

July 18, 2023

Mr. Michael W. Sullivan, P.G. North Coast Regional Water Quality Control Board 5550 Skylane Boulevard, Suite A Santa Rosa, CA, 95403

RE: SOIL AND GROUNDWATER INVESTIGATION WORK PLAN SCHLAFER'S CHEVRON
44901 MAIN STREET
MENDOCINO, CALIFORNIA
EBA Project No. 22-3219
NCRWQCB Case No. 1TMC036

Dear Mr. Sullivan:

EBA Engineering (EBA) is pleased to present this *Soil and Groundwater Investigation Work Plan* (Work Plan) on behalf of Schlafer's Incorporated, for the underground storage tank (UST) site known as Schlafer's Chevron (project site) located at 44901 Main Street, Mendocino, California (Appendix A, Figure 1). This Work Plan has been developed to address the need for additional work at the project site which was detailed in a letter from the North Coast Regional Water Quality Control Board (NCRWQCB) dated March 7, 2023. Specifically, this Work Plan proposes to investigate secondary source areas where light nonaqueous phase liquid (LNAPL) could remain, assess the distal extent of dissolve phase impacts in groundwater, collect soil samples to evaluate the Direct Contact Criteria of the State Water Resource Control Board's (SWRCB's) Low Threat Underground Storage Tank Case Closure Policy (SWRCB, 2012), evaluate vapor intrusion potential for the on-site residence, install two replacement groundwater monitoring wells, and install a sentinel groundwater monitoring well near the off-site domestic well.

#### SITE SETTING

The project site is located within the downtown area of the coastal Town of Mendocino in the southwestern portion of Mendocino County. The site includes an operating fuel service station and residence. The project site is further located within the Fort Bragg Terrace Area Groundwater Basin (Basin) within the North Coast Hydrologic Region. This Basin, which extends along the coast from Rockport on the northern boundary to Point Arena on the southern boundary. The Basin primarily consists of a series of discontinuous, unconsolidated, uplifted marine terrace deposits underlain by bedrock of the Franciscan Complex. The terrace deposits are the primarily water bearing formation in the Basin and the Franciscan Complex is considered effectively non-water bearing

(DWR, 2004). Domestic groundwater supply wells provide potable water for the project site (DW-1) and at the adjacent property, Mendocino Presbyterian Church (DWCH). It has been documented that the Town of Mendocino does not have a community water supply and that there are approximately 80 domestic water supply wells located within 1,000 feet of the project site.

#### SITE HISTORY

On September 16 and 17, 1997, Beacom Construction of Fortuna, California under the supervision of LACO Associates (LACO), removed and replaced two 6,000-gallon gasoline USTs and one 4,000-gallon diesel UST at the project site. Following the removal of the USTs, site investigation activities began in 1998, and groundwater monitoring began in 2000. In order to characterize subsurface impacts related to the release at the site, 19 soil borings and four monitoring wells have been drilled or installed at, and within the vicinity of, the project site. Please see Figure 2 (Appendix A) for the locations of relevant site features. Remedial activities conducted at the project site utilized High-Vacuum Dual-Phase Extraction (HVDPE) which started in November 2012 with an 18-day event. Based on the success of mass removal by HVDPE, a 29-day event was conducted in October 2013, followed by a 5-day event in April 2015. A soil vapor extraction (SVE) system was installed at the project site, which operated from October 2017 to December 2017 then it was subsequently shut down due to low mass recovery rates.

Other than an interruption to groundwater sampling from the Third Quarter 2019 to the Third Quarter 202, groundwater had been sampled regularly at the project site since 2000. Depth to groundwater measurement over the course of sampling have ranged between 0.44 to 18.43 feet below top of casing (TOC) and a southwestern to southeastern flow direction has been calculated based on these measurements. Groundwater flow direction appears to mimic surface topography and flows toward Mendocino Bay, located approximately 1,000 feet south of the project site. Due to the unconfined nature of the terrace deposits, seasonal fluctuation of groundwater elevations have been observed.

Following the HVDPE events, dissolved phase concentrations of gasoline range organics (GRO) (former total petroleum hydrocarbons as gasoline [TPH-g]) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) have displayed a general decrease in concentration at the on-site monitoring well (MW-2), but still remain above Water Quality Objectives. GRO concentrations have been observed at the off-site groundwater monitoring wells MW-1 and MW-1(Church) to display seasonal fluctuations suggesting a secondary source could be present.

#### **SCOPE OF WORK**

EBA proposes the advancement of eight exploratory soil borings (DPT-1 through DPT-8), installation of a soil vapor well, replacement of two groundwater monitoring wells,



and installation of a sentinel groundwater monitoring at the approximate locations shown on Figure 3 in Appendix A. The following tasks will be implemented in the completion of this work scope.

### **Permitting & Pre-field Activities**

Prior to the commencement of drilling activities, the project site will be marked for Underground Service Alert (USA) to identify any subsurface utilities at the proposed areas of investigation. In addition, a drilling permit will be obtained from the County of Mendocino Department of Health Services — Environmental Health Department (CMDHS-EHD), and access agreements obtained from off-site property owners. The CSDHS-EHD, the NCRWQCB and other interested parties will be given a minimum of 48 hours of advanced notice prior to commencement of field activities.

### Soil Boring Advancement and Soil Sample Collection

EBA will contract with and oversee a C-57 licensed driller to advance the proposed soil borings. The soil borings will be advanced using either a track or truck-mounted direct-push technology (DPT) drilling rig equipped with dual-walled tooling. The soil borings will be advanced to an anticipated depth of approximately 20 feet below ground surface (BGS), or at least five feet below first encountered groundwater. Drilling depth, location and number of borings may be adjusted based upon conditions encountered in the field. All field work will be performed under the supervision of a California-registered professional geologist. EBA personnel will field screen the breathing zone for organic vapors using a MiniRae 3000® PID during the drilling activities.

Soil samples will be collected from the borings in butyrate tubes. Soil samples will be screened in the field for the presence of VOCs using a MiniRae 3000® PID and the results will be recorded on the corresponding soil boring logs. The borings will be logged to include measured thickness for asphalt and base rock, depth to contact with native soil, depth to groundwater, lithologic description, moisture content and other relevant observations. The borings will be logged in accordance with the Unified Soil Classification System (USCS). Soil samples will be collected from each soil boring at five and 10 foot BGS depth intervals to allow for evaluation of the media-specific Direct Contact criteria as outlined in the SWRCB's *LTCP*.

Soil samples retained for chemical analysis will be collected in 2-inch diameter by 6-inch-long stainless-steel tubes, covered with Teflon™ sheeting, capped, labeled and placed under refrigerated conditions pending transport under chain-of-custody (C-O-C) procedures to K Prime, Inc. (K Prime), a California State-certified analytical laboratory for the requested chemical analysis. It is anticipated that two soil samples from each soil boring will be submitted for laboratory analysis. However, this sampling frequency may be modified based on lithology and field observations, or at the request of the NCRWQCB.

## **Soil Boring Groundwater Sampling**

Once advanced to the target depth, a groundwater grab sample will be collected from each of the exploratory soil borings using either a disposable polyethylene bailer or a



peristaltic pump equipped with disposable polyethylene tubing. Temporary 0.010-inch slotted polyvinyl chloride (PVC) casing may be placed into the open boreholes to assist in the collection of the groundwater grab samples, if warranted, based on field conditions. Groundwater samples will be collected in sterile, laboratory supplied sample containers, sealed, labeled, and placed under refrigerated conditions pending transport under COC procedures to K Prime for the requested chemical analysis.

## Soil Vapor Well Installation and Sampling

EBA proposes the installation and sampling of one soil vapor well (SV-1) at the approximate location shown on Figure 3, Appendix A. A C-57 licensed driller will perform soil vapor well installation activities. EBA will direct and oversee the soil vapor well installation activities and collect soil samples for laboratory analysis. All field work will be performed under the supervision of a California-registered professional geologist. EBA personnel will field screen the breathing zone for organic vapors using a PID.

It is anticipated that the soil vapor well will be installed to a depth of five feet bgs. Prior to the installation of the soil vapor well, a soil sample will be collected from the soil vapor well boring from approximate depths of two and five feet BGS using a slide-hammer hand-sampler equipped with a 2-inch diameter by 6-inch-long stainless-steel liner. The sample tubes will be capped with Teflon™ tape, labeled and placed under refrigerated conditions pending transport under C-O-C procedures to K Prime.

Following the collection of soil samples from each borehole, a 2-inch to 4-inch-thick bed of #2/12 Monterey sand will be placed in the bottom of the boring. A 6-inch-long stainless-steel vapor screen will be attached to the bottom of ¼-inch-outside-diameter Teflon™ tubing and lowered into the borehole. The Teflon™ tubing will be long enough to extend approximately two to three feet above ground surface to facilitate sample collection. The soil vapor well will then be backfilled with a #2/12 Monterey sand to approximately 6-inches above the screen. An approximately 6-inch-thick layer of dry bentonite chips will be placed on top of the sand pack followed by hydrated granular bentonite to approximately six to eight inches below grade. A minimum of two to three inches of concrete grout will then be placed on top of the hydrated bentonite in order to secure the Teflon™ tubing and reduce the possibility for leaks. The vapor well will be completed with traffic-rated well boxes set in concrete for stability. Teflon™ tubing extending above the ground surface will be capped and coiled inside the well box after the concrete has dried.

A soil vapor sample will be collected from the vapor well after a minimum 48-hour period following installation to allow for well construction materials to cure and for subsurface soil vapor conditions to equilibrate. Soil vapor sampling will be conducted using the equipment and procedures described in the following bulleted list:

• To facilitate sampling, the recessed compression fittings on each vapor well will be connected directly to a sample train provided by K Prime, a State-certified air testing laboratory. The sample train will consist of a ball valve, particulate filter, a 125 milliliter per minute (ml/min) flow regulator, a pressure/vacuum gauge, a 1-



liter Summa<sup>®</sup> canister (sample Summa<sup>®</sup>), and a 6-liter Summa<sup>®</sup> canister (purge Summa<sup>®</sup>). The sample train components utilize Swagelok<sup>®</sup>-type stainless steel compression fittings.

- With the ball valve and the sample Summa® canister closed, integrity testing of
  the sample train will be performed by opening and closing the purge Summa®
  canister in order to place the sample train under vacuum, then monitoring the
  vacuum for a 5-minute period to verify that it remains constant. This procedure
  will be employed to confirm that the sample train can hold a vacuum (not leak)
  and is suitable for sampling.
- The vapor well will be purged before sampling by removing two liters of existing vapor to ensure the soil vapor being sampled is representative of the investigative area. The purge event will be accomplished using the purge Summa® canister.
- The entire sample train will then be placed under a protective clear shroud, along with a second 1-liter Summa® canister (leak Summa®) equipped with a 125-ml/min flow regulator, to facilitate leak testing.
- Sampling will be initiated by opening the sample Summa<sup>®</sup> and leak Summa<sup>®</sup> simultaneously. During sampling, the sample train will be exposed to a leak check compound to facilitate leak testing by spraying 1,1-difluoroethane (DFA) propellant intermittently into the shroud. The leak Summa<sup>®</sup> canister thus records the concentrations within the shroud over the entire duration of the test in order to correlate any concentrations of DFA potentially found in the sample Summa<sup>®</sup> canister.
- When the vacuum gauge indicates that approximately zero inches of mercury (Hg) (vacuum) remain in the sample Summa® canister, both the sample and leak Summa® canisters will be closed, removed, capped, and labeled. The sample start and end times will be recorded in the field notes.
- The soil vapor samples will be transported under C-O-C procedures to K Prime for analytical testing.

## **Soil Vapor Sample Analysis**

EBA proposes to conduct two soil vapor sampling events which will be separated by six months to assess seasonal fluctuations in soil vapor concentrations. The soil vapor samples will be analyzed for BTEX and naphthalene by EPA Method TO-15, oxygen by ASTM D1946, and for DFA (leak check) using EPA Method TO-3. The leak check samples will be analyzed for DFA only.

## **Monitoring Well Installation and Construction**



Due to the inundation of plant roots within monitoring wells MW-1 and MW-3, EBA proposes the installation of two replacement groundwater monitoring wells at the project site, each of which will be located in close proximity to the existing monitoring well. Additionally, EBA proposes to install a sentinel monitoring well near domestic well DWCH. The following provides details for the monitoring well designation and the new nomenclature for the monitoring wells;

- Down gradient monitoring well MW-1, will be replaced with MW-1R;
- Up gradient monitoring well MW-3, will be replaced with MW-3R; and
- The sentinel well will be identified as MW-5.

EBA will construct the replacement groundwater monitoring wells in a similar fashion to the original monitoring wells. It is anticipated MW-1R and MW-3R will be drilled to a depth of 15 feet BGS and MW-5 will be drilled to a depth of approximately 20 feet BGS utilizing six-inch diameter hollow-stem augers (HSA) by a licensed C-57 driller. The following table presents the anticipated well construction details.

Summary of Well Construction Details							
Well ID	Depth of Well	Screen Interval	Filter Pack Interval	Bentonite Seal	Cement Grout		
	Feet BGS						
MW-1R	15	5 - 15	4 - 15	2 - 4	0 - 2		
MW-3R	15	5 - 15	4 - 15	2 - 4	0 - 2		
MW-5	20	20 - 5	4 - 20	2 - 4	0 - 2		

BGS: Below Ground Surface.

During the drilling of the boreholes, soil samples will be collected using a modified California split spoon sampler equipped with internal two-inch diameter by six-inch-long stainless-steel liners or similar soil sampling technology. The soil samples will be described according to the USCS and will be screened in the field for the presence of VOCs using a PID. It is anticipated that EBA will collect two soil samples from each monitoring well location, one soil sample will be collected at five feet BGS and the other will be collected at the groundwater interface.

The groundwater monitoring wells will be installed by drilling to the target exploration depth and then lowering the PVC casing through the HSAs. The monitoring wells will be constructed of two-inch diameter, flush-threaded, Schedule 40 blank and slotted 0.010-inch PVC casing. Based on historical depth to water measurements at the project site, it is anticipated that the screen section of the monitoring well will extend



from the final depth of the borehole to five feet BGS. A filter pack consisting of #2/12 will then be placed around the screen to approximately one-foot above the slotted interval. A two-foot-thick bentonite seal will be placed above the filter pack. The remaining portion of the annular space will be filled with cement slurry. The top of the well will be enclosed in a watertight traffic-rated well box set in concrete and equipped with a locking well cap to provide security.

## **Monitoring Well Development**

The monitoring wells will be developed a minimum of 48 hours following well installation. The development process will utilize a surge block and a disposable polyethylene bailer or pump to remove residual fines that remain from the drilling and to improve the hydraulic communication between the well filter pack and the formation. All purge water generated during development activities will be temporarily stored onsite in properly labeled DOT 17H 55-gallon steel drums pending proper disposal.

## **Monitoring Well Survey**

The location and top of casing (TOC) elevation of the monitoring wells will be surveyed to mean sea level (MSL) by a licensed surveyor. The corresponding data will then be uploaded to the State of California's GeoTracker website in accordance with Assembly Bill 2886 (AB2886).

## **Groundwater Monitoring and Sampling**

Following a minimum of 48 hours after well development, all the monitoring wells at the site will be sampled. Prior to purging, the depth to groundwater from TOC will be measured to the nearest 0.01 feet and recorded in the field notes. Groundwater will be purged from each well using a single-use disposable polyethylene bailer. Groundwater pH, electrical conductivity, and temperature will be monitored during well purging. The monitoring wells will be considered adequately purged when the water quality parameters have stabilized and at least three well volumes have been removed. A field data sheet detailing the sampling procedures and measurements will be completed at the time of sample collection.

Following the purging activities, a groundwater sample will be collected from the monitoring wells using a single-use disposable bailer fitted with a bottom-emptying device to minimize water degassing. Upon collection of the samples, the samples will be transferred into properly labeled, sterile, laboratory-supplied containers, logged on a C-O-C form, and placed under refrigerated conditions pending transport to a California State-certified laboratory for chemical analysis. Groundwater sampling would include all monitoring wells associated with the project site. The domestic well will also be sampled during the groundwater monitoring event.

## **Equipment Decontamination, Borehole Abandonment & Waste Management**

The drilling and sampling equipment will be decontaminated before drilling each soil boring to minimize the possibility of cross contamination. In addition, the sampling equipment will be cleaned prior to collecting each soil sample with an Alconox® solution and a potable water rinse. The decontamination water generated as part of these



cleaning operations will be retained and stored on-site in properly labeled DOT 17H 55-gallon steel drums pending transport to EBA's warehouse located in Santa Rosa, California, where it will be subsequently treated using granular activated carbon (GAC) and discharged to the City of Santa Rosa's Publicly-Owned Treatment Works (POTW) under EBA's Industrial User Permit #SR-GW-7010. Upon completion of the drilling operations, the boreholes will be backfilled with cement grout using tremie pipe to within four inches of grade. The last four inches will be completed with native materials or asphaltic concrete to match existing conditions to the extent practicable.

Soil cuttings generated during soil boring advancement and sampling activities will be stored on-site in properly labeled DOT 17H 55-gallon steel drums pending subsequent disposal at a properly licensed disposal facility.

**Laboratory Analytical Testing** 

All soil and groundwater samples will be analyzed for, diesel range organics (DRO), and GRO using EPA Test Method 8015B, and for VOCs, including BTEX, Methyl tert-Butyl Ether (MtBE), Diisopropyl Ether (DIPE), Ethyl Tertiary Butyl Ether (EtBE), tertiary Amyl Methyl Ether (tAME), tert-Butyl Alcohol (tBA), 1,2-Dichloroethane (EDC), and 1,2-Dibromoethane (EDB) by EPA Test Method 8260B/ 5035/5030. Select soil samples will also be analyzed for naphthalene and polyaromatic hydrocarbons (PAHs) by EPA Method 8270.

#### REPORTING

Findings from the proposed scope of work will be summarized in a *Report of Investigation* (ROI) which will include a description of the work performed, tabulated analytical results, graphical boring logs, a summary of the findings, and recommendations for additional work.

#### SITE HEALTH AND SAFETY PLAN

A Site Health and Safety Plan for the scope of work presented herein is included as Appendix B.

#### SCHEDULE

The scope of work presented herein will be implemented following the approval of this Work Plan and receipt of an approved soil boring permit and the necessary access agreements from off-site property owners, and at the direction of the Client. Advance notice will be provided prior to the implementation of field activities.

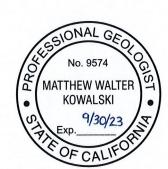


## **CLOSING**

If you have any questions regarding this report, please contact our office at (707) 544-0784.

Sincerely,

**EBA ENGINEERING** 



Matt Kowalski, P.G., QSD

**Project Geologist** 

David Noren, Vice President Environmental Services

#### **APPENDICES**

Appendix A – Figures
Appendix B – Health & Safety Plan

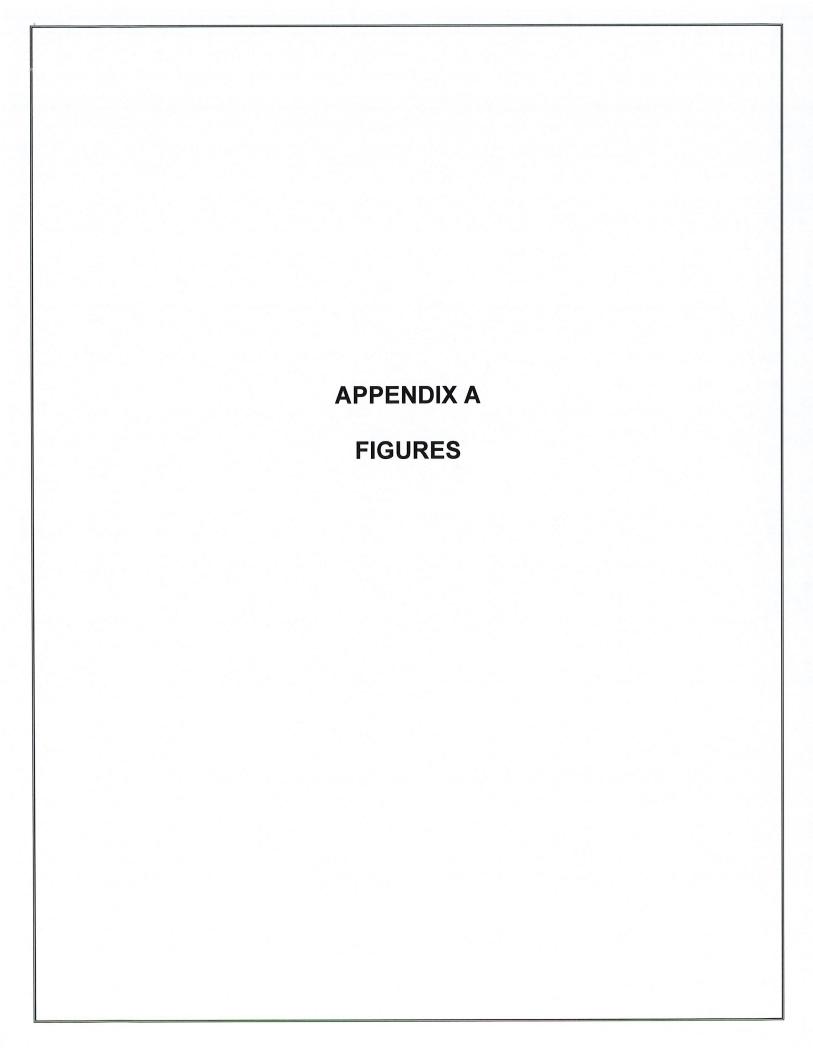
Cc: Ms. Judy Schlafer, P.O. Box 953, Mendocino, CA, 95460



#### REFERENCES

- California Department of Water Resources, *Bulletin No. 118-80, Ground Water Basins in California, Fort Bragg Terrace Area Groundwater Basin.* Updated 2004 (DWR, 2004).
- EBA Engineering, Third Quarter 2022 Groundwater Monitoring Report, Schlafer's Chevron, 44910 Main Street, Mendocino, California. Dated October 30, 2022 (EBA, 2022).
- State Water Resource Control Board, Low Threat Underground Storage Tank Case Closure, Resolution Number 2012-0016 dated August 17, 2012.







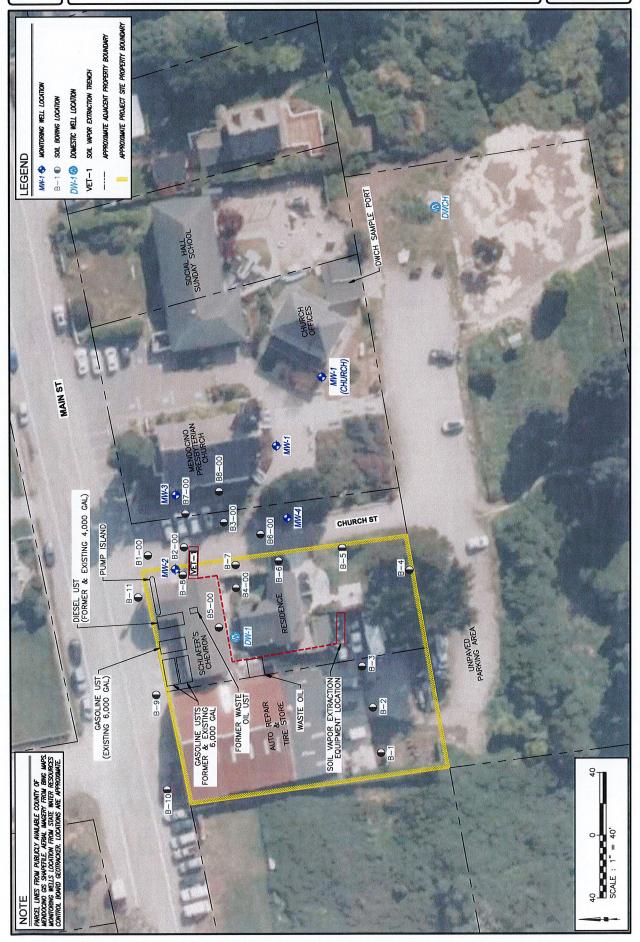


# **LOCATION MAP**

SCHLAFER'S CHEVRON 44901 MAIN SREET MENDOCINO, CA 95460 **FIGURE** 

1

22-3219



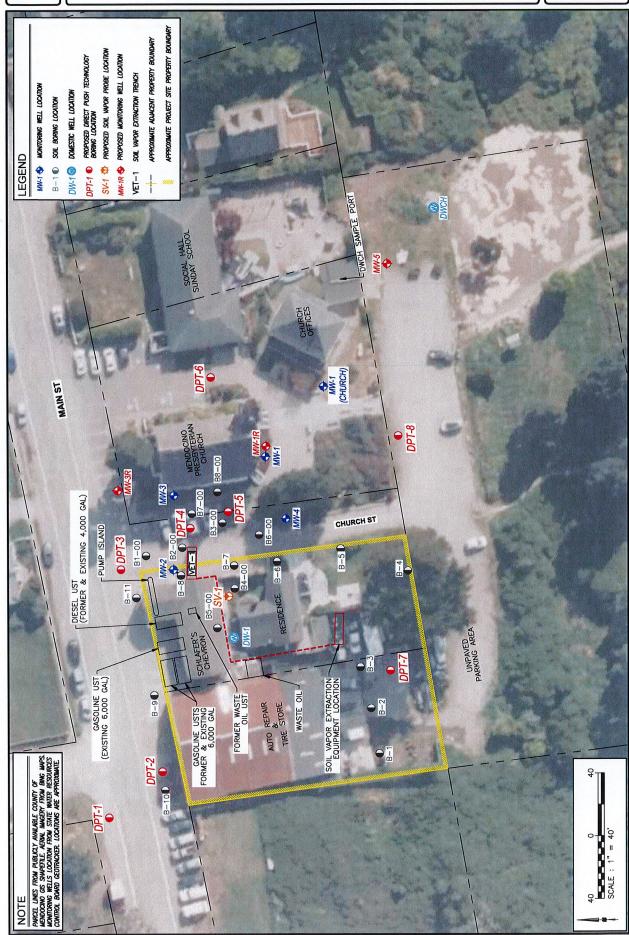
**S** FIGURE

55-2518

**SITE MAP** 

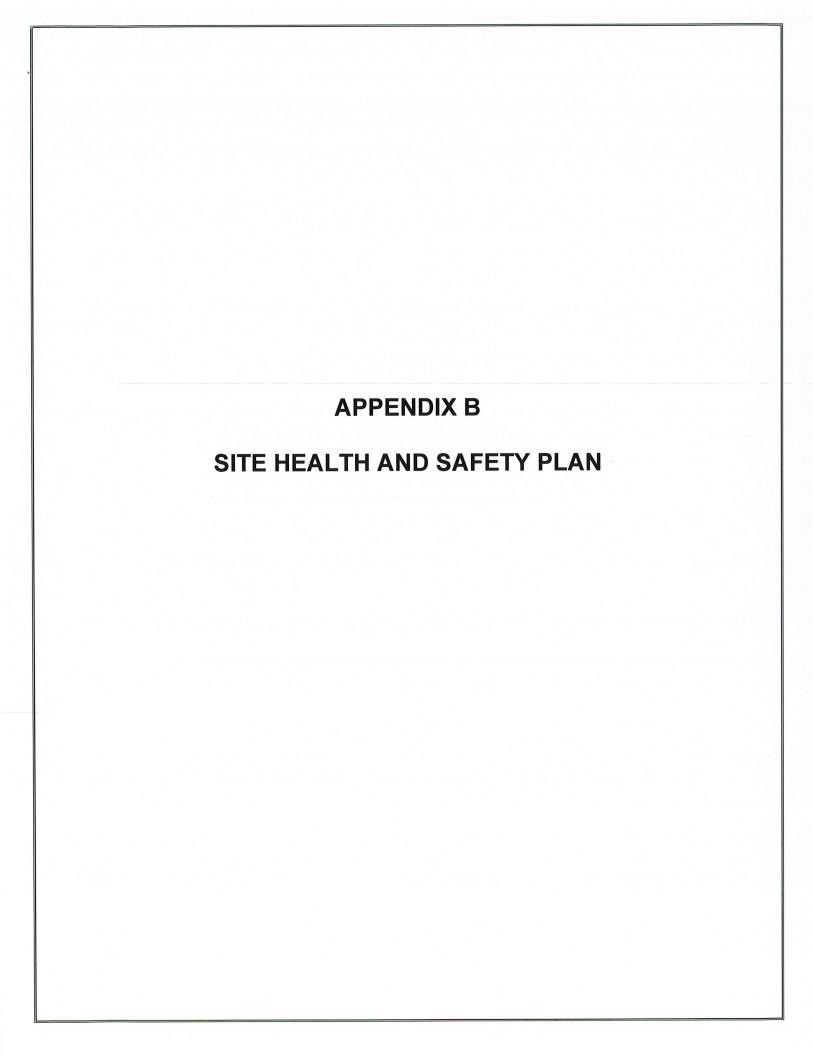
MENDOCINO, CA 95460 44901 MAIN SREET CHLAFER'S CHEVRON





**3** Elenke PROPOSED BORING AND MONITORING WELL LOCATIONS 44901 MAIN SREET ACCATIONS CA 95460





#### SITE HEALTH AND SAFETY PLAN

Project No.: 22 - 3219 Field Activities Date: 2023

Client: Schlafer's Inc. Address: P.O. Box 953

Mendocino, California 95460

Contact Person: Judy Schlafer <u>Telephone No.:</u> 707-357-6181

Job Location: 44901 Main Street, Mendocino, California

**Project Description:** Subsurface Site Investigation

Project Manager: David Noren Site Health & Safety Manager: Matt Kowalski

## **Chemical Hazards:**

CHEMICAL NAME	DESCRIPTION	HEALTH & SAFETY STANDARDS	POTENTIAL ROUTES OF EXPOSURE	SYMPTOMS OF ACUTE EXPOSURE
Benzene	Carcinogen, aromatic HC	8-hr. TLV=10 ppm PEL=1 ppm	Inhalation, dermal	Headache, dizziness
Toluene	Aromatic HC	8-hr. TLV=100 ppm	Inhalation, dermal	Headache, dizziness
Xylenes	Aromatic HC	8-hr. TLV=100 ppm	Inhalation, dermal	Headache, dizziness
Ethylbenzene	Aromatic HC	8-hr. TLV=100 ppm	Inhalation, dermal	Headache, dizziness
Gasoline	Flammable liquid	8-hr. TLV=300 ppm Flashpt.=-50° F LEL=1.4%, UEL=7.6%	Inhalation, dermal	Headache, dizziness eye/skin irritation
Diesel	Combustible liquid		Inhalation, dermal	Headache, dizziness, eye/skin irritation
MtBE	Combustable Liquid	8-hr. TLV=100 ppm	Inhalation, dermal	Dizziness eye/skin irritation
DIPE	Class 1b Flammable Liquid	IDLH: 1400 ppm	Inhalation, dermal	Dizziness eye/skin irritation
ТВА	Combustable Liquid	8-hr. TLV=150 ppm	Inhalation, dermal	Dizziness eye/skin irritation

Note: Health and safety standards refer to airborne concentrations to which nearly all workers may be repeatedly exposed daily without harmful effects. The concentrations are time-weighted averages for a normal 8-hour work period.

<u>Physical Hazards:</u> Fire and explosion (primarily gasoline), heavy equipment, noise, overhead and underground utilities, and heat stress.

#### SITE HEALTH AND SAFETY PLAN

(Continued)

Personal Protective Equipment Required: First aid kit, hard hat, eye protection, noise protection, chemical-protective gloves, steel-toed rubber boots, and respirator with organic vapor cartridge.

Air Monitoring Strategy (including action levels): Monitor breathing zone for total volatile organic compounds (VOCs) with photo-ionization detector meter (parts per million by volume [ppmv] scale). If greater than 5 ppmv in breathing zone for five minutes or greater than 30 ppmv instantaneous, don respirator and/or go upwind of source. Don respirator if fuel odor persists or go upwind of source. Record all measurements in field notebook.

Site Control Measures: 1) Place used protective gear and decontamination equipment in containers for proper disposal; 2) no eating, drinking, or smoking in work area; 3) bring drinking water; 4) decontaminate boots and sampling equipment prior to leaving site; 5) inform workers (including non EBA workers) on-site of elevated VOC readings and document.

Decontamination Procedures (personal and equipment): Decontaminate boots and soil sampling equipment with TSP and water. Wash and rinse sampling equipment with clean water. Store rinse water in 55-gallon drums (labeled) pending receipt of laboratory results or discharge rinse water into contained stockpile awaiting final disposal or treatment.

Decontaminate heavy equipment by scraping loose material, then wash with steam cleaning unit. Collect and combine loose material and rinsate in stockpile awaiting final disposal or treatment.

**Phone:** 707-961-1234 Hospital: Mendocino Coast District Hospital

Fire/Police Dept.: 911 Paramedic: 911

Hospital Address: 700 River Drive, Fort Bragg, CA 95437

**Directions from Project Site to Hospital:** see Hospital Map – Figure H (Appendix C)

- 1) Head east on Main Street
- 2) Turn left onto Highway 101 (north)
- 3) Turn right onto South Street
- 4) Turn left onto River Drive
- 5) Hospital is on the left.

**Directions from Hospital to Project Site:** see Hospital Map – Figure H

- 1) Head west on River Drive
- 2) Turn right onto South Street
- 3) Turn left onto Highway 101 (south)
- 4) Take a left off the Main Street exit
- 5) Project Site is on the right.

#### SITE HEALTH AND SAFETY PLAN

(Continued)

**Emergency Procedures:** Call 911 for fire or serious injury. Proceed to hospital (see map) if necessary for minor injuries. Call EBA (707) 544-0784.

Approved by: Matt Kowalski, P.G. (EBA) Read by: Date: Read by: <u>Date:</u> Read by: Date: Read by: Date: Read by: Date:

Matt Kowalski, P.G. (EBA)

Prepared by:

Read by:

Date: