construction duration and the scale of construction equipment seen at the distance from the residence and I-5, the visual impact of construction activities would be less than significant.

A 10-acre staging area is proposed to be located to the south of the metering station. Temporary use of this area for equipment staging and worker parking would be visible from the existing residence and the area roadways. The temporary use of this staging area would not cause a substantial change in the visual character of the existing landscape because (1) the existing utility uses in the area and (2) equipment will be removed subsequent to construction. Potential impacts to visual resources would be less than significant.

Connecting Pipelines

Due to the presence of construction vehicles, trenching activities that include open-trench, auger bores, HDD, and stockpiled soil, construction of the connecting pipelines would temporarily impact the existing rural character of the project area. Agricultural fields within the 100-foot-wide construction ROW would be temporarily disturbed; however, once construction is complete and the connecting pipelines are in place (approximately 5 feet below ground surface), disturbed surface areas will be restored to preconstruction conditions, and agricultural operations would continue. Restoration of disturbed surface areas (if requested by the affected landowner) will be implemented as part of APMs AES-1 (see Section 4.8.1) and AGRI-2 (see Section 4.8.2).

Travelers passing through the project area, as well as nearby residences, would be affected by temporary changes to the visual landscape of the area due to construction related activities. The construction impacts to visual quality along the connecting pipeline routes would be relatively short-term in duration (approximately 3 to 4 months, spread out along different portions of the pipeline alignment). Overall, the presence of construction crews and equipment during the construction phase would create short-term aesthetic impacts to the local area, including impacts to motorists traveling along the local roadways, as well as for local residents in the project area. Impacts resulting from the construction of the pipeline would be temporary and less than significant with implementation APMs AES-1, which minimizes vegetation clearing during construction, and AGRI-2, which will restore disturbed surfaces after construction.

Operation and Maintenance

Compressor Station

The compressor station would be located on a 10-acre site that is visible from several areas along SR-45 and local roadways. Figure 5.2-2 provides an existing and simulated view of the compressor station site from SR-45 at Paradise Road. The following provides the anticipated bulk and scale of the buildings and equipment proposed on the compressor station site:

Buildings

- Compressor Building: 146 feet 4 inches x 67 feet x 49 feet 6 inches ridge height above grade
- Auxiliary Building: 100 feet 3 inches x 50 feet 3 inches x 29 feet 10 inches ridge height above grade
- Utility Building: 75 feet 3 inches x 25 feet 3 inches x 19 feet 2 inches ridge height above grade

Equipment

- Three Gas Coolers: 40 feet 6 inches x 13 feet 6 inches x 13 feet tall
- Three Engine Jacket Water Coolers: 35 feet x 14 feet x 12 feet 6 inches tall
- Three Engine Exhaust: 42-inch diameter exhaust piping exiting from west of compressor building exhaust stack 60 feet above grade
- Three Dehydration Absorption Towers: 58 feet OD, 30 feet tall
- Two Thermal Oxidizer: 36 inches diameter x 30 feet tall above saddle base
- Two Standby Generators: 19 feet x 9 feet x 12 feet tall with a 36-inch diameter, 10-foot-long muffler horizontally mounted on top.

The most prominent feature would be the compressor building, which would measure approximately 146 feet long, 67 feet wide, and 50 feet tall. Other buildings would not be as large or as tall as the compressor building; however, the combined buildings would have a massing effect on the 10-acre site. The tallest feature would be three engine exhaust stacks at 60 feet tall. Overall, the components listed above would contribute to the industrial character of the facility.

As shown in Figure 5.2-2, distant views of the compressor station are afforded along SR-45; however, at this distance the compressor station is nearly indistinguishable from existing agricultural buildings on adjacent properties. While Figure 5.2-2 provides a relatively unobstructed view of the compressor station site from SR-45, the majority of the views from the highway would be screened by existing orchards, vegetation, and farm structures located on adjacent properties.

As stated above the compressor station would also be visible from several small local roads located in the general vicinity of the 10-acre site, specifically McAusland Road and Southam Road. Figure 5.2-3, Existing and Simulated View from McAusland Road, and Figure 5.2-4, Existing and Simulated View from Southam Road, depict existing and simulated middle-ground views of the compressor station site from McAusland Road and Southam Road. As shown in the figures, the compressor station would be similar in scale and mass to the existing agricultural buildings located south of the proposed site. In addition, to further minimize potential impacts with the existing visual character of the project area, the applicant will paint the compressor station with non-glare, earth tone colors to blend in with the surrounding vegetation/landscape (APM AES-1). Implementation of APM AES-1 into project design will reduce the potential of the compressor station to degrade the existing visual character of the agricultural setting. Therefore, operation and maintenance of the compressor station would not degrade the existing visual character and quality the site and its surroundings. Impacts would be less than significant.

Remote Well Pad Site, Observation Wells, and Saltwater Disposal Well

Most of the components at the 3.1-acre well pad site would be located beneath the ground surface (wells, dual gas gathering and water gathering pipeline, etc.); however, some surface facilities would be visible. The bulk and scale of the buildings and equipment include the following:

Buildings

- Utility Building: 20 feet x 20 feet x 13 feet 4 inches ridge height above grade
- Leased Compressor Building: 26 feet x 36 feet x 26 feet ridge height above grade

Tankage

- Saltwater Storage Tank: 130,000 gallons, 36 feet diameter x 23 feet tall on 1-foot-high foundation
- Methanol Storage Tank: 1,000 gallons, 5 feet 6 inches diameter x 7 feet 6 inches tall

Equipment

- Wellhead Scrubbers:
 - 7-Upper Sands, 26 inches diameter, 12 feet tall
 - 2 to 3-Lower Sands, 30 inches diameter, 13 feet 4 inches tall
- 2 Filter-Separators: 30.5 inches OD, 14 feet long, 5 feet 4 inches tall on 3-foot-high foundation, approximately 30 feet apart.

The 3.1-acre site would be enclosed by a 7-foot-tall chain-link fence with access provided from McAusland Road. Immediately surrounding the remote well pad site there will be an approximately 5-acre buffer area enclosed by a 7-foot-tall chain-link fence for safety purposes (see Appendix A, Sheet 1). The proposed well pads and buffer area are surrounded by existing agricultural operations. The proposed well pad components would not result in a substantial degradation or change in the visual character of the existing landscape considering the location near an existing large agricultural facility to the north (see Figure 5.2-1a, Photo 1). In addition, the distance to the nearest residence is approximately 1,000 feet to the southeast from the remote well pad site boundary, across McAusland and Dodge roads and an agricultural field. Wellheads would be located within open agricultural fields and aboveground portions would be partially screened by agricultural crops and would not significantly degrade the existing visual character of the surrounding site. In addition, to minimize visual impacts of the well pad site, the project applicant will implement APM AES-1, which will assist in blending the remote well pad site with the existing landscape, thereby not degrading the existing visual character of the agricultural setting. Therefore, impacts to aesthetics would be less than significant.

Existing View (7-10-08)



Simulated View



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SOURCE: ICF Jones & Stokes 2009

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Central Valley Gas Storage Project

Existing and Simulated View of Compressor Station Site from State Route 45 at Paradise Road

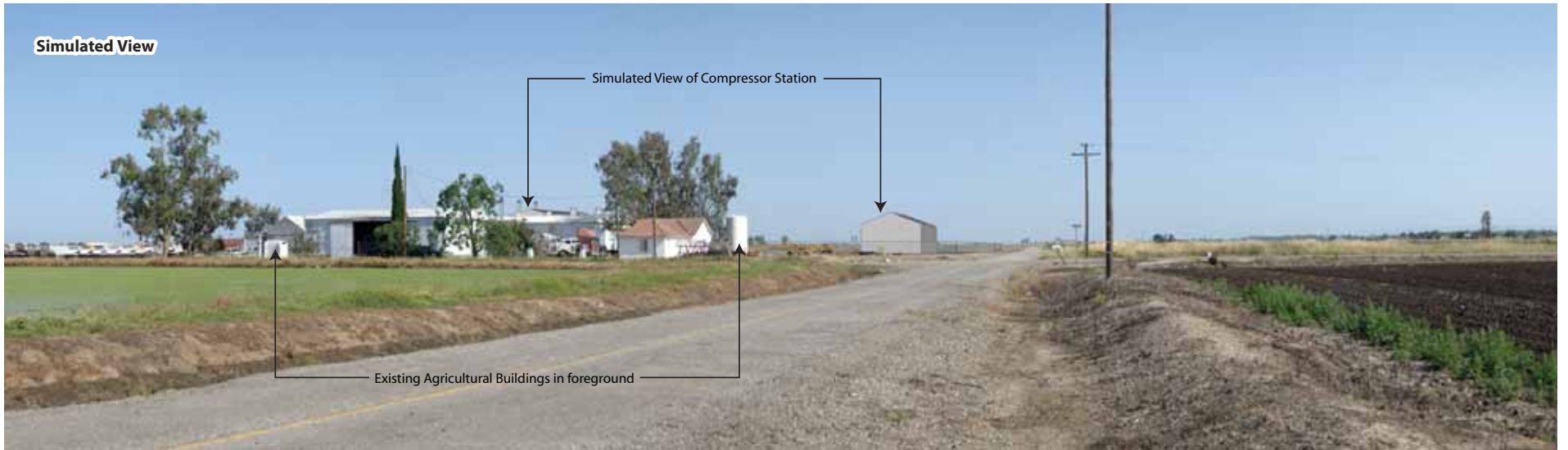
FIGURE 5.2-2

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Existing View (7-10-08)



Simulated View

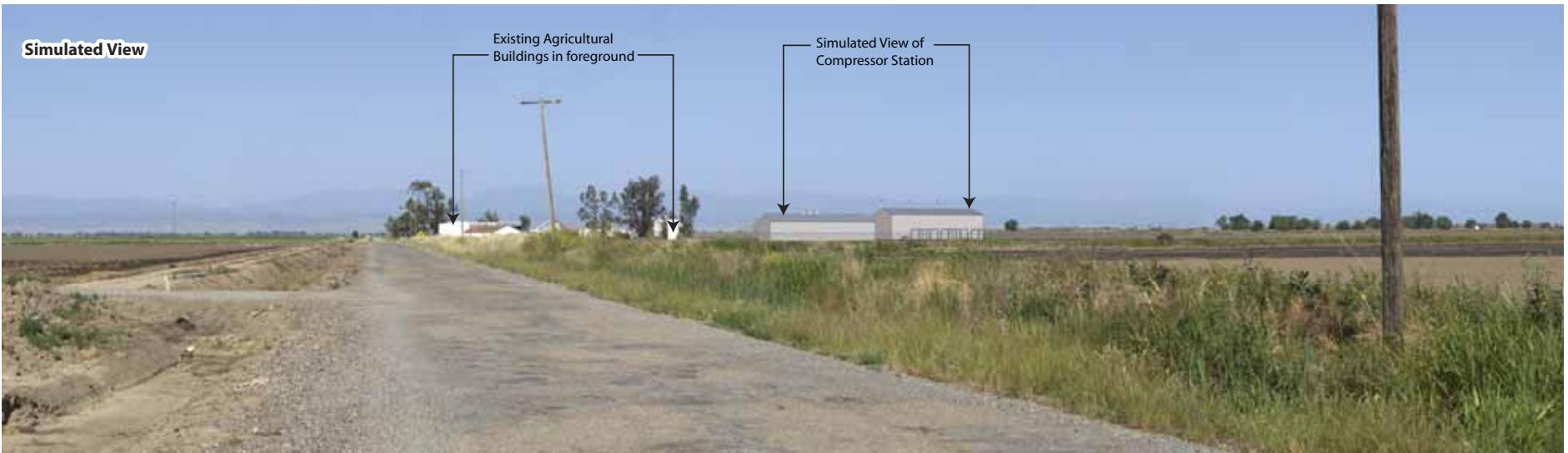


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Existing View (5-11-09)



Simulated View



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Metering Station

The metering station would consist of piping and valve equipment surrounded by a 7-foot-tall chain link security fence. In addition, the structures and their size that would be on site include the following:

- Control Building: 15 feet x 25 feet x 16 feet ridge height above grade
- Odorizer Tank: 8 feet diameter x 30 feet x 10 feet tall.

The site is surrounded by existing similar facilities, including the Wild Goose metering station, Delevan Compressor Station, and the PG&E Colusa Generating Station. This site is located in an area of nonnative annual grassland that has expansive views of the valley (see Figure 5.2-1a, Photo 2). The structures, piping, and equipment related to these facilities would not substantially alter the visual character of the area because of the similar uses in the area, their relatively small size, and the location near an existing utility corridor. The new access road to the metering station would not degrade or change the visual character of the area because farm and access roads are common in the project area. Therefore, impacts to aesthetics would be less than significant.

Connecting Pipelines

The connecting pipelines would be buried features and would not be permanent components of the landscape. Operation of the pipelines would include pipeline inspections and maintenance. Such activities would be conducted via existing roads. No permanent new access roads would be constructed for the purpose of pipeline inspections. The APMs AES-1 and AGRI-2 will ensure that all pipeline corridors are re-vegetated and restored as appropriate. Therefore, no long-term impacts to aesthetics due to the connecting pipelines would occur.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Construction

Project construction would typically occur between 7:00 a.m. and 7:00 p.m., Monday through Saturday. However, drilling at the remote well pad site, observation wells, and saltwater disposal well would occur over a 24-hour period and would require lighting at night. Drilling portions of HDD activities would be limited to daylight hours; however pull back activities could occur at night, requiring lighting. The only area in which nighttime pull back construction activities would be visible in the immediate foreground would be in the vicinity of the proposed railroad and I-5 HDD entry location. This work site is located approximately 300 feet east of the UPRR, and immediately south of a residence that is located approximately 0.50 mile north of Loretz Road. The pull back operations may require lighting for a period of approximately 1 week or less.

Drilling activities at well pads would require 24-hour, 7-day-a-week operations for a period of up to 3 months in order to complete the drilling program for the various proposed wells. Nighttime drilling would require the use of lighting on the drill rig. This lighting would likely be visible from residences along Southam Road and Dodge Road, and potentially from public roadways, including SR-45.

The temporary use of nighttime lighting during construction would be a short-term impact. With the implementation of APM AES-1 and project proposed Mitigation Measures AES-1 and AES-2 that will ensure that nighttime lighting will be shielded and directed away from residential areas, this impact from lighting and glare would be less than significant.

Mitigation Measure AES-1: Night lighting for construction at the well pad and HDD drilling sites, if required, shall be fully shielded and directed away from residential areas. Lights shall be turned off in areas where they are no longer needed.

Mitigation Measure AES-2: The applicants' drilling plan shall specify that lights shall be fully shielded and directed inward on the work area.

Operation and Maintenance

Compressor Station

The proposed compressor station would have three 30-foot light poles with low-intensity lights (5 foot-candles). These lights would illuminate the facility at all times. This new source of light could be discernable from distant roadways and residences. This limited light source is not expected to create adverse light or glare effects. There would also be high-intensity floodlights (30 foot-candles) for nighttime servicing. The high-intensity lighting would be used during occasional nighttime maintenance activities. Such lighting would be temporary and less than significant. Implementation of APM AES-1 (shielding lighting) and Mitigation Measure AES-3 (directing lighting to the ground) will render any impacts from lighting and glare less than significant.

Remote Well Pad Site, Observation Wells, and Saltwater Disposal Well

One light fixture would be installed at the remote well pad site. The fixture would be a 400-watt high-pressure sodium light on a 30-foot pole adjacent to the auxiliary building. This light would only be used on an as-needed basis and would not be on continuously throughout the night. These lights would only be used when the site is accessed. Routine inspections would occur during daylight hours, and nighttime maintenance and construction (e.g., well workovers or major equipment replacement) would be infrequent. Implementation of APM AES-1 and project proposed Mitigation Measures AES-3 and AES-4 will render any impacts from lighting and glare less than significant.

Metering Station Site

The metering station would have low glare lights (5 foot-candles). The lights would be illuminated only when nighttime activities are necessary. New nighttime lighting in the area would be discernable from a distance. Implementation of APM AES-1 and project proposed Mitigation Measures AES-3 and AES-4 will render any impacts from lighting and glare less than significant.

Connecting Pipelines

The gas pipelines would be buried and would not be a source of light or glare during operation. Maintenance of the pipeline would typically occur during the daytime. Emergency maintenance could occur during the night and require lighting; however, this lighting will be

shielded and directed toward the work area. Such impacts would be temporary and impacts would be less than significant.

Mitigation Measure AES-3: All permanent outdoor site and building lighting at the compressor station, remote well pad site, and metering station site shall be directed at the ground and immediate area around the mounting pole or building wall. All permanent outdoor lighting shall be fully shielded such that all light emitted by the fixture, either directly from the lamp or a diffusing element, or indirectly by reflection or refraction from any part of the luminaire, is projected below the horizontal. Poles used for site lighting shall not exceed a height of 35 feet.

Mitigation Measure AES-4: Observation and saltwater disposal well pad lighting and metering station lighting shall be used only as needed when the sites are accessed for monitoring or servicing.

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5.3 AGRICULTURE RESOURCES

<i>Would the project:</i>	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) <i>Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?.</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) <i>Conflict with existing zoning for agricultural use, or a Williamson Act contract?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) <i>Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5.3.1 Environmental Setting

The proposed project would be located in an agricultural area in the unincorporated portion of Colusa County. Agriculture is a major industry in the county. According to the California Department of Finance (2007), slightly more than 485,000 acres in Colusa County, nearly two-thirds of the county's total land area, were in agricultural production in 2005. According to the California Department of Conservation (DOC), the county contains over 200,000 acres of both Prime Farmland and Farmland of Local Importance, and 123,000 acres of Unique Farmland under DOC's Farmland Mapping and Monitoring Program (FMMP) (DOC 2009a). In 2006, agriculture, forestry, and fishing businesses made up 25% of all industries in the county, compared to only 3% in the state, indicating the specific importance of agriculture in Colusa County (Colusa County Economic Development Corporation 2009).

The county's primary agriculture crops consist of rice, orchards, and row crops. For decades, rice has been the leading crop in the county, with perennial crops, like grapes and walnuts, growing in popularity (Colusa California Online Guide 2009).

The FMMP monitors changes in farmland use on a gross scale within Colusa County. In 1998, there were 201,910 acres of Prime Farmland identified in the county (DOC 2009b). In 2006, the amount of Prime Farmland had been reduced to 200,182 acres. About 188 acres of this change was due to urbanization. The remainder was either land being converted to Farmland of Local Importance or to wetlands and agricultural processing areas. The FMMP converts Prime Farmland to Farmland of Local Importance when the land is left idle for three or more update cycles. In 1998, the FMMP identified 125,083 acres of Unique Farmland in Colusa County. In 2006, this had decreased to 123,318 acres. The change is largely attributed to conversion to

wetland and agricultural processing areas. About 22 acres of the change is attributed to urbanization (DOC 2009c).

The project area is designated A-G (“Agriculture-General”) in the Colusa County General Plan (Colusa County 1989) and is zoned E-A (“Exclusive Agriculture”) according to the Colusa County Code (Colusa County Code Appendix I, Article 3, Section 301). Land carrying the A-G designation is generally used for orchard and crop production; however, secondary uses within these designated areas include oil and gas drilling (Colusa County 1989). A-G lands within the project area are dominated by large farms involved in rice production, orchard, or crop row farming. Principal permitted uses within the E-A zone include all general agricultural uses, including animal husbandry and structures associated with agricultural uses. Facilities associated with exploratory drilling and production of fossil fuels and geothermal power are permitted uses within this zone and require a use permit.

The project facilities are proposed to be located in an area that is characterized by large-acreage farms. The proposed 10-acre compressor station site and 3.1-acre remote well pad site would be located in an area presently cultivated with rice. As shown in Figure 5.3-1a, the compressor station site would be located on land that is designated as Unique Farmland, and the remote well pad site would be located on land designated as Prime Farmland. The observation wells would be located in agricultural fields that are presently cultivated with row crops, which are also designated as Prime Farmland. As shown in Appendix A, the majority of the proposed project pipeline alignment would traverse land that is primarily in rice production. Figures 5.3-1a and 5.3-1b show the areas of Prime and Unique Farmland that the pipeline alignment would cross. The land west of the Glenn-Colusa Canal, where the metering station and western most segment of the pipeline alignment would be located, is non-native annual grassland, which is designated as Farmland of Local Importance. There is no land designated as Farmland of Statewide Importance in the project area.

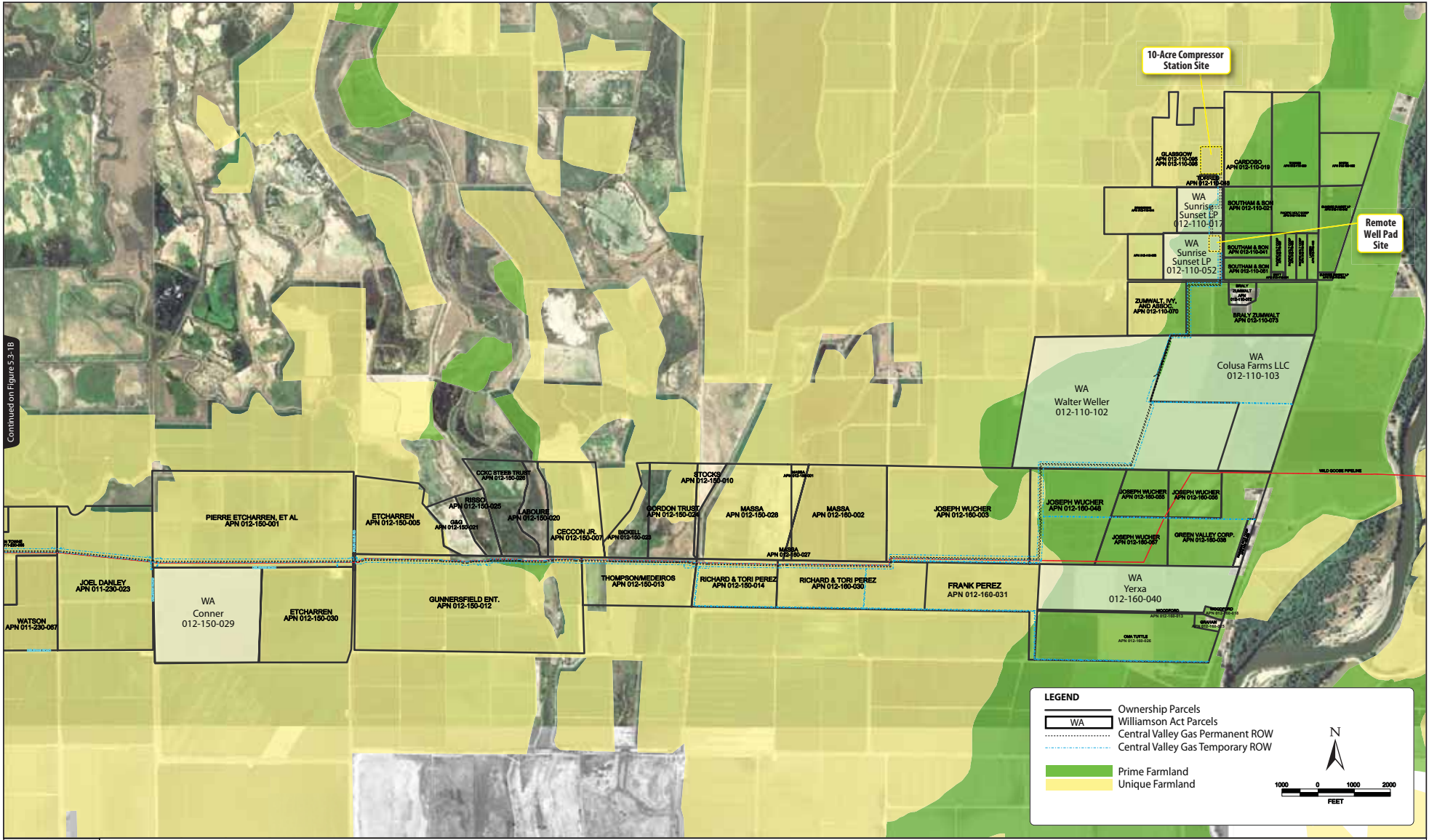
Williamson Act Contracted Properties

Figures 5.3-1a and 5.3-1b depict Williamson Act properties within the project boundary. As shown, the remote well pad site and buffer area as well as portions of the connecting pipeline alignment would be located on lands that are presently under Williamson Act contracts. The Williamson Act is explained in the Section 5.3.2.

5.3.2 Regulatory Setting

Federal

There are no federal goals, objectives, or policies related to agricultural resources that are applicable to the proposed project.

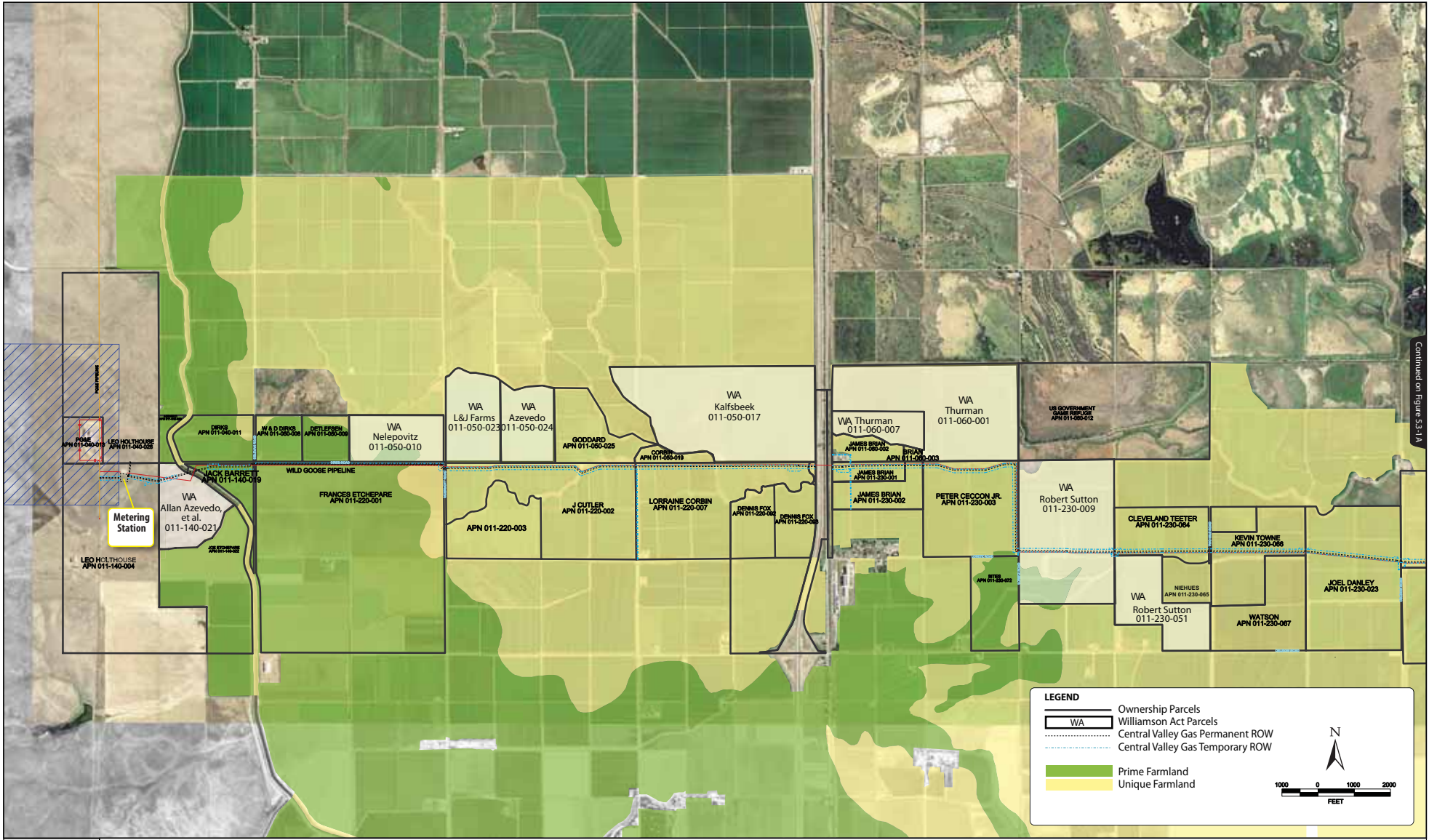


Continued on Figure 5.3-1B

FIGURE 5.3-1a
Farmland and Williamson Act Parcels (Sheet 1 of 2)

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Continued on Figure 5.3.1A

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State

California Department of Conservation's Farmland Mapping and Monitoring Program

The FMMP produces maps and statistical data used to analyze impacts on California's agricultural resources. Every 2 years the maps are updated using data obtained from aerial photographs, a computer mapping system, public review, and field reconnaissance. Agricultural land is rated by the FMMP according to soil quality, irrigation status, and importance. The highest quality land is called Prime Farmland. Other FMMP categories include Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, and Grazing Land. A description of the FMMP farmland categories is provided below (DOC 2009a).

Prime Farmland

Prime Farmland has the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agriculture production at some time during the 4 years prior to the mapping date.

Farmland of Statewide Importance

Farmland of Statewide Importance is similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the 4 years prior to the mapping date.

Unique Farmland

Unique Farmland consists of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but it may include non-irrigated orchards or vineyards, as found in some climatic zones in California. Land must have been cropped at some time during the 4 years prior to the mapping date.

Farmland of Local Importance

The following lands are to be included in the Farmland of Local Importance category:

- All farmable lands within Colusa County that do not meet the definitions of Prime, Statewide, or Unique but are currently irrigated pasture or non-irrigated crops
- Non-irrigated land with the soils qualifying for Prime Farmland or Farmland of Statewide Importance
- Lands that would have Prime or Statewide designation and have been improved for irrigation but are now idle
- Lands with a General Plan Land Use designation for agricultural purposes
- Lands that are legislated to be used only for agricultural (farmland) purposes.

Williamson Act

The state allows local governments to enter into Williamson Act contracts or Farmland Security Zone (FSZ) contracts in order to preserve agricultural land and provide tax benefits to the landowner.

The Williamson Act, formally known as the California Land Conservation Act of 1965 (California Government Code §51200–51297.4, as amended), enables local governments to enter into

contracts with private landowners that restrict specific parcels of land to agricultural or related open-space use. In return, these landowners receive property tax assessments that are based upon farming and open-space uses rather than other potentially higher tax bases (DOC 2007). An agricultural preserve can consist of no less than the following minimum acreage:

- An area of 10 to 40 acres for Prime agricultural land if surrounded by or substantially surrounded by or contiguous to other agricultural preserve lands
- An area of 40 acres or more for Prime agricultural land
- An area of 40 to 160 acres for non-Prime agricultural land if surrounded by or substantially surrounded by or contiguous to other agricultural preserve lands
- An area of 160 acres or more for non-prime agricultural land; provided that in order to meet this requirement, two or more parcels may be combined if they are contiguous and if they are in common ownership or use.

The Williamson Act states that a Board or Council, by resolution, shall adopt rules governing the administration of agricultural preserves. The rules of each agricultural preserve specify the uses allowed. Any commercial agricultural use would generally be permitted within any agricultural preserve. Local governments may identify compatible uses permitted with a use permit. Notwithstanding any determination of compatible uses by a city or county, unless the city or county, after notice and hearing, makes a finding to the contrary, the erection, construction, alteration, or maintenance of gas facilities are specifically determined under the Williamson Act to be compatible uses within any agricultural preserve (California Government Code §51238).

The FSZs are more stringent agricultural preservation contracts between a private landowner and public agency than standard Williamson Act contracts. There are no parcels designated as FSZ in the project area, or along the proposed project gas pipeline alignment.

Local

Colusa County regulates land use through zoning and general plan designations, which indicate allowable uses as well as through general plan policies.

Colusa County General Plan

The following goals, objectives, and policies of the Colusa County General Plan are applicable to the proposed project.

- **Land Use (LU) Objective (c):** To conserve and protect agricultural land through a variety of strategies, including taxation, zoning, and general planning.
- **Land Use Objective (d):** To withhold development permits which would cause direct interference with viable agricultural operations.
- **Land Use Policy LU-4:** Agriculture and resource management should be the primary land uses outside of the designated communities. Freestanding subdivisions isolated from existing communities and lacking urban services should be prohibited.
- **Land Use Policy LU-9:** The proposed development pattern should protect the integrity of agriculture and shall not in any way create a hardship for the county's farmers. Lands presently in agricultural uses that do not adjoin existing communities should be protected through the county's land use regulations. In addition, the CEQA Initial Study checklist should consider the potential impact of proposed development on existing and adjoining agricultural operations and water supply.

- **Land Use Policy LU-20:** Lands designated for General or Upland Agriculture should continue to be used for agriculture at least for the duration of the planning period (1987–2010). Such period may be extended by future revisions of the plan.
- **Land Use Policy LU-25:** Exploration and extraction of oil, gas, and other mineral resources should be conducted in such a way that conflicts with agricultural uses are minimized and permanent interference with agricultural operations is avoided, and in a way that is consistent with the land use compatibility requirements of the Williamson Act, for those lands that are now under contract.
- **Land Use Policy LU-28:** Preservation of agricultural land under the Williamson Act should be an option available to all those who qualify.
- **Community Character Objective (c):** To recognize the contribution of agriculture to the heritage and lifestyle of the county, and preserve an understanding of agricultural needs.
- **Resource Conservation Goal:** Encourage a balanced mix of conservation, utilization, and development of Colusa County’s natural resources.
- **Resource Conservation Objective (d):** To recognize that agricultural land is the county’s greatest natural asset and to take appropriate measures to safeguard Class I and II soils in the future.
- **Conservation Policy CO-2:** Agricultural land should be preserved and protected. This should not be construed to inhibit the restoration of cultivated land to natural habitat by landowners wishing to take such action.
- **Conservation Policy CO-3:** Agricultural lands in Colusa County should be classified according to three general categories based on the following criteria:
 - a) Lands capable of supporting grazing based on resources characteristics, namely soils, climate, and access to water (A-U: Agriculture-Upland)
 - b) Lands capable of supporting crop production (A-G: Agriculture-General):
 - Existing croplands used for this purpose
 - Lands which are not now but could be used for this purpose based on resource characteristics (soils, climate, and access to water)
 - Prime Soils
 - c) Agricultural lands within a community’s sphere of influence or ultimate growth area (A-T: Agriculture-Transition or U-T: Upland-Transition).
- **Open Space Policy OS-1:** Land designated as Resource Conservation (R-C), Agriculture General (A-G), and Agriculture Upland (A-U) in the Land Use Element should be preserved in open space uses for the duration of the planning period unless development of these areas is consistent with applicable community plans or land use policies.
- **Open Space Policy OS-8:** The Sacramento Valley agricultural lands should be preserved to the maximum extent possible to ensure recharge of the Sacramento River groundwater basin and water-bearing soils.

5.3.3 Impact Discussion

Significance Criteria

Appendix G of the CEQA Guidelines provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on agriculture if the project would:

- a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use
- b) Conflict with existing zoning for agricultural use, or a Williamson Act contract
- c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use.

The specific thresholds listed below are used to determine the significance of permanent conversion of Prime and Unique Farmland to non-agricultural uses.

Agricultural land shall be presumed to be in parcels large enough to sustain their agricultural use if the land is (1) at least 10 acres in size in the case of Prime agricultural land or (2) at least 40 acres in size in the case of land that is not prime agricultural land (California Government Code §51222).

Colusa County has two agricultural preserves and the proposed project is located in Agricultural Preserve Number Two (Valley Floor). The minimum parcel size in Agricultural Preserve Two shall be no less than 10 acres if the land is considered Prime agricultural land and no less than 80 acres if the land is non-Prime agricultural land.

- a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?**

Temporary Land Conversion

Construction would result in the temporary loss of agricultural land along the 100-foot construction ROW corridor of the connecting pipeline routes (120-foot ROW corridor in the area of the gas gathering line), within the proposed project staging areas, the metering station, and around the observation wells and saltwater disposal well. Table 5.3-1, shows that the project would temporarily impact 50.6 acres of Prime Farmland, 127.3 acres of Unique Farmland, and 14.9 acres of Farmland of Local Importance. Central Valley proposes APMs ARG1-1 and AGRI-2 (see Section 4.8.2), which will compensate landowners for temporary crop losses in the year of construction and requires that fields be restored to their original elevations. In addition to APM AGRI-1, Mitigation Measure AG-1, which requires land to be professionally appraised for temporary and permanent impacts, will be implemented. The appraisal will be used as a basis for negotiations for fair compensation. In addition, Mitigation Measure AG-2 will be implemented to minimize effects on the access to agricultural fields during construction. With implementation of the proposed APMs AGRI-1 and AGRI-2 and Mitigation Measures AG-1 and AG-2, temporary impacts of agricultural land would be less than significant because impacted land would be restored to preconstruction conditions, and landowners would be compensated for any temporary crop loss due to project construction.

Table 5.3-1: Temporary Land Conversion to Prime Farmland, Unique Farmland, and Farmland of Local Importance

Project Component	Temporary Land Impacts (ac)		
	Prime Farmland	Unique Farmland	Farmland of Local Importance
Observation Wells	2.8	—	—
Saltwater Disposal Well and Associated Pipeline	1.1		
Connecting Pipelines ROW and Staging Areas along alignment	46.7*	127.3*	4.7*
Metering Station and 10-acre Staging Area	—	—	10.2
Totals	50.6	127.3	14.9

* A ROW easement would be acquired for future maintenance and operation of the connecting pipelines (30-foot ROW for the 14.7-mile pipeline and 50-foot ROW for dual gas gathering line).

Mitigation Measure AG-1: In areas where ROW is to be acquired by fee or easement, Central Valley shall compensate the property owner at “fair market value” in compliance with federal and state regulations. The determination of “fair market value” shall be determined by a professional land appraiser retained by Central Valley. Central Valley shall provide qualifications of the professional land appraiser and a copy of appraisals to the CPUC. In areas where temporary impacts would occur due to construction, Central Valley shall replace or compensate property owners for compensable private facilities and crops that were removed for construction. Replacement of facilities and crops shall occur to the extent they are not detrimental to future pipeline or natural gas operations. Compensation shall be determined by the professional land appraiser.

Mitigation Measure AG-2: Central Valley shall coordinate, prior to construction, with owners of land adjacent to the pipeline route regarding temporary blockage of access to the owner’s parcel due to pipeline construction. Alternative access routes shall be provided, or farmers shall be provided breaks in spoil piles, trenches, or pipe strings to accommodate their need for field access during construction.

Land Access

There is a potential that construction activities could impede access to agricultural parcels. Agricultural facilities such as fences, drainage conveyance features, water lines, and dikes may be damaged or removed during construction if care is not taken to avoid, relocate, or immediately repair damages. These impacts will be mitigated to less-than-significant levels by APM AGRI -2 and Mitigation Measure AG-2.

Permanent Land Conversion

The proposed project would result in the permanent conversion of 18.8 acres of agricultural land in areas designated Prime Farmland (8.8 acres) or Unique Farmland (10 acres). There are no lands of Farmland of Statewide Importance in the project area. In the area of the proposed metering station and the access road, the proposed project would convert 1.0 acres of land designated as Farmland of Local Importance. The conversion of Prime Farmland, Unique Farmland, and Farmland of Local Importance is listed by acreage in Table 5.3-2. Farmland designations are shown in Figures 5.3-1a and 5.3-1b.

Table 5.3-2: Prime Farmland, Unique Farmland, and Farmland of Local Importance Converted to Non-Agricultural Uses

Project Component	Permanent Land Converted (ac)		
	Prime Farmland	Unique Farmland	Farmland of Local Importance
Compressor Station ¹	—	10.0	—
Remote Well Pad and Buffer Area ²	8.1	—	—
Observation Wells ³	0.1	—	—
Saltwater Disposal Well	0.4		
New Access Roads ⁴	0.2	—	0.2
Metering Station ³	—	—	0.8
Totals	8.8	10.0	1.0

NOTES:

- ¹ The compressor station site is entirely in agricultural production; access would be via existing road.
- ² The remote well pad, buffer area, and new access road are entirely in agricultural production. The 5-acre buffer area would be kept in a natural state but could not be used for agricultural production as it would be fenced to provide a secure buffer area surrounding the well pad site.
- ³ Acreage does not include new access roads.
- ⁴ 0.213 acre is associated with new access roads to the observation wells and 0.203 acre is associated with the new access road to the metering station. (See Appendix A for location of access roads)

The proposed compressor station is located on land classified as Unique Farmland and would permanently convert 10 acres of land to non-agricultural uses. The development of the remote well pad site and buffer area would convert 8.1 acres of land classified as Prime Farmland to non-agricultural uses. The 5-acre buffer area surrounding the well pad site would not be used for project facilities; however, it would serve as a security buffer that would be fenced and would not be accessible for agricultural uses. In addition, development of the observation well pad sites, saltwater disposal well pad site and pipeline, and access roads would permanently convert 0.7 acre of land classified as Prime Farmland. The total conversion of Prime and Unique Farmland to non-agricultural use would be 18.8 acres for the compressor station site, remote well pad site and buffer area, observation wells, saltwater disposal well and pipeline, and new access roads. The proposed metering station and access road would result in the permanent loss of 1.0 acre of Farmland of Local Importance.

The proposed project would result in a minimal conversion of agricultural land to non-agricultural use. The conversion of 8.8 acres of Prime Farmland by the proposed project activities would equal approximately 0.004% of the total acreage of Prime Farmland in Colusa County. The conversion of 10 acres of Unique Farmland would equal approximately 0.008% of the total Unique Farmland in Colusa County. And conversion of 1.0 acre of Farmland of Local Importance would equal approximately 0.0004% of the total of Farmland of Local Importance.

The amount of Prime Farmland (8.8 acres) that would be converted to non-agricultural land is below the significance threshold of 10 acres, which is noted in California Government Code §51222 as the size of a parcel large enough to sustain agricultural use in the case of prime agricultural land. The amount of Unique Farmland or non-Prime lands (10 acres) is also below the significance threshold of 40 acres as defined in the California Government

Code §51222. In addition, Colusa County's Williamson Act contract states that 80 acres is the minimum parcel size for non-Prime agricultural land. Because impacts to Prime and Unique Farmland are below established significance thresholds and proposed facilities are considered to be compatible with existing agricultural uses, along with the low pressure of converting farmland to non-agricultural uses in the Colusa County, project impacts to Prime and Unique Farmland are considered to be less than significant.

Connecting Pipelines

The connecting pipelines would primarily traverse fields that are currently planted with rice. From the west edge of the metering station to PG&E Line 400/401, the 580-foot interconnection would traverse non-native grasslands. West of I-5, an approximately 1-mile segment of the 14.7-mile gas connecting pipeline would traverse an orchard. In this area, the connecting pipeline is located at the edge of the orchard adjacent to Dirks Road, which would require little or no tree loss. Should the final design of the connecting pipeline alignment be within 15 feet of the canopy drip line of the trees, Central Valley will be required to implement Mitigation Measure AG-3 for protection of the pipeline from tree roots. In addition, should permanent loss to trees occur in this segment, Central Valley will be required to compensate the landowner for any permanent losses (Mitigation Measure AG-4). With implementation of Mitigation Measures A-1, A-3, and A-4, impacts to permanent agricultural land conversion associated with the proposed connecting pipelines would be less than significant.

Mitigation Measure AG-3: Should the final designed pipeline occur within 15 feet of tree canopy drip lines (the outermost extent of the tree canopy), Central Valley, in coordination with affected landowners, shall implement methods to protect the pipeline from tree roots, such as the following:

1. An herbicide-embedded fabric (such as Biobarrier) could be placed in the trench above the pipeline and on the side adjacent the trees
2. Wrap the pipeline with a non-chemical root barrier fabric "sock" before placing into trench
3. Compact soil around pipeline to minimize/prevent root growth upon backfilling the trench.

Mitigation Measure AG-4: If final design of the 14.7-mile connecting pipeline would result in a loss of trees in the orchard along the alignment, Central Valley will compensate the landowner for permanent crop loss.

Operation and Maintenance

Operation and maintenance would not convert farmland. No additional farmland would be lost during operation and maintenance of the project components.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

The proposed project is consistent with the policies of Colusa County's General Plan for the preservation of agriculture in the project area. As indicated in Section 5.3.1, the project area is designated and zoned for agriculture (E-A), and facilities for the production and storage of natural gas are conditionally permitted uses within these zones. To minimize potential

agricultural impacts, Central Valley will implement APM AGRI-1 and AGRI-2. Central Valley is committed to working with landowners to restore the ROW through agricultural areas and compensate them for land acquired for crops and facilities lost as a result of the project. With implementation of APM AGRI-1 and AGRI-2 and Mitigation Measure AG-1, impacts associated with conflicts with existing zoning for agricultural use would be less than significant.

The Williamson Act permits installation of gas pipelines and related facilities on lands subject to land conservation contracts, with conditions to ensure compatibility with existing agricultural operations (Government Code §51238). The installation of the compressor station, wells, metering station, and natural gas connecting pipelines on agricultural lands would not have a substantial effect on productivity of the land and would not require contract cancellation. Wells and pipeline facilities are considered compatible uses on lands under Williamson Act contracts within this portion of Colusa County, pursuant to County Resolution No. 98-51.

The remote well pad site and buffer area and portions of the connecting pipelines would be located on lands that are presently under Williamson Act contracts (Figures 5.3-1a and 5.3-1b). The remote well pad site would result in the conversion of 8.1 acres from parcel 012-110-052, which is approximately 47 acres in size. Permanent loss of approximately 8.1 acres of land currently used for farming at the remote well pad site and buffer area on Williamson Act parcel APN 012-110-052 would not significantly compromise the long-term productive agricultural capability of the covered Williamson Act parcels, nor would it significantly displace or impair current or reasonably foreseeable agricultural operations. Impacts would be less than significant.

As agricultural activities would be able to resume on the Williamson Act lands traversed by the gas gathering line and the 14.7-mile-long gas pipelines, impacts associated with the gas gathering line and 14.7-mile-long gas pipeline would be less than significant.

c) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?

Construction

Construction of the proposed project facilities could result in temporary construction-related nuisances in the project area, including localized construction noise, dust, and construction equipment traffic, that would temporarily inconvenience residents and agricultural operations near the project facilities. During project construction, temporary use areas would be necessary to install the proposed project facilities. Disturbances to agricultural activities would be temporary, and crop production would be reestablished after construction is completed.

Central Valley, as a public utility, is required to offer appropriate compensation for land held in private ownership as part of the acquisition of utility easements (APM AGRI-1). The applicant will also be required to compensate land owners for removal of any structures, crops, and agriculture-related improvements required to construct the project. In addition, Central Valley has committed to implementing APM AGRI-2 to ensure that areas affected by construction are restored to preconstruction conditions. Following construction, fields will be surveyed and regraded to their original elevation where needed, and all rice field dikes and

check boxes will be repaired or replaced. Although the trench backfill in agricultural areas would be compacted to minimize settling, follow-up elevation surveys and finish grading will be provided, as necessary, to ensure that the field grading and irrigation flows are not adversely affected. Fences and irrigation facilities will be replaced or repaired to their original condition following construction. With implementation of APMs AGRI-1 and AGRI-2 and Mitigation Measure AG-1, impacts would be less than significant.

Operation and Maintenance

No other changes in the existing environment would result in the conversion of farmland to non-agricultural use during operation and maintenance of proposed project facilities. There would be no impact.

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5.4 AIR QUALITY/CLIMATE CHANGE

<i>Would the project:</i>	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) <i>Conflict with or obstruct implementation of the applicable air quality plan?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) <i>Violate any air quality standard or contribute substantially to an existing or projected air quality violation?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) <i>Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) <i>Expose sensitive receptors to substantial pollutant concentrations?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) <i>Create objectionable odors affecting a substantial number of people?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<i>Greenhouse Gases</i>				
f) <i>Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) <i>Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5.4.1 Environmental Setting

Climate and Meteorology

Climate

Climate and air quality are determined by the geographic location, topography, and urbanization of an area. This section describes pertinent characteristics of the air basin and provides an overview of the physical conditions affecting pollutant dispersion in the project area.

The State of California, for purposes of air quality classification, has divided the state into meteorologically and geographically similar areas called air basins. The project area (gas field, compressor station, wellhead, interconnecting pipelines) is located in unincorporated Colusa County. The entire project area lies within the Sacramento Valley Air Basin (Basin or SVAB). The climate of the SVAB is Mediterranean in character, with mild, rainy winter weather from November through March. Rainfall in the project area averages approximately 16 inches per year, with most of the precipitation occurring between November and March (World Climate 2009). The climate is warm to hot, with dry weather from May through September. Maximum temperatures frequently approach or exceed 100°F. The topographic features giving shape to the SVAB are the Coast Range to the west, the Sierra Nevada to the east, and the Cascade Range to the north. These ranges channel winds through the Sacramento Valley but also inhibit dispersion of pollutant emissions.

Meteorological Influences on Air Quality

Vertical dispersion of air pollutants in the project area is often hampered by the presence of a persistent temperature inversion in the atmospheric layers of the earth's surface. The net input of cumulative pollutants into the atmosphere from mobile and stationary sources does not vary substantially by season. The duration of an inversion layer increases the concentration of pollutants in the inversion layer and the air mass trapped beneath the inversion layer. Strong winds or daytime warming of the surface air layer is required to disperse the pollutants horizontally. During the winter, motor vehicle emissions such as carbon monoxide (CO) and oxides of nitrogen (NO_x) are of concern because of low inversions and stagnant air that prevent pollutants from dispersing. Ozone (O₃) is less prevalent in the winter due to the lack of intense sunlight needed to produce it from its chemical precursors, volatile organic compounds (VOCs) and NO_x, with higher O₃ levels occurring between the late spring and early fall.

Existing Air Quality

Criteria Air Pollutants

Air pollution is a general term that refers to one or more chemical substances that degrade the quality of the atmosphere. Individual air pollutants may adversely affect human or animal health, reduce visibility, damage property, and reduce the productivity or vigor of crops and natural vegetation.

With the assistance of the Colusa County Air Pollution Control District (CCAPCD), the California Air Resources Board (CARB) compiles inventories and projections of emissions of the major pollutants, and it monitors air quality conditions. Air quality conditions are tracked for both "criteria air pollutants" and "toxic air contaminants." Criteria air pollutants refer to a group of pollutants for which CARB or the U.S. EPA have adopted health-based ambient air quality standards and regionwide pollution reduction plans. Seven air pollutants have been identified by the EPA as being of concern nationwide: O₃; nitrogen dioxide (NO₂); CO; particulate matter sized 10 microns or less (PM₁₀), also called respirable particulate matter or coarse particulate matter; fine particulate matter less than or equal to 2.5 microns in size (PM_{2.5}); sulfur dioxide (SO₂); and lead (Pb). These pollutants are collectively referred to as "criteria" pollutants. The sources of these pollutants, their effects on human health and the nation's welfare, and their final deposition in the atmosphere vary considerably.

Ozone (O₃)

O₃ is the principal component of smog and is formed in the atmosphere through a series of reactions involving reactive organic gases (ROG, also referred to as volatile organic compounds or VOCs) and NO_x in the presence of sunlight. ROG and NO_x are called precursors of O₃. NO_x includes various combinations of nitrogen and oxygen, primarily consisting of nitric oxide (NO) and NO₂. O₃ is a principal cause of lung and eye irritation in the urban environment. Significant O₃ concentrations are primarily produced in the summer, when atmospheric inversions are greatest and temperatures are high. ROG and NO_x emissions are both considered critical in O₃ formation. Control strategies for O₃ have focused on reducing emissions from motor vehicles; industrial processes using solvents and coatings; stationary combustion devices, such as boilers, engines, and gas turbines; and consumer products.

Nitrogen Dioxide (NO₂)¹

NO₂ is a product of combustion and is generated in vehicles and in stationary sources such as power plants and boilers. NO₂ can cause lung damage. As noted above, NO₂ is part of the NO_x family and is a principal contributor to O₃ and smog.

Carbon Monoxide (CO)

CO is a colorless and odorless gas that, in the urban environment, is associated primarily with the incomplete combustion of fossil fuels in motor vehicles. Relatively high concentrations are typically found near crowded intersections and along heavily used roadways carrying slow-moving traffic. Even under the most severe meteorological and traffic conditions, high concentrations of CO are limited to locations within a relatively short distance (300 to 600 feet) of heavily traveled roadways. Overall CO emissions have decreased as a result of the state and federal motor vehicle control programs, which have mandated increasingly lower emission levels for vehicles manufactured since 1973, as well as inspection and maintenance programs, and the use of reformulated gasoline. CO concentrations in the atmosphere are typically higher in winter. The use of oxygenated gasoline in the winter months is required to reduce CO emissions.

Respirable Particulate Matter (PM₁₀)

Particulate matter includes both liquid and solid particles of a wide range of sizes and composition. While some PM₁₀ comes from automobile exhaust, the principal source in Sacramento is dust from construction and from the action of vehicle wheels on paved and unpaved roads. Agriculture, wind-blown sand, and fireplaces can be important sources. PM₁₀ can cause increased respiratory disease, lung damage, and premature death. Control of PM₁₀ is achieved through the control of dust at construction sites, the cleaning of paved roads, and the wetting or paving of frequently used unpaved roads.

¹ In this section, the term NO₂ will be used with respect to the presence of nitrogen dioxide in the atmosphere. The term NO_x will be used to refer to the *emissions* of oxides of nitrogen from stationary and mobile sources, which are primarily in the form of nitric oxide (NO) and, to a lesser extent, nitrogen dioxide (NO₂).

Fine Particulate Matter (PM_{2.5})

The sources, health effects, and control of PM_{2.5} are similar to those of PM₁₀. In 1997, the EPA determined that the health effects of PM_{2.5} were severe enough to warrant an additional standard, which was revised and made more stringent in 2006 (EPA 2006). In addition, CARB adopted an annual standard for PM_{2.5} in June 2002.

Sulfur Dioxide (SO₂)²

SO₂ is a combustion product, with the primary source being power plants and heavy industry that use coal or oil as fuel. SO₂ is also a product of diesel engine combustion. The health effects of SO₂ include lung disease and breathing problems for asthmatics. SO₂ in the atmosphere contributes to the formation of acid rain. In the SVAB, there is relatively little use of coal and oil, and SO₂ is of lesser concern than in many other parts of the country.

Lead (Pb)

Lead is a stable compound, which persists and accumulates both in the environment and in animals. The lead used in gasoline anti-knock additives represented a major source of lead emissions to the atmosphere. However, lead emissions have significantly decreased due to the near elimination of the use of leaded gasoline.

Toxic Air Contaminants

Toxic air contaminants (TACs) refer to a category of air pollutants that pose a present or potential hazard to human health but that tend to have more localized impacts than criteria pollutants. The CARB has identified diesel particulate matter as the predominant TAC in California. Diesel particulate matter is emitted into the air by mobile vehicles that are diesel powered. Such vehicles include heavy-duty diesel trucks, construction equipment, and passenger vehicles. Certain ROG_s may also qualify as TACs.

Ambient Air Quality

CARB and other air districts currently operate air quality monitoring stations throughout the SVAB and Colusa County. The monitoring station nearest to the project site is the Sunrise Boulevard station near the Colusa County Airport (located approximately 13 miles south of the compressor station), with data available through 2008. The Sunrise Boulevard station collects only O₃, PM₁₀, and PM_{2.5} data; data for other pollutants are from other monitoring stations in the SVAB. Recent air quality data collected at the Sunrise Boulevard and other monitoring sites are summarized in Table 5.4-1.

² In this section, the term SO₂ will be used with respect to the presence of sulfur dioxide in the atmosphere. The term SO_x will be used to refer to the *emissions* of sulfur oxides from stationary and mobile sources, which are primarily in the form of SO₂ and, to a lesser extent, sulfur trioxide (SO₃).

Table 5.4-1: Local Ambient Air Quality Data

	Units	Ambient Air Quality Standard ¹	2006	2007	2008
Ozone (O₃)					
Maximum 1-hour concentration	ppm	—	0.084	0.080	0.091
days exceeding state standard	—	0.09 ppm	0	0	0
Maximum 8-hour concentration	ppm	—	0.076	0.067	0.081
days exceeding state standard	—	0.070 ppm	2	0	6
days exceeding federal standard	—	0.075 ppm	1	0	1
Nitrogen Dioxide (NO₂)					
Maximum 1-hour concentration	ppm	—	0.070	0.054	0.061
days exceeding state standard	—	0.18 ppm	0	0	0
Annual concentration	ppm	0.030 ppm (state) 0.053 ppm (federal)	0.012	0.012	0.012
Carbon Monoxide (CO)					
Maximum 1-hour concentration	ppm	—	3.1	NA	NA
days exceeding state standard	—	20 ppm	0	—	—
days exceeding federal standard	—	35 ppm	0	—	—
Maximum 8-hour concentration	ppm	—	2.29	NA	NA
days exceeding state standard	—	9.0 ppm	0	—	—
days exceeding federal standard	—	9 ppm	0	—	—
Respirable Particulate Matter (PM₁₀)					
Maximum 24-hour conc. (state method)	μg/m ³	—	69.0	43.0	90.3
samples exceeding state standard ²	—	50 μg/m ³	4	0	10
Maximum 24-hour conc. (federal method)	μg/m ³	—	68.0	43.0	90.3
samples exceeding federal standard ²	—	150 μg/m ³	0	0	0
Annual concentration (state method)	μg/m ³	20 μg/m ³	ND	22.0	30.6
Fine Particulate Matter (PM_{2.5})					
Maximum 24-hour conc. (state method)	μg/m ³	—	61.0	58.0	169.6
Maximum 24-hour conc. (federal method)	μg/m ³	—	50.0	30.0	54.5
samples exceeding federal standard ²	—	35 μg/m ³	1	0	1
Annual concentration (state method)	μg/m ³	12 μg/m ³	7.9	9.0	ND
Sulfur Dioxide³ (SO₂)					
Maximum 24-hour concentration	ppm	—	0.003	0.004	0.002
days exceeding state standard	—	0.04 ppm	0	0	0
Annual concentration	ppm	0.030 ppm	0.001	0.001	0.001

ND = Insufficient data available to determine.

NA = Data are not available from the listed sources.

¹ See Table 5.4-3 for federal and state standards.

² PM₁₀ and PM_{2.5} at the Colusa-Sunrise Boulevard station are monitored once every 6 days and 3 days, respectively. Therefore, the number of samples exceeding the relevant ambient air quality standard is shown.

³ Sulfur dioxide is not monitored in Colusa County. The nearest monitoring station is North Highlands–Blackfoot Way in Sacramento County.

SOURCES: CARB 2009. Colusa-Sunrise Boulevard Monitoring Station unless otherwise noted.

Global Climate Change

The Greenhouse Effect and Greenhouse Gases

Heat retention within the atmosphere is an essential process to sustain life on Earth. The natural process through which heat is retained in the troposphere³ is called the “greenhouse effect.”

³ The troposphere is the bottom layer of the atmosphere, which varies in height from the Earth’s surface to 10 to 12 kilometers.

The greenhouse effect traps heat in the troposphere through a three-fold process as follows: (1) short-wave radiation emitted by the Sun is absorbed by Earth; (2) Earth emits a portion of this energy in the form of long-wave radiation; (3) and greenhouse gases (GHGs) in the upper atmosphere absorb this long-wave radiation and emit this long-wave radiation into space and toward Earth. This “trapping” of the long-wave (thermal) radiation emitted back toward Earth is the underlying process of the greenhouse effect. This natural process contributes to regulating Earth’s temperature without which the temperature of Earth would be about 0°F (-18°C) instead of its present 57°F (14°C) (NCDC 2008).

Gases that trap heat in the atmosphere are often called GHGs. Principal GHGs include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), O₃, and water vapor (H₂O). Some GHGs, such as CO₂, CH₄, and N₂O, occur naturally and are emitted to the atmosphere through natural processes and human activities. Of these gases, CO₂ and CH₄ are emitted in the greatest quantities from human activities. Man-made GHGs, which have a much greater heat-absorption potential than CO₂, include fluorinated gases, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF₆), and nitrogen trifluoride (NF₃), which are associated with certain industrial products and processes. The major GHGs emitted by human activities remain in the atmosphere for periods ranging from decades to centuries; therefore, it is virtually certain that atmospheric concentrations of GHGs will continue to rise over the next few decades (EPA 2007).

It is generally agreed that human activity has been increasing the concentration of GHGs in the atmosphere (mostly carbon dioxide from combustion of coal, oil, and gas, and a few other trace gases) (NCDC 2008). The global atmospheric concentration of carbon dioxide has increased from a pre-industrial value of about 280 ppm to 379 ppm in 2005 (IPCC 2007). Based on current rates of increase, carbon dioxide concentrations could reach between 490 to 1260 ppm by the end of the 21st century, 75% to 350% above the pre-industrial concentration (IPCC 2001).

A warming trend of approximately 1.0°F to 1.7°F occurred during the 20th century; warming occurred in both the northern and southern hemispheres, and over the oceans (IPCC 2007). Most of the warming in recent decades is very likely the result of human activities (IPCC 2007). There is much uncertainty, however, concerning the magnitude and rate of the warming. Specifically, the EPA notes that “important scientific questions remain about how much warming will occur, how fast it will occur, and how the warming will affect the rest of the climate system, including precipitation patterns and storms” (EPA 2007).

The effect each GHG has on climate change is measured as a combination of the mass of its emissions and the potential of a gas or aerosol to trap heat in the atmosphere, known as its global warming potential (GWP), and it is expressed as a function of how much warming would be caused by the same mass of CO₂. Thus, GHG gas emissions are typically measured in terms of pounds or tons of “carbon dioxide equivalent” (CO₂E).

Contributions to Greenhouse Gas Emissions

Global

Anthropogenic GHG emissions worldwide in 2005 totaled approximately 41,100 million metric tons CO₂E (MMTCO₂E)⁴ (CAIT 2009). Six countries—China, United States, Russian Federation, India, Japan, and Brazil—and the European Community accounted for approximately 60% of the total global emissions, approximately 25,000 MMTCO₂E (CAIT 2009).

United States

The United States was the second highest producer of GHG emissions in 2005, emitting 6,963.8 MMTCO₂E (CAIT 2009). The primary GHG emitted by human activities in the United States was CO₂, representing approximately 84% of total GHG emissions. Carbon dioxide from fossil fuel combustion, the largest source of U.S. GHG emissions, accounted for approximately 94% of U.S. GHG emissions in 2007 (EPA 2009a).

State of California

According to the 2004 GHG inventory data compiled by CARB for the California 1990 GHG emissions inventory, California emitted emissions of 484 MMTCO₂E, including emissions resulting from out-of-state electrical generation (CARB 2007c). The primary contributors to GHG emissions in California are transportation, electric power production from both in-state and out-of-state sources, industry, agriculture and forestry, and other sources, which include commercial and residential activities. These primary contributors to California’s GHG emissions and their relative contributions in 2004 are presented in Table 5.4-2.

Table 5.4-2: Greenhouse Gas Sources in California				
Source Category	Annual GHG Emissions (MMTCO₂E)^a	Percent of Total	Annual GHG Emissions (MMTCO₂E)^b	Percent of Total
Agriculture	27.9	5.8%	27.9	6.6%
Commercial Uses	12.8	2.6%	12.8	3.0%
Electricity Generation	119.8	24.7%	58.5	13.8%
Forestry (excluding sinks)	0.2	0.0%	0.2	0.0%
Industrial Uses	96.2	19.9%	96.2	22.7%
Residential Uses	29.1	6.0%	29.1	6.9%
Transportation	182.4	37.7%	182.4	43.1%
Other ^c	16.0	3.3%	16.0	3.8%
Totals	484.4	100.0%	423.1	100.0%

^a Includes emissions associated with imported electricity, which account for 61.3 MMTCO₂E annually

^b Excludes emissions associated with imported electricity

^c Unspecified combustion and use of ozone-depleting substances

SOURCE: CARB 2007c.

⁴ The CO₂ equivalent emissions on a global or national scale are commonly expressed as “million metric tons of carbon dioxide equivalent (MMTCO₂E)” The carbon dioxide equivalent for a gas is derived by multiplying the tons of the gas by the associated GWP, such that MMTCO₂E = (million metric tons of a GHG) x (GWP of the GHG). For example, the GWP for methane is 21. This means that emissions of one million metric tons of methane are equivalent to emissions of 21 million metric tons of CO₂.

Potential Effects of Human Activity on Climate Change

Globally, climate change has the potential to impact numerous environmental resources through potential, though uncertain, impacts related to future air temperatures and precipitation patterns. Scientific modeling predicts that continued emissions of GHGs at or above current rates would induce more extreme climate changes during the 21st century than were observed during the 20th century.

However, the scientific understanding of the effects of GHG emissions, particulate matter, and aerosols on global climate trends remains uncertain. In addition to uncertainties about the extent to which human activity rather than solar or volcanic activity is responsible for increasing warming, there is also evidence that some human activity has cooling rather than warming effects (IPCC 2001).

According to CARB, some of the potential impacts in California of global warming may include loss in snow pack, sea level rise, more extreme heat days per year, more high O₃ days, more large forest fires, and more drought years (CARB 2006). Several recent studies have attempted to explore the possible negative consequences that climate change, left unchecked, could have in California. These reports acknowledge that climate scientists' understanding of the complex global climate system, and the interplay of the various internal and external factors that affect climate change, remains too limited to yield scientifically valid conclusions on such a localized scale. Substantial work has been done at the international and national level to evaluate climatic impacts, but far less information is available on regional and local impacts.

The primary effect of global climate change has been a rise in average global tropospheric temperature of 0.2°C per decade, determined from meteorological measurements worldwide between 1990 and 2005. Climate change modeling using 2000 emission rates shows that further warming would occur, which would induce further changes in the global climate system during the current century. Changes to the global climate system and ecosystems and to California would include, but would not be limited to the following effects:

- The loss of sea ice and mountain snow pack, resulting in higher sea levels and higher sea surface evaporation rates with a corresponding increase in tropospheric water vapor due to the atmosphere's ability to hold more water vapor at higher temperatures (IPCC 2007)
- Rise in global average sea level primarily due to thermal expansion and melting of glaciers and ice caps, including the Greenland and Antarctic ice sheets (IPCC 2007)
- Changes in weather that include widespread changes in precipitation, ocean salinity, and wind patterns, and more energetic aspects of extreme weather, including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones (IPCC 2007)
- Decline of Sierra snowpack, which accounts for approximately half of the surface water storage in California, by 70% to as much as 90% over the next 100 years (CalEPA 2006)
- Increase in the number of days conducive to O₃ formation by 25% to 85% (depending on the future temperature scenario) in high O₃ areas of Los Angeles and the San Joaquin Valley by the end of the 21st century (CalEPA 2006)
- High potential for erosion of California's coastlines and sea water intrusion into the Delta and levee systems due to the rise in sea level (CalEPA 2006).

5.4.2 Regulatory Setting

The proposed project would be located in Colusa County. Colusa County, along with 11 other counties (or portions of counties), is located within the SVAB. Air pollution control within Colusa County is the responsibility of the CCAPCD. The CCAPCD develops rules and regulations and is responsible for air monitoring, permitting, long-range planning, regulatory development, education, and public information activities related to air quality.

Air quality in the project vicinity is regulated by several jurisdictions, including the EPA, CARB, CCAPCD, and the Northern Sacramento Valley Planning Area (NSVPA, the seven air pollution control districts comprising the northern Sacramento Valley). Each agency develops rules, regulations, policies, and/or goals to attain the goals or directives imposed upon them through legislation. The federal Clean Air Act (42 U.S.C. §7401), as amended, and the California Clean Air Act (CCAA) of 1988 both require that air quality management plans be formulated demonstrating how the ambient air quality standards will be achieved in nonattainment areas. These laws also provide the basis for the implementing agencies to develop mobile- and stationary-source performance standards.

Local air pollution control districts (APCDs) and air quality management districts (AQMDs) have been given authority by the state to manage stationary-source emissions within their jurisdiction. CARB requires that local APCDs and AQMDs develop their own strategies for achieving compliance with the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS), but it maintains regulatory authority over these strategies, as well as all mobile source emissions throughout the state.

Federal

Criteria Air Pollutants

The federal Clean Air Act, passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The EPA is responsible for implementing most aspects of the Clean Air Act, including the setting of NAAQS for major air pollutants, hazardous air pollutant standards, approval of state attainment plans, motor vehicle emission standards, stationary-source emission standards and permits, acid rain control measures, stratospheric O₃ protection, and enforcement provisions. NAAQS are established for “criteria pollutants” under the Clean Air Act; these criteria pollutants are O₃, CO, NO₂, SO₂, PM₁₀, PM_{2.5}, and Pb. The NAAQS define clean and healthful air for the general public. Specifically, air quality standards establish the concentration above which a pollutant is known to cause adverse health effects to sensitive groups within the population, such as children and the elderly. The amount of pollutants released and the atmosphere’s ability to transport and dilute the pollutants affect a given pollutant’s concentration in the atmosphere. Factors affecting transport and dilution include terrain, wind, atmospheric stability, and, for photochemical pollutants, sunlight. The Sacramento Valley’s poor air quality can largely be attributed to emissions, geography, and meteorology.

The NAAQS (other than for O₃, NO₂, PM₁₀, PM_{2.5}, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS for O₃, NO₂, PM₁₀, and PM_{2.5} are based on statistical calculations over 1- to 3-year periods, depending on the pollutant. The NAAQS are presented in Table 5.4-3. The Clean Air Act requires the EPA to reassess the NAAQS at least every 5 years to determine whether adopted standards are

adequate to protect public health based on current scientific evidence. States with areas that exceed the NAAQS must prepare a State Implementation Plan that demonstrates how those areas will attain the standards within mandated time frames.

Table 5.4-3: National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards ¹	National Standards ²
Ozone (O ₃)	1-hour	0.09 ppm	—
	8-hour	0.070 ppm	0.075 ppm
Respirable particulate matter (PM ₁₀)	24-hour	50 µg/m ³	150 µg/m ³
	Annual mean	20 µg/m ³	—
Fine particulate matter (PM _{2.5})	24-hour	—	35 µg/m ³
	Annual mean	12 µg/m ³	15.0 µg/m ³
Carbon monoxide (CO)	1-hour	20 ppm	35 ppm
	8-hour	9.0 ppm	9 ppm
Nitrogen dioxide (NO ₂)	1-hour	0.18 ppm	0.100 ppm
	Annual mean	0.030 ppm	0.053 ppm
Sulfur dioxide (SO ₂)	1-hour	0.25 ppm	—
	24-hour	0.04 ppm	0.14 ppm
	Annual mean	—	0.030 ppm

¹ California standards for O₃, CO (except Lake Tahoe), SO₂ (1-hour and 24-hour), NO₂, suspended particulate matter—PM₁₀ and PM_{2.5}—and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the CCR.

² National standards (other than O₃, NO₂, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O₃ standard is attained when the fourth-highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For NO₂, the standard is attained when the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area does not exceed the standard (effective April 12, 2010). For PM₁₀, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than one. For PM_{2.5}, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

NOTE: "—" indicates not applicable.

SOURCE: CARB 2009.

Each air basin is responsible for meeting the NAAQS for criteria pollutants and is classified by the EPA as an attainment or nonattainment area for each pollutant. Colusa County is one of seven counties in the northern Sacramento Valley that comprise the NSVPA. Colusa County is designated as attainment or unclassifiable for all NAAQS. The status of the Colusa County portion of the NSVPA with respect to attainment for the NAAQS and CAAQS is summarized in Table 5.4-4.

Table 5.4-4: National Ambient Air Quality Standards and Status for Colusa County

Pollutant	Averaging Time	Designation/Classification
Ozone (O ₃)	8-hour	Attainment/Unclassifiable
Respirable particulate matter (PM ₁₀)	24-hour	Attainment/Unclassifiable
Fine particulate matter (PM _{2.5})	24-hour, annual arithmetic mean	Attainment/Unclassifiable
Carbon monoxide (CO)	1-hour, 8-hour	Attainment/Unclassifiable
Nitrogen dioxide (NO ₂)	Annual arithmetic mean	Attainment/Unclassifiable
Sulfur dioxide (SO ₂)	24-hour, annual arithmetic mean	Unclassifiable
Lead (Pb)	Calendar quarter	Attainment

SOURCE: EPA 2009b.

Hazardous Air Pollutants

Federal law defines hazardous air pollutants (HAPs) as noncriteria air pollutants with short-term (acute) and/or long-term (chronic or carcinogenic) adverse human health effects. Regulation of HAPs under federal regulations is achieved through federal and state controls on individual sources. The 1990 federal Clean Air Act Amendments offer a comprehensive plan for achieving significant reductions in both mobile- and stationary-source emissions of HAPs. Under the 1990 Clean Air Act Amendments, a total of 189 chemicals or chemical families were designated HAPs because of their adverse human health effects. Title III of the 1990 federal Clean Air Act Amendments amended Section 112 of the Clean Air Act to replace the former program with an entirely new technology-based program. Under Title III, the U.S. EPA must establish maximum achievable control technology emission standards for all new and existing “major” stationary sources through promulgation of National Emission Standards for Hazardous Air Pollutants (NESHAP). Major stationary sources of HAPs are required to obtain an operating permit from the CCAPCD pursuant to Title V of the 1990 Clean Air Act Amendments. A major source is defined as one that emits at least 10 tons per year of any HAP or at least 25 tons per year of all HAPs.

The Oil and Natural Gas Production and Natural Gas Transmission and Storage NESHAP (40 CFR Part 63, Subpart HHH) could apply to the proposed project. This NESHAP was promulgated to control and minimize the emissions of BTEX (benzene, toluene, ethyl benzene, and xylenes) and n-hexane, the primary HAPs associated with oil and natural gas. These pollutants have been demonstrated to cause adverse health effects with short-term and long-term exposures. The NESHAP applies to all owners and operators of any facility that processes upgrades, or stores hydrocarbon liquids or natural gas. The emissions control standards established by the NESHAP apply to process vents on glycol dehydrators, storage vessels with flash emissions, and equipment leaks located in major source facilities. Facilities subject to the NESHAP are required to implement maximum available control technology (MACT) and achieve specified control efficiencies. The EPA has set throughput thresholds for facilities transporting, storing, and producing natural gas under which MACT is not required due to its implementation not being cost effective. The NESHAP would apply to the proposed project if the facility constitutes a major source of HAPs and the actual annual average throughput to the glycol dehydration unit is equal to or greater than 283,000 cubic meters (10 million standard cubic feet) of natural gas per day. The proposed daily processing rate for the compressor station (300 million standard cubic feet per day) would exceed this applicability threshold. However, based on the estimated total HAP emissions of 6.6 tons per year, which is less than the major source threshold, the NESHAP would not apply to the proposed project.

The EPA has promulgated both a New Source Performance Standard (NSPS) and an NESHAP that apply to stationary, spark-ignition internal combustion engines (ICEs). The NSPS is promulgated under 40 CFR Part 60, subpart JJJJ, while the NESHAP is promulgated under 40 CFR Part 63, Subpart ZZZZ. The NSPS applies to new, modified, or reconstructed ICEs regardless of size. The NESHAP applies to new and reconstructed stationary reciprocating ICEs located at major sources and area sources.⁵ The NESHAP includes different emission

⁵ Area sources are those that are not classified as major sources of HAPs.

standards for engines rated at less than or equal to 500 horsepower (HP) and greater than 500 HP. Under the NSPS, new natural gas fired ICEs rated at greater than 500 HP must meet the following standards:

- VOC: 1.0 grams per horsepower-hour (g/HP-hr) or 86 ppm at 15% oxygen (O₂)
- NOx: 2.0 g/HP-hr or 160 ppm at 15% oxygen (O₂)
- CO: 4.0 g/HP-hr or 540 ppm at 15% oxygen (O₂).

Emergency generators rated over 130 HP must meet the same standards under the NSPS.

Under the NESHAP, new 4-stroke, lean-burn, natural gas fired ICEs rated at greater than 500 HP that control CO emissions must take one the following measures:

- Reduce CO emissions by 93% or more
- Limit concentration of formaldehyde in the stationary ICE exhaust to 14 ppmvd or less at 15% O₂.

An ICE using an oxidation catalyst (as is proposed for the compressor engines) must also take the following measures:

- Maintain the catalyst so that the pressure drop across the catalyst does not change by more than 2 inches of water at 100% plus or minus 10% from the pressure drop across the catalyst that was measured during the initial performance test
- Maintain the temperature of the stationary ICE exhaust so that the catalyst inlet temperature is greater than or equal to 450°F and less than or equal to 1,350°F.

The ICE is also subject to testing, monitoring, and reporting requirements.

New emergency engines are exempt from the emission limits in the NESHAP; however, they would be subject to the NSPS as described above. New emergency engines may operate up to 100 hours per year for “maintenance checks and readiness testing,” including up to 50 hours of non-emergency use. There is no limit on the time allowed for emergency operation.

State

Criteria Air Pollutants

The federal Clean Air Act delegates the regulation of air pollution control and the enforcement of the NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to the CARB, with subsidiary responsibilities assigned to AQMDs and APCDs at the regional and county levels. CARB, which became part of the California Environmental Protection Agency (CalEPA) in 1991, is responsible for ensuring implementation of the CCAA, responding to the federal Clean Air Act, and regulating emissions from motor vehicles and consumer products.

CARB has established the CAAQS, which are more restrictive than the NAAQS, consistent with the Clean Air Act, which requires state regulations to be at least as restrictive as the federal requirements. The CAAQS are shown in Table 5.4-3. The CAAQS describe adverse conditions; that is, pollution levels must be below these standards before a basin can attain the standard. The CAAQS for O₃, CO, SO₂ (1-hour and 24-hour), NO₂, PM₁₀, and PM_{2.5} and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded.

Each air basin is responsible for meeting the NAAQS for criteria pollutants and is classified by EPA as an attainment or nonattainment area for each pollutant. Colusa County is one of seven counties in the northern Sacramento Valley that comprise the NSVPA. In the NSVPA ozone is a seasonal problem (during the months of May through October) with the main sources of ozone including motor vehicles, power plants, factories, and combustion products from various fuels. According to the NSVPA's 2006 Air Quality Attainment Plan, Colusa County is designated as nonattainment transitional for the state ambient air quality standard (ozone) and nonattainment for the state ambient air quality standard (PM₁₀) (NSVPA 2006). The NSVPA is designated as attainment for the state annual PM_{2.5} standard. In addition, the NSVPA is designated as an attainment area for the state SO₂, NO₂, and CO standards. The status of the Colusa County portion of the NSVPA with respect to attainment for the CAAQS is summarized in Table 5.4-5.

Pollutant	Averaging Time	Designation/Classification
Ozone (O ₃)	1-hour, 8-hour	Nonattainment ¹ , Nonattainment-transitional
Respirable particulate matter (PM ₁₀)	24-hour, annual arithmetic mean	Nonattainment
Fine particulate matter (PM _{2.5})	Annual arithmetic mean	Unclassified
Carbon monoxide (CO)	1-hour, 8-hour	Unclassified
Nitrogen dioxide (NO ₂)	1-hour	Attainment
Sulfur dioxide (SO ₂)	1-hour, 24-hour	Attainment
Lead (Pb) ²	30-day average	Attainment
Sulfates (SO ₄)	24-hour	Attainment
Hydrogen sulfide (H ₂ S)	1-hour	Unclassified
Vinyl chloride	24-hour	Unclassified
Visibility-reducing particles	8-hour (10:00 a.m. to 6:00 p.m.)	Unclassified

¹ CARB has not issued area classification based on the new state 8-hour standard. The previous classification for the 1-hour O₃ standard was Moderate.

SOURCE: CARB 2009

Toxic Air Contaminants

A substance is considered toxic if it has the potential to cause adverse health effects in humans. A toxic substance released into the air is considered a TAC. TACs are identified by federal and state agencies based on a review of available scientific evidence. In the State of California, TACs are identified through a two-step process that was established in 1983 under the Toxic Air Contaminant Identification and Control Act, Assembly Bill (AB) 1807. This two-step process of risk identification and risk management was designed to protect residents from the health effects of toxic substances in the air. In addition, the California Air Toxics "Hot Spots" Information and Assessment Act, AB 2588 was enacted by the Legislature in 1987 to address public concern over the release of TACs into the atmosphere. The law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emission sources, location of resulting "hot spots," notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over 5 years.

Local

Air Quality Plans

Air quality in the project vicinity is regulated by several jurisdictions, including the EPA, CARB, the CCAPCD, and the NSVPA. Each jurisdiction develops rules, regulations, policies, and/or goals to attain the goals or directives imposed upon them through legislation. The federal Clean Air Act (42 U.S.C. §7401), as amended, and the CCAA both require that air quality management plans be formulated demonstrating how the ambient air quality standards will be achieved in nonattainment areas. These laws also provide the basis for the implementing agencies to develop mobile- and stationary-source performance standards.

The CCAPCD has jurisdiction over most air quality matters in Colusa County. The CCAPCD is responsible for implementing certain programs and regulations required by the federal Clean Air Act and the CCAA. According to the CARB, the Upper Sacramento Valley nonattainment area, which includes the counties of Tehama, Shasta, Glenn, Butte, and Colusa, has not implemented an attainment plan for any federal criteria air pollutants, but it has developed attainment plans for the state ozone standard. The NSVPA adopted the 2006 Air Quality Attainment Plan which identifies a comprehensive regional strategy to reduce emissions to the level required for attainment of the State ozone standard. Due to the abundance of agricultural uses in Colusa County, the air quality within the county is typically good to moderate. According to the Colusa County General Plan, agricultural burning and dust from agricultural operations constitute the majority of air quality problems in the county (Colusa County 1989). To minimize air quality impacts associated with agricultural burning, the CCAPCD requires land owners to obtain agricultural burn permits (Rule 6.0), which restrict the days the land owners may engage in burn activities. Authorization for date-specific burn days is also required from the CCAPCD (Rule 6.2).

Rules and Regulations

The CCAPCD has developed rules and regulations under which the project would be subject. These include the following:

Rule 2.13 (Visible Emissions): This rule limits the discharge of any pollutants to not exceed 3 minutes in any one hour which is either of the following:

- a) As dark or darker in shade as that designated as No. 2 on the Ringelmann Chart, as published by the United States Bureau of Mines
- b) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke as described in subsection a.

Rule 2.16 (Dust and Fumes): This rule establishes 1-hour emission thresholds for dust and fumes associated with new construction or maintenance activities.

Rule 2.26 (Architectural Coatings): This rule establishes limits on the VOC content of architectural coatings to be used within Colusa County. The intent of the rule is to minimize emissions of VOCs from the use of architectural coatings.

Rule 3.1 (Permits Required): This rule establishes procedures to obtain an Authority to Construct and a Permit to Operate for stationary sources, such as the proposed project. It is

anticipated that stationary sources associated with the compressor station will require such permits, but the well pad site will not.

Rule 3.6 (Standards for Authority to Construct (New Source Review)): For new and modified stationary sources subject to permitting requirements (see Rule 3.1), this rule prescribes the use of BACT and the provision of emission offsets (i.e., mitigation) for equipment whose emissions exceed specified thresholds. The applicability of these requirements would be determined upon submittal of an application for an Authority to Construct under Rule 3.1.

Rule 3.17 (Permits to Operate for Sources Subject to Title V of the Federal Clean Air Act Amendments of 1990): Major stationary sources with the potential to emit 100 tons per year or more of a regulated pollutant, 10 tons per year or more of a HAP, 25 tons per year or more of total HAPs, and certain designated sources must obtain a facilitywide permit in accordance with Title V of the CAA Amendments and Rule 3.17. The facilitywide permit incorporates all federal, state, and local air quality requirements that apply to a facility.

Rule 3.18 (Regulation of Construction or Reconstruction of Major Source of Hazardous Air Pollutants Pursuant to Federal Clean Air Act Section 112(g)): This rule establishes that any newly constructed or reconstructed development identified as a major source of hazardous air pollutants are required to install BACT for toxics. Sources that are subject to an existing NESHAP are exempt from Rule 3.18.

Rule 4.8 (Indirect Source Review Fee): This rule establishes a fee charged to owners/operators of projects that require a building permit from the Colusa County. The proposed project would be subject to these fees since it will require building permits from the Colusa County.

Greenhouse Gas Emissions

Much like criteria pollutants and TACs, GHGs are being addressed at the federal and state levels. The following discussion summarizes key regulatory actions at these levels.

Federal

On April 2, 2007, the U.S. Supreme Court ruled that GHG emissions fit within the Clean Air Act definition of a pollutant, and therefore the EPA has the authority to promulgate GHG regulations. In *Massachusetts v. EPA*, the Supreme Court directed the Administrator to determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In making these decisions, the Administrator is required to follow the language of Section 202(a) of the Clean Air Act. On December 7, 2009, the Administrator signed a final rule with two distinct findings regarding GHGs under Section 202(a) of the Clean Air Act:

- The Administrator found that elevated concentrations of GHGs—CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆—in the atmosphere threaten the public health and welfare of current and future generations. This is referred to as the “endangerment finding.”
- The Administrator further found the combined emissions of CO₂, CH₄, N₂O, and HFCs from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare. This is referred to as the “cause or contribute finding.”

These two findings were necessary to establish the foundation for regulation of GHGs from new motor vehicles as air pollutants under the Clean Air Act.

In June 2005, Governor Schwarzenegger established California's GHG emissions reduction targets in Executive Order S-3-05. The Executive Order established the following goals: GHG emissions should be reduced to 2000 levels by 2010, GHG emissions should be reduced to 1990 levels by 2020, and GHG emissions should be reduced to 80% below 1990 levels by 2050. The secretary of CalEPA is required to coordinate efforts of various agencies to collectively and efficiently reduce GHGs. Representatives from several state agencies comprise the Climate Action Team. The Climate Action Team is responsible for implementing global warming emissions reduction programs. The Climate Action Team fulfilled its report requirements through the March 2006 Climate Action Team Report to Governor Schwarzenegger and the legislature (CalEPA 2006). A second draft biennial report was released in April 2009.

The State of California adopted the Global Warming Solutions Act of 2006 (AB 32) on September 27, 2006, which requires sources within the state to reduce carbon emissions to 1990 levels by the year 2020. AB 32 also sets the following milestone dates for CARB to take specific actions:

- June 30, 2007: Identify a list of discrete early action GHG emission reduction measures (first report published April 20, 2007, with additional measures adopted on October 25, 2007).
- January 1, 2008: Establish a statewide GHG emission cap for 2020 that is equivalent to 1990 emissions.
- January 1, 2008: Adopt mandatory reporting rules for significant sources of GHGs.
- January 1, 2009: Adopt a scoping plan that will indicate how GHG emission reductions will be achieved from significant GHG sources through regulations, market-based compliance mechanisms, and other actions, including recommendation of a minimum threshold for GHG emissions, below which sources would be exempt from reduction requirements.
- January 1, 2011: Adopt regulations to achieve maximum technologically feasible and cost-effective GHG emission reductions, including provisions for both market-based and alternative compliance mechanisms.
- January 1, 2012: Regulations adopted prior to January 1, 2010 become effective.

In June 2007, CARB (CARB 2007a) adopted a list of three early action items to limit GHG emissions from specific source categories (e.g., motor vehicle fuels, landfills), which was supplemented with six additional measures in October 2007 (CARB 2007b). On December 6, 2007, CARB (CARB 2007c) approved the 1990 GHG emissions inventory, thereby establishing the emissions limit for 2020. The 2020 emissions limit was set at 427 million MMTCO₂E. As part of the GHG emission inventory effort, CARB published an inventory of California emissions in 2004 (the latest year inventoried), as shown previously in Table 5.4-2. In addition, CARB (2007d) adopted regulations in December 2007 with recommended emission factors for calculating and reporting GHG emissions from a variety of sources, primarily industrial combustion; the regulations became effective in December 2008 and required initial reports in 2009 for emissions in 2008. CARB approved the AB 32 Scoping Plan on December 11, 2008 (CARB 2008). The scoping plan sets forth the strategy necessary to achieve the adopted emissions target by 2020 and includes programs to reduce transportation-related emissions, increase energy efficiency, increase the use of renewable energy sources, and establish a "cap-and-trade" program. While

the scoping plan includes measures for the natural gas sector, no regulations for specific reductions have been established that would apply to the proposed project.

SB 97, adopted August 24, 2007, requires the Governor's Office of Planning and Research (OPR) to develop CEQA guidelines "for the mitigation of GHG emissions or the effects of GHG emissions" by July 1, 2009. SB 97 further requires the resources agency secretary to adopt these CEQA guidelines by January 1, 2010. Finally, SB 97 removes GHG emissions as a cause of action under CEQA for specified state-financed infrastructure projects until January 1, 2010. On June 19, 2008, the OPR issued a technical advisory as interim guidance regarding the analysis of GHG emissions in CEQA documents. The advisory indicated that a project's GHG emissions, including those associated with vehicular traffic, energy consumption, water usage, and construction activities, should be identified and estimated. The advisory further recommended that the lead agency determine significance of the impacts and impose all mitigation measures that are necessary to reduce GHG emissions to a less-than-significant level. The advisory did not recommend a specific threshold of significance, either quantitative or qualitative, leaving this to the lead agency's judgment and discretion, based upon factual data and guidance from regulatory agencies and other sources where available and applicable. On April 13, 2009, OPR submitted to the Natural Resources Agency its proposed amendments to the state CEQA Guidelines relating to GHG emissions. On July 3, 2009, the Natural Resources Agency commenced the Administrative Procedure Act rulemaking process for certifying and adopting the proposed amendments, starting the public comment period. The Natural Resources Agency adopted the amendments to the guidelines on December 30, 2009. The amendments were approved by the Office of Administrative Law and submitted to the secretary of state on February 16, 2010. The amendments became effective on March 18, 2010.

5.4.3 Environmental Impacts

Significance Criteria

Appendix G of the CEQA Guidelines provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on air quality if the project would:

- a) Conflict with or obstruct implementation of the applicable air quality plan
- b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation
- c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)
- d) Expose sensitive receptors to substantial pollutant concentrations
- e) Create objectionable odors affecting a substantial number of people
- f) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment
- g) Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

Impact Discussion

a) Conflict with or obstruct implementation of the applicable air quality plan?

Colusa County is currently in attainment/unclassifiable status for all federal ambient air quality standards including O₃, PM₁₀, SO₂, PM_{2.5}, CO, and NO₂ (EPA 2009b). However, according to the CCAPCD, the county is a nonattainment area for the state ozone and PM₁₀ standards (Ryan 2009). Colusa County is an attainment area for all other state ambient air quality standards.

As stated previously, Colusa County is one of seven counties in the northern Sacramento Valley that comprise the NSVPA. In order to achieve and maintain healthy air quality throughout the planning area, the NSVPA prepared its first Air Quality Attainment Plan in 1994 and has performed updates to the plan every three years. The most recent update (2006) of the plan identifies counties within the NSVPA designated as “nonattainment” for the CAAQS and identifies air quality problems that should be addressed cooperatively among all counties in order to make the region a healthier place to live. In addition, the plan identifies control measures for stationary sources, area wide sources, and indirect sources of air quality pollution necessary to attain the California ozone standard at the earliest date possible (NSVPA 2006).

Control measures are partially based on air quality pollutant emissions estimates. The individual air pollution control districts of the NSVPA and CARB develop an emission inventory and associated emissions projections jointly. For air quality planning purposes, the emission estimates are based on the most currently available growth and control data for each specific district. If a new project would be inconsistent with the planned land use designation that was considered in the development of an air quality plan, the proposed project could conflict with and could potentially obstruct implementation of the applicable air quality plan.

Implementation of the proposed project would be consistent with the existing land use designation, A-G. As discussed in Section 5.10, the Colusa County General Plan designates oil and natural gas facilities as a compatible and acceptable use in A-G zones, as long as such uses do not interfere with agricultural operations. Because the proposed project represents a permitted use within the A-G land use designation, and because the project would be consistent with the intent of the designated land use for the site, the proposed project would not conflict with the applicable air quality management plan. Furthermore, as discussed in 5.4.3(b), the proposed project will use BACT and would not result in significant operational emissions. Therefore, as the proposed project would not conflict with or obstruct implementation of the applicable air quality plan, this impact would be less than significant.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Construction

Air quality impacts associated with construction of the proposed project would consist of construction equipment emissions, clearing and grading operations, and unpaved surface construction vehicle traffic travel (which can produce particulate matter emissions). Construction activities would generate mobile sources of air pollutants from on-site

equipment operations and would increase traffic to and from the site, including delivery of equipment and materials, and a temporary increase in the number of construction-related employees. Construction emissions can vary daily and are dependent on the level of activity, the specific type of operation, and for dust the prevailing weather conditions. Therefore, emission levels can only be estimated approximately with a corresponding uncertainty in precise air quality impacts. Fugitive dust emissions would primarily result from grading and site preparation activities. NO_x, CO, and SO_x emissions would primarily result from the use of construction equipment and motor vehicles.

Construction emissions were estimated using several sources including the URBEMIS2007 model (for off-road emissions), the EMFAC2007 model (for on-road emissions), and a combination of information from vendors and EPA emission factors for the temporary compressor unit. Emission calculations for the construction phase (and operation phase) of the project are included in Appendix B.

During construction, the project would be subject to CCAPCD Rule 2.16, which establishes one hour emission thresholds for dust and fumes associated with new construction or maintenance activities.

Table 5.4-6 shows the estimated maximum unmitigated daily construction emissions associated with the preliminary construction phases of the project in comparison to the CCAPCD significance thresholds. It should be noted that the CCAPCD recommends using CEQA thresholds of 137 pounds per day for the nonattainment area pollutants ROG and NO_x (ozone precursors), and PM₁₀. In addition to daily thresholds, CCAPCD Rule 3.6 requires emissions offsets for nonattainment area pollutants with emissions exceeding 25 tons per year after installation of BACT. Therefore, ROG, NO_x, or PM₁₀ emissions exceeding 25 tons per year would be considered a significant impact. While SO_x emissions are not included in Table 5.4-6, they would be minimal because all diesel equipment and trucks will be required to use ultra-low-sulfur fuel in accordance with CARB requirements.

Table 5.4-6: Estimated Daily Maximum Unmitigated Construction Emissions					
Emissions	ROG	NO_x	CO	PM₁₀	PM_{2.5}
Construction Emissions (pounds per day)					
2010					
Maximum pounds per day	26.1	168.9	115.4	227.2	51.8
Significance threshold	137	137	NA	137	NA
Threshold exceeded?	No	Yes	NA	Yes	NA
2011					
Maximum pounds per day	72.8	384.0	296.3	38.1	20.5
Significance threshold	137	137	NA	137	NA
Threshold exceeded?	No	Yes	NA	No	NA

Table 5.4-6 (Continued): Estimated Daily Maximum Unmitigated Construction Emissions					
Emissions	ROG	NO_x	CO	PM₁₀	PM_{2.5}
Construction Emissions (tons per year)					
2010					
Tons per year	1.5	6.0	6.5	2.4	0.7
Significance threshold	25	25	NA	25	NA
Threshold exceeded?	No	No	NA	No	NA
2011					
Tons per year	5.3	29.2	22.3	1.5	1.3
Significance threshold	25	25	NA	25	NA
Threshold exceeded?	No	Yes	NA	No	NA

SOURCE: ICF Jones & Stokes 2009

As shown in Table 5.4-6, 2010 daily construction emissions (NO_x and PM₁₀) would exceed the significance threshold of 137 pounds per day. Additionally, 2011 daily construction emissions (NO_x) would also exceed the significance threshold of 137 pounds per day. Also, 2011 construction-related NO_x emissions of 29.2 tons per year would exceed the significance threshold of 25 tons per year. These impacts would be potentially significant.

To minimize air quality impacts generated by construction activities, the applicant will implement APM AIR-1 and AIR-2 (see Section 4.8.3) as part of the proposed project. APM AIR-1 will be implemented to reduce PM₁₀ dust emissions generated by construction activities (the primary cause of PM₁₀ emissions would be grading activities). The following measures will be included in APM AIR-1:

- Water all active construction areas (subject to vehicle travel) at least twice (as necessary) daily
- Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least 2 feet of freeboard
- Water (as necessary) unpaved access roads, parking areas, and staging areas at construction sites that receive regular vehicle travels.

APM AIR-2 includes several measures to reduce NO_x emissions from all diesel powered construction equipment, including support equipment. Measures to be implemented include (to the extent feasible) requiring all diesel engines rated at 100 hp or more to meet (at a minimum) the Tier 2 California Emissions Standards for Off-Road Compression-Ignition Engines, unless such an engine is not available for a particular type of equipment. If a Tier 2 engine is unavailable, that engine shall meet the Tier 1 standards. If a Tier 1 engine is not available for any off-road engine larger than 100 hp, that engine will be equipped with a catalyzed diesel particulate filter unless the engine manufacturer certifies that such a device is not practical for the specific engine type. In addition, APM AIR-2 will require all heavy duty equipment and construction trucks to be properly maintained and tuned and idling time will be minimized through a “common sense” approach to vehicle use.

As shown in Table 5.4-7, the implementation of APM AIR-1 and AIR-2 will reduce construction-related NO_x and PM₁₀ emissions.

Table 5.4-7: Estimated Daily Maximum Mitigated Construction Emissions					
Emissions	ROG	NO_x	CO	PM₁₀	PM_{2.5}
Construction Emissions (pounds per day)					
2010					
Maximum pounds per day	26.1	122.3	115.4	29.4	10.4
Significance threshold	137	137	NA	137	NA
Threshold exceeded?	No	No	NA	No	NA
2011					
Maximum pounds per day	72.8	316.3	296.3	16.7	13.5
Significance threshold	137	137	NA	137	NA
Threshold exceeded?	No	Yes	NA	No	NA
Construction Emissions (tons per year)					
2010					
Tons per year	1.5	4.5	6.5	0.5	0.3
Significance threshold	25	25	NA	25	NA
Threshold exceeded?	No	No	NA	No	NA
2011					
Tons per year	5.3	23.8	22.3	1.2	1.1
Significance threshold	25	25	NA	25	NA
Threshold exceeded?	No	No	NA	No	NA

SOURCE: ICF Jones & Stokes 2009

As shown in Table 5.4-7, implementation of APM AIR-1 will reduce construction-related PM₁₀ emissions below the significance threshold of 137 pounds per day. Therefore, with implementation of APM AIR-1, construction-related PM₁₀ emissions would be less than significant.

As shown in the table, implementation of APM AIR-2 will reduce the maximum (pounds per day) emissions of NO_x in 2010; however, in 2011 NO_x daily emissions would still be above the significance threshold of 137 pounds per day. This impact would be potentially significant. Since daily construction-related NO_x emissions in 2011 would remain above the significance threshold of 137 pounds per day, the project applicant will implement APM AIR-3 (see Section 4.8.3), which consists of leasing NO_x emission reduction credits from the CCAPCD. APM AIR-3 is consistent with CCAPCD Rule 3.6, which requires emissions offsets for nonattainment area pollutants (in this case NO_x) with emissions exceeding 25 tons per year after installation of BACT and Rule 3.16, which allows for leasing of emission reduction credits to offset emissions temporarily (Kitamura 2009).

Operation and Maintenance

Operational sources of air quality pollutant emissions include compressor engines, dehydration reboilers, blow down vents, still vents, and a standby generator. In addition, on-road vehicle trips and area source emissions are also sources of operational air quality pollutants. Before obtaining an Authority to Construct and a Permit to Operate, Central Valley would be required to demonstrate to the CCAPCD that the stationary sources use technologies would be considered BACT, as applicable under Rule 3.6. If operational emissions (after installation of BACT) were to exceed specific significance thresholds, emission offsets or credits would be required for the project.

Table 5.4-8 shows the estimated operational emissions associated with the proposed project. It should be noted that emissions from compressor engines, dehydration reboilers, blow down vents, still vents, and a standby generator are included in these estimates based on their anticipated operating levels (blowdown emissions assume two emergency plan blow down events per year, venting approximately 1.4 million standard cubic feet of gas per year and one maintenance blow down per month, venting approximately 0.01 million standard cubic feet each or 0.12 million standard cubic feet per year). The emission estimates in the following table assumes the implementation of BACT for the compressor engines similar to the BACT implemented for the Wild Goose Gas Storage Project (Wild Goose) in Butte County, California. Blow down assumptions are based on estimates from Central Valley. The BACT implemented for Wild Goose specified controlled emission rates of 0.06 gram NO_x per horsepower-hour (hp-hr), 0.3 gram CO per hp-hr, and 0.09 gram ROG per hp-hr. Assuming similar specified controlled emissions rates for the proposed project, operational emissions will be reduced from uncontrolled by 92% for NO_x, 64% for ROG, and 88% for CO. It should be noted that the BACT for Wild Goose was determined to be selective catalytic reduction (SCR)⁶ for NO_x emissions. Catalytic oxidation⁷ will be BACT for ROG and CO emissions.

Table 5.4-8: Operational Emission Estimates						
Source	ROG	NO_x	CO	PM₁₀	PM_{2.5}	SO_x
Operational Emissions (pounds per day)						
On-road emissions	0.19	0.18	2.87	0.55	0.10	0.00
Area sources	0.00	0.01	0.01	0.00	0.00	0.00
Stationary sources with BACT	60.52	67.85	200.89	22.82	22.82	6.55
Blowdown	6.58	—	—	—	—	—
Total	67.28	68.04	203.77	23.37	22.92	6.55
Significance threshold	137	137	NA	137	NA	NA
Threshold exceeded?	No	No	NA	No	NA	NA

6 Selective catalytic reduction is an emission control technology that converts NO_x to diatomic nitrogen (N₂) using a reductant in the presence of a catalyst. The reductant is usually in the form of anhydrous ammonia, aqueous ammonia, or urea.

7 Catalytic oxidation is an emission control technology that oxidizes CO to CO₂ and hydrocarbons (including many TACs) to CO₂ and water using a catalyst.

Table 5.4-8 (Continued): Operational Emission Estimates						
Source	ROG	NO_x	CO	PM₁₀	PM_{2.5}	SO_x
Operational Emissions (tons per year)						
On-road emissions	0.04	0.04	0.52	0.10	0.02	0.00
Area sources	0.00	0.00	0.00	0.00	0.00	0.00
Stationary sources with BACT	3.91	4.19	13.93	1.71	1.71	0.50
Blowdown	1.20	—	—	—	—	—
Total	5.15	4.23	14.45	1.81	1.73	0.50
Significance threshold	25	25	NA	25	NA	NA
Threshold exceeded?	No	No	NA	No	NA	NA

SOURCE: ICF Jones & Stokes 2009

As shown in Table 5.4-8, daily operation-related emissions of ROG, NO_x, and PM₁₀ would be less than the significance threshold of 137 pounds per day. In addition, annual operation-related emissions of ROG, NO_x, and PM₁₀ would be less than the significance threshold of 25 tons per year. Because the implementation of BACT would be required by the project in order to receive an Authority to Construct Permit and a Permit to Operate from the CCAPCD, the operation-related air quality emissions would be less than significant.

- c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?**

Construction

Refer to response to 5.4.3 (a) and (b). Colusa County is currently in attainment for all of the NAAQS, and all CAAQS except O₃ and PM₁₀. ROG construction emissions would be less than significant. With the implementation of APM AIR-1, AIR-2, and AIR-3, the project's PM₁₀ and NO_x construction emissions will be reduced to below a level of significance, and the project would not be expected to cumulatively increase any criteria pollutant for which the project region is designated as nonattainment. The project's construction-related air quality emissions, in addition to those of other projects in the vicinity, would incrementally contribute to Colusa County's inability to attain state AAQS for O₃ and PM₁₀. It is anticipated that short-term cumulative effects to air quality due to construction activities would be less than significant through implementation of dust abatement procedures in accordance with CCAPCD rules (included in APM AIR-1), as well as the control of construction-generated NO_x through compliance with Tier 2 California emissions standards for off-road compression-ignition engines (as specified in APM AIR-2), proper maintenance of construction vehicles, and minimization of construction traffic idling.

Operation and Maintenance

The ROG, NO_x, and PM₁₀ operational emissions would be less than the quantitative thresholds for these pollutants. Furthermore, the proposed project is consistent with the

existing zoning for the project site. Thus, the project would not result in a cumulatively considerable contribution to existing O₃ and PM₁₀ exceedances of the CAAQS.

d) Expose sensitive receptors to substantial pollutant concentrations?

According to the screening health risk assessment for the proposed project, the closest sensitive receptor (a residence) is located approximately 1,250 feet southeast of the compressor station site boundary on Southam Road. Additional residences in the vicinity of the compressor station are located more than 2,000 feet from compressor station site boundary (see Figure 5.8-1 for a map showing sensitive receptors in the project area).

The CCAPCD has not established CEQA thresholds of significance for health impacts. Thus, the thresholds identified in California Air Pollution Control Officers Association’s (CAPCOA’s) *Health Risk Assessments for Proposed Land Use Projects* (CAPCOA 2009) were used for the analysis of the proposed project’s health impacts. Using these thresholds, the proposed project would have a significant impact on public health if its TAC emissions would result in the following:

- Excess cancer risk of 10 in one million
- Health hazard index of one for toxic air contaminants with acute and chronic, non-carcinogenic health effect

The cancer risk was estimated for those TACs emitted by the proposed project’s emission sources that could result in an increase in the probability of receptors in the project area contracting cancer in excess of background levels. The acute and chronic health hazard indices (HHI) were estimated for TACs that could result in noncancerous health impacts to receptors in the project area.

The highest estimated cancer risk and chronic HHI would occur at a residence located 3,125 feet south-southeast of the compressor station site boundary. The highest estimated acute HHI would occur at a residence located approximately 2,250 feet northeast of the compressor station site boundary. The town of Princeton is located approximately 1 mile northeast of the compressor station and includes numerous sensitive receptors, including residences and a school. Due to greater distances from the compressor station site, health risks to the residents of Princeton are expected to be much lower than those shown in Table 5.4-9. However, as shown in the table below, the project’s impacts would not exceed the significance thresholds for cancer risk and chronic and acute HHI.

Table 5.4-9: Screening Health Risk Assessment Modeling Results	
Screening Criterion	Health Impact
Cancer risk (significant if greater than 10 in one million)	0.9 in one million
Chronic HHI (significant if greater than 1)	0.015
Acute HHI (significant if greater than 1)	0.082

SOURCE: ICF Jones & Stokes 2009

As shown in Table 5.4-9, the potential for health risks as a result of project operations are expected to be below screening criterion levels. Based on the screening health risk assessment prepared for the proposed project, the maximum cancer risk is 0.9 in one million. The chronic and acute health hazard indices indicate that the project would not pose

a significant health risk to the maximally exposed individual because those indices are less than 1. The proposed project is not expected to expose sensitive receptors to substantial pollutant concentrations and impacts would be less than significant.

e) Create objectionable odors affecting a substantial number of people?

Construction

During construction, typical construction equipment and vehicle emissions would be generated and the associated odors could affect nearby residences. However, due to the temporary nature of construction activities and distance between project components and existing residences, construction odors are considered less than significant.

Operation and Maintenance

Processing of natural gas at the compressor station and at the injection/withdrawal wells could potentially release odorized natural gas through emergency blow down events. However, emergency blow down events would not be common (occurring once or twice per year) and released gas would be pressurized and would dissipate quickly. Fugitive emissions through flanges and valves and leaking piping components could also occur at the compressor station site and at various project component sites. To minimize the potential for the release of odorized gas attributed to fugitive emissions and equipment leaks, the applicant will regularly inspect equipment and facilities and implement measures to prevent and repair leaks as part of the project design. Measures will include maintaining piping connections, ensuring connections are welded (to the extent practical), and participating in active monitoring of piping components for leaks. Therefore, the potential impacts associated with the release of odorized natural gas during project operations would be less than significant.

f) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

GHG emissions contributing to global climate change have only recently been addressed in CEQA documents, such that CEQA and case law do not provide much guidance relative to their assessment. Except as discussed below, quantitative significance thresholds for GHG emissions have not been adopted by the State of California or any particular air pollution control district. The CEQA Guidelines do, however, provide guidance regarding topics such as climate change, in Section 15144, Forecasting. Section 15144 notes that preparation of an environmental impact analysis document “necessarily involves some degree of forecasting. While foreseeing the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it reasonably can.”

The project would result in emissions of GHGs during construction and operation. However, it is generally the case that an individual project is of insufficient magnitude by itself to influence climate change or result in a substantial contribution to the global GHG inventory. Thus, GHG impacts are recognized as exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective (CAPCOA 2008). Accordingly, the GHG emissions from a proposed project should be evaluated as to whether they would be considered a cumulatively considerable contribution to the cumulative impact of global climate change.

Neither the State of California nor CCAPCD nor any other air agency has established emission-based significance thresholds for GHG emissions recommended for use by other lead agencies. However, the State of California OPR has issued a Technical Advisory titled CEQA and Climate Change: Addressing Climate Change through CEQA Review (OPR 2008). This advisory provides guidance to land use agencies in the interim period, until the State of California CEQA Guidelines are revised in accordance with SB 97. The advisory states that “public agencies are encouraged but not required to adopt thresholds of significance for environmental impacts.” As part of the SB 97 update to the CEQA Guidelines, OPR requested that CARB recommend statewide interim thresholds of significance for GHGs. In October 2008, CARB presented a Preliminary Draft Staff Proposal with a threshold of 7,000 metric tons of CO₂E per year (MTCO₂E/yr) for operational emissions (excluding transportation-related emissions) from industrial projects (CARB 2008). To date, CARB has not adopted this threshold nor proposed alternative thresholds. In December 2008, the South Coast Air Quality Management District (SCAQMD) adopted an interim threshold of 10,000 MTCO₂E/yr (operational emissions plus construction emissions amortized over 30 years) for “industrial” projects for which the SCAQMD is the lead agency, and it is in the process of developing guidelines for projects for which other agencies are the lead agency. The Bay Area Air Quality Management District (BAAQMD) has not adopted thresholds of significance for GHGs from development projects. However, the BAAQMD has issued draft revisions to its CEQA guidance. The BAAQMD’s draft, *California Environmental Quality Act Air Quality Guidelines* (BAAQMD 2009), includes recommended numerical thresholds for GHG emissions associated with “land use” projects and “stationary source” projects. The proposed threshold of significance for operational-related GHG emissions for stationary source projects is 10,000 MTCO₂E/yr (BAAQMD 2009). Stationary source projects are those that would be subject to permitting requirements in the BAAQMD.

The OPR further advises, “Even in the absence of clearly defined thresholds for GHG emissions, the law requires that such emissions from CEQA projects must be disclosed and mitigated to the extent feasible whenever the lead agency determines that the project contributes to a significant, cumulative climate change impact” (OPR 2008, p.4). Furthermore, the OPR advisory document indicates, “In the absence of regulatory standards for GHG emissions or other scientific data to clearly define what constitutes a ‘significant impact’, individual lead agencies may undertake a project-by-project analysis, consistent with available guidance and current CEQA practice” (OPR 2008, p.6).

To assess the impacts of the significance of the proposed project’s GHG emissions, the CPUC will apply the SCAQMD significance threshold of 10,000 MTCO₂E/yr, including all operational emissions and the construction emissions for this project. In the absence of a rulemaking to establish a GHG emission threshold of significance to be applied uniformly throughout the state, the CPUC is assessing the impacts of GHG emissions on a case-by-case basis. In areas of the state in which the local air pollution control district or air quality management district has not adopted a threshold of significance, the CPUC will apply a threshold that has been adopted by CARB or another air pollution control district or air quality management district. In this instance, the CPUC is using the SCAQMD threshold because CARB has yet to adopt a threshold, and the SCAQMD threshold was adopted after rigorous public vetting and, at the time of this writing, it is the only air district to adopt an emission-based threshold.

The SCAQMD developed its interim significance threshold for GHGs from stationary sources through a robust stakeholder working group process, which included staff from OPR, CARB, and the Office of Attorney General. The working group provided input to staff at seven public meetings. The numerical threshold SCAQMD established is 10,000 MTCO₂E/yr, which corresponds to a threshold that captures 90% of stationary source GHG emissions. SCAQMD adopted the 90% emission capture rate as a reasonable cut-off point, based on staff estimates that the emissions from projects that will not exceed this threshold would account for slightly less than 1% of the future statewide GHG emissions target.

Use of the SCAQMD threshold is an appropriate tool in the CPUC's project-by-project analysis. After careful consideration, the CPUC finds that this threshold, which is based on a 90% emission capture rate, is appropriate for this project at this time. The following analysis describes the estimated emissions associated with the construction and operation of the proposed project and the significance of this impact.

Construction

Table 5.4-10 shows the project's constructed-related GHG emissions. The table includes total emissions for CO₂, CH₄, and N₂O on a CO₂E basis. GHG emissions are estimated to be greater in 2011, as the connecting pipelines would be installed and operational, and the temporary compressor unit would operate during late 2011. One metric ton equals 2,204 pounds.

Table 5.4-10: Construction-Related Greenhouse Gas Emissions	
Year	CO₂E (metric tons per year)
2010	1,392.4
2011	3,635.4

SOURCE: ICF Jones & Stokes 2009

Operation and Maintenance

As discussed above, GHG impacts are recognized as exclusively cumulative impacts. Accordingly, the operational emissions from a proposed project should be evaluated as to whether they would be considered a cumulatively considerable contribution to the cumulative impact of global climate change.

Table 5.4-11 shows the project's operation-related GHG emissions. The majority (approximately 96%) of operation-related GHG emissions would be associated with natural gas combustion in the compressor engines and other stationary sources. The remaining GHG emissions would be associated with on-road vehicle trips and blowdown emissions (emission estimates assume two emergency blowdowns per year and one maintenance blowdown per month) and indirect emissions associated with electricity and water supply. While fugitive emissions from compressors, valves, and flanges would also represent an additional source of operation-related GHG emissions, these emissions would be minimized by inspection and maintenance programs for leaks and compliance with APM AIR-4.

Table 5.4-11: Operational Greenhouse Gas Emissions				
Source	Carbon Dioxide (tons per year)	Methane (tons per year)	Nitrous Oxide (tons per year)	Carbon Dioxide Equivalent (metric tons per year)
On-road	50.85	0.00	0.00	46.57
Area sources (excluding electricity)	2.92	0.00	0.00	2.65
Electricity (direct + indirect (for water))	0.34	0.00	0.00	0.31
Stationary sources with BACT	17,562.04	0.31	0.03	15,952.22
Blowdown	0.00	31.16	0.00	593.79
Total	17,616.15	31.47	0.03	16,595.54

NOTE: Total CO₂E may not match the sum of the individual GHGs due to rounding.
SOURCE: ICF Jones & Stokes 2009

For comparative purposes, the project's contribution to the State of California's total emissions (484 MMTCO₂E), including out-of-state electrical generation, in 2004 (CARB 2007c) would be approximately 0.003%. In addition, the project would be subject to many of the measures to be adopted pursuant to the AB 32 Scoping Plan (CARB 2008), including but not limited to GHG emission standards for passenger vehicles and light trucks, and the Low Carbon Fuel Standard.

As indicated in Table 5.4-11, the proposed project's operational emissions, combined with the construction emissions from Table 5.4-10, would exceed 10,000 MTCO₂E/yr. Accordingly, the project's GHG emissions would represent a cumulatively considerable contribution and would have a significant impact on climate change.

Furthermore, the CPUC Energy Division has a policy of maximum feasible GHG reductions in order to ensure that a project does not conflict with the implementation of AB 32. Therefore, to ensure no conflict with the goals of AB 32 and with CPUC policy, Central Valley will be required to reduce impacts associated with GHG emissions in accordance with the mitigation measures listed below. Mitigation Measures AIR-1 and -2 are focused on reducing the indirect GHG emissions associated with the project's electrical use, while Mitigation Measure AIR-3 will reduce GHG associated with project construction and with operation of the compressor station and employee vehicles. In addition, Central Valley, through implementation of APM AIR-5, has committed to purchasing GHG offset credits for stationary source GHG emissions in excess of 10,000 MTCO₂E/yr.

Mitigation Measure AIR-1: The applicant shall incorporate passive solar design in all buildings that would require temperature control, but not including the compressor building. Buildings shall be sited, oriented, and designed to optimize conditions for natural heating, cooling, and daylighting to the maximum extent practicable. Specific examples of passive solar design may include, but are not limited to, the following:

Building Orientation

- Site buildings to take advantage of shade, prevailing winds, landscaping, and sun screens to reduce energy use.

- Shade south-facing windows that receive full sun with a combination of landscaping, overhangs, shutters, and solar window screens. To optimize southern solar heat gain, locate major window openings on the southeast, south, and southwest sides of the buildings. To minimize cold winter exposure, keep windows on the north-, east-, and west-facing walls small in size.

Heating and Cooling Optimization

- Optimize building glazing by evaluating the thermal resistance (or R-value), visible light transmittance, and solar heat gain coefficient of the building's glass.
- Utilize exterior sun controls and shading techniques such as trees, awnings, or trellises, as opposed to interior controls such as blinds and shutters, to block light and heat before penetrating the building to reduce energy demand from mechanical cooling and heating.
- Place shade trees, trellises, or awnings strategically to minimize the use of glazing.
- Use skylights, natural lighting, and indirect (i.e., solar tube) lighting to eliminate overheating and glare.
- Arrange building openings to catch cooling summertime breezes.
- Size and locate outlet openings to accelerate the flow of breezes through the building.
- Use reflective foil and air space underneath the roof sheeting to reduce heat penetration.

Natural Lighting Optimization

- Install roof monitors and skylights for overhead natural lighting; however, consideration should be given to potential overheating from skylights.
- Use reflective ceilings and light-colored interior surfaces to increase interior lighting.
- Incorporate shading devices to minimize direct-beam sunlight penetration into workspaces.
- Use lighting and control systems, such as automated natural light-actuated controls that adjust depending on the amount of natural light entering the interior space, for maximum flexibility and adjustability depending on the layout of the building and the natural exposure of the structure to natural daylight.

The above measures are provided as guidance to maximize natural lighting and achieve optimal heating and cooling condition. Central Valley shall provide CPUC documentation of passive solar design measure(s) and quantification of energy savings either as a number or percentage. In addition to site plans, architectural plans, landscape plans, and construction plans identifying the design elements incorporated into the building design, supporting documentation is required to verify the energy savings achieved through the combination of chosen design elements. Computer modeling tools and simulation programs may be utilized to identify the best combination of design strategies and to verify performance.

Mitigation Measure AIR-2: Central Valley shall enter into an agreement with PG&E to participate in the ClimateSmart™ Program for purchases of Central Valley's electric energy. All contributions to the ClimateSmart™ program, funded through a surcharge to

a customer's electricity charges, are invested in high-quality greenhouse gas emission reduction and capture projects that are independently verified and registered with the Climate Action Reserve. A copy of the agreement shall be provided to CPUC prior to the start of operation of the compressor station. If a future program renders this agreement redundant (e.g., if Central Valley can demonstrate that the same benefits are achieved via PG&E's participation in a future cap-and-trade program), then the agreement shall be terminated, subject to review and approval by the CPUC.

Mitigation Measure AIR-3: In addition to purchasing and retiring offsets for operational emissions under APM AIR-5, Central Valley will also purchase and retire offsets to cover GHG emissions resulting from construction of the project as follows: (1) the project carbon offsets for the first year of operation shall include a minimum of 2,514 MTCO₂E, based on one-half of the total estimated construction emissions; and (2) the project carbon offsets for the second year of operation shall include the balance of 5,028 MTCO₂E of construction emissions. Because Central Valley has agreed to fully offset the construction emissions of the project within the first 2 years of project operation, there is no need to amortize the construction emissions over the life of the project for the purpose of accounting for these emissions. Project carbon offsets for the construction emissions shall be provided no later than those for the operational emissions as described in APM AIR-5.

Central Valley shall conduct an annual GHG emission inventory of stationary sources (compressor engines, standby generator, natural draft burner, glycol reboilers, still vent, and blowdown of natural gas) each year and report its findings to the CPUC by March 31 of the following year. Central Valley shall include in its annual GHG inventory an additional 50 MTCO₂E, which accounts for an estimated 50 MTCO₂E/yr from non-stationary sources.

When the project carbon offsets from operational emissions (APM AIR-5) and construction emissions are retired, Central Valley shall provide to the CPUC a copy of the verification opinion statement(s) by the verification body accredited by the American Carbon Registry, Climate Action Reserve, or the Voluntary Carbon Standard, as appropriate, for the project carbon offsets provided.

With implementation of these mitigation measures and APM AIR-4, which requires Central Valley to mitigate leaks and related methane losses (see Section 4.8.3), the project would have a less-than-significant cumulative impact on climate change.

g) Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?

The Climate Change Scoping Plan, approved by the CARB on December 12, 2008, provides an outline for actions to reduce California's GHG emissions. The Scoping Plan requires CARB and other state agencies to adopt regulations and other initiatives to reduce GHGs. The Scoping Plan identifies GHG reduction measures to be implemented by the oil and gas industry. One set of measures will reduce methane emissions in gas transmission processes from leaks. These measures will include improved leak detection, process modifications, equipment retrofits, installation of new equipment, and best management practices (BMPs). At this time, no mandatory GHG regulations or finalized agency guidelines

would apply to this project. While details of these measures are not provided in the Climate Change Scoping Plan, it refers to the technologies being implemented through the EPA's Natural Gas STAR program. The Natural Gas STAR program is a voluntary partnership that encourages oil and natural gas companies to adopt cost effective technologies and practices that improve operational efficiency and reduce emissions of methane. APM AIR-4 has been proposed by the applicant to mitigate leaks and related losses of methane from the proposed project based on measures developed under the Natural Gas STAR program.

In addition to the Climate Change Scoping Plan, the CPUC, the California Energy Commission (CEC), and Consumer Power and Conservation Financing Authority adopted an Energy Action Plan in May 2003. Among other energy-related goals, the Energy Action Plan called for these agencies to “[i]dentify critical new gas transmission, distribution, and storage facilities needed to meet California’s future needs” (CPUC et al. 2003). The plan was updated in October 2005 and February 2008 by the CPUC and CEC. The updates continued to call for expansion of natural gas storage capacity. While the Energy Action Plan is focused on enhancing reliability and mitigating price volatility of natural gas supplies in California, the plan calls for the agencies to “optimize all strategies for increasing conservation and energy efficiency to minimize increases in electricity and natural gas demand” as the highest priority (CPUC et al. 2003). The 2008 update recognizes the goals of AB 32 and the need for increasing conservation in natural gas usage. The 2008 update also noted, “Natural gas provides a significant portion of California’s energy requirements and its use in California is expected to remain relatively flat in the near term” (CPUC and CEC 2008). Accordingly, the proposed project would not necessarily contribute to increases in natural gas usage in California; rather, it would increase the reliability and costs of natural gas. Thus, the proposed project is consistent with the goals of the Energy Action Plan. While the Energy Action Plan is not a plan specifically designed to reduce GHG emissions, it considers the potentially competing goals of providing reliable energy sources and reducing GHG emissions in California.

Implementation of Mitigation Measure AIR-3, along with the reductions resulting from AIR-1 and AIR-2, will require that the GHG emissions associated with construction and those associated with operation of the project in excess of 10,000 MTCO₂E/yr be offset, thus achieving a reduction greater than resulting from the overall strategy of the Climate Change Scoping Plan. In addition to these mitigation measures, Central Valley will also implement APM AIR-4 to avoid releases of methane from compressor operations. This impact would be less than significant with mitigation.

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5.5 BIOLOGICAL RESOURCES

<i>Would the project:</i>	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) <i>Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) <i>Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) <i>Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) <i>Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) <i>Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) <i>Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

5.5.1 Environmental Setting

Regional Setting

The project area is located in the Sacramento Valley subregion of the Central Valley, approximately 60 miles north and west of the City of Sacramento. Agriculture is a dominant land use, including rice, row crops, orchards, and other agricultural operations; therefore, much of the natural vegetation has been substantially altered. Wetland systems in the form of the Sacramento and Delevan NWRs are present north and south of the project area.

Existing Conditions

Methods

Reconnaissance-level field surveys of the compressor station, remote well pad site, metering station, and connecting pipelines were conducted by ICF Jones & Stokes biologists in May and July 2008, and in January, March, and June 2009. The area surveyed included the proposed alignment corridor as well as an area 250 feet beyond the construction footprint such that all areas determined to be directly or indirectly affected by project construction and operation activities would be included in the survey. Because private property access was limited along most portions of the pipeline alignment and many of the rice fields were flooded and not accessible during the field surveys, most of the 14.7-mile pipeline alignment study area was viewed from existing agricultural and public roads.

The focus of the surveys was to determine the suitability of habitats within the survey area to support various special-status plant and animal species known to occur in the project region and to map native and non-native vegetation communities within the project corridor. No focused, protocol-level surveys for special-status species were conducted, primarily due to the limited access on private lands. Common and special-status species observed during the field investigations are listed in Appendix C.

A wetland delineation was conducted by ICF Jones & Stokes on areas that could be directly and indirectly impacted by the proposed project, including the compressor station site remote well pad site, observation well pads and saltwater disposal well and pipeline, gathering line, metering station, the approximate 14-mile pipeline alignment, staging areas, and new access roads, to determine if there were any waters of the U.S. (including agricultural wetlands) present on these sites. The fieldwork for the delineation was conducted on January 15, March 5, June 25 and 26, and July 10 and 24, 2009, using the routine on-site determination method described in the ACOE's *Wetlands Delineation Manual* (Environmental Laboratory 1987) and, where applicable, the criteria specified in the Arid West supplement (ACOE 2008). Additionally, in evaluating the potential jurisdictional status of rice fields, Sacramento District Regulatory Memorandum 2007-01, *Irrigated Wetlands* (ACOE 2007), was referenced as well as guidance provided by the ACOE and the EPA in their December 2008 memorandum, *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States* (ACOE/EPA 2008). In areas where the field investigators did not have access because of flooded field conditions or landowner restrictions, wetlands and other water bodies were mapped from the interpretation of aerial photographs and viewed from adjacent areas wherever possible.

Additional information on special-status habitats, special-status plant and animal species, and other sensitive biological resources was compiled from the following sources:

- CDFG's California Natural Diversity Database (CNDDDB) records search of U.S. Geological Survey (USGS) 7.5-minute quadrangles (California Natural Diversity Database 2009).
- California Native Plant Society's (CNPS's) online *Inventory of Rare and Endangered Plants of California* (2008).
- California list of noxious weed species (ICF Jones & Stokes 2009) and invasive plant inventory (ICF Jones & Stokes 2009).
- USFWS species list for Colusa County.
- *Draft Supplement EIR for the Wild Goose Storage Expansion Project* (CPUC 2002).
- *Application for Certification for Colusa Generating Station, Colusa County, California* prepared for E&L West Coast, LLC. (URS Corporation 2006).
- *Revised Biological Assessment (Application for Certification 06-AFC-9) for Colusa Generating Station, Colusa County, California* (URS Corporation 2007a).
- *Draft U.S. Army Corps of Engineers Permit Application for the Colusa Generating Station, Colusa County, California* (URS Corporation 2007b).
- *Biological Assessment for the Wild Goose Gas Storage Project, Butte County, California* (ICF Jones & Stokes 2009).
- *Wetland Delineation Report and Functions and Values Assessment for the Wild Goose Storage Inc. Gas Storage Facilities Expansion* (ICF Jones & Stokes 2009).
- Section 404 permit (Permit Number 200100383) for the Wild Goose Gas Storage, Inc. expansion project (December 2002) and modification to the permit (April 2006).
- Section 404 permit (Permit Number SPK-2006-00897) for PG&E's Colusa Generating Station (July 2008).
- USFWS Biological Opinion (Number 8140-2008-F-0836-1) for PG&E's Colusa Generating Station (March 14, 2008).
- National Marine Fisheries Service (NMFS) letter of concurrence (Number 2007/04155) for PG&E's Colusa Generating Station (August 2, 2007).
- ACOE wetland verification letter for PG&E's Colusa Generating Station (August 10, 2007) (Note: verification expires August 10, 2012). These verified waters of the U.S. are shown on the project alignment maps.
- ACOE Individual Permit Application (July 12, 2001) and subsequent application revisions (November 26 and December 7, 2001) for the Wild Goose Gas Storage Facilities Expansion Project (submitted by Matrix Environmental Planning on behalf of Wild Goose Gas Storage, Inc.).
- National Cooperative Soil Survey Web Soil Survey (Natural Resources Conservation Service 2007).

This information was used to develop lists of special-status species and other sensitive biological resources (e.g., waters of the U.S.) that could be present in the project area. Special-status plant and wildlife species were included in these lists if they were known to occur in the project region and if their habitats could be located within the project area.

Vegetation

The majority of the project area is comprised of active farm lands, predominantly rice, row crops, and various orchards. The natural vegetation communities of the area are primarily associated with the various waterways near the project alignment such as the Sacramento River (to the east of the alignment), Willow Creek, Hunters Creek, Logan Creek, and various drainage and irrigation canals and trenches. Large wetland systems are present north and south of the project area in the Sacramento and Delevan NWRs. It should be noted that all the project facilities, including the proposed 14.7-mile natural gas pipeline, would be located outside the boundaries of both of these refuges.

Seven vegetation communities were identified by ICF Jones & Stokes, and confirmed by Dudek, as occurring in the project area (Table 5.5-1) (ICF Jones & Stokes 2009). These communities were classified pursuant to the CDFG’s List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database (CDFG, Biogeographic Data Branch, Vegetation Classification and Mapping Program, September 2003 edition), as well as through professional judgment for those habitat types that occur in the study area but are not described in the CDFG classification system.

Table 5.5-1: Vegetation Communities/ Land Covers in the Study Area	
Vegetation Community/Land Cover	Total Acreage in Biological Study Area
Non-native annual grassland	70.67
Agricultural land:	
Flooded rice field (non-wetland)	864.43
Flooded rice field (wetland)	174.50
Rotational rice field	18.87
Row crop	63.32
Orchard	111.73
Fallow	77.84
Fremont cottonwood riparian woodland	7.59
Freshwater marsh (outside of wetland drainages)	12.96
Seasonal wetland	0.38
Drainage:	
Non-wetland	21.89
Wetland	15.27
Horticultural plantings	5.20

SOURCE: Bushnell-Bergfalk 2010

A description of each of these communities is summarized below from the survey documentation prepared by ICF Jones & Stokes (2009) and mapped in Appendix A.

Non-native Annual Grassland

Non-native annual grassland occurs primarily in the western portion of the project area, west of the Glenn-Colusa Canal. Small areas of non-native annual grasslands also occur along various

irrigation drainages. This community is characterized by dense to sparse covers of annual grasses that often grow in association with a variety of annual forbs. Common plant species associated with non-native annual grasslands include wild oats (*Avena* spp.), bromes (*Bromus* spp.), annual fescues (*Vulpia* spp.), barbed goatgrass (*Aegilops triuncialis*), Italian ryegrass (*Lolium multiflorum*), mustards (*Brassica* spp.), filarees (*Erodium* spp.), yellow star-thistle (*Centaurea solstitialis*), and other forbs.

Agricultural Land

Agricultural lands include currently cultivated lands, as well as fallow fields. Rice fields (including both wetland and non-wetland rice fields and rotational rice fields) are the dominant agricultural crop in the project area. Other crops and uses include various row crops and orchards. Agricultural lands are the predominant vegetation community within and adjacent to the proposed alignment.

Fremont Cottonwood Riparian Woodland

Fremont cottonwood riparian woodland is the primary riparian community in the project area and occurs along both natural and artificial drainage systems. This community is dominated by Fremont cottonwood (*Populus fremontii*), Goodding's black willow (*Salix gooddingii*), arroyo willow (*Salix lasiolepis*), narrow-leaved willow (*Salix exigua*), valley oak (*Quercus lobata*), California grape (*Vitis californica*), and Himalayan blackberry (*Rubus armeniacus*, formerly *R. discolor*).

Freshwater Marsh

Freshwater marsh areas are primarily associated with drainages that cross through the project corridor. Bulrush-cattail wetland is the dominant type of freshwater marsh habitat that occurs there. This type of wetland is generally dominated by perennial emergent wetland species (species that grow in wetland conditions more than 99% of the time), which often form a closed canopy and grow in areas that are permanently or seasonally flooded by slow-moving or stagnant fresh water. These wetlands may be entirely or partially vegetated with an open water component, or they may be dry in summer.

Within the project area, freshwater marsh wetlands are dominated by bulrush (*Scirpus acutus* and other spp.) and broad-leaved cattail (*Typha latifolia*). In some drainages, curly dock (*Rumex crispus*), Baltic rush (*Juncus balticus*), smartweed, western vervain (*Verbena lasiostachys*), Bermuda grass (*Cynodon dactylon*), Johnson grass (*Sorghum halepense*), barnyard grass (*Echinochloa crus-galli*), and irrigated pasture grasses also occur as subdominants. Some emergent wetlands in the project area support willows in or adjacent to their boundaries.

Seasonal Wetland

Non-native annual grasslands in the western portion of the project area (west of the Glenn-Colusa Canal and south of the Delevan Compressor Station access road) support seasonal wetlands (Appendix A). These wetlands have been characterized as seasonal wetlands rather than vernal pools because they are not closed basin systems and are not dominated by typical vernal pool plant species. Seasonal wetlands were also mapped in the roadside swales along the I-5 corridor and some agricultural ditches.

The seasonal wetlands east of the Glenn-Colusa Canal were delineated by URS Corporation as part of the PG&E Colusa Generating Station Project and verified by the ACOE on

August 10, 2007. The area north of the Delevan Compressor Station access road contains mima-mound topography and supports a variety of seasonal wetland types (including vernal pools and seasonal swales). As described previously, the proposed metering station site and PG&E interconnection pipeline were surveyed by ICF Jones & Stokes for the proposed project and by Essex Environmental and URS Corporation for the other projects in the area, and these areas do not support seasonal wetlands.

Seasonal wetlands in the project area are routinely disked for fire control, and during the wetland delineation conducted in 2009, it was determined that they supported very little vegetation. The dominant species observed during the wetland delineation were Italian wildrye (*Lolium multiflorum*) and Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*).

Drainage

The term *drainage* includes natural and artificially created features with a well-defined bed and bank, as well as flowing water at least some time of the year. In the project study area, these drainages include natural creek systems, irrigation ditches, and canals. Unless they are actively maintained, these drainages typically support freshwater marsh wetlands. Natural drainages (e.g., Hunter Creek) also support riparian woodland vegetation. Drainages with wetland vegetation below the OHWM are referred to as “wetland drainages” and are typically dominated by freshwater marsh vegetation and seasonal wetland vegetation. Drainages that lack wetland vegetation below the OHWM are referred to as “non-wetland drainages.” Wetland drainages would generally be considered jurisdictional wetlands pursuant to Section 404 of the Clean Water Act (CWA), while non-wetland drainages would be considered other waters.

Horticultural Plantings

Horticultural plantings occur along the edges of roads, fences, and developed areas. Eucalyptus trees are the primary horticultural species that occurs in these areas.

Wildlife

During the surveys conducted by ICF Jones & Stokes biologists in May and July 2008, and in January, March, and June 2009, a total of 68 birds, 2 reptiles, 1 amphibian, 4 mammals, and 1 invertebrate species were observed or detected within the study area (Appendix C). The observed species included a number of wetland associated species, such as great blue heron (*Ardea herodias*), pied-billed grebe (*Podilymbus podiceps*), and mallard (*Anas platyrhynchos*); upland species including western kingbird (*Tyrannus verticalis*), western scrub-jay (*Aphelocoma californica*), and Bewick’s wren (*Thryomanes bewickii*); and wide-ranging raptor species including turkey vulture (*Cathartes aura*), red-shouldered hawk (*Buteo lineatus*), and American kestrel (*Falco sparverius*). The wildlife species that could be expected to occur in the various habitats on site are discussed below.

Non-native annual grassland provides foraging and breeding functions to a variety of native terrestrial vertebrates. Grasslands may support species including red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*), great horned owl (*Bubo virginianus*), California vole (*Microtus californicus*), deer mouse (*Peromyscus* spp.), California ground squirrel (*Spermophilus beecheyi*), American badger (*Taxidea taxus*), and coyote (*Canis latrans*), among others.

The agricultural land within the project area is dominated by rice fields, which are used by a variety of wildlife, depending on the geographic area and adjacent habitats. The flood irrigation of rice fields provides feeding and roosting sites for shorebirds, wading birds, waterfowl, and raptors, including great blue heron, various species of egret (*Egretta* spp.), and long-billed curlew (*Numenius americanus*). Amphibians such as Pacific tree frog (*Hyla regilla*) may breed in rice fields if water is present for a sufficient amount of time. Cropland agriculture provides foraging habitat for several bird species common to the Central Valley, including Brewer's blackbird (*Euphagus cyanocephalus*), mourning dove (*Zenaida macroura*), American crow (*Corvus brachyrhynchos*), and the non-native European starling (*Sturnus vulgaris*). Several mammal species likely occur in the agricultural lands, even though the lands are heavily disturbed, including house mouse (*Mus musculus*), deer mouse, California vole, and Botta's pocket gopher (*Thomomys bottae*).

Fremont cottonwood riparian woodland supports a number of aquatic and terrestrial species, including a number of amphibians and reptiles, such as common garter snake (*Thamnophis sirtalis*), western skink (*Eumeces skiltonianus*), and ringneck snake (*Diadophis punctatus*); it also supports birds, such as various species of warblers, northern flicker (*Colpates auratus*), downy woodpecker (*Picoides pubescens*), and flycatchers. Small mammals include various species of shrews, voles, bats, and mice. A number of raptor species may perch and nest in large riparian trees including great horned owl, red-tailed hawk, and American kestrel. Large trees within the riparian habitat may provide opportunities for cavity-dependant species, such as woodpeckers, bats, squirrels, and raccoons (*Procyon lotor*). Other species may use the riparian habitat for cover and dispersal, including striped skunk (*Mephitis mephitis*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), and American badger.

Freshwater marsh wetlands provides nesting habitat for several bird species, including waterfowl, red-winged blackbird (*Agelaius phoenicius*), American bittern (*Botaurus lentiginosus*), marsh wren (*Cistothorus palustris*), and song sparrow (*Melospiza melodia*). Many species of wildlife rely on freshwater marsh for their entire life cycle, including a number of amphibian and reptile species.

Seasonal wetlands provide foraging and breeding habitat for a variety of wildlife species. Because the pools in the study area are shallow, they do not hold water long enough for successful breeding by Pacific tree frog or western spadefoot toad (*Spea hammondi*). Insect larvae and invertebrate species that commonly occur in seasonal wetland systems include predacious diving beetles (Coleoptera: Dytiscidae), water scavenger beetles (Coleoptera: Hydrophilidae), back swimmers (Coleoptera: Notonectidae), and seed shrimp (Arthropoda: Ostracoda). Birds such as killdeer (*Charadrius vociferus*), greater yellowlegs (*Tringa melanoleuca*), and mallard may use seasonal wetlands for nesting and foraging in both winter and spring.

The wildlife value of the drainages within the study area ranges from high to low. Most of the drainages have high to moderate wildlife value because streamside vegetation provides cover and foraging habitat similar to the habitat described above for the freshwater marsh and riparian habitat. Amphibians, including Pacific tree frog and the non-native bullfrog, were observed in drainages during field surveys, and striped skunk, raccoon, and coyote may use drainages for foraging.

Special-Status Plants

A review of the CNDDDB, CNPS, and other existing information for the region resulted in the compilation of a list of special-status plant species that have been documented or potentially

occur in the project region (Table 5.5-2). Based on this analysis, three plant species were determined to have a moderate to high potential to occur in the project area based on their distribution, habitat and soils requirements, and previous documentation in the region. These species include round-leaved filaree (*California macrophylla*), woolly rose-mallow (*Hibiscus lasiocarpus*), and Sanford's arrowhead (*Sagittaria sanfordii*).

Special-Status Wildlife

During the reconnaissance-level surveys conducted within the project area, a number of special-status wildlife species were observed. However, as previously noted, no focused, protocol-level surveys were conducted for many of the species with potential to occur within or adjacent to the project area. The special-status wildlife species observed or detected during site visits include the following: northern harrier (*Circus cyaneus*), yellow warbler (*Dendroica petechia brewsteri*), white-tailed kite (*Elanus leucurus*), little willow flycatcher (*Empidonax traillii brewsteri*), and loggerhead shrike (*Lanius ludovicianus*). A review of the CNDDDB and other existing information for the region resulted in the compilation of a list of special-status wildlife species that have been documented as occurring, or that potentially occur, in the project region (Table 5.5-3). Based on this analysis, 11 wildlife species were determined to have a moderate to high potential to occur in the project area based on their distribution, habitat requirements, and previous documentation in the region. These species include the following: western pond turtle (*Actinemys marmorata*), western spadefoot toad, giant garter snake (*Thamnophis gigas*), tricolored blackbird (*Agelaius tricolour*), burrowing owl (*Athene cunicularia hypugaea*), Swainson's hawk (*Buteo swainsoni*), yellow-breasted chat (*Icteria virens*), American badger, vernal pool fairy shrimp (*Branchinecta lynchi*), valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), and vernal pool tadpole shrimp (*Lepidurus packardii*).

Table 5.5-2: Special-Status Plant Species Detected or Potentially Occurring in the Project Site or Vicinity

Scientific Name	Common Name	Status Federal/ State	CNPS	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range	Status Onsite or Potential to Occur
<i>Astragalus tener</i> var. <i>ferrisiae</i>	Ferris's milk vetch	—/—	1B.1	Meadows / annual herb/ March–June/ 5–75 meters	Low; no suitable habitat present in the project area.
<i>Atriplex cordulata</i>	Heartscale	—/—	1B.2	Occurs in shadscale scrub, valley grassland and wetlands/riparian in saline or alkaline soils / annual herb / April–October/ below 375 meters	Low; no suitable habitat present in the project area; however this species was recorded in CNDDDB approximately 3 miles north of project.
<i>Atriplex depressa</i>	Brittlescale	—/—	1B.2	Shadscale scrub, valley grassland, alkali sink, wetland-riparian, playas / annual herb / May–October/ below 320 meters	Low; no suitable habitat present in the project area; this species was documented in alkali grassland that occurs northwest of the project area during botanical surveys conducted for the PG&E Colusa Generating Station project and was recorded in CNDDDB approximately 2.5 miles north of project.
<i>Atriplex joaquiniana</i>	San Joaquin spearscale	—/—	1B.2	Shadscale shrub, valley grassland/ annual herb / April–October/ below 835 meters	Low; no suitable habitat present in the project area; however, this species was recorded in CNDDDB approximately 2 miles north of project.
<i>Atriplex persistens</i>	Vernal pool smallscale (or persistent-fruited saltscale)	—/—	1B.2	Dry beds of vernal pools on alkaline soils/ annual herb / June–October/ 10–115 meters	Low; no suitable habitat present in the project area; however, this species was recorded in CNDDDB approximately 0.7 mile north of project.
<i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i>	Big-scale balsamroot	—/—	1B.2	Valley grassland, open grassy slopes, valleys within serpentine soils/ perennial herb/ March–June/ 90–1,400 meters	Low; little or no suitable habitat and soil types are present. Project is outside of the elevation range of this species.
<i>California macrophylla</i>	Round-leaved filaree	—/—	1B.1	Valley grassland, foothill woodland / annual herb / March–May/ 15–1,200 meters	Moderate; potential habitat present in annual grasslands at the western end of the project area; this species was recorded in CNDDDB approximately 10 miles north of project.

Table 5.5-2 (Continued): Special-Status Plant Species Detected or Potentially Occurring on the Project Site or Vicinity

Scientific Name	Common Name	Status Federal/ State	CNPS	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range	Status Onsite or Potential to Occur
<i>Carex vulpinoidea</i>	Fox sedge	—/—	2.2	Freshwater marshes and swamps, riparian woodland /perennial herb / May–June/ 30–1,200 meters	Low; only a small amount of marginally suitable habitat is present.
<i>Centromadia parryi</i> ssp. <i>parryi</i>	Pappose tarplant	—/—	1B.2	Coastal prairie, meadows and seeps, coastal salt marshes and swamps, alkaline soils in vernal mesic valley and foothill grassland / annual herb/ June–November/ 2–420 meters	Low; only a small amount of marginally suitable habitat is present.
<i>Chamaesyce hooveri</i>	Hoover’s spurge	FT/–	1B.2	Vernal pools/ annual herb/ July–August// 25–250 meters/	Low; no large vernal pools are present in the project area.
<i>Cordylanthus palmatus</i>	Palmate-bracted bird’s-beak	FE/SE	1B.1	Shadscale scrub, valley grassland, wetland-riparian / annual herb / May–October/ 5–155 meters	Low; no suitable habitat present in the project area. Suitable habitat is present in alkali wetlands that occur west of the Colusa Generating Station; however, this species was not located during the 2006 and 2007 botanical surveys conducted for that project (URS Corporation 2007a). The species was recorded in CNDDDB approximately 2 miles south of project.
<i>Delphinium recurvatum</i>	Recurved larkspur	—/—	1B.2	Shadscale scrub, Valley grassland, foothill Woodland usually in wetlands/perennial herb/ spring/ 30-600 meters	Low; no suitable habitat present in the project area; however, this species was recorded in CNDDDB approximately 10 miles north of project. Project is outside of the elevation range of this species.
<i>Hibiscus lasiocarpus</i>	Woolly rose-mallow	—/—	2.2	Freshwater marshes along rivers and sloughs/ below 120 meters/ life form / June–September/ below 120 meters	Low to Moderate; occurs along Sacramento River east of the project area and was recorded in CNDDDB approximately 5 miles north of project.
<i>Lepidium latipes</i> var. <i>heckardii</i>	Heckard’s pepper-grass	—/—	1B.2	Valley grassland, wetland-riparian / annual herb/ March–May/ below 200 meters	Low; no alkali scalds present in project area; however this species was recorded in CNDDDB approximately 3 miles north of project.

Table 5.5-2 (Continued): Special-Status Plant Species Detected or Potentially Occurring on the Project Site or Vicinity

Scientific Name	Common Name	Status Federal/ State	CNPS	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range	Status Onsite or Potential to Occur
<i>Lupinus milo-bakeri</i>	Milo Baker's lupine	—/ST	1B.1	Disturbed foothill woodland, valley grassland / annual herb / June–September/ 395–430 meters	Low; no suitable habitat present in project area. Project is outside of the elevation range of this species.
<i>Myosurus minimus</i> ssp. <i>apus</i>	Little mousetail	—/—	3.1	Vernal pools / annual herb / March–June/ 20–640 meters	Low; known to occur in the project region (CPUC 2002); suitable habitat occurs north of the metering station but not within the project area.
<i>Navarretia leucocephala</i> ssp. <i>bakeri</i>	Baker's navarretia	—/—	1B.1	Meadows, vernal-pools / annual herb / May–July/ below 1,740 meters	Low; no suitable habitat present in the project area; however, this species was recorded in CNDDDB approximately 10 miles north of project.
<i>Neostapfia colusana</i>	Colusa grass	FT/SE	1B.1	Large deep vernal pools / annual grass/ May–August/ 5–200 meters	Low; no suitable deep basin vernal pool habitat is present in the project area; however, this species was recorded in CNDDDB approximately 3 miles north of project.
<i>Orcuttia pilosa</i>	Hairy Orcutt grass	FE/SE	1B.1	Vernal pools / annual herb / May–September/ 55–200 meters	Low; no suitable vernal pool habitat is present. This species was not located during the 2006 and 2007 botanical surveys conducted for the PG&E Colusa Generating Station Project (URS Corporation 2007a). The species was recorded in CNDDDB approximately 5 miles north of project.
<i>Sagittaria sanfordii</i>	Sanford's arrowhead	—/—	1B.2	Marshes, swamps, ponds, vernal pools and lakes, reservoirs, sloughs, ditches, canals, streams and rivers / perennial herb / May–June/ 3-610 meters	High; potential habitat present along drainages and canals that cross the gas pipeline alignment.
<i>Trichocoronis wrightii</i> var. <i>wrightii</i>	Wright's trichocoronis	—/—	2.1	Riparian, meadows, marsh, vernal-pools / annual herb / May–September/ 5–435 meters	Low; no suitable habitat present in the project area.
<i>Tropidocarpum capparideum</i>	Caper-fruited tropidocarpum	—/—	1B.1	Valley grassland/annual herb/ blooming period not recorded / <200 meters	Believed to be extinct. Was recorded in CNDDDB 10 miles north of the project.

Table 5.5-2 (Continued): Special-Status Plant Species Detected or Potentially Occurring on the Project Site or Vicinity

Scientific Name	Common Name	Status Federal/ State	CNPS	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range	Status Onsite or Potential to Occur
<i>Tuctoria greenei</i>	Greene's tuctoria	FE/SR	1B.1	Vernal pools / annual herb / May–September/ 30–1,070 meters	Low; suitable habitat may be present in vernal pools north of the proposed meter station. This species was not located during the 2006 and 2007 botanical surveys conducted for the PG&E Colusa Generating Station Project (ICF Jones & Stokes 2009).
<i>Wolffia brasiliensis</i>	Columbian watermeal	—/—	2.3	Wetland-riparian/ perennial herb / April–September/ 30–100 meters	Low; only a small amount of marginally suitable habitat is present.

Legend (Status updated October 6, 2009)

FE = Federally listed as endangered

FT = Federally listed as threatened

SE = State-listed as endangered

ST = State-listed as threatened

SR = State rare

CNPS (California Native Plant Society)

1A = Presumed extinct in California

1B = Rare or Endangered in California and elsewhere

2 = Rare or Endangered in California, more common elsewhere

3 = Plants for which we need more information - Review list

4 = Plants of limited distribution - Watch list

CNPS Code Extensions

.1 = Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)

.2 = Fairly endangered in California (20% to 80% of occurrences threatened)

.3 = Not very endangered in California (<20% of occurrences threatened or not current threats known)

Table 5.5-3: Sensitive Wildlife Species Detected or Potentially Occurring in Project Area

Scientific Name	Common Name	Status Federal/ State ¹	Primary Habitat Associations	Status Onsite or Potential to Occur
Amphibians and Reptiles				
<i>Actinemys marmorata</i>	Western pond turtle	None/ CSC	Slow-moving permanent or intermittent streams, ponds, small lakes, reservoirs with emergent basking sites; adjacent uplands used during winter.	High potential. Although the species has not been documented in the project area, suitable habitat is present in drainages that cross the pipeline corridor.
<i>Ambystoma californiense</i>	California tiger salamander	FT/Candidate SE, CSC	Lowland grassland and foothill woodlands. Requires long lasting rain pools for breeding; uses rodent burrows for adult cover and dormancy.	Low potential. Although suitable upland habitat is present in the western portion of the project area and a suitable breeding pond is located approximately 0.5 mile southwest of the metering station, this species has not been recorded north of Yolo County.
<i>Spea [=Scaphiopus] hammondi</i>	Western spadefoot	BLM/ CSC	Most common in grasslands, coastal sage scrub near rain pools or vernal pools; riparian habitats.	Moderate potential. Suitable habitat is present within the seasonal wetland areas north and south of the Delevan Compressor Station access road.
<i>Thamnophis gigas</i>	Giant garter snake	FT/ST	Marshes, meadows, sloughs, ponds, slow-moving water courses, canals where there is a prey base of small fish and amphibians. Also found in irrigation ditches and rice fields.	High potential. This species has been documented within the project region by CNDDDB, and suitable marsh and rice field habitat occurs within the project area.
Birds				
<i>Agelaius tricolor</i> (nesting colony)	Tricolored blackbird	BCC, BLM / CSC	Nests near fresh water, emergent wetland with cattails or tules; forages in grasslands, woodland, agriculture.	High Potential. This species has been documented within the project region by CNDDDB, and suitable marsh habitat occurs within the project area.
<i>Athene cunicularia</i> (burrow sites)	Burrowing owl	BCC, BLM/ CSC	Grassland, lowland scrub, agriculture, coastal dunes, and other artificial open areas.	High potential. This species has been documented within the project region by CNDDDB, and suitable grassland habitat occurs within the project area.

Table 5.5-3(Continued): Sensitive Wildlife Species Detected or Potentially Occurring in Project Area

Scientific Name	Common Name	Status Federal/ State ¹	Primary Habitat Associations	Status Onsite or Potential to Occur
<i>Buteo swainsoni</i> (nesting)	Swainson's hawk	BCC, FS / ST	Forages in open grassland, shrublands, and croplands. Nests in oaks or cottonwoods in or near riparian habitat.	High potential. Calls of this species were heard during surveys. This species has been documented within the project region by CNDDDB, and suitable nesting and foraging habitat occurs within the project area. Nesting has especially been documented along the I-5 corridor.
<i>Circus cyaneus</i> (nesting)	Northern harrier	None/ CSC	Open wetlands (nesting), pasture, old fields, dry uplands, grasslands, rangelands, and coastal sage scrub.	Observed during surveys of the project area. Suitable nesting and foraging habitat occurs within the project area. This species is assumed to be nesting.
<i>Coccyzus americanus occidentalis</i> (nesting)	Western yellow-billed cuckoo	FC, BCC, FS / SE	Dense, wide riparian woodlands and forest with well-developed understories.	Low potential. Although this species has been recorded by the CNDDDB for the Sacramento River, the patches of riparian habitat are not large enough to be suitable for nesting for this species.
<i>Dendroica petechia brewsteri</i> (nesting)	Yellow warbler	None/ CSC	Nests in lowland and foothill riparian woodlands dominated by cottonwoods, alders, and willows; winters in a variety of habitats.	Observed during surveys of the project area. Suitable nesting and foraging habitat occurs within the project area. This species is assumed to be nesting.
<i>Elanus leucurus</i> (nesting)	White-tailed kite	None/ P	Open grasslands, savanna-like habitats, agriculture, wetlands, oak woodlands, and riparian habitat.	Observed during surveys of the project area. Suitable nesting and foraging habitat occurs within the project area. This species is assumed to be nesting.
<i>Empidonax traillii brewsteri</i> (nesting)	Little willow flycatcher	FS / SE	Wet meadow and montane riparian habitats. Most often occurs in broad, open river valleys or large mountain meadows with shrubby willows. Central and Northern California north of the Santa Ynez River.	Observed during surveys of the project area. Suitable nesting and foraging habitat occurs within the project area. This species is assumed to be nesting.
<i>Icteria virens</i> (nesting)	Yellow-breasted chat	None/ CSC	Dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush.	High potential. Although not observed during the surveys, due to presence of other riparian bird species and the presence of suitable habitat within the project area, there is high potential for this species to occur.

Table 5.5-3 (Continued): Sensitive Wildlife Species Detected or Potentially Occurring in Project Area

Scientific Name	Common Name	Status Federal/ State ¹	Primary Habitat Associations	Status Onsite or Potential to Occur
<i>Lanius ludovicianus</i> (nesting)	Loggerhead shrike	BCC/ CSC	Open ground including grassland, coastal sage scrub, broken chaparral, agriculture, riparian, open woodland.	Observed during surveys of the project area. Suitable nesting and foraging habitat occurs within the project area. This species is assumed to be nesting.
<i>Pelecanus erythrorhynchos</i>	American white pelican (nesting colony)	None/CS C	Open water, coastal bays, and large inland lakes. Nests only in Klamath Basin. Uncommon to common on large lakes and estuaries in Central Valley and on the coastal slope from Sonoma County south. Migrant flocks pass overhead almost any month. Winters in Southern California.	Low potential to nest within the project area. Observed in flight over the project area; however there is no suitable nesting habitat within the area.
<i>Riparia riparia</i>	Bank swallow	None / ST	Nests in bluffs or banks, usually adjacent to water. Requires soil that is sand or sandy loam.	Low potential. Although this species is recorded by CNDDDB within the region, there is no suitable nesting bluffs within the project area.
Mammals				
<i>Antrozous pallidus</i>	Pallid bat	BLM, FS/ CSC	Rocky outcrops, cliffs, and crevices with access to open habitats for foraging.	Low potential. No suitable habitat is present for roosting or breeding. May forage over the project area.
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	BLM, FS/ CSC	Mesic habitats, gleans from brush or trees, or feeds along habitat edges. Requires caves, mines, tunnels, buildings, or other structures for roosting.	Low potential. No suitable habitat is present for roosting or breeding. May forage over the project area.
<i>Lasiurus blossevillii</i>	Western red bat	FS/ CSC	Roosts primarily in woodlands and forests 2–40 feet aboveground, from sea level up through mixed conifer forests.	Low potential. No suitable habitat is present for roosting or breeding. May forage over the project area.
<i>Taxidea taxus</i>	American badger	None/ CSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.	Moderate potential. Suitable grassland habitat occurs within the project area near the proposed metering station.

Table 5.5-3 (Continued): Sensitive Wildlife Species Detected or Potentially Occurring in Project Area

Scientific Name	Common Name	Status Federal/ State ¹	Primary Habitat Associations	Status Onsite or Potential to Occur
Invertebrates				
<i>Branchinecta conservatio</i>	Conservancy fairy shrimp	FE/None	Vernal pools; large deep pools in annual grasslands.	Low potential. Seasonal wetlands are present within the project area; however, they are not composed of large deep pools. This species has been documented within the project region by CNDDDB.
<i>Branchinecta lynchi</i>	Vernal pool fairy shrimp	FT/ None	Vernal pools; cool-water pools with low to moderate dissolved solids.	Moderate potential. Seasonal wetlands are present within the project area. This species has not been documented within the project region by CNDDDB.
<i>Desmocerus californicus dimorphus</i>	Valley elderberry longhorn beetle	FT/None	Riparian habitat and adjacent uplands. Completely dependent on host plant elderberry. Current range includes the length of the Central Valley from Redding to Bakersfield.	High potential. Two elderberry shrubs were located during the 2008 surveys by ICF Jones and Stokes. This species has been documented within the project region by CNDDDB.
<i>Lepidurus packardii</i>	Vernal pool tadpole shrimp	FE/None	Vernal pools and ephemeral stock ponds.	Moderate potential. Seasonal wetlands are present within the project area. This species has been documented within the project region by CNDDDB.

¹ The federal and state status of species is primarily based on the Special Animals List (July 2009), California Department of Fish and Game.

Federal Designations:

BCC = Fish and Wildlife Service: Birds of Conservation Concern
 BLM = Bureau of Land Management Sensitive Species
 FC = Candidate for federal listing as threatened or endangered
 FE = Federally listed Endangered
 FS = Forest Service Region 5 Sensitive Species
 FT = Federally listed as Threatened

Other:

AFS E = American Fisheries Society Endangered classification
 Aud = Audubon Society Watch list
 WBWG = Western Bat Working Group High Priority species

SOURCE: ICF Jones & Stokes 2009.

State Designations:

CDF = California Department of Forestry and Fire Protection Sensitive Species
 CSC = California Species of Special Concern
 P = California Department of Fish and Game Protected and Fully Protected Species
 SE = State-listed as Endangered
 ST = State-listed as Threatened
 WL = California Department of Fish and Game Watch List

5.5.2 Regulatory Setting

Federal

Clean Water Act

The ACOE and the EPA have jurisdiction over “waters of the United States.” Waters of the U.S. are generally classified as Wetlands, Navigable Water, or Other Waters and include marine waters, tidal areas, stream channels, and associated wetlands.¹ Under federal regulations, wetlands are defined as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.”

Policies regulating the loss of wetlands generally stress the need to compensate for wetland acreage losses by creating wetlands from non-wetland habitat on at least an acre-for-acre basis. Projects that cause the discharge of dredged or fill materials in waters of the U.S. require permitting by the ACOE. Actions affecting small areas of jurisdictional Waters may qualify for a Nationwide Permit, provided conditions of the permit are met (such as avoiding impacts to threatened or endangered species or to important cultural sites). Projects that do not meet the Nationwide Permit conditions or projects that disturb a larger area require an Individual Permit. The process for obtaining an Individual Permit requires a detailed alternatives analysis and development of a comprehensive mitigation/monitoring plan.

Endangered Species Act

The federal Endangered Species Act (ESA) provides legislation to protect federally listed plant and animal species. Section 7 of the ESA requires that all federal agencies must, in consultation with the USFWS or NMFS, ensure that the lead agency’s actions do not jeopardize the continued existence of a listed species, or destroy or adversely modify the listed species’ “critical habitat.” Section 9 prohibits the take of any fish or wildlife species listed under the ESA as endangered. Take of threatened species also is prohibited under Section 9 unless otherwise authorized by federal regulations. *Take*, as defined by the ESA, means “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” *Harm* is defined as “any act that kills or injures the species, including significant habitat modification.” Section 9 also prohibits removing, digging up, cutting, and maliciously damaging or destroying federally listed plants on sites under federal jurisdiction. Section 10 of the ESA describes the process by which take permits are issued by USFWS/NMFS for take of listed species incidental to an otherwise lawful activity.

¹ Visit the following website for further specification regarding non-navigable (i.e., wetlands) waters that are classified as “waters of the U.S.”:

http://www.epa.gov/owow/wetlands/pdf/CWA_Jurisdiction_Following_Rapanos120208.pdf.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) makes it unlawful to take (kill, harm, harass, shoot, etc.) any migratory bird listed in 50 Code of Federal Regulations 10, including their nests, eggs, or young. Migratory birds include geese, ducks, shorebirds, raptors, songbirds, and seabirds.

State

California Endangered Species Act

The California Endangered Species Act (CESA) provides legal protection for plants or wildlife species listed as rare, threatened, or endangered. The act prohibits the take of endangered and threatened species; however, habitat destruction is not included in the state's definition of take. Under CESA, *take* is defined as an activity that would directly or indirectly kill an individual of a species, but the definition does not include harm or harass. CESA Section 2090 requires state agencies to comply with endangered species protection and recovery and to promote conservation of these species. CDFG administers the act and authorizes take through Section 2081 agreements, except for species designated as fully protected.

The CCR Title 14 Section 670.5 lists animal species considered endangered or threatened by the state, and the CDFG maintains lists of plant and animal species designated endangered, threatened, and rare. The CDFG also maintains a list of "Species of Special Concern" based on limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational, or educational value. The CDFG is empowered by state law to review projects for their potential to impact state-listed species and Species of Special Concern, as well as their habitats.

California Department of Fish and Game Code

The Fish and Game Code governs state-designated wetlands, including riparian and stream habitat and mandates that mitigation be implemented to replace wetland extent and value lost to development. Sections 1600–1607 of the CFGC regulates activities that would affect rivers, streams, or lakes by altering the flow, substantially change or use any materials from the bed, channel or bank of any river, stream or lake, or disposing of debris. Activities that affect these areas, as well as associated riparian habitats, would require a Streambed Alteration Permit from the CFGC. Section 3503 of the CFGC prohibits impacts to actively nesting birds, their nests, or their eggs. Section 3503.5 prohibits killing of raptor species and destruction of raptor nests.

The Fish and Game Code provides protection from take for a variety of species, referred to as *fully protected species*. CFGC Section 3511 lists fully protected birds and prohibits take of these species. The code defines *take* as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Except for take related to scientific research, all take of fully protected species is prohibited.

Porter-Cologne Water Quality Control Act and Section 401 of the Clean Water Act

California's Regional Water Quality Control Board (RWQCB) administers both the Porter-Cologne Water Quality Control Act and Section 401 of the CWA. The Porter-Cologne Water Quality Control Act, California Water Code Section 13260, requires that "any person discharging waste, or proposing to discharge waste, within any region that could affect the 'waters of the State' to file a report of discharge" with the RWQCB. Waters of the state as defined in the

Porter-Cologne Act (Water Code Section 13050 [e]) are “any surface water or groundwater, including saline waters, within the boundaries of the state.”

According to the RWQCB, waters of the state include but are not limited to rivers, streams, lakes, bays, marshes, mudflats, unvegetated seasonally ponded areas, drainage swales, sloughs, wet meadows, natural ponds, vernal pools, diked bay lands, seasonal wetlands, and riparian woodlands pursuant to Section 401 of the CWA. The RWQCB has also claimed jurisdiction and exercised discretionary authority over “isolated waters.”

Local

Colusa County General Plan

The Colusa County General Plan (Colusa County 1989) contains policies in the Resource Conservation (CO) and Open Space and Recreation (OS) Elements that apply to biological resources. The following policies are relevant to the proposed project.

Conservation (Wildlife and Habitat Policies)

CO-20: Protection of Resource Conservation Areas may at times conflict with agricultural and recreation management practices on adjoining lands. Such conflicts should be resolved on a case by case basis in a manner which recognizes the public interests in both habitat resource protection and the sound management of agricultural and recreational resources.

CO-21: Land uses within Resource Conservation Areas shall be regulated only to the degree necessary to achieve protection of the resource. Very low density single family residences, low intensity recreation uses, and agricultural uses may be permitted to the extent that critical habitats are not disrupted.

Open Space and Recreation (Natural Resource Preservation Policies)

OS-6: The National Wildlife Refuges in Colusa County should remain in their present use. Efforts to improve the conditions of the refuges for wildlife should be supported.

5.5.3 Environmental impacts

Significance Criteria

Appendix G of the CEQA Guidelines provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on biological resources if the proposed project would:

- a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.
- b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.
- c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

- d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- f) Conflict with the provisions of an adopted Habitat Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Impact Discussion

- a) **Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?**

Construction

Compressor Station, Remote Well Pad Sites, Observation Wells, and Saltwater Disposal Well

Construction of the proposed compressor station, remote well pad site, observation wells, and saltwater disposal well would occur on open agricultural fields in the eastern end of the project area. Specifically, construction activities would result in the permanent removal of approximately 3.13 acres of non-wetland rice fields (remote well pad site and associated access road) and approximately 9.32 acres of rotational rice fields (compressor station). Because they are not aquatic in nature (i.e., not flooded but drained and left as fallow), the removal of the rotational rice field is not considered to be suitable habitat for giant garter snake. Therefore, no significant impacts on this state- and federally listed species are expected to occur as a result of construction of the compressor station. However, the loss of 3.13 acres of the flooded, non-wetland (i.e., not considered a “wetland” subject to ACOE jurisdiction) rice field is considered a loss of suitable giant garter snake habitat due to the aquatic nature of this habitat. Construction activities within suitable habitat also have the potential to cause direct injury or mortality to any individual snakes inhabiting these fields during construction. Indirectly, boring activities could create vibrations that disturb snakes, which hear primarily by detecting vibrations on the ground. The distance that giant garter snakes can detect vibrations is unknown, as is the magnitude of vibrations that might result in disturbance to foraging, hibernating, or breeding activities. These potential direct and indirect effects on giant garter snake as a result of the permanent loss of flooded rice fields are collectively considered a significant impact on this species.

To minimize the potential for direct and indirect effects on giant garter snake, the applicant will implement APMs BIO-1, BIO-2, BIO-3, BIO-6, BIO-12, and BIO-13. The intent of each APM is summarized here:

- **BIO-1:** Develop and implement a worker environmental awareness program.
- **BIO-2:** Obtain and comply with state, federal, and local permits.
- **BIO-3:** Install temporary construction barrier fencing to protect sensitive resources adjacent to the construction zone.
- **BIO-4:** Minimize potential for the long-term loss of woody riparian vegetation.

- **BIO-5:** Compensate for any loss of woody riparian vegetation at a ratio of 2:1.
- **BIO-6:** Avoid and minimize disturbance of waters of the U.S., including wetlands.
- **BIO-7:** Conduct preconstruction surveys for active burrowing owl burrows and implement the CDFG guidelines for burrowing owl mitigation, if necessary.
- **BIO-8:** Avoid disturbance of tree-, shrub-, or ground-nesting white-tailed kite, northern harrier, loggerhead shrike, and non-special-status migratory birds and raptors.
- **BIO-9:** Establish a minimum 20-foot-wide buffer around all elderberry shrubs prior to construction in the area around the shrub.
- **BIO-10:** Conduct preconstruction surveys for Swainson's hawk nests and implement appropriate restrictions.
- **BIO-11:** Conduct a preconstruction survey for western pond turtles and implement measures to avoid impacts.
- **BIO-12:** Implement avoidance and minimization measures during construction activities in giant garter snake habitat.
- **BIO-13:** Compensate for the temporary disturbance of giant garter snake habitat.
- **BIO-14:** Implement avoidance and minimization measures during construction activities near vernal pool fairy shrimp and vernal pool tadpole shrimp habitat.

Implementation of these measures, along with Mitigation Measure BIO-1, will reduce potentially significant impacts to a less-than-significant level. The applicant will also prepare a Biological Assessment that addresses direct, indirect, and cumulative effects on this federally listed species. The Biological Assessment will be submitted to the ACOE (federal lead agency) to support consultation between the ACOE and the USFWS pursuant to Section 7 of the federal ESA

Mitigation Measure BIO-1: Central Valley will implement all conditions and measures stipulated within the Biological Opinion to be issued by the USFWS at the conclusion of the Section 7 consultation with the ACOE to minimize and/or avoid take and direct and indirect impacts on giant garter snake. A copy of the final Biological Opinion shall be submitted to the CPUC prior to any construction that would impact giant garter snakes or habitat potentially supporting this species, as evidence of the commitment by Central Valley to implement all conditions and measures contained therein.

Construction of the compressor station, remote well pad sites, observation wells, and saltwater disposal well could also result in the disturbance of known nest sites and suitable nesting habitat for Swainson's hawk and white-tailed kite nesting along and adjacent to the Sacramento River to the east of these sites. Noise associated with construction activities could result in the disturbance of active nests of these special-status raptor species if these activities occur during the breeding season (generally between February 15 and August 15) and nests are present within or adjacent to the construction area. These disturbances could cause nest abandonment and associated death of young or loss of reproductive potential at active nests located in or near the project area. Such effects, if they would occur, would be considered a significant impact on these species.

Implementation of APMs BIO-1, BIO-2, BIO-3, and BIO-10 will minimize the potential of direct or indirect impacts to active nests of these species such that resultant impacts would be less than significant.

Metering Station

Construction of the metering station and associated access road, as well as the PG&E interconnect would occur on non-native grassland in the western end of the project area. The metering station and access road would result in permanent impacts to approximately 1 acre of non-native grassland habitat. A temporary loss of approximately 10.2 acres of non-native grasslands is expected to occur associated with the 10-acre staging area and the 0.2-acre metering station work area. The grasslands at the metering station site are heavily disturbed as a result of ongoing construction associated with the PG&E Colusa Generating Station, which has reduced the quality of the habitat for wildlife. However, despite the low habitat value and surrounding facilities, western burrowing owls are known to occur in the grasslands surrounding the proposed metering station site. Although not observed during various botanical surveys conducted at the site, the grasslands could also potentially support populations of round-leaved filaree. If any burrowing owls are breeding prior to construction activities associated with the metering station or PG&E interconnect, active burrows of this special-status raptor could be disturbed or destroyed. In addition, populations of round-leaved filaree could also be disturbed or destroyed. Any such effects on active owl burrows or populations of round-leaved filaree as a result of these construction activities would be considered a significant impact on these special-status species.

Implementation of APMs BIO-1, BIO- 3, and BIO-7 will minimize the potential of direct or indirect impacts to these species such that resultant impacts would be less than significant.

Currently, the proposed metering station site and access road avoids direct effects on vernal pool fairy shrimp and vernal pool tadpole shrimp habitat. However, construction activities in the annual grasslands west of the Glenn-Colusa Canal associated with the metering station could result in unanticipated disturbances on seasonal wetland habitat for these two shrimp species from vehicle or equipment traffic at or near the site during construction activities. Potential impacts on these species and associated habitat would be considered significant.

Implementation of APMs BIO-1, BIO- 3, BIO-6, and BIO-14 will minimize the potential of direct or indirect impacts to these invertebrate species such that resultant impacts would be less than significant, and the potential for direct or indirect take of these federally listed species will be avoided.

Connecting Pipelines

Construction of the gas connecting pipelines would occur within a variety of biological communities, including riparian woodland, freshwater marsh, drainages, rice fields, seasonal wetlands, and horticultural plantings. In particular, construction of the gas pipeline component of the project will result in the temporary loss of approximately 30.43 acres of rice field wetlands and 123.89 acres of flooded rice fields (non-wetland), which are considered suitable habitat for the state- and federally listed giant garter snake. The areas temporarily disturbed as a result of installation of the pipelines will eventually be restored as rice field wetlands and/or rice fields, and no permanent loss of these rice fields is anticipated. Construction activities, even if temporary, also have the potential to cause direct injury or mortality to any individual snakes inhabiting these fields during the time of construction. Indirectly, boring activities could create vibrations that disturb snakes, which hear primarily by detecting vibrations on the ground. These potential direct and indirect

effects on giant garter snake, although temporary in nature, are collectively considered a significant impact on this species. In addition, because of its status as a state- and federally listed species, any harm or loss of individuals or populations of giant garter snake would be subject to regulatory jurisdiction of the CESA and ESA.

To minimize the potential for direct and indirect effects on giant garter snake, the applicant will implement APMs BIO-1, BIO-2, BIO-3, BIO-6, BIO-12, and BIO-13. Implementation of these measures, along with Mitigation Measure BIO-1, will reduce potentially significant impacts on this species to a less-than-significant level. The applicant will also prepare a Biological Assessment that addresses direct, indirect, and cumulative effects on this state and federally listed species. The Biological Assessment will be submitted to the ACOE (federal lead agency) to support consultation between the ACOE and the USFWS pursuant to Section 7 of the ESA.

Construction activities associated with the gas pipelines can also result in the disturbance or loss of active nests of several special-status bird species including yellow warbler, white-tailed kite, Swainson's hawk, little willow flycatcher, yellow-breasted chat, loggerhead shrike, northern harrier, western burrowing owl (west of the Glenn-Colusa Canal), and tricolored blackbird. Construction activities that would adversely affect active nests of any of these species would be considered a significant impact. In addition, loss of active nests of special-status bird species, as well as most common, native bird species would be considered a violation of the MBTA and certain stipulations of the California Fish and Game Code.

Several of the habitats to be temporarily impacted by pipeline trenching and construction are also suitable for western pond turtle, Sanfords's arrowhead, and valley elderberry longhorn beetle (VELB). Construction activities that would result in the harm or destruction of individuals or populations of these species would be considered a significant impact. In addition, because of its status as a federally listed species, any harm or loss of individuals or populations of VELB would be subject to regulatory jurisdiction of the ESA. Possible indirect effects on elderberry shrubs that occur within 100 feet of gas pipeline construction activities include dust accumulation on elderberry shrubs from pipeline ground-disturbing activities, changes in hydrology around elderberry shrubs, and removal of associated woodland species. These activities could result in the subsequent destruction of elderberry shrubs and the loss of VELB habitat and would therefore represent a significant impact on this species.

Currently, the applicant is proposing to avoid drainages that support woody riparian vegetation, particularly elderberry shrubs, by boring underneath the drainage and associated riparian corridor (as described in Section 4.4.3.3). However, if it is ultimately determined that some of these bores are not feasible, woody riparian vegetation (including elderberry shrubs) may be removed or disturbed during construction of the pipeline. As noted above, construction activities that would result in the harm or destruction of individuals or populations of western pond turtle, Sanford's arrowhead, and VELB that could be associated with this vegetation removal would be considered a significant impact.

Lastly, horticultural plantings (e.g., eucalyptus trees) located along roads and fences within the proposed pipeline corridor provide nesting opportunities for special-status raptors, including Swainson's hawk and white-tailed kite. Any disturbance or destruction of active nests of these species would be considered a significant impact.

Implementation of APMs BIO-1 through BIO-3, BIO-6, BIO-12, and BIO-13, along with Mitigation Measure BIO-2, will reduce the above potentially significant impacts on these special-status species to a less-than-significant level.

Mitigation Measure BIO-2: Central Valley will implement all conditions and measures stipulated within the Biological Opinion to be issued by the USFWS at the conclusion of the Section 7 consultation with the ACOE to minimize and/or avoid take and direct and indirect impacts on VELB. A copy of the final Biological Opinion shall be submitted to the CPUC prior to any construction that would impact VELB or habitat potentially supporting this species as evidence of the commitment by Central Valley to implement all conditions and measures contained therein.

Potential direct and indirect effects on VELB will also be addressed in the Biological Assessment to be prepared by the applicant that will be submitted to the ACOE (federal lead agency) to support consultation between the ACOE and the USFWS, pursuant to Section 7 of the ESA.

Operation and Maintenance

Operation and maintenance of the proposed connecting pipelines and associated compressor station, remote well pads, observation wells, saltwater disposal well, and metering station, is expected to result in limited disturbance to existing special-status resources within or adjacent to these project features. Proposed operation and maintenance activities are expected to result in disturbances that are similar to current residential, farming, maintenance, and traffic activities in the project area. Consequently, operation and maintenance activities would not result in significant impacts to any special-status plant or wildlife species.

- b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?**

Table 5.5-4, quantifies the acreage of temporary and permanent impacts on vegetation communities resulting from construction and operation of the proposed project.

Table 5.5-4: Summary of Acreage Impacts on Natural Communities		
Biological Community	Summary of Acreages	
	Acreage of Temporary Impact	Acreage of Permanent Impact
Non-native annual grassland	15.59	1.00
Agricultural land:		
Flooded rice field (non-wetland)	123.89	3.13
Flooded rice field (wetland)	30.43	0.00
Rotational rice field	0.00	9.32
Row crop	7.18	0.00
Orchard	4.46	0.10
Fallow	9.20	0.06
Fremont cotton riparian woodland	0.00	0.00
Freshwater marsh	1.62	0.00

Table 5.5-4 (Continued): Summary of Acreage Impacts on Natural Communities

Biological Community	Summary of Acreages	
	Acreage of Temporary Impact	Acreage of Permanent Impact
Seasonal wetland	0.00	0.00
Drainage:		
Non-wetland	1.25	0.00
Wetland	0.57	0.00
Horticultural plantings	0.00	0.00

SOURCE: Bushnell-Bergfalk 2010

Construction

Compressor Station, Remote Well Pad Site, Observation Wells, and Saltwater Disposal Well

Construction of the compressor station and remote well pad sites (including the new access road to the pad sites) would result in permanent impacts to approximately 3.13 acres of flooded rice field (non-wetland) and 9.32 acres of rotational rice field. The construction of the observation wells (including the associated new access road) and saltwater disposal well would result in permanent impacts to approximately 0.10 acre of orchard and 0.06 acre of fallow fields. Agricultural lands (including non-wetland rice fields, orchards, and fallow fields) in and of themselves are not considered a sensitive natural community by CDFG, USFWS, local/regional agencies, or by any resource plan or policy. Therefore, no significant impacts on sensitive natural communities would occur as a result of construction of the compressor station, remote well pad, and observation and saltwater well sites. The potential impacts on giant garter snake as a result of impacts to flooded rice fields are discussed in Section 5.5.3 (a).

Metering Station

Construction of the metering station and associated access road would result in permanent impacts to approximately 1.00 acre of non-native annual grassland. Project-related construction associated with the metering station would also result in temporary impacts on non-native annual grasslands, which include the 0.2-acre workspace for the metering station and the approximate 10-acre staging area proposed to be located adjacent to the metering station. Non-native annual grasslands in and of themselves are not considered a sensitive natural community by CDFG, USFWS, local/regional agencies, or by any resource plan or policy. Therefore, no significant impacts on sensitive natural communities would occur as a result of construction of the metering station and adjacent staging area. The potential impacts on burrowing owl and other special-status species as a result of disturbance to non-native grasslands are discussed in Section 5.5.3 (a).

Connecting Pipelines

Construction of the connecting pipelines is expected to result in temporary impacts to approximately 123.89 acres of flooded rice fields (non-wetland), 30.43 acres of wetland rice fields, 7.18 acres of row crops, 4.46 acres of orchards, and 9.20 acres of fallow fields. As discussed above, agricultural lands in and of themselves are not considered sensitive natural communities by CDFG, USFWS, local/regional agencies, or by any resource plan or policy. Therefore, the temporary loss of these agricultural lands is not considered a

significant impact on a sensitive natural community. The potential impacts on special-status species as a result of disturbance to these agricultural lands are discussed in Section 5.5.3 (a). The temporary loss of 30.43 acres of rice field wetlands is subject to ACOE jurisdiction and is discussed in Section 5.5.3 (c). Temporary impacts on approximately 5.39 acres of non-native grassland will occur associated with construction of the gas pipeline west of the Glenn-Colusa Canal. From a vegetation perspective, this impact is not considered significant for the reasons stated above.

While the connecting pipelines would cross several drainages, some of which support riparian vegetation, the applicant is proposing to avoid drainages that support riparian vegetation by boring underneath the drainage and associated riparian corridor (as described in Section 4.4.3.3). However, if it is ultimately determined that some of these bores are not feasible, riparian vegetation may be removed or disturbed during construction of the connecting pipelines. Because riparian vegetation is considered a sensitive natural community by CDFG, the loss of, or disturbance to riparian vegetation as a result of construction of the pipeline would be considered a significant impact on a sensitive natural community. Implementation of APMs BIO-1 through BIO-5 will reduce this potentially significant impact to a less-than-significant level.

Operation and Maintenance

Operation and maintenance of the proposed connecting pipelines and associated compressor station, remote well pad site, observation wells, saltwater disposal well, and metering station is expected to result in limited disturbance to existing vegetation communities. Potential impacts would include vehicular traffic and possibly well drilling and reworking activities. However, these activities are expected to result in minimal disturbances that are similar to current residential, farming, maintenance, and traffic activities in the project area. Consequently, operation and maintenance activities would not result in significant impacts to any sensitive natural communities.

- c.) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?**

Table 5.5-5 quantifies the approximate acreage of temporary and permanent impacts on waters of the U.S. resulting from construction and operation of the proposed project.

Table 5.5-5: Summary of Impacts on Waters of the United States			
Biological Community	Type of Waters of the U.S.	Acreage of Temporary Impact	Acreage of Permanent Impact
Non-wetland drainage	Other waters	1.25	None
Wetland drainage	Wetland	0.57	None
Freshwater marsh	Wetland	1.62	None
Seasonal wetland	Wetland	None	None
Flooded rice field (wetland)	Wetland	30.43	None

SOURCE: Bushnell-Bergfalk 2010

Construction

Compressor Station, Remote Well Pad Site, Observation Wells, Saltwater Disposal Well, and Metering Station

No wetlands or other waters of the U.S. were determined to be currently occurring within these project areas; therefore, no temporary or permanent impacts to wetlands or other waters of the U.S., as defined by the ACOE pursuant to Section 404 of the Clean Water Act, are expected to occur as a result of construction in these proposed areas (ICF Jones & Stokes 2010a). While approximately 3.13 acres of flooded rice fields will be permanently affected by construction of the remote well pad and associated access road, these fields, if drained or no longer flooded, would not revert back to a natural wetland condition (primarily due to present soil conditions and a low water table in these areas) and were, therefore, determined not to be wetlands subject to ACOE jurisdiction (ICF Jones & Stokes 2010a). Therefore, no significant impacts on federally protected wetlands will occur as a result of these project components.

Connecting Pipelines

Construction of the gas connecting pipelines of the project is expected to result in temporary impacts on 1.25 acres of non-wetland drainage and 0.57 acre of wetland drainage. Construction of the gas connecting pipelines would also result in temporary impacts on approximately 30.43 acres of rice field wetlands and 1.62 acres of freshwater marsh associated with pipeline alignment trenching. While a final determination has not yet been made by the ACOE as to jurisdiction of these wetlands pursuant to the federal Clean Water Act, for the purposes of this analysis, it is assumed that the areas delineated in the recent delineation of wetlands and other water bodies (ICF Jones & Stokes 2010a), including rice field wetlands, are under federal jurisdiction. No permanent impacts on waters of the U.S. are anticipated as part of the connecting pipelines because the pipelines would be buried approximately 5 feet below ground surface, and the construction corridor will be restored to preconstruction conditions. The impact associated with trenching through waters of the U.S. is considered temporary because construction activities would be relatively short in duration, and construction activities would not substantially alter surface or subsurface wetland hydrologic functions. In addition, topsoil will be replaced immediately after construction and installation of the buried pipelines to allow wetland areas to re-establish. With implementation of APM AGRI-2 (see Section 4.8.2), natural landscape or agricultural field contours will also be restored to pre-project conditions.

Because of the sensitive nature of wetlands and other waters of the U.S., the temporary loss of wetland and non-wetland drainage, freshwater marsh, and rice field wetlands as a result of pipeline construction is considered a significant impact. APMs BIO-1 through BIO-3 and BIO-6, along with Mitigation Measure BIO-3, will be implemented to ensure impacts on waters of the U.S. are less than significant. In addition, the applicant would also be required to mitigate for temporary effects on aquatic habitat for giant garter snake, which would include wetland and non-wetland drainages and rice field wetlands. This impact and applicable APMs are discussed in Section 5.5.3 (a). Because on-site wetland resources are also under the jurisdiction of the Clean Water Act, a permit pursuant to Section 404 of this act for fill of jurisdictional wetlands will also need to be obtained from the ACOE.

Mitigation Measure BIO-3: Central Valley shall submit documentation of Section 404 wetland fill authorization to the CPUC prior to the start of construction. All conditions, stipulations, and measures to avoid, minimize, and/or mitigate for impacts to wetlands and other waters of the U.S. described and contained within the authorized permit shall be implemented by Central Valley, as approved by the CPUC. Documentation verifying the approved ACOE fill permit and associated conditions shall be presented to the CPUC prior to any project construction that would impact wetlands and other waters of the U.S. as evidence of the commitment by Central Valley to implement all conditions and measures contained therein.

Operation and Maintenance

Operation and maintenance of the proposed connecting pipelines and associated compressor station, remote well pad site, observation wells, saltwater disposal well, and metering station is expected to result in limited disturbance to existing vegetation communities. Potential impacts would include vehicular traffic and possibly well drilling and reworking activities. However, these activities are expected to result in minimal disturbances that are similar to current residential, farming, maintenance, and traffic activities in the project area. Operation and maintenance activities would not result in significant impacts to any protected wetlands.

- d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?**

Construction

Because construction of the compressor station, remote well pad site, observation wells, saltwater disposal well, and metering station would result in minimal alterations to existing habitats and would encompass a relatively small development footprint that would not substantially block movement between existing open space areas in the project vicinity, animals that currently utilize these areas are expected to continue to move through the landscape after construction has been completed. Because the connecting pipelines would be underground, no blockage of wildlife movement will occur. Creeks, drainages, and ditches that often serve as movement corridors for various wildlife species in the project area would only be temporarily affected during the construction phase of the proposed project as noise, vibrations, and human presence associated with construction activities is expected to cause terrestrial wildlife species to avoid movements in the vicinity of these activities only during construction periods. However, exposed pipeline trenches or bores could trap small mammals, amphibians, or reptiles moving through the area. Nocturnal animals would be particularly vulnerable to falling into the exposed trenches. If animals cannot escape from the trench or bore, the risk of exposure to predators or the lack of food and cover could result in mortality. This temporary barrier represents a potentially significant impact to movement of terrestrial wildlife species in the project vicinity. Implementation of Mitigation Measure BIO-4 will reduce this impact to less-than-significant levels.

Mitigation Measure BIO-4: In order to prevent potential impacts to wildlife that may fall into open construction trenches associated with the connecting pipelines, the trenches shall be either covered with plywood, tarps, metal plates or some other similar material,

with the edges covered by soil, on a daily basis or will be backfilled on a daily basis. If the trenches are to be left open, escape ramps will be constructed at no more than 1,000-foot intervals along the sidewalls of the trench with at least one ramp placed at either end of the trench. The escape ramps must be at a 2:1 slope or less and may be constructed of any material (e.g., soil, wooden boards) so long as the ramps are placed immediately adjacent to a sidewall. Escape ramps shall also be placed within any bore pits that will remain open during construction activities. The spacing and design of the ramps shall consider the location and dimension of the bore pits and shall be at the discretion of the monitoring biologist.

In addition to installing escape ramps, the full-time biological monitor that will be on site during all construction activities will conduct regular surveys of all open pits and trenches, beginning in the morning prior to construction activities and throughout the day, in search of any wildlife that may have fallen into the bore pits or open trenches. Any animals observed in the pits or trenches will be guided up available escape ramps or will be captured and moved out of the construction area. This survey effort will be documented by the biologist in the daily log and reported to the CPUC at the end of the week. If a state-listed or federally listed species (such as giant garter snake) requires removal from the bore pit or trench, this handling effort will be subject to the conditions of the Biological Opinion.

Operation and Maintenance

Operation and maintenance of the proposed connecting pipelines and associated compressor station, remote well pad site, observation wells, saltwater disposal well, and metering station, is expected to result in limited disturbance on home range and dispersal movements of native wildlife using on-site habitats. Potential impacts would include vehicular traffic and possibly well drilling and reworking activities. However, these activities are expected to result in minimal disturbances because they are similar to current residential, farming, maintenance, and traffic activities in the project area. Those species that currently move through the site are likely to do so following construction and during operation and maintenance activities. Operation and maintenance activities would not result in significant impacts to wildlife movement or established movement corridors or nursery sites.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The proposed project would not conflict with Colusa County policies or ordinances protecting biological resources. Within the Colusa County Conservation Element, only Policies CO-20 and CO-21 (Wildlife and Habitat Policies) are applicable to the protection of biological resources within the county. However, CO-20 and CO-21 involve the protection of Resource Conservation Areas and are thus not applicable to the proposed project because the project would not be located in a Resource Conservation Area. No other policies protecting biological resources were identified in the Colusa County General Plan. Therefore, the project would not conflict with local policies or ordinances protecting biological resources, and no impacts would occur.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

None of the project components are located on lands covered by an approved habitat conservation plan or natural community conservation plan. Therefore, no impacts would occur.

5.6 CULTURAL RESOURCES

<i>Would the project:</i>	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) <i>Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) <i>Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) <i>Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) <i>Disturb any human remains, including those interred outside of formal cemeteries?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

5.6.1 Environmental Setting

Information for the proposed project compiled in the following section was gathered from a review of Central Valley's PEA (ICF Jones & Stokes 2009), cultural resources inventory technical report (ICF Jones & Stokes 2010b), and Native American consultations conducted by Central Valley, as well as the following project area studies:

- Historic Properties Survey Report/Finding of Effect for the Wild Goose Storage, Inc. Gas Storage Facilities Expansion Project (Basin Research Associates 2003)—includes the majority of the alignment (the east–west-trending segment of the 14.7-mile gas connecting pipeline)
- Cultural Resources Monitoring Closure Report for the Wild Goose Storage, Inc. Gas Storage Facilities Expansion Project (Basin Research Associates 2003)—includes the majority of the alignment (the east–west-trending segment of the 14.7-mile gas connecting pipeline)
- Colusa Generation Station Cultural Resources Section Application for Certification (URS Corporation 2006)—includes the portion of the proposed alignment between the PG&E Delevan Compressor Station to just east of McDermott Road.

The data collection methods included the following:

- Records searches were conducted at the Northwest Information Center (NWIC) at Sonoma State University, and the Northeast Information Center (NEIC) at California State University Chico. The record searches were conducted for the project area including the natural gas storage reservoir boundary, 14.7-mile pipeline alignment, and metering station area and a 0.25-mile radius around them. The records searches consisted of reviews of archaeological site records and other cultural technical reports prepared for projects that overlap portions of the proposed project.

- Various maps, including project maps provided by Central Valley in addition to United States Geological Survey (USGS) quadrangle maps, were consulted and used to identify cultural resources that had been previously recorded in the project area.
- Information gathered from archival research including historic maps was also used to assess the potential for encountering previously unrecorded resources in the project area.
- Archaeological and architectural history field surveys were conducted by ICF Jones & Stokes in 2009 and 2010 for small segments of the project in the public ROW and where access permission was granted (including west of the Glenn-Colusa Canal; east of I-5, including Old Highway 99 and UPRR; along a portion Delevan Road; Colusa Drain; west of Clark Avenue; along Dodge Road along the 14.7-mile gas connecting pipeline alignment that trends east–west; Southam Road near the entrance of the access road for observation well S-4; compression station and remote well pad site; dual gas gathering line and 14.7-mile gas connecting pipeline between the compressor station and remote well pad site; the PG&E 12 kV transmission line alignment from SR-45 to McAusland Road; the Zumwalt property; the eastern-most north–south segment of the 14.7-mile pipeline; and HDD launch and exit shaft sites).
- Native American consultation letters were faxed to the Native American Heritage Commission (NAHC) on June 2, 2008, as well as to various Native American representatives on June 16, 2008, requesting information on any sacred lands or sites within the proposed project study area. No additional information on sacred sites was gathered as a result of this consultation. A second request to the NAHC was made on August 4, 2008, due to changes to the proposed project since June 2, 2008. All recipients of the June 16, 2008 letters were contacted via telephone on August 7, and September 18, 21, 24, and 28, 2009.

Identified Cultural Resources

Records Search

Prehistoric

Based on previous work in the general project area and project research, the probability of subsurface archaeological deposits within the project area appears to be low.

Historic

Based on the results of the records search conducted at NWIC and NEIC and review of previous cultural resources studies directly adjacent to the proposed project for the Wild Goose Storage Expansion Project (Basin Research Associates 2003), known historical resources occurring within the project area include the following (ICF Jones & Stokes 2009, 2010b):

- The Glenn-Colusa Canal (CA-GLE-605H)
- Old Highway 99
- UPRR grade (formerly Southern Pacific Railroad)
- Colusa Basin Drain Segment, P-06-249
- S-4 Well
- Canal Segment 1
- Canal Segment 2

- Canal Segment 3
- 230 kV transmission lines
- Zumwalt Property (6934 Dodge Road, Colusa, California)

Results of Cultural Resource Surveys

Field surveys have been conducted and monitoring reports prepared for a good portion of the project area (approximately 95%), including the 14.7-mile gas connecting pipeline alignment, the metering station, the compression station, remote well pad site, HDD launch and exit shafts, Dodge Road to Colusa Farms property pipeline alignment, and the PG&E 12 kV transmission line (ICF Jones & Stokes 2010b), as well as the 10-acre staging area on the west end of the project area (Basin Research Associates 2003) and the Colusa generating project (URS Corporation 2006). These surveys failed to identify significant archaeological remains. Approximately 2,375 feet of the north-south segment of the 14.7-mile pipeline that diverges from the previous Wild Goose pipeline easement has not been subject to archaeological survey due to flooding and private property access issues. Central Valley has made a good-faith effort to gain access to the very limited areas of the study area that remain flooded/inaccessible to archaeological survey, and once access is achieved, it will document findings in a supplemental Section 106 Report. There is no expectation that undiscovered cultural resources exist in these areas.

Several resources were evaluated for their eligibility to the National and California Registers of Historic Places (and in accordance with Section 15064.5(1)(2)-(3) of the CEQA guidelines, using the criteria outlined in Section 5024.1 of the PRC), and all of these resources within the current study area were determined not to be historically significant under CEQA. These included the following:

- The Glenn-Colusa Canal (CA-GLE-605H)
- Old Highway 99
- UPRR grade (formerly Southern Pacific Railroad)
- Colusa Basin Drain Segment, P-06-249
- Canal Segment 1
- Canal Segment 2
- Canal Segment 3
- 230 kV transmission lines
- Zumwalt Property (6934 Dodge Road, Colusa, California)

The SL-1 well; S-2, S-3, and S-4 wells; and test well (proposed saltwater disposal well and pipeline) were not accessible during the 2010 survey effort due to landowner access permission issues. However, there do not appear to be any surface manifestations of these capped wells, and it is highly unlikely that these resources would be considered historically significant. Once access is achieved, these well sites will be surveyed and the applicant will document findings in a supplemental Section 106 Report.

Three isolated archaeological resources were noted in the 2010 study (ISO-CVG-1, ISO-CVG-2, and ISO-CVG-3), but were determined not to constitute historic or archaeological resources under CEQA.

ICF Jones & Stokes (2010b) also assessed the soils, landforms, and geomorphology of the study area to determine the potential for buried archaeological resources within the study area. Some areas were determined to have a higher potential of buried deposits (areas where Moonbend and Vina soil series intersect Willows series soils (Reed 2006 and U.S. Department of Agriculture 2007, cited in ICF Jones & Stokes 2010b, Figure 8)). Existing road cuts and canal cuts within these areas were inspected during 2010 field surveys with negative findings. The ICF Jones & Stokes (2010b) Section 106 report did not recommend further subsurface testing in these sensitive geomorphologic contexts.

Paleontological Resources

The project area passes through two formations that are considered paleontologically sensitive, including:

- Riverbank Formation, lower member (early Pleistocene). Occurs in the vicinity of Delevan. Consists of old, gravelly, sandy, and silty alluvium on low terraces. Typically contains soils with a subsurface hardpan layer.
- Modesto Formation, lower member (mid-Pleistocene). Occurs in the eastern part of the alignment, including the compressor station site. Consists of weakly indurated gravels, sands, silts, and clays on low terraces that border existing streams (ICF Jones & Stokes 2009)

The Riverbank Formation, which underlies a portion of the 14.7-mile connecting pipeline alignment, is a fossil-bearing alluvial (river sediment). Mammoths, bison, camels, and horses have been recovered from the Riverbank Formation elsewhere in California. A partial mammoth (ribs, two teeth, a tusk, and a portion of a shoulder blade) were uncovered in the Riverbank Formation south of Elk Grove in the Sacramento Valley and a late Pleistocene vertebrate fauna was collected from the Riverbank Formation during excavation of a site near ARCO Arena in Sacramento County (ICF Jones and Stokes 2009).

The Modesto Formation underlies the eastern area of the proposed project. Fossil specimens have been reported from the Modesto Formation near the formation's type locality in the city of Modesto. Among these are several sites near Davis and Woodland, which have yielded Rancholabrean-age rodents, snakes, horses, antelope, Harlan's ground sloth, mammoth, and saber-toothed tiger from sediments associated with both the Modesto and Riverbank formations (ICF Jones and Stokes 2009).

As there are previously recorded vertebrate fossil sites in the Riverbank and Modesto formations in the regional vicinity of the proposed project, there is a potential for uncovering additional similar fossil remains during earth-moving activities related to construction of the pipelines.

5.6.2 Regulatory Setting

Federal

The regulations implementing Section 106 (36 CFR Part 800 or Agency counterpart regulations) of the National Historic Preservation Act (NHPA) of 1966 (as amended) require federal agencies to identify all cultural properties on land under its control or jurisdiction that meet the criteria for inclusion in the National Register of Historic Places (NRHP) and to afford the Advisory Council

on Historic Preservation (ACHP) an opportunity to comment on those actions that may affect them.

The NHPA established the federal government's policy on historic preservation and the programs, including the NRHP, through which that policy is implemented. Under the NHPA, historic properties include "... any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places" (16 U.S.C. 470w (5)). Section 106 of the NHPA (16 U.S.C. 470f) requires federal agencies, prior to implementing an "undertaking" (e.g., issuing a federal permit), to consider the effects of the undertaking on historic properties and to afford the ACHP and the State Historic Preservation Office (SHPO) a reasonable opportunity to comment on any undertaking that would adversely affect properties eligible for listing on the NRHP.

Since a permit may be obtained from the ACOE, the NHPA of 1966 (as amended) and its implementing regulations (16 U.S.C. 470 et seq., 36 CFR Part 800, 36 CFR Part 60, and 36 CFR Part 63) may apply to the project, requiring the ACOE to consider whether the project would affect historic properties listed on or meeting the criteria for listing in the NRHP. The ACOE would be the lead agency for NHPA Section 106 compliance and consultation with the SHPO and ACHP would be conducted.

State

The following California Public Resource Code sections and CEQA regulations apply:

- **CEQA: Public Resources Code, Sections 21083.2, 21084.1, et seq.** require analysis of potential environmental impacts of proposed projects and application of feasible mitigation measures.
- **Title 14, Public Resources Code, Section 5020.1** defines several terms, including the following: (f) "DPR Form 523" means the Department of Parks and Recreation Historic Resources Inventory Form; (i) "historical resource" includes, but is not limited to, any object, building, structure, site, area, place, record, or manuscript that is historically or archaeologically significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California; (j) "local register of historical resources" means a list of properties officially designated or recognized as historically significant by a local government pursuant to a local ordinance or resolution; (l) "National Register of Historic Places" means the official federal list of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, engineering, and culture as authorized by the NHPA of 1966 (16 U.S.C. 470 et seq.); and (q) "substantial adverse change" means demolition, destruction, relocation, or alteration such that the significance of a historical resource would be impaired.
- **Title 14, Public Resources Code, Section 5024.1** establishes a California Register of Historical Resources, sets forth criteria to determine significance, defines eligible properties, and lists nomination procedures.
- **Title 14, Public Resources Code, Section 21083.2** defines "unique and non-unique archaeological resources" and states that the lead agency determines whether a project may have a significant effect on unique archaeological resources. If a potential for damage to unique archaeological resources can be demonstrated, such resources must be

avoided. If avoidance is not feasible, mitigation measures shall be required. This section deals with a number of related cultural resource issues, including excavation as mitigation, mitigation costs, time frames for excavation, and mitigation of unexpected resources.

- **Title 14, Public Resources Code, Section 21084.1** defines “historical resource” and states that a project may have a significant effect on the environment if it causes a substantial change in the significance of a historical resource.
- **Title 14, Public Resources Code, Section 5097.5** states that any unauthorized removal of archaeological resources on sites located on public lands is a misdemeanor. As used in this section, “public lands” means land owned by, or under the jurisdiction of the state, or any city, county, district, authority, or public corporation, or any agency thereof.
- **Title 14, Public Resources Code, Section 5097.98** prohibits obtaining or possessing Native American artifacts or human remains taken from a grave or cairn and sets penalties.
- **Guidelines for the Implementation of CEQA, Section 15064.5** defines “historical resource” and addresses effects on historic and prehistoric archaeological resources.
- **Guidelines for the Implementation of CEQA, Section 15126.4** discusses mitigation measures to minimize significant effects to cultural resources. Mitigation measures related to impacts on historical resources include data recovery through excavation when it is the only feasible mitigation available.
- **Title 14, Penal Code, Section 622.5** asserts that anyone who damages an item of archaeological or historic interest is guilty of a misdemeanor.
- **CEQA Guidelines: California Code of Regulations, Sections 15000 et seq., Appendix G (j)** defines a potentially significant environmental effect as occurring when the proposed project would “disrupt or adversely affect . . . an archaeological site, except as part of a scientific study.”

Local

The Conservation (CO) Element of the Colusa County General Plan outlines policies for cultural resources (Colusa County 1989). The policies include:

- **CO-22:** The preserving and re-use of historical sites and structures in the county should be encouraged.
- **CO-23:** The county should apply for landmark status or national register listing for any historical site that may be eligible.
- **CO-24:** The county shall encourage and cooperate with cities, special districts, state and federal agencies, and private landowners in acknowledging and preserving the county's cultural heritage, historical and archaeological structures, sites, and landmarks.
- **CO-25:** An archaeological survey should be required prior to approval of any project that would require excavation in an area known to contain archaeological resources.

5.6.3 Environmental Impacts

Significance Criteria

Appendix G of CEQA provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on cultural resources if the project would:

- a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5
- b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5
- c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature
- d) Disturb any human remains, including those interred outside of formal cemeteries.

Impact Discussion

a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

The Glenn-Colusa Canal, Old Highway 99, UPRR grade, the Colusa Basin Drain, the PG&E 12 kV line, and three canal segments have been evaluated as not meeting the significance criteria of historical resources for the purposes of CEQA. No historic resources are known to exist within the study area. The connecting pipeline would be buried and construction techniques would avoid these evaluated resources by boring beneath them; therefore, impacts to historical resources would be less than significant.

Construction activities of the proposed project would include ground disturbance that may result in the loss of previously unidentified or unknown historical or cultural resources. However, with implementation of APMs CR-1 (conduct additional field investigations and implement measures if resources are found) and CR-2 (conduct archaeological monitoring and stop work if previously unknown resources are encountered) (see Section 4.8.5); impacts would be less than significant.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Although the probability of subsurface archaeological deposits within the project area appears to be low based on previous work in the general area and project research conducted for the proposed project, construction activities may result in the loss of previously unidentified or unknown cultural resources.

In addition, according to the Colusa County General Plan Conservation Element, several Native American tribes were settled in Colusa County prior to the county's Anglo-American settlement in the 1850s (Colusa County 1989). Based on Native American consultation conducted for the project, there are no records of sacred lands or cultural resources in the immediate project area; however, concern was expressed that during project grading resources could be found. Therefore, previously unidentified or unknown archaeological resources could be destroyed or disturbed during ground-disturbing construction activities, which would be potentially significant. Implementation of APMs CR-1 (conduct additional

field investigations and implement measures if resources are found) and CR-2 (conduct archaeological monitoring and stop work if previously unknown resources are encountered) (see Section 4.8.5), as well as Mitigation Measure CUL-1, will ensure that impacts to unknown cultural resources would be less than significant.

Mitigation Measure CUL-1: In the event that any prehistoric or historic subsurface cultural resources are discovered during ground-disturbing activities, such as, chipped or ground stone, historic debris, building foundation, or human bones, all work within 50 feet of the resources shall be halted and a qualified archaeologist shall be consulted to assess the significance of the find. If any find is determined to be significant, representatives of Central Valley, CPUC, and the qualified archaeologist shall meet to determine the appropriate avoidance measures or other appropriate mitigation, with the ultimate determination to be made by the CPUC. All significant cultural materials recovered shall be subject to scientific analysis; professional museum curation, as necessary; and a report prepared by a specialist according to current professional standards.

In considering any suggested mitigation proposed by the consulting archaeologist in order to mitigate impacts to historical resources or unique archaeological resources, the CPUC and Central Valley shall determine whether avoidance is necessary and feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed on other parts of the project site while mitigation for historical resources or unique archaeological resources is carried out.

If the CPUC, in consultation with the qualified archaeologist, determines that a significant archeological resource is present and that the resource could be adversely affected by the proposed project, Central Valley will:

- Re-design the project to avoid any adverse effect on the significant archeological resource; or
- Implement an archeological data recovery program (ADRP), unless the qualified archaeologist determines that the archeological resource is of greater interpretive use than research significance, and that interpretive use of the resource is feasible. If the circumstances warrant an ADRP, such a program shall be conducted. The project archaeologist and the CPUC shall meet and consult to determine the scope of the ADRP. The archaeologist shall prepare a draft ADRP that shall be submitted to the CPUC for review and approval. The ADRP shall identify how the proposed ADRP would preserve the significant information the archeological resource is expected to contain. That is, the ADRP shall identify the scientific/historical research questions that are applicable to the expected resource, the data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the proposed project. Destructive data recovery methods shall not be applied to portions of the archeological resources if nondestructive methods are practical.

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Construction of the pipeline and other underground project components could directly disturb or destroy previously unknown paleontological resources or unique geologic features during ground-disturbing activities occurring within the Riverbank and Modesto formations. With implementation of APM CR-4 (see Section 4.8.5), which requires Central Valley to provide paleontologic resources training to construction workers and stop work if resources are discovered; impacts would be less than significant.

d) Disturb any human remains, including those interred outside of formal cemeteries?

Due to the previous settlement of several Native American tribes in Colusa County, construction of the pipeline and other project components could disturb or destroy previously undetected human remains. The discovery of human remains would be considered a potentially significant impact but can be mitigated to less-than-significant levels with implementation of APM CR-3 (see Section 4.8.5). APM CR-3 requires Central Valley to comply with state laws relating to Native American remains, including no further excavation or site disturbance if human remains are discovered or recognized and proper notification has taken place.

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5.7 GEOLOGY AND SOILS

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) <i>Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:</i>				
i) <i>Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) <i>Strong seismic ground shaking?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) <i>Seismic-related ground failure, including liquefaction?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) <i>Landslides?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) <i>Result in substantial soil erosion or the loss of topsoil?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) <i>Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) <i>Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) <i>Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

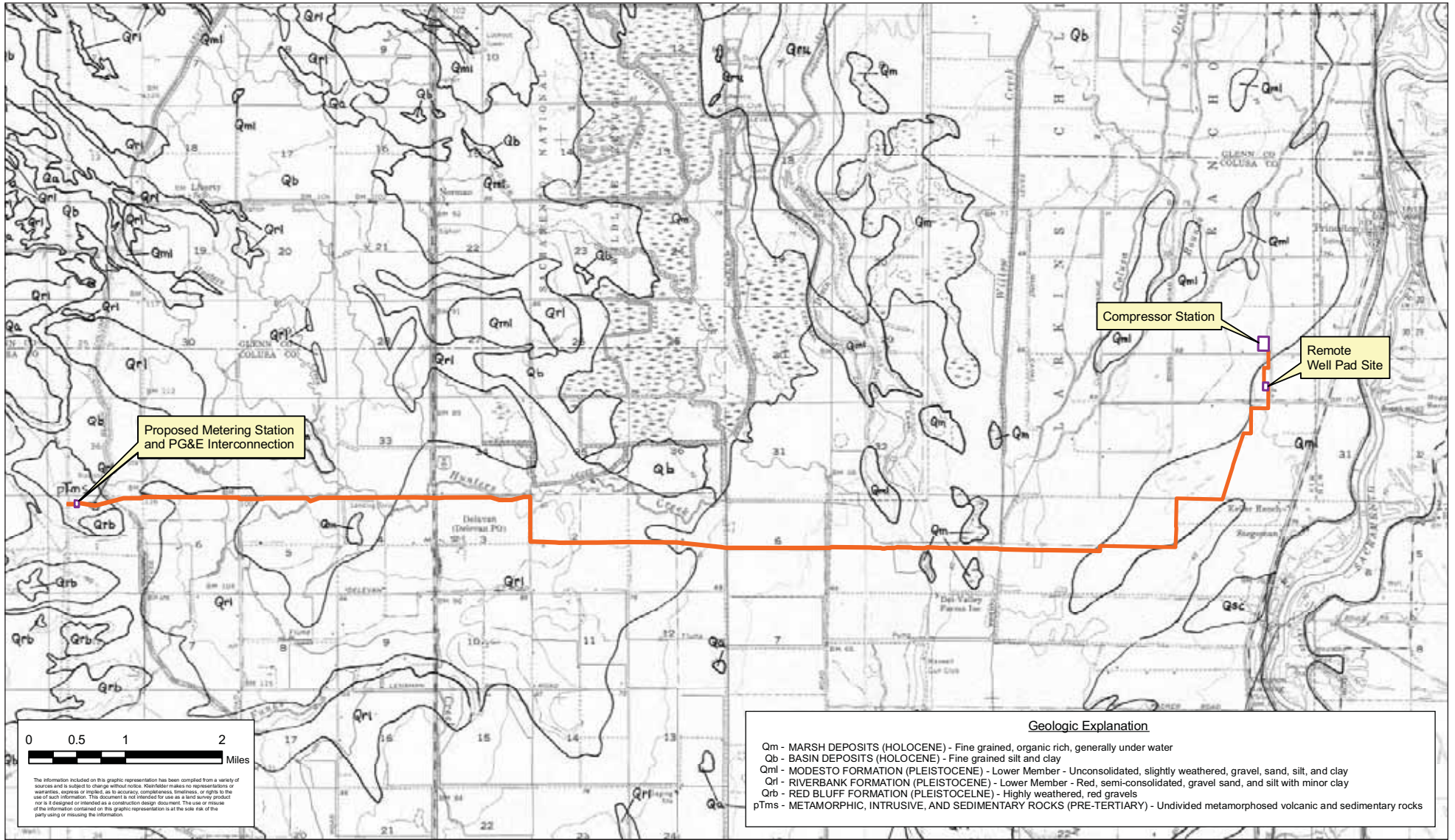
5.7.1 Environmental Setting

The project area is located in the Sacramento Valley, which represents the northward extension of the Great Valley Geomorphic Province of California. The Great Valley Geomorphic Province is characterized by a thick sequence of marine and non-marine sedimentary rocks that have been deposited since the Jurassic period (Colusa County 1989). Most of the soils of the Sacramento Valley floor have been identified as alluvial silt loams, clays, and sands deposited by the Sacramento River and associated channels and derived over time from surrounding sedimentary, igneous, and metamorphic rock (Colusa County 1989).

The project area is underlain by four geological formations/units: Holocene-age Basin Deposits, Pleistocene-age Modesto Formation, Pleistocene-age Riverbank Formation, and pre-Tertiary age bedrock. A description of each unit is provided below (map symbols refer to Figure 5.7-1).

- Basin deposits (map symbol Qb): Basin deposits occur throughout the project area and consist of Holocene-age fine grained silt and clay. The thickness of basin soils can range up to 150 feet (DWR 2006).
- Modesto Formation, lower member (map symbol Qml): Modesto Formation occurs in the eastern project area (including the proposed remote well pad site and a relatively short-segment of the 14.7-mile gas pipeline) and consists of Pleistocene-age unconsolidated, slightly weathered gravel, sand, silt, and clay. Thickness of the formation varies and can range from less than 10 feet to nearly 200 feet (DWR 2006).
- Riverbank Formation, lower member (map symbol Qrl): Riverbank Formation occurs west of the Glenn Colusa Canal, southeast of the proposed metering station and consists of Pleistocene-age semi-consolidated, gravel, sand, and silt alluvium. Deposits in the Riverbank Formation generally occur at higher topographic levels and can range in thickness from less than 1 foot to over 200 feet (DWR 2006).
- Bedrock, metamorphic, intrusive, and sedimentary rocks (map symbol pTms): These occur in the western project area (including the proposed metering station) and consist of undivided metamorphosed volcanic and sedimentary rocks. Rocks mapped near the proposed pipeline include strong cemented sandstone and shale.

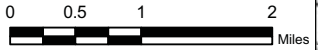
A map of major project components including the compressor station, remote well pad site, observation wells, metering station, and connecting pipelines, along with the underlying geologic units in the project area, is provided in Figure 5.7-1.



Proposed Metering Station and PG&E Interconnection

Compressor Station

Remote Well Pad Site



Geologic Explanation

- Qm - MARSH DEPOSITS (HOLOCENE) - Fine grained, organic rich, generally under water
- Qb - BASIN DEPOSITS (HOLOCENE) - Fine grained silt and clay
- Qml - MODESTO FORMATION (PLEISTOCENE) - Lower Member - Unconsolidated, slightly weathered, gravel, sand, silt, and clay
- Qrl - RIVERBANK FORMATION (PLEISTOCENE) - Lower Member - Red, semi-consolidated, gravel sand, and silt with minor clay
- Qrb - RED BLUFF FORMATION (PLEISTOCENE) - Highly weathered, red gravels
- pTms - METAMORPHIC, INTRUSIVE, AND SEDIMENTARY ROCKS (PRE-TERTIARY) - Undivided metamorphosed volcanic and sedimentary rocks

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SOURCE: ICF Jones & Stokes 2010c

6055-01
JULY 2010

Central Valley Gas Storage Project

**FIGURE 5.7-1
Project Area Geology**

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Soils

Soils underlying the project area include silty clays, silt loams, loams, and clays. Generally, these soils have moderate to high shrink/swell potential and low to high risk for concrete and steel corrosion. A map of the soil units in the project area is provided as Figure 5.7.2. Several characteristics of the project area soils as designated in the Soil Survey of Colusa County, California (U.S. Department of Agriculture 1999) are included in Table 5.7-1.

Table 5.7-1: Project Area Soils and Properties

Soil Number	Soil Name	Slopes (%)	Flooding Frequency	Corrosivity (Steel)	Corrosivity (Concrete)	Shrink/Swell Potential
104	Willows silty clay	0% to 1%	frequently flooded	High	High	High
105	Willows silty clay	0% to 1%	occasionally flooded	High	High	High
106	Willows silty clay	0% to 1%	—	High	High	High
108	Scribner silt loam	0% to 1%	occasionally flooded	Moderate	Low	Low
113	Westfan loam, sodic	0% to 2%	—	Low	Low	Low
124	Moonbend silt loam	0% to 2%	occasionally flooded	Moderate	Low	Moderate
125	Moonbend silt loam	0% to 2%	—	Moderate	Low	Moderate
128	Mallard loam	0% to 1%	—	Moderate	Low	Moderate
130	Corbiere silt loam	0% to 1%	—	High	Low	High
133	Corbiere silt loam	0% to 2%	occasionally flooded	High	Low	High
144	Hillgate clay loam	0% to 2%	—	Low	Moderate	High
145	Hillgate loam	0% to 2%	—	Low	Moderate	Moderate
155	Alcapay loam	0% to 1%	—	High	Low	High
171	Vina loam	0% to 2%	—	Moderate	Low	Low
205	Capay clay	0% to 3%	—	High	Moderate	Very High
206	Capay clay	5% to 9%	—	High	Moderate	Very High
210	Corval loam	0% to 3%	—	Low	Low	Moderate
220	Altamont silty clay	5% to 9%	—	High	Low	High

SOURCE: ICF Jones & Stokes 2009, U.S. Department of Agriculture 1999

Compressor Station

Soils underlying the compressor station are primarily Willows silty clay (0% to 1% slopes). Willows silty clay is poorly drained and has a high shrink/swell potential. Potential for steel and concrete corrosivity is high.

Remote Well Pad Site, Observation Wells, and Saltwater Disposal Well

Soils underlying the remote well pad site, observation wells, and saltwater disposal well include Moonbend silt loam (0% to 2% slopes occasionally flooded) and Vina loam (0% to 2% slopes). Moonbend silt loam is poorly drained and has a moderate shrink/swell potential. Potential for steel corrosivity is moderate while potential for concrete corrosivity is low. Vina loam is well drained, has a pH of approximately 5.8, and a low shrink/swell potential. Potential for steel corrosivity is moderate while potential for concrete corrosivity is low.

Metering Station

Soils underlying the metering station site are primarily Altamont silty clay (5% to 9% slopes). Within the project area this soil is well drained and has a high shrink/swell potential. Potential for steel corrosivity is high while potential for concrete corrosivity is low.

Connecting Pipelines

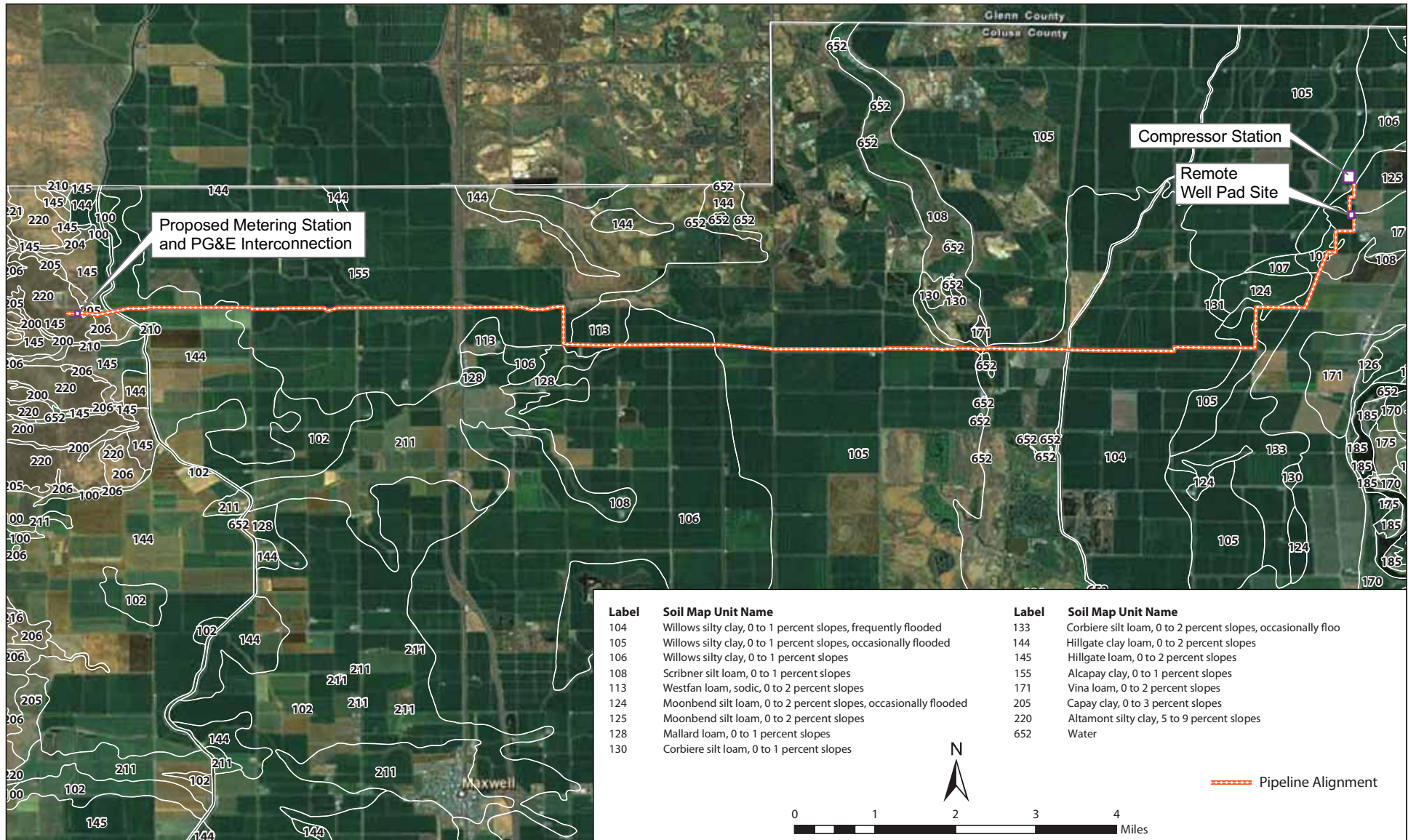
Soils underlying the connecting pipelines are a combination of silty loams, silty clays, clays, and clay loams. The majority of the pipeline would be located in soils with a high shrink/swell potential and a high to moderate potential for steel corrosion.

Faulting

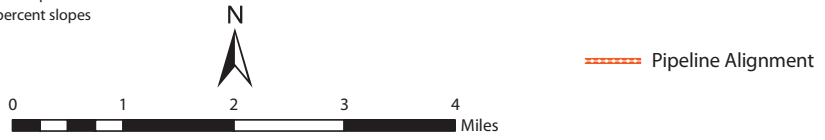
Within the State of California, a fault that shows evidence of movement within Holocene time (within the last 11,000 years) is considered to be active. Faults with evidence of displacement within Quaternary time (within the last 1.6 million years) are considered to be potentially active (California Geological Survey 2003).

The Sacramento Valley generally experiences limited seismic activity due to the general absence of Holocene faults. Most of the faults in Colusa County are Quaternary or pre-Quaternary (active more than 1.6 million years ago) and exhibit low potential for surface rupture (Colusa County 1989). No active faults are present in Colusa County; however, the Great Valley Geomorphic Province is bounded to the west by the Coast Ranges-Great Valley thrust fault system. This thrust fault system is composed of a series of low angle faults that do not extend to the ground surface (blind thrust faults) beneath the western margin of the Great Valley province. East-west compression across the province has resulted in structural features such as north to northwest trending reverse broad folds and underlying blind reverse faults (ICF Jones & Stokes 2009). Several faults representing north-south extensions of regional fault zones are located at the northern and southern ends of the Sacramento Valley.

The nearest mapped fault to the project area is the Willows fault, which traverses (in a north-northwest direction) the northeastern corner of Colusa County (California Geological Survey 2002). The fault crosses the proposed connecting pipeline alignments in the vicinity of the proposed compressor station and well pad site. The Willows fault is mapped as pre-Quaternary and is concealed beneath alluvial deposits, indicating that it is likely not active. Mapped as a branch of the Willows Fault, the Corning Fault is of particular interest to the area because it is linked to late-Pleistocene and Holocene-age activity (ICF Jones & Stokes 2009). Although ground deformation and seismic activity associated with the Corning Fault has been mapped north of the project area near the intersection of the Corning and Willows faults, studies have found no evidence of surface rupture for either fault (ICF Jones & Stokes 2009).



Label	Soil Map Unit Name	Label	Soil Map Unit Name
104	Willows silty clay, 0 to 1 percent slopes, frequently flooded	133	Corbiere silt loam, 0 to 2 percent slopes, occasionally flood
105	Willows silty clay, 0 to 1 percent slopes, occasionally flooded	144	Hillgate clay loam, 0 to 2 percent slopes
106	Willows silty clay, 0 to 1 percent slopes	145	Hillgate loam, 0 to 2 percent slopes
108	Scribner silt loam, 0 to 1 percent slopes	155	Alcapay clay, 0 to 1 percent slopes
113	Westfan loam, sodic, 0 to 2 percent slopes	171	Vina loam, 0 to 2 percent slopes
124	Moonbend silt loam, 0 to 2 percent slopes, occasionally flooded	205	Capay clay, 0 to 3 percent slopes
125	Moonbend silt loam, 0 to 2 percent slopes	220	Altamont silty clay, 5 to 9 percent slopes
128	Mallard loam, 0 to 1 percent slopes	652	Water
130	Corbiere silt loam, 0 to 1 percent slopes		



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FIGURE 5.7-2
Soil Map Units in the Project Vicinity

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Active faults that have potential for future surface rupture are designated as Alquist-Priolo Earthquake Fault Zones by the California Geological Survey. There are no Alquist-Priolo Earthquake Fault Zones crossing the project area (California Geological Survey 2009). The only earthquake in the Sacramento Valley known to have resulted in surface rupture occurred in neighboring Butte County. In 1975 the Cleveland Hills Fault, a short fault segment of the Foothill fault system located approximately 30 miles northeast of the compressor station site, produced a magnitude 6.1 earthquake which resulted in surface rupture of approximately 3.4 miles along the north end of the fault (California Geological Survey 2002). The surface rupture was placed into an Alquist-Priolo Earthquake Fault Zone and is still considered to be capable of surface rupture.

The closest Holocene active fault, the Bartlett Springs Fault, is located approximately 33 miles west of the proposed metering station site. Composed of steep, strike-slip faults, the Bartlett Springs Fault system is a major northwest-trending zone associated with the northern California reach of the San Andreas Fault System. Although no major earthquakes have occurred on the Bartlett Springs Fault in the historic era (within the last 200 years), a magnitude 7.6 earthquake occurred between 300 to 1,000 years ago (ICF Jones & Stokes 2009). The properties of the significant faults located within 62 miles of the project are listed in Table 5.7-2. The location of these faults (along with the historical seismicity of the region) is shown in Figure 5.7-3.

Table 5.7-2: Faults within the Project Area Region

Fault	Length (miles)	Closest Distance (miles)	Slip Rate (millimeters per year)	Characteristic Earthquake Magnitude	Recurrence Interval (years)
Great Valley (Segment 1)	27	10	0.1	6.7	9,615
Great Valley (Segment 2)	14	11	0.1	6.4	6,803
Great Valley (Segment 3)	34	19	1.5	6.6	1,019
Bartlett Springs	108	33	6.0	7.6	599
Hunting Creek-Berryessa	37	35	6.0	7.1	775
Collayomi	18	47	0.6	6.5	1,230
Great Valley (Segment 4)	26	48	1.5	6.6	1,019
Maacama-Garberville	137	57	9	7.5	—

SOURCE: ICF Jones & Stokes 2009.

Several potentially active concealed faults mapped by the California Geological Survey also occur within the project region. One of these faults, the Dunningan Hills Fault, is located approximately 40 miles south of the proposed project in Yolo County. Part of the Great Valley fault system, the Dunningan Hills fault is mapped as a Holocene active fault (California Geological Survey 2002). Several earthquakes of magnitude 6.0 or greater have occurred near the southern extent of the Dunningan Hills fault (Figure 5.7-3). Studies performed by the California Geologic Survey to designate the fault an Alquist-Priolo earthquake fault zone concluded that sufficient evidence did not exist to characterize the fault as active (ICF Jones & Stokes 2009).

Several small, unnamed faults with evidence of Quaternary displacement are located approximately 15 miles southeast of the proposed compressor station near the Sutter Buttes (Figure 5.7-3).

Historic Seismicity

Eight earthquakes registering between magnitude 5 and 7 have been recorded within a 62-mile radius of the proposed project (ICF Jones & Stokes 2009). These eight earthquakes are described below.

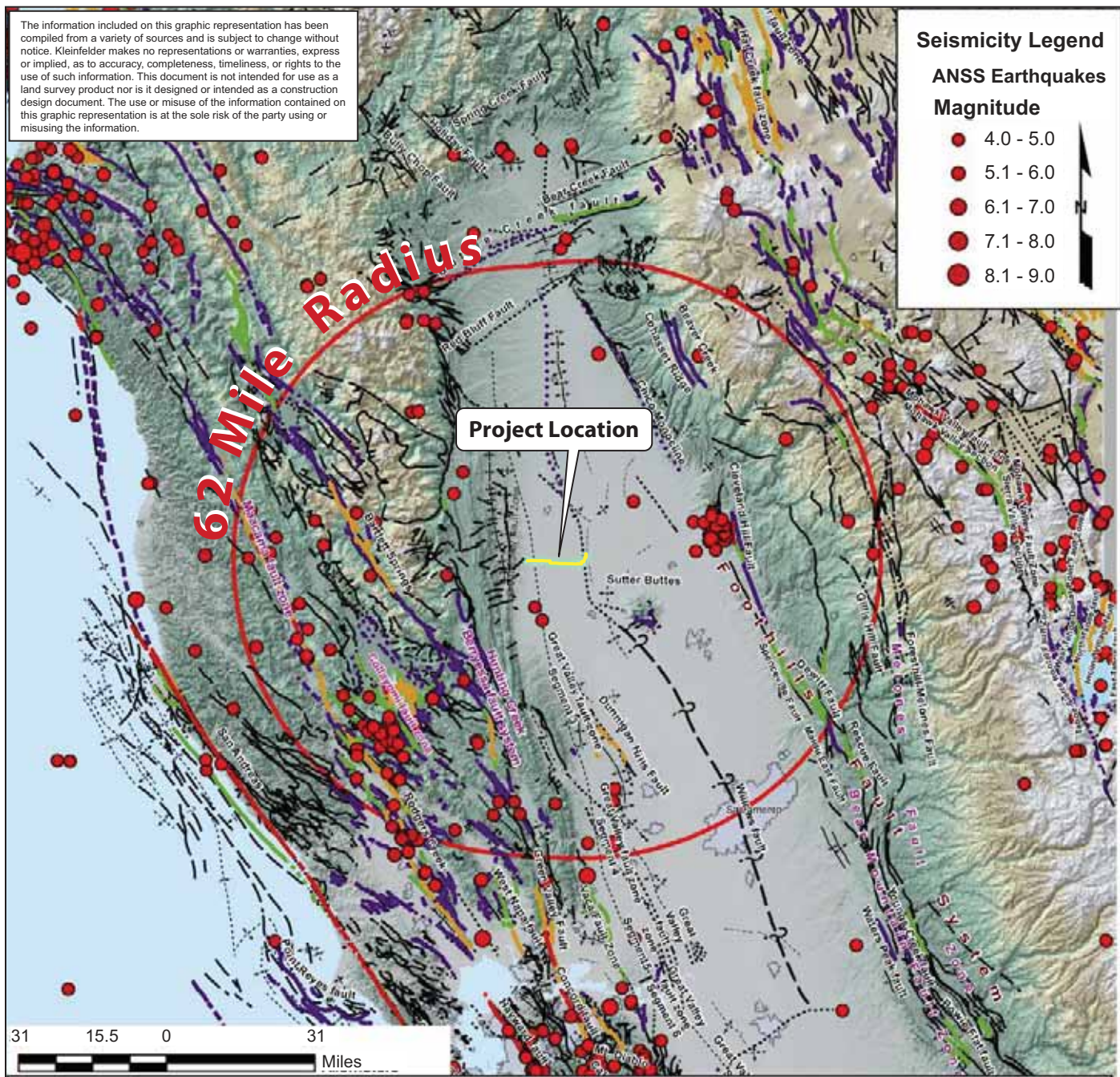
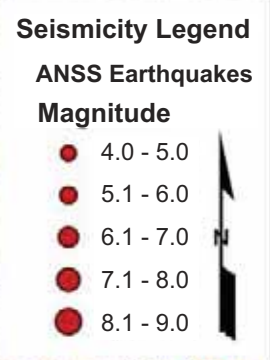
- In 1881, a magnitude 5.6 earthquake occurred approximately 40 miles north of the proposed project near the town of Red Bluff. This event was likely associated with the blind thrust fault beneath the Chico Monocline (part of the Foothills fault system).
- In 1882 and 1893, three earthquakes of magnitude 6.8, 6.4, and 5.6 intensity occurred approximately 60 miles south of the proposed project in the Vacaville-Winters area. These earthquakes were likely associated with the Great Valley Fault System (Segment 6).
- In 1909, a magnitude 5.9 earthquake occurred approximately 40 miles northeast of the proposed project near the mountain town of Strawberry Hill.
- In 1928, a magnitude 5.5 earthquake occurred approximately 40 miles northwest of the proposed project, near the Newville area.
- In 1975, the magnitude 6.1 Oroville earthquake occurred approximately 30 miles northeast of the compressor station site.
- In 1985, four minor quakes (the largest being a magnitude 3.7 event) occurred on an unknown fault in the Coast Ranges foothills, west of the proposed metering station site.

Princeton Gas Field

The Forbes Formation, consisting of shale with lenticular sandstone interbeds, is the oldest and deepest stratigraphic unit in the Princeton Gas Field. Although known to produce gas in other portions of the Sacramento Valley, the Forbes Formation sandstones present in the Princeton Gas Field have not been productive.

The Forbes Formation is overlain by the approximately 2,000-foot-thick Kione Formation. While the lower portion of the Kione Formation is structurally similar to the Forbes Formation, the upper portion is characterized by a massive sandstone section with a small amount of shale interbedding (ICF Jones & Stokes 2009). Named the Wild Goose Sands, this stratum is the only productive zone in the Princeton Gas Field. The proposed natural gas storage reservoir would be located at a depth of approximately 2,000 to 2,300 feet within the Kione Formation. At this depth, the formation generally consists of five sand layers separated by semi-impermeable shale interbeds. The lowest of the sandstone layers, the Massive Sand, is 200 to 350 feet thick. The remaining sandstone layers are thinner, with each layer ranging in thickness of between 5 and 20 feet.

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Faulting Legend

Quaternary Faults (Bryant, 2005; USGS 2007) Historic displacement (< 200 years)		Late Quaternary displacement (< 750,000 years)	Pre-Quaternary Geologic Structures (CGS, 2000)
— Mapped Fault Location — Dashed were Approximated — Concealed	— Mapped Fault Location — Dashed were Approximated — Concealed	— fault, approx. located — fault, approx. located, queried — fault, certain — fault, concealed — fault, concealed, queried — fault, inferred, queried	
Holocene displacement (< 11,000 years)		Quaternary displacement (< 1,600,000 years)	
— Mapped Fault Location — Dashed were Approximated — Concealed	— Mapped Fault Location — Dashed were Approximated — Concealed		

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SOURCE: ICF Jones & Stokes 2009

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FIGURE 5.7-3
Faults and Historic Seismicity

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The Kione Formation is overlain by the Princeton Valley Fill System. Approximately 200 to 500 feet thick, the Princeton Valley Fill System is a northeast–southwest trending canyon that was previously eroded and filled during the late-Pleistocene to early-Eocene era. Subsequent tectonic subsidence filled in the canyon with transgressive marine sequence, which ultimately formed shale deposits. These shale deposits comprise the restrictive layer that confines the productive zone of the Kione Formation. Structural closure and stratigraphic trappings control the productive limit of the system. The stratigraphy of the Princeton Gas Field is shown in Figure 4-1 of this Initial Study.

Eocene age marine and non-marine sediments are situated above the Princeton Valley Fill. These sediments generally consist of shale and to a lesser degree, limestone, and sandstone (ICF Jones & Stokes 2009).

The Pliocene Tuscan and Tehama Formations are situated atop the previous layer of Eocene sediments. Consisting of volcanic mudflows, tuff breccia, and volcanic ash layers, the Tuscan Formation is found approximately 800 to 1,000 feet below ground surface and is 200 to 400 feet thick in the central portion of the Sacramento Valley (ICF Jones & Stokes 2009). Exposed on the west side of the Sacramento Valley, the Pliocene Tehama Formation can reach a thickness of 2,000 feet in the project area and consists of moderately compacted silt, clay, fine silty sand, and cemented conglomerate (DWR 2006). Groundwater production in the Tehama Formation is poor to moderate (production in the Tuscan Formation is greater than in the Tehama Formation) (ICF Jones & Stokes 2009).

Between 1954 and 1991, the Princeton Gas Field produced approximately 9.7 billion cubic feet of natural gas (ICF Jones & Stokes 2009). At this time, the five hydraulically separate sandstone layers that comprise the gas reservoir are watered out (i.e. saline groundwater has replaced the natural gas within the reservoir sand) as a result of previous production and can no longer economically produce commercial quantities of gas.

Potential Geologic and Soil Hazards

Surface Rupture

The Willows fault is the only fault that crosses the proposed pipeline alignment. As stated previously, the Willows fault is mapped as pre-Quaternary and is concealed beneath alluvial deposits indicating that it is likely not active. The California Geological Survey does not consider the Willows fault to be at risk for surface fault rupture, and no evidence of pre-Quaternary surface fault rupture has been documented (ICF Jones & Stokes 2009).

Subsidence

Subsidence is localized movement involving the gradual downward settling or sinking of the ground surface with little or no horizontal motion. Excessive groundwater withdrawal, extraction of natural gas, and tectonic movement can all potentially result in subsidence. The eastern end of the project area (including the natural gas storage reservoir, compressor station, remote well pad site, observation wells, saltwater disposal well and pipeline, and portions of the natural gas connecting pipelines) is located in an area of Colusa County where subsidence has been recorded (Colusa County 1989).

In 2005, the State of California Department of Water Resources (DWR) installed two stations in Colusa County to measure subsidence (DWR 2009). Data from the two stations is publicly accessible through the department's website. Review of this data shows variations in groundwater depth throughout the year likely attributed to seasonal fluctuations and that subsidence is not occurring in the project area (ICF Jones & Stokes 2009).

Pressurization/depressurization of the Princeton Gas Field could result in subsidence; however, there are no records to suggest that past natural gas operations have resulted in subsidence in the Princeton area (ICF Jones & Stokes 2009).

Unstable Soils

Soils occurring within the project area have been previously discussed in this section and are summarized in Table 5.7-1. In general, soils underlying the project area have a moderate to high shrink/swell potential and a high risk of corrosion to steel. Soils with a high shrink/swell potential can pose a significant risk to structures due to the ability of the soils to expand and contract based on the water content. The shrink/swell potential of soils in the project area are shown in Figure 5.7-4.

Landslides

A landslide is the movement of a mass of rock, debris, or earth down a slope. Slope failure often occurs when the force of the overlying materials of the slope exceed the strength of the materials that compose the slope. Soils subject to landslide are shallow, gravelly, and have low water holding potential (Colusa County 1989). Eastern Colusa County (lands east of the Glenn Colusa Canal) has been designated as having a low potential for landslides (Colusa County 1989).

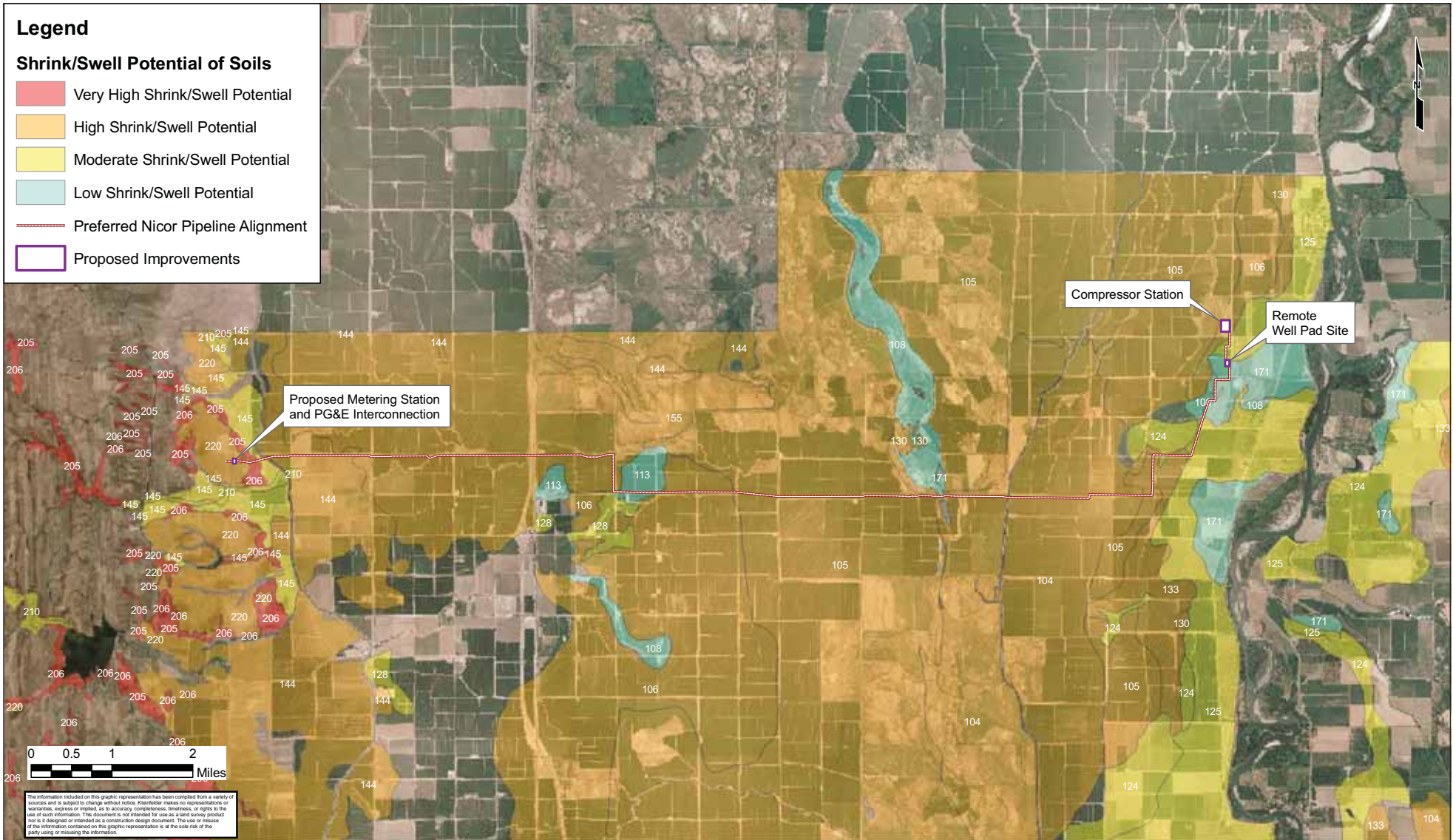
Strong Groundshaking

As shown in Figure 5.7-2, the immediate project area is less seismically active compared to other areas in northern California. Figure 5.7-2 does show however that earthquakes between magnitude 5.1 and 6.0 have occurred within 62 miles of the proposed project. Due to the historical prevalence of earthquakes in the region, preliminary seismic design parameters (based on the 2007 CBC) were developed for the proposed project using the U.S. Geological Survey (USGS) Java Ground Motion Parameter Calculator. According to the USGS Java Ground Motion Parameter Calculator, the peak ground acceleration for the maximum considered earthquake at the west and east ends of the project are 0.40 gravity and 0.34 gravity, respectively. The calculated peak ground acceleration for the design earthquake at the west and east ends of the project are 0.26 gravity and 0.22 gravity, respectively (ICF Jones & Stokes 2009).

Legend

Shrink/Swell Potential of Soils

- Very High Shrink/Swell Potential
- High Shrink/Swell Potential
- Moderate Shrink/Swell Potential
- Low Shrink/Swell Potential
- Preferred Nicor Pipeline Alignment
- Proposed Improvements



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Central Valley Gas Storage Project

FIGURE 5.7-4
Shrink/Swell Potential for Soils in Project Area

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Liquefaction and Lateral Spreading

Liquefaction is a reduction in soil strength and stiffness causing the soil to transfer from a solid to a liquefied state. Often caused by shaking associated with earthquakes and other types of loading, liquefaction typically occurs in loose, shallow, saturated soils or in fine-grained sands of Holocene age. Where development has occurred liquefaction can cause significant damage to life and property, as foundations built into liquefiable soils can undergo vertical and horizontal settlement. The project area is underlain by Holocene-age basin deposits, Pleistocene-age Modesto Formation, Pleistocene-age Riverbank Formation, and pre-Tertiary-age bedrock. While the potential for liquefaction associated with Pleistocene-age soils and bedrocks is low, the potential for liquefaction associated with Holocene deposits and coarse-grained channel deposits is moderate (Colusa County General Plan 1989).

Liquefaction of shallow layers on relatively gentle slopes can result in lateral spreading. Lateral spreading (the lateral movement of soil and underlying alluvium) within the project area is most likely to occur near drainages where shallow slopes are saturated with water. Other than at drainage crossings, the potential for lateral spreading in the project area is low due to the relatively flat terrain.

Tsunami and Seiche

Tsunamis are a series of waves generated by the displacement of oceans due to earthquakes, volcanic eruptions, landslides, underwater explosions, and other large scale disturbances. Because the project area is located more than 80 miles from the coastline, there is no potential for tsunamis inundating the project area.

A seiche is a standing wave on an enclosed or partially enclosed body of water, such as a lake or reservoir. Seismic activity, tsunamis, and wind are all capable of generating a seiche. The nearest body of water to the project site is the Sacramento River (several smaller waterbodies including the Glenn-Colusa Canal and the Colusa Drain) are also present in the project area. Since seiches occur on enclosed or partially enclosed bodies of waters, seiches do not represent a hazard for the project area.

Groundwater

The proposed project is located in the northeastern portion of Colusa Subbasin (Groundwater Basin Number: 5-021.52) of the Sacramento River Hydrologic Region (DWR 2003). Covering approximately 17.4 million acres (27,200 square miles), the Sacramento River Hydrologic Region extends south from the Modoc Plateau and Cascade Range at the Oregon border to the Sacramento–San Joaquin Delta (DWR 2003). The South Colusa Subbasin (5-21.52) encompasses an area of 918,380 acres (1,434 square miles) and is bounded on the east by the Sacramento River, on the west by the Coast Range and foothills, on the south by the Cache Creek, and on the north by Stony Creek (DWR 2006). The Colusa Subbasin aquifer system in the vicinity of the project area is composed of continental deposits of late Tertiary to Quaternary age. These deposits include Holocene stream channel and basin deposits and Pleistocene Modesto and Riverbank Formation (DWR 2006).

Approximately 31% of the urban and agricultural water supply of the hydrologic region is supplied by groundwater (DWR 2003). The Sacramento Valley is recognized as one of the foremost groundwater basins in the state, and groundwater quality is generally excellent,

although some local water quality problems are present. The project area is known to have shallow groundwater.

5.7.2 Regulatory Setting

Federal

There are no federal goals, objectives, or policies related to geology and soils that are applicable to the proposed project.

State

CEQA (California Public Resources Code (PRC) Sections 21000–21177.1) was adopted in 1970 and applies to most public agency decisions to carry out, authorize, or approve projects that may have adverse environmental impacts. CEQA requires that agencies inform themselves about the environmental effects of their proposed actions, consider all relevant information, provide the public an opportunity to comment on the environmental issues, and avoid or reduce potential environmental harm whenever feasible. Relevant CEQA sections include those for protection of geologic and mineral resources, protection of soil from erosion, and protection of paleontological resources (certain fossils found in sedimentary rocks).

California Public Utilities Commission General Order 112-E

CPUC General Order 112-E establishes the following to safeguard life or limb, health, property, and public welfare and to ensure that adequate service will be maintained by gas utilities operating under the jurisdiction of the CPUC.

- Minimum requirements for the design, construction, quality of materials, locations, testing, operations, and maintenance of facilities used in the gathering, transmission, and distribution of gas
- Minimum requirements for similar equipment and procedures used in liquefied natural gas facilities.

These requirements are in addition to federal pipeline safety regulations, and are concerned with the safety of the general public and of employees. Specifically, they address the extent to which the general public's and employees' safety is affected by basic design, quality of materials and workmanship, and testing and maintenance of gas gathering, transmission, and distribution facilities, as well as liquefied natural gas facilities. These requirements are intended to be adequate for safety under conditions normally encountered in the gas industry, and all work performed within their scope must meet or exceed the safety standards set by them.

Department of Conservation, Division of Oil, Gas, and Geothermal Resources

Under Title 14, Division 2, Chapter 4, the Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) oversees the drilling, operation, maintenance, and plugging and abandonment of oil, natural gas, and geothermal wells. This regulatory program emphasizes responsible development of oil, natural gas, and geothermal resources in the state through sound engineering practices that protect the environment, prevent pollution, and ensure public safety.

Alquist–Priolo Earthquake Fault Zoning Act of 1972

The Alquist–Priolo Earthquake Fault Zoning Act of 1972 (formerly the Special Studies Zoning Act) regulates development and construction of buildings intended for human occupancy to avoid the hazard of surface fault rupture. While the act does not specifically regulate gas pipelines, it does help define areas where fault rupture is most likely to occur. The act groups faults into categories of active, potentially active, and inactive. Historical and Holocene-age faults are considered active, late-Quaternary-age and Quaternary-age faults are considered potentially active, and pre-Quaternary-age faults are considered inactive. These classifications are qualified by the conditions that a fault must be shown to be “sufficiently active” and “well defined” by detailed site-specific geologic explorations in order to determine whether building setbacks should be established.

California Seismic Hazards Mapping Act: Seismic Ground Shaking Hazards

The California Seismic Hazards Mapping Act of 1990 (PRC Sections 2690–2699.6) is designed to protect the public from the effects of strong ground shaking, liquefaction, landslides, other ground failures, or other hazards caused by earthquakes. The act requires site-specific geotechnical investigations to identify the hazard and the formulation of mitigation measures before the permitting of most developments designed for human occupancy. Special Publication 117, “Guidelines for Evaluating and Mitigating Seismic Hazards in California” (California Geological Survey 1997), constitutes the guidelines for evaluating seismic hazards other than surface fault rupture and for recommending mitigation measures, as required by PRC Section 2695(a). Because the project area has yet to be mapped, the provisions related to the California Seismic Hazards Mapping Act would not apply.

Erosion Regulations

State regulations pertaining to the management of erosion/sedimentation as they relate to water quality are described in Section 5.9 of this Initial Study. The primary purpose of these regulations and standards is to protect surface waters from the effects of land development. Among other measures included in such regulations and standards are the requirements to reduce the potential for sedimentation caused by erosion.

California Building Code

The 2001 California Building Code (CBC) is based on the 1997 Uniform Building Code (UBC), which is used widely throughout the United States, when adopted on a state-by-state or district-by-district basis, and has been modified for California conditions with numerous more detailed and/or more stringent regulations. The State of California provides minimum standards for structural design and site development for projects containing buildings for human occupancy through the CBC.

Chapter 16 of the CBC (2001) reduces impacts associated with exposure of people and structures to seismic hazards, and it ensures that structures meet specific minimum seismic safety and structural design standards. Chapter 33 specifies the requirements to be fulfilled for site work, demolition, and construction, including the protection of adjacent properties from damage caused by such work. The CBC requires a site-specific geotechnical study to address seismic issues and identifies seismic factors that must be considered in structural design. Chapter 33 requires all development intended for human occupancy to adhere to regulations

pertaining to grading activities, including drainage and erosion control and treatment of expansive soils.

Local

Colusa County General Plan

The Colusa County General Plan includes the following goals, objectives, and policies relevant to the proposed project:

- **Land Use Objective (j):** To permit rural development contingent upon a range of natural factors, including environmental impact, safety hazards, and the availability of water.
- **Resource Conservation Objective (m):** To encourage water use methods that minimize subsidence.
- **Public Health and Safety Objective (l):** To minimize the threats to life and property from seismic and geologic hazards
- **Policy SAFE-6:** No development shall take place on or immediately adjacent to an existing landslide unless a geotechnical investigation has been performed. This investigation shall define slide activity and slide limits, and contain specific recommendations regarding avoidance, removal, or repair. The County Planning Department should maintain a map showing the general location of existing landslides for reference by development sponsors. The determination of the location of a landslide relative to a proposed development and the preparation of any geotechnical report shall be the responsibility of the development sponsor.
- **Policy SAFE-7:** A geotechnical investigation should be performed for any development proposal in an area of known subsidence in order to determine whether engineering modifications should be made to the design to eliminate or mitigate the adverse impacts. The county may also require a geotechnical investigation for any development proposed on highly expansive soils.

5.7.3 Environmental Impacts

Significance Criteria

Appendix G of CEQA provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on geology, soils, and seismicity if the project would:

- a) Expose people or structures to potential adverse effects, including the risk of loss, injury, or death involving the following:
 - i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the state geologist for the area or based on other substantial evidence of a known fault.
 - ii) Strong seismic ground shaking
 - iii) Seismic-related ground failure, including liquefaction
 - iv) Landslides.
- b) Result in substantial soil erosion or the loss of topsoil.
- c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

- d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.
- e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

Impact Discussion

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

- i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.**

There are no Alquist-Priolo Earthquake Fault Zones crossing the project area (Colusa County is not listed as a county affected by Alquist-Priolo Earthquake Fault Zones by the California Geologic Survey). In addition, no active faults are present in the project area. Most of the faults in the Colusa County are Quaternary or pre-Quaternary and are not considered to be active. The nearest mapped Holocene faults (faults that have had surface displacement within the past 11,000 years and most capable experiencing surface displacement in the future) are the Bartlett Springs fault (located approximately 33 miles west of the proposed metering station in Lake County) and the Cleveland Hills fault (located approximately 30 miles northeast of the proposed compressor station in Butte County). The only fault crossing the project area is the Willows fault, which is mapped as pre-Quaternary and concealed beneath Quaternary alluvial deposits. Surface rupture along the fault is not likely because the fault is not active; therefore, impacts would be less than significant.

- ii) Strong seismic ground shaking?**

Although there are no active faults in the project area, active faults within the region have and are capable of producing earthquakes that would expose the project area to strong seismic ground shaking. Strong seismic ground shaking could expose construction workers to potentially dangerous conditions. Project facilities could be significantly impacted by strong seismic shaking if not adequately designed. A strong regional earthquake could result in the rupture of injection wells, pipelines (possibly resulting in fires or explosions), or could generate fractures in the cap rock, which could allow gas from the storage reservoir to migrate to the ground surface. Potential gas migration due to new fractures in the cap rock is discussed in Section 5.8.

To minimize the potential risk for adverse effects associated with strong seismic ground shaking, Central Valley will implement APMs GEO-1, GEO-2, GEO-3, and GEO-4 (see Section 4.8.6). With implementation of APM GEO-1 through GEO-4, which require Central Valley to develop site specific seismic stress guidelines into facility design, to assess pipeline response to seismic ground accelerations and ground deformation from seismic events, to construct the project in compliance with all relevant earthquake safety and structural stability construction and building codes, and to conduct geotechnical

studies, impacts associated with strong seismic ground shaking would be less than significant.

iii) Seismic-related ground failure, including liquefaction?

Soils within Colusa County are primarily alluvial silt loams, clays, and sands deposited by the Sacramento River and associated side channels derived from the igneous and metamorphic rocks (Colusa County 1989). The majority of Colusa County soils are highly expansive. The proposed compressor station, metering station, and connecting pipelines would be located on land underlain by soils with a high shrink/swell potential (soils with a moderate shrink/swell potential underlie the remote well pad site, as shown in Figure 5.7-4). In addition, at areas where the 14.7-mile connecting pipeline route would cross waterways, ground failure is a concern due to the steep features of waterway banks. Therefore, if not adequately designed, project facilities could be susceptible to seismic-related ground failure, including liquefaction.

To minimize the potential for seismic-related ground failure, including liquefaction, Central Valley will implement APMs GEO-4 and GEO-5 (see Section 4.8.6). With implementation of APMs GEO-4 and GEO-5, which require Central Valley to conduct geotechnical studies and implement specific measures in potential liquefaction prone and expansive soil areas and be constructed in accordance with all applicable state and county building and construction codes and ordinances related to creek, drainage, and canal crossings, impacts would be less than significant.

iv) Landslides?

The project area is located primarily within a flat floodplain with a low potential for landslides (Colusa County 1989). The potential for landslides at proposed facility sites is remote. In order to avoid waterways, the proposed 14.7-mile connecting pipeline would auger bore or horizontally directionally drill (HDD) beneath the Colusa Trough, Logan Creek, Hunter's Creek, and the Glenn Colusa Canal. At trough, creek, and canal crossings, the risk of landslides is potentially significant due to the steep features associated with waterway banks. If not designed and constructed properly, pipeline construction could result in landslides at waterway crossings. To minimize the potential for landslides during pipeline construction, Central Valley will implement APM GEO-5 (see Section 4.8.6). With implementation of APM GEO-5, which requires Central Valley to assess pipeline response to surface deformation due to landslides or slumping at channel and canal piping crossings and ensure that the project is constructed in accordance with all applicable standards and codes related to waterway crossings, impacts would be less than significant.

b) Result in substantial soil erosion or the loss of topsoil?

General construction activities (excavation, grading, etc.) would result in vegetation removal and soil disturbance, which would promote soil erosion at proposed facility sites. Construction of the proposed 14.7-mile connecting pipeline could result in accelerated soil erosion at locations where auger boring or HDD is proposed and could also promote erosion and the loss of topsoil as a result of open-cut trenching along the connecting pipeline route. The flat terrain present in the project area helps to reduce the overall risk of erosion during project construction. To further minimize the potential for construction-accelerated erosion,

Central Valley will implement APM HYDRO-1 (see Section 4.8.8), which requires the preparation of a stormwater pollution prevention plan containing erosion and sediment control measures to be implemented during construction. Implementation of erosion and sediment control measures will ensure that the amount of soil that is displaced or transported is reduced and the discharge of soil is controlled. To minimize the potential for loss of topsoil, Central Valley will require the project contractor to stockpile the upper 12 inches of native topsoil excavated during open-cut trenching and ultimately replace the topsoil at the top of the trench backfill once the connecting pipelines are installed. This practice will ensure that the loss of topsoil is minimized. With implementation of APM HYDRO-1 and the construction backfilling techniques discussed above, impacts would be less than significant.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

The topography of the project is generally a flat floodplain with minimal topographic variation. There are no hillsides or slopes near project facilities that could become unstable or over-steepened. The geological formations/units that underlay the project have varying degrees of stability relative to the activities proposed at each project facility site.

As stated previously the majority of the soils occurring within the project area have a moderate to high shrink/swell potential. Development within soils with a high shrink/swell potential is susceptible to differential movement due to the fluctuations in water content. Site specific geotechnical studies (APM GEO-4) will be performed by Central Valley to ensure that expansive soils are accounted for in the design of the project. In addition, Central Valley will implement specific measures in expansive soil areas. Central Valley will also conduct geotechnical soil borings (APM GEO-3) in order to determine the appropriate seismic structural design and construction requirements of the California Building Code.

Subsidence resulting from pressurization/depressurization of the Princeton Gas Field and the displacement of groundwater due to the injection of gas into the field is not likely to occur. There have been no records of subsidence occurring in the Princeton area (ICF Jones & Stokes 2009). In addition, the integrity of the storage formation and the overlying strata would not be compromised by the injection pressures proposed by the project (injection pressures would be less than the strength of the storage formation), and deformation of the overlying strata is not likely to occur. New injection/withdrawal wells and observation well conversion would be constructed in accordance with the strict regulations of DOGGR, which account for potential impacts resulting from subsidence. The gas connecting pipelines will be designed and constructed in accordance with all applicable state and local regulations (APM GEO-3) and in accordance with the specific design parameters (APM GEO-4). With implementation of APM GEO-3 and GEO-4, which require Central Valley to conduct geotechnical studies and implement site specific measures in liquefaction-prone and expansive soil areas, impacts would be less than significant.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Refer to response to 5.7.3 (a) (iii). The project area (and the majority of Colusa County) contains highly expansive soils (soils with a high shrink/swell potential), which are susceptible to significant volume change when saturated (Colusa County 1989). Due to changes in soil volume attributed to fluctuation in moisture content, structures placed on soils with a high shrink/swell potential can be subject to differential movement without proper foundation design.

With the exception of the proposed remote well pad site, all project facilities would be located on soils with a high shrink/swell potential. The remote well pad site would be located on soils with a moderate shrink/swell potential. To minimize the potential impacts caused by expansive soils, Central Valley will implement APM GEO-3 and GEO-4. APM GEO-3 will require Central Valley to construct the project in accordance with current state and local regulation and to conduct geotechnical soil borings and testing to determine the appropriate structural design and construction requirements to ensure that project facilities are not subject to the adverse effects of expansive soils. APM GEO-4 will require Central Valley to conduct geotechnical studies and implement site-specific measures including but not limited to in situ ground densification, ground modification and improvements, deep foundation, and reinforced shallow foundations such that expansive soil would not create substantial risk to project facilities and employees. With implementation of APM GEO-3 and GEO-4, impacts would be less than significant.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

A domestic water well would be drilled at the compressor station site to supply water to the auxiliary building. A sanitary disposal system would also be installed at the compressor station auxiliary building, and waste generated would be disposed of in an on-site septic system or at an appropriate off-site facility. The water well and any leach line or drainage field would have the appropriate separation so that any contamination to the well will be avoided. The RWQCB would require a percolation test for the septic system. The percolation test as well as the depth to groundwater will drive the design and the separation. Therefore, impacts associated with the use of a septic system would be less than significant.

5.8 HAZARDS AND HAZARDOUS MATERIALS

<i>Would the project:</i>	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) <i>Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) <i>Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) <i>Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) <i>Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) <i>For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) <i>For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) <i>Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

<i>Would the project:</i>	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

5.8.1 Environmental Setting

Population Density

The proposed project is located in a sparsely populated, rural-agricultural area. Five homes associated with agricultural operations are located in the vicinity of the proposed compressor station and remote well pad site (Figure 5.8-1). The nearest residences would be located approximately 1,250 southeast of the proposed compressor station site boundary, located on Southam Road, and approximately 1,000 feet southeast of the proposed remote well pad site and buffer area boundary, located on Dodge Road. Immediately east of I-5, Old Highway 99, and the UPRR, and northwest of the community of Delevan, a single occupied residence would be located in close proximity to the proposed 14.7-mile-long gas connecting pipeline route. Several residences near the community of Delevan would be located less than 0.5 mile south of proposed pipeline route.

Fire Hazards

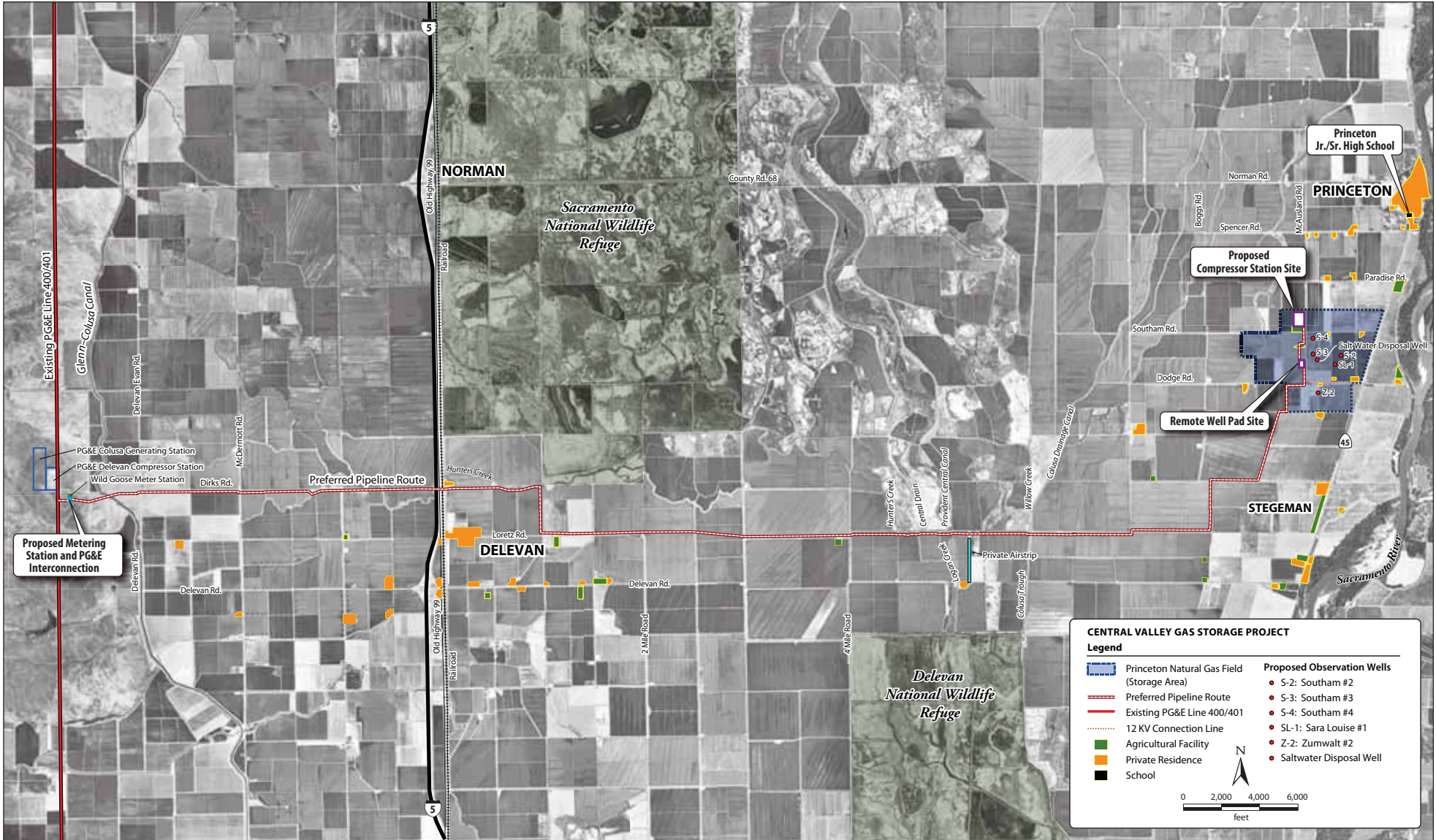
The State of California Department of Forestry and Fire Protection (CAL FIRE) has identified Federal Responsibility Areas, State Responsibility Areas, and Local Responsibility Areas throughout the state. The project area is located in a Local Responsibility Area, and local fire departments (Princeton Fire Protection District and the Maxwell Fire Protection District) would provide fire suppression services to the project area in the event of a fire.

It is important to note that project operators would be the first responders in cases of any emergency hazard/fire situation associated with the proposed project.

CAL FIRE is the umbrella planning agency under which the Maxwell and Princeton fire departments operate. CAL FIRE planning incorporates concepts established in the national and State of California Fire Plans, the CAL FIRE Unit Fire Plans, and community wildfire protection plans. CAL FIRE has organized California into 21 administrative fire units (a fire unit can include single or multiple counties), each covered by a Unit Fire Management Plan. Colusa County is located in the Sonoma-Lake-Napa Fire Unit. The Unit Fire Management Plan identifies high-value, high-risk areas within the fire unit and discusses strategies to reduce the damage caused by wildfires. CAL FIRE identifies high-risk areas by examining several factors including vegetation type, topography, fire history, and frequency of severe fire weather.

The nearest Federal Responsibility Areas to the project include the Sacramento and Delevan NWRs. There are no State Responsibility Areas in the vicinity of the project area (State Responsibility Areas are generally located west of I-5 within Colusa County). The majority of the project area has not been assessed for fire hazard severity and is designated "unzoned" by CAL FIRE (CAL FIRE 2007). Colusa County designates the project area as a low fire hazard severity zone (Colusa County 1989). A small section of the project area west of I-5 is designated as moderate for fire hazard severity by CAL FIRE and Colusa County. Fire services are discussed in detail in Section 5.14, Public Services. The California Department of Forestry and Fire Protection (CAL FIRE) provides hazard response including fire, medical, rescue, and disaster and provides leadership in the protection of life, property, and natural resources through fire planning. CAL FIRE planning incorporates concepts established in the National and State of California Fire Plans, the CAL FIRE Unit Fire Plans, and community wildfire protection plans. CAL FIRE has organized California into 21 administrative fire units (a fire unit can include single or multiple counties), each covered by a Unit Fire Management Plan. Colusa County is located in the Sonoma-Lake-Napa Fire Unit. The Unit Fire Management Plan identifies high-value, high-risk areas within the fire unit and discusses strategies to reduce the damage caused by wildfires. CAL FIRE identifies high-risk areas by examining several factors including vegetation type, topography, fire history, and frequency of severe fire weather.

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CENTRAL VALLEY GAS STORAGE PROJECT

Legend

Princeton Natural Gas Field (Storage Area)	S-2: Southam #2
Preferred Pipeline Route	S-3: Southam #3
Existing PG&E Line 400/401	S-4: Southam #4
12 KV Connection Line	SL-1: Sara Louise #1
Agricultural Facility	Z-2: Zumwalt #2
Private Residence	Saltwater Disposal Well
School	

0 2,000 4,000 6,000 feet

DUDEK

SOURCE: ICF Jones & Stokes 2010c

6055-01
JULY 2010

Central Valley Gas Storage Project

FIGURE 5.8-1
Sensitive Receptors in the Project Area

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CAL FIRE identifies Federal Responsibility Areas, State Responsibility Areas, and Local Responsibility Areas in the state. Federal Responsibility Areas in the project vicinity include the Sacramento and Delevan NWRs. There are no State Responsibility Areas in the vicinity of the project area (State Responsibility Areas are generally located west of I-5 within Colusa County). The project area is located in a Local Responsibility Area, and local fire departments and fire protection districts would provide fire suppression services to the project area in the event of a fire. The majority of the project area has not been assessed for fire hazard severity and is designated “unzoned” by CAL FIRE (CAL FIRE 2007). Colusa County designates the project area as a low fire hazard severity zone (Colusa County 1989). A small section of the project area west of I-5 is designated as moderate for fire hazard severity by CAL FIRE and Colusa County. Fire services are discussed in detail in Section 5.14, “Public Services.”

Airports

Airports within Colusa County include the Colusa County Airport, located southeast of the project area in the City of Colusa, and private airstrips associated with agricultural operations. Table 5.8-1 lists the airport and airstrips in the vicinity of project, their distance from the closest project component, and airport ownership.

Table 5.8-1: Airports and Airstrips in the Project Area Vicinity		
Airport/Airstrip	Distance from project component	Ownership
Colusa County Airport	13 miles SE of proposed compressor station	Public: County of Colusa
Gunnerfield Ranch Airstrip	Adjacent to proposed 14.7-mile pipeline route, N of the Delevan NWR	Private: Doug McGeoghegan
Moller Airstrip	5 miles S of proposed 14.7-mile pipeline route in the community of Maxwell	Private: Tim Azevedo
Davis Airstrip	15 miles SE of the proposed compressor station	Private: John W. Davis

SOURCE: Pilotoutlook.com 2009

Hazardous Materials

Section 25501(o) of the Health and Safety Code defines hazardous materials as “any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment.” Hazardous materials include (but are not limited to) hazardous substances, hazardous wastes, or any substance that could be injurious to the health of the public and the environment if released.

An Environmental Data Resources (EDR) Data Map Corridor Study was conducted for the proposed project to identify any previous contamination in the vicinity of project components that may have resulted from past or present use of the project area properties. The EDR report did not identify any contaminated sites within a 1-mile radius of project components (EDR 2008).

Natural Gas

Natural gas used by consumers is composed almost entirely of methane. Methane is a colorless, odorless gas with a wide distribution in nature. Although not toxic, methane is highly flammable and may form explosive mixtures with air at sufficient concentrations. Methane is an asphyxiant and may replace oxygen in an enclosed space. Natural gas does ignite where an

ignition source is present and can be explosive when allowed to accumulate in confined spaces at sufficient concentrations. Natural gas could come from leaks at the compressor station, wellheads sites, connecting pipelines, or could migrate from underground formations.

Gas Migration

The uncontrolled movement of natural gas from a contained state (in a reservoir or well) to an uncontained state (in the air, geologic formations, soil, etc.) is referred to as gas migration. Due to flammability and explosiveness of natural gas, gas migration is an important issue in natural gas storage facility projects.

Gas migration from an underground reservoir to the surface can occur in three ways: (1) from defective cementing of annular seals for new wells or previously abandoned wells that were not properly abandoned; (2) through over-pressurizing existing cracks or faults in the cap rock; or (3) through formation of new fractures in the cap rock from the proposed gas injection and repeated cycling of gas pressure associated with gas storage procedures.

5.8.2 Regulatory Setting

Federal

Hazardous Materials

Toxic Substances Control Act of 1976

Congress enacted the Toxic Substances Control Act of 1976 (15 U.S.C. 2601 et seq.) to give the federal EPA the ability to track the thousands of industrial chemicals being produced in or imported into the United States. The EPA routinely screens industrial chemicals and reports and tests those found to pose a potential health hazard to the environment and/or to human health. Through the Toxic Substances Control Act, the EPA can ban the manufacture and import of those chemicals that pose an immediate risk. The EPA also can track and control new industry-developed chemicals in order to protect the environment and human health from potential risks.

Resource Conservation and Recovery Act of 1976

The Resource Conservation and Recovery Act (RCRA), or Solid Waste Disposal Act (42 U.S.C. 6901 et seq.), established a framework for the proper management of hazardous and non-hazardous solid waste. This act, along with the Toxic Substances Control Act, enacted a program administered by the EPA for the regulation of the generation, transportation, treatment, storage, and disposal of hazardous waste. The RCRA was amended in 1984 by the Hazardous and Solid Waste Act, which affirmed and extended the “cradle to grave” system of regulating hazardous wastes from their creation to disposal. The use of certain techniques for the disposal of some hazardous wastes was specifically prohibited by the Hazardous and Solid Waste Act. The RCRA focuses on active and future facilities; it does not address abandoned or historical sites, which are managed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. 9601 et seq.).

Comprehensive Environmental Response, Compensation, and Liability Act

CERCLA (42 U.S.C. 9601 et seq.), commonly known as Superfund, was enacted by Congress on December 11, 1980. This law provided broad federal authority to respond directly to releases

or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA established requirements concerning closed and abandoned hazardous waste sites, provided for liability of persons responsible for the release of hazardous waste at these sites, and established a trust fund to provide for cleanup when no responsible party could be identified. The law authorizes two types of responses: short-term removals requiring prompt response and long-term remedial response actions that permanently and significantly reduce serious on-site dangers. CERCLA also enabled the revision of the National Contingency Plan (42 U.S.C. 9605). The National Contingency Plan provided guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants. The National Contingency Plan also established the National Priorities List of contaminated sites warranting further investigation by the EPA. CERCLA was amended by the Superfund Amendments and Reauthorization Act (SARA) on October 17, 1986.

Superfund Amendments and Reauthorization Act

Under SARA Title III, a nationwide emergency planning and response program was established that imposed reporting requirements for businesses that store, handle, or produce significant quantities of hazardous or acutely toxic substances, as defined under federal laws. SARA Title III required each state to implement a comprehensive system to inform federal authorities, local agencies, and the public when a significant quantity of hazardous, acutely toxic substances are stored or handled at a facility. In addition, SARA provided new enforcement and settlement tools, increased the focus on human health problems posed by hazardous waste sites, and stressed the importance of permanent remedies and innovative treatment technologies in cleaning up hazardous waste sites.

EPA Risk Management Program

Ammonia is an example of an acutely hazardous material that the EPA regulates under the Risk Management Program, contained within the Clean Air Act (42 U.S.C. 7401 et seq.). Although a federal program, the Risk Management Program is intended to reduce hazards at the local level. The program requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes detailed safety precautions and maintenance plans and an adequate emergency response program. The information required is intended to help local fire, police, and emergency response personnel (first responders) in the event of an accidental spill or exposure event.

Occupational Safety and Health Administration Process Safety Management of Highly Hazardous Chemicals

The Process Safety Management of Highly Hazardous Chemicals (HHCs) (29 CFR 1910.119) is intended to prevent or minimize the consequences of catastrophic releases of toxic, reactive, flammable, or explosive HHCs by regulating their use, storage, manufacturing, and handling. The standard intends to accomplish its goal by requiring a comprehensive management program integrating technologies, procedures, and management practices. The standard does not apply to gas well drilling and servicing activities.

U.S. Department of Transportation Office of Hazardous Materials Safety

Transportation of hazardous materials is regulated by the U.S. Department of Transportation's (USDOT's) Office of Hazardous Materials Safety. The Office of Hazardous Materials Safety

formulates, issues, and revises hazardous materials regulations under the federal Hazardous Materials Transportation Law (49 CFR 100–185). These regulations cover hazardous materials definitions and classifications, hazard communications, shipper and carrier operations, training and security requirements, and packaging and container specifications.

The hazardous materials transportation regulations require carriers transporting hazardous materials to receive training in the handling and transportation of hazardous materials. Training requirements include pre-trip safety inspections; use of vehicle controls and equipment, including emergency equipment; procedures for safe operation of the transport vehicle; training on the properties of the hazardous material being transported; and loading and unloading procedures. All drivers must possess a commercial driver's license (49 CFR 383). Vehicles transporting hazardous materials must be properly placarded. In addition, the carrier is responsible for the safe unloading of hazardous materials at the site, and operators must follow specific procedures during unloading to minimize the potential for an accidental release of hazardous materials.

Gas Wells and Pipeline Operations and Safety

U.S. Department of Transportation

The USDOT provides oversight for the country's natural gas pipeline transportation. The USDOT responsibilities are promulgated under 49 U.S.C. 601. The Pipeline and Hazardous Materials Safety Administration, Office of Pipeline Safety (OPS), administers the national regulatory program to ensure the safe transportation of gas and other hazardous materials by pipeline. Two statutes provide the regulatory framework for the federal pipeline safety program: the Natural Gas Pipeline Safety Act (NGPSA) of 1968 and the Hazardous Liquid Pipeline Safety Act (HLPSA) of 1979 (49 U.S.C. 601). These acts are discussed in more detail below.

The federal pipeline regulations are published in 49 CFR 190–199. Section 192.5 specifies pipe class locations. Section 192.101 describes the requirements for steel pipe yield strength, nominal wall thickness, longitudinal joint factor, and other design factors based on pipe class. It should be noted that many of the pipeline regulations discussed in parts 190–199 are written as performance standards. These regulations set the level of safety to be attained and allow the pipeline operator to use various technologies to achieve the desired result.

In summary, the requirements of federal regulations become more stringent as the human population density increases. The regulations in 49 CFR 192 define area classifications based on population density in the vicinity of the pipeline and specifies more rigorous safety requirements for more heavily populated areas. In general, pipeline facilities located within more populated areas are required to have a more conservative design. In addition, the USDOT requires that operators have certain qualifications to operate gas pipelines. Construction crews are not subject to these qualifications.

Title 49 CFR 192, Subpart O, "Gas Transmission Pipeline Integrity Management," requires the operators of gas pipeline systems in high consequence areas (HCAs) to significantly increase their minimum required maintenance and inspection efforts. In general, the integrity of pipelines must also be evaluated using an internal inspection device or a direct assessment, as prescribed in regulation. As of December 17, 2004, gas transmission operators of pipelines in HCAs were required to develop and follow a written integrity management program that

contained the elements prescribed in 49 CFR 192.911 and address the risks on each covered transmission pipeline segment.

The USDOT (68 Federal Register (FR) 69778; 69 FR 18228; 69 FR 29903) defines HCAs as they relate to the different class zones, potential impact circles, or areas containing an identified site as defined in 49 CFR 192.903. The OPS published a series of rules from August 6, 2002, to May 26, 2004 (69 FR 69817; 69 FR 29904) that defines HCAs where a gas pipeline accident could do considerable harm to people and their property. This definition satisfies, in part, the congressional mandate in 49 U.S.C. 60109 for the OPS to prescribe standards that establish criteria for identifying each gas pipeline facility in a high-density population area.

Natural Gas Pipeline Safety Act (NGPSA) of 1968

The NGPSA of 1968, as amended through March 2006 (49 U.S.C. 601), defines the safety standards for the design, construction, inspection, and initial testing of new natural gas pipeline facilities. These standards include permissible construction materials, location-specific design factors, and safety factors used to prevent and (if necessary) contain a natural gas incident. Additionally, the NGPSA authorizes the USDOT to regulate pipeline transportation of natural (flammable, toxic, or corrosive) gas and other gases and the transportation and storage of liquefied natural gas.

Hazardous Liquid Pipeline Safety Act (HLPESA) of 1979

The HLPESA of 1979, as amended, authorizes the USDOT to regulate pipeline transportation of hazardous liquids (crude oil, petroleum products, anhydrous ammonia, and carbon dioxide). Both the NGPSA and HLPESA have been recodified as 49 U.S.C. 601.

Pipeline Safety Improvement Act of 2002

The Pipeline Safety Improvement Act of 2002 (49 U.S.C. 60129) implemented changes and new requirements in the way that the natural gas industry maintains the safety and integrity of its pipelines. The law applies to natural gas transmission pipeline companies. Central to the law are the requirements it places on each pipeline operator to prepare and implement an “integrity management program,” which, among other things, requires operators to identify HCAs on their systems, conduct risk analyses of these areas, perform baseline integrity assessments of each pipeline segment, and inspect the entire pipeline system according to a prescribed schedule and using prescribed methods. Integrity management programs are submitted to the OPS, Research and Special Projects Administration. All pipeline segments within HCAs must be inspected and remediation plans (if required) completed by December 17, 2008, while non-HCA segments must be inspected by 2012. All segments must be re-inspected on a 7-year cycle, with certain exceptions. Other provisions of the law included increased penalties for violations of the law and “whistle-blower” protection for pipeline system employees. This law was subsequently enhanced and passed by the 109th Congress in 2006 (referred to as the Pipeline Inspection, Protection, Enforcement and Safety Act of 2006 (HR 5782)).

State

Hazardous Materials

Hazardous Waste Control Law

The California Hazardous Waste Control Law (HWCL) is administered by the CalEPA to regulate hazardous wastes. While the HWCL is generally more stringent than the RCRA, until the EPA approves the California hazardous waste control program (which is charged with regulating the generation, treatment, storage, and disposal of hazardous waste), both state and federal laws apply in California. The HWCL lists 791 chemicals and approximately 300 common materials that may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal, and transportation; and identifies some wastes that cannot be disposed of in landfills.

The CCR provides the following definition for hazardous waste (22 CCR 66261.10 (a) (1)):

...a waste that exhibits the characteristics may: (A) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed or otherwise managed.

According to 22 CCR, substances having a characteristic of toxicity, ignitability, corrosivity, or reactivity are considered hazardous waste. Hazardous wastes are hazardous substances that no longer have a practical use, such as material that has been abandoned, discarded, spilled, or contaminated or is being stored prior to proper disposal.

Toxic substances may cause short- or long-term health effects, ranging from temporary effects to permanent disability or death. For example, toxic substances can cause eye or skin irritation, disorientation, headache, nausea, allergic reactions, acute poisoning, chronic illness, or other adverse health effects if human exposure exceeds certain levels (the level depends on the substance involved). Carcinogens (substances known to cause cancer) are a special class of toxic substances. Examples of toxic substances include most heavy metals, pesticides, and benzene (a carcinogenic component of gasoline). Ignitable substances (e.g., gasoline, hexane, and natural gas) are hazardous because of their flammable properties. Corrosive substances (e.g., strong acids and bases such as sulfuric (battery) acid or lye) are chemically active and can damage other materials or cause severe burns upon contact. Reactive substances (e.g., explosives, pressurized canisters, and pure sodium metal) may cause explosions or generate gases or fumes as a result of contamination or exposure to heat, pressure, air or water.

Other types of hazardous materials include radioactive and biohazardous materials. Radioactive materials and wastes contain radioisotopes, which are atoms with unstable nuclei that emit ionizing radiation to increase their stability. Radioactive waste mixed with chemical hazardous waste is referred to as "mixed wastes." Biohazardous materials and wastes include anything derived from living organisms. They may be contaminated with disease-causing agents such as bacteria or viruses.

Department of Toxic Substance Control

The Hazardous Waste Control Law states that any person who stores, treats, or disposes of hazardous wastes must obtain a Hazardous Waste Facility Permit or a grant of authorization from the Department of Toxic Substances Control.

California Accidental Release Prevention Program

Similar to the federal Risk Management Program, the California Accidental Release Prevention Program includes additional state requirements and an additional list of regulated substances and thresholds. The regulations of the program are contained in 19 CCR 2735.1 et seq. The intent of California Accidental Release Prevention is to provide first responders with basic information necessary to prevent or mitigate damage to public health, safety, and the environment from the release or threatened release of hazardous materials.

California Department of Transportation and California Highway Patrol

The California Department of Transportation (Caltrans) regulates the transportation of hazardous materials throughout the state. Caltrans requires that drivers transporting hazardous wastes obtain a certificate of driver training that shows the driver has met the minimum requirements concerning the transport of hazardous materials, including proper labeling and marking procedures, loading/handling processes, incident reporting and emergency procedures, and appropriate driving and parking rules. The California Highway Patrol also requires shippers and carriers to complete hazardous materials employee training before transporting hazardous materials.

California Health and Safety Code

In California, the handling and storage of hazardous materials is regulated by Chapter 6.95 of the California Health and Safety Code. Under Sections 25500–25543.3, facilities handling hazardous materials are required to prepare a hazardous materials business plan. The business plan provides information to local emergency response agencies regarding the types and quantities of hazardous materials stored at a facility and provides detailed emergency planning and response procedures in the event of a hazardous materials release. In the event that a facility stores quantities of specific acutely hazardous materials above the thresholds set forth by California code, facilities are also required to prepare a risk management plan and California accidental release plan. The risk management plan and accidental release plan provide information on the potential impact zone of a worst-case release and require plans and programs designed to minimize the probability of a release and mitigate potential impacts.

Underground or aboveground storage tanks are typically used to store hazardous waste. Regulations regarding underground storage tanks used to store hazardous materials require owners and operators to register, install, monitor, and remove their tanks according to established standards and procedures. Releases are to be reported to the local Certified Unified Program Agency. Chapter 6.67 of the California Health and Safety Code (Sections 25270–25270.13) regulates the storage of petroleum in aboveground storage tanks and requires construction methods and monitoring to prevent petroleum releases. Owners of aboveground storage tanks containing petroleum products with an aggregate storage capacity greater than 1,320 gallons are required to prepare and implement spill prevention and response strategies and to contribute to the Environmental Protection Trust Fund that is used to respond to some

spills. Proper drainage, dikes, and walls are required to prevent accidental discharge from endangering employees, facilities, or the environment.

California Occupational Safety and Health Administration

The California Occupational Safety and Health Administration (Cal/OSHA) is the primary agency responsible for worker safety in the handling and use of chemicals in the work place. Cal/OSHA standards are generally more stringent than federal regulations. The employer is required to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR 337–340). The regulations specify requirements for employee training, availability of safety equipment, accident prevention programs, and hazardous substance exposure warnings.

Gas Wells, Pipelines, and Pipeline Safety

California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR)

The DOGGR is responsible for reviewing and regulating the drilling, operation, and maintenance of natural gas wells. Title 14, Division 2, Chapter 4 of CCR provides regulations for the development of natural gas resources throughout the state through standard engineering practice that protects the environment and ensures public safety. Division 3 and several chapters of the Public Resources Code regulate natural gas operations in the state.

California Public Utilities Commission General Order 112-E

State pipeline facilities are under the jurisdiction of the CPUC as a result of their certification by the OPS. The retrieval/storage wells are within the jurisdiction of California's DOGGR. CPUC General Order 112-E provides regulations to ensure adequate services are maintained by gas facilities located within the jurisdiction of the CPUC. The regulations provide the following in relation to public health and safety: minimum requirements for the design, construction, quality of materials, locations, testing, operation, and maintenance of facilities used in the gathering, transmission, and distribution of gas; and minimum requirements for similar equipment and procedures used in liquefied natural gas facilities. These requirements are considered adequate for safety for standard conditions encountered within the gas industry.

California Code of Regulations

The construction and operation of natural gas wells are regulated per 14 CCR, Division 2, Chapter 4, "Development, Regulation, and Conservation of Oil and Gas Resources" (14 CCR 1712 et seq.). Article 3, "Requirements," contains regulations specific to oil and gas field practices, including preparation of an oil spill contingency plan and a blowout prevention and control plan (14 CCR 1722 et seq.). Section 1724.6, "Approval of Underground Injection and Disposal Projects," requires DOGGR approval prior to the beginning of any underground injection project. Section 1724.7, "Project Data Requirements," identifies the documents required by DOGGR in order to obtain approval, which includes geologic and engineering studies and an injection plan. Section 1724.9, "Gas Storage Projects," requires submittal and approval from DOGGR of the characteristics of the cap rock, calculations of the oil and gas reserves of storage zones prior to injection, a list of proposed surface and subsurface safety devices to ensure safety of the project, and the proposed wastewater disposal method. Similarly, Section 1724.10, "Filing, Notification, Operating, and Testing Requirements for

Underground Injection Projects,” contains requirements including drilling procedures; a chemical analysis of the injecting product; and data showing that no damage to life, health, property, or natural resources is occurring as a result of the project.

Title 14, Subchapter 2, “Environmental Protection,” sets forth rules and regulations governing DOGGR’s environmental protection program (14 CCR 1750 et seq.). Section 1775, “Oilfield Wastes and Refuse,” regulates the disposal of drilling fluids. Disposals are to be carried out in a manner to avoid impacts to life, health, property, natural resources, and public safety. Chapter 4 also contains provisions for the testing of idle wells that have been out of continuous service for more than 5 years, casing programs for wells, and regulations regarding plugging and abandonment of wells.

California Laws for the Conservation of Petroleum and Gas

California Public Resources Code Division 3, Chapter 1, Articles 4 and 5 (Sections 3200–3347) contains regulations regarding the construction, operation, and maintenance of oil and natural gas facilities. Regulations cover many aspects of facility construction and operations, including well completion, well abandonment, blowout prevention, orders for repair, abandoned wells, hazardous wells, leak detection, and unreasonable waste of gas. Several regulations are discussed below.

Well Completion

“[A] well is properly completed when it has been shown, to the satisfaction of the supervisor, that the manner of producing oil or gas or injecting fluids into the well is satisfactory and that the well has maintained production of oil or gas or injection for a continuous six-month period” (Section 3208).

Abandonment

A well is properly abandoned when it has been shown, to the satisfaction of the supervisor, that all proper steps have been taken to isolate all oil-bearing or gas-bearing rock encountered by the well. It must also be shown that steps have been taken to protect underground or surface water that is suitable for irrigation or farm or domestic purposes from the infiltration or addition of any harmful substance, and to prevent later damage to life, health, property, and other resources (Section 3208). The supervisor or district deputy may order the re-abandonment of any previously abandoned well if there is reason to question the integrity of the existing abandonment (Section 3208.1(a)). Before commencing any work to abandon any well, the owner or operator shall file with the supervisor or the district deputy a written notice of intention to abandon the well.

“Abandonment shall not proceed until approval is given by the supervisor or the district deputy. If the supervisor or the district deputy does not give the owner or operator a written response to the notice of intention within 10 working days, the proposed abandonment shall be deemed to have been approved and the notice of intention shall for the purposes of this chapter be deemed a written report of the supervisor” (Section 3229). “The supervisor, in cooperation with appropriate state and local agencies, shall conduct a study of abandoned oil and gas wells located in areas of the state with substantial potential for methane and other hazardous gas accumulations in order to determine the location, the extent of methane gas and other hazardous gas accumulations, and potential hazards from abandoned wells” (Section 3240).

Blowout Prevention

“Any person engaged in operating any oil or gas well wherein high pressure gas is known to exist, and any person drilling for oil or gas in any district where the pressure of oil or gas is unknown shall equip the well with casings of sufficient strength, and with such other safety devices as may be necessary, in accordance with methods approved by the supervisor, and shall use every effort and endeavor effectually to prevent blowouts, explosions, and fires” (Section 3219).

Order for Repair

“The supervisor shall order such tests or remedial work as in his judgment are necessary to prevent damage to life, health, property, and natural resources; to protect oil and gas deposits from damage by underground water; or to prevent the escape of water into underground formations, or to prevent the infiltration of detrimental substances into underground or surface water suitable for irrigation or domestic purposes, to the best interests of the neighboring property owners and the public.” (Section 3224)

Hazardous Wells

“The Legislature hereby finds and declares that hazardous and certain idle-deserted oil and gas wells, as defined in this article, are public nuisances and that it is essential, in order to protect life, health, and natural resources that such oil and gas wells be abandoned, reabandoned, produced, or otherwise remedied to mitigate, minimize, or eliminate their danger to life, health, and natural resources.” (Section 3250)

Article 4.4, Regulation of Production Facilities

“(a) The division shall, by regulation, prescribe minimum facility maintenance standards for all production facilities in the state. The regulations shall include, but are not limited to, standards for all of the following:

1. Leak detection.
2. Corrosion prevention and testing.
3. Tank inspection and cleaning.
4. Valve and gauge maintenance, and secondary containment maintenance.
5. Other facility or equipment maintenance that the supervisor deems important for the proper operation of production facilities and that the supervisor determines are necessary to prevent damage to life, health, property, and natural resources; damage to underground oil and gas deposits from infiltrating water and other causes; loss of oil, gas, or reservoir energy; and damage to underground and surface waters suitable for irrigation or domestic purposes by the infiltration of, or the addition of, detrimental substances.” (Section 3270)

Spill Contingency Plan

“Within three months of its acquisition of a production facility or at the time of the initial production at its production facility, the facility operator shall file with the division a spill contingency plan” (Section 3270.1).

Article 5. Unreasonable Waste of Gas

“The unreasonable waste of natural gas by the act, omission, sufferance, or insistence of the lessor, lessee or operator of any land containing oil or gas, or both, whether before or after the removal of gasoline from the gas, is opposed to the public interest and is unlawful. The blowing, release, or escape of gas into the air shall be prima facie evidence of unreasonable waste” (Section 3300).

Local

Colusa County General Plan

The following policies of the Colusa County General Plan’s Safety Element are relevant to the proposed project:

- **SAFE-10:** An adequate water source for fire protection purposes shall be ensured prior to development in high or moderate fire hazard zones.
- **SAFE-11:** Fire protection policies in the Community Services Element should be supported to reduce the hazards associated with wildfire.

Several policies of the General Plan’s Community Services Element are applicable to fire hazards and are listed below.

- **FIRE-2:** Proposed development applications should be referred to the local fire chief for recommendations and comments. Comments should include specific recommendations about equipment, manpower, or facilities that might be required as a result of the development.
- **FIRE-4:** Development which could create a public hazard in the event of a fire shall be located away from existing and planned residential areas.
- **FIRE-5:** New development should incorporate design measures which are responsive to the risk of fire hazard in those areas.

Business Plan and Emergency Planning

The California Health and Safety Code establishes that facilities storing hazardous materials in excess of 55 gallons (liquid), 500 pounds (solid), or 200 cubic feet (compressed gas) must prepare and submit a hazardous materials business plan to the local Certified Unified Program Agency (Section 25503.5). The local Certified Unified Program Agency for project area is the Colusa County Environmental Health Division. In addition, the storage, handling, and disposal of hazardous materials are also regulated by the Colusa County Department of Agriculture and Office of Emergency Services (ICF Jones & Stokes 2009). Businesses must report the types and amounts of hazardous wastes they use to the Colusa County Office of Emergency Services (Colusa County 1989).

5.8.3 Environmental Impacts

Significance Criteria

Appendix G of the CEQA Guidelines provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on hazards and hazardous materials if the project would:

- a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous or other materials into the environment.
- c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.
- e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area.
- f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area.
- g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Impact Discussion

- a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**

Construction

Construction of the all project components would involve the transport, use, and disposal of hazardous materials during the construction phase. This material would include fuels (e.g., gasoline, diesel, and propane), lubricants, solvents, hydraulic fluids, and other toxic or flammable materials. If not properly secured during transport to or storage at project site, accidental release (spill) could create a significant hazard to the public and the environment. This could result in release of toxic materials onto local roads and adjacent waterways and could potentially contaminate soils or groundwater. Potential hazards (accidental spills) during routine transport, use, and disposal would be considered a significant impact.

In order to reduce the potential exposure of the public to hazardous materials during construction activities, Central Valley will implement APMs HAZ-1 and HAZ-2 (see Section 4.8.7). With implementation of APM HAZ-1, which requires Central Valley and the project contractor to implement equipment maintenance and refuelling restrictions, and APM HAZ-2, which requires Central Valley to prepare and implement a construction and operation safety and emergency response plan, impacts to the public or the environment through the routine transport, use, or disposal of hazardous materials would be less than significant.

Remote Well Pad Site

The drilling of injection/withdrawal wells at the proposed remote well pad site would involve the use of potentially hazardous materials. Drilling muds would be used to lubricate the drill

bit, bring drill cuttings (earth and rock material from the drill hole) back to the surface, and maintain down-hole pressure during drilling. Drilling mud is usually nontoxic; however, the mud could become contaminated with contaminated water, oils, and chemicals during drilling and would require proper disposal. Potential hazards (accidental spills) associated with the routine transport and disposal of drill mud and cuttings would be considered a significant impact. To minimize the potential for accidental spills, all fluids used during well drilling would be contained in tanks or drums stored at the remote well pad site and then transported for disposal at an appropriate facility.

Connecting Pipelines

HDD is proposed at three locations along the 14.7-mile-long gas connecting pipeline. HDD operations typically use bentonite, a fine, non-toxic clay that when mixed with water provides lubricant and operating fluid for the drilling process. Bentonite could enter adjacent waterways and degrade water quality if not stored and disposed of properly. In addition, HDD operations would generate potentially hazardous drilling mud and cuttings that would require proper disposal. Potential hazards (accidental spills resulting in bentonite entering an adjacent waterway, etc.) would be considered a significant impact.

As part of the HDD plan that would be prepared by Central Valley, spill prevention measures would be developed and implemented to minimize the risk of bentonite entering waterways during HDD operations. Central Valley's engineering consultant would also prepare a bore plan containing detailed drawings and a frac-out contingency plan as part of the HDD plan. The intent of the plan would be to minimize the potential for a frac-out; providing for the timely detection of frac-outs; and ensuring an organized, timely, and "minimum-impact" response in the event of a frac-out and release of bentonite in a waterway. With implementation of the HDD bore plan and frac-out contingency plan, potential impacts associated with accidental spills and bentonite entering adjacent waterways along the pipeline route would be minimized.

In order to further minimize the potential for accidental release of drilling mud and cuttings during disposal activities, the project will implement Mitigation Measure HAZ-1. With implementation of Mitigation Measure HAZ-1, impacts would be less than significant.

Mitigation Measure HAZ-1: Central Valley and/or the project contractor will contain drilling mud and cuttings from well drilling and HDD in portable tanks and will remove and dispose of these at approved facilities for this type of waste.

Operations and Maintenance

Compressor Station, Remote Well Pad Site, Observation Wells, and Saltwater Disposal Well

Operation of the compressor station, remote well pad site, observation wells, and saltwater disposal well would require the transport, use, and storage of hazardous materials. Quantities of materials to be stored at the compressor station site are listed in Table 5.8-2. Approximately 1,000 gallons of methanol would be stored at the remote well pad site. Methanol would be used to avoid potential hydrate formation (which can disrupt productivity) at the injection/withdrawal wells. Hazardous materials would not be stored at the observation wells or saltwater disposal well.

Material	Estimate Quantity Stored On-Site (gallons)
Clean Tri-ethylene glycol	2,500
Used Tri-ethylene glycol	2,500
Engine Coolant	1,500
Engine lube oil	1,000
Compressor lube oil	1,000
Used lube oil	800

SOURCE: ICF Jones & Stokes 2009.

Hazardous materials at the compressor station would be securely stored in double- or single-walled storage tanks. Materials stored in single-walled tanks would feature a spill containment area designed to contain the entire stored volume of the tank if a leak occurred.

The compressor station would generate a variety of liquid wastes (including lubricants and solvents) during normal operations. The quantities generated are expected to be low. In accordance with current federal, state, and local regulations, waste generated by the compressor station would be stored on site for a maximum of 90 days and would then be transported by a licensed hazardous waste hauler to an appropriate hazardous waste storage facility. Generated wastes would be securely stored in double- or single-walled tanks. Solid wastes (e.g., oily rags, oil filters) would be temporarily stored on site in secured, enclosed areas and then disposed of at an appropriate off-site facility. The routine transport of this material by a licensed hazardous waste hauler is not considered a significant impact since transport of material would conform to USDOT requirements.

As required by the California Health and Safety Code (Section 25503.5), Central Valley would prepare and submit to the Colusa County Environmental Health Division a hazardous materials business plan for the proposed compressor station and remote well pad site. The type and quantity of hazardous materials stored at the compressor station and the remote well pad site would also be reported to the Colusa County Office of Emergency Services. With implementation of APM HAZ-2, which requires Central Valley to prepare and implement a construction and operation safety and emergency response plan; APM HYDRO-1, which requires preparation and implementation of a Stormwater Pollution Prevention Plan (Section 4.8.8, "Hydrology and Water Quality"); the required hazardous materials business plan; and Mitigation Measure HAZ-2, impacts to the public or the environment through the use and storage of hazardous materials at the compressor station and remote well pad site would be less than significant.

Mitigation Measure HAZ-2: All personnel working at the compressor station and remote well pad site will be trained in general and specific hazardous chemical safety issues and response procedures.

Metering Station

PG&E would store an odorant (a 50/50 blend of tetrahydrothiophene and tertiary butyl mercaptan) at the metering station. Tetrahydrothiophene and tertiary butyl mercaptan are both colorless, strong-odored liquids that are used in a variety of industrial applications,

including as an odorant to natural gas. The compounds are also irritants and are extremely flammable. The blend would be transported, stored, and used at the metering station to add odorant to natural gas, as necessary.

The blend would be transported to the site via trucks carrying individual cylinders of the chemical. It is estimated that one delivery of two to three cylinders per week would be required. The route for delivery would likely be along Delevan, McDermott, and Dirks roads, from I-5 to the proposed metering station. The one-way travel distance from I-5 is approximately 4.7 miles.

The likely delivery route passes adjacent to agricultural lands and several associated residences. No schools or commercial developments are located in the area. The possibility of accidental conditions along the delivery route are low due to the general lack of sensitive receptors and low traffic volumes along the route. PG&E will transport the odorant blend in accordance with regulations governing the transportation of hazardous materials including the federal Hazardous Materials Transportation Law and the employee training/certification requirements of Caltrans and the California Highway Patrol.

The 50/50 blend would be stored in a tank at the metering station. The metering station operator would be required to prepare and submit a hazardous materials business plan for the proposed metering station to the Colusa County Environmental Health Division and inform the Colusa County Office of Emergency Services of the quantity of odorant stored on site. The metering station is located in a sparsely populated agricultural area with similar industrial uses in the vicinity. The blend would be contained within a tank specifically designed to store the odorant. For these reasons and with implementation of hazardous materials safety laws, the impact associated with a release of stored material at the site would be less than significant.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Construction

The EDR report concluded that no hazardous materials sites occur within 1 mile of project facilities. However, there is potential for previously unidentified recognized environmental conditions to occur within the project area, which if disturbed during construction could create a significant hazard. With implementation of Mitigation Measures HAZ-3 and HAZ-4, impacts would be less than significant.

Mitigation Measure HAZ-3: In the event that soils suspected of being contaminated, based on visual or olfactory evidence or from portable chemical monitoring devices, are removed during excavation activities along the pipeline corridor, the excavated soil will be tested and, if contaminated above soil action levels, shall be disposed of at a licensed waste facility. Any excavated areas which have an odor due to contaminated soil will be covered while one or more samples are being tested to determine the level of contamination. The presence of known or suspected contaminated soil or groundwater will require the supervision of testing and investigation by a licensed professional geologist or engineer, as appropriate, to meet state and federal regulations.

Mitigation Measure HAZ-4: If asbestos-cement pipe (ACP) is encountered during construction, the pipe will be removed by hazardous materials trained employees from the construction work area and stockpiled to the side. Containment and removal may be carried out simultaneously with the continuation of construction to the extent possible.

Well drilling at the remote well pad site could result in potential significant impacts if natural gas were to escape from the reservoir through a drilled borehole. The injection/withdrawal wells would be constructed under the supervision of DOGGR, according to DOGGR regulations. Prior to the start of drilling, DOGGR will issue a list of rules regulating allowable drilling methods and casing/cementing procedures. Central Valley would submit detailed drilling plans and procedures to DOGGR and Colusa County and would obtain the necessary drilling permits from both agencies. In addition, Central Valley would post a security bond with DOGGR before drilling wells. Since the release of gas resulting in a torch fire could result in an impact up to 210 feet from the well head, the applicant has developed a site plan that will place the area of impact outside of public access, resulting in less-than-significant impact.

Open-cut trenching is proposed for the majority of the construction of the 14.7-mile-long gas connecting pipeline. If pipeline construction activities (including open cut trenching, boring, and HDD operations) are not closely coordinated with local utilities and subsurface infrastructure in the immediate project area, potential conflicts and service disruptions could occur. To ensure that potential conflicts and service disruptions do not occur, Central Valley would coordinate closely with the Colusa County Public Works Department during final project design to identify potential utility conflicts and initiate relocation. Central Valley would also contact Underground Service Alert at least 2 days prior to the start of construction so that all owners of underground infrastructure registered with Underground Service Alert are informed of construction activities and are able to mark areas where their infrastructure is located so that they may be avoided to the extent possible. Central Valley would also coordinate with Wild Goose Storage, LLC to ensure that construction activities do not interfere with operation of the Wild Goose Storage gas pipeline and storage facility. With implementation of Mitigation Measure HAZ-5 and the coordination discussed above, impacts associated with potential conflicts and service disruption would be less than significant.

Mitigation Measure HAZ-5: If existing underground structures cannot be avoided, structures will be crossed by boring or ditching under them unless the owner of the structures allows them to be removed or the natural gas pipeline to be installed over them. The trench will be hand-dug in areas in close proximity to existing pipelines and other structures. A minimum clearance of 1 foot shall be maintained, where feasible, between such lines or structures and the line being laid, unless otherwise specified. Special procedures, such as placement of protective materials between the pipeline and existing structure, will be followed to protect existing structures where this clearance is not feasible.

Pipeline construction could also encounter contaminated groundwater during trench dewatering along the pipeline route. This water would be pumped into nearby agricultural ditches and if not properly handled could enter adjacent waterways and potentially affect water quality. With implementation of APM HYDRO-2, which requires Central Valley to

prepare and implement a dewatering and discharge plan (Section 4.8.8), impacts would be less than significant.

Operations and Maintenance

Gas Migration

Three potential pathways for natural gas to migrate from the reservoir to the surface have been identified: (1) from defective cementing of annular seals for new wells or previously abandoned wells that were not properly abandoned; (2) through over-pressurizing existing cracks or faults in the cap rock; or (3) through formation of new fractures in the cap rock from the proposed gas injection and repeated cycling of gas pressure associated with gas storage procedures. Each of these pathways is discussed in turn, followed by a conclusion whether the risk of gas migration from the re-pressurized reservoir to the surface would be significant.

Potential Gas Migration through Wells

Plugged and abandoned wells located within the Princeton Gas Field are assumed to have been sealed into the cap rock and plugged per DOGGR requirements. DOGGR will require that the applicant reevaluate all abandoned wells and provide remedial measures to assure the wells have been properly plugged. On initial review, DOGGR has determined that well S-4 will require remedial work to rectify casing integrity. The work required by DOGGR includes location and evaluation of wells within a radius of ¼ mile of the gas storage area (DOGGR Area of Review). Central Valley is proposing to convert ~~five~~four older wells (three currently open wells and ~~two~~one plugged and abandoned wells) into observation wells. Prior to their use as observation wells, these wells would be re-entered in order to inspect casings and wellheads. If necessary, remedial work would be performed to upgrade the well for gas storage use. This work may involve pressure testing, relining the well with new casing, installing new wellheads, and cement work. If any well fails integrity testing and cannot be repaired to DOGGR standards, the well would be plugged and abandoned in accordance with DOGGR regulations. ~~One~~Two existing plugged and abandoned wells (S-1 and Z-1) would remain plugged and abandoned during project operations. As part of routine operations, Central Valley would conduct regular inspections of the well to ensure no gas leaks occur. If a leak is detected, the well would be re-entered and remedial work would be performed to ensure that leakage does not continue. Implementation of Mitigation Measure HAZ-6, which requires Central Valley to prepare and implement a gas monitoring plan that includes periodic monitoring of existing wells located above the natural gas storage reservoir, would reduce potential impacts to less than significant levels.

If not properly designed and constructed, new injection/withdrawal wells at the remote well pad site could have the potential for gas migration during operation. To ensure proper design and construction of wells, Central Valley (as part of its application to operate a gas storage field) would prepare and submit detailed drilling plans and procedures to DOGGR for approval. In general, the cemented casing would isolate the storage zone from higher strata and protect freshwater aquifers in accordance with DOGGR requirements. The proposed casings would effectively block any migration of gas through the wells to zones above or below the zone(s) of intent into aquifers or to the surface.

Central Valley would prepare and submit an application to operate a gas storage field to DOGGR for approval. The application would include the project data requirements established by DOGGR (14 CCR 1724.9) for gas storage projects. These requirements include the preparation of engineering and geological studies and an injection plan. These studies and plans would describe the well drilling and abandonment plans; reservoir characteristics; all geologic units, aquifers, and oil and gas zones; and the monitoring system to ensure that injected gas is confined to the intended zone.

With implementation of the measures discussed above, APM HAZ-2 (which requires Central Valley to prepare and implement a construction and operation safety and emergency response plan), and Mitigation Measure HAZ-6, potential impacts associated with gas migration through wells would be less than significant.

Mitigation Measure HAZ-6: Central Valley will prepare and implement a Gas Monitoring Plan prior to construction. The Gas Monitoring Plan will address the type and frequency of gas monitoring well tests, both surface and in shallow soils; the frequency of wellhead inspections by a qualified operator; monitoring requirements for abandoned wellheads; and reporting requirements. The Gas Monitoring Plan will be submitted to ~~DOGGR~~ the California Department of Toxic Substances Control (DTSC) for approval; DTSC will review results of the Gas Monitoring Plan and request implementation of any additional monitoring that is required as a result of the information obtained. ~~a~~ A copy will be submitted to the CPUC. Dudek will be responsible for monitoring natural gas at shallow depths near the ground surface.

The four primary elements of this gas monitoring plan are:

1. Establish a baseline or background level for natural gas at the surface prior to storage operations. This will allow comparison and sound evaluation of future project-related gas monitoring results.
2. Periodically measure for levels of detectable gas at predetermined surface locations. This will allow the storage operator to ascertain whether the levels of gas detected at the surface, if any, have increased noticeably above the previously established background levels. It is expected that small variations may occur, which may not individually rise to any significant level, but trends over several sample periods could provide an indication of a change that requires further investigation.
3. Quantify and, if necessary, qualify any changes in an attempt to identify the source. First, based on sampling and testing of gas samples, determine whether the gas quality signature is similar to the native gas production in the area or to pipeline gas. Gas in the storage reservoirs will be almost exclusively pipeline gas with components that should be relatively easy to identify compared to native gas.
4. Based on any specific changes observed, Central Valley shall respond to the data and corresponding analysis with additional testing, surveillance, or mitigation, as appropriate. If the data indicates that any detected surface gas is from the storage operation, then a plan will be developed to identify the leaking pipeline, well, or reservoir, including procedures to further test and correct the

situation. The overall gas monitoring plan will be evaluated after 5 years to determine its future usefulness.

The monitoring plan will consist of the following features:

- Permanent monitoring/testing sites at the project remote well pad site and compressor station site
- Leakage surveys at predetermined locations at least once each calendar year
- Utilization of standard, industry-approved gas measurement equipment
- Field personnel trained on gas sampling methods and instrumentation, identifying stressed vegetation, and other indicators of potential leakage.

Potential Gas Migration through Existing Cracks or Faults in the Cap Rock

The Princeton Gas Field is vertically contained by an impermeable cap rock made up of a 200- to 500-foot-thick shale layer. It is assumed that this cap rock contained the gas stored under natural conditions within the original Princeton Gas Field without substantial leakage.

Most documented leakage from gas storage reservoirs has occurred in shallow salt formations rather than in formations contained by a shale cap rock (Mannon Associates 2008). However, leakage of stored gas has occurred in California at the El Segundo Oil Fields, Castaic Hills Oil Field, and the Montebello Oil Field (Mannon Associates 2008), fields with different characteristics than the Princeton Gas Field. The route of escape for stored gas leakage can include cap rock structure through existing or new cap rock fractures, faults, casing failures, defective cement well seals, and/or substandard abandonment cementing of oil and gas wells. In the case of cap rock, the injection pressure at each well must be limited such that when the gas reaches the cap rock, it does not generate sufficient pressure to open or dilate existing cap rock fractures or create new fractures. Anticipated injection pressures would be engineered such that expected stresses would not compromise the integrity of the storage formation or result in deformation. There have been no documented incidences of leakage of natural gas from former Princeton Gas Field operations.

Existing data from previous drilling in the Princeton Gas Field does not include laboratory test data substantiating the strength of the reservoir cap rock. This could raise concern that sufficient cap rock strength to contain gas at anticipated storage pressure has not been objectively demonstrated. In addition, there may be existing fractures within the reservoir cap that are substantially closed at ambient pressures that could dilate and leak under proposed operation pressure. In accordance with DOGGR requirements, core sampling, laboratory strength tests, and engineering calculations are required to demonstrate safe storage pressures at the cap rock and also to determine a safe range of pressure gradients for the storage zone. Central Valley has recently completed a test well to address these issues. Gas migration could result in groundwater impacts, health effects, and potentially flash fires or explosions. However due to the low population density in the project area and the absence of structures where migrating gas could accumulate, the potential health effects and impacts from gas migration would not be considered significant. Potential impacts to groundwater are discussed in Section 5.9, "Hydrology and Water Quality."

Potential Gas Migration to the Surface through Formation of New Fractures in the Cap Rock from the Proposed Gas Injection and Cycling of Gas Associated with Gas Storage Procedures

There is a remote possibility that gas could migrate to the surface through new fractures in the cap rock from the proposed gas injection and gas cycling. Gas would be injected into the natural gas storage facility at pressures up to 40% higher than pre-development pressures. In order to do this safely, the operator must determine the fracture gradient pressure of the reservoir rock layers at each well site and make certain that the new pressures are below the level that could generate fractures in the reservoir rock. The increased pressure could result in vertical and/or horizontal leakage of gas. In accordance with DOGGR Section 1724.9 (a through f) requirements for gas storage projects and prior to commencing gas injections, Central Valley would recover core from the cap rock in order to conduct threshold pressure tests to confirm that the planned maximum operating pressures would not compromise the integrity of the storage reservoir cap and that an adequate margin of safety in the maximum operating pressure is established. Cap rock physical properties including threshold pressure are required by DOGGR prior to approval of gas storage projects. In addition, the location and pressure of the gas in the storage reservoir would be monitored through direct pressure readings and or/electric wire-logging of well bores at the five proposed observation well locations. The data collected by observation wells would be used to ensure the proper placement and containment of the gas to the zone of intent as it is cycled in and out of the storage facility. If gas is observed migrating outside of its intended zone or horizontal boundary or if pressure changes related to gas migration are detected, Central Valley would be alerted and would then be able to implement operational changes to address the issue and stop the migration. With implementation Mitigation Measures HAZ-6, HAZ-7, and HAZ-8, impacts associated with potential gas migration resulting from new fractures in the cap rock would be less than significant.

Mitigation Measure HAZ-7: Central Valley will conduct annual temperature logging inside injection/withdrawal well and observation well casings. A temperature tool will be run into each injection and observation well to measure temperature anomalies. In the event that anomalous temperature gradients are identified, or if elevated gas concentrations are detected in the shallow soils during monitoring conducted as part of Mitigation Measure HAZ-6, Central Valley will further investigate to determine the cause and source of the anomaly. In the event there is a casing integrity issue, practicable steps will be taken in a concerted effort to minimize the impact of the leak until repairs can be made. Leaks will be repaired as soon as possible in the case of a leak that is potentially hazardous to human health, as soon as reasonable without causing additional hazards, and documentation will be sent to DOGGR no later than 4 months after leak detection. A copy of the documentation will be submitted to the CPUC.

Mitigation Measure HAZ-8: If routine surface or subsurface gas monitoring indicates that a well may be leaking (e.g., methane concentrations above baseline levels gas bubbles, distressed vegetation), Central Valley will report it immediately to the DOGGR and implement the appropriate remedial actions in consultation with the DOGGR. Central Valley will submit all well remediation and repair records to the DOGGR.

Mitigation Measure HAZ-9:

- Inspect produced-water storage tank(s) for integrity/leakage on an annual basis.
- Meter produced and injected formation water; periodically reconcile produced versus injected formation water quantities.
- Construct secondary containment berm around tank(s).
- Leak/pressure testing of the casing from below the base of freshwater to ground surface to verify that under injection pressures the well cannot leak saline fluid into the freshwater aquifer zones.

Mitigation Measure HAZ-10:

- Proper gas well design. The primary aquifer protection mechanism is structurally sound, leak-free casing, and there is a competent cement bond across the base of freshwater with either the surface casing or the injection/production casing. The well design is regulated by DOGGR. Verification of adherence to well design is accomplished by inspection and by running cement bond logs after construction is completed.
- Periodic monitoring for indications of leakage. This includes annual temperature logging of the wells, which will detect vertical formation fluid/gas movement within the borehole area above the zone of intent.
- Well work to repair casing and/or annular cement seal leakage if detected.

Fires and Explosions from Release of Gas from Pipelines, Wellheads, and Other Facilities

EDM Services conducted a system safety and risk of upset report for the proposed project, and the results are provided in Appendix D.

The USDOT database of natural gas transmission pipeline releases from January 2002 through December 2008 has been analyzed. These data were used to develop the baseline frequency of unintentional releases from the proposed facilities. After deleting all releases noted from “gathering” lines and “offshore” lines, which are not onshore natural gas transmission lines, there were 614 releases remaining from onshore transmission pipelines. Of these, the two major causes of release were excavation damage and external corrosion. One hundred thirty one (21%) of the releases were caused by excavation damage from a third party and the pipeline operator. Eighty-three (14%) of the releases were caused by external corrosion. The remaining 400 (65%) releases were caused by a variety of factors, listed below in descending order of frequency:

- Miscellaneous or unknown, 12%
- Malfunction of control or relief equipment, 8%
- Vehicles not related to excavation, 6%
- Internal corrosion, 5%
- Butt weld failure, 4%
- Rain and flooding, 4%
- Body of pipe failure, 4%
- Incorrect operation, 3%

- Pipe weld seam failure, 3%
- Component failure, 3%
- Earth movement, 2%
- Joint failure, 2%
- Threaded fitting or coupling failure, 2%
- Lightning, 1%
- Fire and explosions, 1%
- Fillet weld failure, 1%
- Temperature, <1%
- Wind, <1%
- Rupture of previously damaged pipe, <1%
- Vandalism, <1%.

Compressor Station

The level of confinement within the compressor building is sufficient to provide a 5 to 15 psig peak overpressure (Appendix D). This level can result in serious injuries and fatalities. However, since the compressor building and compressor station site are not accessible to the public and since the nearest residence is located approximately 1,250 feet from the site boundary, impacts to the public would be less than significant.

Remote Well Pad Site

The operation of the wells during injection and withdrawal could result in a significant impact if natural gas were to escape through a failed component at the wellhead or associated piping. The individual risk assessment results conducted for the proposed project concluded that the individual risk posed at the well site would exceed the one in one million individual risk threshold (Appendix D). The radiant heat footprint of a torch flame originating at the wellheads at the remote well pad site would extend approximately 210 feet from the wells. According to the preliminary site plan for the remote well pad site, the secured buffer area fence line has been designed at 220 feet from the wellheads to remove the public from the zone of impact. This would preclude the public from entering the radiant heat zone from the wells; therefore, the risk to the public at the remote well pad site would be less than significant.

Connecting Pipelines

Pipeline Rupture or Failure

Releases of hazardous materials into the environment could occur if the pipelines were to rupture or fail as a result of a material defect, corrosion, seismic-induced stresses, or by accidental contact during third-party excavation activities. Material defects could be caused by poor weld quality or generally poor workmanship during the manufacturing of the pipeline components or during construction of the proposed project. To minimize potential impacts resulting from material defects, Central Valley would conduct regular inspections at the pipeline manufacturing facility and in the field during construction to ensure that all material and work is compliant with industry standards. In addition, the pipelines would incorporate modern cathodic protection facilities that would be monitored regularly to detect potential

damage due to corrosion. The individual risk assessment results conducted for the proposed project concluded that the individual risk for the connecting pipelines would be less than the common individual risk threshold of one in one million (Appendix D). Also, the societal risks posed by the proposed project are less than the often used significance threshold. Therefore, since the individual and societal risks of a pipeline rupture are below commonly used thresholds, the impact is considered less than significant. Seismic design of the pipeline is discussed in Section 5.7, "Geology and Soils."

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No schools are located or are proposed to be located within 0.25 mile of any of the proposed project facilities. The nearest school, Princeton Junior/Senior High School, is located approximately 1.25 miles northeast of the compressor station site in the community of Princeton. Operation of the metering station would involve regular deliveries of an odorant (a 50/50 blend of tetrahydrothiophene and tertiary butyl mercaptan) to the facility; however, the likely transport route (along Delevan, McDermott, and Dirks roads from I-5 to the proposed metering station) does not pass within 0.25 mile of any school. No impacts would occur.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

The EDR report prepared for the project revealed no evidence of hazardous materials sites occurring within the project area (EDR 2008). No impact would occur.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

The project area is not located within an airport land use plan or within 2 miles of a public airport or public use airport. The nearest public airport, Colusa County Airport, is located approximately 13 miles southeast of the proposed compressor station. No impacts would occur.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

Gunnerfield Ranch Airstrip is located along the proposed 14.7-mile-long gas connecting pipeline route in rice lands east of 4 Mile Road and north of the Delevan NWR. This private airstrip is a runway for local crop dusters and does not experience heavy traffic. In order to avoid potential conflicts with aviation operations, the gas pipeline would be bored under the airstrip. In addition, with implementation of Mitigation Measure HAZ-9, impacts would be less than significant.

Mitigation Measure HAZ-911: During construction, Central Valley will coordinate with the adjacent airstrip landowner and implement measures to avoid conflicts with air traffic or crop spraying activities.

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Construction of the proposed project would not result in the closure of major regional transportation facilities. Road closures in the immediate project area are not anticipated. However, if required, road or lane closures would be temporary and limited to short segments of road. Temporary road or lane closures could impede access to local residents and emergency service providers and would be considered a significant impact. Central Valley would implement a construction traffic plan (see APM TRA-1 in Section 4.8.11) to minimize short-term construction-related traffic impacts including interference with emergency response. The construction traffic plan would require advance notification of road or lane closures to adjacent property owners and emergency service providers and development of an emergency access plan for emergency vehicle access in and adjacent to the construction zones. To further minimize potential impacts regarding interference with emergency response, the project would implement Mitigation Measure TRA-1 (see Section 5.16), which provides provisions for access for emergency vehicles to residences along the pipeline alignment. With implementation of APM TRA-1 and Mitigation Measure TRA-1, impacts would be less than significant.

Operation and maintenance of the proposed project would not impair implementation of or interfere with an adopted emergency response plan or emergency evacuation plan. Project facilities would be located adjacent to roadways with direct access to major regional transportation facilities (I-5 and SR-45). Connecting pipelines would be buried and would not affect any major access routes in the project area. There is no formal evacuation plan covering the proposed project area. No impact would occur.

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

The Colusa County General Plan identifies most of the project area as a low fire hazard severity zone (Colusa County 1989). The potential for fires near the western end of the project area is moderate due to the dry grassland environment and winds. The proposed project would include several safety features, including modern gas control systems, to provide for greater safety during operation of the project. Fire detection systems would monitor equipment located at the compressor station and would be able to alarm first responders or (if necessary) shut down equipment in order to isolate the compressor station. Fire prevention measures (e.g., smoking area restriction and work area restriction) would be implemented, and fire fighting equipment (e.g., dry chemical fire extinguishers) would be located at the proposed compressor station and metering station.

To further minimize potential impacts related to wildland fires, the project would implement APM HAZ-2. With implementation of APM HAZ-2, which requires Central Valley to prepare and implement a construction and operation and emergency response plan that includes a fire prevention and management element, risk of wildland fire in the area attributed to construction, operation, and maintenance of the proposed project would be less than significant.

5.9 HYDROLOGY AND WATER QUALITY

<i>Would the project:</i>	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) <i>Violate any water quality standards or waste discharge requirements?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) <i>Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) <i>Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) <i>Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) <i>Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) <i>Otherwise substantially degrade water quality?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<i>Would the project:</i>	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<i>h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<i>i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<i>j) Inundation by seiche, tsunami, or mudflow?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

5.9.1 Environmental Setting

Climate Characteristics

The proposed project area is semiarid with average rainfall approximately 16 inches per year. Most of the rainfall occurs in the winter and spring.

Surface Water

The proposed project site is located within the Colusa Basin Watershed, which encompasses the eastern slopes of the inner Coastal Ranges, the trough of the Colusa Basin, and the Sacramento River (Colusa County 1989). The Colusa Basin Watershed in Colusa County is comprised of five major drainage areas as defined by the California DWR. The eastern end of the project alignment is located within the Glenn-Knights Landing Drainage Analysis Unit (DAU), and the remainder of the project area is located within the Willow-Arbuckle DAU (Colusa County 1989). Drainage from these areas is typically conveyed by small canals in a southerly direction towards larger canals, including the Colusa Drainage Canal and the Glenn-Colusa Canal. Drainage generally flows to the Sacramento River. Within each DAU there are several smaller watersheds.

The proposed project area consists of a number of natural waterways in addition to irrigation and drainage canals. The following provides a description of the major waterways within the study area. These waterways are shown in Figure 4-2.

- The Sacramento River is located east of the compressor station, remote well pad site, and observation well project components and provides the major sources of irrigation water for the area. The flow in the river is regulated by the Shasta and Keswick Dams north of the City of Redding. The river drains the Sacramento Valley and eventually flows toward

San Francisco Bay. The Basin Plan (Central Valley Regional Water Quality Control Board 1998) identifies beneficial uses of the river as domestic and municipal water supply, recreation, and fish habitat.

- The Glenn-Colusa Canal provides the majority of irrigation water for the area and is managed by the Glenn Colusa Irrigation District. This canal crosses the western end of the proposed project area.
- The Colusa Trough (aka Colusa Drainage Canal) is a southwest draining linear depression that crosses the eastern section of the 14.7-mile connecting pipeline alignment.
- Hunters Creek is an intermittent creek that crosses the central section of the proposed 14.7-mile connecting pipeline and crosses into the Colusa Trough area.
- Logan Creek connects to the Colusa Trough. It crosses the proposed 14.7-mile connecting pipeline alignment once near 4 Mile Road.

In addition to these waterways, the proposed 14.7-mile connecting pipeline alignment crosses numerous irrigation canals and drains. Freshwater wetlands and marshes also occur near these drainages and agricultural canals. A large wetland complex occurs north of the proposed 14.7-mile connecting pipeline alignment and west of the Colusa Trough.

The county has identified much of the eastern portion of Colusa County (east of I-5) as an area of potential flooding associated with seasonal overflowing of the Sacramento River and poor drainage in natural basins (Colusa County 1989). The eastern project area including the compressor station, remote well pad site and buffer area, observation wells, saltwater disposal well and pipeline, and the eastern segment of the north-south portion of the connecting pipelines are located outside the 100- and 500-year floodplain and are protected by levees from the 100-year flood (FEMA 2003). The eastern segment of the 14.7-mile east-west portion of the connecting pipeline alignment is located within the 100-year flood zone (FEMA 2003). The western end of the project area including the western portion of the 14.7-mile connecting pipeline alignment and the metering station is located outside of the 100- and 500-year flood zone. Designated Federal Emergency Management Agency (FEMA) flood zones in the project area are identified in Figure 5.9-1.

Groundwater

The eastern portion of Colusa County is located within the Colusa Subbasin of the Sacramento Valley Groundwater Basin. Continental deposits of late Tertiary to Quaternary age comprise the aquifer system of the subbasin (DWR 2006). The alluviums present in the geologic formations generally contain free flowing groundwater. Recent alluviums in the formations are saturated most of the year. Within Colusa County, groundwater tends to flow in a southeast direction to the Sacramento River. Groundwater levels in the county are generally low in the summer months but are recharged annually during the rainy season. Frequently, groundwater levels are near the surface in the vicinity of the Sacramento River during the wet season.

The Colusa Subbasin is approximately 1,400 square miles, encompassing portions of Colusa, Glenn, Tehama, and Yolo Counties. The water bearing formations within the project area, from shallow to deep, include the following:

- Holocene Stream Channel Deposit: forms the upper portion of the aquifer and consists of unconsolidated gravel, sand, silt, and clay

- Holocene Basin Deposits: consists of silts and clays and is generally unconsolidated and is low yielding with poor water quality
- Pleistocene Modesto and Riverbank Formations: made up of highly permeable gravels and silts and is a major yielding aquifer
- Pleistocene Tuscan Formation: occurs in the northern portion of the basin and is found at a depth of 400 feet
- Pleistocene Tehama Formation: this formation can extend up to 2,000 feet in depth and has poor to moderate productivity.

Agricultural operations are the greatest users of water in the county (Colusa County 1989). Most operations are supplied water from the Glenn-Colusa Canal and Tehama-Colusa Canals, which is generally less expensive compared to pumping groundwater. All municipal and industrial water needs in the county are provided by groundwater (Colusa County 1989). Between the Sacramento River and surrounding low hills and alluvial fans, water levels are relatively shallow due to surface infiltration or rainwater and irrigation water, subsurface lateral flow of water in shallow porous layers and clay-rich, or hard, layers restricting downward flow of water to aquifers.

Approximately 84% of the water used for agriculture is from surface water, with the remaining water from groundwater. With the reduced water supplies available from the State Water Project, there may be more dependence on groundwater for irrigation and water storage.

Water Quality

Surface water quality ranges from 200 to 400 parts per million (ppm) of Total Dissolved Solids (TDS). This range in salinity depends upon the water way and the time of year. The major water quality concern in the area is runoff of pesticides and herbicides associated with rice farming and other agriculture. The Central Valley Regional Water Quality Control Board (RWQCB) is currently implementing regulations to reduce this water quality concern.

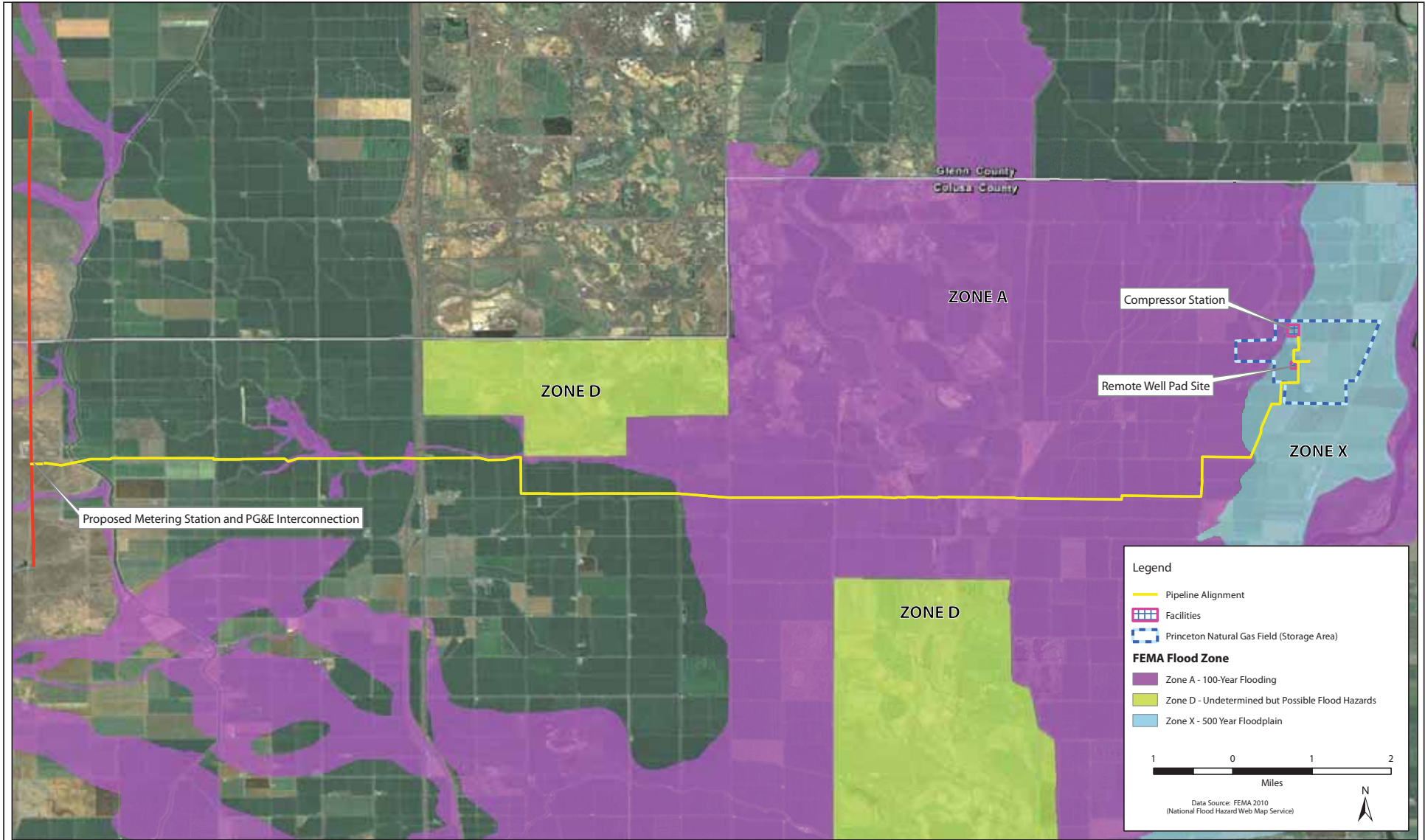
Water quality of groundwater varies from 200 to 1,200 ppm TDS depending upon the aquifer and location. There are some portions of the shallower aquifers where nitrates and pesticides reach relatively high levels.

5.9.2 Regulatory Setting

Federal

Clean Water Act

Increasing public awareness and concern for controlling water pollution led to enactment of the Federal Water Pollution Control Act Amendments of 1972. As amended in 1977, this law became commonly known as the Clean Water Act (CWA) (33 U.S.C. §1251 et seq.). The CWA established basic guidelines for regulating discharges of pollutants into the waters of the U.S. The CWA requires that states adopt water quality standards to protect public health, enhance the quality of water resources, and ensure implementation of the CWA.



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JULY 2010

SOURCE: ICF Jones & Stokes 2010f

Central Valley Gas Storage Project

FIGURE 5.9-1
Federal Emergency Management Agency Flood Zones in the Project Area

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National Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System (NPDES) permit program, as authorized by Section 402 of the CWA, was established to control water pollution by regulating point sources that discharge pollutants into waters of the U.S. In the State of California, the EPA has authorized the State Water Resources Control Board (SWRCB) permitting authority to implement the NPDES program. In general, the SWRCB issues two baseline general permits: one for industrial discharges and one for construction activities. The Phase II Rule that became final on December 8, 1999, expanded the existing NPDES program to address stormwater dischargers from construction sites that disturb land equal to or greater than 1 acre.

Section 401 of the Clean Water Act

Section 401 of the CWA requires an applicant for a federal permit, such as the construction or operation of a facility that may result in the discharge of a pollutant, to obtain certification of those activities from the state in which the discharge originates. This process is known as the Water Quality Certification. For projects in Sacramento County, the Central Valley RWQCB, Region 5 issues Section 401 permits.

Section 404 of the Clean Water Act

Section 404 of the CWA established a permitting program to regulate the discharge of dredged or filled material into waters of the U.S., which include wetlands adjacent to national waters. This permitting program is administered by the ACOE and enforced by the EPA.

Section 10 of the Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. §403) requires the ACOE to authorize construction of any structure in or over navigable waters of the U.S. or obstruction or alteration in a navigable water. Structure or work outside the limits defined for navigable waters of the U.S. require a Section 10 permit if the structure or work affects the course, location, condition, or capacity of the waterbody. Navigable waters are defined as waters that are subject to the ebb and flow of the tide.

Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) (42 U.S.C. §201) was originally passed by Congress in 1974 to protect public health by regulating the public drinking water supply. The law was amended in 1986 and 1996 and requires many actions to protect drinking water and its sources, including rivers, lakes, reservoirs, springs, and groundwater wells. The act authorizes the EPA to set national health-based standards for drinking water to protect against both naturally occurring and man-made contaminants that may be found in drinking water. The EPA states that established drinking water standards must be met, and water agencies work together to enforce standards.

Through Section 40, Part 144 of the Code of Federal Regulations (CFR), the SDWA prohibits any injection activity that could allow the movement of fluid-containing contaminants into underground sources of drinking water if the presence of that contaminant could cause a violation of any primary drinking water regulation under 40 CFR 142, or that would otherwise adversely affect public health. This regulation applies to Classes I, II, and III and allows the

director to take emergency action if a known contaminant is present or is likely to enter a public water system or underground drinking water source.

State

Streambed Alteration Agreement

Sections 1601–1603 of the California Fish and Game Code require an agreement between the CDFG and a public agency proposing to substantially divert or obstruct the natural flow or effect changes to the bed, channel, or bank of any river, stream, or lake. The agreement is designed to protect the fish and wildlife values of a river, lake, or stream.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act of 1967 (California Water Code, Section 13000 et seq.) requires the SWRCB and the nine RWQCBs to adopt water quality criteria to protect state waters. These criteria include the identification of beneficial uses, narrative and numerical water quality standards, and implementation procedures. The criteria for the project area are contained in the *Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins* adopted by the Central Valley RWQCB on December 9, 1994.

State Water Resources Control Board

The SWRCB is responsible for issuing stormwater permits in accordance with the NPDES program. For projects disturbing 1 or more acres of land, the applicant must file a notice of intent (NOI) for coverage under the General Permit for Stormwater Discharges Associated with Construction Activity (General Permit) and prepare an SWPPP that specifies BMPs to prevent pollutants from contacting stormwater and procedures to control erosion and sedimentation.

Regional Water Quality Control Board

Colusa County falls within the jurisdiction of the Region 5 RWQCB. Each RWQCB is responsible for water quality control planning within their region, often in the form of a basin plan. The RWQCB is also responsible for implementing the provisions of the General Permit, including reviewing SWPPPs and monitoring reports, conducting compliance inspections, and taking enforcement actions. In addition, the RWQCB may issue individual dewatering permits for discharges associated with construction projects.

California Code of Regulations

CCR, Title 14, Division 2, Chapter 4 (Development, Regulation, and Conservation of Oil and Gas Resources) contains regulations specific to oil and gas field practices, including preparation of an oil spill contingency plan and a blowout prevention and control plan. 14 CCR 1724.9 pertains to gas storage projects and requires submittal to and approval from the DOGGR of the characteristics of the cap rock, calculations of the oil and gas reserves of storage zones prior to injection, a list of proposed surface and subsurface safety devices to ensure safety of the project, and the proposed wastewater disposal method. Similarly, 14 CCR 1724.10 contains requirements for underground injection projects, including drilling procedures; a chemical analysis of the injecting product; and data showing that no damage to life, health, property, or natural resources is occurring as a result of the project.

Local

Colusa County General Plan

The following policies of the Conservation Element of the Colusa County General Plan are relevant to the proposed project.

- **CO-13:** Waste disposal sites and other sources of hazardous or polluting materials should be discouraged in close proximity to streams, creeks, reservoirs, or the Sacramento River groundwater basins. All future sites shall comply with the RWQCB's requirement of filing a Soil Waste Assessment Test (SWAT report).
- **CO-14:** Sedimentation and erosion shall be minimized through control of grading, quarrying, logging, vegetation removal, placement of roads and bridges, use of off-road vehicles, and agricultural practices.
- **CO-17:** Water-conserving agricultural practices and reuse of water should be promoted.

The following policies of the Community Services Element of the Colusa County General Plan are relevant to the proposed project.

- **WA-3:** All wells drilled to serve new development shall meet California Department of Public Health water quality standards. If necessary, water shall be treated to meet these standards.
- **WA-4:** New industries which consume significant amounts of water should be encouraged to recycle the water and ensure its percolation back into the groundwater strata. Water recycling must be undertaken in a manner that protects the groundwater from contamination.
- **WA-7:** The potential impact of development on the quality and quantity of water in existing wells should be a primary consideration for proposed projects. Future development shall be located in a way that ensures the long-term provision of water to existing and future county residents in an economically feasible, financially sound manner.
- **FL-4:** New development should be required to mitigate its drainage impact through any of a series of measures that should be explored in a countywide drainage and flood control plan.
- **FL-6:** Future development in the county should be located in a way that precludes the need for costly flood control structures and drainage improvements. Development in the 100-year flood plain should be discouraged; no critical or high occupancy structures such as schools and hospitals shall be permitted in the flood plain.

5.9.3 Environmental Impacts

Significance Criteria

Appendix G suggests that a development project could have a significant impact on hydrology and water quality if the project would:

- a) Violate any water quality standards or waste discharge requirements
- b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would

drop to a level which would not support existing land uses or planned uses for which permits have been granted)

- c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on or off site
- d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site
- e) Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff
- f) Otherwise substantially degrade water quality
- g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- h) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam
- i) Be at risk of inundation by seiche, tsunami, or mudflow.

Impact Discussion

a) Violate any water quality standards or waste discharge requirements?

Compressor Station, Remote Well Pad Site, Observation Wells, and Saltwater Disposal Well

Construction of the proposed compressor station, remote well pad, observation wells, and saltwater disposal well and pipeline has the potential to create short-term sedimentation impacts associated with grading and other construction activities. Runoff from the sites may carry sediments to the nearby drains resulting in significant impacts. Additionally, the use of fuels, solvents and other chemicals associated with construction or operation of the facility may impact surface or groundwater. During drilling activities at the remote well pad site, there could also be accidental release of drilling muds, resulting in additional sedimentation impacts. Implementation of APMs discussed in Section 5.5 and Section 5.8, including BIO-2, BIO-6 (see Section 4.8.4), HAZ-1 and HAZ-2 (see Section 4.8.7), as well as HYDRO-1 and HYDRO-2 (see Section 4.8.8) will ensure that impacts to water quality during construction would be less than significant. The intent of each of these APMs is summarized here:

- **BIO-2:** Obtain and comply with state, federal, and local permits
- **BIO-6:** Avoid and minimize disturbance of waters of the United States
- **HAZ-1:** Implement equipment maintenance and refueling restrictions
- **HAZ-2:** Prepare and implement a construction and operation safety and emergency response plan
- **HYDRO-1:** Prepare and implement a SWPPP
- **HYDRO-2:** Prepare and implement a dewatering and discharge plan.

Saline water produced from the gas storage formations during gas withdrawal would be separated, stored in tanks, and either reinjected into the same formations or trucked off location to a properly licensed commercial disposal location. DOGGR regulates the design, drilling, and operation of these reinjection wells to ensure that water is reinjected only into

the desired aquifer. Based on the stringent requirements and oversight of DOGGR, the reinjection of produced water into the gas storage formations would not affect potable groundwater quality. Central Valley will be required to obtain EPA Class II injection well permits from DOGGR to drill and operate the saltwater disposal wells. Central Valley's adherence to state permit requirements and stringent DOGGR guidelines will ensure that potential degradation of surface water quality during operation of the project would be less than significant.

Metering Station and Connecting Pipelines

Construction activities would expose disturbed and loosened soils to erosion from rainfall, water, and wind erosion, and they would remove the protective cover of vegetation and lessen the natural soil resistance to rainfall impact erosion. Proposed construction activities including grading, trenching, auger bore/HDD, and dewatering could impact surface water and groundwater. Grading and trenching activities could result in soil erosion and sedimentation of waterways located downstream of construction areas including Hunters Creek, Logan Creek, Colusa Trough, and several drainages. In addition, the proximity of construction areas to waterways increases the potential for hazardous materials used during construction to enter waterways. Implementation of APMs including BIO-2, BIO-6, HAZ-1 and HAZ-2, as well as HYDRO-1 and HYDRO-2 will reduce these impacts to less than significant.

- b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?**

Compressor Station, Remote Well Pad Site, Observation Wells, and Saltwater Disposal Well

With the exception of water used for construction (including dust suppression), there would not be substantial use of groundwater at the compressor station, remote well pad site, observation wells, and saltwater disposal well. No significant impact would occur.

Metering Station and Connecting Pipelines

Shallow groundwater conditions occur along much of the 14.7-mile connecting pipeline route; therefore, during pipeline construction, dewatering would be required. Groundwater pumped from the pipeline trench could be discharged into nearby surrounding agricultural ditches and drainage canals (trench water will be filtered through hay bales prior to being discharged into surrounding rice fields upon agreement with applicable landowner). Central Valley would be required to obtain NPDES Permit 05-175 from the Central Valley Water Board for necessary dewatering of the connecting pipeline trench. The permit contains daily discharge limits (250,000 gallons) and a cease operations duration (operations cannot extend beyond a 3-month period). If dewatering activities exceed the daily or cease operations threshold, then the project applicant would be required to inform the Central Valley Water Board and may be required to obtain waste discharge requirements.

With implementation APM HYDRO-1 and HYDRO-2, as well as compliance with the dewatering requirements of NPDES Permit 05-175, impacts would be less than significant.

- c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?**

Compressor Station, Remote Well Pad Site, Observation Wells, Saltwater Disposal Well, and Metering Station

The construction of the proposed 10-acre compressor station, 3.1-acre remote well pad site, observation wells, saltwater disposal well, and 1-acre metering station site would slightly increase impervious surface area. These facilities' ground surfaces would be graveled following construction, and only a small area would become impervious due to construction of structures. This would result in a small increase in runoff and would not alter the course of a stream or river or substantially increase the amount of surface runoff that would result in substantial erosion or flooding. Therefore, impacts would be less than significant. The buffer area around the remote well pad site would remain as natural habitat, and no change in drainage patterns would occur.

Connecting Pipelines

Stream channels will not be altered by the construction of the proposed connecting pipelines as the canals, streambeds, and drains will be crossed using auger bores and HDD. Construction of the proposed connecting pipelines would only slightly increase impervious surfaces along the proposed alignments during construction activities. This is not expected to substantially increase runoff resulting in increased erosion or flooding. No significant impact would occur.

- d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?**

See response 5.9.3 (c). The project would result in a small increase in runoff and would not alter the course of a stream or river or substantially increase the amount of surface runoff that would result in substantial erosion or flooding. Therefore, impacts would be less than significant.

- e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?**

See 5.9.3 (c). The project would not be adding a significant amount of impervious area to the project area. Most of the new impervious area would consist of the compressor station facility. The limited amount of runoff from the facility would discharge to the graveled compressor station yard or to surrounding agricultural field. Impacts would be less than significant.

f) Otherwise substantially degrade water quality?

Compressor Station, Remote Well Pad Site, Observation Wells, Saltwater Disposal Well, and Metering Station

No additional impacts have been identified for the compressor station. Implementation of the proposed project would involve the drilling of wells through the aquifers underlying the proposed well pad site. This would involve the use of drilling muds. The drilling of the wells would be conducted according to DOGGR requirements and supervision including the placement of casings and sealing of casings to prevent contamination of groundwater. With stringent DOGGR permit well drilling requirements, impacts to groundwater from this source would be less than significant.

The gas would be injected and stored at a pressure that is 40% higher than that of the previous gas extraction activities at the Princeton Gas Field. Although there has been no documentation of gas entering the aquifers, there is a potential that gas could enter the aquifers through cracks, faulting, or other anomalies. This could result in contamination of the aquifers with methane and other trace continuances of natural gas. This is a potentially significant impact. Implementation of Mitigation Measure HYDRO-1 will reduce this impact to less-than-significant levels.

Mitigation Measure HYDRO-1: Central Valley shall develop and implement a groundwater monitoring plan that will include both pre-injection and post-injection monitoring of groundwater quality to identify any seepage of stored natural gas into the groundwater aquifers. In the event that stored natural gas is detected above the reservoir, Central Valley shall immediately consult with DOGGR and the Central Valley RWQCB to determine the appropriate remedial action required, including depressurization of the reservoir or other appropriate measures approved by DOGGR and the RWQCB. The monitoring and any potential remediation shall be under the supervision of DOGGR and RWQCB.

Connecting Pipelines

In order to avoid potential impacts with waterways, pipeline sections will be horizontally directionally drilled (HDD) at two major waterway crossings and auger bored under smaller creeks, and drainages along the 14.7-mile-long alignment. Drilling mud (bentonite, a highly alkaline clay-based material) would be used during HDD operations and could enter surface waters if drilling fluids were to migrate to the surface during boring activities. Additionally, there is a remote possibility that drilling fluids could seep into local surface waters through natural fractures or porous and permeable zones occurring with the affected creek bed. Drilling fluid contact with surface water (referred to as “frac-out”) could degrade water quality, and due to potential pH increases resulting from the introduction of highly alkaline bentonite, such a frac-out could impact aquatic life.

As part of the project design, the project engineering consultant would prepare an HDD plan that will contain a frac-out contingency plan. Preparation of an HDD plan and related frac-out contingency plan will ensure that surface water impacts as a result of frac-out would be less than significant.

Prior to being placed into operation, the pipeline would be hydrostatically tested to ensure that the pipeline contains no leaks. Testing would require approximately 1.7 million gallons of water, which would be purchased from one of the local water purveyors. During hydrostatic testing of the pipeline, materials could potentially seep from the pipeline via leaks or cracks. Hydrostatic testing would be conducted in accordance with the requirements of U.S. Department of Transportation (USDOT) pipeline safety regulations and applicable permits. Test water would be discharged onto nearby dry agricultural land through agreement with applicable landowner (under Central Valley Water Board Resolution R5-2003-008) or into small ponds or surrounding drainage ditches.

Discharge of hydrostatic test water is regulated by the Central Valley Water Board through the requirements of the NPDES permit and waste discharge requirements issued by the board. Implementation of APM HYDRO-2 that requires preparation of a dewatering will provide details regarding the methods of hydrostatic test water and where the test water will be discharged, as well as methods to ensure surface waters are not affected by discharged water.

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

The proposed project does not involve placement of housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map because the project does not include any residential housing. No impacts would occur.

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?

Compressor Station Site, Remote Well Pad Site, Observation Wells, and Saltwater Disposal Well

The compressor station, remote well pad sites, observation wells, and saltwater disposal well and pipeline are located outside the 100- and 500-year flood hazard area. Because the project does not place any structures within a 100-year flood hazard area that would impede or redirect flows, impacts would be less than significant.

Metering Station and Connecting Pipelines

The eastern east–west portion of the 14.7-mile connecting pipeline is located within a 100-year flood zone. The metering station, western end of the connecting pipeline alignment, and the eastern north–south portion of the connecting pipeline are located outside of the 100- and 500-year flood hazard area. The gas connecting pipelines would be buried approximately 5 feet below ground surface and would not impede or redirect flows. Therefore, impacts due to flooding would be less than significant.

i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

The project components would be located in an agricultural area where intermittent shallow flooding occurs. Construction and operation of the proposed project would not directly affect

or propose any changes to the Sacramento River levee or Colusa Trough levee. Central Valley will use HDD underneath Colusa Trough, auger bore, or avoid other levees as part of the project design. Also, the project would not expose people or structures to a significant loss due to flooding as a result of the failure of a levee or dam, and no dams would be affected. Therefore, impacts would be less than significant.

j) Inundation by seiche, tsunami, or mudflow?

Because of the location of the proposed project in a relatively flat valley floor and site conditions, the project would not contribute to inundation by seiche, tsunami, or mudflow. No impacts would occur.

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5.10 LAND USE AND PLANNING

<i>Would the project:</i>	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) <i>Physically divide an established community?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) <i>Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) <i>Conflict with any applicable habitat conservation plan or natural community conservation plan?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

5.10.1 Environmental Setting

The proposed project is located within Colusa County, a predominantly agricultural county within the western portion of the Sacramento Valley. The primary existing land uses in the project area are agricultural (primarily rice farming and orchard production) with widely scattered rural residences, agricultural operations, and ancillary paved and dirt roads. The project area has been the location of natural gas exploration and development since the 1950s and several project components are within the area designated the Princeton Gas Field by the DOGGR. Also within the project area are components of the Wild Goose Gas Storage Field operation, specifically, an approximate 12-mile segment of a 25.6-mile connection pipeline from the Wild Goose Storage Incorporated Remote Facility Site in Butte County to the PG&E Line 400/401 transmission pipeline near the PG&E Delevan Compressor Station northwest of Delevan in Colusa County.

Colusa County

Colusa County regulates land use primarily through general plan designation, county code, zoning, and the development review process. The county code establishes permitted, conditional, and prohibited uses for all zoning districts and also provides development standards for each district. The Colusa General Plan Land Use Element identifies the various land uses and states that agriculture is the dominant and most important land use in the county. The total value of agricultural production in Colusa County in 2007 was \$484,525,000, which ranks 22nd out of 58 counties in the state (California Farm Bureau Federation 2009).

To preserve the agricultural character of the project area and discourage non-agricultural uses, the Land Use Element of the Colusa County General Plan (1989) designates the use of the project area as “Agriculture-General” (A-G). Land carrying the A-G designation is generally used for orchard and crop production; however, secondary uses within these designated areas

include oil and gas drilling (Colusa County 1989). A-G lands within the project area are dominated by large farms involved in rice production, orchard, or crop row farming. Land designated Rural Service Center (RSC) also occurs within the project area. A small strip of land (under which a short segment of the proposed interconnection pipeline would cross) adjacent to I-5 near the Delevan Road interchange is designated RSC. According to Colusa County, RSC designated lands are “very small, predominately residential settlements” on which commercial and residential uses are acceptable provided that they conform to the zoning map for the specific community in which they are located (Colusa County 1989).

Areas designated A-G within the project area are zoned “Exclusive Agriculture” (E-A) by the Colusa County Code. Principal permitted uses within the E-A zone include all general agricultural uses, including animal husbandry and structures associated with agricultural uses (single-family residences supporting agricultural operations are permitted within the E-A zone). Facilities associated with exploratory drilling and production of fossil fuels and geothermal power are permitted uses within this zone and require a use permit. Lands zoned “Floodway” (F-W) are also located within the project area. These lands are typically found adjacent to the Sacramento River and the Colusa Drain. The F-W zone is intended to be applied to lands “which lie within stream or tidal channels and adjacent to areas which are periodically inundated” (Colusa County Code Section 4.12). Land use designations in the project area (and the location of project components) are depicted on Figure 5.10-1.

According to Colusa County Code Section 6.03, projects proposing gas pipelines and associated facilities are permitted within all zoning districts provided they receive Planning Commission approval and obtain all necessary use permits.

Local Setting

The project’s major components are located in two general areas, connected by a 14.7-mile, 24-inch east–west pipeline. The eastern project components include the natural gas storage reservoir, compressor station, remote well pad site, observation wells, saltwater disposal well, and two of the gas lines (the dual gas gathering line and temporary gas line), while the western project component consists of a metering station. All project components (with the exception of a short segment of the proposed 14.7-mile pipeline that would cross land adjacent to I-5 designated RSC) would be located on or traverse land designated A-G and zoned E-A by Colusa County.

Natural Gas Storage Reservoir

The natural gas storage reservoir is within the established Princeton Gas Field. Natural gas was discovered in the Princeton Gas Field in 1953, and between 1954 and 1991, the Princeton Gas Field produced approximately 9.7 billion cubic feet of natural gas. The gas field has been depleted since 1991. Existing inactive well pads and access roads are located within the natural gas storage reservoir boundaries. Active agricultural operations (including rice and row crop production) and five rural residences are also located within the natural gas storage reservoir boundaries.

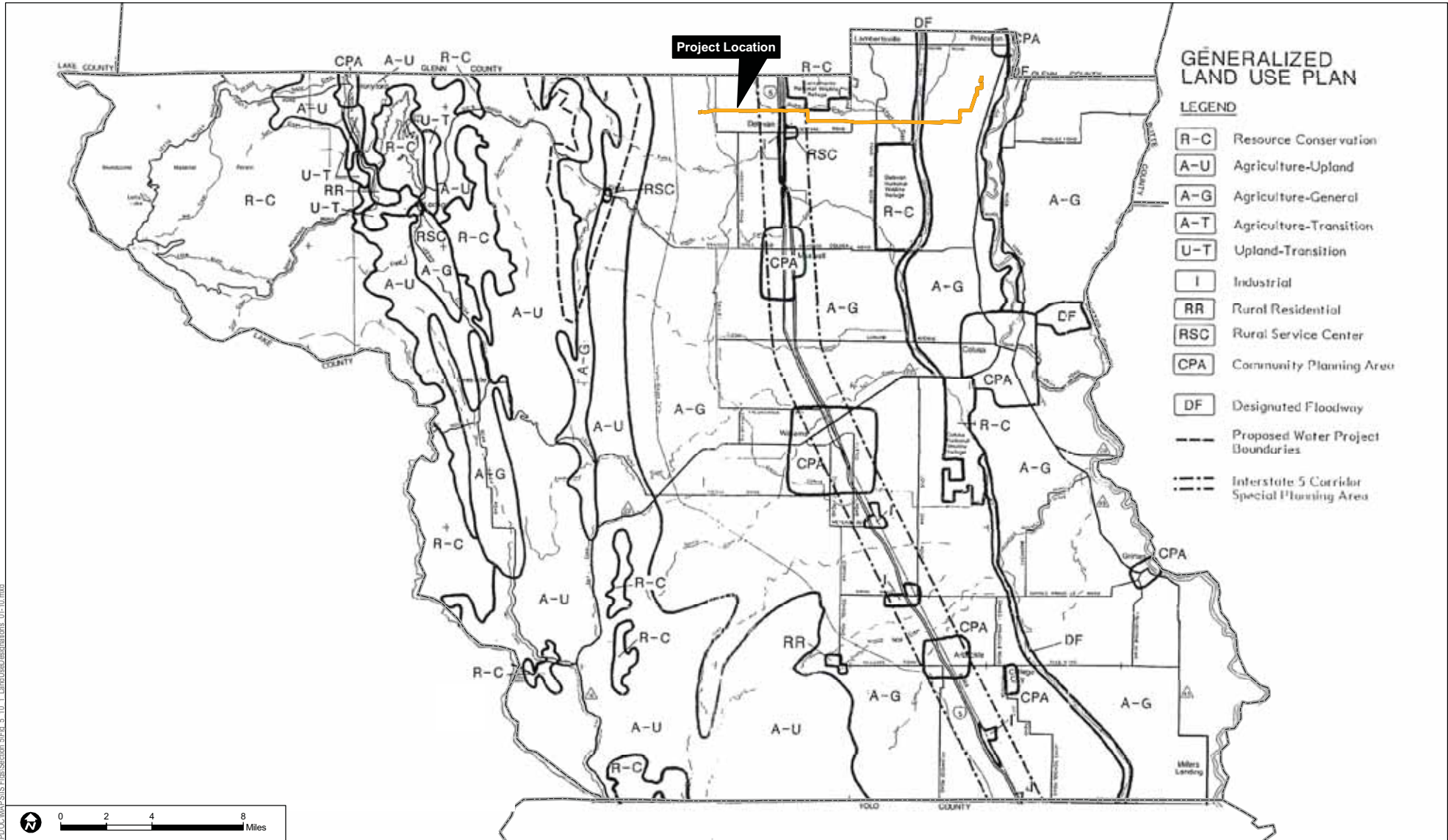


FIGURE 5.10-1
Land Use Designations in the Project Area

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Compressor Station

The 10-acre compressor station site would be located on the west side of McAusland Road, approximately 300 feet north of Southam Road. The proposed site is within the northern portion of the natural gas storage reservoir on a large agricultural parcel currently used for rice production.

One residence is located in relative close proximity to the compressor station site boundary on Southam Road. It is approximately 1,250 feet to the southeast along Southam Road. A second residence is located over half a mile (approximately 3,000 feet) along Southam Road to the southeast of the compressor station site boundary. An agricultural facility is located immediately south of the compressor station site boundary on the corner of McAusland and Southam roads.

Remote Well Pad Site, Observation Wells, and Saltwater Disposal Well

The 3.1-acre remote well pad site would be located on the west side of McAusland Road, approximately 1,800 feet south of the proposed compressor station site boundary. An approximately 5-acre fenced buffer area would surround the remote well pad site. The proposed site is centrally located above the natural gas storage reservoir and, similar to the compressor station, is located on an agricultural parcel used for rice production. The parcel on which the proposed site is located is entered into a Williamson Act contract. The remote well pad site would result in the conversion of 8.1 acres of a 47-acre site. The Williamson Act allows for these uses with the approval of a Use Permit. Please see Section 5.3 for further discussion of the Williamson Act. Three rural residences are located less than 2,000 feet from the remote well pad site and buffer area boundary. These residences are located 1,700 feet to the northeast, 1,000 feet to the southeast, and 1,650 feet to the southeast.

Existing and plugged wells considered for conversion to observation wells and the saltwater disposal well are located generally east and southeast of the proposed remote well pad site boundary. These wells are located on agricultural parcels used for row crops. The saltwater disposal pipeline would be located on private land adjacent to an exiting agricultural road south of the saltwater disposal well. Each of the potential observation wells and the saltwater disposal well would be located within 1 mile of the five residences located above the natural gas storage facility site boundary.

Metering Station

The proposed metering station site would be located near the north-south PG&E 400/401 pipeline, immediately east of the PG&E Delevan Compressor Station and west of the Glenn-Colusa Canal. The metering station would be constructed on an approximately 1.0-acre site south of the existing Wild Goose Storage meter station. The proposed metering station site is located on non-native annual grasslands currently used for livestock grazing. The Glenn-Colusa Canal is located approximately 0.40 mile to the east. The nearest residence is located over 1 mile southeast of the metering station site boundary.

Connecting Pipelines

An approximate 1,950-foot-long, dual 16-inch gas gathering line system would connect the injection/withdrawal wells to the compressor station. The gas gathering line system would be located along McAusland Road, within the same trench as the 14.7-mile gas pipeline. A

temporary connection to PG&E Line 172 would occur via a 170-foot-long, 8-inch pipeline that would be located primarily within the remote well pad site and buffer area. Upon exiting the eastern boundary of the remote well pad site buffer area, the temporary gas pipeline would connect with PG&E Line 172 on the east side of McAusland Road.

The approximate 14.7-mile, 24-inch pipeline and 580-foot interconnect would be constructed between the proposed compressor station and PG&E's existing Line 400/401, located just south of the PG&E Delevan Compressor Station. The pipeline would be located entirely in Colusa County and would pass approximately 0.50 mile north of the community of Delevan. Figure 5.10-1 shows the proposed pipeline alignment.

As shown on Figures 5.3-1a and 5.3-1b, the proposed 14.7-mile pipeline would cross or be located adjacent to several parcels entered into Williamson Act contracts. In addition, the proposed 14.7-mile connecting pipeline would be aligned between two NWRs located in Colusa County: the Sacramento NWR and Delevan NWR. These areas provide wildlife viewing and hunting opportunities as part of their primary function as waterfowl and habitat management areas. At its nearest point, the gas pipeline would be aligned approximately 70 feet southwest of the Sacramento NWR boundary and approximately 1 mile north of the Delevan NWR. According to the *Final Comprehensive Conservation Plan and Environmental Assessment* prepared by the USFWS for the Sacramento, Delevan, Colusa, and Sutter NWRs, the area of the Sacramento NWR closest to the proposed pipeline corridor is designated as an active hunting area, and the area of the Delevan NWR closest to the pipeline corridor is designated as a closed zone in which recreational uses are not permitted (USFWS 2009). In addition to crossing agricultural lands, the proposed pipeline corridor also crosses underneath I-5, Old Highway 99, UPRR, a private runway used by crop dusters, several creeks, troughs, and drains.

Residential uses are limited along the pipeline alignment. These uses generally consist of rural residences near the pipeline route and include homes located primarily southeast of the well pad site and several homes located near the community of Delevan, located south of the pipeline alignment. One residence is located immediately north of the 14.7 mile-long connecting pipeline alignment, east of the UPRR and I-5.

Land Ownership

Appendix E contains a full list of landownership information within 300 feet of the surface area of the natural gas storage reservoir, the project surface facilities, and along the connecting pipelines and access roads.

5.10.2 Regulatory Setting

Federal

U.S. Fish and Wildlife Service-Final Comprehensive Conservation Plan for the Sacramento, Delevan, Colusa, and Sutter National Wildlife Refuges

The Final Comprehensive Conservation Plan was designed to guide the management of the Sacramento, Delevan, Colusa, and Sutter NWRs through 2024. Prior to the adoption of the plan, each wildlife refuge was managed by an individual Refuge Management Plan. The plan addresses the USFWS's policies, goals, and vision regarding the management of wildlife refuges located in the western Sacramento Valley, and it helps to achieve the refuge purposes

of the NWR System Mission Statement. The Mission Statement is as follows: “To administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (16 U.S.C. 668dd et seq.).

The Final Comprehensive Conservation Plan contains an individual habitat management plan for each of the four refuges. In addition, the visitors services available within each refuge are identified within a refuge-specific map included in the plan. These “visitor services” maps identify the areas in the refuge where recreational activities such as wildlife viewing and hunting are permitted. Chapter 4, Planned Management and Adopted Programs, contains policies established to guide the future management of each refuge.

Local

The Colusa County General Plan includes the following goals, objectives, and policies relevant to the proposed project:

- **Land Use Goal:** Maintain the efficient and harmonious use of land in the county, promoting a well-organized and orderly development pattern, avoiding random, haphazard growth, protecting public health and safety, and accommodating the orderly growth of population and employment.
- **Land Use Objective (c):** To conserve and protect agricultural land through a variety of strategies, including taxation, zoning, and general planning.
- **Land Use Objective (d):** To withhold development permits which would cause direct interference with viable agricultural operations.
- **Land Use Objective (j):** To permit rural development contingent upon a range of natural factors, including environmental impact, safety hazards, and the availability of water.
- **Land Use Objective (n):** To promote development which is consistent in character and appearance with existing development in the county and limit development where it would be inconsistent with surrounding uses or detract from the area’s character.
- **Land Use Objective (o):** To ensure that development in rural areas is harmonious in scale and orientation with the natural physical setting.
- **Policy LU-4:** Agriculture and resource management should be the primary land uses outside of the designated communities. Freestanding subdivisions isolated from existing communities and lacking urban services should be prohibited.
- **Policy LU-12:** Potential conflicts between airports or landing strips and surrounding land uses shall be avoided by closely regulating future development in take off and approach zones.
- **Policy LU-20:** Lands designated for General or Upland Agriculture should continue to be used for agriculture for at least the duration of the planning period (1987–2010). Such period may be extended by future revisions of the plan.
- **Policy LU-25:** Exploration and extraction of oil, gas, and other mineral resources should be conducted in such a way that conflicts with agricultural uses are minimized and permanent interference with agricultural operations is avoided, and in a way that is consistent with the land use compatibility requirements of the Williamson Act, for those lands that are now under contract.

- **Public Health and Safety Objective (k):** To discourage incompatible uses in areas of excessive noise, and to restrict the introduction of excessive noise in areas where land use compatibility guidelines would be exceeded.
- **Policy SAFE-14:** New projects should be conditioned, improved, or denied according to the standards of Table SAFE-3. When necessary, environmental impact reports should be used to gauge the existing and projected noise environments for proposed project. All projects in areas above the “conditionally acceptable” noise levels should provide the county with proof from a professional acoustical consultant that occupants of the project will be protected from excessive noise.
- **Policy SAFE-15:** New land uses that produce high levels of noise should not be allowed to encroach upon noise-sensitive uses. Concurrently, new noise-sensitive land uses should be discouraged near uses that produce high levels of noise, including transportation routes.
- **Policy SAFE-21:** New development should be encouraged to follow site planning practices which create quieter environments.
- **Policy SAFE-30:** The county should develop regulations for injection wells to ensure that saline water does not leak into groundwater and toxic substances are not injected into the wells. Such measures could be attached to permits to operate the wells, and may include the following:
 - Allow the county to randomly check substances prior to injection, and permit up to five tests per year to determine the composition of the substances.
 - Require operators to maintain a log of injections to be made available to county inspectors.
 - Require operators to secure well facilities and storage tanks against unauthorized access.
 - Require operators to pay for tests of existing wells within one-quarter mile of an injection site, if requested by a county inspector, to determine the extent of possible contamination.
- **Policy CIRC-39:** Any proposed pipeline or transmission line within the county shall be aligned so that interference with agriculture is minimized.

5.9.3 Environmental Impacts

Significance Criteria

Appendix G of the CEQA Guidelines provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on land use and planning if the project would:

- a) Physically divide an established community
- b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect
- c) Conflict with any applicable habitat conservation plan or natural community conservation plan

Impact Discussion

a) Physically divide an established community?

Compressor Station, Remote Well Pad Site, Observation Wells, and Saltwater Disposal Well

The compressor station includes the construction of three permanent buildings (an auxiliary building, utility building, and compressor building) and installation of numerous aboveground components. The remote pad site includes the construction of a permanent auxiliary building and a temporary building to house a leased compressor unit during construction of the 14.7-mile pipeline. Both the 10-acre compressor station site and 3.1-acre well pad site and associated buffer area are located within a sparsely populated rural-agricultural area within the natural gas storage reservoir area. Access roads would be constructed off of McAusland Road to provide access to the sites. The operation and maintenance of the compressor station, well pad site, observation wells, and saltwater disposal well and pipeline would not physically divide an established community. Facilities would be relatively small, located in sparsely populated areas presently used for agricultural operations, and would not encumber access to existing farms and agricultural operations. The access roads that would be built to access observation wells and the saltwater disposal well would not completely transect agricultural parcels and would not create a complete division between two portions of an agricultural parcel. The saltwater disposal pipeline would be located entirely underground. No additional land disturbance would be required during operation and maintenance. There would be no impact related to the physical division of an established community.

Metering Station

The metering station would be constructed on an approximate 1-acre site. An approximate 400-foot-long and 40-foot-wide access road would be constructed off of Dirks Road to the proposed metering station site. The metering station would not physically divide an established community. The metering station would be relatively small and located in a sparsely populated agricultural area in close proximity to the Wild Goose Metering Station and the PG&E Delevan Compressor Station. Therefore, the metering station would represent an established land use (industrial) in the immediate area. No additional land disturbance would be required during operation and maintenance. There would be no impact related to the physical division of an established community.

Connecting Pipelines

The operation and maintenance of the gas gathering line, temporary gas line, and the 14.7-mile gas pipeline would not divide any surrounding land uses as the connecting pipelines would be located entirely underground. The gas gathering system would be located partially within the compressor station and the remote well pad site. Upon exiting these facilities, the gas gathering system would be located on private land adjacent to project area roads. The temporary pipeline would only be operational during construction of the 14.7-mile pipeline (approximately 13 months). Therefore, there would be no impact related to physically dividing an established community.

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

With the exception of a short segment of the 14.7-mile pipeline that would be located on land designated RSC (near I-5), project components would be located on or traverse lands designated A-G by the Colusa County General Plan and zoned E-A by the Colusa County Zoning Ordinance. The Colusa County General Plan designates oil and natural gas facilities as a compatible and acceptable use in A-G zones, as long as such uses do not interfere with agricultural operations (Colusa County 1989). In addition, the land traversed by the proposed project is zoned E-A, and according to the Colusa County Zoning Ordinance, exploratory drilling and production of fossil fuels and geothermal power is a permitted use in the E-A zone with a use permit. Pipeline facilities are considered compatible uses on lands under Williamson Act contracts as long as they do not substantially impair agricultural operations on those parcels. Construction of the project could result in conflicts with existing agricultural operations but these conflicts would be temporary and less than significant due to short-term nature of construction. Operation of the project is not expected to result in conflicts with agricultural operations occurring in the project area. The proposed project would have no conflict with any applicable land use plan, policy, or regulations. There would be no impact.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

None of the project components are located on lands covered by an approved habitat conservation plan or natural community conservation plan. Therefore, no impacts would occur.

5.11 MINERAL RESOURCES

<i>Would the project:</i>	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) <i>Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) <i>Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

5.11.1 Environmental Setting

Mineral Resources

The California State Legislature enacted the Surface Mining and Reclamation Act (SMARA) in 1975 to limit new development in areas containing significant mineral deposits. SMARA calls for the California State Geologist to classify the lands within California based on mineral resource availability.

Although California has a wide range of mineral commodities, it was recognized that regionally produced construction materials, like sand, gravel, and crushed stone, are used in every urban area of the state and require special classification data. The California Division of Mines and Geology (CDMG) has classified urbanizing lands according to the presence or absence of significant sand, gravel, or stone deposits that are suitable as sources of aggregate. Since Colusa County is primarily agricultural and non-urbanized, mineral resource zones have not been identified in the county.

Mineral activity within the county is currently limited to sand and gravel extraction (Colusa County 1989). According to the General Plan Conservation Element, the mineral resource potential in the project area is severely limited with no known deposits identified in the project area (General Plan Figure CO-7, Mineral Resource Potential). There are no known mining operations in the vicinity of the proposed project.

Natural Gas Resources

Natural gas fields are found throughout the eastern portion of Colusa County. According to the General Plan, the natural gas industry plays a vital role in the county's economy, and the county is one of the most productive natural gas producing counties in the state (Colusa County 1989). The proposed compressor station and well pad site are located above the depleted Princeton Gas Field.

Between 1954 and 1991, the Princeton Gas Field produced approximately 9.7 billion cubic feet of natural gas from five wells. At this time, the five hydraulically separate sandstone layers that comprise the gas reservoir are all watered out (i.e., saline groundwater has replaced the natural

gas within the reservoir sand) as a result of previous production, and it can no longer economically produce commercial quantities of gas.

5.11.2 Regulatory Setting

State

California Division of Oil, Gas, and Geothermal Resources

The DOGGR regulates drilling, production, injection, and gas storage operations in accordance with CCR Title 14, Division 2, Chapter 4, Section 1724.7 (Project Data Requirements). Approval must be obtained from the DOGGR before any subsurface injection or disposal can begin. The operator must provide data that is pertinent and necessary for the proper evaluation of the proposed project. The data required includes and is not limited to the following:

- An engineering study that includes the reservoir characteristics for each injection zone; reservoir fluid data; well casing diagrams; and a well, drilling, plugging, and abandonment plan
- A geologic study that includes a structural contour map; a map of each injection zone; a geologic cross-section; thickness, characteristics and physical properties of the cap rock; gas reserves of the storage zones before the start of injection; and a representative electric log identifying all geologic units, formations, freshwater aquifers, and oil or gas zones
- An injection plan that includes a map of the facilities; maximum surface injection pressure; daily rate of injection per well; monitoring system or method to be used to ensure that no damage is occurring and that injection fluid is confined to the intended zone or zones of injection; method of injection; proposed cathodic protection measures for plant, line, and wells; proposed surface and subsurface safety devices, tests, and precautions taken to ensure safety of the project; treatment of water injected; and source and analysis of injection fluid.

Reservoir characteristics that must be defined include porosity, permeability, average thickness, areal extent, fracture gradient, breakout pressure, original and present temperature and pressure and original and residual oil, gas, and water saturations. Gas storage projects must also submit additional information including areal extent, average thickness, and threshold pressure of the cap rock.

Surface Mining and Reclamation Act of 1975

SMARA of 1975 was enacted by the State of California to address the need for a continuing supply of mineral resources while ensuring the proper reclamation of surface mining operations. Reclamation is regulated in order to prevent or minimize the negative impacts of surface mining operations. Under the authority of SMARA, the DOC is responsible for the classification and conservation of the state's mineral resources.

Local

Colusa County General Plan

The Conservation Element of the Colusa County General Plan contains the following policy that is relevant to the proposed project:

Policy CO-6: Development within and adjacent to Resource Conservation lands shall be regulated so that proposed future land uses will not be incompatible with mineral extraction operations, where existing or future mineral extraction operation are likely. Regulations shall be responsive to the type/intensity of the mining operation and the nature of the adjacent land use. Regulations may include but are not limited to: (1) development siting (setback requirements, clustering); (2) land use buffer requirements; (3) hours of operation for mining activities; and (4) dust and noise controls on mining activities and operation.

Colusa County Code

Chapter 9A, Surface Mining and Reclamation, of the Colusa County Code states that “the extraction of minerals is essential to the economic well-being of the county and to the needs of society and that the reclamation of mined lands is necessary to prevent or minimize adverse effects on the environment and to protect the public health and safety” (Colusa County Code Chapter 9A, Section 9A-1). The purpose and intent of Chapter 9A is to ensure the availability of important mineral resources while also regulating extraction operations according to the requirements of California's SMARA of 1975.

In accordance with Public Resource Code 2762, the Colusa County General Plan and applicable mineral resource maps are updated to reflect mineral information within twelve months of receipt from the State Mining and Geology Board of such information. Land use decisions within Colusa County are guided by information provided on the location of identified mineral resources of regional significance. Conservation and potential development of identified mineral resource areas will be considered and encouraged. Recordation on property titles of the presence of important mineral resources within the identified mineral resource areas may be encouraged as a condition of approval of any development project in the impacted area. Section 9A-17 of the County Code states that “Prior to approving a use that would otherwise be incompatible with mineral resource protection, conditions of approval may be applied to encroaching development projects to minimize potential conflicts.”

5.11.3 Environmental Impacts

Significance Criteria

Appendix G of CEQA provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on mineral resources if the project would:

- a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state
- b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Impact Discussion

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

Project implementation would not adversely affect any known natural gas or aggregate deposits. Other than the previous occurrence of natural gas, there are no known mineral

resources within the subsurface boundary and geologic structure of the natural gas storage facility. No significant aggregate deposits are mapped in the project area. Construction and operation of the project would not interfere with or preclude the operation of mineral resource management in the region. Therefore, no impact would occur.

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

The Colusa County General Plan does not identify any locally important minerals in the project area. The General Plan does identify two active mineral resource sites within the County: the Sand Creek Pit and the Princeton Ranch Pit, which are sand and aggregate material pits (Colusa County 1989). These operations do not occur adjacent to or in the immediate vicinity of the proposed project components. Therefore, no impact would occur.

5.12 NOISE

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) <i>Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) <i>Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) <i>A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) <i>A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) <i>For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) <i>For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

5.12.1 Environmental Setting

General Characteristics of Noise

To describe environmental noise, and to assess project impacts on areas that are sensitive to noise, a measurement scale that simulates human perception is customarily used. Sound (noise) levels are measured in decibels (dB). Figure 5.12-1 describes typical A-weighted noise levels for various noise sources. Community noise levels are measured in terms of an A-weighted sound level. The A-weighted scale of frequency sensitivity accounts for the sensitivity of the human ear, which is less sensitive to low frequencies and correlates well with human

perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria.

Human activities cause community noise levels to be widely variable over time. For simplicity, sound levels are usually best represented by an equivalent level over a given time period (Leq). The Leq, or equivalent sound level, is a single value (in dBA) for any desired duration, which includes all of the time-varying sound energy in the measurement period, usually 1 hour.

Community noise levels are usually closely related to the intensity of nearby human activity. Noise levels are generally considered low when ambient levels are below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA. In wilderness areas, the day–night noise levels (Ldn) can be below 35 dBA. In small towns or wooded and lightly used residential areas, the Ldn is more likely to be around 50 or 60 dBA. Levels around 75 dBA are more common in busy urban areas, and levels up to 85 dBA occur near major freeways and airports.

Various noise descriptors have been developed to describe time-varying noise levels. The following are the noise descriptors most commonly used in community noise analysis.

- **Equivalent Sound Level (Leq):** Leq represents an average of the sound energy occurring over a specified period. In effect, Leq is the steady-state sound level containing the same acoustical energy as the time-varying sound that actually occurs during the same period. The 1-hour A-weighted equivalent sound level (Leq(h)) is the energy average of A-weighted sound levels occurring during a 1-hour period and is the basis for noise abatement criteria (NAC) used by Caltrans and the Federal Highway Administration (FHWA).
- **Percentile-Exceeded Sound Level (Lxx):** Lxx represents the sound level exceeded for a given percentage of a specified period (e.g., L10 is the sound level exceeded 10% of the time, and L90 is the sound level exceeded 90% of the time).
- **Maximum Sound Level (Lmax):** Lmax is the highest instantaneous sound level measured during a specified period.
- **Day-Night Level (Ldn):** Ldn is the energy average of A-weighted sound levels occurring over a 24-hour period, with a 10 dB penalty applied to A-weighted sound levels occurring during nighttime hours between 10:00 p.m. and 7:00 a.m.
- **Community Noise Equivalent Level (CNEL):** Similar to Ldn, CNEL is the energy average of the A-weighted sound levels occurring over a 24-hour period, with a 10 dB penalty applied to A-weighted sound levels occurring during the nighttime hours between 10:00 p.m. and 7:00 a.m., and a 5 dB penalty applied to the A-weighted sound levels occurring during evening hours between 7 p.m. and 10 p.m.

SOUND LEVELS FOR TYPICAL ACTIVITIES

REFERENCE AND COMMUNITY RESPONSES

Subjective Human Response and Conversation	Home and Industrial (Indoor Noise)	dBA Scale (Level)	Community and Traffic (Outdoor Noise)	Reference Loudness	Community Reaction To Outdoor Noise
Threshold of Pain		-- 140 --	Aircraft Carrier		
			Military Jet Aircraft		
Threshold of Discomfort	Rock Band (Max.)	-- 130 --	Large Siren at 100 Ft.	16 Times as Loud	
			Jet Takeoff at 200 Ft.		
Maximum Vocal Effort	Discotheque (Max.)	-- 120 --	Thunderstorm Activity	8 Times as Loud	
			Elevated Train		
Very Loud	Symphonic Music (Max.)	-- 110 --	Auto Horn at 5 Ft.	4 Times as Loud	
			Industrial Plant		
Shouting in Ear	Newspaper Printing Rm.	-- 100 --	Compacting Trash Truck	2 Times as Loud	Vigorous Action and Law Suits
			Heavy Truck at 25 Ft.		
Shouting	Food Blender	-- 90 --	Motorcycle at 25 Ft.	Reference Loudness	Threats of Legal Action
			Symphonic Music (Typ.)		
Very Annoying	Garbage Disposal	-- 80 --	Small Truck at 25 Ft.	1/2 as Loud	Appeals to Officials
			Alarm Clock		
Moderately Loud	Vacuum Cleaner	-- 70 --	Heavy Traffic at 50 Ft.	1/4 as Loud	Widespread Complaints
			Avg. Traffic at 100 Ft.		
Normal Conversation	Electric Typewriter	-- 60 --	Light Traffic at 100 Ft.	1/8 as Loud	Sporadic Complaints
			Air Conditioner at 20 Ft.		
Quiet	Typical Office	-- 50 --	Typical Suburban Area		No Reaction, Although Noise is Noticeable
			Birdsong		
Very Quiet	Living Room	-- 40 --			
			Bedroom		
Soft Whisper	Library	-- 30 --	Rural Area	Just Audible	
			Broadcasting Studio		
		-- 20 --			
		-- 10 --		Threshold of Hearing	
		-- 0 --			

SOURCE: Appendix F



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Central Valley Gas Storage Project

**FIGURE 5.12-1
Typical Noise Levels in the Environment**

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Existing Noise Sources in Project Region

The project is located in a sparsely populated, rural agricultural area. The primary sources of noise are distant and local traffic, agricultural activities, and distant aircraft. Vehicular traffic on SR-45 and I-5 near the community of Delevan are relatively constant sources of noise in the project area.

Ambient noise levels were characterized by measurements made at three locations near the closest residences located around the proposed compressor station and remote well pad site. Ambient sound measurements for the proposed compressor station were performed on the morning, afternoon, and nighttime of April 27, 2009. At the reported sound measurement locations, the A-weighted equivalent sound levels (Leq(h)s) were performed at approximately 5 feet above ground. The acoustical measurement system consisted of a Rion Model NA-27 Sound Level Meter (a Type 1 SLM per ANSI S1.4 & S1.11) equipped with a 1/2-inch microphone with a windscreen, and the SLM was calibrated within 1 year of the sound test date. The sound measurements at the nearby noise sensitive areas (NSAs) attempted to exclude "extraneous sound," such as a car passing immediately by the measurement position, and the sound measurements were typically performed during periods of minimum audible traffic noise. Table 5.12-1 shows the results of the study, and Figure 5.12-2 shows the monitoring locations.

Table 5.12-1: Measured Noise Levels at Noise Sensitive Areas					
Location	Distance/Direction to Compressor Building/Well Pad Storage Wells	Measured Morning Leq (dBA)	Measured Afternoon Leq (dBA)	Measured Evening Leq (dBA)	Calculated Ldn (dBA)
House (NSA 1)	1,900 feet SE of Compressor Building	38	48	43	50
House (NSA 2)	2,400 feet NE of Compressor Building	42	43	39	47
House (NSA 3A)	1,525 feet S–SE of Well Pad Storage Wells	46	48	46	53
House (NSA 3B)	2,000 feet S–SE of Well Pad Storage Wells	46	48	46	53

SOURCE: Hoover & Keith 2009, 2010.

Compressor Station, Remote Well Pad Site, Observation Wells, and Saltwater Disposal Well

The primary sources of ambient noise at the proposed compressor station, remote well pad site, observation wells, and the saltwater disposal well are farm equipment, vehicles, and natural sources, such as wind. Noise measurements taken at the closest noise sensitive areas to the proposed compressor building (NSA 1) and remote well pad storage wells (NSA 3) indicate the Ldn is 50 dBA and 53 dBA, respectively. Traffic along Southam Road and Dodge Road are the primary sources of noise at these locations.

Metering Station

The primary sources of ambient noise at the proposed metering station are industrial land uses, such as the PG&E Delevan Compressor Station and the Wild Goose Metering Station. Because there are no noise-sensitive areas located within 1 mile of the proposed metering station, noise measurements were not taken at this location.

Connecting Pipelines

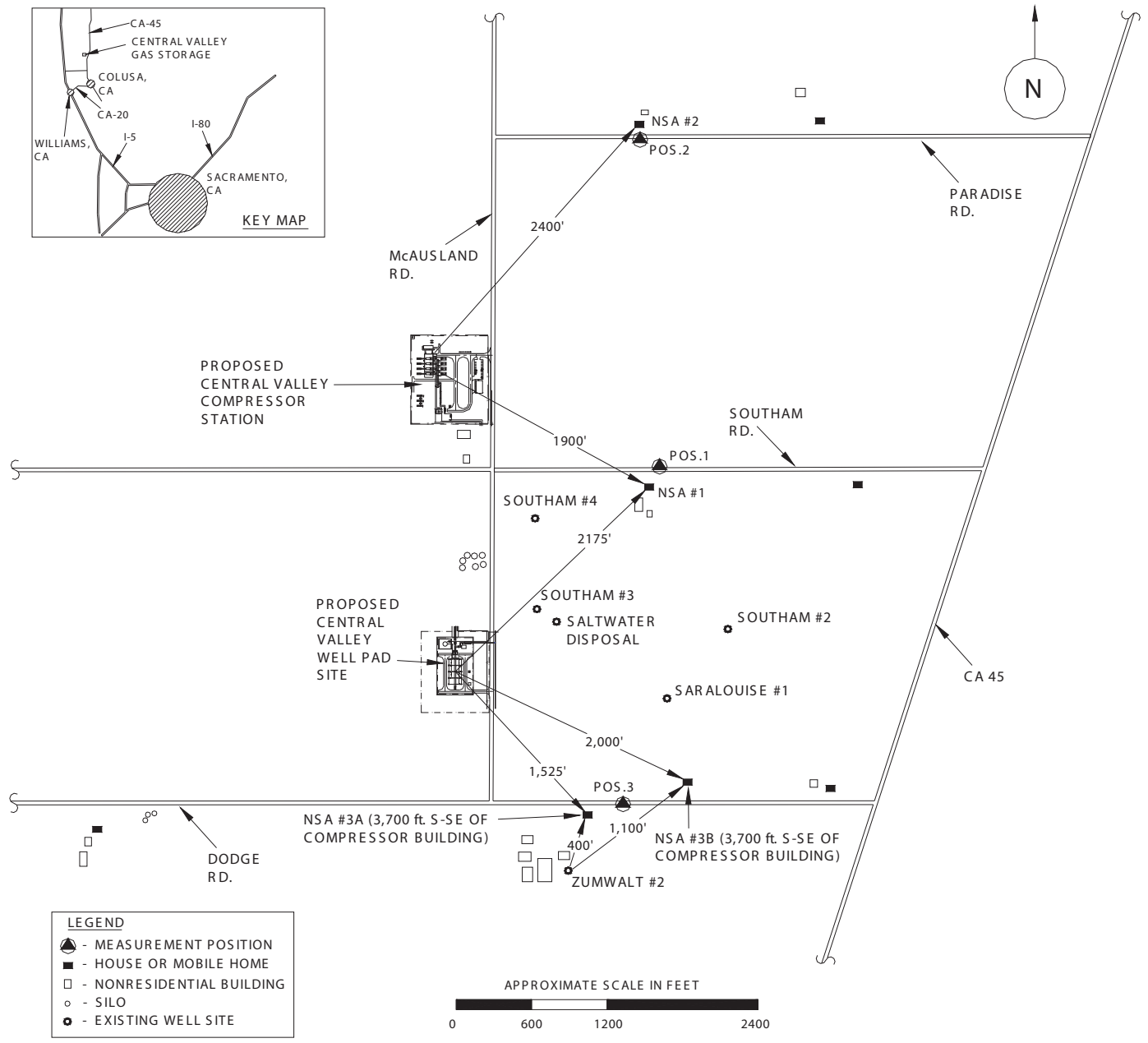
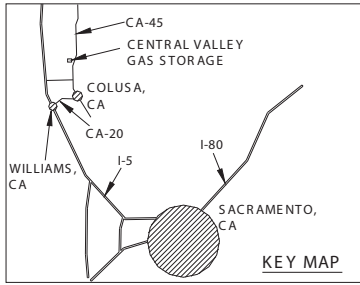
The proposed 16-inch dual gas gathering pipeline would be located between the compressor station and well pad site. The 16-inch pipeline would be located within the ROW of existing project area roads, including McAusland Road and Southam Road, and agricultural fields. The temporary 170-foot-long, 8-inch gas pipeline for connection to PG&E Line 172 would be located within the remote well pad site and buffer area and extend eastward into McAusland Road and connect to PG&E's gas line. These pipelines would be located underground. The proposed 14.7-mile gas connecting pipeline would primarily cross active agricultural fields in unincorporated Colusa County. Existing noise primarily comes from traffic on small agricultural roads and farm equipment, although some noise along the corridor comes from larger roads, I-5, and the UPRR, which runs north-south adjacent to I-5 in the project area. Noise measurements were not taken at any locations along the 14.7-mile natural gas connecting pipeline route or the 580-foot interconnection with PG&E Line 400/401.

Sensitive Receptors

Sensitive noise receptors are facilities or areas (e.g., residential areas, hospitals, schools) where excessive noise levels would be considered an annoyance. According to the Colusa County General Plan, residences, hospitals, and schools are considered sensitive receptors. According to the Colusa County Code, residentially zoned properties are considered sensitive uses (Appendix I, Article 8, Section 8.01 (a)).

The identified sensitive receptors include residential sites within the natural gas storage facility boundary. These residences include NSA 1, 2, 3A, and 3B as identified in Figure 5.12-2. In addition, sensitive receptors also include residences located within the vicinity of the proposed pipeline. The greatest concentration of residences near the pipeline is associated with the community of Delevan. One residence in this area would be located adjacent to the pipeline route. This segment of the pipeline alignment is an area that already experiences high noise levels from vehicular traffic and occasional train traffic. Other isolated residences along the pipeline alignment are also located along existing roadways that experience regular traffic.

Pipeline construction would occur in the vicinity of the Sacramento NWR and the Delevan NWR. The southern portion of the Sacramento NWR (the portion nearest to the proposed pipeline) is an active hunting area, and the northern portion of the Delevan NWR is closed for recreational activities. Both refuges experience noise from adjacent freeways (Sacramento NWR), roads (Delevan NWR), agricultural operations, and low-flying aircraft. Therefore, these areas are not generally considered to be noise sensitive.



SOURCE: Hoover & Keith, Inc. 2010

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Central Valley Gas Storage Project

**FIGURE 5.12-2
Noise Measurement Locations**

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5.12.2 Regulatory Setting

Federal

There are no federal laws or regulations related to noise that are applicable to the proposed project.

State

California Government Code Section 65302(f) requires each local jurisdiction to include a noise element in its general plan.

Because Colusa County does not have noise standards for construction noise, guidelines recommended by the California Department of Health (California Department of Health 1977) are applied to this project. These guidelines recommend the following limits for construction operation noise effects on residential uses:

Mobile Equipment

Maximum noise levels for non-scheduled, intermittent, short-term operation (less than 10 days) of mobile equipment:

- Daily, except Sundays and legal holidays (7:00 a.m. to 7:00 p.m.): 75 dBA
- Daily, 7:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays: 60 dBA

Stationary Equipment

Maximum noise levels for repetitively scheduled or relatively long-term operation (periods of 10 days or more) of stationary equipment:

- Daily, except Sundays and legal holidays (7:00 a.m. to 7:00 p.m.): 60 dBA
- Daily, 7:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays: 50 dBA

In addition, the county does not have noise standards for vibration. The California Department of Health guidelines recommend that operating or permitting the operation of any device that creates a vibration that is above the vibration perception threshold of an individual at or beyond the property boundary of the source not be allowed.

Local

Colusa County General Plan

The Colusa County Noise Element has been incorporated into the Safety Element of the General Plan. Noise is perceived as a relatively minor problem in the county, and therefore little effort has been taken by the county to conduct a community-wide noise survey or mapping of noise contours. For similar reasons, the county has not implemented a noise ordinance that regulates noise from construction or stationary sources of noise.

The Noise Element of the General Plan identifies land use compatibility guidelines for noise and policies for limiting the exposure of people in the county to noise. The land use compatibility guidelines generally conform to the three State of California Department of Health Services Office of Noise Control categories. For residential uses, 55 Ldn (exterior) and 45 Ldn (interior) are identified as being normally acceptable.

The Noise Element also contains the following policies that are applicable to the proposed project:

- **SAFE-14:** New projects should be conditioned, improved, or denied according to the land use compatibility standards discussed in the Colusa County General Plan Safety Element. When necessary, environmental impact reports should be used to gauge the existing and projected noise environments for proposed projects. All projects in areas above the “conditionally acceptable” noise level should provide the county with proof from a professional acoustical consultant that occupants of the project will be protected from excessive noise.
- **SAFE-15:** New land uses that produce high levels of noise should not be allowed to encroach upon noise-sensitive uses. Concurrently, new noise-sensitive land uses should be discouraged near uses that produce high levels of noise, including transportation routes.
- **SAFE-21:** New development should be encouraged to follow site planning practices which create quieter environments.
- **SAFE-22:** Activities which would unnecessarily disturb the peace and quiet of neighborhoods or cause unusual discomfort or annoyance should be prohibited. Regulation of non-vehicular noise (construction, air compressors, manufacturing, loud music) should be encouraged to avoid disturbing adjacent uses.

Colusa County Code

The Colusa County Code contains regulations related to noise and residentially zoned properties. Appendix I, Article 8, Section 8.01 (a) of the Colusa County Code states that “noise generated by the proposed use as measured at the nearest residential zoned property shall not exceed a day-night of 60 dB, or a median hourly noise level of 50 dBA in daytime (7:00 a.m. to 10:00 p.m.) and 45 dBA nighttime (10:00 p.m. to 7:00 a.m.), whichever is more restrictive.”

The operational noise standards discussed in the Colusa County General Plan and Colusa County Code are applicable to residentially zoned properties. There are no residentially zoned properties in the project area. Residences in the project vicinity are located on lands zoned E-A, which permits a single-family dwelling for the landowner or primary tenant of the agriculturally zoned property. Therefore, the operational noise standards provided in the Colusa County General Plan and Colusa County Code are not applicable to the proposed project.

Direction regarding the appropriate noise standard to be applied to construction and operational noise was provided by the Colusa County Planning Department. According to the Colusa County Planning Department, the 55 Ldn land use compatibility standard in the General Plan Noise Element is the appropriate standard to be used to assess project-related continuous noise (ICF Jones & Stokes 2009).

5.12.3 Environmental Impacts

Significance Criteria

Appendix G of the CEQA Guidelines provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact from noise if the project would:

- a) Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies
- b) Expose persons to or generate excessive ground-borne vibration or ground-borne noise levels
- c) Cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project
- d) Cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project
- e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels
- f) For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

The specific thresholds listed below are used to determine the significance of construction and operational noise impacts.

Construction Noise

- When continuous noise from well drilling is predicted to result in an increase in noise that causes the noise level to exceed 55 dBA Ldn at adjacent residences.
- When noise from general construction activities is predicted to result in an increase in noise that causes the noise level to exceed 75 dBA Leq(h) at adjacent residences.

Operational Noise

- When continuous noise from operation of the project facilities is predicted to result in an increase in noise that causes the noise level to exceed 55 dBA Ldn at the adjacent residences.
- When intermittent noise from operation of the facilities is predicted to exceed 75 dBA-Lmax 7:00 a.m. to 7:00 p.m. or 60 dBA-Lmax 7:00 p.m. to 7:00 a.m. at adjacent residences.

Ground-borne Noise and Vibration

- Vibration from construction activities or facility operations that causes audible ground-borne noise or perceptible vibration.

Impact Discussion

- a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**

Construction

General Construction Activities

General construction activities associated with project facilities would be short-term and (excluding well drilling, which would occur 24 hours a day, 7 days a week until complete) would occur Monday through Saturday, 7:00 a.m. to 7:00 p.m. General construction would include grading, scraping, HDD, or boring and compaction activities. In addition to site-

specific activities, vehicles traveling to and from the site also may affect noise in the project area. The magnitude of construction-noise impacts would depend on the type of construction activity, the noise level generated by various pieces of construction equipment, the duration of the activity, the distance between the activity and noise-sensitive receptors, and shielding effects from local barriers and topography.

As shown in Tables 4-3 through 4-6, the type of construction equipment used for this project would vary depending on the construction task. At a distance of 50 feet, the maximum noise level for the various pieces of equipment identified in Tables 4-3 through 4-6 would typically range up to approximately 88 dBA. Assuming several of the loudest pieces of equipment are used simultaneously in close proximity to each other, the combined maximum noise-source level would range up to 92 dBA. Table 5.12-2 lists the expected noise levels at varying distances from an active construction site. It should be noted that the effects of shielding from structures or topography are not accounted for in the noise levels (acoustical absorption by the ground is accounted for in the noise levels).

Table 5.12-2: Estimated Construction Noise in the Vicinity of Active Construction Sites			
Distance Between Source and Receiver (feet)	Geometric Attenuation (dBA)	Ground Effect Attenuation (dBA)	Calculated Maximum Sound Level (dBA)
50	0	0	92
100	-6	-2	85
500	-20	-6	66
900	-25	-8	60
1,000	-26	-8	58
1,200	-28	-9	56
1,400	-29	-9	55
1,800	-31	-10	52
2,000	-32	-10	50

SOURCE: Calculations based on Federal Transit Administration 2006 (geometric spreading of sound)

Note that the equipment noise levels presented in Table 5.12-2 are maximum noise levels. The equipment operates in alternating cycles of full power and low power, thus producing noise levels less than the maximum level. The average sound level of the construction activity also depends upon the amount of time that the equipment operates and the intensity of the construction during the time period. For the type of equipment anticipated to be used for this project, the hourly average sound level is anticipated to range up to approximately 80 dBA at a distance of 50 feet from the equipment.

Noise sensitive areas located 100 feet or less from an active construction site would therefore be subject to noise levels in excess of the applicable noise standard 75 dBA Leq(h) noise threshold, and a significant impact would occur.

No noise sensitive areas would be located within 100 feet or less from the compressor station, remote well pad site, metering station, or along the pipeline route. The closest residence would be a residence located directly east of I-5, Old Highway 99, and UPRR,

northwest of the community of Delevan. The construction noise level would range up to approximately 62 dBA Leq(h) at this residence. The construction activities would be short-term and would occur during daytime hours. With implementation of APM NOI-1 (see Section 4.8.9), which requires Central Valley to incorporate noise control measures into the project construction contract, and Mitigation Measure NOI-1, which requires general construction noise not to exceed 75 dBA Leq(h) at noise sensitive receptors during daytime hours, noise impacts from general construction would be less than significant.

Mitigation Measure NOI-1: Central Valley will incorporate specifications to reduce and control noise generated from construction-related activities such that general construction noise Monday through Saturday, 7:00 a.m. to 7:00 p.m., does not exceed 75 dBA Leq(h) at noise sensitive receptors (e.g., occupied residences, churches, schools) into the project construction contract.

Well Drilling at the Remote Well Pad Site

Up to 10 injection/withdrawal wells are proposed at the remote well pad site. Each well would take approximately 6 to 10 days to drill, and drilling rigs would operate continuously (24 hours a day, 7 days a week) until each well is completed.

Table 5.12-3 summarizes the predicted noise levels at the residences nearest to the remote well pad site during drill rig operations. The estimated sound contribution of the drill rig activities was performed for NSA 1, NSA 3A, and NSA 3B since the sound contribution of the drilling operations at other more distant noise-sensitive areas typically would be equal to or less than the sound contribution at these noise-sensitive areas.

Table 5.12-3: Predicted Noise Levels From Operation of Drill Rigs at the Proposed Storage Wells						
Residence	Distance to Proposed Storage Wells	Calculated Ambient Ldn (dBA)	Estimated Leq of Storage Well Drill Rig Noise (dBA)	Calculated Ldn of Storage Well Drill Rig Noise (dBA)	Measured Ambient Ldn + Estimated Ldn of Drill Rig Noise (dBA)	Potential Noise Increase (dB)
NSA 1 (House)	2,125 feet NE	49.5	39.9	46.3	51.2	1.7
NSA 3A (House)	1,525 feet S-SE	52.6	44.30	50.7	54.8	2.2
NSA 3B (House)	2,000 feet SE	52.6	40.9	47.3	53.7	1.1

SOURCE: Hoover & Keith 2010

As shown in Table 5.12-3, continuous noise from well drilling at the remote well pad site would not cause the noise level at the nearest residences to exceed 55 dBA Ldn. Noise generated by continuous well drilling at the remote well pad site would therefore be less than significant.

Temporary Compressor Unit at the Remote Well Pad Site

A temporary 1,500 horsepower compressor unit would be located at the remote well pad site during construction of the 14.7-mile gas connecting pipeline. The temporary compressor unit

(and temporary PG&E Line 172 connecting pipeline) would allow Central Valley to receive and inject gas into the natural gas storage facility on an interruptible basis before construction of the 14.7-mile gas connecting pipeline was complete.

Table 5.12-4 summarizes the predicted noise levels at the residences nearest to the proposed temporary compressor unit located on the remote well pad site.

Table 5.12-4: Predicted Noise Levels From Operation of the Temporary Compressor						
Residence	Distance to Temporary Compressor Unit	Calculated Ambient Ldn (dBA)	Estimated Leq of Temporary Compressor Noise (dBA)	Calculated Ldn of Temporary Compressor Noise (dBA)	Measured Ambient Ldn + Estimated Ldn of Temporary Compressor Noise (dBA)	Potential Noise Increase (dB)
NSA 1 (House)	1,900 feet NE	49.5	40.7	47.1	51.5	2.0
NSA 3A (House)	1,625 feet S-SE	52.6	42.5	48.9	54.1	1.5
NSA 3B (House)	2,025 feet S-SE	52.6	40.0	46.4	53.5	0.9

SOURCE: Hoover & Keith 2010

As shown in Table 5.12-4, the continuous operation of the temporary compressor unit at the remote well pad site during construction would not increase the noise level at the nearest residences above 55 dBA Ldn. This assumes implementation of the noise abatement features summarized in Section 9.0 of the Hoover & Keith 2009 Noise Study prepared by the applicant for this project (see Appendix F). Noise generated by continuous operation of the temporary compressor units during construction would therefore be less than significant.

Conversion of Existing Wells to Observation Wells and a Saltwater Disposal Well

Central Valley would convert up to three existing open wells (S-3, S-4, and SL-1) and one previously plugged and abandoned well (S-2) into storage observation wells. The 2009 test well would be converted to a saltwater disposal well. One new observation well, Z-2, will be drilled. In order to be converted to observation wells and a saltwater disposal well, existing wells would be re-entered by a service rig to determine their internal integrity, and if necessary, remedial work would be performed. Existing well sites and access roads would be graded and improved to accommodate a service rig and other equipment. Service rigs and any necessary remedial work would occur between the hours of 7:00 a.m. and 7:00 p.m., Monday through Saturday. Each well conversion would take approximately 3–5 days to complete. Observation well Z-2 would take approximately 5 to 7 days to drill, and the drilling rig would operate continuously (24 hours a day, 7 days a week) until the well is completed.

Table 5.12-5 summarizes the predicted noise levels at the residences nearest to the observation and saltwater disposal well service and drilling rig operations. The estimated sound contribution of the service and drilling rig activities was only performed for the closest noise-sensitive areas since the sound contribution of the service and drilling rig operations at other more distant noise-sensitive areas typically should be equal to or less than the sound contribution at these noise-sensitive areas.

Table 5.12-5: Predicted Noise Levels From Operation of Drill Rigs at the Proposed Observation Wells

Residence	Distance to Closest Service Rig	Calculated Ambient Ldn (dBA)	Estimated Leq of Service Rig Noise (dBA)	Calculated Ldn of Service Rig Noise (dBA)	Measured Ambient Ldn + Estimated Ldn of Service Rig Noise (dBA)	Potential Noise Increase (dB)
NSA 1 (House)	1,250 feet NE of S-3	49.5	42.9	40.9	50.1	0.6
NSA 1 (House)	925 feet E-NE of S-4	49.5	46.6	44.6	50.7	1.2
NSA 3A (House)	400 feet N of Z-2	52.6	59.6	66.0	66.1	13.6
NSA 3B (House)	1,100 feet NE of Z-2	52.6	48.3	54.7	56.8	4.2
NSA 3B (House)	650 feet S of SL-1	52.6	50.7	48.7	54.1	1.5
NSA 3B (House)	1,200 feet S-SW of S-2	52.6	43.4	41.4	52.9	0.3

SOURCE: Hoover & Keith 2009, 2010

As shown in Table 5.12-5, the operation of service rigs at existing well sites would not increase the noise level at the nearest residences above 55 dBA Ldn. Noise generated by service rigs at the observation and saltwater disposal well sites would therefore be less than significant. The operation of drilling rigs at the proposed Z-2 observation well site would, however, increase the noise level at the nearest residences (NSA 3A and NSA 3B) above 55 dBA Ldn. This is considered significant; however, the construction activities would be short term, and with implementation of Mitigation Measure NOI-2, which requires Central Valley to meet with nearby NSAs prior to drill rig set up activities in order to explain the planned well site activities and offer temporary relocation during drill rig activities or compensation, and Mitigation Measure NOI-3, which requires Central Valley to install a temporary noise barrier around the drill rig during drilling activities at proposed observation well Z-2, noise impacts from drill rig activities associated with observation well Z-2 would be less than significant.

Mitigation Measure NOI-2: Prior to drill rig set up activities and prior to commencement of nighttime activities, Central Valley will meet with nearby NSAs to explain the project schedule and planned well site activities. In the event that noise attributable to drill rig activities becomes objectionable and if it exceeds applicable criteria, Central Valley will offer temporary relocation or compensation.

Mitigation Measure NOI-3: Central Valley shall install a minimum 12-foot-tall temporary noise barrier around three sides of the drill rig during drilling activities at proposed observation well Zumwalt-2. The actual height of the noise barrier may vary depending on the selected drill rig; however, the noise barrier material shall have a minimum sound transmission class (STC) rating of 20. The open side of the noise barrier shall face away from the adjacent closest residence, and the noise barrier shall reduce noise levels to 55 dB Ldn or less at the adjacent closest residence.

Operations and Maintenance

Compressor Station

The compressor station would generate continuous noise during operations and would be the primary source of continuous operational noise associated with the proposed project. The compressors would be used for injection and withdrawal and would be available 24 hours a day, 7 days a week. The three proposed compressor units (which could run continuously for variable periods of time) would be located in the northwestern corner of the site within a permanent compressor building designed to minimize noise emissions. Other noise sources associated with operation of the compressor station would include occasional truck deliveries and employee traffic.

Table 5.12-6 summarizes the predicted noise levels at the residences nearest to the compressor station. The estimated sound contribution of the compressor units was only performed for the closest noise-sensitive areas since the sound contribution of the compressor station operations at other more distant noise-sensitive areas typically should be equal to or less than the sound contribution at these noise-sensitive areas.

Table 5.12-6: Predicted Noise Levels From Operation of the Compressor Station						
Residence	Distance to Compressor Building	Calculated Ambient Ldn (dBA)	Estimated Leq of Compressor Station Noise (dBA)	Calculated Ldn of Compressor Station Noise (dBA)	Measured Ambient Ldn + Estimated Ldn of Compressor Station Noise (dBA)	Potential Noise Increase (dBA)
NSA 1 (House)	1,900 feet SE	49.5	41.7	48.1	51.8	2.3
NSA 2 (House)	2,400 feet NE	46.5	39.2	45.6	49.1	2.6

SOURCE: Hoover & Keith 2009

The nearest sensitive receptors to the compressor building are NSA 1, a residence located approximately 1,900 feet southeast of the compressor building on Southam Road, and NSA 2, and a residence located approximately 2,400 feet northeast of the compressor building on Paradise Road. Ambient noise at these residential locations was measured at approximately 50 dBA Ldn and 47 dBA Ldn. Operation of the compressor station would generate noise levels of 48 dBA Ldn and 46 dBA Ldn at NSA 1 and NSA 2, respectively. This assumes implementation of the noise abatement features summarized in Section 8.0 of the Hoover & Keith 2009 Noise Study prepared by the applicant for this project (see Appendix F for these measures). The noise measures include (but are not limited to) specifications for compressor station building structure, ventilation, engine exhaust systems, and engine air intake systems. As shown in Table 5.12-6, the operation of the compressor station would not increase the noise level at the nearest residences above 55 dBA Ldn. Therefore, potential noise impacts resulting from operation of the compressor units at the compressor station would be less than significant.

In addition to noise resulting from normal operation of the compressor units at the compressor station, the venting of gas at the compressor station would also generate noise. Three types of vents are associated with the proposed project: pressure relief vents, compressor unit blow down vents, and plant emergency shutdown (ESD) vents.

Because pressure relief vents would only release a small amount of natural gas and over-pressure situations would typically be immediately addressed by system operators, operation of these vents would not result in adverse noise impacts. Similarly, due to infrequent use, operation of ESD vents would not result in adverse noise impacts.

Compressor blow down vents would be operated during normal maintenance operations and would be operated routinely. Therefore, operation of these vents could result in high noise levels. Sound levels associated with compressor blow down vents are dependent upon several factors, including initial blow down pressure, the diameter and type of blow down valve, and the arrangement of downstream vent piping. Table 5.12-7 summarizes the predicted noise levels from a normal blow down event (a “normal” blow down event is a short duration event lasting approximately 5 minutes).

“Normal” Blow Sound Source	Closest Residence	Distance to Compressor Station	Estimated Initial Sound Level for Blowdown Event (dBA)
Proposed Compressor Units	NSA 1(House)	1,900 Feet SE	44

Table 5.12-7 indicates that intermittent noise associated with normal blow down events would not exceed the applicable noise threshold for operations (75 dBA-Lmax between 7:00 a.m. and 7:00 p.m. or 60 dBA-Lmax between 7:00 p.m. to 7:00 a.m. at adjacent residences). Therefore, intermittent noise generated during operation of the compressor station would be less than significant.

Remote Well Pad Site, Observation Wells, and Saltwater Disposal Well

Injection/withdrawal wells at the remote well pad site, observation wells, and the saltwater disposal well would generate a minimal amount of noise during operations. Since these facilities would be located in a sparsely populated area, normal operation would not increase the noise level at the nearest residence above 55 dBA Ldn. Maintenance activities at these facilities would generate noise; however, due to the expected short duration of maintenance activities, impacts would be less than significant.

Metering Station and Connecting Pipelines

Similar to the remote well pad site, observation wells, and the saltwater disposal well, operation of the metering station and connecting pipelines would generate noise; however, the metering station would be located more than 1 mile from the nearest residence, and the pipeline would be located underground. Maintenance activities would generate short-term, infrequent noise. Impacts would be less than significant.

b) Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels?

Construction

Other than the short term use of pile driver at the compressor station, construction of the compressor station, remote well pad site, observation wells, saltwater disposal well, and metering station would not require the use of equipment typically associated with considerable ground-borne vibration such as blasting and impact breakers. The closest compressor station

site boundary is located approximately 1,250 feet from the nearest residence. The vibration from a typical pile driver is a peak particle velocity of 0.644 inches per second at a distance of 50 feet. Peak particle velocity is the measurement of the vibratory ground motion in the vicinity of the affected structure. The vibration at a distance of 1,250 feet would be a peak particle velocity of 0.002 inches per second. This vibration would not result in annoyance to people or damage to structures. Grading activities, trucks, and other equipment used during construction could generate some ground-borne vibration; however, the impact from construction-related vibration would be short-term and would generally be confined to the immediate area around the activity. Because ground-borne vibration attenuates rapidly, impacts would be less than significant.

Construction activities associated with connecting pipelines (the dual gas gathering line, temporary connection to PG&E Line 172, and the 14.7 mile interconnection to PG&E Line 400/4001), in addition to the saltwater disposal pipe, would primarily occur in areas that are well removed from sensitive receptors and would generally have the same impacts as discussed above for the compressor station, remote well pad site, observation wells, saltwater disposal well, and metering station. Residences would be located near the gas gathering line, temporary PG&E Line 172 connecting pipeline, and 14.7-mile gas connecting pipeline construction areas, but the vibration generated by construction equipment would be short-term and generally confined to the immediate area of activity. Vibration impacts resulting from construction of connecting pipelines would be less than significant.

Operations and Maintenance

The use of large reciprocating compressor units at the compressor station could potentially result in significant ground-borne noise and vibration impacts if the units are not properly isolated. However, in order to operate properly, compressor units must be operated under strict vibration limits. Because the nearest residence is located approximately 1,900 feet from the compressor building, and because vibration limits would be applied to the compressor units, operation of compressor units is not anticipated to generate audible ground-borne noise or perceptible vibration at the nearest residence. Therefore, potential ground-borne noise and vibration would be less than significant.

Operation and maintenance of the various project facilities would cause low levels of ground-borne noise and vibration; however, these impacts would be minimal and would likely be imperceptible. Ground-borne vibration would dissipate within 50 feet of the source and due to distance between project facilities and residences, would likely be imperceptible to the nearest residences. Maintenance of facilities would require a few periodic truck trips; however, this is already a chief source of vibration in the area. Vibration would be minimal, and impacts from operation and maintenance would be less than significant.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Construction

Construction would be temporary, and permanent increases in ambient noise levels in the project vicinity would not occur because of construction activities. Impacts would be less than significant.

Operations and Maintenance

Operation of the compressor station would result in a permanent noise increase in the vicinity of the facility. As shown in Table 5.12-6, the operation of the compressor station would result in noise level increases at the nearest sensitive receptors (NSA 1 and NSA 2) of 2 dBA and 3 dBA Ldn, respectively. The noise level increases attributed to operation of the compressor station would not exceed the established significance standard of 55 dBA Ldn. Therefore, noise impacts would be less than significant, and no mitigation would be required. Similarly, operation and maintenance associated with the remote well pad site, observation wells, saltwater disposal well, metering station, and connecting pipelines would generate a minimal amount of noise and would be located away from noise-sensitive areas. Impacts would be less than significant.

- d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?**

Construction

Refer to response to 5.12.3 (a). Construction of the compressor station and metering station would result in a temporary increase in ambient noise levels in the vicinity of project facilities. However, due to location and construction activities proposed at these sites, construction would not generate substantial noise levels in excess of established standards. Impacts would be less than significant.

Construction of the remote well pad site would include injection/withdrawal well drilling and temporary use of a leased compressor unit. These activities would be the primary noise-generating activities occurring on site during construction. The noise increases attributed to well drilling and operation of the leased compressor unit at the remote well pad site are summarized in Tables 5.12-3 and 5.12-4. As shown in Table 5.12-3, temporary and periodic noise increases of approximately 2 dBA Ldn (measured at NSA 1 and NSA 3A) and approximately 1 dBA Ldn (measured at NSA 3B) would be generated by well drilling at the remote well pad site. As shown in Table 5.12-4, temporary and periodic noise increases of 2 dBA Ldn and 1.5 dBA Ldn (measured at NSA 1 and NSA 3A, respectively), and approximately 1 dBA Ldn (measured at NSA 3B), would be generated by temporary use of the leased compressor unit. The temporary noise increase attributed to well drilling and use of a leased compressor unit at the well pad site would be less than significant because the resulting noise level would not exceed the established significance threshold of 55 dBA Ldn.

As shown in Table 5.12-5, operation of the service rig at the observation wells would result in temporary and periodic noise increases of between 0.3 and 13.6 dBA Ldn from the various observation well sites to sensitive receptors. With the exception of well drilling associated with new observation well Z-2, the temporary noise increase attributed to the well drilling would be less than significant because the resulting noise level would not exceed the established significance threshold of 55 dBA Ldn. To minimize the potential for substantial ambient noise level increases resulting from drill rig activities associated with observation well Z-2, Central Valley would implement Mitigation Measures NOI-2 and NOI-3. With implementation of Mitigation Measure NOI-2, which requires Central Valley to meet with nearby NSAs prior to drill rig set up activities and prior to commencement of nighttime activities to explain the planned well site activities and offer temporary relocation during drill

rig activities or compensation, and Mitigation Measure NOI-3, which requires Central Valley to install a temporary noise barrier around the drill rig during drilling activities at proposed observation well Z-2, short-term construction noise associated with drill rig activities would be less than significant.

Construction of the 14.7-mile pipeline would primarily affect one residence located in close proximity of the proposed pipeline route. As a result of pipeline construction, this residence would be subject to substantial temporary ambient noise level increases. Pipeline construction would occur during the day along a linear corridor so that construction would not be located in one place for an extended period of time. In addition, to further minimize the potential for substantial ambient noise level increases, Central Valley would implement APM NOI-1 and Mitigation Measure NOI-1. With implementation of APM NOI-1, which requires Central Valley to incorporate noise control measures into the project construction contract, and Mitigation Measure NOI-1, which requires general construction noise not to exceed 75 dBA Leq(h) at noise sensitive receptors, short-term construction noise impacts would be less than significant.

Operation and Maintenance

Temporary and periodic noise generated during operation of the project would primarily be generated by maintenance vehicle trips and would not cause substantial periodic increases in noise levels. Impacts would be less than significant.

- e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?**

The project is not located within an airport land use plan or within 2 miles of a public airport or public use airport. At its nearest point, the proposed 14.7-mile gas pipeline would be located approximately 13 miles north of the Colusa County Airport, located in Colusa. No impacts would occur.

- f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?**

The proposed 14.7-mile gas connecting pipeline would auger bore under a private airstrip (Gunnerfield Ranch Airstrip) located east of Delevan Road and 4 Mile Road. One residence is located immediately south of the airstrip. Construction activities in the vicinity of the airstrip and residence would likely include excavation of bore pits and trenching. Noise increases from pipeline installation typically would last no more than a few days at any given location, and due to distance, construction activities would not generate an excessive amount of noise, which would impact people residing or working in the area; therefore, a less than significant impact would occur.

5.13 POPULATION AND HOUSING

<i>Would the project:</i>	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) <i>Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) <i>Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) <i>Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

5.13.1 Environmental Setting

The proposed project is located within Colusa County, a sparsely populated, predominantly agricultural county within the Upper Sacramento Valley. The project would be located within a largely rural, undeveloped area, and the project does not propose the development of housing.

Nearby communities include Princeton, Delevan, and Maxwell. Colusa is the nearest city to the project area. The unincorporated communities of Colusa County and the City of Colusa have a combined total population of 16,710 and total housing stock of 6,437 units (State of California 2009b). Approximately 10,570 people are employed who reside in these communities and the City of Colusa. These communities provide housing opportunities in the project area, and they are located in close proximity to roadways that provide direct access to the project work sites.

Population

Colusa County had a population of approximately 21,776 in 2007 (State of California 2009a). The county is projected to grow by over 35% between 2007 and 2020 (State of California 2007). Table 5.13-1 shows growth trends and projections for Colusa County.

Colusa County	2000	2007	2020
Total Population	19,027	21,776	29,558
Change from 2000 Population	—	+2,749	+10,531
Percent Change from 2000	—	14.4%	55.3%

SOURCE: State of California 2007, 2009a.

The City of Colusa had an estimated population of 5,705 in 2008, which represents a growth of approximately 5.6% since 2000 (State of California 2009b). The city's population exceeded 5,900 in January 2009 (State of California 2009b).

Work Force

Colusa County's total work force is approximately 11,180 (EDD 2009a). There were approximately 130 construction jobs in the county as of 2008 (EDD 2009b). Colusa County's unemployment rate (14.0% in 2008) has been consistently higher than the rate for California (7.2% in 2008) but has dropped slightly from 13.7% in 2004 (EDD 2009c).

The City of Colusa total work force was approximately 3,180 in 2008. The city's unemployment rate in 2008 was 9.4%, which is higher than the 7.6% unemployment rate reported at the time of the 2000 Census (EDD 2009c).

Housing

The total number of housing units in Colusa County was 7,448 in 2008 (State of California 2009b). The total vacancy rate for all Colusa County housing units was 9.8% in 2008 (State of California 2009b).

The total number of housing units in the City of Colusa was 2,125 in 2008 (State of California 2009b). The total vacancy rate for Colusa housing units was 5.79% in 2008, indicating that approximately 123 housing units were available in 2008 (State of California 2009b).

5.13.2 Regulatory Setting

Federal

There are no federal laws or regulations related to population, employment, and housing that are applicable to the project.

State

There are no state laws or regulations related to population, employment, and housing that are applicable to the project.

Local

Colusa County General Plan

The Colusa County General Plan Housing Element contains the following policy related to housing that pertains to the project.

- **HO-12:** Protect the quality of existing neighborhoods in Colusa County from intrusion by incompatible uses.

5.13.3 Environmental Impacts

Significance Criteria

Appendix G of CEQA provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on population and housing if the project would:

- a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)
- b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere
- c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

Impact Discussion

It is assumed that potential impacts to population and housing would be similar across project components (surface facilities and connecting pipelines) due to the rural environment and sparse population of the project area. The following discussion describes potential impacts by phase and in general terms for the entire project area.

- a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?**

Construction

The project would generate construction-related jobs over an approximately 20-month construction period. The construction workforce would vary from month to month, and the work would be spread out within the project area at various sites. Approximately 370 workers would be required during the construction period of the proposed project. The anticipated total workforce for construction of the proposed project is summarized in Table 5.13-2.

Table 5.13-2: Anticipated Workforce			
Phase	Total Workforce	Estimated Duration	Construction Year
Pipeline construction	230	3–4 months	2011
Compressor station (this includes Line 172, gathering lines, and electric distribution line)	75	12–14 months	2010–2012
Metering station and interconnect into PG&E Line 400/401	30	2–3 months	2010
Well pad preparation, drilling and observation well conversions	15	3 months	2010
Site cleanup/restoration	20	2–3 months	2012
Project Totals	370	—	—

NOTE: Based on the proposed phasing of the project, it is estimated that 335 workers would be required for the peak construction period when construction of the compressor station, metering station, and 14.7-mile-long pipeline would occur concurrently.
SOURCE: ICF Jones & Stokes 2009

Local workers are expected to perform some of the construction work; however, due to the lack of a large work force in the immediate area, the bulk of the construction workforce would come from outside of the immediate area. Also, specialized non-local workers would be required to construct the proposed project. It is anticipated that these workers would reside in the vicinity of the project area only temporarily during the construction period

because the construction industry differs from most other industry sectors in several ways, such as the following:

- Construction employment has no regular place of business. Rather, construction workers commute to job sites that may change several times a year.
- Many construction workers are highly specialized (e.g., crane operators, steel workers, welders) and move from job site to job site, dictated by the demand for their skills.
- The work requirements of most construction projects are also highly specialized, and as a result, workers are employed on a job site only as long as their skills are needed to complete a particular phase of the construction process.

Because non-local workers would be in the area only during construction, they are not expected to become permanent residents. During construction activities, non-local workers would use hotel/motel accommodations or recreational vehicle parks and local campgrounds. No demand for permanent housing would be created during the construction phase of the proposed project. The communities of Colusa, Willows, and Williams would likely accommodate the majority of non-local workers. Larger communities such as Marysville, Yuba City, and Woodland may also accommodate non-local workers. Several hotels, motels, RV parks, and campgrounds are located within Colusa County or within a 60-mile radius of the project area. Non-local workers would then leave the area when the project is completed. The project would not induce substantial population growth in Colusa County, as temporary housing opportunities are located in greater Colusa County and within a 60-mile radius of the project area. Any impacts on population and housing associated with construction workers would be less than significant.

Operation and Maintenance

The proposed project would not result in substantial population growth in the area because no new homes or businesses are proposed, and no infrastructure related to population growth is proposed. The proposed project would require approximately 6–8 full-time employees to operate and maintain the facilities. Operations and maintenance personnel would be present at the facility during normal daytime hours, and some employees would be on call after hours. There would be times when the facility would be manned 24 hours per day. These may include times when there are equipment problems; ongoing special projects; issues relating to the operation of the PG&E pipeline system; or any time that ensuring a safe, reliable operation dictate.

It is likely that most of these new employees would be drawn from the surrounding communities.

The addition of up to 6–8 workers and their families would not constitute a substantial increase in population growth. Any slight increase in the local workforce resulting from the project would help to reduce local unemployment and housing vacancy rates, but these benefits would not be sufficient to trigger additional population growth. No new or expanded services or infrastructure would be necessary to accommodate the permanent positions created by the project. Accordingly, project-related permanent positions would not induce substantial population growth in Colusa County. Any impacts on population and housing associated with permanent workers would be less than significant.

b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

The project would be located in a sparsely populated, rural agricultural area, and no existing housing would be displaced or substantially affected by construction of the proposed project components. No impacts would occur.

Operation and maintenance of the proposed natural gas storage facility would not displace existing housing. There would be no impacts associated with the displacement of residents and existing housing.

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

The project would be located in a sparsely populated, rural agricultural area, and local residents would not be displaced by construction activities, therefore, no impact would occur.

Operation and maintenance of the proposed natural gas storage facility would not displace people. There would be no impacts associated with the displacement of residents and existing housing.

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5.14 PUBLIC SERVICES

<i>Would the project:</i>	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) <i>Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:</i>				
<i>Fire protection?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<i>Police protection?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<i>Schools?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<i>Parks?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<i>Other public facilities?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

5.14.1 Environmental Setting

Fire Protection

Fire protection services to the project area and vicinity are provided by both the Princeton Fire Protection District (PFPD) and the Maxwell Fire Protection District (MFPD). Both the PFPD and the MFPD are staffed by volunteer fire fighters.

The PFPD provides fire service protection services and emergency medical aid to the northeastern part of Colusa County (Colusa County 1989). The nearest fire station to the eastern end of the project area (compressor station, remote well pad site, observation wells, and the eastern end of the connecting pipelines) is the PFPD station, located at 342 Winter Street in Princeton. This station has 15 volunteer personnel, including one fire chief (Masa 2009). The station is located approximately 1.5 miles northeast of the proposed compressor station and approximately 7 miles northeast of the central project area (generally located between 2 Mile Road and 4 Mile Road). Estimated response time to the eastern end of the proposed project is between 8 and 10 minutes (ICF Jones & Stokes 2009). The MFPD provides fire protection services and emergency medical aid to the north central part of Colusa County (Colusa County 1989). The western end of the proposed project (the metering station and the western end of the 14.7-mile connecting pipeline) would be served by the MFPD. The station is located approximately 7 miles southeast of the proposed metering station and approximately 7 miles southwest of the central project area. The central portion of the project could be served by either the MFPD or the PFPD. Estimated response time to the western end of the proposed project is between 8 and 10 minutes and between 12 and 15 minutes for the central portion of the proposed project (ICF Jones & Stokes 2009). The MFPD maintains one station located at 231 West Oak Street in Maxwell and has 3 paid personnel and approximately 30 volunteer personnel (Wells 2009).

Police Protection

Police protection services would be provided to the project area by the Colusa County Sheriff's Department (Sheriff's Department). The Sheriff's Department provides general police services to the numerous communities within Colusa County. Services provided by the Sheriff's Department include 24-hour patrol, detective services (part of the Investigations Unit), drug education, and crime prevention. In addition, the Sheriff's Department also serves as the county Emergency Services Center. Response time to the project area would depend upon the location of the assigned deputy at the time of the call. The expected response times to a situation in the project area could be within a few minutes (if there is a deputy in the area) to 15 minutes (ICF Jones & Stokes 2009). The nearest station is located at 929 Bridge Street in Colusa, which is located approximately 13 miles southeast of the proposed compressor station. The Sheriff's Department employs 75 staff members (including approximately 30 sworn officers) and 93 volunteer members (Colusa County Sheriff's Department 2009).

Schools

The vicinity of the project area is served by two school districts: the Princeton Joint Unified School District and the Maxwell Unified School District.

The closest school district to the western end of the project area is the Princeton Joint Unified School District, located at 428 Norman Road in the community of Princeton. The Princeton Elementary School has a student enrollment of 107 (Great Schools 2009). Princeton Junior/Senior High School, located at 473 State Street, has a student enrollment of 109 (Great Schools 2009). Most of the students attending these schools reside in Glenn County; therefore, the Princeton schools are part of the Glenn County Office of Education. These two schools are located in relatively close proximity in Princeton and are located approximately 1.5 miles north of the proposed compressor station. Princeton Joint Unified School District schools annually serve a total of approximately 200 students.

The Maxwell Unified School District includes an elementary school, a high school, and a continuation high school with a total student enrollment of 459 students in the 2007–2008 school year (Maxwell Unified School District 2009).

Parks and Other Recreational Facilities

The proposed project is located in a sparsely populated, rural agricultural area that does not contain developed parks. The city parks closest to the project area are the City of Colusa's Colusa Levee Scenic Park and Memorial Park, both located more than 13 miles southeast of the proposed compressor station. The Sacramento NWR and the Delevan NWR are located within the project area, north and south of the proposed 14.7-mile connecting pipeline. The Sacramento NWR is located immediately east of I-5 and north of Delevan, and the Delevan NWR is located west of the Sacramento River, generally between 4 Mile Road and the Colusa Trough. Recreational activities at the 10,819-acre Sacramento NWR and the 5,877-acre Delevan NWR include hunting and wildlife viewing. Recreational activities at the 67-acre Colusa-Sacramento State Recreation Area (located approximately 10 miles southeast of the proposed project area) include fishing, camping, boating, and hiking. The Sacramento River is also located in the vicinity of the proposed project area. Construction would not occur within

these three areas. Additional discussion of recreational facilities in the area is provided in Section 5.15.

Other Public Facilities

One major hospital, the Colusa Regional Medical Center, is located in Colusa County. The countywide health care system administered by the Colusa Regional Medical Center includes a 48-bed acute care hospital and nursing facility in Colusa and rural clinics in Arbuckle, Colusa, Stonyford, and Williams (Colusa Regional Medical Center 2009). The closest hospital to the project area is the Colusa Regional Medical Center. The hospital is located at 199 East Webster Street in the City of Colusa approximately 13 miles southeast of the proposed compressor station. The Colusa Regional Medical Center provides quality healthcare services to Colusa and surrounding communities. The Colusa Regional Medical Center medical staff consists of 3 hospital-based physicians, 9 primary care physicians, 11 specialty physicians, and 1 honorary physician (Colusa Regional Medical Center 2009).

Ambulatory services in the county are provided by Enloe Medical Center. Enloe Medical Center, a 391-bed non-profit hospital in Chico, has a ground ambulance program serving the counties of Butte, Sutter, and Colusa (ICF Jones & Stokes 2009). It also uses FlightCare, an air ambulance that provides 24-hour service to rural areas located within a 75-mile radius of the medical center (Enloe Medical Center 2009). Requests for ambulance services would be dispatched by the Colusa County Sheriff's Department.

5.14.2 Regulatory Setting

Federal

There are no federal laws or policies related to public services that are applicable to the proposed project.

State

There are no federal laws or policies related to public services that are applicable to the proposed project.

Local

The Colusa County General Plan Community Services Element contains the following policies related to public services that pertain to the project.

- **FIRE-2:** Proposed development applications should be referred to the local fire chief for recommendations and comments. Comments should include specific recommendations about equipment, manpower, or facilities that might be required as a result of the development.
- **FIRE-4:** Development which could create a public hazard in the event of fire shall be located away from existing and planned residential areas.
- **FIRE-5:** New development should incorporate design measures which are responsive to the risk of fire hazard in those areas.

5.14.3 Environmental Impacts

Significance Criteria

Appendix G of the CEQA Guidelines provides guidance for evaluating whether a development project may result in significant impacts. Appendix G states that a development project could have a significant impact on public services if the project would result in substantial, adverse physical impacts associated with the provision of new or physically altered governmental facilities, the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:

- a) Fire protection
- b) Police protection
- c) Schools, parks, and other public facilities.

Impact Discussion

The following impact discussion is organized by the type of public service potentially affected, rather than by the project component where impacts could potentially occur. It is assumed that potential impact to public services in the project area would be similar across project components; therefore, impacts are discussed in general terms for the entire project area.

a) Fire Protection

Central Valley would have six to eight full-time employees. In the case of any upset or unusual situation, communication of any operational upset or emergency would be done through the plant control system and pagers or cell phones carried by individual employees.

The first level of response is the computer control system for the plant. The control system would first respond by identification of the situation, isolation of the high-pressure gas, and elimination of the gas from the affected area. This system for control of gas compressor systems has been under a constant state of development starting as early as the 1960s.

After the plant control system triggers a response, employees would be notified in accordance with the project's emergency response procedures, which would be written prior to commercial operation. In the case of operational upsets or unusual conditions during manned hours (daylight), human response would be almost immediate. In the case of night or unmanned operation, personnel would be notified immediately. More specifically, during the construction phase, any event on the pipeline or an off-site incident would likely be responded to in the 10- to 20-minute time frame. During the operations phase, an event on the pipeline would likely be responded to within 30 minutes during periods when the Central Valley facility is manned, and 45 to 60 minutes when the facility is unmanned.

Nicor, Inc., states that it currently fights all fires on its facility sites with company personnel (Schnegelsberg et al., pers. comm. 2010). First responders from local fire departments are asked to come to the plant gate and wait for company personnel to stabilize the situation before entry onto the plant site.

With regard to the potential for an accident off site, it is important to note that gas pipeline design, internal inspection protocols, cathodic protection systems, landowner education, and sign programs have dramatically improved the safety of all pipeline systems. Responses

due to off-site conditions are rare, but may take longer than on-site problems. If there were a pipeline rupture due to physical damage to the pipe, several things would happen. First, gas volumes measured at either end would change substantially. Further, line pressures would decline rapidly. Either of these changes would be indicative of a potential problem with the gas pipeline. The most common method of management of gas pipeline conditions is to close the block valves at both ends of the pipe, which can be done remotely. A stable pipeline pressure indicates the pipe is secure. A falling pressure indicates a line problem. From a first response standpoint, this would trigger a callout of operating personnel.

It is important to note that Nicor operates 7 gas storage fields and has gas facilities located in approximately 300 communities in Illinois. The effective emergency response plans developed in over 50 years of operation would be the model for development of the project's plan. Colusa County has approximately 1,375 existing natural gas wells, of which about 800 are active. According to DOGGR, there has been no experience with leakage problems in all of Northern California. There were two cases in Montebelo field and Playa del Rey in Southern California, and they were the result of injection into older wells that were not up to standard.

Construction

Construction of the proposed project would generate little need for fire protection services. In the event of an emergency during construction, demand for fire emergency response would be temporarily increased (see Section 5.8 for discussion of fire risks). It should be noted that project operators who have specialty training in responding to incidents at gas storage facilities would be the first responders. Equipment will be available on site for both early detection and firefighting. However, few instances requiring assistance from emergency service providers during construction are expected, and local and regional emergency response providers are expected to be capable of responding to construction emergencies. Training will be provided to two members of the Princeton Fire Department. In addition, an emergency response plan will be put into place during construction to ensure that emergency vehicles have access in and adjacent to the construction work area. To further minimize fire risk during construction, Central Valley will implement APM HAZ-2 (see Section 4.8.7), which will restrict equipment use in specific areas and ensure that combustion engines conform to applicable regulatory standards. No new governmental facilities would be required to support construction of the proposed development. Impacts would be less than significant.

Operations and Maintenance

Operation of the proposed project would result in the storage of natural gas underground, along with the compressor station, well pad site, metering station, and required connecting pipelines. Consequently, as further discussed in Section 5.8, operation of the project would result in increased risk of fire and/or explosion, resulting in an increased demand for local emergency services, including fire protection.

Project operators who have specialty training in responding to incidents at gas storage facilities would be the first responders during operation of the project. Equipment will be available on site for both early detection and firefighting. Central Valley would be required to pay development fees to Colusa County that would be used, in part, to support public

services such as fire protection and to offset any increased demands from the proposed project. In addition, Central Valley would maintain appropriate natural gas firefighting equipment at the compressor station, and employees would be trained in fire response techniques. The project applicant will provide specialized training to local fire department personnel, contribute to the Princeton Fire Department equipment fund, and make an annual contribution to the Princeton Fire Department's ongoing operations. The compressor station would also be equipped with fire, heat, and gas detection systems that would allow Central Valley to respond to fires. Should a small fire, explosion, or release of hazardous substances originating at proposed project facilities during operations occur, existing fire and emergency responders are expected to be adequate to respond. Large-scale, catastrophic events originating at project facilities would require a coordinated effort by regional emergency service providers. However, as discussed in Section 5.8, the low probability of a catastrophic event would not require new fire protection or emergency response capabilities; therefore, the potential impact to existing fire and emergency responders would be less than significant.

b) Police Protection

Construction

Construction of the proposed project would generate little need for police services; therefore, no new police protection or response capabilities would be required to support construction of the proposed project.

Operations and Maintenance

The Colusa County Sheriff's Department is expected to be able to adequately respond to emergency calls generated by proposed project facilities during operations. Larger-scale events may require a coordinated effort by multiple emergency response providers in the region; however, the low probability of such an event makes the potential impact less than significant.

Project facilities would require six to eight new full-time employees during operations. The addition of six to eight workers and their families would not cause a significant additional demand for police protection services. Impacts associated with the need for new or physically altered governmental facilities would be less than significant.

c) Schools, Parks, and other Public Facilities

As stated in Section 5.13, neither construction nor operation of the proposed project is expected to result in a long-term increase in the local population that would result in new demand for public facilities.

Construction

Over the approximate 20-month construction period, a total of approximately 370 workers would be required. Non-local workers are not expected to become permanent residents of local communities after construction of the project is complete. Given the brief construction period, family members are not anticipated to accompany non-local workers. Non-local workers may cause minor short-term increases in the use of local parks, libraries, or other public facilities; however, the increased use of facilities would not warrant the construction of

new public facilities. Injured workers could potentially visit local health care facilities, but such visits would not cause capacity impacts that would require new or physically altered facilities. Therefore, impacts to schools, parks, and other public facilities during construction would be less than significant.

Operations and Maintenance

Operation of the project would require approximately six to eight new employment positions. New employment positions may be filled by residents residing in surrounding communities. The addition of six to eight workers and their families would not constitute a substantial impact to school capacity. Potential impacts on schools in the project area would be considered less than significant because of the small number of permanent employees who could potentially have children attending schools in this area. Potential increases in the use of project area parks and local health care facilities would not require construction of additional facilities; therefore, impacts to schools, parks, and other public facilities would be less than significant.

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5.15 RECREATION

<i>Would the project:</i>	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) <i>Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) <i>Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) <i>Result in permanent and/or temporary impacts, such as possible disruption of recreational activities, affecting the recreational value of existing facilities?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

5.15.1 Environmental Setting

Colusa County provides numerous recreation options, including hunting, fishing, camping, boating, and golfing. The recreational opportunities and facilities located in Colusa County within the project vicinity are discussed in greater detail below.

Sacramento River

The Sacramento River is located outside of the immediate project area, approximately 1 mile east of the proposed compressor station and remote well pad site. Boating and fishing are popular activities on the river.

National Wildlife Refuges

The Sacramento and Delevan NWRs are located within the immediate project area, north and south of the proposed 14.7-mile natural gas connecting pipeline, respectively. Both areas are managed by the USFWS and are part of the Sacramento NWR Complex, which also includes the Colusa, Sacramento River, and Sutter NWRs (all located outside the immediate project area). The Sacramento NWR is located immediately east of I-5 and north of Delevan. The Delevan NWR is located west of the Sacramento River, generally between 4 Mile Road and the Colusa Trough. Recreational activities at the 10,819-acre Sacramento NWR and the 5,877-acre Delevan NWR include hunting, photography, and wildlife viewing (USFWS 2009). Waterfowl and pheasant hunting are permitted in both refuges. The waterfowl-hunting season generally begins in mid-October and ends near the end of November, and the pheasant-hunting season generally begins in mid-November and ends near the end of December (CDFG 2009). In 2006, the Sacramento NWR saw 86,165 visitors, while the Delevan NWR saw 6,386 visitors (USFWS

2009). Photography and wildlife viewing are permitted on units within the refuges open to the public. Construction would not occur within the refuges.

Private Hunting Clubs

Several private hunting clubs offer waterfowl hunting in Colusa County. The majority of the project area is zoned Exclusive Agriculture (E-A), which permits recreational hunting with a use permit. There are private governmental cooperative programs that provide recreational hunting for waterfowl and upland game birds (pheasant) on some of the private lands in the project vicinity, and a few property owners lease rice fields to hunters during the fallow fall and winter months. The Gaines Ranch Duck Clubs operates over 2,400 acres of prime waterfowl country in Northern California along State Highway 162 between Highway 99 and I-5 (Gaines Ranch Hunting Club 2009). The four properties located nearest the project area are discussed below.

- **The Riz Ranch:** This duck- and goose-hunting ranch is located west of the Sacramento NWR near the community of Princeton. It lies approximately 5 miles north of the compressor station site. The ranch consists of over 600 acres of flooded rice fields and seven four-man blinds.
- **P&P Ranch:** This 450-acre rice farm is located in the area of the Sacramento NWR just west of the Riz Ranch. Four blinds are located on the property.
- **DPM Ranch:** This 160-acre duck- and goose-hunting property is located east of the Sacramento NWR, approximately 3.5 miles north of the compressor station site. A two- and a four-man blind are located on the property.
- **The North Field:** This area features two separate fields and four four-person blinds on 450 acres of flooded rice grounds located northeast of the Sacramento NWR, just south of Highway 162 west of the town of Glenn. This field is located approximately 8 miles north of the compressor station site.

The Richmond Hunting Club and the RSCT, Inc. Duck Club also operate hunting grounds in Colusa County; however, these grounds are generally located outside of the immediate project area.

5.15.2 Regulatory Setting

Federal

U.S. Fish and Wildlife Service Final Comprehensive Conservation Plan for the Sacramento, Delevan, Colusa, and Sutter National Wildlife Refuges

The *Final Comprehensive Conservation Plan* (CCP) was designed to guide the management of the Sacramento, Delevan, Colusa, and Sutter NWRs through 2024. Although part of the Sacramento NWR Complex the Sacramento River NWR is not included in the CCP. Prior to the adoption of the plan, each wildlife refuge was managed by an individual Refuge Management Plan. The CCP addresses the USFWS's policies, goals, and vision regarding the management of wildlife refuges located in the western Sacramento Valley and also helps to realize the refuge mission statement: "To administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans" (16 U.S.C. 668dd(a)(2)).

The CCP contains an individual habitat management plan for each of the four refuges. In addition, the visitor services/recreational opportunities available within each refuge are identified within a refuge-specific map included in the plan. These “visitor services” maps identify the areas within the refuge in which recreational activities such as wildlife viewing and hunting are permitted. Chapter 4, Planned Management and Adopted Programs, of the plan contains policies established to guide the future management of each refuge.

State

There are no state laws or policies related to recreation that are applicable to the proposed project.

Local

The Colusa County General Plan Open Space Element includes policies related to recreation. These policies include:

- **OS-3:** Publicly owned lands currently used for recreational purposes or as undeveloped open space should be retained in their present use, unless designated for an alternate use by the Land Use Element.
- **OS-18:** Colusa County should, through its land development regulations, ensure that adequate park space is provided to serve new development.
- **OS-27:** Private landowners should continue to have the right to offer hunters access to their land during the official hunting seasons.

5.15.3 Environmental Impacts

Significance Criteria

Appendix G of CEQA provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on recreation if the project would:

- a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
- b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.
- c) Result in permanent and/or temporary impacts, such as possible disruption of recreational activities, affecting the recreational value of existing facilities

Impact Discussion

- a) **Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?**

Construction

Short-term increases in the use of regional recreational facilities could occur during construction of the proposed project. Construction would require an estimated 370 workers

at multiple project sites over an approximate 20-month period. The total workforce in the project area would vary from month to month and from component to component.

A small percentage of the construction workforce is anticipated to be drawn from local communities surrounding the project area. The remainder of the workforce would be comprised of workers from outside the immediate project area. It is anticipated that these workers could reside in project area communities during the 20-month construction period (refer to Section 5.13 for additional details). It is estimated that at peak construction, when the compressor station, metering station, and 14.7-mile connecting pipeline would be constructed concurrently, a maximum of 335 construction workers would be needed for approximately 4 months. Due to the brief duration of workers' stays, and the fact that temporary worker residences would likely be distributed among multiple communities in Colusa County, the temporary increase in population attributed to construction workers would not increase the use of parks or other recreational facilities to the point where deterioration would occur. Therefore, impacts would be less than significant.

Operation and Maintenance

The operation and maintenance of the proposed project would not result in substantial permanent increase in the use of existing regional recreational facilities that would cause accelerated deterioration of said facilities. Operation of the project would not result in substantial long-term population growth (operation would result in the creation of 6 to 8 permanent employment positions). Therefore, impacts associated with the increased use of existing regional recreational facilities during operation and maintenance of the proposed project would be less than significant.

b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

The proposed project would not include recreational facilities or require the construction or expansion of recreational facilities. Because operation and maintenance of the proposed project would only result in a minor increase in project area population (the project would create 6 to 8 permanent employment positions), the expansion of existing facilities or the construction of new facilities would not be necessary. Once construction of the project is complete, non-local workers are not expected to remain in the project area. Therefore, no impacts related to construction or expansion of new or existing facilities would occur.

c) Result in permanent and/or temporary impacts, such as possible disruption of recreational activities, affecting the recreational value of existing facilities?

Construction

Compressor Station, Remote Well Pad Site, Observation Wells, and Saltwater Disposal Well

The proposed compressor station, remote well pad site, observation wells, and saltwater disposal well would be located in agricultural fields. These facilities would not be located in areas currently used for recreation. However, surrounding parcels in the project area contain lands managed by private hunting clubs, and some landowners in the project area lease rice fields to hunters for recreational hunting. As part of the project (APM REC-1), Central Valley

would coordinate with the adjacent landowners and implement measures to avoid conflicts with seasonal recreational hunting activities. With implementation of APM REC-1 (see Section 4.8.10), potential seasonal conflicts with surrounding private landowners utilizing their property for recreational hunting would be less than significant.

Metering Station

The metering station is not located in a rice field area where hunting activities could take place and is not in an area currently used for recreation. Therefore, no impact to recreation near the metering station would occur.

Connecting Pipelines

The 16-inch dual gas gathering line would be located between the proposed compressor station and remote well pad site. The 16-inch pipeline would be located within the ROW of existing project area roads, including McAusland and Southam roads, and on agricultural property. The temporary 170-foot long, 8-inch connection pipeline to PG&E Line 172 would be located within the remote well pad site and buffer area and extend eastward under McAusland Road. These pipelines would not be located in areas used for recreation, and construction of these pipelines would not result in permanent or temporary impacts.

Portions of the 14.7-mile connecting pipeline would be constructed north of the Delevan NWR and south of the Sacramento NWR. Between the Colusa Trough and 4 Mile Road, construction of the proposed pipeline would take place more than 1 mile north of the 5,877-acre Delevan NWR. The northern portion of the Delevan NWR (the portion closest to the project alignment and thus most likely to be impacted by construction activities) is classified as a “closed zone” in which hunting activities are not permitted (USFWS 2009). Wildlife viewing and photography is permitted in designated areas within the closed zone. These designated areas are over 1.5 miles south of the proposed pipeline alignment. Impacts to these areas during construction would be less than significant.

North of Loretz Road and east of I-5, construction of the proposed pipeline would take place as close as 70 feet from the 10,819-acre Sacramento NWR boundary. According to the CCP and Environmental Assessment for the Sacramento, Delevan, Colusa, and Sutter NWRs, the southern area of the Sacramento NWR has open areas for hunting. Hunting is permitted on the southern portion of the Sacramento NWR on Saturdays, Sundays, and Wednesdays during the legal season (USFWS 2009). The hunting area is approximately 1,000 feet to the north of the pipeline corridor. The area closest to pipeline construction is designated “Pheasant Only Area,” in which pheasant hunting is permitted between the middle of November and the end of December. Further east of this area are areas designated “Hunting Free Roam Zones,” in which waterfowl hunting is permitted from the middle of October to the end of November and pheasant hunting is permitted from the middle of November to the end of December. Noise produced during fall and winter construction activities could potentially affect hunters and birders that use the Sacramento NWR during hunting season.

To minimize potential conflicts with recreational activities within the project area during the hunting season, Central Valley would implement APM REC-1. APM REC-1 requires coordination with the adjacent NWRs and landowners and implements measures to avoid

conflicts with seasonal recreation activities. With implementation of APM REC-1, potential seasonal conflicts with the Sacramento NWR and surrounding private landowners utilizing their property for recreational hunting would be less than significant.

Operation and Maintenance

Compressor Station, Remote Well Pad Site, Observation Wells, Saltwater Disposal Well, and Metering Station

The proposed compressor station, remote well pad site, observation wells, saltwater disposal well, and metering station would be located in agricultural fields. These facilities would not be located in areas currently used for recreation. Therefore, operation and maintenance of these facilities would not result in either permanent or temporary impacts to recreational activities.

Connecting Pipelines

A segment of the 14.7-mile connecting pipeline would be constructed south of the Sacramento NWR and north of the Delevan NWR. All connecting pipelines would be located underground. Potential impacts could result from maintenance activities along these portions of the pipeline; however, maintenance would be short-term and would not substantially impact recreational activities at the nearby NWRs. Permanent or temporary impacts resulting from maintenance of the proposed pipeline would be less than significant.

5.16 TRANSPORTATION/TRAFFIC

<i>Would the project:</i>	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) <i>Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?</i>	<input type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
b) <i>Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?</i>	<input type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
c) <i>Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) <i>Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?</i>	<input type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
e) <i>Result in inadequate emergency access?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) <i>Result in inadequate parking capacity?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) <i>Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

5.16.1 Environmental Setting

The study area of the proposed project includes roadways to the surface facilities and roadways along the proposed connecting pipeline routes. Local jurisdictions in the project vicinity include the communities of Princeton and Delevan and Colusa County. Roadways and intersections are rated at varying levels of service (LOS). LOS is a measure of roadway operating conditions, ranging from LOS A, which represents the best range of operating conditions, to LOS F, which represents the worst. Basic definitions are presented in Table 5.16-1. Due to the rural nature of the project area and limited resources of Colusa County, traffic counts for the majority of project

area roadways have not been conducted recently. Small, local roads in the vicinity of project facilities are assumed to be operating at LOS A.

Table 5.16-1: Level of Service Definitions

LOS	Descriptions
LOS A	LOS "A" represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to maneuver within the traffic stream is extremely high. The general level of comfort and convenience provided to the motorist, passenger, or pedestrian is excellent.
LOS B	LOS "B" is in the range of stable flow, but the presence of other users in the traffic stream begins the noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream. The level of comfort and convenience is somewhat less than at LOS A because the presence of others in the traffic stream begins to affect individualistic behavior.
LOS C	LOS "C" is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual users becoming significantly affected by interactions with others in the traffic stream. The selection of speed is now affected by the presence of others, and maneuver within the traffic stream requires substantial vigilance in the part of the user. The level of comfort and convenience declines noticeably at this level.
LOS D	LOS "D" represents high-density, but stable, flow. Speed and freedom to maneuver are severely restricted and the driver or pedestrian experiences a poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level.
LOS E	LOS "E" represents operating conditions at or near the capacity level. All speeds are reduced to a low but relatively uniform value. Freedom to maneuver within the traffic stream is extremely difficult and it is generally accomplished by forcing a vehicle or pedestrian to "give way" to accommodate such maneuvers. Comfort and convenience levels are extremely poor, and driver or pedestrian frustration is generally high.
LOS F	LOS "F" is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations. Operations within the queue are characterized by stop and go waves, and they are extremely unstable. Vehicles may progress for several hundred feet or more, then be required to stop in cyclic fashion.

SOURCE: Colusa County 1989

Roadway Network

The proposed project would be located in a sparsely populated rural area, surrounded by agricultural fields and operations with several associated residential uses. I-5, SR-45, local public and private roads, and agricultural roads would provide access to the proposed project facilities (Figure 4-2). Table 15.16-2 depicts the access roads that would be used for the project components.

Table 5.16-2: Access Roads to Project Components

Project Components	Primary Access Routes
Eastern Area	
Compressor station	I-5 to Maxwell Road Exit
Remote well pad site	SR-45
Observation wells	Dodge Road
Gas gathering line	Southam Road
Temporary gas line	McAusland Road
Eastern portion of 14.7-mile-long gas pipeline	Agricultural roads
Central Area	
Central portion of 14.7-mile-long gas line	Old Highway 99 (frontage road for I-5) Loretz Road Delevan Road 2 Mile Road 4 Mile Road Agricultural roads
Western Area	
Western portion of 14.7-mile-long gas line	I-5 to Delevan Road exit
Metering station	McDermott Road Dirks Road

As shown in Table 5.16-2, the eastern project area would be accessed from SR-45, which traverses north–south through the counties of Yolo, Colusa, and Glenn. The project components in the eastern area would be located approximately 0.75 mile west of SR-45. The western project area would be accessed from I-5, which traverses north–south through California. Approximately 0.40 mile north of Loretz Road, the proposed pipeline would HDD beneath I-5, Old Highway 99, and the UPRR. To access the metering station, a permanent access road would be constructed off of Dirks Road.

Primary Access Roads

Primary access roads to the project area include I-5, SR-45, Delevan Road, and Dodge Southam Road. Below is a description of each of these primary access roads.

- **Interstate 5** is a four-lane freeway that carries inter-regional traffic through western Colusa County. In the project vicinity, average traffic volume on I-5 is approximately 25,000 vehicles per day (Caltrans 2009).
- **State Route 45** is a two-lane arterial located within Yolo, Colusa, and Glenn counties. North of the City of Colusa, SR-45 is designated a Minor Arterial by the Circulation Element of the Colusa County General Plan (Colusa County 1989). SR-45 carries inter-regional traffic north–south through eastern Colusa County adjacent to the Sacramento River. Within the project area, the average daily traffic on SR-45 is approximately 2,300 vehicles.

- **Delevan Road** is a paved, two-lane local road that connects local farm roads with I-5 in the western project area. In the project vicinity, average traffic volume on Delevan Road is unknown but assumed to be less than 500 vehicles per day.
- **Dodge Southam Road** is a paved, two-lane local road that connects local farm roads with SR-45 in the eastern project area. In the project vicinity, average traffic volume on Dodge Southam Road is unknown but assumed to be less than 300 vehicles per day.

Air Transportation Network

The closest airport to the project area is Colusa County Airport, approximately 13 miles southeast from the eastern project area. Colusa County Airport is open to the public and has been operating since 1962. The airport has one 3,035-foot-long by 60-foot-wide runway. The Colusa County Airport is publicly owned by Colusa County and averages approximately 77 aircraft operations per day. Transient general aviation accounts for 77% of air traffic at this airport and the remaining 23% of air traffic consists of local aviation (AirNav 2009). Several private airstrips primarily associated with agricultural operations are also located in Colusa. One private airstrip, Gunnerfield Ranch, is located in the immediate project area just south of the 14.7-mile pipeline route. Two private airstrips (Davis Airstrip southwest of Colusa and Moller Airstrip in Maxwell) are located outside of the immediate project area.

Rail Transportation Network

UPRR track runs north–south adjacent to I-5, between the communities of Maxwell and Delevan. The portion of track near the project area is a section of the “I-5 Corridor,” which offers north–south freight service through the states of Washington, Oregon, and California. UPRR trains transport various goods, including chemicals, fuel, manufactured goods, containerized freight, fruits, vegetables, and canned goods along the I-5 Corridor.

Amtrak does not currently provide service in Colusa County. The nearest passenger train service is located in Marysville, approximately 40 miles southeast of the proposed compressor station. While not an Amtrak train station, the Amtrak bus stop located in Marysville provides Amtrak riders access to the nearest Amtrak station in Sacramento, which is a major rail station included on several Amtrak routes. The Sacramento station is included on the San Joaquin route (providing service between Oakland and Bakersfield), the Capitol Corridor route (providing service between San Jose and Auburn), the Coast Starlight route (providing service between Los Angeles and Seattle, Washington), and the California Zephyr route (providing service between Emeryville, California, and Chicago).

Public Transportation

Bus line operators within the project area include Greyhound and Colusa County Transit. Greyhound has a station located in Marysville and operates routes on SR-70 between the city of Marysville and Sacramento (Greyhound also operates several routes along I-5 in the western project area). Colusa County Transit, a small transit system that offers dial-a-ride service to the communities of Colusa, Arbuckle, Williams, Maxwell, Grimes, Princeton, Sites, and Stonyford, runs five buses a day Monday through Friday, 7:00 a.m. to 5:00 p.m. (Colusa County Department of Public Works 2009). The nearest Colusa County Transit bus route travels east–west along Maxwell Road approximately 6 miles south of the eastern portion of the proposed pipeline route. There are no bus routes, stops, or stations within the immediate project area.

Bicycle and Pedestrian Network

There are existing bike trails located in Colusa County at the Colusa-Sacramento River State Recreation Area, located approximately 10 miles southeast of the proposed project area. No other formal bike trails are located within the unincorporated areas of Colusa County. One designated Class III bike route (Wescott Road) has been established in the City of Colusa (City of Colusa 2007).

5.16.2 Regulatory Setting

Federal

There are no federal laws or policies related to transportation and traffic that are applicable to the proposed project.

State

Caltrans is the state agency tasked with improving and maintaining roads in the State of California. In areas with designated state routes, the state has the responsibility to maintain these roadways while the local jurisdiction is responsible for maintaining local roads. Local jurisdictions work with Caltrans to designate transportation network requirements and critical areas in need of improvement. The proposed project is located in Caltrans District 3, which includes Colusa County. This district is responsible for planning, designing, and maintaining state highways in the Sacramento Valley, including I-5, SR-45, SR-20, and SR-16 in Colusa County.

Local

The Colusa County General Plan Circulation Element contains the following policies related to public services that pertain to the project (Colusa County 1989):

- **CIRC-8:** The County should encourage the operation of [I-5] at Level of Service “B” or better and all other roads at Level of Service “C” or better.
- **CIRC-14:** Improvements to existing streets that are needed as a result of private development should be the financial responsibility of that developer. Right-of-way dedication should be required as a condition of approval for any development which encompasses a segment of a proposed new or widened major or minor collector. The County shall also encourage the financing of off-site improvements by developers if it is shown that their projects will require such improvements to avoid unacceptable traffic delays.
- **CIRC-39:** Any proposed pipeline or transmission line within the county shall be aligned so that interference with agriculture is minimized.
- **CIRC-49:** Any earthmoving or road reconstruction project should be followed by seeding and vegetation, which restores a natural appearance.
- **CIRC-55:** Permitted roadside commercial uses should have an approved public access plan. The plan should address public safety and ease of access to the site.

5.16.3 Environmental Impacts

Significance Criteria

Appendix G of the CEQA Guidelines provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on traffic and transportation if the project would:

- a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)
- b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways
- c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks
- d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)
- e) Result in inadequate emergency access
- f) Result in inadequate parking capacity
- g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

Impact Discussion

- a) **Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?**

Construction

Construction of the proposed project would last approximately 20 months. Construction-related traffic would consist of material deliveries, workers commuting to and from work locations, and the transfer and staging of equipment, piping, and other construction materials. Equipment staging and delivery trips would be spread over the course of the work day and would be staged from designated staging areas. During the peak period of construction (when the compressor station, metering station, and 14.7-mile-long pipeline will be constructed concurrently over a 4 month period), approximately 335 people would be working on the project in the area. This represents the highest number of people working in the project area at one time. The total workforce in the project area would vary from month to month and from component to component. In addition, construction of the proposed project would entail the delivery of materials to the various project sites. During the peak of construction as many as 196 daily truck trips would be required for material delivery and removal at the various project sites. By combining construction employee traffic volumes with truck trips, it is estimated that project construction would require a maximum of approximately 866 vehicle trips per day during the peak period of construction—a 4 month period.

Appendix A, Project Alignment Sheets, shows the location of the proposed equipment and material staging areas. These areas would be used not only for staging of equipment but also for worker parking. The greatest concentration of construction traffic would be to and from these staging areas. The number of construction workers and associated worker vehicle trips would vary over the 20-month construction period, as workers would access different areas of the project area at different periods of the work sequence and at different times of day depending on the construction in progress. Due to the relative low level of traffic on project area roadways, the relative short duration of the project, and not all construction traffic concentrated in one area, impacts would be less than significant.

The primary traffic flow to and from the project study area would result from daily construction worker commute trips. The distribution and timing of these trips over project area roadways is difficult to predict because worker trips would originate from different locations. It is anticipated that more workers would commute from the southeast due to the relatively higher population centers, such as in the cities of Colusa, Yuba City, and Marysville. Some workers may also commute from the northeast from larger population centers such as the City of Chico. Since these communities are located in multiple directions from the project study area, commute traffic concentration on any one route would be minimal. Trips to the various staging areas would be noticeable for the short term of the construction activity. However, traffic would not result in significant reduction of roadway capacity both due to the relative low level of traffic and the relative short duration of the project. Therefore, this impact would be less than significant.

Installation of the connecting pipelines beneath public roads would be required at several locations along the pipeline routes and may require temporary lane and/or road closures that could result in local traffic congestion. Central Valley would be required to obtain ROW encroachment permits from the County in order to construct within the road ROWs. The encroachment permits would include stipulations to control traffic congestion that Central Valley would be required to implement. In addition to required County encroachment permits, Central Valley proposes to prepare a construction traffic plan pursuant to APM TRA-1 (see Section 4.8.11) to further reduce potential construction impacts. The plan would identify measures to control traffic, such as installation of temporary warning signs and traffic control devices, identification of detours, notification to property owners, and maintenance of access to driveways, private roads, and farm roads outside the immediate construction zone. Central Valley would also enter into a road maintenance agreement with Colusa County to cover any potential construction-related damage to public roads. Implementation of County permits, as well as of Central Valley's construction traffic plan, would ensure that congestion impacts caused by project-related lane closures would be temporarily adverse, but less than significant.

Operation and Maintenance

The proposed project would generate traffic primarily during construction. Traffic generated during operation and maintenance of the project would be negligible because the project would only create six to eight new permanent employment positions, and the number of deliveries to facilities is expected to be minimal. Maintenance activities would be infrequent. Impacts on local roadways during operations and maintenance would be less than significant.

b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?

Construction

As described in Section 5.16.3(a), existing traffic volumes on local project area roadways are low and are assumed to operate at LOS A. Colusa County encourages the operation of all roads (other than I-5) at Level of Service "C" or better (Colusa County 1989). Because existing traffic volumes are low, construction-related traffic could impact existing LOS on project area roadways during peak construction periods. To reduce the potential for temporary LOS impacts during construction, Central Valley would implement a Construction Traffic Plan (APM TRA-1). Implementation of the Construction Traffic Plan would ensure that impacts related to roadway LOS would be reduced to less-than-significant levels.

Operation and Maintenance

Traffic during operation of the proposed project would not result in exceedance of LOS standards on local area roadways. Operation of the project would create six to eight permanent employment positions, which would generate approximately 12 to 16 worker vehicles trips per day, Monday through Friday. Deliveries to and maintenance activities at project facilities would generate infrequent traffic. This traffic would vary from day to day and would not result in exceedance of LOS standards on local area roadways. Impacts would be less than significant.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?

Construction, operation, and maintenance of the proposed project would not result in changes to air traffic patterns or increase in traffic or result in safety risks to air traffic. The nearest airport is the Colusa County Airport, approximately 13 miles southeast of the proposed compressor station.

Potential conflicts with Gunnerfield Ranch, a private airstrip just south of the 14.7-mile pipeline route (approximately 4 miles southwest of the proposed compressor station), would be avoided as the pipeline would be auger-bored beneath the airstrip. In addition, with implementation of APM TRA-1, construction activities in the vicinity of the private airstrip will be coordinated with the users/owners to ensure that the construction activities do not represent a hazard to the use of the runway.

The project's tallest structure would be the proposed compressor building, which would be approximately 50 feet tall. The compressor building and other permanent structures would not require a change in air traffic patterns, result in substantial safety risks, or constitute an obstruction to air traffic. Short-term use of a drilling rig during construction would require notification to the Federal Aviation Administration (FAA) due to the height of the drill rig mast (approximately 150 feet) but would not require a permit or lighting. As per FAA Regulations Part 77, Objections Affecting Navigable Airspace, towers with heights in excess of 200 feet generally require FAA obstruction permits and lighting. No impacts would occur.

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Construction

Construction of the proposed compressor station, remote well pad site, observation wells, and metering station would not result in hazards due to project design features. However, construction activity could interfere with the normal function of roadways in the project area, as the presence of large construction equipment on local rural roads could present a safety hazard with smaller, personal vehicles and farm equipment. Central Valley would implement a Construction Traffic Plan (APM TRA-1) during construction. The Construction Traffic Plan would feature measures to minimize short-term, construction-related impacts on local traffic, including providing alternate routes to route local traffic around roadway construction. With implementation of APM TRA-1, impacts would be less than significant.

Pipeline construction would involve the use of trenching, auger boring, and HDD. Along the 14.7-mile-long pipeline, construction would use HDD methods to traverse I-5, Old Highway 99, and the UPRR track. Drilling under these features would require encroachment permits from each agency responsible for the feature crossed: Caltrans District 3 (I-5), the County of Colusa Public Works Department (Old Highway 99), and UPRR (railroad track). Traversing the UPRR track with HDD would require a permanent easement and use lease for land near or within UPRR's ROW. Adherence to the stipulations of Caltrans, the County, and UPRR encroachment permits, as well as to those stipulations that would be part of Central Valley's Construction Traffic Plan (APM TRA-1), would ensure that traffic hazards due to project construction would be less than significant.

Operation and Maintenance

The project would not include features that would affect traffic circulation or cause substantial new traffic hazards during operation and maintenance. Connecting pipelines would be buried. The compressor station, remote well pad site, observation wells, and metering station would be located at secure sites accessible by local roads in a sparsely populated rural agricultural area. Newly constructed driveways to the compressor station, remote well pad site, and observation wells would be adequate to accommodate maintenance-related vehicles. Impacts would be less than significant.

e) Result in inadequate emergency access?

Construction

The project is located in a rural area, and a limited number of residences, commercial, and industrial uses are located along the project roadways. Pipeline construction would occur primarily within agricultural fields but in some areas would be located along public and private roadways and agricultural roads. Pipeline construction could temporarily restrict access to adjacent properties. Temporary lane closures are not anticipated during construction, but lane closures, if required, could potentially result in inadequate emergency access in the immediate construction zone. The proposed Construction Traffic Plan (APM TRA-1) will be implemented to minimize short-term, construction-related traffic impacts, including conflicts with emergency access to work sites and local residences. The Construction Traffic Plan will require advance notification to adjacent property owners and

emergency service providers. APM TRA-1 requires consultation and coordination with area emergency service providers and development of an emergency access plan. To further minimize potential impacts regarding inadequate emergency access, the project will implement Mitigation Measure TRA-1, which provides provisions for emergency vehicle access to residences along the pipeline alignment. With implementation of APM TRA-1 and Mitigation Measure TRA-1, impacts would be less than significant.

Mitigation Measure TRA-1: The emergency access plan prepared as part of APM TRA-1 shall include providing access to residences along the pipeline alignment. Requirements of the plan shall include advanced notice, between 2 and 4 weeks prior to construction, by mail to adjacent property owners and emergency service providers as to where property access would be blocked, excavation plating, emergency vehicles being granted access via one open lane, short detours, and alternate routes.

Operation

Project surface facilities are located in remote areas and would not block roadways, and therefore would not affect emergency access. The pipelines would be buried and would not interfere with emergency access. There would be no impact.

f) Result in inadequate parking capacity?

Construction of the proposed project would occur in a sparsely populated rural agricultural area. Construction vehicles and equipment, including individual worker vehicles, would be parked either within the construction zone or at the designated staging areas associated with the project facilities. There are no existing parking facilities in the project area that would be affected by project construction. Construction, operation, and maintenance of the proposed project would have no impact on parking capacity.

g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

Construction, operation, and maintenance of the proposed project would not conflict with adopted policies, plans, or programs supporting alternative transportation. There are no bus lines, bike lanes, or other forms of alternative transportation present in the immediate project area, and there are no adopted policies, plans, or programs supporting alternative transportation applicable to the project area. No impacts would occur.

5.17 UTILITIES AND SERVICE SYSTEMS

<i>Would the project:</i>	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) <i>Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) <i>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?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) <i>Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) <i>Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) <i>Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) <i>Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) <i>Comply with federal, state, and local statutes and regulations related to solid waste?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

5.17.1 Environmental Setting

Water Supply

Domestic water supplies within Colusa County are supplied by groundwater accessible through public and private wells. Irrigation water for agricultural fields is primarily supplied by surface water from the Tehama-Colusa or Glenn-Colusa Canal, the Colusa Drain, or the Sacramento

River. In general, the water requirements of Colusa County can be met in normal years, but shortages can potentially occur during dry years (Northern California Water Association 2006).

Within Colusa County, the Colusa County Department of Planning, and Building, the Colusa County Department of Environmental Health, and the Colusa County Resource Conservation District are the primary agencies responsible for maintaining and protecting drinking water quality (Northern California Water Association 2006).

The proposed project would be located within the boundaries of several regional water districts. The compressor station, remote well pad site, observation wells, gas gathering lines, and temporary gas line would be located in the Princeton-Codora-Glenn Irrigation District. Portions of the 14.7-mile-long gas pipeline would be located in the Princeton-Codora-Glenn Irrigation District, Provident Irrigation District, Willow Creek Mutual Water Company area, Glenn-Colusa Irrigation District, and the Holthouse Water District. The metering station would be located in the Holthouse Water District. All project components would be located within the service area of Reclamation District 2047.

The Princeton-Codora-Glenn Irrigation District provides agricultural water supply and covers an area of approximately 11,500 acres of land in southeastern Glenn County and northeastern Colusa County. Water supplied by the Princeton-Codora-Glenn Irrigation District is purchased from the U.S. Bureau of Reclamation and is pumped from the Sacramento River by one of two pumping plants operated by the Princeton-Codora-Glenn Irrigation District: the Sidds Landing pumping plant (located north of Glenn) or the Schaad pumping plant (located north of Princeton). Water is delivered to approximately 90 customers through an open canal system (Glenn County 2009).

Provident Irrigation District provides agricultural water supply and covers an area of approximately 16,000 acres in southeastern Glenn County and northeastern Colusa County. Provident Irrigation District supplies water to approximately 50 customers through a system of open canals and ditches (Glenn County 2009).

Willow Creek Mutual Water Company is a non-profit water company that provides agricultural water supply to an approximate 7,000-acre area in southeastern Glenn County and northeastern Colusa County. Willow Creek Mutual Water Company supplies water to approximately 225 stakeholders either by purchasing from surrounding irrigation water districts or providing from the Sacramento River through the water rights it holds (Barber 2009).

The Glenn-Colusa Irrigation District, the largest water district in the Sacramento Valley, provides agricultural water supply and covers an area of approximately 175,000 acres of land in eastern Glenn County and north-central Colusa County. The Glenn-Colusa Irrigation District is provided water through "Settlement Water Contracts" with the U.S. Bureau of Reclamation. Through these contracts, the Glenn-Colusa Irrigation District is provided 720,000 acre-feet of base supply water from April through October, and 105,000 acre-feet of Central Valley Water Project water purchased in July and August. The Glenn-Colusa Irrigation District also has a State Water Resources Control Board permit that entitles the district to winter water (at 1,200 cubic feet) between November 1 and March 31. The 1,076 landowners and 300 tenant water users within the district are supplied water through almost 1,000 miles of canals, laterals, and drains (Glenn-Colusa Irrigation District 2009).

The Holthouse Water District provides agricultural water supply and covers an area of approximately 1,560 acres of land in north-central Colusa County. The only customers of the Holthouse Water District are the Holthouse Ranch Property and tenants in the immediate area (Lee 2009). Water supplied by the Holthouse Water District is obtained from the Tehama-Colusa Canal Authority, a joint powers authority consisting of 17 water contractors in four counties within the western Sacramento Valley. Water is delivered to water contractors via the 140-mile-long Tehama-Colusa and Corning canals irrigation water systems (Tehama-Colusa Canal Authority 2009).

Wastewater

In Colusa County, wastewater is treated by either on-site disposal (septic system) or centralized disposal. Areas served by on-site disposal are generally rural and located outside of community boundaries. Centralized disposal or community treatment facilities typically serve areas of concentrated population; within Colusa County, the communities of Arbuckle, Maxwell, Princeton, and Williams and the City of Colusa are served by community treatment facilities.

Stormwater

Other than man-made ditches and canals, there are no stormwater drainage facilities in the project area. Several cities and communities within Colusa County have developed municipal stormwater drainage systems. However, in rural areas rainwater and irrigation runoff from fields typically flows to agricultural ponds, irrigation ditches, and canals. There are several locations on or near the proposed project facilities that contain these drainage features.

Solid Waste

Non-Hazardous and Recyclable Solid Waste

One active solid waste disposal site and one solid waste transfer station are located within Colusa County (California Integrated Waste Management Board 2009a, b):

- **Stonyford Disposal Site:** Located in Stonyford, approximately 15 miles from the proposed metering station location
- **Maxwell Transfer Station:** Located in Maxwell, approximately 15 miles from the proposed metering station location.

Table 5.17-1 describes each of the above facilities in terms of their landfill classification, disposal rate, and remaining capacity. There are three landfill classifications:

- **Class I Landfill:** Licensed to receive hazardous waste
- **Class II Landfill:** Licensed to receive both non-hazardous municipal solid waste and limited types of hazardous solid and liquid wastes
- **Class III Landfill:** Licensed to receive non-hazardous municipal solid waste.

Table 5.17-1: Solid Waste Disposal Facilities in Colusa County			
Facility (closure year)	Landfill Classification	Permitted Disposal Rate/Throughput (tons per day)	Remaining Capacity (cubic yards)
Stonyford Disposal Site (2064)	III	10	29,512 (as of December 2009)
Maxwell Transfer Station	—	100	—

SOURCES: California Integrated Waste Management Board 2009a; California Integrated Waste Management Board 2009b; Azevedo 2010.

Waste hauled to the Maxwell Transfer Station is transported to a solid waste landfill within Colusa County, such as the Stonyford Disposal Site, or to a larger facility in nearby Glenn County or Yuba County. Regional facilities located in Glenn County (Glenn County Landfill) and Yuba County (Recology Ostrom Road Landfill) are described in Table 5.17-2. All listed facilities provide construction and demolition waste services.

Table 5.17-2: Solid Waste Disposal Facilities in Glenn and Yuba County

Facility	Landfill Classification	Permitted Disposal Rate/Throughput (tons per day)	Remaining Capacity (cubic yards)
Glenn County Landfill (2021)	III	100	1,203,200 (as of May 18, 2001)
Recology Ostrom Road Landfill (2066)	II, III	3,000	40,600,000 (as of April 1, 2004)

SOURCES: California Integrated Waste Management Board 2009c, d.

The Glenn County Landfill is located in the community of Artois, approximately 20 miles north of the proposed metering station. The Recology Ostrom Road Landfill is located in the community of Wheatland, approximately 50 miles southeast of the proposed compressor station.

Hazardous Waste

There are no hazardous waste disposal facilities operating in Colusa County. The nearest facility is the Recology Ostrom Road Landfill located in Yuba County. In addition to construction/demolition debris, the Recology Ostrom Road Landfill accepts contaminated soils and sludge (biosolids) (California Integrated Waste Management Board 2009d). Approximately 225 acres of the 260-acre Recology Ostrom Road Landfill are classified a Class II landfill that accepts limited types of hazardous solid and liquid waste.

5.17.2 Regulatory Setting

Federal

Clean Water Act

Increasing public awareness and concern for controlling water pollution led to enactment of the Federal Water Pollution Control Act Amendments of 1972. As amended in 1977, this law became commonly known as the Clean Water Act (CWA) (33 U.S.C. 1251 et seq.). The CWA established basic guidelines for regulating discharges of pollutants into the waters of the U.S. The CWA requires that states adopt water quality standards to protect public health, enhance the quality of water resources, and ensure implementation of the CWA.

State

California Department of Conservation, Division of Gas and Geothermal Resources

The Division of Gas and Geothermal Resources regulates drilling, production, injection, and gas storage operations in accordance with 14 CCR 1724.7, Project Data Requirements. Approval must be obtained from the Department of Gas and Geothermal Resources before any subsurface injection or disposal project can begin.

Water

The project area is located within the jurisdiction of the Central Valley RWQCB (Region 5). The Central Valley RWQCB formulates policy, implements water discharge regulations, and conducts permitting and enforcement within the project area.

Solid Waste

AB 939 established an integrated waste management hierarchy to guide the California Integrated Waste Management Board and local agencies in the implementation of programs geared at (1) source reduction, (2) recycling and composting, and (3) environmentally safe transformation and land disposal. AB 939 also included waste diversion mandates that require all cities and counties to divert 50% of all solid waste through source reduction, recycling, and composting activities (California Integrated Waste Management Board 2008).

AB 75 was passed in 1999 and added new provisions to the Public Resources Code, mandating that all state agencies and large state facilities develop and implement an integrated waste management plan. Also, the provisions of AB 75 required all state agencies and large state facilities to divert at least 25% of their solid waste from landfills by January 1, 2002, and at least 50% on and after January 1, 2004. As of January 1, 2006, extensions to the diversion requirements were no longer available (California Integrated Waste Management Board 2009e).

The project is required to comply with Title 14 of the CCR, which established minimum standards for solid waste handling and disposal (the current regulations of the California Integrated Waste Management Board are found within Title 14). The California Department of Toxic Substances Control issues permits for the transport of hazardous wastes.

Local

Colusa County General Plan

The Colusa County General Plan Community Services Element contains policies related to utilities and service systems that pertain to the project. The following policies are related to issues including water (WA), wastewater treatment (WWT), drainage and flood control (FL).

- **WA-3:** All wells drilled to serve new development shall meet California Department of Public Health water quality standards. If necessary, water shall be treated to meet these standards.
- **WA-6:** Where no surface water source is available, the availability of groundwater sufficient to meet project needs should be one of the primary considerations used to determine the suitability of a site for development.
- **WWT-1:** Future development should be located in a way that ensures the economically feasible and environmentally sound provision of wastewater treatment.
- **WWT-3:** Subject to review by the Department of Environmental Health, Colusa County should permit “alternative” on-site treatment systems in rural areas, including mound systems.
- **FL-4:** New development should be required to mitigate its drainage impact through any of a series measures [sic] that should be explored in a countrywide drainage and flood control plan.

Colusa County Code

Chapter 32 of the Colusa County Code establishes policies and regulations pertaining to solid waste management. The purpose of Chapter 32 is to develop solid waste management policy for the preservation of the health, safety, and wellbeing of the public. The chapter contains subsections regulating solid waste precollection and storage practices (Section 32-2), management of construction and demolition waste (Section 32-2(i)), waste removal time periods (Section 32-3), and transfer station services (Section 32-6). The proposed project would be subject to the provisions of Chapter 32 of the Colusa County Code.

5.16.3 Environmental Impacts

Significance Criteria

Criteria for determining the significance of impacts on utilities were based on the environmental checklist form in Appendix G of the CEQA Guidelines. Based on the checklist questions, a project may have a significant effect on the environment if it would result in any of the outcomes listed below.

- a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board
- b) 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
- c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects
- d) Not have sufficient water supplies available to serve the project from existing entitlements and resources, or would need new or expanded entitlements
- e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments
- f) Be served by a landfill without sufficient permitted capacity to accommodate the project's solid waste disposal needs
- g) Conflict with federal, state, and local statutes and regulations related to solid waste.

Impact Discussion

- a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?**

Construction

Construction may require dewatering activities requiring discharge. Water will also be used during hydrotesting of the proposed gas pipelines. Water produced by dewatering and hydrotesting would be passed through an on-site filtration system consisting of hay bales prior to being discharged to adjacent agricultural fields. Short-term water quality impacts resulting from dewatering and hydrotesting activities would be reduced to less than significant with implementation of APM HYDRO-2 (see Section 4.8.8), which requires implementation of a dewatering and discharge plan, and Mitigation Measure U-1.

Mitigation Measure U-1: All discharges shall be in compliance with local, state, and federal regulations pertaining to wastewater disposal. Approval shall be obtained from the Central Valley RWQCB prior to discharging water produced by dewatering and hydrotesting of pipelines.

Operation and Maintenance

Operation and maintenance of the proposed project would generate minor amounts of wastewater. The sole source of wastewater generated during operations would be associated with the sanitary disposal system at the compressor station auxiliary building restroom. This wastewater would be disposed of either in an on-site septic system that would be serviced periodically or at an appropriate off-site facility.

Saltwater generated during gas withdrawal would be reinjected back into the Upper Kione formation at a depth below freshwater aquifers (between 2,400 and 2,500 feet) and would not require treatment. Therefore, wastewater generated by the proposed project would be minimal and would not exceed wastewater treatment requirements of the Central Valley RWQCB. Impacts would be less than significant.

b) 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?

The proposed project would not generate population growth, and no additional wastewater treatment capacity would be required as a result of the project. Therefore, no new or expanded wastewater facilities would be required.

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Other than man-made agricultural ditches and channels, there are no stormwater drainage facilities in the project area. The project would result in the creation of less than 2 acres of impervious areas, most of which would be associated with the compressor station buildings. Project surface facilities, including the compressor station, observation wells, and metering station, would be graveled in order to minimize the potential impacts of increased surface runoff. Runoff would likely be absorbed by the graveled surface of these facilities prior to infiltrating surrounding agricultural lands. Therefore, because the project would generate a nominal amount of stormwater runoff, the project would not require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, and no impacts would occur.

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

Construction

Construction of the compressor station, remote well pad site, and metering station would require water for fugitive dust suppression, soil compaction, and general construction purposes. Hydrotesting of the gas pipelines would require the one-time use of approximately 1.7 million gallons of water. It is anticipated that construction water needs could be met by

local irrigation districts, local groundwater, or local municipal sources. Therefore, impacts on water supply would be less than significant.

Operation and Maintenance

A water well would be constructed at the proposed compressor station facility in order to provide water to the auxiliary building. This water would be used as potable water for facility employees and would also be used in the on-site sanitary disposal system. The quantity of water used for operation of the proposed project is considered low relative to surrounding agricultural uses. Therefore impacts to the regional water supply would be less than significant.

- e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?**

Due to the limited amount of wastewater expected to be generated by the proposed project, local wastewater treatment providers are expected to determine that they would have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments. Therefore, impacts would be less than significant.

- f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?**

Construction

Construction of the proposed project would generate solid waste during excavation of the pipeline trench and during grading activities associated with the other project components. The majority of solid waste generated by construction would consist of soils, rocks, and other earth debris. Concrete may be excavated at the observation well conversion locations. Project engineers anticipate that soils would be balanced on site at the compressor station, remote well pad site, and metering station. Excavated soils could be used as backfill, hauled to off-site locations requesting fill materials, or hauled to a disposal facility. Central Valley estimates approximately 15,000 cubic yards of excavated material would be disposed of offsite. Solid waste encountered during excavation would be disposed of at an appropriate project area disposal site.

The estimated remaining capacity and anticipated closure dates of landfills serving the project area are provided in Table 5.17-1. As shown in Table 5.17-1, project area landfills would have sufficient capacity to accommodate project construction. The project could encounter or generate hazardous wastes during construction, specifically during pipeline trench construction and HDD operations. Hazardous wastes would be disposed of at an appropriate facility, such as Recology Ostrom Road Landfill in Yuba County. Therefore, impacts associated with the permitted capacity of landfills during construction would be less than significant.

Operation and Maintenance

During operation and maintenance of the proposed project, a small amount of waste would be generated and would be disposed of at an appropriate waste facility. Local landfills have sufficient remaining capacity to serve the project. Therefore, impacts associated with the

permitted capacity of landfills during project operation and maintenance would be less than significant.

g) Comply with federal, state, and local statutes and regulations related to solid waste?

Central Valley and its contractors would comply with all relevant federal, state, and local statutes and regulations related to solid waste. Impacts would be less than significant.

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5.18 MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) <i>Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) <i>Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) <i>Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Explanation of Mandatory Findings of Significance Checklist

- a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?**

Construction of the proposed project could potentially impact special-status plant and animal species occurring in the project area. Impacts will be avoided by developing and implementing a worker environmental awareness program (APM BIO-1), avoiding and minimizing the loss of woody riparian vegetation and wetland areas (APM BIO-4 and BIO-6), installing temporary construction fencing adjacent to the construction zone (APM BIO-3), establishing 20-foot-wide buffers around all elderberry shrubs (APM BIO-9), and by boring under waterways (see Section 4.8.4 for a detailed description of each BIO APM). Mitigation

would be required for giant garter snake and valley elderberry longhorn beetle (Mitigation Measures BIO-1, BIO-2) (see Section 5.5.3 for a detailed description of all BIO mitigation measures) and APMs (BIO-1 through BIO-3 and BIO-7 through BIO-14) will be implemented for special-status species, including but not limited to Swainson's hawk, western pond turtle, Sanford's arrowhead, and western burrowing owl. With the implementation of mitigation measures and APMs, impacts to special-status plant and animal species would be less than significant.

Construction would result in temporary impacts to non-wetland and wetland drainages, freshwater marsh, and rice field wetlands along the proposed 14.7-mile pipeline route. To ensure that temporary impacts to wetlands are less than significant, APMs BIO-1 through BIO-3 and BIO-6, along with Mitigation Measure BIO-3, will be implemented. No permanent impacts to wetlands or other "waters of the U.S." will occur because the pipelines will be buried and the construction corridor will be restored to preconstruction conditions. Construction associated with the connecting pipelines will avoid drainages that support riparian vegetation by boring underneath the drainage and associated riparian corridor (see APM BIO-4). Therefore, no temporary or permanent impacts to riparian habitats are anticipated.

Creeks, drainages, and ditches that often serve as movement corridors for various wildlife species in the project area would be temporarily affected during the construction of the proposed project. In addition, exposed pipeline trenches or bores during construction could trap small mammals, amphibians, or reptiles moving through the area. Implementation of Mitigation Measure BIO-5 will ensure that temporary barriers resulting from construction would be reduced to less-than-significant levels.

Construction of the proposed project may result in damage to or loss of a previously unknown cultural or historical resource. Impacts to cultural or historical resources would be considered significant if the resources found are eligible for listing on the California Register of Historic Places or the National Register of Historic Places. Mitigation Measure CUL-1 (see Section 5.6.3) and APMs CUL-1 and CUL-2 (see Section 4.8.5) will be implemented to ensure that if encountered, impacts to previously unknown cultural or historical resources would be minimized and thus reduced to a less-than-significant level.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

As discussed in Sections 5.2 through 5.17, many of the potential impacts of the proposed project would occur during construction, with few lasting operational effects, primarily associated with agriculture, air quality/climate change, and hazards and hazardous materials (see below and Section 5.3, Section 5.4, and Section 5.8). Because construction related impacts of the proposed project are temporary and localized, they would only have the potential to combine with similar impacts of other projects if they occur at the same time and in proximity to each other.

Per discussions with Colusa County staff, the PG&E Colusa Generating Station (Loudon 2009) is currently under construction. The PG&E Colusa Generating Station is located in

north central Colusa County, approximately 1,250 feet northwest of the proposed metering station and immediately south of the existing PG&E Delevan Compressor Station. The 31-acre Colusa Generating Station is a 640-megawatt combined cycle plant that would rely on natural gas for fuel in order to produce “clean and reliable energy” to the residents of California. As proposed, the Colusa Generating Station would begin commercial operations in spring 2010 (Colusa Generating Station 2009).

Commercial operations of the Colusa Generating Station would likely begin prior to the issuance of a Permit to Construct for the Central Valley Gas Storage Project. Therefore, cumulatively considerable impacts would not occur during construction of the proposed project.

In addition to the PG&E Colusa Generating Station, Wild Goose Storage, LLC (Wild Goose) has filed an application with the CPUC for the Wild Goose Phase 3 Expansion Project. The Wild Goose project proposes expansion of the remote facility site (in Butte County—approximately 11 miles west of Central Valley’s proposed compressor station and remote well pad site) and modifications at the Delevan Interconnect site (in Colusa County just north of Central Valley’s proposed metering station).

The existing Wild Goose remote facility site, located in Butte County, would be expanded westward by approximately 4.5 acres. The facilities that would be constructed on site include four new gas compressor units in a new building, two new process trains, and two new dehydration units and associated equipment to provide the proposed injection and withdrawal capabilities. The modifications at the Delevan Interconnect site, located in Colusa County, would be made entirely within the existing 0.6-acre facility. In addition to the improvements at the Delevan Interconnect site, Wild Goose would install a new hot-tap connection pipeline, approximately 30 feet in length, from the existing Line 400 Connection Pipeline to PG&E’s Line 401 transmission pipeline (CPUC 2009).

The proposed construction schedule for the Wild Goose Phase 3 Expansion Project is 23 months, anticipated to begin April 2010. The construction at the Delevan Interconnect site is expected to take approximately 3 months (CPUC 2009). There may be some overlap during construction of facilities with the Central Valley Gas Storage Project that would contribute to cumulative construction disturbances in the project area.

As discussed in Sections 5.2 through 5.17, the proposed project would have a less-than-significant effect on agriculture, air quality/climate change, and hazards and hazardous materials. The cumulative impact associated with the project’s incremental effects, in addition to the past, current, and future surrounding development on these environmental resources, has been determined to be less than significant, as further described below.

Agriculture

As discussed in Section 5.3, the proposed project would result in the permanent conversion of 18.8 acres of agricultural land in areas designated Prime Farmland (8.8 acres) or Unique Farmland (10 acres). Because project impacts to Prime and Unique Farmland are below established significance thresholds and proposed facilities are considered to be compatible with existing agricultural uses, along with the low pressure of converting farmland to non-agricultural uses in the Colusa County, project impacts to Prime and Unique Farmland would not be cumulatively considerable. Further, the two cumulative projects located in Colusa

County, including PG&E's Colusa Generating Station and the Wild Goose Delevan Interconnect site, do not occur in Prime or Unique Farmland.

Air Quality/Climate Change

Construction, operation, and maintenance of the proposed project would generate air pollutant emissions. The NSVPA is a nonattainment area with respect to the state ozone and PM₁₀ ambient air quality standards. Accordingly, the relevant criteria air pollutants are NO_x, ROGs, and PM₁₀. Collectively, the criteria pollutant emissions from proposed project, the Colusa Generation Station, and the proposed expansion of the Wild Goose Phase 3 Expansion Project would result in a cumulatively significant impact to the existing nonattainment in the NSVPA. As stated in Section 5.4.3, Significance Threshold (c), the proposed project individually would result in significant NO_x emissions during construction; however, with implementation of APMs AIR-1, AIR-2, and AIR-3, the NO_x emissions would be less than significant and not represent a cumulatively considerable impact to nonattainment in the NSVPA. In addition, the operational emissions of NO_x, ROG, and PM₁₀ from the proposed project would be less than the significance thresholds for these pollutants, and the proposed project would not result in a cumulatively considerable contribution to the nonattainment in the NSVPA.

As discussed in Section 5.4, the proposed project's GHG emissions would represent a cumulatively considerable contribution to the significant impact on climate change resulting from global GHG emissions. To ensure no conflict with the goals of AB 32 and in accordance with CPUC policy, Central Valley will be required to reduce impacts associated with GHG emissions in accordance with the mitigation measures described in Section 5.4. Mitigation Measures AIR-1, -2, and -3 (see Section 5.4.3 for a detailed description of all AIR mitigation measures) are focused on reducing the indirect GHG emissions associated with the project's electrical use, while Mitigation Measure AIR-4 will offset direct GHG associated with construction of the proposed project, operation of the compressor station, and employee vehicles. With implementation of these mitigation measures and APMs AIR-4 and AIR-5 (see Section 4.8.3), project impacts to climate change would not be cumulatively considerable.

Hazards and Hazardous Materials

Operation of the project, as well as the past, current, and future surrounding development including the future operation of Colusa Generating Station and the Wild Goose Phase 3 Expansion project in the study area, may increase the opportunity and likelihood for exposure of people to hazardous materials or health risks. Compliance with applicable laws and regulations identified in Section 5.8.2 would reduce the potential health and safety impacts associated with implementation of the project to less-than-significant levels. Adherence to applicable federal, state, and local county laws and regulations associated with other projects in the area, including the Colusa Generating Station and Wild Goose Phase 3 Expansion project, would reduce the cumulative risk or adverse public health effects associated with the hazards and hazardous materials to less-than-significant levels.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

The preceding sections of this Initial Study discuss various types of impacts that could have adverse effects on human beings, including the following:

- Air pollutant emissions associated with project construction and operation activities (see Section 5.4)
- Hazards, such as risk of upset, exposure to hazardous substances, or wildland fires (see Section 5.8)
- Water quality standard violations due to release of chemicals during project construction (see Section 5.9)
- Traffic hazards related to construction-generated traffic (see Section 5.16).

Each type of impact with the potential to cause substantial adverse effects on human beings has been evaluated, and this Initial Study concludes that all of these potential impacts are either less than significant or can be mitigated to a less-than-significant level with the implementation of measures presented herein. Therefore, the proposed project does not involve any activities, either during construction or operation that would cause significant adverse effects on human beings that cannot be readily mitigated to a less-than-significant level.

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