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Facility Name: DOD - NORWALK DFSP-KINDER MORGAN

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June 26, 2020

Attention: Mr. Paul Cho Regional Water Quality Control Board Los Angeles Region 320 West 4th Street, Suite 200 Los Angeles, California 90013

Subject: Offsite South-Central Horizontal Biosparge and Soil Vapor Extraction Well Installation Completion Report, SFPP Norwalk Pump Station, 15306 Norwalk Boulevard, Norwalk, California

Dear Mr. Cho,

On behalf of SFPP, LP, an indirect subsidiary of Kinder Morgan, Inc. (Kinder Morgan), Jacobs has prepared this report detailing the drilling and installation of offsite south-central horizontal biosparge well BS-03 and soil vapor extraction (SVE) well HSVE-01 at the SFPP Norwalk Pump Station located at 15306 Norwalk Boulevard, Norwalk, California. Figure 1 shows the location of the project site, Figure 2 depicts the remediation system layout, and Figure 3 displays the location of the new wells.

This work was performed by Jacobs in accordance with the Work Plan for Drilling and Installation of a Stacked Horizontal Biosparge and Soil Vapor Extraction Remediation Well System in the Offsite South-Central Area of SFPP Norwalk Pump Station, Norwalk, California (Jacobs, 2019). In the work plan, Kinder Morgan proposed to install one biosparge well (BS-03) and one SVE well (HSVE-01) in the offsite south-central area. This work follows the successful installation of southeastern biosparge well BS-02 in 2017, as detailed in the Southeastern Horizontal Biosparge Well (BS-02) Completion Report, SFPP Norwalk Pump Station, 15306 Norwalk Boulevard, Norwalk, California (Jacobs, 2018) and successful operation of south-central horizontal biosparge well BS-01. Remediation wells BS-03 and HSVE-01 will remain inoperable pending connection to existing remediation equipment, likely to be completed in late-2020. System monitoring and data analysis will commence upon startup. After sufficient data have been collected, the data will be compiled into an evaluation report that will include tabulated summaries of biosparge and SVE system performance results (including a zone of influence [ZOI] evaluation), along with supporting groundwater data, soil vapor analytical data, and baseline natural source zone depletion (NSZD) rate evaluation data. The evaluation report will be submitted to the Regional Water Quality Control Board, Los Angeles Region (RWQCB) and Norwalk Tank Farm Restoration Advisory Board members for review.



Subject: Offsite South-Central Horizontal Biosparge and Soil Vapor Extraction Well Installation Completion Report, SFPP Norwalk Pump Station, 15306 Norwalk Boulevard, Norwalk, California

1. Background Information

This section presents a summary of background information including site description, hydrogeologic conditions, and references to documents in the administrative record that describe the existing remediation systems, effectiveness of the existing remediation systems, and selection of biosparge as an alternate interim remedy to the existing remediation systems.

1.1 Site Description

Kinder Morgan operates three active fuel pipelines along an approximately 20-foot-wide easement that traverses the southern boundary of the site. The site is partitioned into a 36-acre parcel to the west owned by the Defense Logistics Agency (DLA) Energy (formerly Defense Energy Support Center), and a 15-acre parcel to the east that is now owned by the City of Norwalk. The 36-acre parcel was formerly occupied by 12 aboveground fuel storage tanks and associated piping and facilities. The facility was decommissioned in 2001 and is no longer used to handle fuel. The aboveground tanks and the main infrastructure were demolished in 2011; demolition of the subsurface piping was completed in 2012. The 15-acre parcel is a vacant lot that the City of Norwalk plans to redevelop into a park, similar to adjacent Holifield Park.

Due to historical site operations, subsurface environmental assessments have been performed at the site since 1986. Groundwater monitoring and remediation wells have been installed at the site for monitoring and as components of groundwater remediation systems (Figure 2). The environmental assessments have evaluated and defined subsurface soil and groundwater within the uppermost groundwater zone that has been impacted by fuel-related hydrocarbons from historical releases from SFPP pipelines at the site. Separate-phase floating product, or light nonaqueous phase liquid (LNAPL), as well as sorbed-phase and dissolved-phase fuel hydrocarbons have been delineated in areas beneath the site and at offsite properties to the south, west, and east. The screened interval of BS-03 and HSVE-01 was placed below and above the LNAPL zone in the offsite south-central area.

Site assessments indicate that the chemicals of potential concern are total petroleum hydrocarbons (TPH), including TPH quantified as gasoline (TPH-g), diesel (TPH-d), and jet propulsion fuel grades 4, 5, and 8 (JP-4, JP-5, and JP-8); benzene, toluene, ethylbenzene, and total xylenes (BTEX); 1,2-dichloroethane (1,2-DCA); methyl tertiary butyl ether (MTBE); and tertiary butyl alcohol (TBA). A groundwater Monitoring and Reporting Program has been in effect at the site since 1995, and the current program is described in the *Revised Groundwater Sampling and Analysis Plan* (CH2M¹, 2013a).

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¹ Note: CH2M is now Jacobs. On December 15, 2017, CH2M HILL Companies Ltd., including CH2M HILL Engineers, Inc., became part of Jacobs. CH2M is now a wholly owned direct subsidiary of Jacobs.



Subject: Offsite South-Central Horizontal Biosparge and Soil Vapor Extraction Well Installation Completion Report, SFPP Norwalk Pump Station, 15306 Norwalk Boulevard, Norwalk, California

1.2 Hydrogeologic Conditions

The site is underlain by the following hydrogeologic units (from shallow to deep):

- Semiperched groundwater zone between depths of approximately 20 and 50 feet below ground surface (bgs). Groundwater flow within this uppermost zone is generally north to northwestward with a horizontal gradient of approximately 0.001 foot per foot (ft/ft).
- Bellflower aquitard of the Lakewood Formation between depths of approximately 50 and 80 feet bgs beneath the site. The Bellflower aquitard consists predominantly of clay, silty clay, and sandy clay with some interbedded sand with silt.
- Exposition aquifer between depths of approximately 80 and 220 feet bgs. The potentiometric surface in the Exposition aquifer is approximately 20 feet lower than that in the semiperched uppermost groundwater zone. This relatively consistent difference in hydraulic heads between the semiperched upper groundwater zone and the Exposition aquifer indicates that the Bellflower aquitard inhibits the vertical movement of groundwater in the site area. The horizontal hydraulic gradient in the Exposition aquifer beneath the site area has a magnitude of approximately 0.001 ft/ft and a generally southeastward direction.

Additional information about subsurface conditions is available in the report titled *Conceptual Site Model and Proposed Alternate Interim Remedy for Soil, Groundwater, and LNAPL* (CH2M, 2013b).

1.3 Overview of Existing Remediation Systems and Biosparge Technology

The following documents in the administrative record provide a description of the process and effectiveness of the existing remediation systems, and selection of biosparge as an alternate interim remedy to the existing remediation systems:

- CH2M. 2013c. Horizontal Biosparge System Construction and Pilot Test Work Plan, SFPP Norwalk Pump Station, 15306 Norwalk Boulevard, Norwalk, California. November 13.
- CH2M. 2017. Evaluation Report for the South-Central Area Horizontal Biosparge Pilot Test, SFPP Norwalk Pump Station, 15306 Norwalk Boulevard, Norwalk, California. August 3.
- Jacobs. 2018. Southeastern Horizontal Biosparge Well (BS-02) Completion Report SFPP Norwalk Pump Station, 15306 Norwalk Boulevard, Norwalk, California. July 12.
- Jacobs. 2019. Work Plan for Drilling and Installation of a Stacked Horizontal Biosparge and Soil Vapor Extraction Remediation Well System in the Offsite South-Central Area of SFPP Norwalk Pump Station, Norwalk, California. November 4.
- Jacobs. 2020. Fourth Quarter 2019 Remediation Progress Report, SFPP Norwalk Pump Station, 15306 Norwalk Boulevard, Norwalk, California. January 15.

2. Field Activities and Well Construction Summary

This section presents a synopsis of field activities and well construction details. Field activities were performed between November 2019 and January 2020.



Subject: Offsite South-Central Horizontal Biosparge and Soil Vapor Extraction Well Installation Completion Report, SFPP Norwalk Pump Station, 15306 Norwalk Boulevard, Norwalk, California

2.1 Preparatory Activities

The following tasks were completed prior to initiating drilling:

- Updated the existing site-specific health and safety plan to incorporate the planned fieldwork.
- Demarcated the proposed bore path of the biosparge and SVE well along the ground surface.
- Notified Underground Service Alert (USA). As required by USA, the borings were called-in and marked-out in white paint prior to mobilizing. The Dig Alert ticket numbers were A193310362 and B193180656.
- Obtained the required well permit from the Los Angeles County Department of Public Health (Attachment A).
- Registered biosparge well BS-03 as an injection well with the U.S. Environmental Protection Agency (EPA) (Attachment A).
- Performed an underground utility check using a private utility-locating subcontractor. Jacobs and the subcontractor met with Kinder Morgan operations staff, marked-out the boring locations, and cleared the boring locations of potential underground utilities and other infrastructure.
- To supplement the underground utility clearance, potholing using a hand auger was performed down to 10 feet bgs every 3 feet from the borehole entry point to approximately 50 feet downrange, for a total of 17 locations. The purpose of potholing along the bore path was to reconfirm that no shallow subsurface obstructions were present.
- Coordinated with Kinder Morgan personnel to arrange for a project inspector to be present while advancing the boreholes beneath the active product pipeline that is perpendicular to the borehole.
- In accordance with Kinder Morgan's Liquids O&M Procedure, Construction Near Company Facilities, Directional Drilling, Section 3.14, Part D (Kinder Morgan, 2017), prior to initiating directional drilling, another drilling contractor (Cascade Environmental) performed air-knife/hydro-knife excavation activities to expose buried Kinder Morgan assets and other buried utilities. In total, seven excavations were dug to the following dimensions:
 - Excavation 1 3 feet by 3 feet by 6 feet deep. Abandoned Kinder Morgan line, 10-inch diameter, 3.5 feet bgs (northernmost).
 - Excavation 2 7 feet by 4 feet by 6 feet deep. Abandoned Navy line, 10-inch diameter, 3.5 feet bgs.
 - **Excavation 3 2.5 feet by 2.5 feet by 4 feet deep.** Water line, 10-inch diameter, 2.5 feet bgs.
 - Excavation 4 7 feet by 7 feet by 10 feet deep. Kinder Morgan line, 24-inch diameter,
 5.0 feet bgs; and Kinder Morgan line, 36-inch diameter, 4.0 feet bgs.
 - Excavation 5 4 feet by 4 feet by 7 feet deep. Possible Kinder Morgan line, 10-inch diameter, 3.75 feet bgs.



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- Excavation 6 3 feet by 3 feet by 7.5 feet deep. Possible Kinder Morgan line, 16-inch diameter, 4.0 feet bgs.
- Excavation 7 3 feet by 4 feet by 7 feet deep. Kinder Morgan line, 16-inch diameter,
 3.5 feet bgs (southernmost).

2.2 Drill Rig Mobilization

The directional drilling subcontractor, Ellingson-DTD, mobilized an American Augers DD210 drill rig rated for 210,000 pounds thrust and 210,000 pounds pullback force, with approximately 60,000 foot-pounds of torque, to the site.

While in operation, the drill rig was supplied with circulated drilling mud from a MudTechnology Inc., MCT-800 mud system, which mixes and distributes the drill mud. This mud system includes multiple mud tanks, mixing jets, scalper screens/shakers, desilting and de-sanding hydrocyclones, pumps, and associated fluid conveyance lines. Saturated drill cuttings from the shakers were accumulated in 20-yard roll-off containers positioned adjacent to the mud system. Photographs of the drill rig and mud system are provided in Attachment B (Photographs 1 and 2).

2.3 Borehole Navigation

Ellingson-DTD used a gyroscopic steering tool, supplied and operated by Sharewell, Inc. (Sharewell), to determine the precise location of the drill bit during borehole advancement. The navigation system, located just behind the drill-collar, allowed for real-time monitoring of the advancing drill-head without need for a wire surface grid. Continuous communication between the driller and the Sharewell technician enabled precise navigation within (+/-) 1 foot vertically and 3 feet horizontally. Sharewell survey results, including plan and profile views of the bore paths/wells and navigation data collected from each drill rod, are provided in Attachment C.

2.4 Drilling and Well Construction

The drill bit diameter used to advance boreholes at BS-03 and HSVE-01 was 10.25 inches. The borehole diameter ranged from 100 to 125 percent of the drill bit size, due to asymmetrical enlargement of the horizontal borehole by gravitational effects during drilling. A photograph of the drill bit is provided as Photograph 3 in Attachment B. Biodegradable guar-based drilling fluid (Baroid BioBore biodegradable biopolymer) was used to facilitate advancement of the drill bit and circulation of the drill cuttings from the borehole.

The entry points for BS-03 and HSVE-01 are located along the access road immediately southeast of the former truck fill stand. BS-03 was drilled to a distance of 769.54 lateral feet bgs with a surficial bore path extending 755.25 feet from the entry point and having a total depth of 45 feet bgs. HSVE-01 was drilled to a distance of 741.42 lateral feet bgs with a surficial bore path extending 755.08 feet from the entry point and having a total depth of 19 feet bgs. Both borings are blind holes, meaning single-entry completion. Soil cutting returns at the drilling rig mud system were logged by a Jacobs geologist for color, grain size, odor, and other pertinent soil characteristics. Soil also was screened in the field using a photoionization detector for the potential presence of volatile organic compounds. A copy of the boring logs are provided in Attachment D.



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Once the borehole for BS-03 was completed, all rods were removed from the boring, the drill bit and navigation system housing (containing the gyroscopic steering tool) were removed, and the drill rods with an open "blunt nose" fitting at the distal end were returned to "chase" the boring and prepare for well installation. Drilling fluid was pumped continuously during this process to keep the borehole open and drill rods clear. Upon achieving the target distance, the drill rig mast/carrier was used to gradually push the polyvinyl chloride (PVC) well materials into place in 10-foot (flush-threaded) sections. A total of 270 feet of Schedule 80 PVC riser pipe (blank casing) were installed from the entry point to the beginning of the screened interval, with 500 feet of Schedule 80 PVC slotted pipe ("screen") from 270 to 770 feet. Photograph 4 in Attachment B shows project staff inspecting the well materials prior to installation. The screen has a maximum slot width of 0.010 inch, a slot length of 1.5 inches, and 4 rows at 20 slots per foot (4 rows x 5 slots per row; approximately 0.27 percent open area). A filter pack was not installed for this well because it is not necessary for a horizontal well of this configuration. The well construction diagram for BS-03 is included in Attachment E.

Similarly, once the borehole for HSVE-01 was completed, all rods and tooling were "tripped out" of the bore. However, immediately following drill rod removal, the 6-inch-diameter Schedule 10 stainless-steel casing was pushed downhole without the aid of the conductor casing/guide rod. A total of 241 feet of Schedule 10 stainless-steel riser pipe (blank casing) was installed from the entry point to the beginning of the screened interval, with 500 feet of 6-inch-diameter Schedule 10 stainless-steel casing (screen) from 241 to 741 feet. Photograph 5 in Attachment B shows project staff inspecting the well materials prior to installation. The screen has 1.5-inch-long slots, with a maximum width of 0.020 inch. The open area in well HSVE-01 increases with successive zones. starting at the proximal end of the screen. The first zone (Zone 1) spans the screen section from 0 to 150 feet from the proximal end of the screen and has an open area of 0.717 percent. Zone 2 spans the screen section from 150 to 350 feet, measured from the proximal end of the screen, and has an open area of 0.739 percent. Zone 3 extends to the distal end of the screen, spanning from 350 to 500 feet from the proximal end, and has an open area of 0.762 percent. Slot length and width were gauged and confirmed in the field by Jacobs field staff. A filter pack was not installed for this well because it is not necessary for a horizontal well of this configuration. The well construction diagram is included in Attachment E.

2.4.1 Well Development

Well development was conducted to ensure effective communication between the wells and the surrounding geologic formation. A combination of flushing and jetting with a mixture of water and drill-fluid-breaking enzyme (added at approximately 2 pints per 2,000 gallons of water) was employed to clear the screened interval of both wells during development. The total development water discharged after flushing and jetting was approximately 7,880 gallons at BS-03 and 5,870 gallons at HSVE-01, with a total of six and eight jetting passes through the screened intervals of BS-03 and HSVE-01, respectively. Approximately 13,750 gallons of development fluid (development water and drilling mud) was discharged and containerized during the development event. Field water quality parameters (pH, temperature, conductivity, turbidity, sand and mud content) were collected during development activities and are included in the well development logs (Attachment F).



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2.4.2 Well Grouting

Installation of well seals at BS-03 and HSVE-01 was completed following well development. A grout plug was emplaced in each well by pumping approximately 300 gallons of thick cement-bentonite through a tremie to approximate depths of 20 feet bgs (about 70 feet measured laterally) at BS-03 and 15 feet bgs (about 100 feet measured laterally) at HSVE-01. The grout plug settled for several hours followed by emplacement of approximately 250 gallons and 130 gallons of cement-bentonite grout at BS-03 and HSVE-01, respectively. Grouting was continued until grout material was visible at the borehole entry point. In total, 550 gallons and 430 gallons of cement-bentonite grout was emplaced at BS-03 and HSVE-01, respectively.

2.4.3 Wellhead Completion

A cleanout port was installed at the proximal end of wells BS-03 and HSVE-01 in a steel frame access manway (one manway for both wellheads), with dimensions of approximately 36 inches by 60 inches, with a spring-assist H-20 rated cover. The termination of the biosparge well includes one 4-inch-diameter Schedule 80 PVC "Y" pipe. The termination of the SVE well includes one 6-inch-diameter stainless steel "Y" pipe. For both biosparge and SVE wells, the straight end of the "Y" terminates inside the vault with a 4-inch and 6-inch National Pipe Tapered (NPT) thread plug (PVC and stainless steel, respectively). For each well, the 45-degree elbow of the "Y" connects to 3-inch and 6-inch high-density polyethylene (HDPE) transition fittings and HDPE conveyance pipe that stub outside of the vault at approximately 3 feet below grade, for future connection to remediation systems. The stubs are covered with slip caps (secured with duct tape) and the location is delineated at the surface. The manways are set in a concrete pad that measures approximately 18 inches wide on all sides of the vault and is 6 inches thick. Figure 4 provides a conceptual well completion diagram. Photographs of the well vaults are provided as Photographs 8 and 9 in Attachment B.

2.4.4 Site Restoration Activities

Following well installation activities, the seven excavations dug to expose buried pipelines and other utilities were restored to match pre-construction conditions. Excavations were backfilled to approximately 4 inches below grade using zero-sack slurry (i.e., flowable fill) and capped with approximately 4 inches of asphaltic concrete to match the surrounding grade. In total, approximately 12 cubic yards of zero-sack slurry and 4 tons of asphaltic concrete were emplaced to backfill and cap the excavations.

3. Waste Management

Waste generated during field activities included soil cuttings, drilling fluids, decontamination water, purged groundwater, disposable sampling supplies, disposable personal protective equipment, and general refuse, including construction debris. Soil cuttings and drilling fluids were containerized in eight 20-cubic-yard roll-off bins, with secondary containment. Rinse water and purged groundwater were containerized in two 6,000-gallon polyethylene holding tanks and one Adler tank, with secondary containment. Discarded personal protective equipment and general refuse were containerized in one 20-yard roll-off bin. Following analytical results for waste characterization,



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drilling fluids were solidified in-place and roll-off bins holding solid waste (drill cuttings) and solidified mud were removed from the site by Kinder Morgan's waste hauling contractor (Patriot Environmental Services [Patriot]).

The following sections summarize liquid and solid waste removed from the site during the investigation.

3.1 Liquids

- Liquid waste (development and decontamination fluid) samples were collected for profiling purposes on February 11, 2020, by Patriot.
- Nonhazardous waste liquids (BS-03 and HSVE-01 decontamination water and well development water) were removed from the site on February 26, 2020, by Patriot and transported to Patriot Waste Water at 314 West Freedom Avenue, Orange, California.

3.2 Solids

- Solid waste (drill cuttings) and drill mud samples (prior to solidification) were collected for profiling purposes on December 11, 2019.
- Nonhazardous waste solids (drill cuttings from potholing, pipeline excavations, and borehole drilling) were removed from the site on February 06, 2020, by Patriot and transported to Soil Safe of California, Inc., at 12328 Hibiscus Avenue, Adelanto, California.
- Nonhazardous waste solids (solidified drill mud from BS-03 and HSVE-01) were removed by Patriot and transported to Patriot Waste Water at 314 West Freedom Avenue, Orange, California.
- General refuse, such as disposable sampling supplies and spent personal protective equipment, were containerized in a separate dumpster and hauled offsite by Patriot for disposal as municipal trash at the end of the project.

Copies of the waste manifests are provided in Attachment G.

4. System Startup Schedule

This section provides a high-level summary of the methods and processes that will be followed during system startup, short- and long-term monitoring, data evaluation, and reporting. A work plan addendum will be submitted prior to system startup that expands on this summary and provides a detailed description of the work that will occur prior to, during, and after startup.

4.1 System Startup

Biosparging at BS-03 will not be initiated until the capture zone study of HSVE-01 is completed to confirm sufficient management of potential vapor migration from BS-03 sparging activities. Following the capture zone study, BS-03 startup will be initiated at a flow rate of approximately 0.1 cubic foot per minute (cfm) per foot of screen interval (cfm/ft), and will be increased gradually in steps over a period of approximately 3 to 5 days to a target flow rate of 0.8 cfm/ft. The lateral extent of the ZOI in the saturated zone will be evaluated, and the SVE vacuum capture zone will be



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reassessed, based on field measurements at nearby groundwater monitoring wells and soil vapor monitoring probes.

The baseline flow rate for HSVE-01 will be 1 cfm/ft or 500 cfm and will be increased gradually to a maximum of 1.8 cfm/ft, depending on vacuum and water table elevation measurements in surrounding soil vapor monitoring probes and groundwater monitoring wells.

Monitoring and evaluation of the new system will be conducted in three phases:

- Phase 1: Baseline Sampling
- Phase 2: Short-Term ZOI Evaluation and Soil Vapor Monitoring
- Phase 3: Long-Term Monitoring

4.1.1 Phase 1: Baseline Sampling

Prior to BS-03 and HSVE-01 system startup, a baseline set of groundwater and soil vapor samples will be collected from selected wells during the normal operation of the total fluids extraction and SVE systems. Groundwater samples will be analyzed for volatile organic compounds (VOCs) including fuel oxygenates using EPA Method 8260B, TPH-g and TPH-d using EPA Method 8015M, and field water quality parameters (pH, dissolved oxygen, oxidation-reduction potential, temperature, and conductivity). Soil vapor samples will be analyzed for VOCs using EPA Method TO-15, TPH-g using EPA Method TO-3, and fixed gases (oxygen, carbon dioxide, and methane) using ASTM International (ASTM) D1946.

4.1.2 Phase 2: Short-Term ZOI Evaluation and Soil Vapor Monitoring (Week 1)

The ZOI evaluation will be conducted after the 3-day startup period and will require approximately 2 days to complete. The lateral and vertical extent of the ZOI will be based on the following observations and/or field analytical data from nearby groundwater monitoring wells and/or soil vapor monitoring probes: (1) changes in dissolved oxygen concentrations; (2) vadose zone pressure; (3) changes in water level; and (4) changes in vadose zone VOCs, oxygen, and carbon dioxide vapor concentrations.

4.1.3 Phase 3: Long-Term Monitoring

Groundwater

After the first week of operation, the groundwater wells will be monitored quarterly for a period of 1 year. After 1 year of quarterly sampling, these wells will be sampled on a semiannual basis under the routine groundwater Monitoring and Reporting Program for the site. Groundwater samples will be analyzed for VOCs including fuel oxygenates using EPA Method 8260B, and TPH-g and TPH-d using EPA Method 8015M. Additional wells may be added to this list in a work plan addendum.

Soil Vapor

After the first week of operation, the nested soil vapor monitoring probes will be monitored for VOCs, oxygen, and carbon dioxide with a 5-gas meter as follows: weekly during the first month, monthly for the next 6 months, and on a quarterly basis thereafter. Concurrently, vadose zone pressure will be measured using a digital manometer.



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Soil vapor samples will be collected quarterly from the same set of soil vapor monitoring probes for a period of 1 year to evaluate subsurface soil vapor concentrations near the site boundary. After 1 year of quarterly sampling, these soil vapor monitoring probes will be sampled on a semiannual basis. Soil vapor samples will be analyzed for VOCs using EPA Method TO-15, TPH-g using EPA Method TO-3, and fixed gases (carbon dioxide, oxygen, and methane) using ASTM D1946. Additional probes may be added to this list in a work plan addendum.

5. References

CH2M HILL (CH2M). 2013a. Revised Groundwater Sampling and Analysis Plan, SFPP Norwalk Pump Station, 15306 Norwalk Boulevard, Norwalk, California. May 30.

CH2M HILL (CH2M). 2013b. Conceptual Site Model and Proposed Alternate Interim Remedy for Soil, Groundwater, and LNAPL, Defense Fuel Support Point, 15306 Norwalk Boulevard, Norwalk, California. September 3.

CH2M HILL (CH2M). 2013c. Horizontal Biosparge System Construction and Pilot Test Work Plan, SFPP Norwalk Pump Station, 15306 Norwalk Boulevard, Norwalk, California. November 13.

CH2M HILL (CH2M). 2017. Evaluation Report for the South-Central Area Horizontal Biosparge Pilot Test, SFPP Norwalk Pump Station, 15306 Norwalk Boulevard, Norwalk, California. August 3.

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Jacobs. 2018. Southeastern Horizontal Biosparge Well (BS-02) Completion Report SFPP Norwalk Pump Station, 15306 Norwalk Boulevard, Norwalk, California. July 12.

Jacobs. 2019. Work Plan for Drilling and Installation of a Stacked Horizontal Biosparge and Soil Vapor Extraction Remediation Well System in the Offsite South-Central Area of SFPP Norwalk Pump Station, Norwalk, California. November 4.

Jacobs. 2020. Fourth Quarter 2019 Remediation Progress Report, SFPP Norwalk Pump Station, 15306 Norwalk Boulevard, Norwalk, California. January 15.

Jacobs

June 26, 2020

Subject: Offsite South-Central Horizontal Biosparge and Soil Vapor Extraction Well Installation Completion Report, SFPP Norwalk Pump Station, 15306 Norwalk Boulevard, Norwalk, California

If you have any questions regarding this investigation, please contact Eric Davis/Jacobs at (404) 323-1600, or Mr. Ryan Koch, Kinder Morgan's Remediation Project Manager, at (713) 420-6730.

Regards

Eric Davis

Senior Project Manager

Six Dan

Malcolm Thomas, M.Sc., P.G.

Project Geologist

California Professional Geologist, No. 9825

Copies to: Ryan Koch, Kinder Morgan, Inc.

Norwalk Tank Farm Restoration Advisory Board Reference Librarian, Norwalk Public Library

Attachments:

Figure 1 - Site Location Map

Figure 2 – Remediation System Layout

Figure 3 – Offsite South-Central Area Biosparge Well Location Map

Figure 4 – Conceptual Horizontal Biosparge Well Completion Diagram

Attachment A – Los Angeles County Department of Public Health Well Permit and EPA Injection Well Registration

Attachment B – Photographic Documentation

Attachment C - Ellingson-DTD Data Report

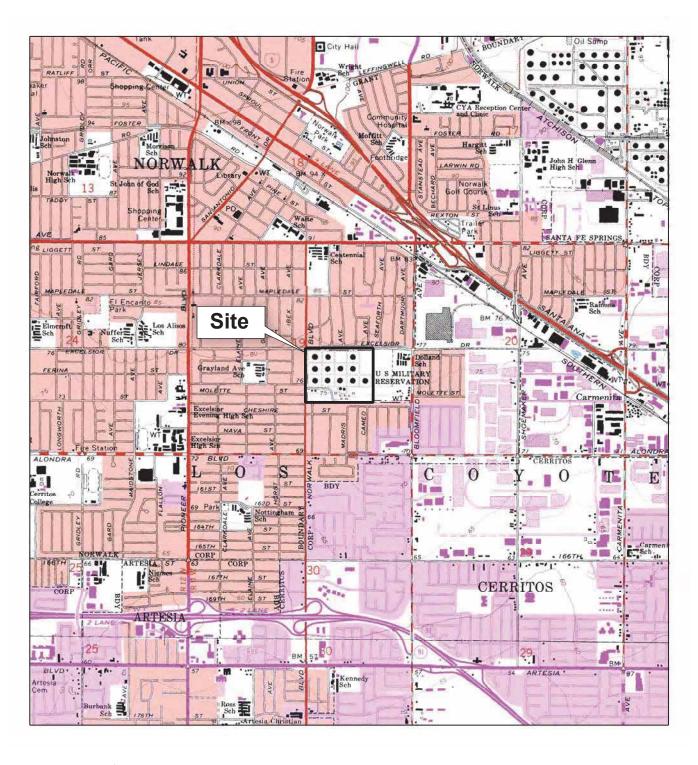
Attachment D - Well Boring Logs

Attachment E – Well Construction Diagrams

Attachment F – Well Development Logs

Attachment G - Waste Manifests

Figures



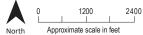
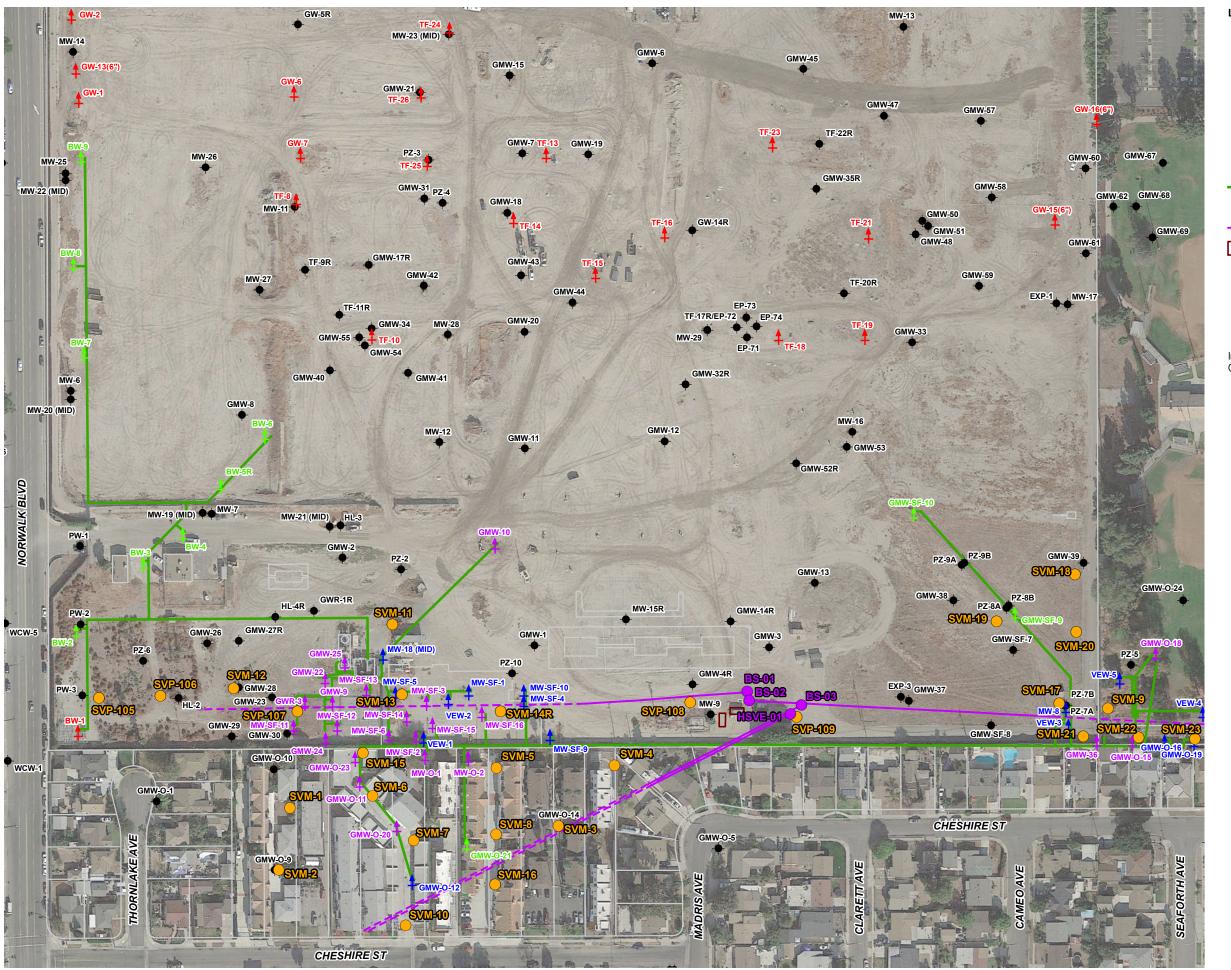


Figure 1. Site Location Map SFPP Norwalk Pump Station Norwalk, California

BASEMAP MODIFIED FROM U.S.G.S. 7.5 MINUTE QUADRANGLE MAP LOS ALAMITOS 1964, CALIFORNIA. PHOTO-REVISED 1981. WHITTIER 1965, CALIFORNIA. PHOTO-REVISED 1981.





LEGEND

- Soil Vapor Probe/Soil Vapor Monitoring Probe
 Horizontal Biosparge Well Entry Point
 Existing Groundwater Monitoring Well
- Existing Remediation Well
- Kinder Morgan Combined Soil Vapor and Total Fluids Extraction Wells
- Kinder Morgan Soil Vapor Extraction Wells
- Kinder Morgan Total Fluids and/or Groundwater Extraction Wells
- Kinder Morgan Remediation Piping Layout (Above Ground and Below Ground)
- Horizontal Biosparge Well
 (Dashed Line Depicts Approximate
 Lateral Extent of Well Screen)
- Air Compressor System

Imagery Source: Google Earth December 3, 2017.

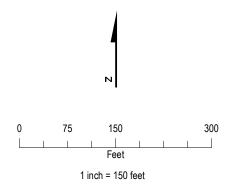
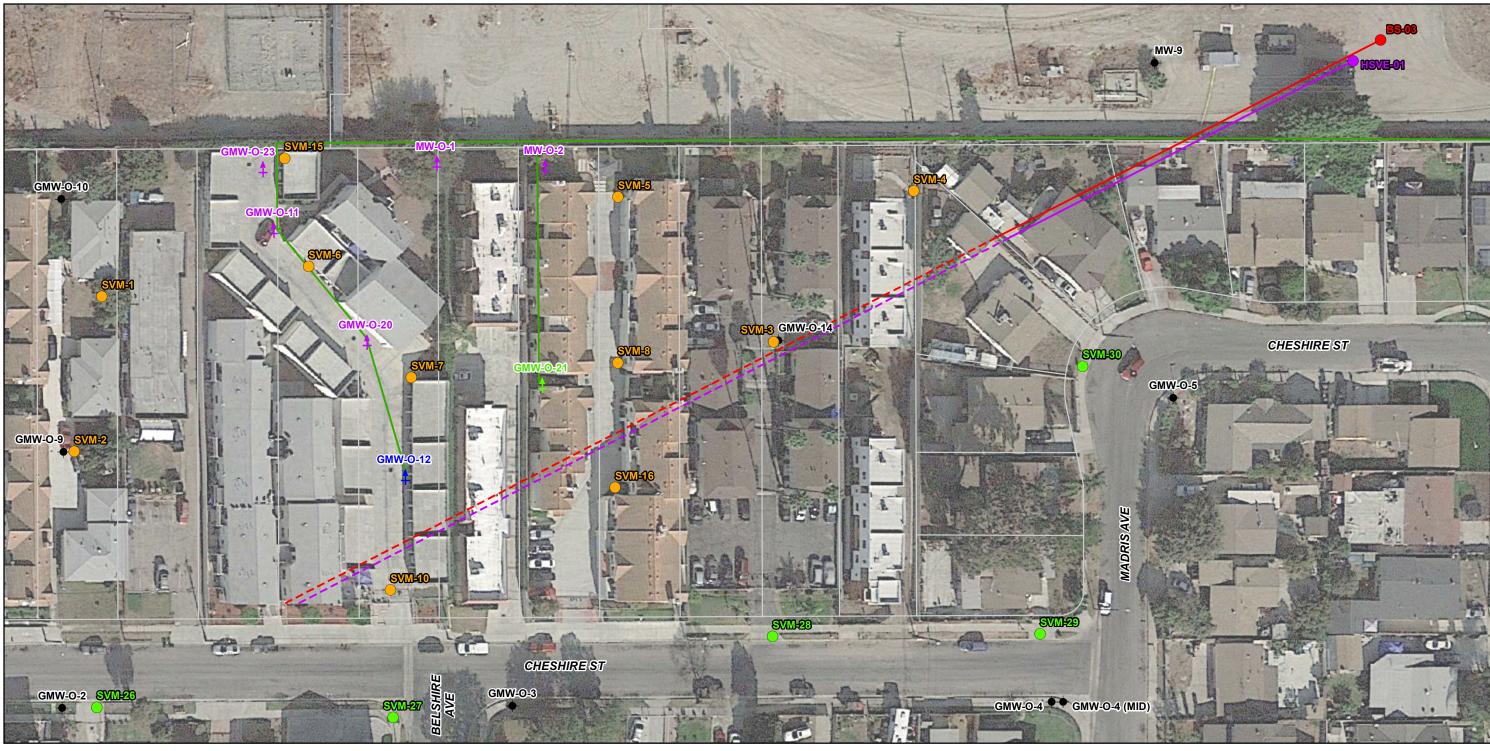


Figure 2. Remediation System Layout SFPP Norwalk Pump Station Norwalk, California





LEGEND

Proposed Soil Vapor Monitoring Probe Location

BS-03 (500-foot Screen, 270-foot Blank Casing)
HSVE-01 (500-foot Screen, 241-foot Blank Casing)

Soil Vapor Probe/Soil Vapor Monitoring Probe

Existing Groundwater Monitoring Well
Existing Kinder Morgan Combined Soil Vapor
and Total Fluids Extraction Wells

Existing Kinder Morgan Soil Vapor Extraction Wells
Existing Kinder Morgan Total Fluids and/or

Groundwater Extraction Wells

Existing Kinder Morgan Remediation Piping Layout (Above Ground and Below Ground)

New Remediation Well (BS-03) New Remediation Well (HSVE-01)

> Imagery Source: Google Earth December 3, 2017.

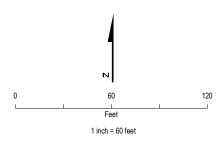
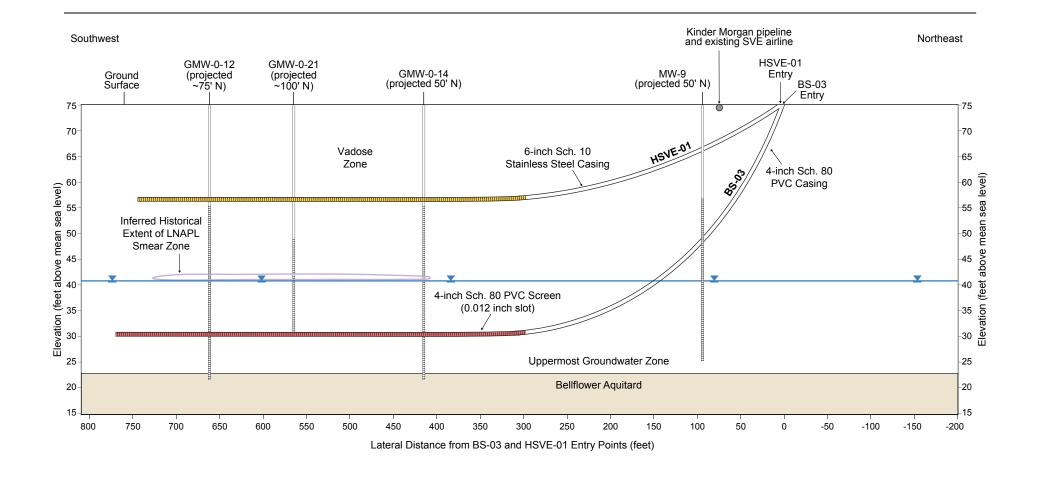


Figure 3. Offsite South Central Area Biosparge Well Location Map SFPP Norwalk Pump Station Norwalk, California





LEGEND

Monitoring or TFE/SVE Well Screen

Horizontal Biosparge Well Screen

Horizontal Soil Vapor Extraction Well Screen

Average 2Q19 GWE for GMW-O-12, GMW-O-14, GMW-O-21 and MW-9

Kinder Morgan Pipeline and Existing Remediation System Piping

Note: HSV-01 boring path will reside approximately 10 feet north of the BS-03 boring path

Figure 4.Conceptual Horizontal Biosparge and Soil Vapor Extraction Well Completion Diagram

SFPP Norwalk Pump Station Norwalk, California



Attachment A Los Angeles County Department of Public Health Well Permit and EPA Injection Well Registration



ENVIRONMENTAL HEALTH



DATE: November 22, 2019

Drinking Water Program

5050 Commerce Drive, Baldwin Park, CA 91706

Telephone: (626) 430-5420 • Facsimile: (626) 813-3013 • Email: waterquality@ph.lacounty.gov

http://publichealth.lacounty.gov/eh/ep/dw/dw_main.htm

SR0204789 15306 Norwalk Boulevard, Norwalk, CA 90650 Work Plan Approval

WORK SITE ADDRESS	CITY	ZIP	EMAIL ADDRESS FOR WELL PERMIT APPROVAL
15306 Norwalk Boulevard	Norwalk	90650	eric.davis@jacobs.com

NOTICE

- WORK PLAN APPROVALS ARE VALID FOR 180 DAYS. 30 DAY EXTENSIONS OF WORK PLAN APPROVALS ARE CONSIDERED ON AN INDIVIDUAL (CASE-BY-CASE) BASIS AND MAY BE SUBJECT TO ADDITIONAL PLAN REVIEW FEES (HOURLY RATE AS APPLICABLE).
- WORK PLAN MODIFICATIONS MAY BE REQUIRED IF WELL AND GEOLOGIC CONDITIONS ENCOUNTERED AT THE SITE INSPECTION ARE FOUND TO DIFFER
 FROM THE SCOPE OF WORK PRESENTED TO THE DEPARTMENT OF PUBLIC HEALTH—DRINKING WATER PROGRAM.
- WORK PLAN APPROVALS ARE LIMITED TO COMPLIANCE WITH THE CALIFORNIA WELL STANDARDS AND THE LOS ANGELES COUNTY CODE AND DOES NOT
 GRANT ANY RIGHTS TO CONSTRUCT, RENOVATE, OR DECOMMISSION ANY WELL. THE APPLICANT IS RESPONSIBLE FOR SECURING ALL OTHER
 NECESSARY PERMITS SUCH AS WATER RIGHTS, PROPERTY RIGHTS, COASTAL COMMISSION APPROVALS, USE COVENANTS, ENCROACHMENT
 PERMISSIONS, UTILITY LINE SETBACKS, CITY/COUNTY PUBLIC WORKS RIGHTS OF WAY, ETC.
- THIS PERMIT IS NOT COMPLETE UNTIL ALL OF THE FOLLOWING REQUIREMENTS ARE SIGNED BY THE DEPUTY HEALTH OFFICER. WORK SHALL NOT BE
 INITIATED WITHOUT A WORK PLAN APPROVAL STAMPED BY THE DEPARTMENT OF PUBLIC HEALTH—DRINKING WATER PROGRAM.
- ONCE APPROVED NOTIFY INSPECTOR AT ytaye@ph.lacounty.gov PREFERABLY 3 BUSINESS DAYS BEFORE WORK IS SCHEDULED TO BEGIN.

TO BE COMPLETED BY DEPARTMENT OF PUBLIC HEALTH—DRINKING WATER PROGRAM:

WORK PLAN APPROVED (1 Air Sparge well construction)

, . .

ADDITIONAL APPROVAL CONDITIONS:

- Work plan approval is issued for scope of work submitted to the Drinking Water Program. Any modifications to the scope of work will require additional work plan review.
- Ensure to backfill using a tremie pipe or equivalent, proceeding upward from the bottom of the boring.
- The construction of wells must comply with all applicable requirements published in the California Well Standards (Bulletins 74-81 and 74-90), Los Angeles County Code and all other applicable laws.
- Submit well completion report/log to vtaye@ph.lacounty.gov within 30 days from the date its construction is completed.
- Drillers shall submit their well completion reports to the Department of Water Resources through the Online System of Well Completion Reports (OSWCR) at https://civicnet.resources.ca.gov/DWR_WELLS.



ANNULAR SEAL FINAL INSPECTION REQUIRED	₩ELL COMPLETION LOG REQUIRED		
DATE ACCEPTED: REHS signature	DATE ACCEPTED: REHS signature		
□ WATER QUALITY—BACTERIOLOGICAL STANDARDS REQUIRED	□ WATER QUALITY—CHEMICAL STANDARDS REQUIRED		
DATE ACCEPTED: REHS signature	DATE ACCEPTED: REHS signature		
□ WATER SUPPLY YIELD REQUIRED	□ OTHER REQUIREMENT		
DATE ACCEPTED: REHS signature	DATE ACCEPTED: REHS signature		



An official website of the United States government.



Close >

We've made some changes to EPA.gov. If the information you are looking for is not here, you may be able to find it on the EPA Web Archive or the January 19, 2017 Web Snapshot.



Underground Injection Well Registration for the Pacific Southwest (Region 9)

Underground Injection Control in Region 9

<u>General inquiries</u> or send email to <u>R9iWells@epa.gov</u> Be sure to include your e-mail address if you'd like a response.

Register any class of injection well using the inventory form below.

How to Register Injection Wells

Common Questions

Injection Well Inventory Form

Transaction Type (choose one): First time entry Change	
Facility Information	
Facility Name: (Required)	
SFPP Norwalk Pump Station	
This is a private residence true false	
Street: 15306 Norwalk Boulevard	
Street 2:	
City: (Required) Norwalk	

State: (Red	quired)	CA	
Zip: (Requ	uired)	90650	
Facility Pl	none:	714-560-4	4802
F	acility L	ocation	
County	CA-Lo	os Angeles	
Land ID: RCRA ID	, APN, o	r TMK or l	eave blank
8082-013	3-905		
Private Govern Govern	e nment-lo nment-fe nment-tr	ocal, state	f the property: (Required)
If Tribal so	elect Tri	be name:	- None -
NAICS Co		ase. For inc	dustry/business, find NAICS code at www.census.gov
486910			
Latitude Latitudes i		can Samoa	should be entered as <i>negative</i> numbers. Free lat/long finder is
33.89158	804		$^{\circ}{ m N}$

Longitude
Enter positive numbers for degrees longitude east or negative numbers for longitude west, in

Enter positive numbers for degrees longitude east or negative numbers for longitude west, in this field.

-118.0692023

Longitude (W or E)

Specify "W" for longitudes in the U.S., or "E" for longitudes in Guam & the Northern Mariana Islands.

W

Legal Contact In	form	ation: Owner or Other Responsible Party	
Owner Contact Name:		Alan Van Antwerp	
Email: (Required)	Alan_Vanantwerp@kindermorgan.com		

Organizat Kinder I	` .	nergy Partners, L.P.			
Street:	9950 San Diego Mission Road				
Street 2:					
City: (Red	quired)	San Diego			
State:	CA		_		
Zip: (Req	uired)	92108			
If you work back butto 3 Number of the planner of	f identica rating Sta ed/under eve/not plued and ap ed and ab & Abando have bee	proved by regulator andoned without approval ned? In plugged and abandoned enter the <i>numer</i>			
< 50 50 - 50 > 500 Injection 1 Dispo Energ Hydra Oil or	below group 00 Purpose sal y productulic barri mineral	ound surface) ion er			

Underground Injection Well Registration for the Pacific Southwest (Region 9) | Protectin... Page 4 of 5 Irrigation runoff Non-contact cooling water Brine Combined industrial/sanitary Disinfected Tertiary Effluent (CA Title 22) Geothermal fluids Industrial Non-hazardous (describe in comments) Mine lixiviant Potable water Remedial fluids/air Septic tank effluent Untreated sewage Dispersal Direction Select the predominant plumbing orientation of the injection well(s): horizontal such as a leachfield; vertical such as a drywell or seepage pit horizontal vertical **Injectate Sources** Please select one. From this site only This site and others Comments Please list any local or state permits that authorize, monitor, or otherwise affect the reported injection well(s). If this site is subject to any relevant local or state permits, or if you have any operational considerations for the injection well(s) that you would like to note, please list them here. Pending well permit from the LA County of Public Health. Operation of BS-03 is under regulatory oversight of the Regional Water Quality Control Board, Los Angeles Region. Paul Cho is the case manager. BS-03 will be used to inject air into the groundwater at the southeast area of the site for LNAPL removal and remediation of dissolved petroleum hydrocarbons Your Name If you are NOT the owner listed above, please enter your name here. Malcolm Thomas Your Email (Required) malcolm.thomas@jacobs.com

Your Organization

Your organization if other than the contact above.

Jacobs Engineering Group, Inc.

Submit Registration

Davis, Eric/LAC

From: drupal_admin@epa.gov on behalf of US EPA: Injection Well Registration <no-reply@epa.gov>

Sent: Friday, November 15, 2019 7:25 AM

To: Thomas, Malcolm/SCO

Subject: [EXTERNAL] Injection Wells Registration: Confirming your submission

Thank you for using the online injection well registration form. Below is a copy of the preliminary data you submitted. This is the first step in registering your well. When this information is evaluated and entered into the EPA database you will receive a second notice for confirmation of well(s) registration.

Warning: Please print or save this email for your records. It may take up to 2 weeks for EPA to process your inventory data and respond. If you do not hear from us within two weeks, please contact Leslie Greenberg (greenberg.leslie@epa.gov)

Submitted on Friday, November 15, 2019 - 10:25

Your submitted information:

This is a private residence: false Street: 15306 Norwalk Boulevard

Street 2: City: Norwalk State: CA Zip: 90650

Facility Phone: 714-560-4802

==----- Facility Location ----=

County: CA-Los Angeles Land ID: 8082-013-905

Indicate the land ownership of the property: Government-federal

If Tribal select Tribe name: NAICS Code: 486,910 Latitude: 33.891580°N Longitude: -118.069202 Longitude (W or E): W

==---- Legal Contact Information: Owner or Other Responsible Party ----=

Owner Contact Name: Alan Van Antwerp Email: Alan_Vanantwerp@kindermorgan.com Organization: Kinder Morgan Energy Partners, L.P.

Street: 9950 San Diego Mission Road

Street 2:

City: San Diego State: CA Zip: 92108

==----- Well Details ----=

Total number of injection wells at this site: 3 Number of identical wells reported below: 1 Well Operating Status of your well(s): Active

Plugged & Abandoned? Injection Well Depth: < 50 Injection Purpose: Remediation Injectate: Remedial fluids/air Dispersal Direction: horizontal

Injectate Sources: From this site only

Comments: Pending well permit from the LA County of Public Health. Operation of BS-03 is under regulatory oversight of the Regional Water Quality Control Board, Los Angeles Region. Paul Cho is the case manager. BS-03 will be used to inject air into the groundwater at the southeast area of the site for LNAPL removal and remediation of dissolved petroleum hydrocarbons Your Name: Malcolm Thomas Your Email: malcolm.thomas@jacobs.com Your Organization: Jacobs Engineering Group, Inc.

Best regards, U.S. EPA, Pacific Southwest Region Leslie Greenberg (greenberg.leslie@epa.gov)

Attachment B Photographic Documentation



Attachment B. Photographic Documentation, Horizontal Biosparge and Soil Vapor Extraction Well Installation

Photograph 1: View of drill rig (American Augers DD210), looking east.

Photograph 2: View of mud system (MCT800), looking south.

Photograph 3: View of 10-1/4-inch cobble bit.

Photograph 4: View of BS-03 well casing, looking southwest.

Photograph 5: View of HSVE-01 well casing, looking north.

Photograph 6: View of daylit Kinder Morgan pipelines, looking south.

Photograph 7: View of HSVE-01 boring progression, looking east/northeast.

Photograph 8: View of BS-03 well vault installation and stub-out, looking west.

Photograph 9: View of HSVE-01 well vault installation and stub-out, looking west.

Photograph 10: View of HSVE-01 and BS-03 vault completions, looking east.



Photograph 1: View of drill rig (American Augers DD210), looking east.





Photograph 2: View of mud system (MCT800), looking south.







Photograph 4: View of 4-inch-diameter PVC well screen and blank casing for BS-03, looking southwest.





Photograph 5: View of 6-inch-diameter blank and slotted stainless-steel casing for HSVE-01, looking north.



Photograph 6: Daylit, southernmost, active 16-inch Kinder Morgan pipeline (top in blue) and unknown line (bottom in yellow). Coating of 16-inch pipeline repaired (blue). Top of active pipeline 3.5 feet below ground surface. Depicted excavation extends 7 feet deep and 4 feet by 4 feet in length, looking south.



Photograph 7: View of HSVE-01 boring progression, looking east/northeast.



Photograph 8: View of BS-03 well vault installation and stub-out, looking west.





Photograph 9: View of HSVE-01 well vault installation and stub-out, looking west.

FES0618201344SCO 10



Photograph 10: View of HSVE-01 (front) and BS-03 (back) vault completions, looking east.

FES0618201344SCO 11

Attachment C Ellingson-DTD Data Report

TrueGyde Steer: Directional Data Report

Job Name Service Company Location

19-404 B SHAREWELL HDD Norwalk, CA

Line Az 242.8° Ellingson DTD Customer

Description

Product Size/Type

6" Stainless Probe S/N Survey MD CL Elev Raw Az **Pilot Rad** Reamed Rad DLS Min Annu Max Annu DS Away Lateral Incl Plg Az 75.00 242.60 0.00 N/A 15.74 -2.8576.70 242.60 N/A N/A N/A 0.0 0.0 72.88 1 15.20 15.20 30.45 -2.9375.90 242.60 242.40 N/A N/A N/A N/A 2 47.15 31.95 61.63 -2.6665.94 79.00 242.60 244.20 N/A N/A N/A N/A 3 78.85 31.70 92.93 -1.84 61.04 83.20 242.60 244.43 551 658 10.40 N/A 4 110.85 32.00 124.77 -1.79 57.88 85.48 242.80 241.35 572 646 10.02 N/A 5 142.15 -2.56 56.30 88.74 241.30 241.48 10.25 N/A 31.30 156.02 559 630 6 173.39 31.24 187.23 -3.7856.09 90.50 241.48 239.66 742 875 7.72 N/A 7 205.29 31.90 219.10 -5.15 56.23 89.97 241.30 241.01 1205 1602 4.75 N/A

TrueGyde Steer: Directional Data Report

Job Name Service Company 19-404 Sharewell HDD

Line Az 2
Customer E
Description

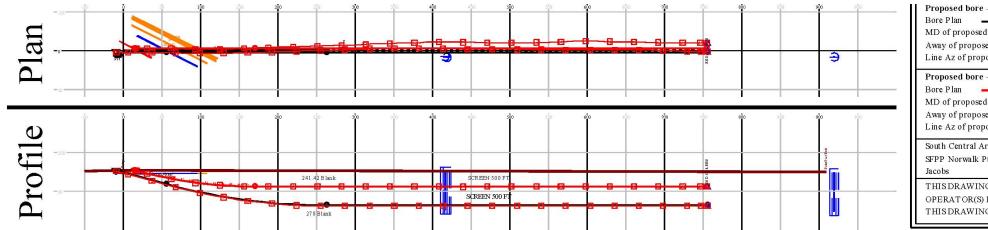
242.8° Ellingson DTD

Location
Product Size/Type

Norwalk, CA

Probe S/N

Survey	MD	CL	Away	Lateral	Elev	Incl	Raw Az	Plg Az	Pilot Rad	Reamed Rad	DLS	Min Annu	Max Annu	DS
Tie-In	0.00	N/A	-9.30	2.24	76.39	74.60	242.50	242.50	N/A	N/A	N/A	0.0	0.0	ΤI
1	15.75	15.75	5.87	2.20	72.17	74.32	242.80	242.84	N/A	N/A	N/A	N/A	N/A	KB
2	47.70	31.95	36.67	2.31	63.65	74.73	243.00	243.16	N/A	N/A	N/A	N/A	N/A	KB
3	79.40	31.70	67.30	3.00	55.52	75.56	243.16	245.04	4739	INF	1.21	N/A	N/A	KB
4	111.40	32.00	98.44	3.62	48.20	78.01	244.00	242.89	1485	2500	3.86	N/A	N/A	KB
5	142.90	31.50	129.36	3.31	42.24	80.16	241.90	241.60	1005	1390	5.70	N/A	N/A	KB
6	174.40	31.50	160.50	2.66	37.55	82.72	241.60	241.60	760	963	7.54	N/A	N/A	KB
7	205.90	31.50	191.81	1.89	34.13	84.81	241.50	241.21	796	1025	7.20	N/A	N/A	KB
8	237.40	31.50	223.21	1.02	31.92	87.16	241.50	241.23	773	987	7.41	N/A	N/A	KB
9	268.80	31.40	254.59	0.03	31.21	90.24	241.23	240.79	719	901	7.97	N/A	N/A	KB
10	300.10	31.30	285.87	-1.11	31.34	90.23	241.20	240.64	996	1384	5.75	N/A	N/A	KB
11	332.25	32.15	318.00	-2.16	31.40	90.00	241.30	241.26	1914	4087	2.99	N/A	N/A	KB
12	364.40	32.15	350.15	-2.57	31.28	89.55	242.50	242.90	7938	INF	0.72	N/A	N/A	KB
13	395.87	31.47	381.61	-2.42	31.15	90.00	242.80	243.26	23857	INF	0.24	N/A	N/A	KB
14	427.29	31.42	413.03	-2.22	31.20	90.17	243.26	243.08	32032	INF	0.18	N/A	N/A	KB
15	459.27	31.98	445.01	-1.95	31.21	89.86	243.80	243.50	17534	INF	0.33	N/A	N/A	KB
16	491.25	31.98	476.99	-1.52	31.19	90.06	243.80	243.67	INF	INF	0.06	N/A	N/A	KB
17	523.19	31.94	508.93	-1.30	31.18	89.92	243.80	242.75	21979	INF	0.26	N/A	N/A	KB
18	554.49	31.30	540.23	-1.13	31.21	90.20	243.80	243.47	16046	INF	0.36	N/A	N/A	KB
19	585.75	31.26	571.49	-0.79	31.29	90.09	244.80	243.40	INF	INF	0.03	N/A	N/A	KB
20	617.66	31.91	603.40	-0.67	31.25	89.76	243.30	242.66	33830	INF	0.17	N/A	N/A	KB
21	649.06	31.40	634.80	-0.69	31.23	90.15	243.30	242.88	INF	INF	0.05	N/A	N/A	KB
22	680.37	31.31	666.10	-0.47	31.25	89.92	243.00	243.55	31890	INF	0.18	N/A	N/A	KB
23	711.67	31.30	697.39	0.33	31.21	89.95	242.80	245.00	28349	INF	0.20	N/A	N/A	KB
24	743.39	31.72	729.10	1.26	31.23	90.11	242.80	243.97	INF	INF	0.04	N/A	N/A	KB
25	760.69	17.30	746.40	1.46	31.23	89.93	242.80	243.00	INF	INF	0.01	N/A	N/A	KB
Bit	769.54	8.85	755.25	1.49	31.22	89.93	242.80	243.00	N/A	N/A	N/A	N/A	N/A	PR



Proposed bore - Modified Bore Plan MD of proposed bore = 770.0 ft Away of proposed bore = 765.3 ft Line Az of proposed bore = 0.0°	As-drilled bore - 19-404 Bore started on Dec 05, 2019 Bore completed on Dec 12, 2019 Directional data ☐ Tracking data △
Proposed bore - 19 Ft Depth Stainless Bore Plan MD of proposed bore = 741.9 ft Away of proposed bore = 740.1 ft Line Az of proposed bore = 0.0°	As-drilled bore - 19-404 B Bore started on Dec 13, 2019 Bore completed on Dec 17, 2019 Directional data ☐ Tracking data △
South Central Area Biosparge Well SFPP Norwalk Punp Station Jacobs	
THIS DRAWING PROVIDED BY: SHAREWELL I OPERATOR(S) FOR THIS JOB: RENO MAYNARI THIS DRAWING IS BASED ON INFORMATION P	D

Attachment D Well Boring Logs

 PROJECT NUMBER:
 BORING NUMBER:

 D3270300.A.CS.EV.01.01L
 BS-03
 SHEET 1 OF 7

Directional Borehole Log

PROJECT : SFPP Norwalk Horizontal Well Installations, Norwalk, CA

LOCATION : 15306 Norwalk Blvd, Norwalk, CA

ELEVATION : NA

DRILLING CONTRACTOR AND RIG : Ellingson-DTD, American Augers DD210

COORDINATES :

DRILLING METHOD AND EQUIPMENT : Horizontal Drilling, 10-1/4" bit

WATER			τ. <u>Επιτε</u>	SON-DID		STEERING METHOD AND EQUIP START : 12/9/2019	END: 12/12/2019	LOGGER : M. Thomas
WATER		NG DATA		7				LOGGEN : W. Monas
BOREHOLE LENGTH (ft)	DEPTH BELOW GROUND (ft)	BOREHOLE INCLINATION (DEGREES)	DRILLING PIPE	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING RATE, DETAILS, AND INSTRUMENTATION	WELL DETAILS
10 10 20 30	4.05	-15.68		2.7		SM (SM) brown (7.5YR 5/4), fine to coarse (40% fine - 40% medium - 20% coarse), subangular, micaceous, with quartz and pyrite SM (SM) brown (7.5YR 5/4), same as above		cement-bentonite seal
40	12.57	-15.27		3.2		SM (SM) brown (7.5YR 5/4), same as above		blank 4-inch Sch 80 PVC
70	20.7	-14.44		4.7		SM (SM) brown (7.5YR 5/4), fine to medium (50% fine - 50% medium), subangular, micaceous, with quartz and trace pyrite		
110	28.02	-11.99		2.6		SM (SM) brown (7.5YR 5/4), fine to coarse (50% fine - 40% medium - 10% coarse), subangular, micaceous, with quartz and pyrite		

 PROJECT NUMBER:
 BORING NUMBER:

 D3270300.A.CS.EV.01.01L
 BS-03
 SHEET 2 OF 7

Directional Borehole Log

PROJECT : SFPP Norwalk Horizontal Well Installations, Norwalk, CA LOCATION : 15306 Norwalk Blvd, Norwalk, CA

ELEVATION: NA DRILLING CONTRACTOR AND RIG: Ellingson-DTD, American Augers DD210

COORDINATES: DRILLING METHOD AND EQUIPMENT: Horizontal Drilling, 10-1/4" bit

WATER	LEVEL :	NA				START : 12/9/2019	END : 12/12/2019	LOGGER : M. Thomas
		NG DATA		TAL (ပ္ခ	SOIL DESCRIPTION	COMMENTS	
BOREHOLE LENGTH (ft)	DEPTH BELOW GROUND (ft)	BOREHOLE INCLINATION (DEGREES)	DRILLING PIPE	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE, DETAILS, AND INSTRUMENTATION	WELL DETAILS
130						SM (SM) brown (7.5YR 5/4), fine to coarse (50% fine - 40% medium - 10% coarse), subangular, micaceous, with quartz and pyrite(continued from previous page)		
140	33.98	-9.84		3.3		SM (SM) dark brown (10YR 3/3), fine to coarse (50% fine - 40% medium - 10% coarse), subangular, micaceous, with quartz and trace pyrite	sheen, color change	TO T
160	38.67	-7.28		2.5		SM (SM) dark brown (10YR 3/3), same as above, fine to medium (50% fine - 50% medium)	sheen	
200	42.09	-5.19		2.6		SM (SM) dark brown (10YR 3/3), fine to medium (50% fine - 50% medium), subangular, micaceous with quartz	sheen	
220	44.3	-2.84		2.6		SM (SM) dark brown (10YR 3/3), same as above	sheen	

PROJECT NUMBER: BORING NUMBER: D3270300.A.CS.EV.01.01L BS-03

Directional Borehole Log

SHEET 3 OF 7

PROJECT : SFPP Norwalk Horizontal Well Installations, Norwalk, CA

LOCATION : 15306 Norwalk Blvd, Norwalk, CA

ELEVATION : NA

DRILLING CONTRACTOR AND RIG : Ellingson-DTD, American Augers DD210

COORDINATES :

DRILLING METHOD AND EQUIPMENT : Horizontal Drilling, 10-1/4" bit

WATER	LEVEL :	NA				START : 12/9/2019	END : 12/12/2019	LOGGER : M. Thomas
		NG DATA		TAL	ဖွ	SOIL DESCRIPTION	COMMENTS	
BOREHOLE LENGTH (ft)	DEPTH BELOW GROUND (ft)	BOREHOLE INCLINATION (DEGREES)	DRILLING PIPE	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE, DETAILS, AND INSTRUMENTATION	WELL DETAILS
- - - 250_						SM (SM) dark brown (10YR 3/3), same as above(continued from previous page)		
260	45.04	0.04		4.7		SM (SM) dark brown (10YR 3/3), fine to coarse (50% fine - 45% medium - 5% coarse), subangular, micaceous,with quartz		
270	45.01	0.24						4-inch SCH 80 PVC, 5, 6, slotted 0.010-inch, 4 rows, 1.5-inch spacing
290	44.88	0.23		3.9		SM (SM) dark brown (10YR 3/3), same as above		
310	44.00	0.23						
320	44.82	0		5.3		SM (SM) dark brown (10YR 3/3), fine to medium (60% fine - 40% medium), subangular, micaceous, with quartz		
340	11.02	•						
350				3.4		SM (SM) dark brown (10YR 3/3), same as above	sheen	

STEERING CONTRACTOR: Ellingson-DTD

 PROJECT NUMBER:
 BORING NUMBER:

 D3270300.A.CS.EV.01.01L
 BS-03
 SHEET 4 0F 7

Directional Borehole Log

STEERING METHOD AND EQUIPMENT: Gyroscopic Steering Tool

PROJECT : SFPP Norwalk Horizontal Well Installations, Norwalk, CA

LOCATION : 15306 Norwalk Blvd, Norwalk, CA

ELEVATION : NA

DRILLING CONTRACTOR AND RIG : Ellingson-DTD, American Augers DD210

COORDINATES :

DRILLING METHOD AND EQUIPMENT : Horizontal Drilling, 10-1/4" bit

WATER	LEVEL :	NA				START: 12/9/2019	END : 12/12/2019	LOGGER : M. Thomas
l		NG DATA	ļ	TAL (90	SOIL DESCRIPTION	COMMENTS	
BOREHOLE LENGTH (ft)	DEPTH BELOW GROUND (ft)	BOREHOLE INCLINATION (DEGREES)	DRILLING PIPE	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE, DETAILS, AND INSTRUMENTATION	WELL DETAILS
- - 370	44.94	-0.45				SM (SM) dark brown (10YR 3/3), same as above(continued from previous page)		
380	45.07	0		3.6		SM (SM) dark brown (10YR 3/3), fine to medium (60% fine - 40% medium), subangular, micaceous with quartz grains		200 200 200 200 200 200 200 200 200 200
410	45.02	0.17		1.3		SM (SM) dark brown (10YR 3/3), same as above	sheen	2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
440	45.01	-0.14		5.0		SM (SM) dark brown (10YR 3/3), fine to medium (50% fine - 50% medium), subangular, micaceous with quartz grains	sheen	1
470 470 — — — — — — — — — — — — — — — — — —				2.4				

STEERING CONTRACTOR: Ellingson-DTD

 PROJECT NUMBER:
 BORING NUMBER:

 D3270300.A.CS.EV.01.01L
 BS-03
 SHEET 5 OF 7

Directional Borehole Log

STEERING METHOD AND EQUIPMENT: Gyroscopic Steering Tool

PROJECT : SFPP Norwalk Horizontal Well Installations, Norwalk, CA

LOCATION : 15306 Norwalk Blvd, Norwalk, CA

ELEVATION : NA

DRILLING CONTRACTOR AND RIG : Ellingson-DTD, American Augers DD210

COORDINATES : DRILLING METHOD AND EQUIPMENT : Horizontal Drilling, 10-1/4" bit

WATER I				3011-010		START : 12/9/2019	END : 12/12/2019	LOGGER : M. Thomas
WATER		NG DATA		٦				ECOCEN. W. Monas
ᇦᅩ				m (m	507	SOIL DESCRIPTION	COMMENTS	
BOREHOLE LENGTH (ft)	DEPTH BELOW GROUND (ft)	BOREHOLE INCLINATION (DEGREES)	DRILLING PIPE	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE, DETAILS, AND INSTRUMENTATION	WELL DETAILS
490						SM (SM) dark brown (10YR 3/3), same as above(continued from previous page)		
500	45.03	0.06						
510 - - - 520	45.04	-0.08		2.1		SM (SM) dark brown (10YR 3/3), same as above		
530	43.04	-0.06		2.2				
550	45.01	0.2		2.2		SM (SM) dark brown (10YR 3/3), fine to medium (60% fine - 40% medium)		
560				3.7				
580	44.93	0.09		3.1		SM (SM) dark brown (10YR 3/3), same as above		0.000000000000000000000000000000000000
590								

 PROJECT NUMBER:
 BORING NUMBER:

 D3270300.A.CS.EV.01.01L
 BS-03
 SHEET 6 0F 7

Directional Borehole Log

PROJECT : SFPP Norwalk Horizontal Well Installations, Norwalk, CA

LOCATION : 15306 Norwalk Blvd, Norwalk, CA

ELEVATION : NA

DRILLING CONTRACTOR AND RIG : Ellingson-DTD, American Augers DD210

COORDINATES :

DRILLING METHOD AND EQUIPMENT : Horizontal Drilling, 10-1/4" bit

STEERING CONTRACTOR: Ellingson-DTD STEERING METHOD AND EQUIPMENT: Gyroscopic Steering Tool WATER LEVEL: NA START: 12/9/2019 END: 12/12/2019 LOGGER: M. Thomas STEERING DATA ENVIRONMENTAL DATA (PID = ppm) SOIL DESCRIPTION COMMENTS **GRAPHIC LOG** BOREHOLE LENGTH (ft) DEPTH OF CASING, DRILLING RATE, DETAILS, SOIL NAME, USCS GROUP SYMBOL WELL DETAILS COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY AND INSTRUMENTATION 1.7 SM (SM) dark brown (10YR 3/3), fine to medium (50% fine - 50% medium), subangular, micaceous with 610 quartz grains 44.97 -0.24 620 630 4.3 dark brown (10YR 3/3), same as above 640 650 44.99 0.15 660 11.7 SM (SM) sheen dark brown (10YR 3/3), same as above 670 680_ 44.97 -0.08 690 6.5 SM (SM) sheen 700 dark brown (10YR 3/3), same as above 710_ -0.05 45.01

PROJECT NUMBER:	BORING NUMBER:				
D3270300.A.CS.EV.01.01L	BS-03	SHEET	7	OF	7

Directional Borehole Log

PROJECT : SFPP Norwalk Horizontal Well Installations, Norwalk, CA

LOCATION : 15306 Norwalk Blvd, Norwalk, CA

ELEVATION : NA

DRILLING CONTRACTOR AND RIG : Ellingson-DTD, American Augers DD210

COORDINATES :

DRILLING METHOD AND EQUIPMENT : Horizontal Drilling, 10-1/4" bit

STEERIN	IG CONT	RACTOR	R: Elling	son-DTD		STEERING METHOD AND EQUIP	MENT: Gyroscopic Steering To	ol
WATER	LEVEL :	NA				START: 12/9/2019	END : 12/12/2019	LOGGER : M. Thomas
		NG DATA		TAL	90	SOIL DESCRIPTION	COMMENTS	
BOREHOLE LENGTH (ft)	DEPTH BELOW GROUND (ft)	BOREHOLE INCLINATION (DEGREES)	DRILLING PIPE	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE, DETAILS, AND INSTRUMENTATION	WELL DETAILS
730 740 750 760	44.99	0.11		4.7		SM (SM) dark brown (10YR 3/3), same as above(continued from previous page) SM (SM) dark brown (10YR 3/3), same as above	sheen	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
7700	45	-0.07				Subsurface Boring Length: 769.54 ft. End Depth: 45.00 ft bgs. Maximum Depth: 45.07 ft bgs.		

 PROJECT NUMBER:
 BORING NUMBER:

 D3270300.A.CS.EV.01.01L
 HSVE-01
 SHEET 1 OF 7

Directional Borehole Log

PROJECT : SFPP Norwalk Horizontal Well Installations, Norwalk, CA

LOCATION : 15306 Norwalk Blvd, Norwalk, CA

ELEVATION : NA

DRILLING CONTRACTOR AND RIG : Ellingson-DTD, American Augers DD210

COORDINATES :

DRILLING METHOD AND EQUIPMENT : Horizontal Drilling, 10-1/4" bit

STEERIN	IG CONT	RACTOR	R: Elling	son-DTD		STEERING METHOD AND EQUIP	PMENT: Gyroscopic Steering To	ol
WATER	LEVEL :	NA				START : 12/14/2019	END : 12/17/2019	LOGGER: M. Thomas/N. Orliczky
l		NG DATA		I I	စ္	SOIL DESCRIPTION	COMMENTS	
BOREHOLE LENGTH (ft)	DEPTH BELOW GROUND (ft)	BOREHOLE INCLINATION (DEGREES)	DRILLING PIPE	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE, DETAILS, AND INSTRUMENTATION	WELL DETAILS
10	2.02	-14.1				SM (SM) brown (7.5YR 5/4), fine to coarse (40% fine - 40% medium - 20% coarse), subangular, micaceous, with quartz and trace pyrite SM (SM) brown (7.5YR 5/4), same as above		
30						SM (SM) brown (7.5YR 5/4), same as above		
50	8.96	-11						blank 6-inch Sch 10 stainless-steel
70				4.3		SM (SM) brown (7.5YR 5/4), same as above		
80	13.86	-6.8		2.1		SM (SM) brown (7.5YR 5/4), fine to coarse (40% fine - 40% medium - 20% coarse), subangular, micaceous, with quartz and trace pyrite		
110	17.02	-4.52						

PROJECT NUMBER: BORING NUMBER: D3270300.A.CS.EV.01.01L HSVE-01

Directional Borehole Log

SHEET 2 OF 7

PROJECT : SFPP Norwalk Horizontal Well Installations, Norwalk, CA

LOCATION : 15306 Norwalk Blvd, Norwalk, CA

ELEVATION : NA

DRILLING CONTRACTOR AND RIG : Ellingson-DTD, American Augers DD210

COORDINATES :

DRILLING METHOD AND EQUIPMENT : Horizontal Drilling, 10-1/4" bit

WATER				טוט-ווסאן		STERING METHOD AND EQUIP START : 12/14/2019	END : 12/17/2019	LOGGER : M. Thomas/N. Orliczky
	STEERI	NG DATA		Ā	U)	SOIL DESCRIPTION	COMMENTS	
BOREHOLE LENGTH (ft)	DEPTH BELOW GROUND (ft)	BOREHOLE INCLINATION (DEGREES)	DRILLING PIPE	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE, DETAILS, AND INSTRUMENTATION	WELL DETAILS
130 - - 130 - - - 140	18.6	-1.26		2.6		SM (SM) brown (7.5YR 5/4), fine to medium (50% fine - 50% medium), subangular, micaceous, with quartz and trace pyrite		
150 - - - - 160 - - - - - - - - - - - - - - - - - -				5.4		SM (SM) brown (7.5YR 5/4), same as above	Sheen	native material native material native material
180	18.81	0.5		31.0		SM (SM) brown (7.5YR 5/4), fine to medium (60% fine - 40% medium), subangular, micaceous, with quartz and pyrite	Sheen and odor	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$
210	18.67	-0.03		15.1		SM (SM) dark brown (10YR 3/3), same as above	Sheen and odor	

 PROJECT NUMBER:
 BORING NUMBER:

 D3270300.A.CS.EV.01.01L
 HSVE-01
 SHEET 3 OF 7

Directional Borehole Log

PROJECT : SFPP Norwalk Horizontal Well Installations, Norwalk, CA

LOCATION : 15306 Norwalk Blvd, Norwalk, CA

ELEVATION : NA

DRILLING CONTRACTOR AND RIG : Ellingson-DTD, American Augers DD210

COORDINATES :

DRILLING METHOD AND EQUIPMENT : Horizontal Drilling, 10-1/4" bit

WATER	FVFI ·	ΝΔ				START : 12/14/2019	END : 12/17/2019	LOGGER : M. Thomas/N. Orliczky
WATER		NG DATA		7		SOIL DESCRIPTION	COMMENTS	EGGGEN: W. Monaghy. Oniczky
BOREHOLE LENGTH (ft)	DEPTH BELOW GROUND (ft)	BOREHOLE INCLINATION (DEGREES)	DRILLING PIPE	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE, DETAILS, AND INSTRUMENTATION	WELL DETAILS
-						SM (SM) dark brown (10YR 3/3), same as above(continued from previous page)		
250 - - -				6.1		SM (SM) dark brown (10YR 3/3), same as above		Girls SCH 10
270	18.59	-0.18		9.4		SM (SM)	Sheen	0.020-inch, 1.5-inch long slots
290	18.67	-0.12				dark brown (10YR 3/3), same as above	Olechi Circuit	
310				14.0		SM (SM) dark brown (10YR 3/3), fine to medium (60% fine - 40% medium), subangular, micaceous, with quartz and pyrite	Sheen	
330	18.69	0.07		7.7		SM (SM) dark brown (10YR 3/3), same as above		

 PROJECT NUMBER:
 BORING NUMBER:

 D3270300.A.CS.EV.01.01L
 HSVE-01
 SHEET 4 0F 7

Directional Borehole Log

PROJECT : SFPP Norwalk Horizontal Well Installations, Norwalk, CA

LOCATION : 15306 Norwalk Blvd, Norwalk, CA

ELEVATION : NA

DRILLING CONTRACTOR AND RIG : Ellingson-DTD, American Augers DD210

COORDINATES : DRILLING METHOD AND EQUIPMENT : Horizontal Drilling, 10-1/4" bit

STEERIN	NG CONT	RACTOR	R: Elling	son-DTD		STEERING METHOD AND EQUIP	MENT: Gyroscopic Steering To	ol
WATER	LEVEL :	NA				START : 12/14/2019	END : 12/17/2019	LOGGER: M. Thomas/N. Orliczky
1		NG DATA		I I	စ္ခ	SOIL DESCRIPTION	COMMENTS	
BOREHOLE LENGTH (ft)	DEPTH BELOW GROUND (ft)	BOREHOLE INCLINATION (DEGREES)	DRILLING PIPE	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE, DETAILS, AND INSTRUMENTATION	WELL DETAILS
-	18.72	-0.2				SM (SM) dark brown (10YR 3/3), same as above(continued from previous page)		
370 380 390				7.7		SM (SM) dark brown (10YR 3/3), same as above		
400	18.95	-0.64		9.8		SM (SM) dark brown (10YR 3/3), same as above	Sheen	
420	19.02	0.38		1.0				20 20 20 20 20 20 20 20 20 20 20 20 20 2
440	18.87	0.2		4.6		SM (SM) dark brown (10YR 3/3), fine to medium (60% fine - 40% medium), subangular, micaceous, with quartz and trace pyrite	Sheen	
470				0.7		SM (SM) dark brown (10YR 3/3), fine to medium		

STEERING CONTRACTOR: Ellingson-DTD

 PROJECT NUMBER:
 BORING NUMBER:

 D3270300.A.CS.EV.01.01L
 HSVE-01
 SHEET 5 OF 7

Directional Borehole Log

STEERING METHOD AND EQUIPMENT: Gyroscopic Steering Tool

PROJECT : SFPP Norwalk Horizontal Well Installations, Norwalk, CA

LOCATION : 15306 Norwalk Blvd, Norwalk, CA

ELEVATION : NA

DRILLING CONTRACTOR AND RIG : Ellingson-DTD, American Augers DD210

COORDINATES : DRILLING METHOD AND EQUIPMENT : Horizontal Drilling, 10-1/4" bit

MATER				,			END : 13/17/2010	
WATER		NG DATA		_		START : 12/14/2019	END : 12/17/2019	LOGGER : M. Thomas/N. Orliczky
╽ _╝ ╴			O	N (m	90-	SOIL DESCRIPTION	COMMENTS	
BOREHOLE LENGTH (ft)	DEPTH BELOW GROUND (ft)	BOREHOLE INCLINATION (DEGREES)	DRILLING PIPE	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE, DETAILS, AND INSTRUMENTATION	WELL DETAILS
	18.84	-0.1				SM (SM) dark brown (10YR 3/3), fine to medium(continued from previous page)		
490	10.04	-0.1		2.5		SM (SM)		
510 - - -						dark brown (10YR 3/3), fine to medium		
520 - - - - 530	18.83	0.12						
540				5.0		SM (SM) dark brown (10YR 3/3), fine to medium		
550	18.88	-0.3						- 1
570	18.87	0.36		1.0		SM (SM) dark brown (10YR 3/3), fine to medium		
590	10.01	0.00		2.2				

 PROJECT NUMBER:
 BORING NUMBER:

 D3270300.A.CS.EV.01.01L
 HSVE-01
 SHEET 6 OF 7

Directional Borehole Log

PROJECT : SFPP Norwalk Horizontal Well Installations, Norwalk, CA

LOCATION : 15306 Norwalk Blvd, Norwalk, CA

ELEVATION : NA

DRILLING CONTRACTOR AND RIG : Ellingson-DTD, American Augers DD210

COORDINATES :

DRILLING METHOD AND EQUIPMENT : Horizontal Drilling, 10-1/4" bit

STEERING CONTRACTOR: Ellingson-DTD

STEERING METHOD AND EQUIPMENT: Gyroscopic Steering Tool

WATER						STERRING METHOD AND EQUI START : 12/14/2019	END: 12/17/2019	LOGGER : M. Thomas/N. Orliczky
WATER		NG DATA		7				LOGGEN: W. Monas/N. Oniczky
BOREHOLE LENGTH (ft)	DEPTH BELOW GROUND (ft)	BOREHOLE INCLINATION (DEGREES)	DRILLING PIPE	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING RATE, DETAILS, AND INSTRUMENTATION	WELL DETAILS
610 610 620	18.86	-0.34				SM (SM) dark brown (10YR 3/3), fine to medium(continued from previous page)		\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$
630	18.89	0.24		0.9		SM (SM) dark brown (10YR 3/3), fine to medium		1
650 660 670				0.5		SM (SM) dark brown (10YR 3/3), fine to medium		
680	18.88	-0.2		0.1		SM (SM) dark brown (10YR 3/3), fine to medium		
700	18.98	-0.17						

PROJECT NUMBER:	BORING NUMBER:				
D3270300.A.CS.EV.01.01L	HSVE-01	SHEET	7	OF	7

Directional Borehole Log

PROJECT: SFPP Norwalk Horizontal Well Installations, Norwalk, CA LOCATION: 15306 Norwalk Blvd, Norwalk, CA ELEVATION: NA DRILLING CONTRACTOR AND RIG: Ellingson-DTD, American Augers DD210 COORDINATES: DRILLING METHOD AND EQUIPMENT: Horizontal Drilling, 10-1/4" bit STEERING CONTRACTOR: Ellingson-DTD STEERING METHOD AND EQUIPMENT: Gyroscopic Steering Tool WATER LEVEL: NA START: 12/14/2019 END: 12/17/2019 LOGGER: M. Thomas/N. Orliczky STEERING DATA ENVIRONMENTAL DATA (PID = ppm) SOIL DESCRIPTION COMMENTS **GRAPHIC LOG** BOREHOLE LENGTH (ft) DEPTH OF CASING, DRILLING RATE, DETAILS, SOIL NAME, USCS GROUP SYMBOL WELL DETAILS COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY AND INSTRUMENTATION 1.3 SM (SM) Sheen dark brown (10YR 3/3), fine to medium 730_ 19.01 0.04 740_ Subsurface Boring Length: 741.42 ft. End Depth: 19.00 ft bgs. 0.04 Maximum Depth: 19.02 ft bgs. 750_ 760_ 770. 780_ 790_ 800_ 810_ 820_ 830_

Attachment E Well Construction Diagrams **Jacobs**

PROJECT NUMBER D3270300.A.CS.EV.01.01L

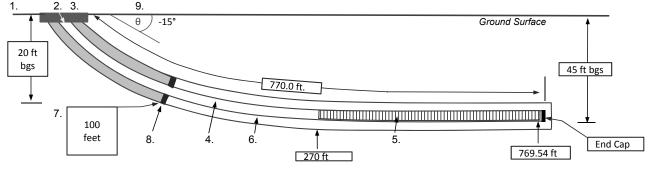
WELL NUMBER BS-03

SHEET

1 OF

WELL COMPLETION DIAGRAM

PROJECT: KMEP Norwalk Biosparge Well Installation LOCATION: 15306 Norwalk Blvd, Norwalk, CA DRILLING CONTRACTOR: Ellingson DTD and Sharewell HDD DRILLING METHOD AND EQUIPMENT USED: Directional Mud Drilling. American Augers DD210 drill. 10 1/4-inch cobble bit STEERING METHOD AND EQUIPMENT USED: Sharewell gyroscopic steering tool WATER LEVELS: Refer to Site Data for Water Levels START: 12/9/2019 END: 12/13/2019 LOGGER: M. Thomas 3. 9.



C	070 700 F4 f+	N-44- C
Screen fro	om 270 - 769.54 feet.	Not to S

	Screen from 270 - 769.54 feet. Not to Scale
1- Ground elevation at well 76.22 ft msl	Fluid degrader CETCO LEB-CD Liquid Enzyme Breaker
2- Top of casing elevation 75.97 ft msl	
3- Wellhead protection cover typ H20 spring-assist vault box 5'x3'x2'	
a) concrete pad dimensions 6.5'x4.5'x0.5' concrete pad	
	Development method Water Flushing and Jetting
4- Dia./type of well casing Threaded 4-inch SCH 80 PVC	
	Development time ~6.0 hours
5- Type/slot/aperture of screen 4-inch SCH 80 slotted PVC	Final Development Parameters
0.010" nominal slots, cut in 4 rows quadra-symmetrical	Temp: 23.95° C
Slot Length/Spacing 1.5 inch slots	pH: 6.31
Field Measured? Yes / No Yes	Conductivity: 1.9 ms/cm
	Turbidity: 69.9 NTU
6- Type screen filter Natural Filter Pack from Borehole	Sand Content: <1.0 ml/L
a) Quantity used N/A	Mud Content: <1.0 ml/L
	Total Water Volume Discharged: ~8,950 gallons
7- Type of seal Portland-Cement Bentonite Grout	
a) Quantity used 66 (95 lb.) bags of Portland with 5% Bentonite	Comments
	Drill bit has a 10.25" diameter; however, horizontal borehole diameters
8- Grout stop seal Cement-bentonite grout plug to 67 feet down ran	ge vary slightly (likely 100% to 125% of drill bit size) due to gravitational
	effects.
9- Angle at Point of Entry15°	
a) Boring angle at screer 0.24° to 0.07°	

bioploymer drilling fluid.

Drilling Fluid employed Baroid Bio-Bore biodegradable

Jacobs

PROJECT NUMBER D3270300.A.CS.EV.01.01L

WELL NUMBER
HSVE-01

SHEET

1 OF 1

WELL COMPLETION DIAGRAM

PROJECT: KMEP Norwalk Biosparge Well Installation LOCATION: 15306 Norwalk Blvd, Norwalk, CA DRILLING CONTRACTOR: Ellingson DTD and Sharewell HDD DRILLING METHOD AND EQUIPMENT USED: Directional Mud Drilling. American Augers DD210 drill. 10 1/4-inch cobble bit STEERING METHOD AND EQUIPMENT USED : Sharewell gyroscopic steering tool END: 12/17/2019 LOGGER: M. Thomas WATER LEVELS: Refer to Site Data for Water Levels START: 12/13/2019 9. θ -14° Ground Surface 30 ft bgs 19 ft bgs 741.9 ft 70 feet 8. 5. End Cap 769.54 ft 270 ft Screen from 270 - 769 54 feet Not to Scale CETCO LEB-CD Liquid Enzyme Breaker 1- Ground elevation at well 74.9 ft msl Fluid degrader 2- Top of casing elevation 74.65 ft msl 3- Wellhead protection cover typ H20 spring-assist vault box 5'x3'x2' a) concrete pad dimensions 6.5'x4.5'x0.5' concrete pad Development method Water Flushing and Jetting 4- Dia./type of well casing Threaded 4-inch SCH 80 PVC Development time ~6.0 hours Final Development Parameters 5- Type/slot/aperture of screen 4-inch SCH 80 slotted PVC 0.010" nominal slots, cut in 4 rows quadra-symmetrical Temp: 23.95° C Slot Length/Spacing 1.5 inch slots Field Measured? Yes / No Yes Conductivity: 1.9 ms/cm Turbidity: 69.9 NTU 6- Type screen filter Natural Filter Pack from Borehole Sand Content: <1.0 ml/L a) Quantity used N/A Mud Content: <1.0 ml/L Total Water Volume Discharged: ~8,950 gallons 7- Type of seal Portland-Cement Bentonite Grout a) Quantity used 66 (95 lb.) bags of Portland with 5% Bentonite Drill bit has a 10.25" diameter; however, horizontal borehole diameters Cement-bentonite grout plug to 67 feet down range vary slightly (likely 100% to 125% of drill bit size) due to gravitational 8- Grout stop seal effects. 9- Angle at Point of Entry -15° a) Boring angle at screer0.24° to 0.07°

bioploymer drilling fluid

Drilling Fluid employed Baroid Bio-Bore biodegradable

Attachment F Well Development Logs **Jacobs**

PROJECT NUMBER D3289100.A.CS.EV.02.01L WELL ID BS-03

Sheet 1 of 1

WELL DEVELOPMENT LOG

PROJECT: KMEP Norwalk Biosparge and Soil Vapor Extraction Well Installation LOCATION: 15306 Norwalk Blvd, Norwalk, CA

DEVELOPMENT CONTRACTOR : Ellingson DTD

DEVELOPMENT METHOD AND EQUIPMENT USED : Flush and Jet, Vactor 1200 Jet/Vacuum Unit

START WATER LEVELS : Not monitored START : 12/19/2019 1/8/2020 LOGGER : M. Thomas

MAXIMUM DRAWDOWN DURING PUMPING: Not determined (ND)

10 - 40 gpm RANGE AND AVERAGE DISCHARGE RATE: TOTAL QUANTITY OF WATER DISCHARGED: 7,880 gallons

DISPOSITION OF D	ISCHARGE WA	TER:	Discharg	e water he	eld in rolloff bin an	d poly tanks	s for profiling a	nd disposal	
MONITORING EQUI	PMENT USED:	Horiba U	-52 cal'd t	o 7.0 pH,	cond4.49 mS/ci	m, and turbi	dity 0.0 NTU		
Date/Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Temp. (°C)	pН	Conductivity (µmhos/cm)	Turbidity (NTU)	Sand (ml/L)	Mud (ml/L)	Remarks (color, odor, sheen, sediment, etc.)
12/19/19 13:30									Initial flush of well of drilling mud with 2 pints of liquid enzyme breaker to approx. 2,000-gallons
15:00	4,800						-		end of flush.
1/8/2020									development via jetting
10:15	5,000		19.79	7.95	0.864	271	<1	<1	light tan, transluscent
10:25	5,400		20.12	4.41	2.49	>1,000	>50	>100	dark brown with mud and sand
10:35	5,800		20.91	4.31	2.610	>1,000	>50	>100	dark brown with mud and sand
10:45	6,000		20.86	4.51	2.500	>1,000	>50	>100	5 min of down time. Dark brown with mud + sand
10:55	6,400		20.88	4.43	2.270	>1,000	>50	>100	dark brown with mud and sand
11:05	6,800		20.99	4.41	2.520	>1,000	>50	>100	dark brown with mud and sand
11:30	7,080		20.26	4.43	2.420	>1,000	>50	>100	dark brown with mud and sand
11:40	7,480		20.70	4.40	2.49	>1,000	>50	>100	dark brown with mud and sand
12:20	7,880		22.02	4.28	2.54	>1,000	>50	>100	dark brown with mud and sand
12:21									terminated jetting/flushing with a total of 6 screet passes. Approx 3.5 hours of development
End of development									
		I	1	I		ı ——			

Jacobs

PROJECT NUMBER D3289100.A.CS.EV.02.01L

WELL ID HSVE-01

Sheet 1 of 1

WELL DEVELOPMENT LOG

KMEP Norwalk Biosparge and Soil Vapor Extraction Well Installation LOCATION: 15306 Norwalk Blvd, Norwalk, CA PROJECT:

DEVELOPMENT CONTRACTOR: Ellingson DTD

DEVELOPMENT METHOD AND EQUIPMENT USED : Flush and Jet, Vactor 1200 Jet/Vacuum Unit

START WATER LEVELS: Not monitored START: 12/20/2019 END: 1/8/2020 LOGGER: M. Thomas

MAXIMUM DRAWDOWN DURING PUMPING: Not determined (ND)

RANGE AND AVERAGE DISCHARGE RATE: 5 - 40 gpm

RANGE AND AVERA	AGE DISCHARG	SE RATE:	5 - 40 gp	m					
TOTAL QUANTITY (OF WATER DIS	CHARGED:	5,870 ga	llons					
DISPOSITION OF D	ISCHARGE WA	TER:	Discharg	e water h	eld in rolloff bin a	nd poly tank	s for profiling	and dispo	sal.
MONITORING EQUI	PMENT USED:	Horiba U	l-52 cal'd	to 7.0 pH	, cond4.49 mS/	cm, and turb	idity 0.0 NTU	ı	
Date/Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Temp.	pН	Conductivity (µmhos/cm)	Turbidity (NTU)	Sand (ml/L)	Mud (ml/L)	Remarks (color, odor, sheen, sediment, etc.)
12/20/19 07:30			_				-		Intial flush well of drilling mud with 2 pints of liquid enzyme breaker to approx. 2,000-gallons of wate
9:00	3,000	1		I	-				end of flush.
1/7/2020		-			-				development via jetting
15:10	3,400		23.97	5.77	0.67	65.9	20	<1	light brown, transluscent
15:20	3,800	-	24.81	5.81	2.18	>1,000	>50	>100	dark brown with mud and sand
15:40	4,600		24.70	5.82	3.020	>1,000	>50	>100	dark brown with mud and sand
15:45		-		5.91	2.89	>1,000	>50	>100	dark brown with mud and sand
1/8/2020		-							End of jetting. 8 screen passes completed.
8:30	4,800	-	19.35	6.10	2.790	>1,000	>45	70.0	light brown, cloudy onegue increasing elacity
1/14/2020						,			light brown, cloudy, opaque, increasing clarity Development via submersible pump set between 185 to 225 feet down casing. Pump rate between 5 and 10 gallons per minute
8:00	4,810		17.02	4.45	2.43	>1,000	2.0		cloudy, odor
8:15	5,050		19.69	4.53	2.45	960	0.0		cloudy, odor
8:25	5,150		19.92	4.88	2.47	760	0.0		cloudy, odor
8:35	5,250		20.57	4.83	2.45	>1,000	0		cloudy, odor
8:40				-					pump stopped to allow for recharge
9:07				-					pumping resumed
9:08	5,350		19.83	4.71	2.4	>1,000	0.0		cloudy, odor
9:15									pump stopped to allow for recharge
9:42									pumping resumed
9:44	5,420		18.10	4.80	2.47	>1,000	0.0		cloudy, odor
10:00	5,450		21.28	4.79	2.57	>1,000	0.0		cloudy, odor
10:10	5,500		22.56	5.5	2.31	680	0		cloudy, odor
10:20	5,550		23.5	5.72	2.15	405	0		cloudy, odor
10:30	5,600		23.51	5.81	2.11	330	0		slightly cloudy, slight odor
10:40	5,650		23.62	5.99	2.03	228	0		slightly cloudy, slight odor
10:50	5,700		23.64	6.09	1.99	179	0		slightly cloudy, slight odor
11:10	5,800		23.56	6.2	1.94	113	0		clear, slight odor
11:22	5,860		23.95	6.31	1.90	69.9	0		clear, slight odor
11:24	5,870	-							pumping ceased

Attachment G Waste Manifests

	NON-HAZARDOUS	1. Generator ID Number	er	12	Page 1 of 3. E	mergency Respons	e Phone	4. Waste Tr	acking Nun	0229	000	1
-	WASTE MANIFEST	CATO	300331		1 8	00-624-913	8			0229	000	
	Generator's Name and Mail SFPP, L.P. Norw 1001 Louisiana S Houston TX 77 Generator's Phone: 71.3	ng Address valk Station Street EHS 8th FI 002	loor	Att: Natani	el Grace Ger	erator's Site Addres FPP, L.P. (No 5306 Norwalk orwalk CA	onwalk S	Station)	ess)			
6	i. Transporter 1 Company Nar	ne	-	1000			100	U.S. EPA ID	Number		Ti Ba	1
L	Patriot Environ	mental Service	25 /4/16		Capital office	4 27 48	in the	CAL	0 0 5	3 8 6	7 9 4	74-
7.	. Transporter 2 Company Nan	ne			1 100	100		U.S. EPA ID	Number			1
100	Designated Facility Name ar Patriot WesteWar 314 W. Freedom Orange CA 928 acility's Phone: 714	ter Ave 65	الله المواحدي والمائد			Liston December 19	e construction and	U.S. EPA ID		e a u	i red	-0
ľ	9. Waste Shipping Name	TO SECULIAR	German Complete Sea	Machine and district	THE STREET	10. Cont		11. Total	12. Unit	-25-00 (A.O. 450)	7.4 (*** -45**)	145
20'				* 16	100	No.	Туре	Quantity	Wt./Vol.	Mark Control of the Control	Charles and the	10000
	" Non Hazardo	us Waste, Liquid	(Drilling Mud)	w.	by the same of	And the second second	B - V	1000				
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	2.											
Sec.						2		1 1				
	3.				10.00		9					
	4		ter del					Section Control		1		
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Ŀ												
	3. Special Handling Instruction P.W.W. ORAN PATRIOT ENV	GE PROFILE SVS. JOB	NO.: SOC-2 NO.: 01-19	9-01233)			Mark Control
14.	P.W.W. ORAN PATRIOT ENV GENERATOR'S/OFFEROR marked and labeled/placard merator's/Offeror's Printed/Ty	GE PROFILE SV5. JOB SCERTIFICATION: I her ed, and are in all respect ped Name	NO : 3OC-2 NO : 01-19 reby declare that the costs in proper condition for	onlents of the Wi		PACPACITATION/705	SALVE ASSESSED TO THE PROPERTY OF THE PROPERTY	hay not included and included in the control of the	ijing "LOS;	Month	Day Ye	
4.	P.W.W. ORAN PATRIOT ENV GENERATOR'S/OFFEROR marked and labeled/placard merator's/Offeror's Printed/Ty	GE PROFILE SVS. JOB SCERTIFICATION: I here ed, and are in all respect ped Name	NO :: 30C-2 NO :: 01-19	9-01233	My firm MMT and falling to applicable in	PICUED SEEN TO BE	journ govern	haradingarsa	interior in the latest	Month	a September	
5. ra	GENERATOR'S/OFFEROR marked and labeled/placard nerator's/Offeror's Printed/Ty International Shipments	SCERTIFICATION: I here ed, and are in all respect ped Name	NO : 3OC-2 NO : 01-19 reby declare that the costs in proper condition for	9-01233	ing to applicable in Signature	PACPACITATION/705	try/exit:	Topiscijng av snij mental regulations	ing sing	Month	Day Ye	
14. Ge: 15.	GENERATOR'S/OFFEROR marked and labeled/placard nerator's/Offeror's Printed/Ty International Shipments unsporter Signature (for export	SCERTIFICATION: I here ed, and are in all respect ped Name MES Import to U.S. its only): It of Receipt of Materials	NO : 3OC-2 NO : 01-19 reby declare that the costs in proper condition for	9-01233	ing to applicable in Signature	Port of en	try/exit:	hand income, mental regulations.	interior in the second	Month る	Day Ye	9
14. Ge: 15.	GENERATOR'S/OFFEROR marked and labeled/placard nerator's/Offeror's Printed/Ty International Shipments unsporter Signature (for export Transporter Acknowledgmen proporter 1 Printed/Typed National Shipments	SCERTIFICATION: I hered, and are in all respect ped Name Import to U.S. ts only): t of Receipt of Materials me	NO.: SOC-2 NO.: 01-19 reby declare that the co is in proper condition for	9-01233	ing to applicable in Signature	Port of en Date leave	try/exit:ng U.S.;	méntal regulations.	in, inc	Month	Day Ye	
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1	NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number CATO800	2. Page 1	800-624-9136	370	4. Waste T	racking Numbe NH	0228998	1
	5. Generator's Name and Mailin SFPP, L.P. Norwal 1001 Louisiana S Houston TX 770 Generator's Phone: 713 6. Transporter 1 Company Name	ng Address rallk Station Street EHS 8th Floor 302 420-5610 mental Services		ace Generator's Site Address SFPP, L.P. (No 15308 Norwalk Norwalk CA 9	Blvd.	U.S. EPA ID	Number	8 6 6 7 9	4
	8. Designated Facility Name an Patriot WasteWat 314 W. Freedom Orange CA 928	er Ave 85			er er er	U.S. EPA ID		outre	d
l	Facility's Phone: 714 9		Marie Committee	10. Conta	iners	11. Total	12. Unit	क्रिक्ट अहा जुन्सम्बद्धाः	
l	9. Waste Shipping Name			No.	Туре	Quantity	Wt./Vol.	an and the symmetric designation	Transport
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MEN	2.								
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	14. GENERATOR'S/OFFEROR' marked and labeled/placarde Generator's/Offeror's Printed/Tyj	S CERTIFICATION: I hereby declare ed, and are in all respects in proper c sed Name	that the contents of this Borralyfind ondition for transport according to a	Mane railpald decurers des pplicable international and hat Signature	ional govern	ing the page of the control regulation	ISM, LOCA s.	d are classified, package	ed, Year
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	7b. Alternate Facility (or Generat	or)		Manifest Reference I	Number:	U.S. EPA ID) Number		
	acility's Phone: 7c. Signature of Alternate Facility	(or Generator)	1					Month Day	Yea
									2,000
18	Designated Facility Owner or O	perator: Certification of receipt of ma	sterials covered by the manifest or	cont as noted in Item 17a	y vervious signa	rumphoreintere pla	and the second	Marie Commence	Lighter
	nted/Typed Name	powers or annual or recorpt of the	The second state of the second	Signature				Month Day	Yea
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1-800-997-6966

DESIGNATED FACILITY TO GENERATOR

913-897-6966

NON-HAZARDOUS WASTE MANIFEST							3. Emergency			4. Waste T	racking Nur	nber	2007	
5. Generator's Name and I SFPP, L.P. No. 1001 Louisian Houston TX	Mailing Address Drivalk Station Street EHS 77002	n 8th Fl		0 3 3	8 9 6 2 Att N	! 1 ataniel Grac	900-62 Generator's S SFPP, L 15308 N Norwalk	ite Addres P. (No	s (if different privalk S Blvd.	than mailing additation)	ress)	0228	3991	
6. Transporter 1 Company	Name	10								U.S. EPA IC	Number		100	
7. Transporter 2 Company	onmental S Name	ervice	S			1 3	CAN SHALL	1 1	73.4	U.S. EPA ID	D 0 5 Number	3 8 6	6 7	9.
8. Designated Facility Nam Patriot Wastev 314 W. Freedo Orange CA 9 Facility's Phone: 714	Mater m Ave 2865		Walk to	17. 67.					and the same	U.S. EPA II		eau	i r	e
9. Waste Shipping N		A Second	ndun-ji	rice up	- Marine	Andrew of Europe	med with the training		ainers	11. Total Quantity	12. Unit Wt./Vol.	motion was no	E . Mary Co	1
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П	153 Norwalk B	oulevard			10, 255-011	to Contact:				
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1	Consultant's Name and Billing	Address:			Consu	ltant's Phon	e #:			
	PATRIOT ENVIR	ONMENTAL				to Contact	2614			
	Nancy Clement	s / Dan Nous	zen.		Person					
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1	Generation Site (Transport from	m): (name & address)			Site Ph	one #:				
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	3. Emergency Response Pho 800-624-9136	ne 4. Waste Tro	ocking Number NH C	234094	
5. Generator's Name and Mailing Address SFPP, L.P. NORWAIK Station 1001 Louisiana Street EHS 8th Floor Houston TX 77002 Generator's Phone: 713 420-5610	15308 Norwalk BN Norwalk CA 908	vd.	66)		
6. Transporter 1 Company Name Patriot Environmental Services		U.S. EPA ID	Number	8 6 6 7	9 4
7. Transporter 2 Company Name	Willed South the	U.S. EPA ID		0 0 0 1	
8. Designated Facility Name and Site Address all Of Weste Viete 314 W. Freedom Ave Orange CA 92865 Facility's Phone: 714 921-4545		U.S. EPA ID		quir	ed
9. Waste Shipping Name and Description	10. Container	11. Total	12. Unit		
1. Non Hazardous Waste, Liquid (Drilling Mud)	No.	Type Quantity	Wt./Vol.	COLUMN TO SERVE TO S	A CONTRACTOR OF THE PERSON OF
WON HAZARDOUS YWASIE, LIQUID (U/IIIING MUD)	0.01	TT 4,800	G		
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Generators/Onerors Printed/Typed Name	are nully and accurately describe discable international and national ignature	when handling was above by the proper si governmental regulation	aste JOBA hipping name, ar ns.		Day Year
	U.S. Port of entry/e			100	
Transporter Signature (for exports only):	Date leaving				
16. Transporter Acknowledgment of Receipt of Materials Transporter 1 Printed/Typed Name State of the Company o	ignature) Laulignature	interior	0	19/2	Day Year Day Year
17. Discrepancy 17a. Discrepancy Indication Space Quantity Type	Residue	Partial R	tejection	Ful	Il Rejection
≥ 17b. Alternate Facility (or Generator)	Manifest Reference Num	U.S. EPA I	D Number	7 A PROPERTY.	7-1-
17.0. Automitato Faculty (ur Generalist)		i			
17b. Alternate Facility (or Generator) Facility's Phone: 17c. Signature of Alternate Facility (or Generator)			,	Month	Day Year
			and the second second	or and the second	Victoria Carle
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest excel	ept as noted in Item 17a			Month	Day Year
Printed/Typed Name	ignature				Ju, 104
GC Labels Printed in the USA DESIGNATED FACILITY	Y TO GENERATOR	Reord		MANIFES	r-C6NHW

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	Houston TX 77002 Generator's Phone: 713 420 5640	niel Grace George 15	306 Norwalk rwalk CA 9	Blvd.	tanon) add	988)	0201	
II	6. Transporter 1 Company Name Patriot Environmental Services				U.S. EPA ID	Number	3 8 6 6	3704
II	7. Transporter 2 Company Name	1964 40		-	U.S. EPA ID		3000	7 8 4
	8. Designated Facility Name and Site Address Patriot Waste Water 314 W. Freedom Ave Orange CA 92865. Facility's Phone: 714 921-4545.		Persona		U.S. EPA ID		egui	red
П	9. Waste Shipping Name and Description	A LINE N	10. Conta		11. Total Quantity	12. Unit Wt./Vol.	-	
E I	Non Hazardous Waste, Liquid (Drilling Mud)		No.	Type	Quantity	WL/VO.	Marija da Sala	or production of the same of t
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	P.W.W. ORANGE PROFILE NO.: SOC-20-0002 PATRIOT ENV. SVS. JOB NO.: 01-19-01233 14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this comarked and labeled/placarded, and are in all respects in proper condition for transport accommarked and labeled/placarded, and are in all respects in proper condition for transport accommarked.	XEVALVES SPE	repriete PD	nal goden	ng ng lipogay ng nental regulations		nd are classifie	d, packaged,
Ų	Generator's Offeror's Printed Typed Name JAMIES D 912	Signature	4.	K	_		A	25 AO
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Œ	16. Transporter Acknowledgment of Receipt of Materials	Signature					Month	Day Year
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DESIGNATED FA	Facility's Phone: 17c. Signature of Alternate Facility (or Generator)			percent.		HOUSE	Month	Day Year
- DESK				contract page		notice of	demonst	- Total
	18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the ma	nifest except as note Signature	d in Item 17a				Month	Day Year
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WASTE MANIFEST	1. Generator ID Number CATO80	033982		mergency Respons		4. Wasto 1	Fracking Nur	
5. Generator's Name and Mail SFPP, L.P. Non	ing Address		1 8	00-624-913	6		NH	0234022
Tuul Louisiana	Street EUC Oth Class	Att. Nathani	Stateden	FPP, L.P. (N	orwalk S	han mailing add Lation)	ress)	
Houston TX 77 Generalor's Phone: 71	7002		1	53 Norwalk E orwalk CA	SIVO.			
b. Iransponer 1 Company Na	me			ON OA	00001			
Patnot Environ	nmental Services					U.S. EPA II		
7. Transporter 2 Company Nar	me					CA	D 0 5	386679
A Designated English Name	10: 41	V:				U.S. EPA IC	Number	
8. Designated Facility Name at Soil Safe of Calif	fornia, Inc.					U.S. EPA IC	Number	
12328 Hibiscus Adelanto CA 93	Ave.							
Facility's Phone: 800	862-8001					a a		
9. Waste Shipping Nam					_	N o	t R	equire
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