

## **D.9 Noise and Vibration**

This section addresses the Proposed Project and alternatives as they would affect the community noise environment or cause disruptions from vibration. Section D.9.1 provides a description of the existing noise setting, and the applicable noise ordinances and limitations are introduced in Section D.9.2. An analysis of the project's impacts and discussion of mitigation is provided in Section D.9.3. The Project's alternatives are analyzed in Section D.9.4. Section D.9.5 provides mitigation monitoring, compliance, and reporting information and Section D.9.6 lists the references cited in this section.

### **D.9.1 Environmental Setting for the Proposed Project**

This section provides a description of ambient noise levels and sensitive noise receptors near the proposed wellhead site, compressor station, and associated pipelines located within the City of Sacramento. It should be noted that a discussion regarding the County of Sacramento noise environment has not been provided in this section as no aboveground construction or long-term project features would be located within the County of Sacramento.

#### ***D.9.1.1 General Characteristics of Community Noise***

To describe environmental noise and to assess project impacts on areas that are sensitive to community noise, a measurement scale that simulates human perception is customarily used. The basic terminology and concepts of noise are described below. Technical terms are defined in Table D.9-1.

**Table D.9-1**  
**Definitions**

<b>Term</b>	<b>Definition</b>
Ambient noise level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
A-weighted sound level (dBA)	The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Community noise equivalent level (CNEL)	CNEL is the average equivalent A-weighted sound level during a 24-hour day and it is calculated by adding 5 dB to sound levels in the evening (7 p.m. to 10 p.m.) and adding 10 dB to sound levels in the night (10 p.m. to 7 a.m.).
Decibel (dB)	A unit for measuring sound pressure level equal to 10 times the logarithm to the base 10 of the ratio of the measured sound pressure squared to a reference pressure, which is 20 micropascals.
Equivalent noise level (Leq)	The sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period. Leq is designed to average all of the loud and quiet sound levels occurring over a time period.

Sound (noise) levels are measured in decibels (dB). Table D.9-2 depicts common sound levels for various noise sources. Community noise levels are measured in terms of 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.

**Table D.9-2**  
**Typical Sound Levels Measured in the Environment and Industry**

Noise Source	A- Weighted Sound Level in Decibels
Civil defense siren (100 feet)	130
—	120
—	110
Pile driver (50 feet)	100
Power lawn mower (3 feet)	—
Motorcycle (25 feet)	90
Diesel truck (50 feet)	—
Garbage disposal (3 feet)	80
Vacuum cleaner (3 feet)	70
Normal conversation (3 feet)	—
—	60
Light traffic (100 feet)	50
Bird calls (distant)	40
Soft whisper	30
—	20
—	10

Note: “—” indicates data is not applicable.

People are generally more sensitive and annoyed by noise during the evening and nighttime. Thus, another noise descriptor used in community noise assessments, the community noise equivalent level (CNEL), was introduced. The CNEL scale represents a time-weighted 24-hour average noise level based on the A-weighted sound level. CNEL accounts for the increased noise sensitivity during the evening (7:00 p.m. to 10:00 p.m.) and nighttime hours (10:00 p.m. to 7:00 a.m.) by adding 5 dB and 10 dB, respectively, to the average sound levels occurring during these hours. Another noise descriptor, termed the day–night average sound level (Ldn), is also used. The Ldn is similar to CNEL except there is no penalty for the noise level occurring during the evening hours.

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 Ldn noise levels 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 (e.g., areas located near downtown Sacramento), and levels up to 85 dBA occur near major freeways and airports. Although people often accept the higher levels associated with very noisy urban residential and residential-commercial zones, they nevertheless are considered to be adverse to public health.

#### ***D.9.1.2 Noise Environment and Sensitive Noise Receptors in the Project Area***

The existing noise environment includes various land uses, including residential, recreational, commercial, industrial, and agricultural uses, located within the project study area. The mixture of land uses results in a variation of noise levels located near project features. Noise levels are typically higher for land uses located near the compressor station and wellhead site along with connecting pipelines due to the variety of land uses (e.g., residential, commercial, industrial, and recreational). Noise levels tend to be highest within the urban portions of the project study area, near roadways and railroads, and within aircraft flight paths.

Heavy trucks and bus traffic traveling along Power Inn Road are the primary sources of ground-borne vibration near the compressor station, wellhead site, and connecting pipelines. Trucks and buses typically generate ground-borne vibration velocity levels of approximately 63 vibration decibels (VdB) at 50 feet. These levels could reach 72 VdB at 50 feet where trucks drive over bumpy roads (SNGS, LLC 2007a).

Sensitive noise receptors are facilities or areas (e.g., residential areas, hospitals, schools) where excessive noise levels would be considered an annoyance. Noise-sensitive receptors are distributed throughout the project study area and a description of the existing noise environment and sensitive noise receptors is presented below. Also see Section D-8, Land Use, Agriculture, and Recreational Resources, and Figure D.8-2, Existing Land Use Diagram: City and County of Sacramento Project Components.

### **Wellhead Site, Compressor Station, and Pipeline Segments 1 and 2**

#### ***Wellhead Site***

Land uses surrounding the proposed wellhead site consist of industrial uses located to the south of Junipero Street and vacant land to the east and north. Residential uses are also located to the west of the wellhead site across Power Inn Road. Recreational uses, consisting of Danny Nunn Park, are located to the southwest across Power Inn Road. The primary sources of noise in the study area include motorists traveling along Junipero Street and Power Inn Road and aircraft

flying overhead. Background sound levels were measured at four representative locations on November 29, 2006 and July 19 and July 20, 2007. The location and actual levels measured are presented in Table D.9-3.

**Table D.9-3**  
**Ambient Noise Measurements—SNGS Project Study Area**

Site	Time	L <sub>eq</sub>	L <sub>min</sub> <sup>1</sup> (dB)	L <sub>max</sub> <sup>2</sup> (dB)
<b>Wellhead Site (Approximately 70 feet from Power Inn Road)</b>				
Day/night average <sup>3</sup>	24-hour <sup>4</sup>	66.5	41.2	89.8
Nighttime average	8 p.m. to 7 a.m. <sup>5</sup>	64.9	41.2	83.1
Nighttime hourly	8 p.m. to 9 p.m.	67.4	49.2	82.8
—	9 p.m. to 10 p.m.	66.7	49.3	80.4
—	10 p.m. to 11 p.m.	66.3	48.2	83.0
—	11 p.m. to 12 a.m.	65.1	42.2	77.7
—	12 a.m. to 1 a.m.	62.7	42.0	76.0
—	1 a.m. to 2 a.m.	61.4	42.2	75.8
—	2 a.m. to 3 a.m.	60.2	41.2	75.7
—	3 a.m. to 4 a.m.	62.1	42.5	83.1
—	4 a.m. to 5 a.m.	63.5	42.8	76.4
—	5 a.m. to 6 a.m.	66.9	49.6	80.9
—	6 a.m. to 7 a.m.	68.0	53.1	80.2
<b>Compressor Station Site<sup>6</sup></b>				
—	—	61.4	48.9	84.1
<b>Residential Area Along Power Inn Road (Across from wellhead site, at setback of residential property)<sup>6</sup></b>				
—	—	77.0	52.3	89.7
<b>Residential Area Along Power Inn Road at Lemon Hill Avenue (at setback of residential property)<sup>6</sup></b>				
—	—	76.3	54.5	96.4

Note: “—” indicates data is not applicable.

Sources: SNGS, LLC 2007a, 2007b.

<sup>1</sup> Minimum sound level during the noise measurement.

<sup>2</sup> Maximum sound level during the noise measurement.

<sup>3</sup> The measurement was taken approximately 70 feet from Power Inn Road, and was taken from 11:30 a.m. on July 19, 2007, to 10:15 a.m. on July 20, 2007.

<sup>4</sup> The noise measurement was taken for less than 24 hours. See note 3 for the exact time period of the measurement.

<sup>5</sup> Nighttime hours were expanded from the City of Sacramento nighttime hours, which are between 10 p.m. and 7 a.m., to include the 8 p.m. to 10 p.m. hours because of city restrictions for construction hours.

<sup>6</sup> The measurement was taken midday on November 29, 2006. Each measurement was completed over a 10-minute duration (the compressor station has relatively constant noise levels as there is no traffic associated with the site).

As seen in Table D.9-3, the existing nighttime average noise level ranged from approximately 60 to 68 dB near the proposed wellhead site. The closest sensitive receptors in the vicinity of the proposed wellhead site are residential homes located approximately 100 feet to the west across Power Inn Road.

### *Compressor Station*

Land uses surrounding the proposed compressor station consist of industrial buildings associated with Depot Park to the north, railroad tracks to the west, and undeveloped land to the south and east. Noise-generating land uses include traffic-related noise associated with Depot Park, railroad uses located to the west, and overhead flights. As seen in Table D.9-3, the average noise level was approximately 61 dB near the proposed compressor station. The closest sensitive receptors located in the vicinity of the proposed compressor station are residential homes located approximately 2,250 feet to the west across Power Inn Road. There are two city-owned parkland sites within the boundaries of Depot Park, which are within 0.25 mile of the compressor station site. These sites are currently not developed as parks.

### *Pipeline Segments 1 and 2*

Connecting pipelines would be constructed from the wellhead site to the compressor station and from the compressor station to Sacramento Municipal Utilities District (SMUD)'s existing pipeline along Fruitridge Road. Land uses surrounding the proposed pipelines consist of industrial buildings associated with Depot Park and vacant lands located adjacent to Power Inn Road. The primary sources of noise include motorists traveling along adjacent roadways, railroad uses, and overhead flights. The closest sensitive receptors are residences located to the west of Power Inn Road, which range from approximately 100 feet to over 200 feet from the proposed centerline of pipelines.

## **D.9.2 Applicable Regulations, Plans, and Standards**

Regulating environmental noise is generally the responsibility of local governments. The U.S. Environmental Protection Agency (EPA) once published guidelines on recommended maximum noise levels to protect public health and welfare (EPA 1974), and the State of California maintains recommendations for local jurisdictions in the General Plan Guidelines published by the Governor's Office of Planning and Research (OPR 1998). The following sections summarize the federal and state recommendations and the local requirements.

### ***D.9.2.1 Federal and State Standards***

The U.S. EPA has indicated that residential noise exposure of 55 to 65 dB is acceptable when analyzing land use compatibility (EPA 1981); however, these guidelines are not regulatory. With regard to noise exposure and workers, the federal Occupational Safety and Health Administration (OSHA) establishes regulations to safeguard the hearing of workers exposed to occupational noise (29 CFR 1910.95). OSHA specifies that sustained noise over 85 dBA can be a threat to workers' hearing (29 CFR 1910.95).

The State of California requires each local government to perform noise surveys and implement a noise element as part of their general plan. Generally speaking, noise levels less than 60 Ldn are acceptable for all land uses, including residences, schools, and other noise-sensitive receptors. Noise levels greater than 70 Ldn are normally unacceptable for most noise-sensitive land uses, and levels between 60 and 70 Ldn are usually considered conditionally acceptable, because the structures where the receptors reside normally provide some level of insulation (OPR 1998).

**D.9.2.2 Local Noise Ordinances and Policies**

Each local government aims to protect its residents from intrusive noise. Applicable local noise ordinances and policies are described below.

**City of Sacramento Municipal Code**

The City of Sacramento Municipal Code (Chapter 8) (Sacramento, City of 2008) contains regulations in relation to noise restrictions and sets standards for exterior noise levels at residential properties, as shown in Table D.9-4. Section 8.68.060 exempts certain activities from including specific construction noise, such as excavation activities, as long as all construction activities are limited between the hours of 7:00 a.m. and 6:00 p.m. Monday through Saturday and between the hours of 9:00 a.m. and 6:00 p.m. on Sunday. This section also requires the use of exhaust and intake silencers for internal combustion engines, and provides for construction work to occur outside the designated hours for a period not to exceed 3 days, if the work is of urgent necessity and in the interest of the public health and welfare.

**Table D.9-4**  
**City of Sacramento Exterior Noise Standards**

Cumulative duration of sound	Allowable Noise Level (dBA)	
	Daytime (7:00 a.m. to 7:00 p.m.)	Nighttime (10:00 p.m. to 7:00 a.m.)
Exterior noise standard	55 dBA	50 dBA
Cumulative period of 30 minutes per hour	0	0
Cumulative period of 15 minutes per hour	+ 5	+ 5
Cumulative period of 5 minutes per hour	+ 10	+ 10
Cumulative period of 1 minute per hour	+ 15	+ 15
Level not to be exceeded for any time period	+ 20	+ 20

Notes: Each of the noise limits specified shall be reduced by 5 dBA for impulsive or simple tone noises, or for noise consisting of speech or music. If the ambient noise level exceeds that permitted by any of the first four noise limits categories specified, the allowable noise limit shall be increased by 5 dBA increments in each category to encompass the ambient noise level. If the ambient noise level exceeds the fifth noise level category, the maximum ambient noise level shall be the noise limit for that category. The noise level can be intermittent and vary, but the cumulative duration of the specified noise level cannot exceed the applicable allowable duration period (the maximum allowable noise level is not to be exceeded for any duration). Table D.9-1 provides a definition for ambient noise level.

Source: Sacramento, City of 2008.

### D.9.3 Environmental Impacts and Mitigation Measures for the Proposed Project

#### D.9.3.1 *Definition and Use of Significance Criteria*

Significance of noise impacts depends on whether the project would increase noise levels above the existing ambient levels by introducing new sources of noise. The following significance criteria are based on the CEQA checklist identified in Appendix G of the CEQA Guidelines. Under CEQA, noise impacts would be considered significant if the Proposed Project would result in:

- 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;
- Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; and
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

#### D.9.3.2 *Applicant Proposed Measures*

There are no applicant proposed measures (APMs) proposed by SNGS, LLC related to impacts from noise and vibration.

#### D.9.3.3 *Noise and Vibration Impact Analysis*

##### **Impact N-1: Construction Activities Would Temporarily Increase Local Noise Levels**

Construction of the proposed wellhead site, compressor station, and pipeline segments one and two would generate noise from construction equipment and other activities. Typical noise levels at 50 feet for the types of construction equipment that would be used are listed in Table D.9-5.

**Table D.9-5  
Typical Noise Levels of Construction Equipment**

Equipment Type	Noise Level (dBA at 50 feet)
<i>Earthmoving</i>	
Front loader	85
Backhoe	80
Tractor, bulldozer	85
Scraper, grader	85

**Table D.9-5 (Continued)**

Equipment Type	Noise Level (dBA at 50 feet)
Paver	89
Truck	88
<b>Materials Handling</b>	
Concrete mixer	85
Concrete pump	82
Crane (movable)	83
Crane (derrick)	88
<b>Stationary</b>	
Pump	67
Generator	81
Compressor	72
<b>Project-Specific</b>	
Pneumatic tools	85
Jackhammers and rock drills	88
Compactors	82

Source: Federal Transit Administration 1995.

Maximum construction-related noise levels at 50 feet from these Proposed Project components could range from 72 to 88 dBA. Construction noise in a well-defined area typically attenuates at approximately 6 dB per doubling distance. Therefore, at a distance of 100 feet from these Proposed Project components, the construction noise level would be approximately 66 to 82 dBA, and at a distance of 200 feet, the noise levels would range from 60 to 76 dBA.

#### *Wellhead Site*

The closest sensitive noise receptors are located in the vicinity of the proposed wellhead site and consist of residential units located approximately 200 feet across Power Inn Road.

Development of the wellhead site would take approximately 3 months to complete and generally occur between 7:00 a.m. and 6:00 p.m. Monday through Saturday, with possible construction activities occurring on Sunday between 9:00 a.m. and 6:00 p.m. in accordance with the City of Sacramento Municipal Code Section 8.68.060. In addition to the construction activities and associated noise, development of the wellhead site would require the drilling of up to six new injection/ withdrawal wells, one water disposal well, and one observation well. Drilling of the wells is proposed to be conducted on a 24-hour, 7-day-a-week basis, which is outside the hour limitations of the City of Sacramento Municipal Code Section 8.68.060, and is therefore not exempt. Each well will take approximately 8 days to drill. Noise during drilling operations will produce noise levels up to 83 dBA at 50 feet and up to 71 dBA at the nearest receptor. This would exceed the City's noise standard and be considered a significant impact. Implementation

of mitigation measures N-1a through N-1e would reduce short-term construction and drilling-related noise impacts of the proposed wellhead; however, this impact would remain significant (Class I).

#### *Compressor Station*

Land uses surrounding the compressor station consist of a mix of industrial and commercial uses. No sensitive receptors are located in the vicinity of the compressor station. Construction of the compressor station would take appropriately 6 to 8 months to complete and would occur between 7:00 a.m. and 6:00 p.m. Monday through Saturday, with the possibility of some activities occurring on Sunday. Because construction noise would comply with the City of Sacramento's allowable construction noise standards, this impact would be less than significant (Class III).

#### *Pipeline Segments 1 and 2*

Construction of the connecting pipeline segments would take approximately 3 months to complete and is expected to progress at a rate of approximately 100 feet per day in most portions of the alignment. This construction effort may have noise levels reaching 83 dBA at some periods of construction. Much of the construction will be within or near the former Army Depot and in industrial areas. However, the construction within the vicinity of Power Inn Road may subject residents to periodic noise levels exceeding 70 dBA at the property line during daytime hours. In areas where the construction activities are located near these sensitive receptors (e.g., residences), the forward progression of construction activities would mean that the noise impact may last for 2 to 3 days at any one location. Due to the short-term duration of construction activities associated with the connecting pipeline segments and due to construction occurring during the City's allowable time periods, this noise level would result in a less-than-significant noise impact (Class III).

### **Mitigation Measures for Impact N-1: Construction Activities Would Temporarily Increase Local Noise Levels**

**N-1a Timing of Construction Activities.** SNGS, LLC shall conduct construction activities between 7:00 a.m. and 6:00 p.m. Monday through Saturday and 9:00 a.m. to 6:00 p.m. Sunday or for a shorter period if so stipulated in the relevant local noise ordinance. Exceptions shall only apply to drilling operations associated with the proposed wellhead and horizontal directional drilling (HDD) construction.

**N-1b Temporary Noise Barriers.** SNGS, LLC shall install temporary noise barriers between well drilling and HDD equipment and sensitive receptors. Temporary noise barriers shall be installed between the drilling rig and nearby receptors such that noise levels at nearby

residences are reduced. Depending on the length of the noise barrier, it may need to be repositioned after drilling of each well has been completed and the drilling rig has been repositioned. The height and location of the noise barrier shall be determined based on the size of the drilling rig to be used and the location of the proposed wells, and shall be included in a drilling plan submitted to CPUC and the City of Sacramento for review and approval. Exceptions shall apply only upon approval by the city. It is estimated that the barriers will result in a 5 to 10 dBA attenuation, which may still result in nighttime noise impacts.

- N-1c Advanced Notice to Sensitive Receptors.** SNGS, LLC or its construction contractor shall provide advanced notice, between 2 and 4 weeks prior to construction, by mail to all sensitive receptors and residences within 300 feet of construction sites, staging areas, and access roads. The announcement shall state specifically where and when construction would occur in the area. If construction delays of more than 7 days occur, an additional notice shall be made, either in person or by mail. Notices shall provide tips on reducing noise intrusion; for example, by closing windows facing the planned construction. The notice shall also advise the recipient on how to inform the applicant/contractor if specific noise- or vibration-sensitive activities are scheduled so that construction can be rescheduled, if necessary, to avoid a conflict. SNGS, LLC shall also publish a notice of impending construction in local newspapers, stating when and where construction will occur. Prior to public notification, copies of all notices shall be submitted to the CPUC for review and approval.
- N-1d Dedication of a Public Liaison.** SNGS, LLC shall identify and provide a public liaison before and during construction to respond to concerns of neighboring receptors, including residents, about noise construction disturbance. Procedures for reaching the public liaison officer via telephone or in person shall be included in notices distributed to the public in accordance with Mitigation Measure N-1c. SNGS, LLC shall also establish a toll-free telephone number for receiving questions or complaints during construction and develop procedures for responding to callers. Prior to public notification, procedures included in the notices shall be submitted to the CPUC for review and approval. SNGS, LLC shall provide the CPUC with a bimonthly letter reporting the number of calls received and a summary of caller concerns and how concerns were addressed.
- N-1e Use of Appropriate Mufflers.** Construction equipment, excluding HDD drilling equipment, shall be equipped with the appropriate mufflers to reduce noise impacts.

### **Impact N-2: Vibration Could Cause a Temporary Nuisance During Construction**

Vibration levels from heavy equipment transport and grading activities may be perceptible to residents or workers in nearby light industrial and warehouse structures immediately adjacent to the construction work. Construction activities, such as a heavy trucks passing over large potholes or bumps, could produce perceptible vibration within approximately 50 feet. Although the detectability of vibration is highly dependent on the soil type at the construction site, the type of equipment used, and the structure of the building receptor, construction could cause annoyance for a sensitive receptor within approximately 50 feet of construction work. Because the closest sensitive receptor is located across Power Inn Road, approximately 200 feet from the proposed wellhead site, temporary impacts associated with construction-related vibration would be less than significant (Class III).

Vibration from drilling activities may exceed 80 VdB at the wellhead during drilling operations. Because the nearest residence would be 200 feet from the nearest drilling rig and the directional drilling areas would be greater than 1,000 feet, it is expected that groundborne vibration will attenuate at the closest residence so that this impact may be considered less than significant (Class III) during the drilling operation.

### **Impact N-3: Noise from Operation of the Wellhead Site**

No gas compression would occur at the wellhead site. Noise at the operating wellhead site would only be with the piping system, pumps, and a backup generator and are anticipated to be below the City's allowable noise thresholds, since these facilities would be housed in structures and will be behind block walls. Therefore, noise from operating the wellhead would be less than significant (Class III).

### **Impact N-4: Noise and Vibration from Operation of the Compressor Station**

The compressor station operation would produce noise from electric-powered compressors and cooling units. Such units could produce noise levels up to 68 dBA at a distance of 50 feet based on noise readings from similar units. Because the compressor site is approximately 2,250 feet from the nearest residence, it is expected that the noise levels would attenuate to approximately 35 dBA, resulting in a less-than-significant impact (Class III). With regard to the future city park sites within Depot Park, which would be located within 0.25 mile of the compressor station, noise levels would attenuate to approximately 40 dBA, resulting in a less-than-significant impact (Class III). Vibration of the operation facility is also expected to be low and will attenuate to very low levels at the locations of any residences, resulting in a less-than-significant impact (Class III).

## **D.9.4 Project Alternatives**

### ***D.9.4.1 Gas Field Alternatives***

#### **Freeport Gas Field**

##### *Environmental Setting*

The Freeport Gas Field is located approximately 5 miles southwest of the Florin Gas Field on agricultural land located on the suburban fringe of Elk Grove. The gas field is partially located underneath a wastewater treatment plant. Since this alternative would be located adjacent to a suburban community, the existing noise levels would be slightly less than those associated with the Proposed Project occurring in an urban area.

##### *Environmental Impacts and Mitigation Measures*

Similar to the Proposed Project, this alternative would involve constructing facilities including injection/withdrawal wells, compressor station, and connecting pipeline(s). This alternative would construct 1 mile of pipeline traveling through a largely rural area in order to reach tie-ins. The construction- and operation-related noise-level impacts (N-1 through N-4) of this alternative would not be substantially different from those associated with the Proposed Project. However, because the activities are in a generally rural area, it is anticipated that the drilling operations and wellhead operations would be farther away from sensitive receptors, resulting in a less-than-significant impact (Class III).

##### *Comparison to the Proposed Project*

Noise impacts resulting from the development and construction of the Freeport Gas Field alternative would be slightly less than those associated with the Proposed Project.

#### **Snodgrass Slough Gas Field**

##### *Environmental Setting*

The Snodgrass Slough Gas Field is located approximately 20 miles southwest of the Florin Gas Field on agricultural land. It is 3 miles east of the Sacramento River and California State Highway 160 and 4 miles north of the nearest population center, Walnut Grove. Since this alternative would be located in a largely agricultural area, the existing noise levels are anticipated to be substantially less than projected levels associated with the Proposed Project.

##### *Environmental Impacts and Mitigation Measures*

Similar to the Proposed Project, this alternative would involve constructing facilities including injection/withdrawal wells, compressor station, and connecting pipeline(s). However, due to the

location, nearly 5 miles of pipeline would be required for the transmission of natural gas from the extraction point to tie-ins with the SMUD pipeline. Additionally, pipeline construction would require HDD to cross beneath the Snodgrass Slough, Interstate 5 (I-5), and Union Pacific Railroad (UPRR). The construction- and operation-related noise-level impacts (N-1 through N-4) of this alternative would not be substantially different than those associated with the Proposed Project. However, because the activities are in a generally rural area, it is anticipated that the drilling operations and wellhead operations would be farther away from sensitive receptors, resulting in a less-than-significant impact (Class III).

#### *Comparison to the Proposed Project*

Generally, the noise impacts associated with this alternative would be less than those associated with the Proposed Project, since it is likely that the wellhead site would be located in an area farther away from sensitive receptors.

### **Thornton Gas Field**

#### *Environmental Setting*

The Thornton Gas Field is located approximately 20 miles south of the Florin Gas Field on agricultural land south of the Cosumnes River Preserve. It is located 1.5 miles east of I-5 and 1 mile north of the town of Thornton. Since this alternative would be located in a largely agricultural area, the existing noise levels are anticipated to be substantially less than the Proposed Project.

#### *Environmental Impacts and Mitigation Measures*

Similar to the Proposed Project, this alternative would involve constructing facilities including injection/withdrawal wells, compressor station, and connecting pipeline(s). This alternative would construct nearly 7 miles of pipeline traveling through a largely rural area in order to reach tie-ins. The construction- and operation-related noise-level impacts (N-1 through N-4) of this alternative would not be substantially different from those associated with the Proposed Project. However, because the activities are in a generally agricultural area, it is anticipated that the drilling operations and wellhead operations would be farther away from sensitive receptors, resulting in a less-than-significant impact (Class III).

#### *Comparison to the Proposed Project*

Generally, the noise impacts for this alternative gas field location would be slightly less than those discussed for the Proposed Project. In particular, the impacts of drilling at the wellhead site would be less than those associated with the Proposed Project because it would be farther from sensitive receptors.

### ***D.9.4.2 Project Design Alternatives***

#### **Alternative Wellhead Site to Compressor Station Pipeline Route 1**

##### *Environmental Setting*

This alternative would use the same construction locations for the wellhead site, compressor station, and SMUD Line 700 tie-in. Only the pipeline route would differ from the Proposed Project. From the northwest corner of the wellhead site, this alternative would head due east to the UPRR tracks. This alternative would parallel Junipero Street and cross an active industrial use yard. It would then parallel the UPRR tracks northwest to Elder Creek Road. This route would be approximately 7,800 feet long. This alternative would be approximately 450 feet longer than the Proposed Project. The existing noise environment is the same as for the Proposed Project.

##### *Environmental Impacts and Mitigation Measures*

Construction- and operation-related noise impacts would be similar to those associated with the Proposed Project (Impacts N-1 through N-4). Similar mitigation measures (N-1a through N-1e) would be required to reduce these impacts.

##### *Comparison to the Proposed Project*

Due to the increased length of pipeline required, the construction-related noise impacts associated with the alternative pipeline would be slightly greater than those associated with the Proposed Project.

#### **Alternative Wellhead Site to Compressor Station Pipeline Route 2**

##### *Environmental Setting*

This alternative would use the same construction locations for the wellhead site, compressor station, and SMUD Line 700 tie-in. Only the pipeline route would differ from the Proposed Project. From the northwest corner of the wellhead site, this alignment would run approximately 600 feet north within the utility alignment to Berry Avenue where it runs eastward toward the UPRR tracks, and then parallels the UPRR tracks northwest to Elder Creek Road. This alignment would be approximately 7,700 feet long. This alternative would be approximately 350 feet longer than the Proposed Project.

##### *Environmental Impacts and Mitigation Measures*

Construction- and operation-related noise impacts would be similar to those associated with the Proposed Project (Impacts N-1 through N-4). Similar mitigation measures (N-1a through N-1e) would be required to reduce these impacts.

### *Comparison to the Proposed Project*

Due to the increased length of pipeline required, the construction-related noise impacts associated with the alternative pipeline would be slightly greater than those associated with the Proposed Project.

### **Alternative Wellhead Site to Compressor Station Pipeline Route 3**

#### *Environmental Setting*

This alternative would use the same construction locations for the wellhead site, compressor station, and SMUD Line 700 tie-in. Only the pipeline route would differ from the Proposed Project. From the northwest corner of the wellhead site, this alignment would run north approximately 1,650 feet within an existing utility alignment, and then approximately 650 feet north along Power Inn Road to Elder Creek Road. From that intersection, the pipeline would be installed within Elder Creek Road, for approximately 1,800 feet, to the intersection with the UPRR tracks. This alternative would be approximately 7,100 feet long. This alternative would be approximately 250 feet shorter in length than the Proposed Project.

#### *Environmental Impacts and Mitigation Measures*

Construction- and operation-related noise impacts would be similar to those associated with the Proposed Project (Impacts N-1 through N-4). Similar mitigation measures (N-1a through N-1e) would be required to reduce these impacts.

### *Comparison to the Proposed Project*

Due to the decreased length of pipeline required, the construction-related noise impacts resulting from developing this alternative pipeline would be slightly less than those associated with the Proposed Project.

#### **D.9.4.3 Environmental Impacts of the No Project Alternative**

Under the No Project Alternative, none of the facilities or pipelines associated with the project or alternatives analyzed in this EIR would be constructed by SNGS, LLC; therefore, none of the impacts described in this section would occur. The project components of the SNGS Facility, including the wellhead site, compressor station, and associated pipelines, would not be built. However, under the No Project Alternative, larger natural gas utilities, such as PG&E, may elect to expand their natural gas storage facilities in order to meet demand. If PG&E elected to construct and operate a new natural gas storage facility, the development of such a project would experience similar temporary construction-related traffic, which would have similar noise impacts as those associated with the Proposed Project.

### D.9.5 Mitigation Monitoring, Compliance, and Reporting

Table G-1 describes the mitigation monitoring, compliance, and reporting program for noise and vibration.

### D.9.6 References

29 CFR 1910.95. Appendix F: Calculations and Application of Age Corrections to Audiograms. Occupational Safety and Health Standards, Subpart G, Occupational Health and Environment Control.

EPA (Environmental Protection Agency). 1974. "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety." Office of Noise Abatement and Control, U.S. Environmental Protection Agency.

EPA. 1981. *Noise Effects Handbook: A Desk Reference to Health and Welfare Effects of Noise*. Office of Noise Abatement and Control, U.S. Environmental Protection Agency. July 1981.

Federal Transit Administration. 1995. Transit Noise and Vibration Impact Assessment. April 1995.

OPR (Office of Planning and Research). 1998. *General Plan Guidelines*. Sacramento, California: State of California, Governor's Office of Planning and Research. November 1988.

Sacramento, City of. 2008. Sacramento Municipal Code. Accessed February 2, 2008 online at: <http://www.qcode.us/codes/sacramento/>

SNGS (Sacramento Natural Gas Storage), LLC. 2007a. *Proponents Environmental Assessment (PEA) for the Sacramento Natural Gas Storage (SNGS) Project*. Sacramento, California: Sacramento Natural Gas Storage, LLC and EIP Associates, a division of PBS&J. April 5, 2007.

SNGS, LLC. 2007b. *Attachment 16: SNGS Response to Review of PEA Completeness*. Sacramento, California: Sacramento Natural Gas Storage, LLC and EIP Associates, a division of PBS&J. August 10, 2007.