# B. DESCRIPTION OF PROPOSED PROJECT

## B.1 Introduction

Section B describes SNGS, LLC's proposed Sacramento Natural Gas Storage (SNGS) Facility (the Proposed Project). Detailed descriptions of project construction and operation provide a common understanding of the project parameters considered in Section D of this Environmental Impact Report (EIR), where environmental impacts are evaluated. Section B.2 describes the Proposed Project and its components. Section B.3 provides temporary and permanent land requirements. Section B.4 describes the construction activities associated with the Proposed Project. Section B.5 describes the operation and maintenance procedures. Section B.6 describes procedures to be followed in the event that the project site is no longer in use. Section B.7 describes project protocols and measures proposed by SNGS, LLC that are designed to reduce or avoid potential environmental impacts associated with project construction, operation, and maintenance. Section B.8 lists the references cited and used in preparation of the figures for this section.

## B.2 Project Description

The Proposed Project would store up to 7.5 billion cubic feet (bcf) of working natural gas in the existing depleted Florin Gas Field located within the City of Sacramento and partially within and adjacent to an unincorporated area of Sacramento County (see Figures B-1, Regional Map, and B-2, Florin Gas Field). As shown in Figure B-3, the Proposed Project components include the underground natural gas storage reservoir, a wellhead site, a compressor station, a buried 16-inch interconnection pipeline between the wellhead and compressor site, and a buried 16-inch interconnection pipeline between the compressor site and Sacramento Municipal Utilities District (SMUD) Line 700. The applicant proposes to connect the SNGS Facility to Pacific Gas and Electric (PG&E) Line 400/401 using capacity on the existing SMUD Line 700, which is connected to Line 400/401 along County Road 29 near County Road 88 in Winters, California. At the PG&E tie-in location, a new meter would replace an existing meter. All surface facilities would be located within the City of Sacramento. Each project component is described in more detail below.

### B.2.1 Project Location and Regional Context

~~For the purposes of this EIR,~~ T~~t~~he Proposed Project ~~has been divided into~~consists of ~~three~~ four ~~distinct primary~~ distinct components: the gas field, wellhead site, compressor station, and associated pipelines ~~based on location~~.

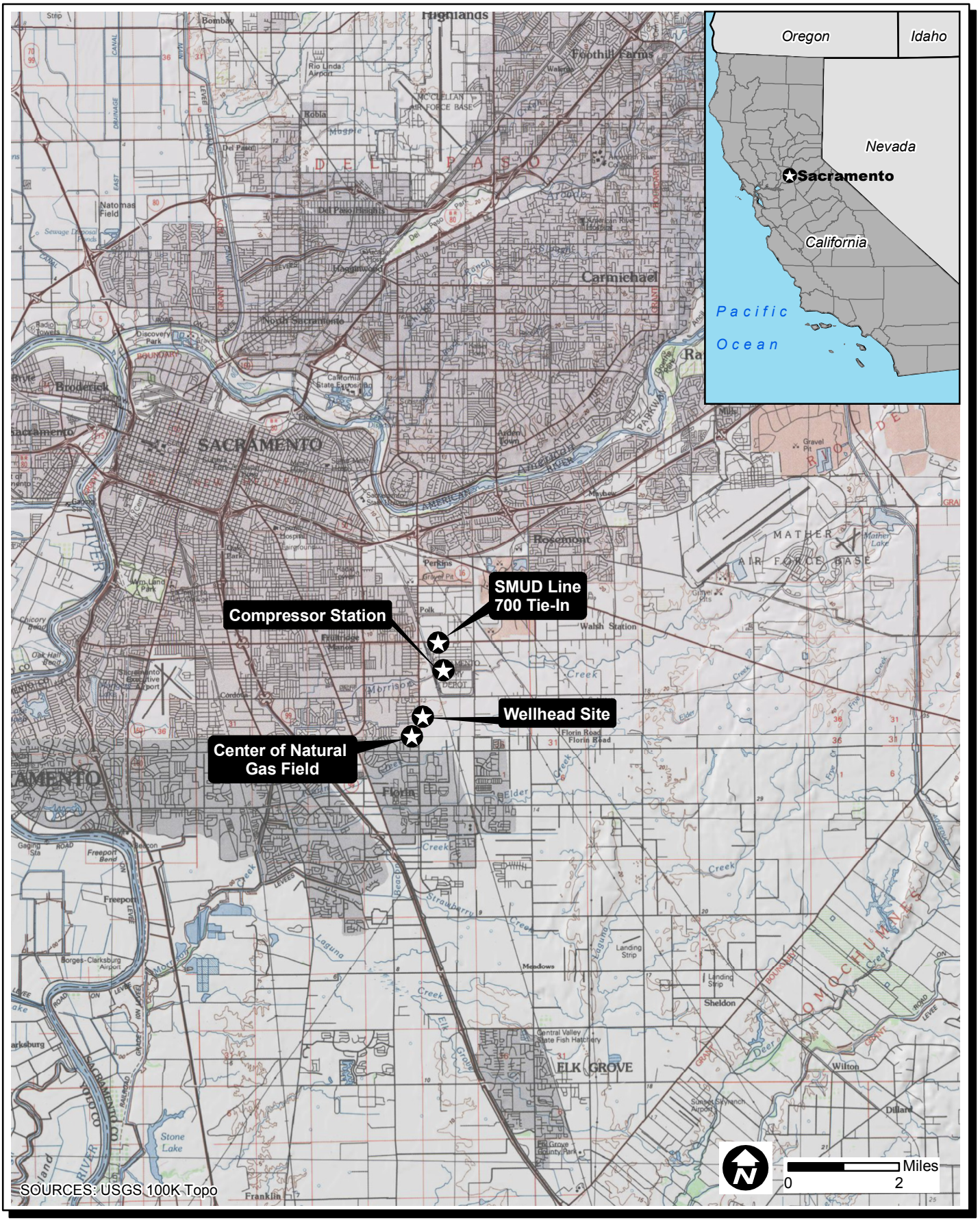
**Florin Gas Field**

Figure B-2 shows the limits of the Florin Gas Field boundaries as provided by SNGS, LLC (SNGS, LLC 2007b) (delineated as a red boundary) and based on the California Department of

Conservation's Division of Oil, Gas, and Geothermal Resources (DOGGR) gas field mapping (DOGGR 2007) (shown as a shaded boundary). The DOGGR boundary was determined by placing an 800--foot boundary by existing wells and is not used in determining the boundaries of an injection project. Figure B-2 also shows the location of the eight plugged and abandoned wells in the Florin Gas Field. The SNGS limits of the field boundary are based on modeling of the reservoir by Ryder Scott Company (Ryder Scott Company 2008). The DOGGR limits are based on more qualitative information from well drilling information and the location of historic wells in the field.[1] The gas field, as modeled by Ryder Scott Company, is approximately 3,800 feet belowground surface and underlies approximately 379 acres in the City of Sacramento and the County of Sacramento (approximately 164 acres in the city and 215 acres in the county based on the SNGS-provided boundary). Subsequent modeling by Ryder Scott assumed that the southern portion of the field was isolated and non-–productive as shown o~~i~~n Figure B-2. Assuming this is correct, the usable portion of the field would be approximately 287 acres. The acreage of the DOGGR boundary is approximately 152 acres (108 acres in the city and 44 acres in the county). Several land uses are located above the field, including residential, industrial, and commercial (including the former Army Depot), and park uses (Danny Nunn Park). The EIR analysis is based on the SNGS gas field boundary, which, as shown in Figure B-2, encompasses the majority of the DOGGR limits.

Approximately 8.~~2~~3 bcf of natural gas was produced at the Florin Gas Field with the reservoir estimated to contain 13 bcf (approximately 5.6 bcf is buffer or cushion gas that cannot be extracted). The reservoir is expected to store approximately 7.5 bcf of working natural gas, which meets the 4.0 bcf requirement for SMUD's local supply, and allows storage of 3.5 bcf of additional gas. Initial pressure of the field was estimated to be 1,677 pounds per square inch (psi) at the cap rock prior to operation (Ryder Scott Company 2008). The field initially operated at a pressure of 1,518 psi and ended at 1,115 psi. It is estimated that the current pressure is between 1,200 to 1,300 psi (SNGS, LLC 2008c). The Proposed Project is projected to operate at a maximum pressure of 1,804 psi (Ryder Scott Company 2008). The reservoir will operate at a range of pressures and is anticipated to not exceed 1,805 psi. Based on modeling, this pressure will occur in only a few locations in the field.

[1] It should be noted that DOGGR does not estimate storage capacity. DOGGR has historic production records of the previous Florin Gas Field, which Ryder Scott Company used to determine a portion of the gas field capacity. Ryder Scott Company did further modeling to determine the gas field capacity. Also, based on testimony before the CPUC, there is disagreement among experts as to the size of the field. Dr. John Robertson questioned the size and storage capacity of the reservoir asserting that the field was larger than depicted by SNGS, LLC. Mr. Bruce Palmer of the Scott Ryder Company provided testimony replying to Dr. Robertson's testimony. Mr. Palmer responded to each of Dr. Robertson's issues defending the model and the modeled size of the reservoir.

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Sacramento Natural Gas Storage Project - EIR

**Regional Map**

**FIGURE**
**B-1**

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Sacramento Natural Gas Storage Project - EIR

**Florin Gas Field**

**FIGURE B-2**

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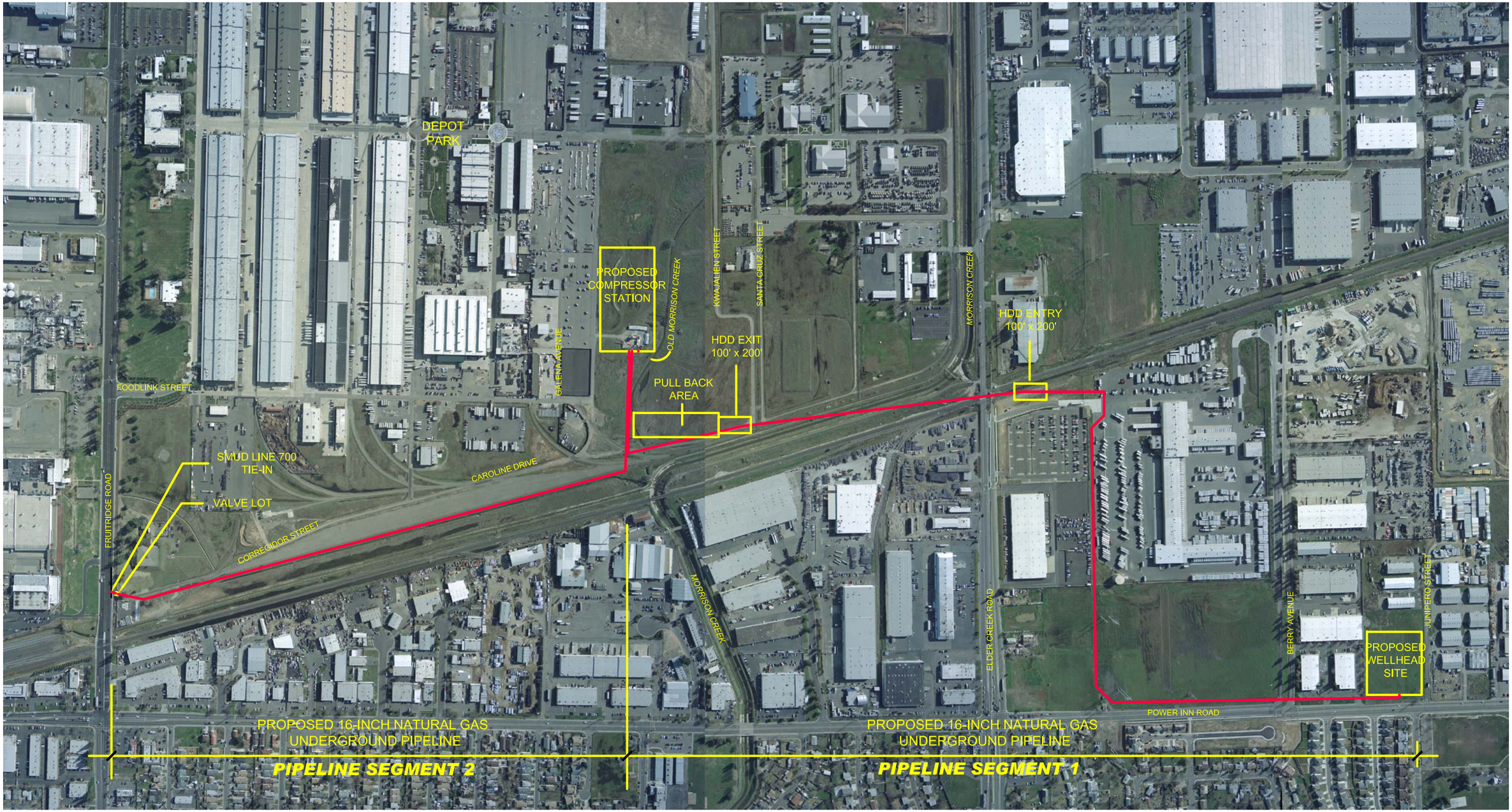


Source: SNGS, LLC 2008b.

Sacramento Natural Gas Storage Project - EIR

**Compressor Station, Wellhead Site & Connecting Pipelines**

FIGURE B-3

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**Wellhead Site, Compressor Station, and Associated Pipelines**

As shown in Figure B-3, the wellhead site is proposed to be located at the northeast corner of the intersection of Junipero Street and Power Inn Road. The proposed wellhead site is generally devoid of vegetation and has been recently plowed or tilled. Existing uses surrounding the wellhead site are industrial and commercial to the north, south, and east of the site and residential to the west of the site, on the west side of Power Inn Road. The compressor station is proposed to be located northeast of the wellhead site on the former Sacramento Army Depot that is now a business/industrial park called Depot Park in the City of Sacramento. The proposed compressor station would be located on an approximately 5-acre site on a mostly undeveloped portion of Depot Park (refer to Figure B-3). The site currently contains a concrete pad. It is bound by the remnant Morrison Creek channel and open space to the south, by industrial uses to the north, and by open space to the west and east. Pipeline components would connect from the wellhead site to the compressor station and from the compressor station to an existing SMUD Line 700 located beneath Fruitridge Road.

The proposed pipeline alignment would leave the wellhead site and parallel Power Inn Road to the north within the existing powerline right-of-way (ROW) and under Berry Avenue for approximately 1,800 feet. The alignment then heads due east approximately 600 feet south of Elder Creek Road for a distance of approximately 1,950 feet. At this point, the alignment turns due north again and traverses approximately 3,000 feet before entering the compressor station. The line would cross under Elder Creek Road and the Union Pacific Railroad (UPRR) and Morrison Creek, north of Elder Creek Road (see Figure B-3). From the compressor station, the alignment would parallel Caroline Drive within Depot Park to Fruitridge Road.

The primary project components outlined above are described in detail in the following sections. Temporary and permanent land requirements are shown in Table B-1, Section B.3.

### *B.2.1.1 Florin Gas Field*

The Proposed Project would store natural gas in the depleted Florin Gas Field reservoir, which is situated approximately 3,800 feet below the ground surface (top of the reservoir). Natural gas was previously extracted from five wells in the Florin Gas Field by Proctor and Gamble and Union Oil Company until approximately 1987 when the natural gas supply was depleted. Three other wells were drilled by Venada National and TXO, but all three missed the structure and were dry holes. At the time of depletion, the eight wells and appurtenance facilities were plugged, capped, and abandoned in accordance with regulations set forth by DOGGR (Weatherwax and Weatherwax 2007). Currently, there is no natural gas injection or extraction equipment at any of the Proposed Project sites.

The Florin Gas Field was discovered in the Winters Formation in November 1977 by Union Oil Company of California. Five wells were installed using directional drilling between 1977 and 1983. All five extraction wells and an additional three non-production wells had been depleted by 1987 and were plugged and abandoned by 1993. Figure B-4 shows a subsurface diagram to illustrate the subsurface conditions, including the gas storage area within the Winters Formation.

*Northeasterly view of wellhead site*

The geology between the surface and the Florin Gas Field consists of a sequence of alternating layers of sand and shale deposited in ancient seas that occupied the Sacramento Valley between 10 million to 80 million years ago. The geological conditions resulting from the rising of the Sierra Nevada and sinking of the Sacramento Valley contributed to the trapping of natural gas within permeable subsurface layers, such as the Winters Formation (see Section D.5, Geology and Soils, for a more detailed discussion of the geology in the Proposed Project area).

A porous sandstone unit within the Winters Formation measuring approximately 150 feet thick formed the Florin Gas Field. An impermeable shale cap measuring approximately 150 to 300 feet thick above the sandstone unit prevented the natural gas from escaping (see Figure B-4).

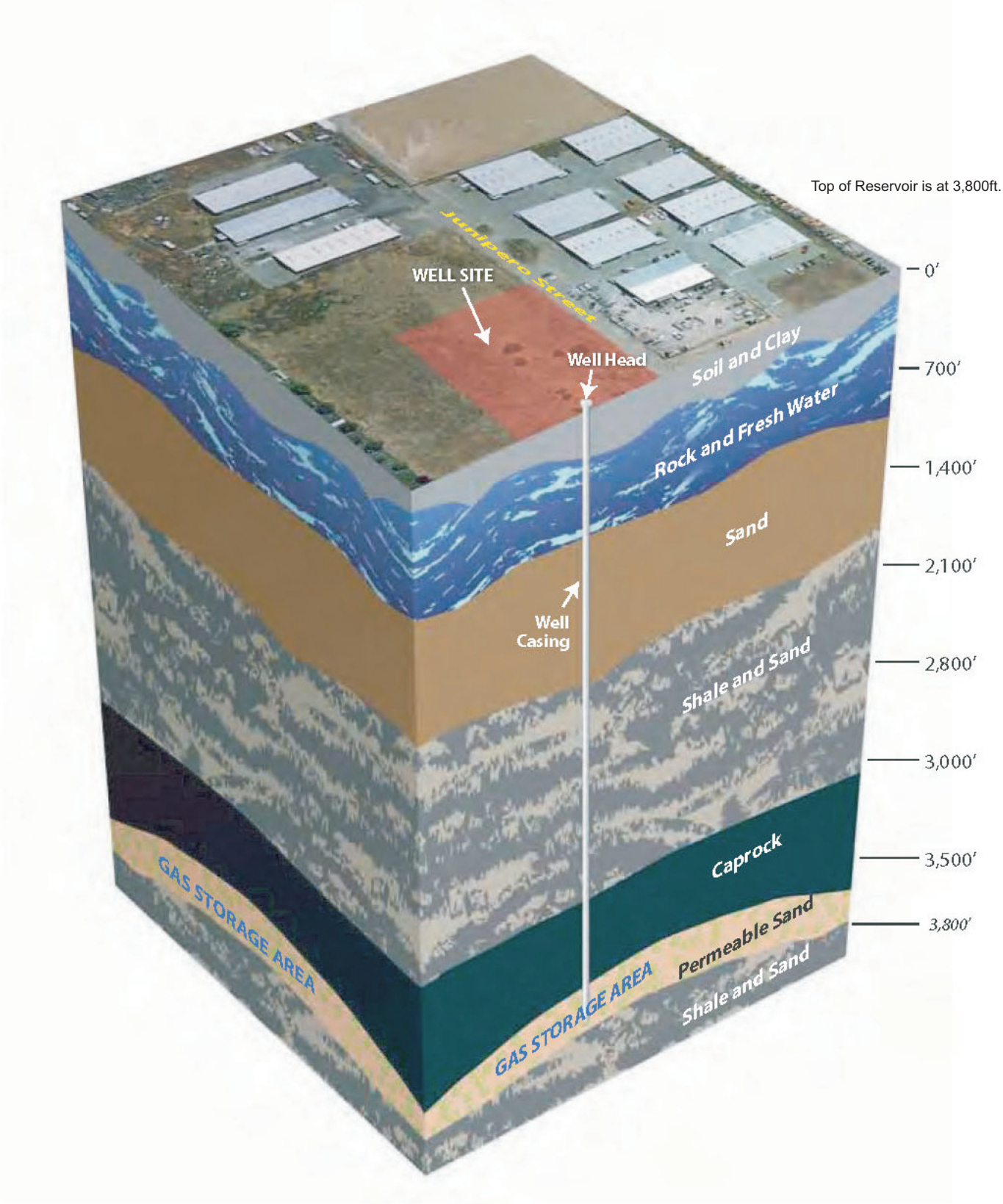
The Proposed Project would use the Florin Gas Field in its current state. Six new injection/withdrawal wells would be drilled through the subsurface formations, as described for the wellhead site in Subsection B.2.1.2.

### *B.2.1.2 Wellhead Site, Compressor Station, and Associated Pipelines*

**Wellhead Site**

Up to six new injection/withdrawal wells, one water disposal well, and one observation well are proposed to be drilled and constructed on a currently vacant 4-acre parcel at the intersection of Power Inn Road and Junipero Street (refer to Figure B-3). Gas injected into the formation will not be injected at a pressure greater than 1,650 psi. There is an approximately 100-foot-wide power easement along the western edge of the property. A 10-foot-tall masonry wall would be constructed around the property. See Section D.13, Visual Resources, for a visual simulation and additional information on the screening wall.

Access to the site would be through a gate on Junipero Street. The portion of the site within the wall would be covered with crushed rock.




SOURCE: SNGS, LLC 2007a.

Sacramento Natural Gas Storage Project - EIR

**Subsurface Diagram of Florin Gas Field**

FIGURE B-4

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*Westerly view from southwest corner of wellhead site*

The wellheads would stand approximately 6 feet above ground level and each well would require a space measuring 15 feet by 25 feet, as shown in Figure B-5. An observation well would also be installed on the wellhead site to monitor for any changes in conditions within and above the reservoir. A water injection well would be drilled to permit water produced with the gas to be re-injected into the zone of production. Five water tanks (noted as "$H_20$ tanks" on Figure B-5) measuring 12 feet in diameter and 10 feet high would be situated on the west side of the site and would be used to temporarily store water and natural gas liquids inadvertently extracted with the natural gas. The water would be injected into the same reservoir. In addition, a control building and injection pumps would be installed within the fenced/walled limits to operate the wells and other equipment on site.

The wellhead site would also include a pig launcher/receiver to allow the insertion and removal of pigs (a device inserted into a pipeline to perform cleaning, inspection, and other internal functions) from the associated underground pipelines. A slug catcher would be installed along the north side of the site to separate liquid and other impurities from the natural gas that is extracted. All equipment associated with the wellhead site would be located within the fenced and walled limits of the site.

The wellhead site would have gas odorization capability to add the odorization agent methyl mercaptan, if needed to compensate for reduction in the concentration of this odorizing agent in the storage field. Methyl mercaptan is a naturally occurring, colorless gas with an extremely strong repulsive smell characteristic of rotting cabbage. Methyl mercaptan is commonly added to otherwise odorless gasses, such as natural gas, to enable people to detect leaks by smell, and the natural gas injected into the storage field will contain this odorizing agent. If needed, methyl mercaptan would be added to the natural gas at the wellhead site prior to the injection of the gas back into SMUD Line 700 to meet federal and state odorization standards. The odor would only be detectable from residences and businesses in the event of a gas leak.

Ingress and egress for vehicles and equipment would be provided by a gated driveway off of Junipero Street. Two personnel emergency gates facing Power Inn Road, one facing Junipero Street, and two along the east perimeter wall would also provide emergency exits from the site for workers (see Figure B-5).

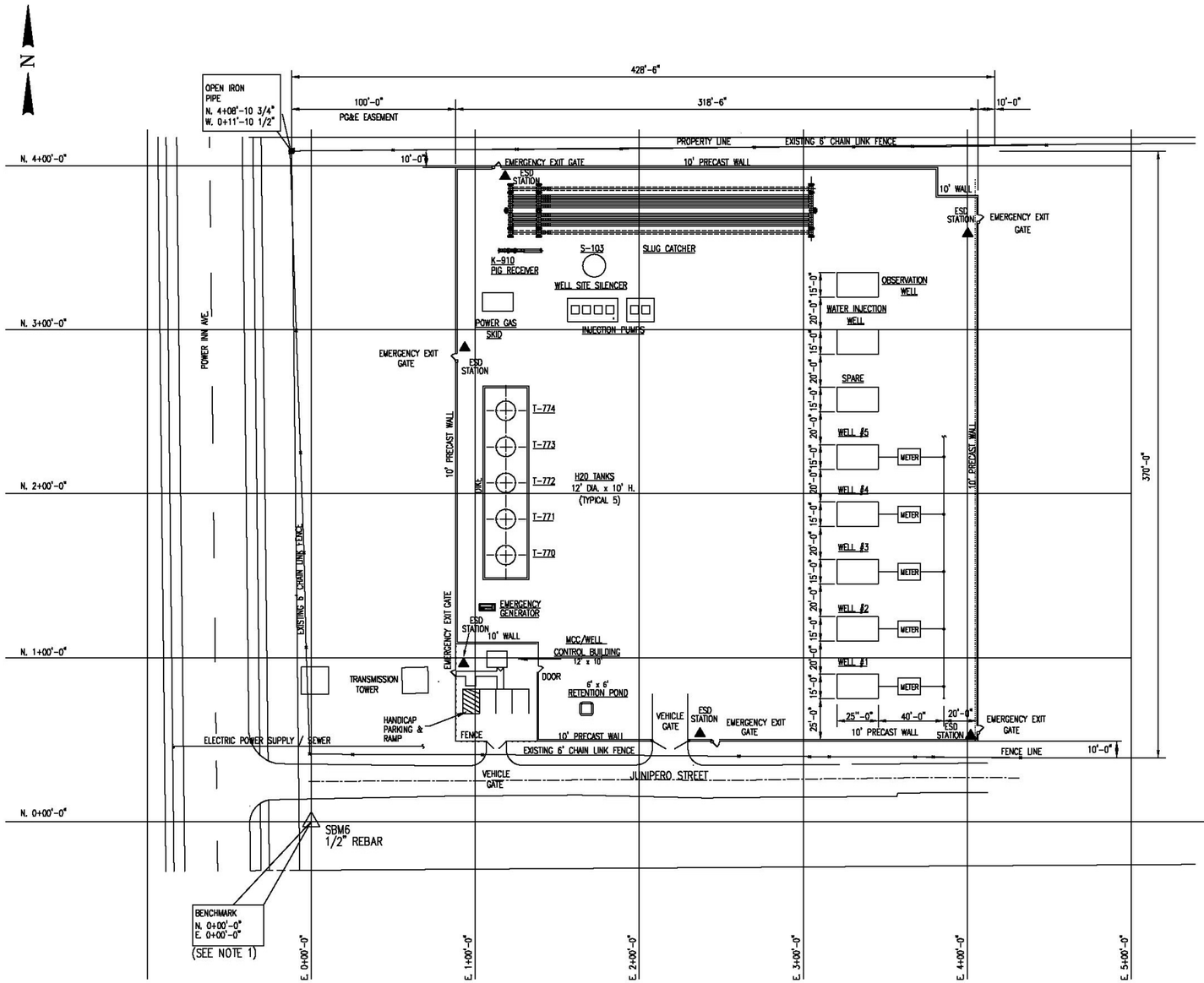
Water and sewer lines would be required for the operational phase of the project to supply potable water and connect to the Sacramento Regional County Sanitation District's sewer system. The water and sewer lines would be located along the north edge of the property and would tie into existing lines owned by the City of Sacramento located in Power Inn Road. Both lines will extend from Power Inn Road to the property immediately adjacent and to the east of the wellhead site, at which point they will be capped for later use by the adjacent property owner.

The waterline would be an 8-inch line from Power Inn Road into the wellhead site and would supply water to a fire hydrant to be located outside but adjacent to the front gate. Extensions would be run off the mainline to feed hose bibs within the site as needed.

### Compressor Station

As shown in Figure B-6, the compressor station would include two electric drive compressors, each paired with a 3,500 horsepower (hp) electric motor (located inside the "Compressor Building" on Figure B-6). A back-up compressor with an electric motor of up to 3,500 hp may also be installed (shown on Figure B-6 located inside the "Compressor Building" labeled as "Future"). Electric power to the site would be provided by SMUD and would require 4,160 volts of electricity. SNGS, LLC is in the process of negotiating an agreement with SMUD to have 50% of the energy for the electric compressors be provided by alternative sources, such as solar, hydro, geothermal, or wind power. The compressors would be housed in a building approximately 50 feet by 110 feet and would stand approximately 24 feet high. A 6-foot-high chain link security fence would surround the compressor station and the lot would be covered with crushed rock. The site would also have nighttime security lighting.

The compressor station would have a maximum injection capability of 100 million cubic feet (Mcf) and maximum withdrawal capacity of 200 Mcf of natural gas per day. The compressors would provide sufficient pressure to inject the natural gas into the Florin Gas Field. The compressors and valving would also regulate the pressure in the interconnect pipelines that would connect to the existing SMUD pipeline. Metering equipment would be located at the compressor station site for the SMUD pipeline interconnect. The metering equipment would be used to accurately measure the amount of natural gas withdrawn from and returned to the storage field. The compressor station site would also have gas odorization capability in order to add the odorization agent methyl mercaptan, if necessary to meet odorization standards in the event of a gas leak.




REVISED-DESTROY ALL PREVIOUS REVISIONS
Dated: Apr. 16, 2008

NOTES:
1. SBM6 = SITE BENCHMARK
   E. 6730825.07 = E. 0+00'-0"
   N. 1945702.89 = S. 0+00'-0"

LEGEND
▲----EMERGENCY SHUTDOWN STATION

| NO. | REVISION | DATE | DRAWN | CHECKED | HSE | APP'D | MILESTONE |
|---|---|---|---|---|---|---|---|
| G | REVISED WALL HEIGHT | 04-18-08 | DHM / RRB | RB / DB | | DWM | |
| F | ISSUED FOR DESIGN | 03-20-08 | DHM / RRB | RB / DB | | DWM | |
| E | ISSUED FOR HAZOP | 01/21/08 | DHM / RRB | / | | RAD | |
| D | REISSUED FOR BID | 10/03/07 | DHM / RRB | / | | RAD | |
| C | REISSUED FOR BID | 7/27/07 | DHM / RRB | / | | RAD | |
| B | REISSUED FOR BID | 03/28/07 | DHM / RRB | / | | RAD | |
| A | ISSUED FOR BID | 3-20-07 | DHM / RRB | / | | RAD | |

amec paragon

| | | | |
|---|---|---|---|
| ENGINEER | DHM | DATE 02/21/07 | SCALE 1"=30' |
| DRAWN | RRB | DATE 02-21-07 | SHEET 1 OF 1 |
| CHECKED | | DATE | JOB NO. A7012-00 |
| APPROVED | | DATE | VPE No. |
| CLIENT APPR | | DATE | CLIENT SNGS |
| CLIENT NO. | | | VERSION |

SACRAMENTO NATURAL GAS STORAGE, LLC

PLOT PLAN
WELL SITE

DRAWING NO. A7012-01-03-011 REV. G

Sacramento Natural Gas Storage Project - EIR

**Wellhead Site Schematic**

FIGURE B-5

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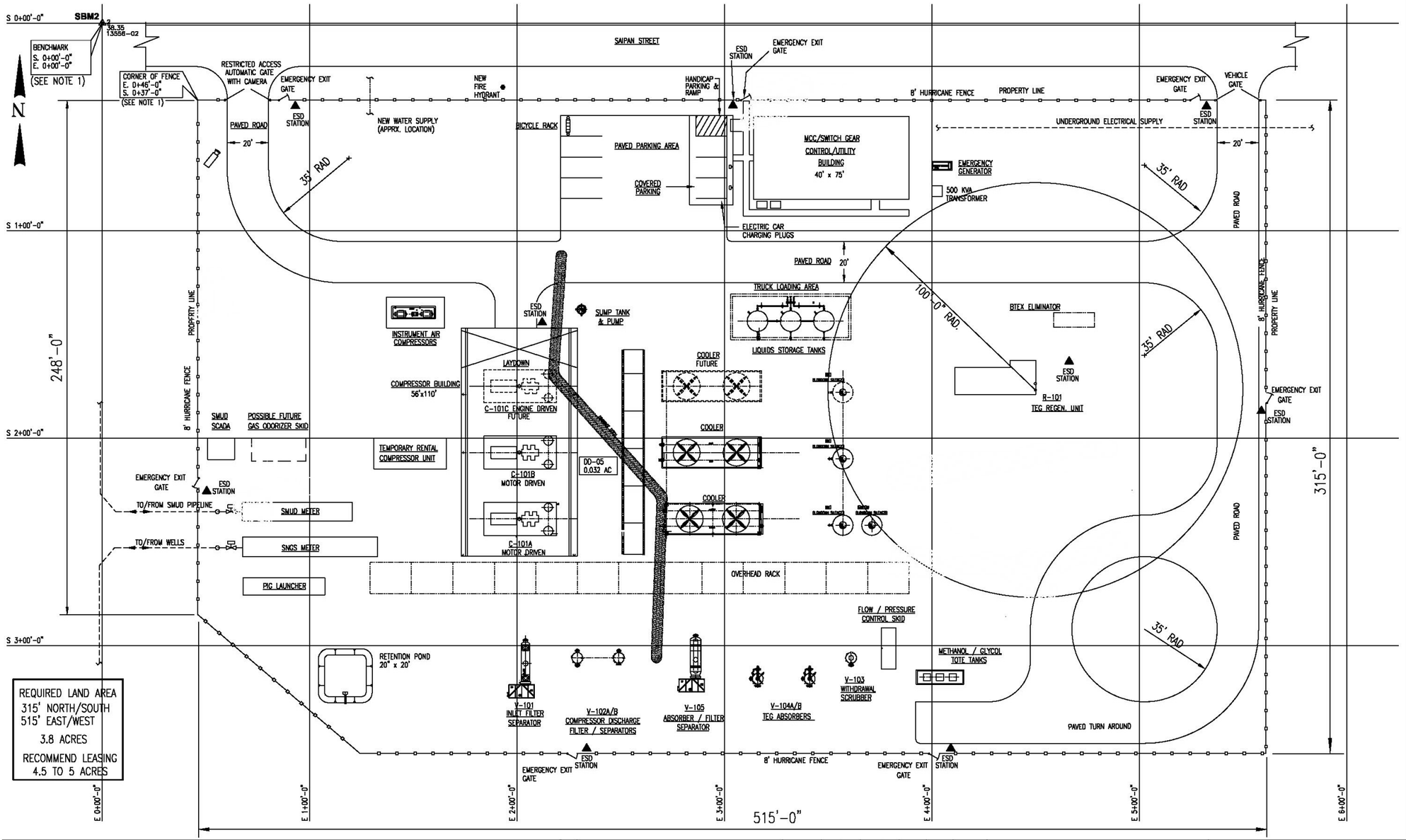


REQUIRED LAND AREA
315' NORTH/SOUTH
515' EAST/WEST
3.8 ACRES
RECOMMEND LEASING
4.5 TO 5 ACRES

NOTES:
1. SBM2=SITE BENCHMARK 2
N. 1950752.0520 = N. 0+00'-0"
E. 6732685.9710 = E. 0+00'-0"

LEGEND
VP----VERNAL POOL
DD----DRAINAGE DITCH
▲----EMERGENCY SHUTDOWN STATION

**ISSUED FOR DESIGN**
DATE Mar 20, 2008

| NO. | REVISION | DATE | DRAWN | CHECKED | HSE | APP'D | MILESTONE |
|---|---|---|---|---|---|---|---|
| F | ISSUED FOR DESIGN | 03-20-08 | DHM / RRB | LR / DB | | DWN | |
| E | REVISED EAST/WEST PROPERTY DIMENSION | 02/05/08 | DHM / RRB | / | | RAD | |
| D | ISSUED FOR HAZOP | 01/21/08 | DHM / RRB | / | | RAD | |
| C | REISSUED FOR BID | 10/03/07 | DHM / RRB | / | | RAD | |
| B | REISSUED FOR BID | 03/28/07 | DHM / RRB | / | | RAD | |
| A | ISSUED FOR BID | 3/20/07 | DHM / RRB | / | | RAD | |

amec paragon

| | | | |
|---|---|---|---|
| ENGINEER | DHM | DATE 02/20/07 | SCALE 1"=20' |
| DRAWN | RRB | DATE 02-21-07 | SHEET 1 OF 1 |
| CHECKED | | DATE | JOB NO. A7012-00 |
| APPROVED | | DATE | VPE No. |
| CLIENT APPR | | DATE | CLIENT SNGS |
| CLIENT NO. | | | VERSION |

**SACRAMENTO NATURAL GAS STORAGE FACILITY**

PLOT PLAN
COMPRESSOR STATION

DRAWING NO. A7012-01-03-010 REV. E

Sacramento Natural Gas Storage Project - EIR

**Compressor Station Schematic**

FIGURE B-6

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### Associated Pipelines—Pipeline Connection to SMUD Line 700

As shown in Figure B-3, in order to transport natural gas from the existing SMUD natural gas transmission lines to the proposed compressor station, from the compressor station to the wellhead site, and then back to the compressor station and to the SMUD pipeline, two short pipeline segments would be installed. This pipeline would convey natural gas delivered for storage from the compressor station to the wellhead site for injection into the gas field and gas withdrawn from storage to the compressor station where it will be measured prior to injection into the SMUD pipeline. The pipeline between the well site and the compressor station would be "pig-able," which would allow an inspection tool to check the interior of the pipeline. Pipeline markers would be installed over the pipeline, in accordance with federal Department of Transportation (DOT) guidelines. For the purposes of this EIR, the pipeline segments are described as segments one and two.

*Pipeline Segment 1*

As shown in Figure B-3, a 16-inch-diameter pipeline would run from the compressor station to the wellhead site. This bidirectional pipeline would be approximately 1.45 miles long and would be installed at a minimum depth of 6 feet below grade. The pipeline wall thickness would be 0.656 inch with 32-millimeter fusion-bonded epoxy coating for protection. From the wellhead site, the pipeline alignment would parallel Power Inn Road in an existing power line easement that then turns east approximately 500 feet south of Elder Creek Road. The pipeline would be installed under Berry Avenue using conventional trenching techniques. Horizontal directional drilling (HDD) would be used to install the pipe from the south side of Elder Creek Road to the north side of Kwajalien Street and beneath Morrison Creek and the UPRR tracks. An emergency shutdown valve (ESD) is proposed to be constructed in sSegment one1 to further divide the pipeline into an approximately 1,900--foot and 5,700--foot portion.

*Pipeline Segment 2*

As shown in Figure B-3, from the compressor station, a 16-inch-diameter pipeline would run from the compressor stations to the SMUD interconnect just south of Fruitridge Road within Depot Park. This bidirectional pipeline would be approximately 0.8 mile long and would be installed at a minimum depth of 6 feet below grade. The pipeline wall thickness would be 0.375 inch with 16-millimeter fusion-bonded epoxy coating for protection. The pipeline would terminate at the SMUD interconnect and valve. SMUD will construct, own, and operate a lateral from Line 700 to the interconnect. The interconnect (shown in Figure B-3 by "SMUD 700 Tie-In") would be located approximately 800 feet east of Power Inn Road and south of the eastbound lane of Fruitridge Road on Depot Park. A SMUD valve would be installed at the tie-in location and within Depot Park to control flow between the compressor station and SMUD's Line 700.

## B.3 Temporary and Permanent Land Requirements

Construction of the Proposed Project would result in both temporary and permanent impacts as shown in Table B-1. In general, temporary impacts would occur for installation of the pipeline, including workspaces needed for HDD. Permanent impacts would be equal to the land requirements for the compressor station and wellhead site. A small amount of permanent impacts would also occur from installation of pipeline markers and vent pipes along the pipeline alignments.

**Table B-1**
**Project Land Requirements by Project Component**

| Project Component/Jurisdiction | Temporary Requirement | Permanent Requirement |
|---|---|---|
| ***County of Sacramento*** | | |
| Florin Gas Field | None | None |
| ***City of Sacramento*** | | |
| Wellhead site | 4 acres | 4 acres |
| Compressor station | 5 acres | 5 acres |
| Associated pipelines | 20.1 acres | 7.35 acres |

## B.4 Project Construction

This section presents an overview of construction methods typically used for construction of a wellhead site, compressor station and pipeline connections. SNGS, LLC's proposed construction schedule is presented in the following section, Section B.4.1, followed by descriptions of construction activities and methods that are anticipated for construction of the Proposed Project (Section B.4.2). Sections B.4.3 and B.4.4 provide construction employment, materials and staging areas, and methods that SNGS, LLC will employ to prevent interruptions in existing utilities services during construction.

### B.4.1 Construction Schedule

Subject to the California Public Utilities Commission's (CPUC's) approval of the Certificate of Public Convenience and Necessity (CPCN) and to obtaining all other necessary facility permits, franchises, and approvals, SNGS, LLC anticipates the completion of construction within 6 to 9 months. Table B-2 provides SNGS, LLC's Proposed Project schedule for construction. While the schedule will be modified to begin after CPUC approval, this table illustrates the approximate length of each construction phase. Construction activities could occur concurrently and therefore total construction duration is anticipated to take approximately 6 to 9 months to complete.

**Table B-2**
**Project Construction Schedule as Proposed by SNGS, LLC**

| Project Phase | Duration (months) |
|---|---|
| Florin Gas Field | N/A |
| Wellhead site | 3 |
| Compressor station site | 6–8 |
| Associated pipelines | 3 |

Source: SNGS, LLC 2007a.

Drilling rigs would operate 24 hours per day, seven days a week while each well is drilled until completion. SNGS, LLC anticipates that each well will take approximately 8 days to drill. Equipment and materials typically would be delivered during daylight hours. Construction of the compressor station would occur between 7:00 a.m. and 6:00 p.m., Monday through Saturday, with the possibility of some construction activities being undertaken on Sundays. Once the HDD work begins it may continue on a 24-hour basis until it is complete for each HDD site.

## B.4.2 Construction Activities and Methods

### *B.4.2.1 Florin Gas Field*

There will be no construction activities associated with or required to use the Florin Gas Field. Installation of wells moving natural gas into and out of the reservoir is described below.

### *B.4.2.2 Wellhead Construction*

The wellhead site would be prepared for development by installing sewer and water lines as described in Section B.2.1. The site would then be fenced with a masonry wall. Sidewalks, curbs, and gutters would be installed along Power Inn Road and Junipero Street and landscaping would be installed between the sidewalk and the perimeter of the site.

Within the wellhead site, pad sites would be cleared of surface materials and then graded flat to provide a level work area for the drill rigs. Rock would be placed on the pad sites for stabilization and drainage patterns would be established within the site to control runoff and direct to collection point. The type of drilling rig to be used would be self-contained and would be relocated and used to construct each well. Typical equipment includes non-resident driller's quarters, a "doghouse" and tool pusher trailer, and power supply. After the drilling of a well is complete, the drilling rig would be relocated to the next position. All fluids used in or for the drilling operation would be contained in temporary mobile tanks or drums stored on site. Drilling residue (liquids, mud, and other material from the wells) would be trucked in vacuum trucks to an approved disposal site.

An electric rotary drill rig would be used to drill the wells. A drill rig would be used to spin a drill bit attached to drill pipe. Well casings would be installed and cemented in place and drilling is conducted through the casing. As the bit advances deeper into the earth, additional drill pipe is added to the "drill string." Drill string would be stored on site in a "pipe rack" until additional sections are needed. A blow-out preventer would be installed. The process of drilling, adding drill stem, and drilling again would continue until the driller has reached the desired depth of approximately 3,800 feet. Drilling mud is used to lubricate the bit, return drill cuttings back to the surface, and control pressure within the hole. Fluids used in the drilling operation would be contained and stored on site in mobile tanks or 55-gallon drums in a designated containment area. ~~This process is very similar to the HDD process that is described in more detail below~~. Once the well is in place the well would be completed including installation of ~~,~~ ancillary valving, piping, and monitoring equipment. ~~would be installed and tested~~

### *B.4.2.3 Compressor Station Construction*

Construction activities for the compressor station would involve clearing, grading, and rocking of the site; building foundations and installing the perimeter fencing; erecting structures to house the compressors and associated facilities; installing equipment and piping; and cleaning the site. Vegetation would be cleared to create a level surface. Excavating required for the foundations would be performed as needed and all backfill would be compacted in place. Any excess soils would be used on site. Construction activities and storage of construction equipment would be confined to the 5-acre compressor station site. Equipment consisting of the glycol dehydration units, reboilers, and coolers would be installed on concrete pads. The aboveground storage tanks would be installed within diked areas or other secondary containment structures. Prior to placing the compressor station in service, the gas piping system (both aboveground and belowground) would be hydrostatically tested (i.e., filled with water and pressurized to test the integrity of the pipe, welds, and joints). Controls and safety devices, such as the emergency shutdown system, relief valves, gas and fire detection facilities, and other protection and safety devices, would be checked and tested.

### *B.4.2.4 Pipeline Construction*

Pipelines would be installed along roads, including Berry Avenue, and in undisturbed areas using conventional trenching techniques. SNGS, LLC plans to use HDD technology to cross beneath Morrison Creek, the adjacent UPRR ROW, and Elder Creek Road. Except along the railroads and in areas that support sensitive resources, the construction easement would be 70 feet wide. Environmentally sensitive areas would be marked and temporarily fenced. Construction activities associated with installing the pipe are described in more detail as follows.

### Grading and Pipeline Trenching Methods

Bulldozers or similar equipment would be used to grade the ROW and prepare a level work area to install the pipe. Trenching would be accomplished with backhoes or trenching machines, depending on terrain and site-specific conditions. The trench would be excavated to the depth sufficient to permit a minimum of 6 feet of cover over the installed pipe and would be approximately 6 feet wide. A deeper trench may be required to avoid existing utilities. Trench spoil would be temporarily stored next to the trench on the spoil storage portion of the ROW. Blasting is not anticipated based on the geological conditions of the project area. The trench would typically not remain open for more than 72 hours in one area.

### Pipe Delivery, Stringing, and Welding

Pipe would be delivered to the ROW and strung along the centerline or open trench. Pipeline sections would be welded on the ROW and prepared for lowering into the trench. All welds would be X-rayed to ensure structural integrity and to comply with applicable federal DOT regulations and American Petroleum Institute 1104 specifications.

### Lowering-In, Tie-In, and Backfilling

Pipe would be lowered into the trench in sections with two or more backhoes or sideboom tractors. The trench would be backfilled using select excavated subsoils and topsoil would then be replaced and restored to its original condition using either tracked construction equipment or water to minimize future settling. A small amount of excess soils may need to be removed from the pipeline route and disposed of off site. Any excess would be disposed of at an appropriate disposal facility.

### Horizontal Directional Drilling Method

The pipeline would be installed beneath Morrison Creek, Elder Creek Road, and the UPRR ROW using the HDD technique. This technique uses a hydraulically powered horizontal drilling rig to drill a hole along a pre-defined azimuth below the ground surface between two points on the surface (see Figure B-7). The drill may reach depths of 80 feet below the ground's surface but the actual depth depends on where subsurface horizons suitable for HDD exist. The HDD process is supported by a drilling mud tank and a power unit for the hydraulic pumps and mud pumps.

The drill rig would be set up in a temporary workspace measuring 100 feet by 200 feet on the south side of Elder Creek Road, west of the UPRR tracks. The drill would exit in a temporary workspace measuring 100 feet by 200 feet, located on the north side of Kwajalien Street and east of Caroline Drive. A pullback area measuring 150 feet by 560 feet, located just north of the exit side temporary workspace would be required to assemble the pipe.

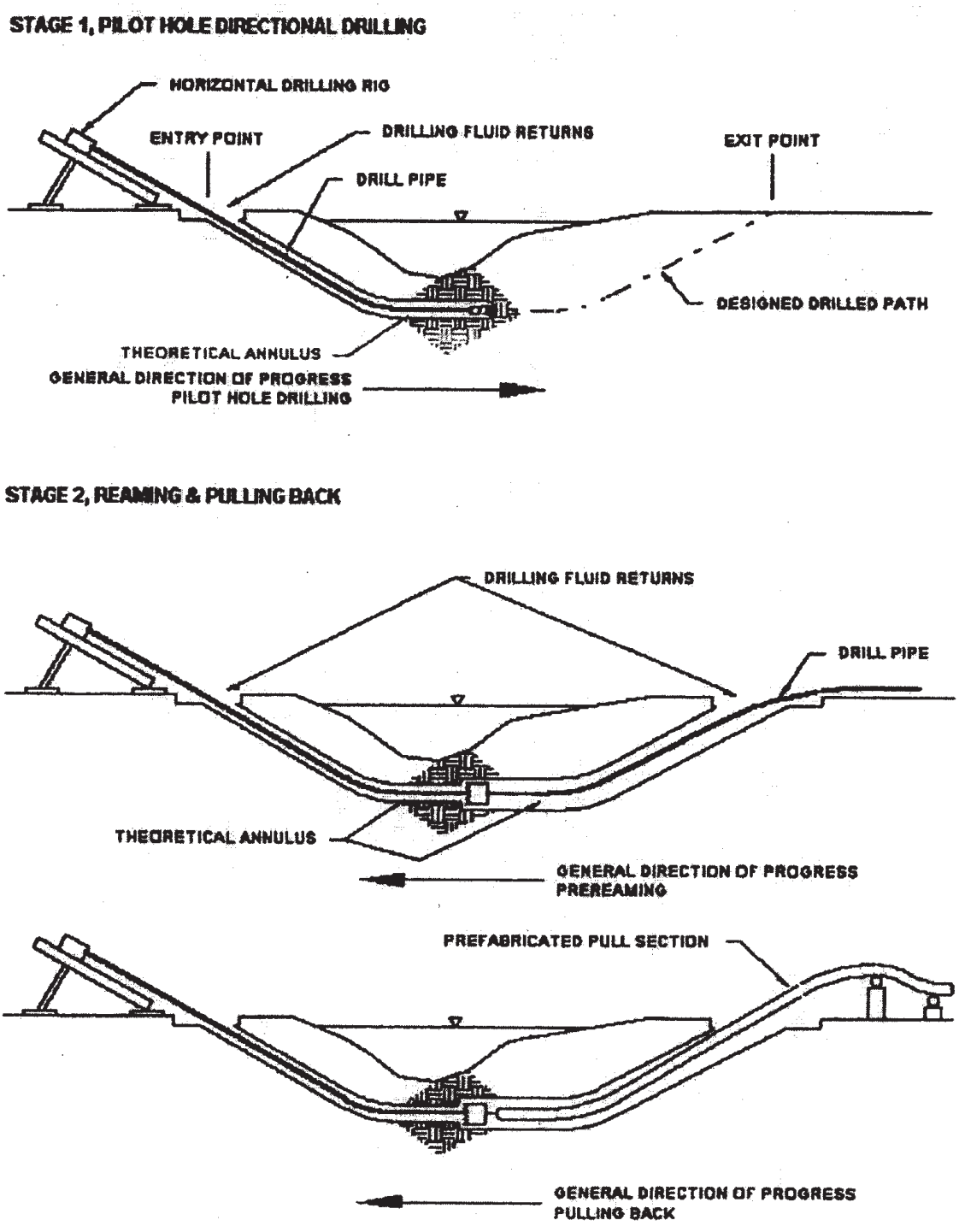
During a bore, drilling mud is pumped under high pressure through the drill stem to rotate the cutting head and return the soil cuttings to the small pit at the surface entry point. Any excess drilling mud would be hauled away and disposed of at an approved location. While the bore is occurring, pipe sections to be pulled through the crossing would be strung on pipe supports situated along the ROW. The pipe sections would be welded together, X-rayed, and protective epoxy applied to the joints. SNGS, LLC's contractor would prepare a bore plan for the HDD that includes a detailed description of the drilling unit, hole diameter, depth of cover, directional survey and control plan, mud system, additives, and mud pumping pressures.

**Pipeline Testing**

After construction and prior to placing the pipelines in service, the completed pipelines would be hydrostatically tested. Approximately 44,000 gallons of water would be used for hydrostatic testing. This water would be obtained from existing public water supplies, most likely from a water hydrant. The pipeline segment would be filled with water and pressurized to a rate that exceeds the operating pressure of the pipeline. The pressure would be held for a number of hours and monitored for leaks, in accordance with industry standards. Following the hydrostatic testing, the water would be tested for water quality standards and discharged into the storm drain system. If necessary, the water would be filtered prior to discharge in the storm drain system to comply with the General Order for Dewatering and Other Low Threat Discharges to Surface Waters, issued by the Central Valley Regional Water Quality Control Board (CVRWQCB).

### B.4.3 Construction Equipment and Personnel

SNGS, LLC would retain a construction contractor to construct each component of the Proposed Project. SNGS, LLC has entered into a Project Stabilization Agreement with the Sacramento-Sierra's Building and Construction Trades Council covering the construction activities. Between 150 and 200 total employees would be required over the duration of the construction period, of which 70%, or between 105 to 140 employees, is expected to be local labor. The total number of workers at any one site will vary depending on the construction activity, but SNGS, LLC anticipates a maximum of 30 workers at the wellhead site, 20 along the pipeline route, and 40 at the compressor station site at one time. Table B-3 provides an estimate of construction equipment and usage required for each phase of the project. Construction of the Proposed Project would use standard construction equipment including, but not limited to, drill rigs, bulldozers, backhoes, pickup trucks, and excavators.




SOURCE: Ozzie's Padder of North America, Inc., No Date

Sacramento Natural Gas Storage Project - EIR

**Horizontal Directional Drilling Process**

FIGURE B-7

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**Table B-3**
**Estimated Construction Vehicle Types and Duration of Use**

| Vehicle Type | Estimated Number Required* | Duration |
|---|---|---|
| Water trucks | 3 | — |
| Backhoe | 5 | — |
| Dump trucks | 4 | 3 days |
| Forklifts | 3 | — |
| Boring rig (HDD) | 1 | 1 week at two locations |
| Grader | 2 | 2 days per project component |
| Roller/Compactor | 2 | 2 days per project component |
| Cranes | 3 | 1 day per week at 3 locations |
| Flatbed trucks | 3 | — |
| Pickup trucks | 4 | — |
| Side boom | 1 | — |
| Drill rig (HDD) | 1 | — |
| Logging trucks | 1 | Daily, during drilling of wells |
| Vacuum trucks | 1 | — |
| X-ray trucks | 2 | — |
| Welder trucks | 10 | — |
| Stationary pump | 2 | — |
| Cement truck/pump | 10 | — |
| Stationary generators | 1 | — |
| Bending machines | 1 | — |
| Air compressors | 4 | — |
| Flatbed trucks | 29 | — |

Source: SNGS, LLC 2007a.
Notes: * Total for all phases and components of construction. Actual equipment on site may be less, depending on construction schedule (i.e., equipment from wellhead could potentially be used at compressor station and/or interconnect).
"—" indicates that this vehicle would be used for the duration of the project.

### B.4.4 Staging Areas

Staging areas for construction will take place on the proposed wellhead site, compressor station site, and along the pipeline corridor. No additional staging areas are proposed.

## B.5 Operation and Maintenance

Operation and maintenance of the proposed facility would be performed by the SNGS, LLC's operations and maintenance personnel. SNGS, LLC expects that three employees would be required to operate and maintain the project. The compressor station would be staffed 24 hours a day, 7 days a week. The wellhead would be remotely monitored and controlled at all times from the Depot Park compressor station. SNGS, LLC would also monitor the metering station and pipeline remotely from the Depot Park compressor station. In addition, the metering equipment

and pipeline would be monitored by PG&E and SMUD. Both PG&E and SMUD will be able to control the metering equipment and valves.

As part of the proposed operation and maintenance program, aboveground piping components would be maintained to minimize leakage of odorized gas. The pipeline would be monitored following procedures outlined in and with an emergency plan prepared in accordance with 49 CFR 192.615, which requires operators to establish written procedures to minimize the hazard resulting from a gas pipeline emergency. The facility valves, flanges, and other piping components would be monitored for leaks by operations personnel as part of the day-to-day operation of the facility. In the event SNGS, LLC receives notification from a third party concerning the smell of odorant in the vicinity of the proposed facility, SNGS, LLC operations personnel would investigate the source of the odor and repair any leaks contributing to the odor. A log of all third-party notifications regarding gas odors would be kept. The date of the notification, the cause of the odor, and the date of the repair of any corresponding odorant leaks would be recorded in the log. A copy of the described log would be submitted to the CPUC quarterly.

## B.6 Abandonment of Project

At the point that the Proposed Project is no longer in use and the site is abandoned, the following procedures will be used:

- The gas reservoir pressure will be depleted to its current conditions.
- The gas wells will be abandoned in place and plugged, according to the requirements of ~~the~~ DOGGR, ~~in place~~ at the time of abandonment.
- The pipelines will be flushed to remove any contaminants, cut off from SMUD Line 700, and abandoned in place.
- Surface structures, including the compressor station and well sites, will be removed and the areas restored to their previous conditions.

## B.7 SNGS Project Protocols

Section 2.5.7 of the April 2007 Proponent's Environmental Assessment (PEA) prepared by SNGS, LLC, details the best management practices (BMPs) that would be followed during all project-related activities (SNGS, LLC 2007a). The BMPs provide general protection measures, as well as measures specific to environmental issue areas, such as air quality, paleontology, geology, traffic, or water quality. SNGS, LLC's proposed BMPs are herein termed applicant proposed measures (APMs). Table B-4 lists the APMs introduced in each issue area and Table B-5 lists the APMs as proposed.

**Table B-4**
**Applicant Proposed Measures for Each Issue Area**

| Issue Area | APMs |
|---|---|
| Air Quality | 3 |
| Geology and Soils | 4, 5, 6 |
| Hazardous Material, Public Health and Safety | 7, 8, 9, 10 |
| Transportation and Traffic | 11 |
| Biological Resources | 1, 2, 12, 13 |
| Hydrology and Water Quality | 14, 16 |
| Visual Resources | 15 |

The impact analysis in this EIR assumes implementation of all APMs as part of the applicant's project description. However, where other impacts are identified that are not addressed by these BMPs, or where the BMPs are not considered to be adequate to reduce impacts to less than significant levels, additional mitigation measures are recommended. APMs will be incorporated into the Mitigation Monitoring, Compliance, and Reporting Program (MMCRP) developed for this Proposed Project and monitored in the same fashion as the mitigation measures developed in this EIR (see Section G, Mitigation Monitoring and Reporting, of this EIR for details on the MMCRP).

**Table B-5**
**Applicant Proposed Measures for Proposed Project**

| APM No. | Description |
|---|---|
| 1 | SNGS, LLC would identify work areas and would ensure that:<br>• Construction activities, equipment, and associated activities (e.g., staging areas) are confined to the designated work zones<br>• Areas supporting sensitive resources (e.g., nearby seasonal wetlands and special-status species' habitat) are avoided.<br>Construction equipment would be confined to a designated work zone in the project area. Before ground-disturbing activities are initiated, the work zone would be clearly staked and flagged. Where feasible, all adjacent waters and wetlands would be avoided and would be designated as exclusion zones during the preconstruction phase. |
| 2 | SNGS, LLC would conduct Worker Environmental Awareness Program (WEAP) training for construction crews before construction activities begin. The WEAP training would include a brief review of the special-status species and other sensitive resources that could occur in the Proposed Project area (including their life history and habitat requirements and what portions of the Proposed Project area they may be found in) and their legal status and protection. The program would also cover all mitigation measures; environmental permits; and Proposed Project plans, such as the BMPs, erosion control and sediment plan, and any other required plans. During WEAP training, construction personnel would be informed of the importance of avoiding ground-disturbing activities outside of the designated work area. The designated Environmental Inspector would be responsible for ensuring that construction personnel adhere to the guidelines and restrictions. WEAP training sessions would be conducted as needed for new personnel brought onto the job during the construction period (relative to the area in which the employee would be working and the tasks the employee would be completing). |

## Table B-5 (Continued)

| APM No. | Description |
|---|---|
| 3 | (a) The Proposed Project shall provide a plan, for approval by the lead agency and the Sacramento Metropolitan Air Quality Management District (SMAQMD), demonstrating that the heavy-duty (>50 horsepower) off-road vehicles to be used in the construction project, including owned, leased, and subcontractor vehicles, would achieve a project-wide fleet-average 20% $NO_X$ reduction and 45% particulate reduction compared to the most recent California Air Resources Board (CARB) fleet average at the time of construction. The SMAQMD shall make the final decision on the emission control technologies to be used by the project construction equipment; however, acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.<br>(b) The project applicant and/or contractor shall submit to SMAQMD a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that shall be used an aggregate of 40 or more hours during any phase of the construction project. The inventory shall include the horsepower rating, engine production year, and projected hours of use or fuel throughput for each piece of equipment. The inventory shall be updated and submitted monthly throughout the duration of the project, except that an inventory shall not be required for any 30-day period in which no construction activity occurs. At least 48 hours prior to the use of subject heavy-duty off-road equipment, the project applicant and/or contractor shall provide SMAQMD with the anticipated construction timeline, including start date and name and phone number of the project manager and on-site foreman.<br>(c) The project applicant and/or contractor shall ensure that emissions from all off-road diesel powered equipment used on the project site do not exceed 40% opacity for more than three minutes in any one hour. Any equipment found to exceed 40% opacity (or Ringelmann 2.0) shall be repaired immediately and SMAQMD shall be notified within 48 hours of identification of non-compliant equipment. A visual survey of all in-operation equipment shall be made at least weekly by contractor personnel certified to perform opacity readings, and a monthly summary of the visual survey results shall be submitted to the SMAQMD throughout the duration of the project, except that the monthly summary shall not be required for any 30-day period in which no construction activity occurs. The monthly summary shall include the quantity and type of vehicles surveyed as well as the dates of each survey.<br>(d) The project applicant shall pay into the SMAQMD's construction mitigation fund to offset construction-generated emissions of $NO_X$ that exceed SMAQMD's daily emission threshold of 85 lbs/day. The project applicant shall coordinate with the SMAQMD for payment of fees into the Heavy-Duty Low-Emission Vehicle Program designed to reduce construction related emissions within the region. Fees shall be paid based upon the current SMAQMD Fee of $14,300/ton of $NO_X$ emissions generated. This fee shall be paid prior to issuance of building permits. Detailed construction information for the Proposed Project is not yet available. However, based upon the preliminary URBEMIS emissions modeling, the expected payment for remaining construction related construction $NO_X$ emissions over the significance threshold would be $7,513. Fees may be paid on a per/acre basis, in which case the average fee would be approximately $356/acre. If the projected construction equipment or phases change, the applicant shall coordinate with the SMAQMD to determine if the mitigation fee needs to be recalculated.<br>(e) Limit idling time of construction equipment to 5 minutes or less, when feasible.<br>(f) The following applicable measures would be implemented as part of the Proposed Project to minimize dust emissions and to be consistent with Sacramento Metropolitan Air Quality Management District (SMAQMD) "Level 1" guidelines for reducing construction impacts to a less-than-significant level:<br>• Water all active construction areas at least twice daily<br>• Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard.<br>SNGS, LLC would provide the CPUC with a copy of its final Authority to Construct/Permit to Operate permit from the SMAQMD. Additionally, aboveground piping would be maintained to minimize leakage of odorized gas. SNGS, LLC would provide incident, quarterly, and annual reports to the CPUC in accordance with CPUC Rule 112-E, Subpart B. And lastly, SNGS, LLC would utilize electric drill rigs and electric compressors to avoid the emissions that would otherwise result from the use of combustion engines for these equipment elements. |

## Table B-5 (Continued)

| APM No. | Description |
|---|---|
| | (g) SNGS, LLC will comply with CARB's Vehicle Climate Change Standards to the extent that new passenger vehicle and light trucks are purchased by the project's operators and staff starting in the 2009 model year.<br>(h) SNGS, LLC will comply with the Energy Commission's California energy standards or energy efficient lighting requirements for this project. |
| 4 | (a) The Proposed Project would be designed to meet Class IV Seismic ~~the seismic~~ safety standards of the CBC (i.e., a 0.4 ground acceleration). Other s~~S~~pecific design measures may include, but are not limited to, special foundation design, additional bracing and support of upright facilities (e.g., tanks, exhaust stacks), and weighting the pipeline in areas of potential liquefaction. In addition, automated leak detection, isolation, and shutdown controls would limit the secondary effects of equipment damage. Project facilities and foundations would be designed to withstand changes in soil density. When the detailed engineering design of the project is completed, it would be submitted to the CPUC, DOT Office of Pipeline Safety (which provides oversight of pipeline construction, operation, and safety) and the DOGGR (which provides oversight of design, installation, and operation of gas wells) for their review and approval.<br>(b) The Proposed Project will be designed in accordance with the Natural Gas Pipeline Safety Act of 1968 and CPUC General Order 112-E and implement design specifications as identified in the geotechnical engineers report (Terracon 2008) to reduce primary and secondary risks associated with seismically induced ground shaking. |
| 5 | DOGGR is responsible for wells drilled into an underground gas storage facility. SNGS, LLC would complete engineering and geology studies and an injection plan and submit them to DOGGR for approval. These studies 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. SNGS, LLC would be required to post a bond with DOGGR to ensure proper completion or abandonment of any well drilled. Additionally, DOGGR would be responsible for approving a water injection plan that would allow SNGS, LLC to inject water that is extracted from the gas field back into the gas field. |
| 6 | A paleontological resources discovery and management plan would be developed prior to construction and implemented as part of the Proposed Project to avoid potential impacts on these resources. The plan would contain the following elements:<br>• Paleontological Mitigation Plan—Prior to the start of construction, a qualified paleontologist shall be retained to design a paleontological resource mitigation and monitoring program and to implement this program during earth-moving activities. The mitigation and monitoring program shall include the following:<br>o Preconstruction coordination<br>o Construction monitoring procedures that include the use of qualified paleontological resources monitors in sensitive areas<br>o Procedures to be followed if a previously unidentified paleontological resource is discovered during construction that include halting all ground-disturbing activity in the vicinity of the discovery; notification of the City of Sacramento Community Development Department or the County of Sacramento, as appropriate; and specimen or data recovery as determined adequate by a qualified paleontologist and that are consistent with the Society of Vertebrate Paleontology guidelines<br>o Sampling and data recovery procedures (if necessary)<br>o Museum storage coordination for any specimen and data recovered<br>o Report of findings.<br>• Field Survey—Prior to the start of construction, the paleontologist shall conduct a field survey of exposures of sensitive stratigraphic units within the construction area that will be disturbed.<br>• Construction Personnel Education—Prior to the start of construction activities, construction personnel involved with earth-moving activities will be informed of the possibility of encountering fossils, the appearance of fossils and the types of fossils likely to be seen during construction activities, and proper notification procedures should fossils be encountered. This worker training will be prepared and presented by a qualified paleontologist.<br>• Paleontological Monitoring—The paleontologist shall monitor earth-moving construction activities where this |

## Table B-5 (Continued)

| APM No. | Description |
|---|---|
| | activity will disturb previously undisturbed sediment. Monitoring will not take place in areas underlain by artificial fill or in areas where exposed sediment will be buried but not otherwise disturbed. |
| 7 | The following measures would be incorporated into the construction contract specifications to address hazardous materials generated from construction-related activities:<br>• Diesel fuel and petroleum-based lubricants shall be stored only at designated staging areas.<br>• All hazardous material spills or threatened releases, including petroleum products such as gasoline, diesel, and hydraulic fluid—regardless of the quantity spilled—must be immediately reported if the spill has entered or threatens to enter a water of the State of California or the United States, or has caused injury to a person or threatens injury to public health. |
| 8 | SNGS, LLC would prepare a Hazardous Materials Contingency Plan that would be implemented if a spill occurs or if any hazardous materials are encountered during construction. Provisions outlined in this plan would include phone numbers of city, county, state, and federal agencies and primary, secondary, and final cleanup procedures. In addition, SNGS, LLC would require the project contractor to prepare a Health and Safety Plan (HSP) to minimize environmental impacts in the event that hazardous soils or other materials are encountered during construction of the project. The HSP would include elements that establish worker training, engineering controls, and monitoring. The HSP also would establish security measures to prevent unauthorized entry to cleanup sites and to reduce hazards outside the investigation/cleanup area. |
| 9 | SNGS, LLC would prepare an Emergency Response Plan for use in response to a pipeline-related emergency (e.g., gas leak, earthquake, accidental release of hazardous materials or waste, fire, and/or pipeline or facility damage). Included in this plan would be measures for fire prevention. The plan would be designed in accordance with state and federal regulations, including 49 CFR 192, Health and Safety Code (Chapter 6.95), and Titles 19, 22, and 27 of the California Code of Regulations (CCR). |
| 10 | SNGS, LLC would design the pipelines between Fruitridge Road and the compressor station and between the compressor station and the wellhead site with a design safety factor* of 0.4, which exceeds the Class 3 standard applicable to the project under the provisions of 49 CFR 192.5. SNGS, LLC would also do the following:<br>• Pplace the pipeline under a minimum of 6 feet of earthen cover in all locations, which exceeds the 3-foot minimum standard applicable to the project.<br>• Conduct X-ray verification of 100% of all applicable welds.<br>• Place an Emergency Shutdown (ESD) valve in pipeline segment one approximately where it turns east from Power Inn Road to reduce the potential flow of gas as a result of a pipeline failure along pipeline segment one.<br>• Install pipeline and well shutoff valves with closure time capability of not more than 30 seconds.<br>• Design and operate compressor equipment to limit the maximum injection pressure at the wellhead to 1,650 psi. |
| 11 | SNGS, LLC would prepare a traffic control plan to minimize short-term construction-related impacts on local traffic. The plan would be submitted for review and approval by the City of Sacramento Director of Utilities and would include the following:<br>• A diagram showing the location of the proposed work area<br>• A diagram showing the locations of areas where public ROW may be closed or obstructed<br>• A diagram showing the placement of traffic control devices<br>• The proposed phasing of traffic control<br>• Times when traffic control would be in effect<br>• Times when demolition/construction activities would prohibit access to private property from a public ROW<br>• A statement that the applicant shall comply with the City of Sacramento's noise ordinance during the performance of all work<br>• A statement that the applicant understands that the plan may be modified by the director at any time in order to eliminate or avoid traffic conditions that are hazardous to the safety of the public. |

**Table B-5 (Continued)**

| APM No. | Description |
|---|---|
| | The plan would clearly define the location, timing, and types of interferences that could potentially block public ROW and emergency access. The plan also allows the Director of Utilities to modify, suspend, or stop the plan if a potential public safety hazard would result. Due to the limited work required for the Morrison Creek Cross-Tie metering and gas conditioning equipment in Sacramento County, coordination with the County Public Works Director would not be necessary. |
| 12 | The equipment used for the Proposed Project would require periodic maintenance and refueling. To reduce the potential of contamination by spills, no refueling, storage, servicing, or maintenance of equipment would be performed within 100 feet of sensitive environmental resources (e.g., seasonal wetlands and Morrison Creek). Additionally, all refueling or servicing would be done with absorbent material or drip pans underneath equipment to contain spilled fuel or fluids. Any fluids drained from the machinery during servicing would be collected in leakproof containers and taken to an appropriate disposal or recycling facility. If such activities result in spillage or accumulation of a product on the soil, the contaminated soil would be assessed and disposed of properly. Under no circumstances would contaminated soils be added to a spoils pile.<br>Mobile refueling trucks likely would be used for on-site refueling of stationary construction equipment. The refueling trucks would be independently licensed and regulated to haul and dispense fuels and to ensure that the appropriate spill prevention techniques are implemented. All maintenance materials (i.e., oils, grease, lubricants, antifreeze, and similar materials) would be stored in a designated storage area, away from site activities and more than 100 feet from sensitive resources. During construction, all vehicles and equipment required on site would be parked or stored at least 100 feet from water bodies, wetlands, and other sensitive resource areas. These areas would be identified on the construction drawings, as appropriate. All wash-down activities would be conducted at least 100 feet from sensitive environmental resources. |
| 13 | Following installation of the pipeline, the ROW would be graded to preconstruction grades and contours and would be seeded with an appropriate seed mix. The seed mix would be composed of the appropriate mix of species and be acceptable to the landowner. All disturbed areas of paved roadways would be repaved. |
| 14 | SNGS, LLC would prepare an erosion and sediment control plan and a post-construction erosion and sediment control plan that describes when, where, and how the site reclamation BMPs would be implemented. The City of Sacramento would review and approve these plans prior to construction. |
| 15 | SNGS, LLC has proposed constructing a 10-foot perimeter wall surrounding the wellhead site along with landscaping along Power Inn Road and Junipero Street to reduce visual impacts. Landscaping would consist of drought-tolerant plants, which would naturalize after irrigating for two or three growing seasons. |
| 16 | SNGS, LLC would prepare a Bore Plan and Frac-Out Contingency Plan that would both reduce the potential for a frac-out to occur and minimize any negative impact should a frac-out occur. The plan will include specific measures for monitoring frac-out, containing drilling mud, and notifying agency personnel. The plan will be submitted to CPUC and agencies with jurisdiction prior to HDD activities. The contractor will be responsible for hauling and the disposal of all waste drilling fluid at an approved location. |

Note: * Design safety factor is a seismic design standard.

## B.8 References

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