ConocoPhillips
76 Broadway
Sacramento, California 95818

February 14, 2006

Mr. Don Hwang
Alameda County Health Agency
1131 Harbor Bay Parkway
Alameda, California 94502

Re: **Transmittal**
ADDITIONAL SOIL AND GROUNDWATER INVESTIGATION WORK PLAN
76 SERVICE STATION # 3072
2445 CASTRO VALLEY BOULEVARD
CASTRO VALLEY, CALIFORNIA

Dear Mr. Hwang:

I declare under penalty of perjury that to the best of my knowledge the information and/or recommendations contained in the attached report is/are true and correct.

If you have any questions or need additional information, please contact

Shelby S. Lathrop (Contractor)
ConocoPhillips
Risk Management & Remediation
76 Broadway
Sacramento, CA 95818
Phone: 916-558-7609
Fax: 916-558-7639

Sincerely,

Thomas Kosel
Risk Management & Remediation

Attachment

TRC

Customer-Focused Solutions

February 14, 2006 TRC Project No. 42013903

Mr. Don Hwang
Hazardous Materials Specialist
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

SITE: 76 STATION NO. 3072
2445 CASTRO VALLEY BOULEVARD
CASTRO VALLEY, CALIFORNIA

RE: ADDITIONAL SOIL AND GROUNDWATER INVESTIGATION WORK PLAN

Dear Mr. Hwang:

On behalf of ConocoPhillips Company (ConocoPhillips), TRC submits this work plan for additional site assessment at 76 Station No. 3072, located at 2445 Castro Valley Boulevard in Castro Valley, California (Figure 1). The site was an active leaking underground storage tank (LUST) case until May 20, 1993 when closure was granted by the Regional Water Quality Control Board (RWQCB). However, based on the results of a recent baseline assessment conducted at the site, the case has been reopened.

1.0 PROJECT OBJECTIVES AND SCOPE OF WORK

The objectives of this assessment are to further characterize the extent of hydrocarbons in site soils and the dissolved-phase hydrocarbons in the shallow water-bearing zone onsite.

The scope of work for this assessment includes the following:

- Advancement of Cone Penetrometer Test (CPT) borings at five onsite locations.
- Collection of depth-discreet grab groundwater samples using a hydropunch sampler for analysis at a state certified laboratory.
- Based on results of CPT hydropunch investigation, construction of additional groundwater monitoring wells, if necessary.
- Collection of soil and groundwater samples during monitoring well installation for analysis at a state certified laboratory.
- Preparation of a final technical report documenting CPT hydropunch activities, well installation and development, groundwater sampling procedures, laboratory results, waste characterization, and disposal.

2.0 SITE DESCRIPTION

The site is currently an active 76 service station located on the corner of Castro Valley Boulevard and Strobridge Avenue in Castro Valley, California (Figure 1). Current site facilities include a station building, lube bay, and auto service building, three underground fuel storage tanks, one underground waste oil storage tank, and three dispenser islands. Locations of the pertinent site features are shown on Figure 2.

2.1 Geology and Hydrogeology

Based on the observations during the recent baseline assessment and during previous soil and groundwater investigations conducted at the site, lithologies observed beneath the site consist of silts, clays, and fine sands. Shale has also been observed underlying the clay and fine sands from 10 to 50 feet below grade (fbg).

Groundwater has been encountered at the site historically between 6 and 9 fbg. During the recent baseline investigation, groundwater was encountered at depths of between 15 and 25 fbg on the northern portion of the site and 47 to 50 fbg on the southern portion of the site (TRC, 2005). Historically, the groundwater flow direction has been to the northeast (Kaprealian Engineering (KEI), 1991).

3.0 SITE BACKGROUND

November 1989 through February 1990: Three 10,000 gallon underground storage tanks (USTs), one 550 gallon waste oil UST, and product piping were removed and replaced. The UST pits were over excavated to remove impacted soil (KEI, 1991).

November 14, 1989: Six soil samples (A1, A2, B1, B2, C1, and C2) were collected from below the fuel USTs and one soil sample (WO1) was collected from below the waste oil UST. Samples from beneath the gasoline USTs contained concentrations of total petroleum hydrocarbons as gasoline (TPH-g) from non-detect to 11 parts per million (ppm) and non-detect concentrations of benzene, toluene, ethylbenzene, and xylenes (BTEX). Concentrations of total petroleum hydrocarbons as diesel (TPH-d) were non-detect in the sample collected from below the diesel UST. The soil samples collected from beneath the waste oil tank contained reportable concentrations of TPH-g, metals, and 1,1-dichloroethene (1,1-DCE) and were non-detect for all other constituents analyzed (KEI, 1991).

November 16, 1989: Six sidewall soil samples (SW1 through SW6) and a grab water sample were collected from the fuel UST. Samples SW1 and SW4 contained TPH-g concentrations of 140 ppm and 160 ppm, respectively. TPH-d was detected at a concentration of 24 ppm in sample SW4 (KEI, 1991).

December 22, 1989: Eight soil sidewall samples (SW1 (17), SW2 (17), SW7 through SW11, and SW3 (17)) were collected after additional excavation of the UST pits. Maximum reported TPH-g concentrations were 1,500 ppm and 1,900 ppm (KE, 1991).

January 18 and 19, 1990: Three 2-inch diameter monitoring wells (MW1, MW2, and MW3) were installed onsite (KEI, 1991).

February 14, 1990: Three soil samples (P1, P2, and P3) were collected from the product pipeline trenches. Low to non-detect concentrations of TPH-g and BTEX were detected with a maximum TPH-g concentration of 87 ppm (KEI, 1991).

March 9, 1990: Three sidewall soil samples (SWB, SWC, and SWD) were collected from the sidewalls of the waste oil UST pit. Low to non-detect concentrations of TPH-g and BTEX were detected with a maximum TPH-g concentration of 37 ppm (KEI, 1991).

April 24 and 25, 1990: Eight exploratory soil borings (EB1 through EB8) were drilled and soil samples collected. The borings were backfilled with neat cement. Low to non-detect concentrations of TPH-g and BTEX were detected with a maximum TPH-g concentration of 5 ppm (KEI, 1991).

August 13, 1990: Two 2-inch monitoring wells (MW4 and MW5) were installed. Soil samples from the monitoring well pilot borings contained non-detect concentrations of TPH-g and BTEX in all samples. Benzene was detected at a maximum concentration of 3.2 ppb (KEI, 1991).

January 24, 25 and 31, 2005: TRC conducted a Baseline Site Assessment (TRC, 2005) which involved the advancement of six direct-push borings (SB-1 through SB-6) to assess the presence of hydrocarbon-affected soil and groundwater beneath the site. TPPH was detected in two soil samples at a maximum concentration of 480 milligrams per kilogram (mg/kg) in SB-1 at a depth of 8 fbg. MTBE was detected in two soil samples at a maximum concentration of 0.11 mg/kg in SB-3 at a depth of 18 fbg. MTBE was detected in three of the four grab groundwater samples at a maximum concentration of 87 micrograms per liter (µg/L) in boring SB-1.

4.0 SITE ASSESSMENT ACTIVITIES

TRC proposes to advance five onsite CPT borings for the purpose of characterizing site lithology, identifying potential water-bearing zones, and assessing groundwater quality within those zones. Proposed CPT boring locations are shown on Figure 2.

Based on the data generated by the CPT hydropunch investigation, additional Site monitoring wells will be constructed, if required, for the purpose of assessing soil and groundwater quality and hydrogeologic conditions. The proposed monitoring well locations and construction details will be provided to the Alameda County Health Care Services Agency (ACHCS) prior to the commencement of monitoring well construction activities.

4.1 Pre-Field Activities

Prior to commencing boring and well installation activities, drilling permits will be acquired from the Alameda County Public Works Agency. Underground Service Alert (USA) will be notified at least two days prior to field activities to mark underground utilities at the proposed boring locations and around the property boundaries. In addition, a private utility locator will be contracted to confirm the absence of buried utilities at each proposed boring/well location. Prior to advancing each boring, a pilot hole will be cleared with an air knife to approximately 5 fbg to verify the absence of buried utilities.

A site and job specific health and safety plan that promotes personnel safety and preparedness during the planned activities has been developed and is included in Appendix A. On the morning of the day that the field activities are to commence, a "tailgate" meeting will be conducted with all exclusion zone workers to discuss the health and safety issues and concerns related to the specific work.

4.2 CPT Hydropunch Investigation

A CPT rig will be used to advance up to three separate co-located borings at five onsite locations. Proposed CPT boring locations are shown on Figure 2. The CPT rig is equipped with an onboard computer system that will provide a continuous lithologic log and real time analysis of the subsurface conditions.

The initial boring at each location will be advanced to a maximum depth of approximately 60 fbg or until refusal, using the integrated electronic cone system of the CPT rig to determine soil stratigraphy, relative density, and hydrogeologic conditions in the vicinity of the borings.

Subsequent co-located borings will be advanced to potential water bearing zones, as identified from analysis of the data obtained from the initial data run, for depth-discrete hydropunch groundwater sampling.

The hydropunch groundwater sample tool will be advanced to the potential groundwater sampling depth identified during the initial logging run, the hydropunch screen will be exposed, and a groundwater sample will be collected. The use of separate co-located borings for each depth-discrete groundwater sample prevents the potential for cross-contamination during boring advancement.

Grab groundwater samples will be properly preserved and transported to a state-certified laboratory under appropriate chain-of-custody protocol. The samples will be analyzed for the following:

- Total petroleum hydrocarbons as diesel (TPH-d) by EPA Method 8015
- Total purgeable petroleum hydrocarbons (TPPH) by EPA Method 8260B
- Benzene, toluene, ethyl benzene, total xylenes (BTEX) by Method 8260B

- Methyl tertiary butyl ether (MTBE), tertiary butyl alcohol (TBA), di-isopropyl ether (DIPE), tertiary amyl methyl ether (TAME), ethyl tertiary butyl ether (ETBE) 1,2-dichloroethane (1,2-DCA), 1,2-dibromoethane (EDB), and ethanol by EPA Method 8260B.

4.3 Monitoring Well Installation

If evidence of significant groundwater impacts is observed during the CPT hydropunch investigation, groundwater monitoring wells will be installed at the Site to determine local hydrogeologic conditions and provide long-term groundwater quality monitoring. Monitoring wells will be installed using a hollow-stem auger drilling rig. Proposed monitoring well locations and construction details will be provided to the ACHCS for review and approval prior to remobilization and commencement of monitoring well construction activities. Soil samples will be collected at five-foot depth intervals using a split-spoon sampler. Samples will be collected for soil description in accordance with the Unified Soil Classification System (ASTM D-2487), field hydrocarbon vapor testing, and analysis at a state-certified laboratory. General field procedures to be followed during this investigation are outlined in Appendix B.

The soil samples will be screened in the field using a hand-held organic vapor meter equipped with a photo-ionization detector (PID). Samples will be selected for laboratory analysis based on the PID screening levels and any observed hydrocarbon impact such as staining, sheen, free product, or hydrocarbon odor. At least two soil samples per boring will be submitted to a state-certified laboratory for analysis, one of which will be the soil sample collected from the capillary fringe from each boring. The selected soil samples will be properly preserved and transported to the laboratory under appropriate chain-of-custody protocol. The soil samples will be analyzed for the following:

- TPH-d by EPA Method 8015
- TPH-g by EPA Method 8260B
- BTEX by Method 8260B
- MTBE, TBA, DIPE, TAME, ETBE 1,2-DCA, EDB, and ethanol by EPA Method 8260B.

The proposed monitoring wells will be constructed of 2-inch diameter polyvinyl chloride (PVC) blank (riser) and slotted screen (0.020). The well screen interval will be determined from lithologic data collected from the exploratory borings. The screen formation annulus will be filled with an appropriate filter pack material. The riser formation annulus will be properly sealed with hydrated bentonite chips and cement grout. The wellhead will be sealed with a watertight, lockable well cap. A flush-mounted, watertight, traffic-rated well box will be installed over the wellhead.

Following installation of the filter pack, the well will be developed (surged and bailed) to improve hydraulic communication between the geologic formation and the well. A wellhead reference point, typically a notch cut into the top of the well casing, will be surveyed relative to the surrounding site wells and the nearest benchmark. Future depth to groundwater measurements will be made from the wellhead reference point.

Additional monitoring well installation procedures that will be followed are included in Appendix B.

4.4 Groundwater Monitoring and Sampling

Fluid level measurements and groundwater sampling will be conducted no sooner than 48 hours after development of the well. Fluid levels will be measured relative to the top of the casing with a precision of 0.01 feet. The presence and thickness of free phase product will also be checked in the well.

After measuring fluid levels, the wells will be purged and sampled. A groundwater sample will be collected from the well using a clean new disposable bailer following standard sampling procedures (Appendix B). The groundwater samples will be appropriately preserved and submitted to a state-certified laboratory for analysis. Chain-of-Custody protocol will be followed, providing a continuous record of sample possession prior to analysis. The laboratory will analyze the groundwater samples for the following:

- TPH-d by EPA Method 8015
- TPPH by EPA Method 8260B
- BTEX by Method 8260B
- MTBE, TBA, DIPE, TAME, ETBE 1,2-DCA, EDB, and ethanol by EPA Method 8260B.

4.5 Waste Disposal

Soil cuttings and water generated during site assessment activities will be temporally stored onsite in Department of Transportation (DOT)-approved 55-gallon drums pending disposal to an approved disposal/recycling facility. Waste manifests will be prepared for proper transport and disposal of the waste.

4.6 Site Assessment Report

Upon completion of the site assessment activities, a final report will be prepared which will include the CPT logs, boring logs and well construction details, laboratory analytical results, findings, and conclusions. The report will be submitted to the ACHCS within six weeks of the completion of the field activities.

5.0 WORK SCHEDULE

Planned activities will be performed according to the following estimated completion schedule:

- Agency approval of work plan expected within four weeks of submittal.
- Conduct CPT hydropunch investigation within six weeks of work plan approval from the ACHCS.

- Submit analytical results of the CPT hydropunch investigation and, if necessary, a site plan showing final proposed monitoring well locations to the ACHCS for review prior to their installation.
- If new wells are needed, agency review of revised proposed well locations expected within one week of submittal.
- If new wells are needed, install monitoring wells within three weeks of obtaining agency approval of proposed well locations (assuming rig availability)
- Submit technical report within six weeks of completion of field activities.

6.0 REFERENCES

Kaprealian Engineering Inc. (KEI), 1991, Quarterly Report for Unocal Service Station #3072, located at 2445 Castro Valley Boulevard, Castro Valley, California, July 15, 1991.

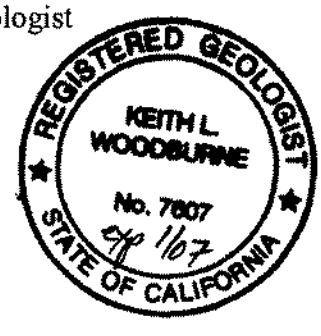
TRC, 2005, Baseline Site Assessment Report for 76 Service Station No. 3072, located at 2445 Castro Valley Boulevard, Castro Valley, California, March 8, 2005.

If you have any questions regarding this work plan, please call Keith Woodburne at (925) 688-2488.

Sincerely,
TRC

Rachelle Dunn
Staff Geologist

Keith Woodburne, P.G.
Senior Project Geologist



Attachments: Figure 1: Vicinity Map
Figure 2: Site Plan Showing Proposed CPT Boring Locations
Appendix A: Site Health and Safety Plan
Appendix B: General Field Procedures

cc: Shelby Lathrop, ConocoPhillips (electronic upload only, with attachment)

FIGURES

1 MILE 3/4 1/2 1/4 0 1 MILE

SCALE 1 : 24,000

N

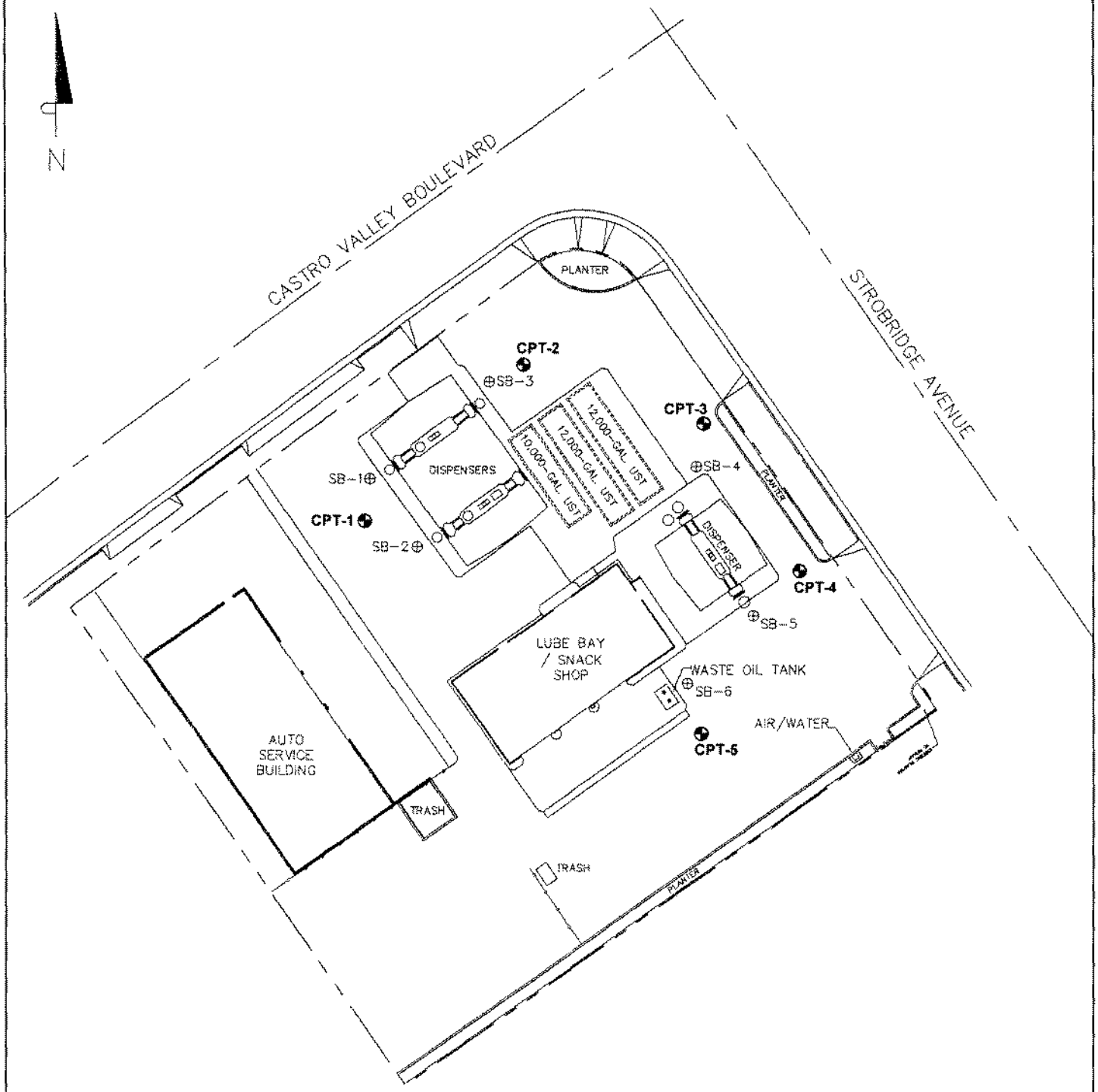
SOURCE:

United States Geological Survey
7.5 Minute Topographic Maps:
Hayward Quadrangle
California

VICINITY MAP

76 Service Station #3072
2445 Castro Valley Boulevard
Castro Valley, California

TRC | **FIGURE 1**



APPROXIMATE SCALE (FEET)

0 40 80

LEGEND

- Property Boundary
- Fence
- ⊕ SB-6 Previous Soil Boring
- CPT-5 Proposed CPT Hydropunch Location

SOURCE: Client-provided site plan prepared by A&S Engineering, October 1997.

SITE PLAN SHOWING PROPOSED CPT HYDROPUNCH LOCATIONS

76 Service Station #3072
2445 Castro Valley Boulevard
Castro Valley, California

TRC

FIGURE 2

APPENDIX A

SITE HEALTH AND SAFETY PLAN

TRC

Customer-Focused Solutions

SITE SPECIFIC HEALTH & SAFETY PLAN

76 Service Station # 3072
2445 Castro Valley Blvd.
Castro Valley, California

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TABLES

ATTACHMENTS

SITE SPECIFIC HEALTH AND SAFETY PLAN (HSP)

76 Service Station # 3072
Site Assessment
2445 Castro Valley Blvd.
Castro Valley, California

1.0 INTRODUCTION

The purpose of this Health & Safety Plan (HSP) is to establish responsibilities, procedures and contingencies for the protection of TRC employees, contractors, visitors and the public while performing activities at the 76 Service Station # 3072 in Castro Vallye. This site-specific HSP is to be implemented in conjunction with TRC Solutions, Inc (TRC) Health and Safety Programs, including the Injury and Illness Prevention Program (IIPP) and Hazard Communication Program.

The use of proper health and safety procedures in accordance with applicable OSHA regulations shall be required during site work. The procedures presented in this HSP are intended to serve as guidelines. They are not a substitute for sound judgment by site personnel.

1.1 KEY COMPANIES INVOLVED IN PROJECT

CUSTOMER OR CLIENT:	ConocoPhillips
DESIGN ENGINEER:	TRC
CONTRACTOR:	TRC
SUBCONTRACTOR:	Gregg Drilling & Woodward Drilling

Gregg Drilling & Woodward Drilling have also prepared an HSP(s) for the drilling activities. Their HSP(s) supplements TRC's HSP. A copy of their HSP(s) is included in **Attachment G**.

1.2 SCOPE OF WORK

The proposed work will be performed by TRC, Woodward Drilling, and/or Gregg Drilling and will include but may not be limited to the following activities:

- *Hand clear all boring locations to 5 feet to ensure not to hit underground utilities using an air or water knife.*
- *After borings have been hand cleared, drill bore holes using a CPT rig to total approximate maximum depths of 60 fbg.*
- *Collect groundwater and soil samples.*
- *Seal sample boings with grout.*
- *After borings have been hand cleared, drill bore holes using a drill rig to total approximate depths of 25 fbg.*
- *Install monitoring wells using drill rig, sand dolly, mixer, and pump.*
- *Well development using a development rig.*
- *Site clean-up.*

2.0 SITE INFORMATION

This HSP considers the physical, chemical, and biological hazards that may be encountered during work activities at the site. Operations associated with this HSP will be conducted in accordance with the scope of work and approved design drawings/specifications.

Summary information for this project is provided in the following table:

Table 1: Site Information

Anticipated Work Period: Site description (see Attachment A for site map):	February 2006 to April 2006 Active automobile service station
Approximate depth to groundwater:	Between 15 and 50 fbg
Contaminants of concern (see Attachment B):	Gasoline, Diesel, BTEX, and MTBE in Soil and Groundwater.

3.0 ROLES & RESPONSIBILITIES

Contact information and names of key project personnel are listed below. A description of their responsibilities follows.

Table 2: Key Project Personnel and Contact Information

Role	Name	Contact Information
TRC Personnel		
TRC Project Manager/Supervisor	Keith Woodburne	Office: (925) 688-2488 Cell: (925) 260-1373
TRC Site Safety Officer (SSO)	Rachelle Dunn	Office: (925) 688-2464 Cell: (925) 260-6722
TRC Assistant Site Safety Officer (Assistant SSO)	Mike Sellwood	Office: 9925) 688-2468 Cell: (925) 260-3654
Contractor/Subcontractor Personnel		
☐ Contractor / ☒ Subcontractor Company Name: Gregg Drilling		
Site Safety Officer (SSO)		
Assistant Site Safety Officer (SSO)		

☐ Contractor / ☒ Subcontractor Company Name: Woodward Drilling		
Site Safety Officer (SSO)		
Assistant Site Safety Officer (SSO)		

TRC Site Safety Officer or Assistant Safety Officer must report all site incidents immediately to the TRC Project Manager

TRC PM/Supervisor must report all incidents INVOLVING PERSONAL INJURY immediately to:		
TRC Human Resources Manager	Jenny Rue	(949) 341-7436 – office (949) 337-2625 - cell
TRC PM/Supervisor must report all incidents NOT INVOLVING PERSONAL INJURY within 24 hours to:		
TRC EHS Supervisor	Greg Burket	(949) 341-7403 – office (949) 283-4313 - cell

3.1 TRC PROJECT MANAGER/SUPERVISOR

- Overall responsibility for development of a complete and accurate HSP. The HSP shall account for all foreseeable hazards.
- Responsible for the management and technical direction of all aspects of the project.
- Ensure the completion of periodic site inspections.
- Conduct incident investigations.
- Delegate responsibility for field implementation of the HSP to TRC Site Safety Officer.

3.2 SITE SAFETY OFFICERS (SSO) – TRC & CONTRACTOR PERSONNEL

- Responsible for the daily implementation of the HSP.
- Ensures HSP is available onsite and that the plan is understood and signed by all personnel entering the site. (See **Attachment F** "Safety Compliance Agreement").
- Conducts (or coordinates the completion of) Tailgate Safety Meetings and ensures documentation of these meeting is available for review.
- Uses JSAs to emphasize hazards and protective measures discussed in the HSP.
- Communicates any revisions to the scope of work or HSP to affected personnel and Project Manager/Supervisor.
- Implements emergency response procedures.

3.3 ASSISTANT SITE SAFETY OFFICER (ASST SSO) – TRC & CONTRACTOR PERSONNEL

- In the event the SSO is not on site, the Assistant SSO will assume the responsibilities of the SSO.
- It is TRC's intent to have a TRC SSO or Assistant SSO available onsite during work activities. On the occasion neither person are physically onsite, they will be available by phone or pager. See "Table 2: Key Project Personnel and Contact Information".

3.4 TRC EMPLOYEES

- Responsible for understanding and complying with this HSP, including the JSAs.
- Are required to participate in Tailgate Safety Meetings prior to commencement of site work.
- Must acknowledge an understanding of the HSP by signing the "Safety Compliance Agreement" (See **Attachment F**).

3.5 CONTRACTORS & SUBCONTRACTORS

A copy of the HSP will be made available to each designated Contractor/Subcontractor (from now on to be referred to "Contractors") Site Health and Safety Officer (SSO) prior to coming to the site. Upon review or briefing of the HSP, each contractor and their personnel working at the site will be required to sign the "Safety Compliance Agreement" (See Appendix F) to verify their understanding and willingness to comply with the HSP.

TRC hires Contractors to apply their technical expertise to specific work tasks (i.e. construction, drilling, grading and heavy equipment operation/maintenance). Although TRC has a certain level of knowledge in these areas, the contractor is most knowledgeable of the hazards within their particular area of expertise and is in the best position to implement and monitor an effective H&S program. Contractors are required to follow and operate within their company's health and safety program and policies. TRC will exercise reasonable care to prevent and detect safety violations on the site. However, direct supervision of contractor employee safety is the responsibility of the contractor.

Contractors are to designate a company representative as their own Site Safety Officer and, if applicable, Assistant Safety Officer. This individual shall monitor the contractor's employees and ensure that safe working procedures are being followed. The Site Safety Officer and, if applicable, Assistant Safety Officer shall be identified to the TRC in writing, either by email, letter or by having the individual sign and provide contact information on "Safety Compliance Agreement" (See **Attachment F**).

Contractors are to:

- Provide a copy of their HSP to the TRC SSO or Project Manager/Supervisor before work commences.
- Provide safety equipment and personal protective equipment for their employees.
- Ensure their equipment is in proper working order and their employees are trained and medically fit to complete the work assigned to them.
- Upon request, provide evidence that personnel working at the site have received the necessary training, certifications and, if applicable, medical surveillance.

The Contractor must inform the TRC SSO if the risks associated with a particular task exceeds day-to-day safety requirements and necessitate additional safety precautions to protect the employees performing the particular task. In such cases, TRC may dictate that additional safety precautions be implemented. In the event a discrepancy arises between contractor safety procedures and those of TRC, the more stringent is to be implemented.

3.6 VISITORS / REGULATORY AGENTS

- Visitors / regulatory agents will be provided an overview of the basic site safety information. A copy of this HSP will be made available for review.
- All visitors / regulatory agents are required to sign-in on "Safety Compliance Agreement" (See **Attachment F**) each time they enter the project site.
- Visitors / regulatory agents should be escorted by a TRC or designated contractor employee and should not be allowed to move about the site alone.

4.0 COMMUNICATION

Communication is an important aspect of project safety and this HSP. There are several processes incorporated in this HSP to ensure communication of health and safety hazards.

- Pre-job Project Planning meetings to discuss the scope of work and potential hazards
- Site walkdowns with the TRC workgroup, subcontractors and the customer/client.
- Development of site-specific HSP and JSAs.
- Communication and acknowledgement of understanding of HSP & JSAs by signing the "Safety Compliance Agreement" (See **Attachment F**)
- Tailgate meetings emphasizing that hazard assessment is a continuous process, and any potentially unsafe actions or condition are to be communicated immediately to the SSO.
- Communicating results of field observations/audits. Visual observations are to be conducted daily by the SSO. Periodic field observations will also be recorded on the TRC Field Observation Form (TRC IIPP, Appendix H). Results from either observation will be communicated during Tailgate Safety Meetings.

5.0 REVISIONS TO HSP

If a situation arises where the HSP requires revision, the following option are available:

- Except in the case of emergency situations, no deviations from the HSP may be implemented without the prior notification and approval of the TRC Site Safety Officer (SSO).
- If HSP revisions are minor (i.e. not involving significant changes to the scope of work, associated hazards or PPE requirements), the TRC Site Safety Officer (SSO) can make hand-written revisions to the HSP in the field. HSP Revisions must then be communicated to affected personnel and the Project Manager/Supervisor.
- If HSP revisions are substantial (i.e. not involving significant changes to the scope of work, associated hazards or PPE requirements), the TRC Site Safety Officer (SSO) must consult with the Project Manager/Supervisor before making revisions. The TRC Site Safety Officer (SSO) can make hand-written revisions to the HSP in the field. HSP Revisions must then be communicated to affected personnel and the Project Manager/Supervisor. It is up to the

discretion of the Project Manager/Supervisor whether a revised HSP will be reissued to replace the original HSP on the work site.

6.0 HAZARD ASSESSMENT

Hazard assessment is essential for establishing hazard prevention measures. Below is a list of potential physical, chemical and biological hazards associated with various TRC project sites. Not all hazards apply to this site-specific HSP. In addition, the list is not all-inclusive and may require additional hazards associated with a particular project/site to be added.

Please check, or add applicable hazards or hazardous tasks, hazards associated with the scope of work described in this HSP (Section 1.2). A JSA shall be developed to address each of the indicated hazards or hazardous tasks. JSAs are included in **Attachment E** of this HSP.

6.1 PHYSICAL HAZARDS

☐ Excavation & Trenching (where personnel will be entering the excavation)
☐ Heavy Equipment (not drilling related)
☒ Drilling
☒ Overhead lines
☒ Underground utilities
☐ Energy Control – Lock out / Tag out
☐ Flammable Atmospheres (> 10% LEL)
☒ Traffic - vehicular and pedestrian
☒ Trips, Slips & Falls
☒ Head, foot, eye, and back injuries
☒ Falling objects
☐ Working from elevated surface (> 6ft); Fall Protection / Fall Arrest
☐ Ladders Use
☒ Sharp objects

Equipment
☐ Electrical equipment (including powered hand tools):
☒ Hydraulic equipment: drill rig, development rig
☒ Pneumatic equipment: Air knife, cutting tool

Non-Powered Hand Tool
☒ Cutting equipment: utility knife
☐ Welding hazards
☐ Confined Spaces

6.2 CHEMICAL HAZARDS

MSDS are to be included with the HSP whenever a hazardous material (not waste) is stored or utilized at the work site. MSDSs can be found in **Attachment B** after the Occupational Health Guidelines and Toxicological Information Table.

☒ Refined Petroleum products
☐ Asbestos
☐ Surpentine Soils
☐ PCE, TCE
☐ Ozone
☐ Hydrogen Sulfide
☐ Landfill Gases
☒ Environmental samples, soil cuttings, decontamination water, dust (nuisance, silica)

6.3 BIOLOGICAL HAZARDS

☒ Noise Exposure
☐ Heat Stress
☐ Cold Stress
☒ Weather - heat, cold, rain, fog
☐ Poisonous Plants
☐ Animals/Insects
☐ Misc Pathogens

7.0 GENERAL SAFETY RULES

This section presents general safety rules for all persons working at the project site. Failure to follow safety protocols and/or continued negligence of health and safety policies will result in expulsion of a worker or firm from the site and may result in termination of employment.

1. Horseplay, fighting, gambling or the possession of firearms are not permitted.
2. Work shall be well planned and supervised to prevent injuries. Supervisors shall assure that employees observe and obey safety rules and regulations.
3. An employee reporting for work who, in the opinion of his supervisor, is unable to perform his assigned duties in a safe and reasonable manner shall not be allowed on the job.
4. No employee shall be assigned a task without first having been instructed on proper methods, including safety training, of carrying out the task. Any employee who feels they have not received proper instruction shall notify their supervisor prior to carrying out the task.
5. Injuries and accidents shall be reported immediately to the immediate supervisor, who will then report it to the SSO.
6. There shall be no consumption of food or drink in operational areas of the site. Hands should be thoroughly cleansed prior to eating.
7. Smoking is not permitted on the site.
8. When personnel are conducting hazardous operations, there shall be at least one other person (buddy system) on duty in the immediate area as a backup in case of emergency.

9. Wear required personal protective equipment (PPE) in the workplace when appropriate and/or when specified in the site specific health & safety plan. Loose clothing and jewelry should not be worn when operating machinery.
10. Do not operate any machinery if you are not authorized or qualified to do so. If unsure how to operate a machine or perform any assigned task, ask the Project Manager/Supervisor before proceeding.
11. Do not operate motorized equipment until proper training and certification has been provided (e.g. forklifts, etc.)
12. No one shall knowingly be permitted or required to work while the employee's ability or alertness is so impaired by fatigue, illness or other causes that it might unnecessarily expose the employee or others to injury.
13. Alcohol and drugs are strictly prohibited on any TRC premises, customer property, and/or in Company vehicles. Employees shall not report to work under the influence of drugs or alcohol. Employees are prohibited from possessing, using, manufacturing, distributing, dispensing, selling or purchasing illegal drugs or other controlled substances (as defined under federal and state law).

8.0 PERSONAL PROTECTIVE EQUIPMENT

TRC and Contractor personnel are required to wear PPE appropriate for the task and potential physical, chemical and biological exposures. Selection of PPE is based on hazard assessment (i.e. JSAs) and air monitoring.

8.1 PPE REQUIRED BY ALL PERSONNEL AT ALL TIMES ON THE WORK SITE

☒ Hard Hat
☒ Safety Shoes/Boots
☒ Safety Vest
☒ Eye Protection - ☒ glasses ☐ goggles ☐ face shield
☐ Hand Protection - ☐ leather ☐ nitrile ☐ other _____
☐ Hearing Protection
☐ Respiratory Protection - ☐ APR Particulate ☐ APR Chemical cartridge ☐ other _____
☐ Protective Clothing - ☐ Tyvex ☐ Nomex ☐ Coveralls ☐ other _____

8.2 PPE WHICH SHOULD BE AVAILABLE AT ALL TIMES ON THE WORK SITE

☐ Hard Hat
☐ Safety Shoes/Boots
☐ Safety Vest
☐ Eye Protection - ☐ glasses ☐ goggles ☐ face shield
☒ Hand Protection - ☒ leather ☒ nitrile ☐ other _____
☒ Hearing Protection
☐ Respiratory Protection - ☐ APR Particulate ☐ APR Chemical cartridge ☐ other _____

☐ Protective Clothing - ☐ Tyvex ☐ Nomex ☐ Coveralls ☐ other _____

8.3 PPE REQUIRED BY A SPECIFIC TASK

See JSA's in Appendix E.

9.0 RESPIRATORY PROTECTION

For operations that require the use of a respirator, the TRC and Contractor SSOs must verify that Field Personnel are medically approved to use respiratory equipment, fit tested, and trained in the proper use of respirators. Only respirators that are NIOSH/MSHA approved are to be used.

Respiratory protection is mandatory if workers are required to complete tasks within a hazardous atmosphere. According to OSHA, a hazardous atmosphere is defined as:

- Flammable gas, vapor, or mist in excess of 10% of LEL.
- Atmospheric oxygen is below 19.5% or above 23.5%.
- When concentration of a known contaminant is greater than the permissible exposure limit (PEL).
- Airborne combustible dust exceeds its LEL (approximated when dust obscures vision at a distance of 5 feet or less).

If conditions warrant, air monitoring may be required to verify the presence or absence of a hazardous atmosphere. Air monitoring is to be conducted whenever a situation or condition arises that could reasonably result in a hazardous atmosphere.

9.1 AIR-PURIFYING PARTICULATE RESPIRATORS

Employees involved in construction and earthmoving operations that result in nuisance dust and particulates may use air-purifying respirators. These are commonly referred to as "dust masks" and do not require fit testing. Particulate respirators can to be used in situations where dust and particulates are the only contaminants posing an inhalation hazard. Particulate respirators are not to be used in oxygen deficient atmosphere or if hazardous levels of gas/vapor contaminants are also present.

A high efficiency particulate air (HEPA), P100 respirator should be used in place of commercially available "dust masks".

9.2 AIR-PURIFYING GAS/VAPOR RESPIRATORS

TRC employees and Contractors are required to wear half-face, air-purifying respirators with the appropriate chemical cartridge under the following circumstances:

- When concentration of a known contaminant continuously exceeds permissible exposure limit (PEL) time-weighted average or the threshold limit value(TLV) time-weighted average.
- When volatile organic compound (VOC) vapors in the work area continuously exceed the threshold limit value- time-weighted average (TLV-TWA) for gasoline (300 parts per million [ppm]).

- When, at any time, VOC vapors in the work area exceed the threshold limit value - short-term exposure limit (TLV-STEL) for gasoline (500 ppm).

See **ATTACHMENT B** for additional information and regulatory exposure limits for chemicals of concern at this site.

Air purifying respirators (APRs) with chemical cartridges can be used under the following conditions:

- If the oxygen concentration is between 19.5% and 23.5%.
- If chemical contaminants have been identified.
- The toxic concentrations are known and the respirator cartridges are effective in removing the contaminants.
- The respirator and cartridges are NIOSH/MSHA approved.
- The contaminants have noticeable warning qualities such as odor and visibility characteristics including color.

In the event workers are required to wear air purifying respirators (APRs) with chemical cartridges, the following requirements must be met:

- The TRC or Contractor SSO must verify that workers are:
  - Medically approved (within one year) to use respiratory protection.
  - Fit-tested for the specific respirator to be used.
  - Trained in the proper use and limitations of the respirator to be used.
- Contractors must provide proof of the above to the TRC SSO, upon request.
- If an employee or contractor has not cleared by the SSO to use a respirator, they will not be assigned tasks that may potentially expose them to contaminants.
- Personnel with interfering facial hair are not permitted to wear respirators and shall not be permitted in areas where respiratory protection is required.

9.3 AIR-SUPPLIED RESPIRATORS

Air-supplied respirators, such as SCBA or airline, full-face respiratory protection, are not anticipated to be required at the site. This level of respiratory protection is utilized in oxygen deficient atmospheres or atmospheres considered to be at or above immediately dangerous to life and health (IDLH) levels. These conditions will only occur in rare, if any, circumstances such as confined space entry or emergency situations. The use of air-supplied respiratory protection is not permitted without approval and guidance from the Project Manager.

10.0 AIR MONITORING

Air monitoring is required to verify the presence or absence of a hazardous gas/vapor atmosphere whenever a situation or condition arises that could reasonably result in a hazardous atmosphere.

Based on OSHA's definition of a hazardous atmosphere, there are 4 different hazards that require monitoring. The table below describes the type of hazard, what air monitoring equipment to use

and what levels constitute a hazard. The information provided in the table does not take into consideration all the possible variations of hazardous atmosphere, however it will provide guidance when determining the presence of a hazardous atmosphere. Any questions or concerns should be directed to the SSO before work begins.

Table 3: Air Monitoring Guidance

Hazard	Appropriate Air Monitoring Equipment	Hazardous Levels	Comments
Flammability	Combustible gas indicators (CGI) are direct-reading instruments; measures % LEL and oxygen.	>25% of the LEL during cold work >10% of the LEL during hot work	Since many flammable vapors are heavier than air, be sure to take readings at ground level. Work be suspended if CGI readings exceed 10% of LEL.
Oxygen deficiency or abundance	Same as above or an Oxygen Meter	<19.5% and >23.5%	Concentrations >23.5% may present an increased flammability hazard.
Exceeding the permissible exposure limit (PEL)	Photoionization detector (PID) can detect organic and inorganic vapors/gases	Varies depending on chemical. See **Attachment B** for hazardous levels of common chemicals	It is impossible to differentiate the different chemicals using a PID meter. However, the PID will indicate whether chemicals are present and at what levels. Measurements taken within worker's breathing zone will be used to determine respiratory protection requirements.

Airborne combustible dust is not anticipated at the work site.

When conducting, air monitoring the following actions should be considered:

- Be familiar with the proper use and limitations of the air monitoring equipment to be used.
- Ensure air-monitoring equipment (TRC's or otherwise) is in working order and has been properly calibrated. The TRC SSO is to document verification of calibration (i.e. in a field log book).
- Clearly document the results of air monitoring, including:
  - Equipment name / type and calibration data
  - Date, time and site location of air monitoring (use a site map to clarify the locations of readings.
  - Indication of what is being measured (LEL, oxygen, or ppm)
  - Results of the air monitoring
- Measurements for volatile organics should be taken at low point where vapors could accumulate.
- Measurements taken to determine the need for respiratory protection should be take within the worker's "breathing zone", keeping in mind the worker's closest proximity to the hazard source.
- An individual should never enter a confined area or excavation in order to conduct initial air monitoring. Instead, actions should be taken to lower the air monitoring equipment into the

area to indicate the presence (or absence) of a hazardous atmosphere. Most air monitoring equipment has audible alarms.

- ☐ In the event that CGI readings on the site exceed 10 percent of the LEL, work will be suspended until the source can be eliminated or controlled.

11.0 SITE CONTROL

The primary objective of site control is to minimize the exposure to potentially hazardous substances and/or situations. Supervision and controlling access to the work site is necessary to protect site personnel, visitors and the public.

For this site, the following areas will be designated as hot, warm and cold zones:

Hot Zone: An area around each of the boring locations large enough to accommodate the rig, support truck, and have a buffer zone around the work area of 20 feet.

Warm Zone: ☒ NA

Cold Zone: Area immediately outside each hot zone where supplies and unused equipment may be staged during the work day.

For the purposes of this HSP, site control will be discussed under two circumstances: (1) work involving Physical Hazards and (2) work involving Chemical Hazards.

In either case, site control areas are to be clearly identified and communicated by the SSO. The hot zone must be clearly identified and should be isolated with cones, barricades, or high visibility caution tape. In addition, sufficient area also must be available to conduct operations while providing a protective buffer for persons and property outside the controlled areas.

Check which is applicable:

☒ Work involving Physical Hazards

Work does *not* involve direct contact with hazardous substances. However, if the scope of work primarily involves physical hazards (i.e. vehicular traffic, heavy equipment operation, etc.), the establishment of a warm zone may is not necessary. Instead, a hot zone must be established to surround all the physical hazards. The hot zone area shall provide enough room and buffer to protect both workers and the public. A cold zone is established outside the hot zone to allow "support" activities to be conducted in a safe location.

☐ Work involving Chemical Hazards

The concept of site control and the establishment of hot/warm/cold work zones are intended for work involving the exposure (or potential exposure) to hazardous chemical concentrations. Under these circumstances, the purpose of work zones is two-fold: 1) minimize the exposure to potentially

hazardous substances and 2) minimize the spread of hazardous substances outside the immediate work area through decontamination procedures.

A brief overview of site control work zones is provided below:

Hot Zone

- Where personnel may be subject to chemical or physical hazards.
- Where known or suspected contamination exists and may also be where equipment operation and/or environmental sampling will take place.
- To be clearly identified and should be isolated with cones, barricades, or high visibility caution tape.
- Large enough to provide sufficient room and buffer to protect both workers and the public.

Warm Zone

- Located between the hot and cold zones; beginning at the edge of the hot zone and extends to the cold zone.
- Utilized as a control point or corridor for persons entering or exiting the hot zone.
- Where personnel and equipment are decontaminated.

Cold Zone

- Located outside the hot zone where administrative and other support functions are located.
- Where adverse exposure to contaminants and physical hazards are unlikely.

11.1 DECONTAMINATION

The purpose of decontamination is to: (1) remove chemical containments from personnel and/or equipment and (2) significantly reduce the spread of chemical contaminants beyond the hot/warm zone.

Decontamination is intended to occur within the warm zone. Depending on the project, there may be a need to decontaminate both personnel and equipment. The decontamination process should be appropriate to the chemical hazards present. For example refined petroleum contaminated soil on work boots/shoes may only require physical removal of the soil with a sturdy brush. However, decontamination of equipment (i.e. drilling augers) may require additional steps to ensure contaminants are not spread beyond the hot/warm zones. Heavy equipment (i.e. excavators, trucks used for waste transportation, etc.) may require a combination of steps, including the placement of gravel at the entrance/exit of the site.

11.1.1 Personnel Decontamination Procedures ☐ NA

Remove contaminated PPE in an inside out manner within designated area. Contaminated garments are to be placed in designated plastic bags or drums prior to disposal or transfer offsite. Labels in compliance with the hazard communication standard will be affixed to containers of contaminated debris and clothing.

11.1.2 Equipment Decontamination Procedures ☐ NA

The augurs and tools will be decontaminated prior to starting work and before each new boring is commenced using a stem cleaner. Prior to use, the sampler and sampling tubes are brush-scrubbed in a Liquinox and potable water solution and rinsed twice in clean potable water. Sampling equipment and tubes are also decontaminated before each sample is collected to avoid cross-contamination between borings. Decontamination water will be transferred from the driller's decontamination trailer to a drum via five gallon buckets, properly labeled, and stored onsite, in appropriate storage area, pending disposal to an approved disposal/recycling facility.

11.2 SITE SECURITY

Appropriate security measures will be established in coordination with the site owner/operator and communicated to site personnel. The objective of these measures is to (1) protect the public from potential exposure to physical/chemical hazards; (2) avoid public interference with personnel and safe work practices; and (3) prevent theft or vandalism of equipment at the site.

Site specific security measures include: ☐ NA

- Proper security precautions will be taken, including locking any unattended vehicles and/or equipment, using caution tape and cones around the work area and any open holes, and properly covering any open holes that maybe left overnight.

12.0 PERSONNEL TRAINING

TRC and Contractor personnel are required to acknowledge their understanding and willingness to comply with this HSP before admission to the site by signing the "Safety Compliance Agreement" (See **Attachment F**).

Site specific training requirements are indicated below:

☒ Personnel shall meet the training requirements specified in the OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) Standard [29 CFR 1910.120(e) and CCR Title 8 Section 5192(e)].

☐ Kinder Morgan Contractor Safety Video.

☐ Railroad Training:
- ☐ UPPR Contractor Orientation
- ☐ BNSF Contractor Orientation
- ☐ Cal Train Contractor Orientation
- ☐ "FRA Roadway Worker"Training (works within 25' of track)

13.0 MEDICAL PROGRAM

TRC has established a medical surveillance program to assess, monitor, and help protect the health of employees, in particular, employees who may be exposed to potentially hazardous substances during site work. Personnel undergo medical examinations as follows:

- **Initial:** Pre-employment / prior to any assignment involving work in a hazardous or potentially hazardous environment. The initial examination is used to establish a baseline picture of health against which future changes can be measured, and to identify any underlying illnesses or conditions that might be aggravated by chemical exposures or job activities. This exam also certifies whether an employee is medically fit to wear a respirator.

- **Periodic:** At least once every 12 to 24 months (depending on the employees involvement in field activities) to measure changes in health status. This exam certifies whether an employee is still medically fit to wear a respirator.

- **Upon notification:** As soon as possible upon notification by an employee that they have developed signs or symptoms indicating possible overexposure to hazardous substances, or in response to an injury or exposure during an emergency situation.

- **Exit**: At termination of employment.

14.0 EMERGENCY RESPONSE PLAN

The TRC SSO (depending on which is present) will have controlling authority during an emergency. In the SSO's absence, the Alternate SSO will be in charge.

14.1 EVACUATION PROTOCOL

Evacuation protocol, routes and assembly areas from the site will be established by the SSO, and communicated to Field Personnel during the Tailgate Safety Meeting(s) prior to initiating work. In the event of an evacuation, personnel will meet at a pre-established assembly areas and the TRC SSO conduct a "head count" to see that everyone is accounted for. Contractor SSO is responsible for being able to provide an accurate head-count of contractor personnel.

Primary assembly area = In front of the station store.

Secondary assembly area= Across the street at the corner of Castro Valley Blvd and Strobridge Avenue.

14.2 FIRST AID & CPR

TRC employees and Contractors with current First Aid and CPR certification and who are willing to provide First Aid and CPR will be asked to identify themselves at Tailgate Safety Meetings. Their names will be documented on the Tailgate Meeting Checklist (**Attachment F**).

14.3 EMERGENCY MEDICAL ASSISTANCE

A list of emergency medical assistance sources has been established as part of this HSP. ATTACHMENT C lists the names, locations, and telephone numbers of emergency response organizations in the vicinity of the project site, and a map to the nearest hospital(s) with an *emergency room*.

A vehicle shall be available onsite during work activities to transport injured personnel to the identified emergency medical facilities, if necessary. Company vehicles are to be equipped with a fire extinguisher and first aid kit.

14.4 EMERGENCY PROCEDURES

In the event of an accident, injury, or other emergency, remember to:

- **Stop work and REMAIN CALM.**
- **Move personnel to a safe location (evacuation plan).**
- **Call 911 or notify other emergency facilities, as necessary.**
- **Address medical emergencies and apply first aid, if necessary.**
  - Move injured or exposed person(s) from immediate area only if it is safe to do so.
  - If serious injury or life-threatening condition exists, call 911. Clearly describe the location, injury and conditions to the dispatcher. Designate a person to direct emergency equipment to the injured person.
- **Contain physical hazards.**
  - Act only if hazard is minimal and you are trained to deal with the situation. Otherwise evacuate and wait for emergency services to arrive.
- **Notify SSO and initiate incident reporting procedures.**
  - See page 2 of this HSP for contact information. In the event the SSO is not available, the order of notification should be 1) Assistant SSO, 2) TRC Project Manager and 3) HR Manager (if incident involves injury) or EHS Supervisor (if incident does not involves injury).
  - TRC SSO is to notify TRC Project Manager/Supervisor as soon as reasonably possible.
- Do not resume work until the SSO has determined it is safe to do so.

15.0 INCIDENT REPORTING

In case of an accident, TRC personnel are to immediately report the incident to their Project Manager/Supervisor and follow the TRC incident reporting procedures detailed in the TRC IIPP. TRC's incident reporting forms are available through the Project Manager/Supervisor and include:

- TRC Incident Report
- Driver's Report of Accident

- ☐ TRC Potential / Near Miss Reporting Form
- ☐ TRC Employees Report of Incident
- ☐ TRC Witness Report of Incident
- ☐ Corrective Action Form

All incidents and near misses are investigated in accordance with TRC's IIPP. The TRC Incident Report Form is to be completed and submitted to the TRC EHS Supervisor within 24 hours following any incident.

Contractor personnel are to report incidents to their SSO who is then required to report the incident to the TRC SSO, TRC Alternate SSO or TRC Project Manager immediately.

Some important information to include when reporting an incident are:

1. A description of the event (including date and time)
2. Details regarding personal injury and property damage, if any.
3. Whether emergency services were notified (i.e., medical facilities, fire department, police department) and the basis for that decision. Including time and names of persons/agencies notified, and their response.
4. Clarify the need for and type of TRC support.
5. Immediate corrective action(s) taken.

16.0 HEALTH AND SAFETY PLAN (HSP) SIGNATURE PAGE

Job Safety Analysis Author	**Date:**	**HSP Author**	**Date:**

Review/Approvals:

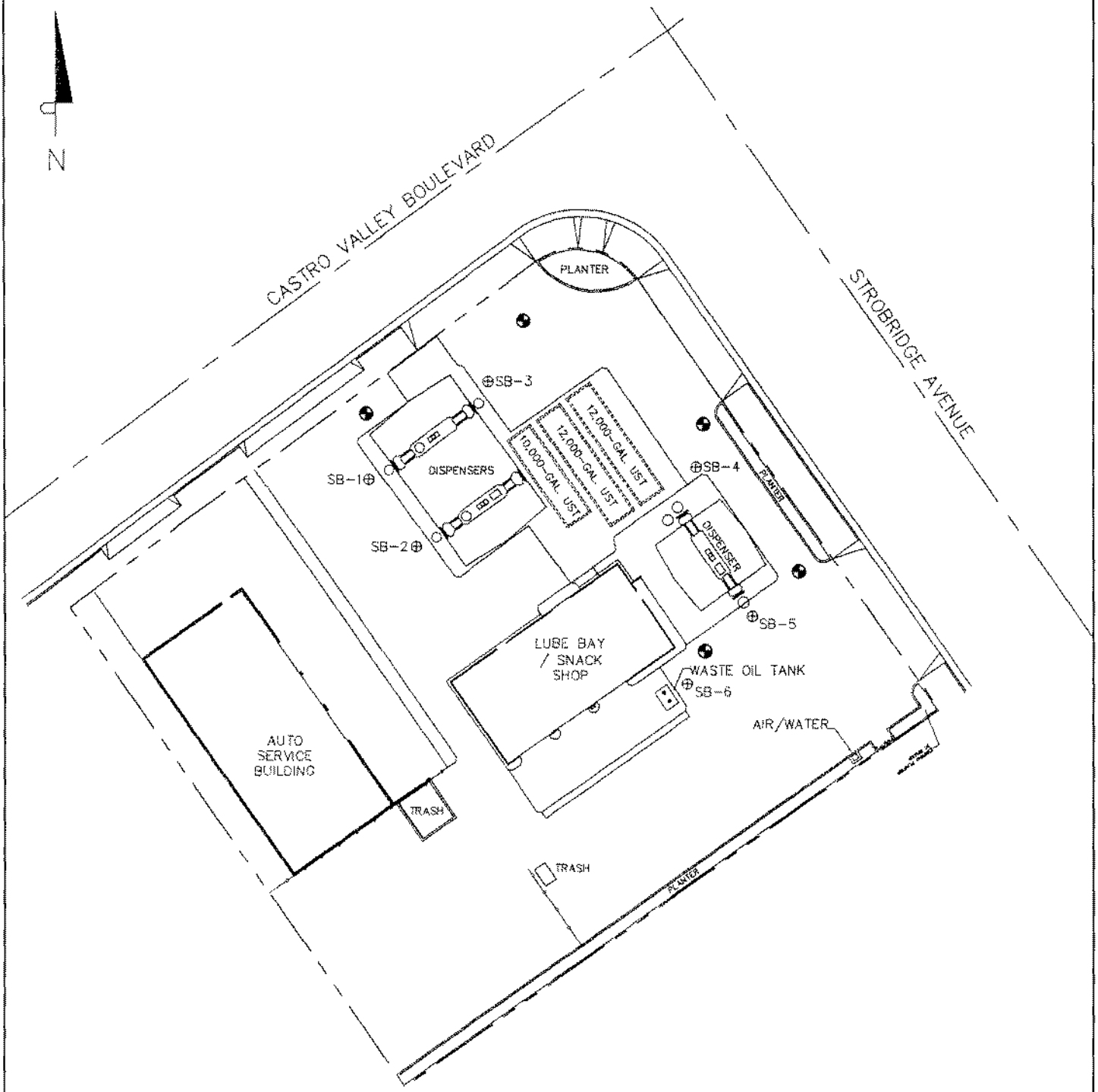
Site Safety Officer **Facility/Field Supervisor**	**Date:**	**Project Manager/Supervisor***	**Date:**
Local Safety Coordinator* ☐ **NA**	**Date**	**EHS Supervisor/Safety Professional (CIH, CSP, other)***	**Date**

Additional Information or Instructions:

* Note: **For most projects, the Project Manager/Supervisor will review, approve and sign the HSP.** In the event the operations are beyond the normal scope of work, additional review is available upon the request from the PM/Supervisor. The Local Safety Coordinator is the first recourse for reviewing HSPs **not** involving high-risk operations. It is recommended that for HSPs involving high-risk operations (i.e. hazardous exposures to chemicals, large scale or deep excavations, confined space entry, etc.), the EHS Supervisor and/or a Safety Professional [Certified Industrial Hygienist (CIH), Certified Safety Professional (CSP) or other professionally qualified person] be consulted for review of the HSP to ensure proper protective measures are being implemented.

ATTACHMENT A

SITE PLAN



APPROXIMATE SCALE (FEET)

0 40 80

LEGEND

- Property Boundary
- Fence
- ⊕ SB-6 Previous Soil Boring
- Proposed Soil Boring

SOURCE: Client-provided site plan prepared by A&S Engineering, October 1997.

PROPOSED SOIL BORINGS

76 Service Station #3072
2445 Castro Valley Boulevard
Castro Valley, California

TRC

FIGURE 2

ATTACHMENT B

OCCUPATIONAL HEALTH GUIDELINES AND TOXICOLOGICAL INFORMATION

Table B-1
OCCUPATIONAL HEALTH GUIDELINES AND TOXICOLOGICAL INFORMATION
Gasoline Constituents

Contaminant	ACGIH TLV-TWA (ppm)	NIOSH REL (ppm)	OSHA PEL (ppm)	STEL (ppm)	IDLH (ppm)	Routes of Exposure	Known or Suspected Carcinogen	Symptoms
Diesel (as Stoddard solvent)	for Diesel fuel/ Kerosene 14.4 (skin only)	Approx. 60-98	500	250-500 (NIOSH ceiling)	Approx. 3000-5600	Inhalation, Ingestion, Contact	No	Irritation to eyes, skin, mucous membrane; dermatitis, headache, fatigue, blurred vision, dizziness, slurred speech, confusion, convulsions, aspiration, weakness, restlessness, incoordination
Gasoline	300	n/a	n/a	500 (ACGIH)	n/a	Inhalation, Absorption, Ingestion, Contact	Yes	Irritation to eyes, skin, mucous membrane; dermatitis, headache, fatigue, blurred vision, dizziness, slurred speech, confusion, convulsions, aspiration
Benzene	0.5	0.1	1	1 (NIOSH)	500	Inhalation, Absorption, Ingestion, Contact	Yes	Irritation to eyes, skin, nose, resp system, giddiness, headache, nausea, staggered gait, fatigue, anorexia, weakness/exhaustion, dermatitis
Toluene	50	100	200	150 (NIOSH)	500	Inhalation, Absorption, Ingestion, Contact	No	Irritation to eyes, nose; fatigue, weakness, confusion, euphoria, dizziness, headache, dilated pupils, tears, nervousness, muscle fatigue, insomnia, dermatitis
Ethyl benzene	100	100	100	125 (NIOSH& ACGIH)	800	Inhalation, Ingestion, Contact	No	Irritation to eyes, skin, mucous membranes; headache, dermatitis, narcosis, coma
Xylenes (o,m,p,)	100	100	100	150 (NIOSH & ACGIH)	900	Inhalation, Absorption, Ingestion, Contact	No	Irritation to eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait, nausea, vomiting, abdominal pain, dermatitis
Methyl tert butyl ether ((MTBE)	40	n/a	n/a	n/a	n/a	n/a	n/a	n/a

DEFINITIONS

ACGIH TLV-TWA	American Conference of Governmental Industrial Hygienists, Threshold Limit Value-Time Weighted Average
NIOSH REL	National Institute of Occupational Safety & Health, Recommended Exposure Limit
STEL	Short Term Exposure Limit (Gasoline STEL is by ACGIH; BTEX STELs are by NIOSH)
OSHA PEL	Occupational Safety and Health Administration, Permissible Exposure Limit
IDLH	Immediately Dangerous to Life and Health
ppm	parts per million
CNS	Central Nervous System
n/a	not available (i.e., no value has been established)

Threshold Limit Value: Threshold limit values (TLVs) refer to airborne concentrations of substances and represent conditions under which it is believed nearly all workers may be repeatedly exposed, day after day, without adverse health effects.

Threshold Limit Value - Time Weighted Average: The time weighted average (TWA) is a concentration for a normal 8-hour workday and a 40-hour workweek, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect. TLV-TWAs are established by the ACGIH.

Recommended Exposure Limit: Unless otherwise noted, the recommended exposure limit (REL) is a TWA concentration for up to a 10-hour workday during a 40-hour workweek. RELs are established by NIOSH to reduce or eliminate adverse occupational health effects.

Short Term Exposure Limit: A short term exposure limit (STEL) is defined as a 15-minute TWA exposure that should not be exceeded at any time during a workday. When compared to the REL (or TLV-TWA for ACGIH standards), the STEL allows the worker to be exposed to a higher concentration, BUT for a shorter period of time. Exposures above the REL up to the STEL should not be longer than 15 minutes and should not occur more than four times per day.

Permissible Exposure Limit: Permissible exposure limits (PELs) are TWA concentrations that must not be exceeded during any 8-hour work shift of a 40-hour workweek. PELs are established by OSHA (29 CFR 1910.1000).

Immediately Dangerous to Life and Health: Immediately dangerous to life and health (IDLH) values are established as concentrations from which a worker can escape within 30 minutes without suffering loss of life, irreversible health effects, or other deleterious effects that could prevent him/her from escaping the hazardous environment. The purpose of establishing an IDLH exposure concentration is to ensure that workers can escape from a given contaminated environment in the event of failure of respiratory protection equipment.

ATTACHMENT C

EMERGENCY SERVICES
PHONE NUMBERS, DIRECTIONS, AND LOCAL AREA MAP

EMERGENCY SERVICES

FACILITY / LOCATION	TELEPHONE
Emergency Situation	**911**
TRC 24 HOUR Notification Number	**1-800-274-9072**

Hospital Name, Address, Phone
Eden Medical Center (510) 537-1234
20103 Lake Chabot Rd
Castro Valley, CA

Directions:

1. Start at **2445 CASTRO VALLEY BLVD, CASTRO VALLEY** going towards **JOHN DR,STROBRIDGE AVE,CASTRO VALLEY BLVD** - go **0.3** mi
2. Turn on **LAKE CHABOT RD** - go **0.2** mi
3. Arrive at **EDEN MEDICAL CENTER**

Direct Number to Emergency Room ..... (510) 537-1234

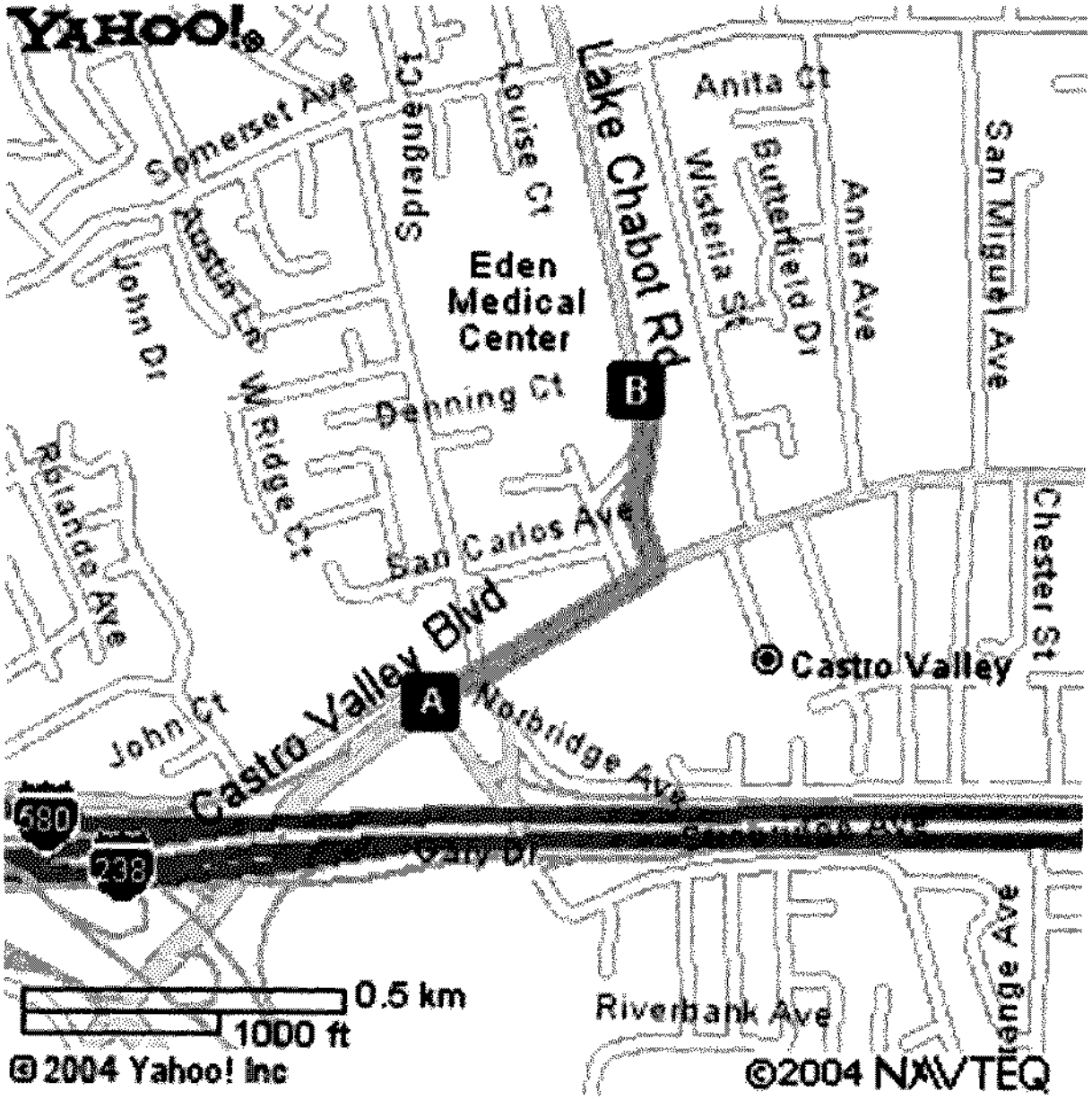
Poison Control Center
California Poison Control System - San Francisco Division (800) 876-4766
at San Francisco General Hospital
University of California San Francisco
Box 1369
San Francisco, California 94143-1369

Office of Emergency Services (800) 852-7550

USA Dig Alert of Northern California (800) 227-2600

ATTACHMENT D

LOCAL AREA MAP
with routes to hospital



ATTACHMENT E

JOB SAFETY ANALYSIS

TRC

JOB SAFETY ANALYSIS

COMPANY/ PROJECT NAME or ID/ LOCATION (City, State)	DATE PREPARED FOR HSP:	☐ NEW ☒ REVISED from S: Drive
ConocoPhillips #3072, Castro Valley, California	1/31/06	
JSA WORK ACTIVITY (Description): Drilling	List of Contractor(s) and key work activity: Gregg Drilling & Woodward Drilling	

SITE SPECIFIC JSA AUTHOR	POSITION / TITLE	DEPT	SIGNATURE
Rachelle Dunn	Staff Geologist	Concord	

"TRC APPROVED" JSA DEVELOPMENT TEAM	POSITION / TITLE	APPROVAL DATE
Adrienne Collins	Concord Safety Coordinator	
Sonya Rieken	EHS Advisor	
Greg Burket	EHS Supervisor	

Required PPE (indicate with "R") vs. Must Have Available On-site (indicate "A")

R HARD HAT R/A GLOVES Specify: ☒ leather ☒ Nitrile ☐ Other _____ R SAFETY GLASSES _____GOGGLES _____FACE SHIELD	R REFLECTIVE VEST A HEARING PROTECTION R SAFETY SHOES: Protective Toe _____ 5pt.HARNESS / LANYARD PPE CLOTHING: _____Coveralls _____Tyvek Suit _____Nomex _____Other (specify):	RESPIRATORY PROTECTION: ☒ NA _____½ face Air Purifying Respirator (APR) _____Particulate Mask: ☐ PM100 ☐ PM95 _____ Cartridge: ☐ VOC ☐ _____ _____Full face ARP; specify cartiridge type: _____ Air Supplied Respirator _____SCBA _____Air-line	Additional PPE:

Always perform a Safety Assessment: 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.

[1] JOB TASKS	[2] POTENTIAL HAZARDS	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
1. Set up Job Site	a. Physical Injury from being struck by moving vehicles or equipment.	a. Have one person watch traffic while the other creates exclusion zone in a high-use traffic area. a. Create an exclusion zone at least 10-feet beyond the limits of the boring location; use snow fencing, barricades, delineators, cones and/or caution tape in accordance with project specification. a. Always wear safety vest, establish eye contact with operators utilizing flag men wear appropriate. a. Vehicles shall use reverse beepers or flagmen.
2. Drilling	a. Contact with subsurface water, gas, electrical, and/or fiber optic lines in the vicinity of drilling locations. b. Walking drill auger c. Broken wire cable or detached drill stem d. Distracted driller	a. Following the hole clearance and drilling procedures outlined in TRC's Subsurface Distrubance Safety Checklist. a. If unknown lines or obstructions are encouthered, stop drilling and notify Contact PM. Do not undermine any utilities. b. Place conductor casing in open boring prior to start of drilling operations. c. Do not stand directly in front of the drill rig while machinery is operating. Stand off to the side by driller's platform or opposite side of drill rig. d. Always communicate with the driller before approaching the operating drill stem.
3. Well Completion	a. Opening/closing/moving drums b. Overspray and cross-contamination during auger decontamination c. Broken pump hose d. Dust from concrete/cement bags	a. Wear leather gloves during the opening and closing of drums to protect fingers. a. Use only drum dolly to move drums with soil, grout, concrete, or decontamination water. b. Safety glasses, splash goggles, or face shield will be worn at all times when spraying/decontaminating augers. b. Do not overspray while cleaning augers. Create a "clean zone" with plastic liner for placement of decontaminated augers. c. Do not stand directly next to pump and hose when it is operating, stand to the side. d. Wear an approved dust and mist respirator when opening and dumping bags into mixer.

[1] List all activities/steps which present a significant hazard, preferably in sequence. FOCUS ON POTENTIALLY HAZARDOUS ACTIVITIES; not the trivial ones. Apply common, yet knowleable & informed, sense to identify what could reasonably be expected to cause danger.

[2] CONCENTRATE ON SIGNIFICANT HAZARDS. What can go wrong? How can someone get hurt? Can someone be struck by or strike an object?; caught on, in or between objects?; fall to ground or lower level?; experience excessive strain or stress? Be exposed to inhalation or skin hazards. Specify the hazards; be descriptive.

[3] Describe actions, procedures or limits necessary to eliminate or minimize the hazards. Be clear, concise and specific. Use objective, observable and quantified terms. Avoid subjective general statements such as, "be careful" or "use as appropriate".

TRC
JOB SAFETY ANALYSIS

COMPANY/ PROJECT NAME or ID/ LOCATION (City, State)		DATE PREPARED FOR HSP:	☐ NEW ☒ REVISED from S: Drive
ConocoPhillips #3072, Castro Valley, California		1/31/06	
JSA WORK ACTIVITY (Description):		List of Contractor(s) and key work activity:	
Drilling		Gregg Drilling & Woodward Drilling	
Field Changes: 4.	a. b. c. d.	a. b. c. d.	

GENERAL SAFETY HAZARDS	LOCATION(S) WHERE HAZARD IS TO BE EXPECTED	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
5. Slips, trips, and falls	a. In exclusion zone	a. Clean as you work. Put equipment away when done using it. Blot up puddles of standing water and sweep work area. a. Cover or use appropriate warning to protect all unattended open holes.
6. Cut/Pinched fingers or toes	a. Throughout work area; particularly when moving materials.	a. Wear leather gloves when lifting sharp or heavy equipment.
7. Strained muscles.	a. Throughout work area; particularly when moving augers	a. Use proper lifting techniques; get help when moving heavy objects (>70 lbs).
8. Unauthorized Personnel in exclusion zone	a. In exclusion zone	a. Use visitor check-in log; do not allow anyone in exclusion zone without proper PPE and training documentation. (HAZWOPER/LPS).
9. Flying debris	a. In exclusion zone	a. Wear ANSI-approved safety glasses working around operating equipment.
10. Loud Noise	a. In exclusion zone	a. Wear ANSI-approved hearing protection around operating equipment.
11. Explosion/Fire	a. In exclusion zone	a. No smoking or open flame. Periodically monitor ambient air concentrations with PID/LEL Meter. Shut down job and move personnel and equipment upwind if hydrocarbon concentrations are **> 300 ppm or >10% of LEL.** a. Place 2-20lb ABC Fire extinguishers in location soecified by SSO. a. Follow TRC's Cell Phone Use Guidelines.
12. Exposure to hydrocarbon impacted soil or groundwater	a. In exclusion zone	a. Wear nitrile gloves during handling of soil or groundwater.
13. Soil and groundwater cross-contamination	a. In exclusion zone	a. Identify and delineate soil stockpile area or storage area of drummed soil cuttings/decontamination water.

[1] List all activities/steps which present a significant hazard, preferably in sequence. FOCUS ON POTENTIALLY HAZARDOUS ACTIVITIES; not the trivial ones. Apply common, yet knowleable & informed, sense to identify what could reasonably be expected to cause danger.

[2] CONCENTRATE ON SIGNIFICANT HAZARDS. What can go wrong? How can someone get hurt? Can someone be struck by or strike an object?; caught on, in or between objects?; fall to ground or lower level?; experience excessive strain or stress? Be exposed to inhalation or skin hazards. Specify the hazards; be descriptive.

[3] Describe actions, procedures or limits necessary to eliminate or minimize the hazards. Be clear, concise and specific. Use objective, observable and quantified terms. Avoid subjective general statements such as, "be careful" or "use as appropriate".

TRC
JOB SAFETY ANALYSIS

Field Notes:

LIMITATION: As part of TRC's EHS Policy, a JSA is provided by TRC for its employees. The purpose of a JSA is NOT to identify all hazards associated with a task, but to identify key potential hazards to get TRC and other onsite personnel thinking about other potential safety hazards and mitigating actions for unsafe conditions and behavior during various works. TRC recognizes that JSA's may not cover every conceivable step or hazard that emerges during a job, so we've provided a "Field Change" section below to amend a JSA if required. The JSA does not supersede or replace any local, state or federal permit, regulation, statute or other entities policies and procedures but is simply a tool for enhancing the execution of safe work at a jobsite under TRC's supervision. Similarly, all subcontractors are required to provide their own JSA(s) for their specialty prior to performing any work for TRC or its customers in accordance with TRC's EHS Policy; however, any unsafe condition or hazard not covered in any JSA is ultimately the direct responsibility of the person or entity performing the work.

COMPANY/ PROJECT NAME or ID/ LOCATION (City, State)	DATE PREPARED FOR HSP:	☐ NEW ☒ REVISED from S: Drive
ConocoPhillips #3072, Castro Valley, California	1/31/06	
JSA WORK ACTIVITY (Description):	List of Contractor(s) and key work activity:	
Hole Clearance	Gregg Drilling & Woodward Drilling	

SITE SPECIFIC JSA AUTHOR	POSITION / TITLE	DEPT	SIGNATURE
Rachelle Dunn	Staff Geologist	Concord	

"TRC APPROVED" JSA DEVELOPMENT TEAM	POSITION / TITLE	APPROVAL DATE
Adrienne Collins	Concord Safety Coordinator	
Sonya Rieken	EHS Advisor	10/06/05
Greg Burket	EHS Supervisor	10/07/05

Required PPE (indicate with "R") vs. Must Have Available On-site (indicate "A")

R HARD HAT R/A GLOVES Specify: ☒ leather ☒ Nitrile ☐ Other _____ R SAFETY GLASSES _____GOGGLES _____FACE SHIELD	R REFLECTIVE VEST A HEARING PROTECTION R SAFETY SHOES: Protective Toe _____ 5pt.HARNESS / LANYARD PPE CLOTHING: ____Coveralls ____Tyvek Suit ____Nomex ____Other (specify):	RESPIRATORY PROTECTION: ☒ NA _____½ face Air Purifying Respirator (APR) _____Particulate Mask: ☐ PM100 ☐ PM95 _____ Cartridge: ☐ VOC ☐ _____ _____Full face ARP; specify cartridge type: _____ Air Supplied Respirator ____SCBA ____Air-line	Additional PPE:

Always perform a Safety Assessment: 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.

[1] JOB TASKS	[2] POTENTIAL HAZARDS	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
1. Set up Job Site	a. Physical Injury from being struck by moving vehicles or equipment.	a. Have one person watch traffic while the other creates exclusion zone in a high-use traffic area. a. Create an exclusion zone at least 10-feet beyond the limits of the hole clearance; use snow fencing, barricades, delineators, cones and/or caution tape in accordance with project specification.
2. Hole Clearance	a. Damage to underground utilities/piping b. Contact with chemical contamination c. Run-off and Soil Cross-Contamination	a. Follow procedures outlined in TRC's Subsurface disturbance checklist. Contact TRC PM if utility/piping is encountered. b. Wear nitrile gloves when handling water or soil. Wear required PPE, incluing safety glasses, while on job site. c. Cover all spoils stockpiles with plastic-sheeting and berm in accordance with local regulations.
3. Use of Air/Water Knifes	a. Physical injury from high-pressure air/water spray	a. Never place fingers or other body parts in front of high-pressure end of air knife/water knife nozzle. a. Always follow safe working procedures outlined in equipment handbook.
Field Changes: 4.	a. b. c. d.	a. b. c. d.

GENERAL SAFETY HAZARDS	LOCATION(S) WHERE HAZARD IS TO BE EXPECTED	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
5. Slips, trips, and falls	a. In exclusion zone	a. Clean as you work. Put equipment away when done using it. Blot up puddles of standing water and sweep work area. a. Cover or use appropriate warning to protect all unattended open holes.
6. Cut/Pinched fingers or toes	a. Throughout work area; particularly when moving materials and during hole clearance	a. Wear leather gloves when lifting sharp or heavy equipment.
7. Strained muscles.	a. Throughout work area; particularly when moving materials and during hole clearance	a. Use proper lifting techniques; get help when moving heavy objects (>70 lbs).
8. Unauthorized Personnel in exclusion zone	a. In exclusion zone	a. Use visitor check-in log; do not allow anyone in exclusion zone without proper PPE and training documentation. (HAZWOPER/LPS).

COMPANY/ PROJECT NAME or ID/ LOCATION (City, State) ConocoPhillips #3072, Castro Valley, California	DATE PREPARED FOR HSP: 1/31/06	☐ NEW ☒ REVISED from S: Drive
JSA WORK ACTIVITY (Description): Hole Clearance	List of Contractor(s) and key work activity: Gregg Drilling & Woodward Drilling	

9. Flying debris	a. In exclusion zone	a. Wear ANSI-approved safety glasses working around operating equipment.
10. Loud Noise	a. In exclusion zone	a. Wear ANSI-approved hearing protection around operating equipment.
11. Explosion/Fire	a. In exclusion zone	a. No smoking or open flame. Periodically monitor ambient air concentrations with PID/LEL Meter. Shut down job and move personnel and equipment upwind if hydrocarbon concentrations are **> 300 ppm or >10% of LEL**. a. Place 2-20lb ABC Fire extinguishers in location soecified by SSO. a. Follow TRC's Cell Phone Use Guidelines.

Field Notes:

LIMITATION: As part of TRC's EHS Policy, a JSA is provided by TRC for its employees. The purpose of a JSA is NOT to identify all hazards associated with a task, but to identify key potential hazards to get TRC and other onsite personnel thinking about other potential safety hazards and mitigating actions for unsafe conditions and behavior during various works. TRC recognizes that JSA's may not cover every conceivable step or hazard that emerges during a job, so we've provided a "Field Change" section below to amend a JSA if required. The JSA does not supersede or replace any local, state or federal permit, regulation, statute or other entities policies and procedures but is simply a tool for enhancing the execution of safe work at a jobsite under TRC's supervision. Similarly, all subcontractors are required to provide their own JSA(s) for their specialty prior to performing any work for TRC or its customers in accordance with TRC's EHS Policy; however, any unsafe condition or hazard not covered in any JSA is ultimately the direct responsibility of the person or entity performing the work.

TRC

JOB SAFETY ANALYSIS

COMPANY/ PROJECT NAME or ID/ LOCATION (City, State)	DATE PREPARED FOR HSP:	☐ NEW ☒ REVISED from S: Drive
ConocoPhillips #3072, Castro Valley California	01/31/06	
JSA WORK ACTIVITY (Description): Well Development	List of Contractor(s) and key work activity: Gregg Drilling	

SITE SPECIFIC JSA AUTHOR	POSITION / TITLE	DEPT	SIGNATURE
Rachelle Dunn	Staff Geologist	Concord	

"TRC APPROVED" JSA DEVELOPMENT TEAM	POSITION / TITLE	APPROVAL DATE
Adrienne Collins	Concord Safety Coordinator	
Sonya Rieken	EHS Advisor	
Greg Burket	EHS Supervisor	

Required PPE (indicate with "R") vs. Must Have Available On-site (indicate "A")

R HARD HAT R/A GLOVES Specify: ☒ leather ☒ Nitrile ☐ Other _____ R SAFETY GLASSES _____GOGGLES _____FACE SHIELD	R REFLECTIVE VEST A HEARING PROTECTION R SAFETY SHOES: Protective Toe _____ 5pt.HARNESS / LANYARD PPE CLOTHING: _____Coveralls _____Tyvek Suit _____Nomex _____Other (specify):	RESPIRATORY PROTECTION: ☒ NA _____½ face Air Purifying Respirator (APR) _____Particulate Mask: ☐ PM100 ☐ PM95 _____ Cartridge: ☐ VOC ☐ _____ _____Full face ARP; specify cartridge type: _____ Air Supplied Respirator _____SCBA _____Air-line	Additional PPE:

Always perform a Safety Assessment: 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.

[1] JOB TASKS	[2] POTENTIAL HAZARDS	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
1. Set up Job Site	a. Physical Injury from being struck by moving vehicles or equipment.	a. Have one person watch traffic while the other creates exclusion zone in a high-use traffic area. a. Create an exclusion zone at least 10-feet beyond the limits of the boring location; use snow fencing, barricades, delineators, cones and/or caution tape in accordance with project specification. a. Always wear safety vest, establish eye contact with operators utilizing flag men wear appropriate. a. Vehicles shall use reverse beepers or flagmen.
2. Bail and surging well	a. Broken wire cable b. Distracted operator c. Overspray and cross-contamination during bailer and surge block decontamination	a. Do not stand directly in front of the development rig while machinery is operating. Stand off to the side. b. Always communicate with the operator before approaching the operating development rig. e. Safety glasses, splash goggles, or face shield will be worn at all times when spraying/decontaminating bailer and surge block. c. b. Do not overspray while cleaning bailer and surge block.
3. Purging well	a. Opening/closing/moving drums b. Overspray and cross-contamination during pump decontamination	a. Wear leather gloves during the opening and closing of drums to protect fingers. a. Use only drum dolly to move drums with soil, grout, concrete, or decontamination water. b. Safety glasses, splash goggles, or face shield will be worn at all times when spraying/decontaminating pump. b. Do not overspray while cleaning pump.
Field Changes: 4.	a. b. c. d.	a. b. c. d.

[1] List all activities/steps which present a significant hazard, preferably in sequence. FOCUS ON POTENTIALLY HAZARDOUS ACTIVITIES; not the trivial ones. Apply common, yet knowleable & informed, sense to identify what could reasonably be expected to cause danger.

[2] CONCENTRATE ON SIGNIFICANT HAZARDS. What can go wrong? How can someone get hurt? Can someone be struck by or strike an object?; caught on, in or between objects?; fall to ground or lower level?; experience excessive strain or stress? Be exposed to inhalation or skin hazards. Specify the hazards; be descriptive.

[3] Describe actions, procedures or limits necessary to eliminate or minimize the hazards. Be clear, concise and specific. Use objective, observable and quantified terms. Avoid subjective general statements such as, "be careful" or "use as appropriate".

TRC

JOB SAFETY ANALYSIS

COMPANY/ PROJECT NAME or ID/ LOCATION (City, State)	DATE PREPARED FOR HSP:	☐ NEW ☒ REVISED from S: Drive
ConocoPhillips #3072, Castro Valley California	01/31/06	
JSA WORK ACTIVITY (Description):	List of Contractor(s) and key work activity:	
Well Development	Gregg Drilling	

GENERAL SAFETY HAZARDS	LOCATION(S) WHERE HAZARD IS TO BE EXPECTED	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
5. Slips, trips, and falls	a. In exclusion zone	a. Clean as you work. Put equipment away when done using it. Blot up puddles of standing water and sweep work area. a. Cover or use appropriate warning to protect all unattended open holes.
6. Cut/Pinched fingers or toes	a. Throughout work area; particularly when moving materials.	a. Wear leather gloves when lifting sharp or heavy equipment.
7. Strained muscles.	a. Throughout work area; particularly when moving augers	a. Use proper lifting techniques; get help when moving heavy objects (>70 lbs).
8. Unauthorized Personnel in exclusion zone	a. In exclusion zone	a. Use visitor check-in log; do not allow anyone in exclusion zone without proper PPE and training documentation. (HAZWOPER/LPS).
9. Flying debris	a. In exclusion zone	a. Wear ANSI-approved safety glasses working around operating equipment.
10. Loud Noise	a. In exclusion zone	a. Wear ANSI-approved hearing protection around operating equipment.
11. Explosion/Fire	a. In exclusion zone	a. No smoking or open flame. Periodically monitor ambient air concentrations with PID/LEL Meter. Shut down job and move personnel and equipment upwind if hydrocarbon concentrations are **> 300 ppm or >10% of LEL.** a. Place 2-20lb ABC Fire extinguishers in location soecified by SSO. a. Follow TRC's Cell Phone Use Guidelines.
12. Exposure to hydrocarbon impacted groundwater	a. In exclusion zone	a. Wear nitrile gloves during handling of groundwater.

Field Notes:

LIMITATION: As part of TRC's EHS Policy, a JSA is provided by TRC for its employees. The purpose of a JSA is NOT to identify all hazards associated with a task, but to identify key potential hazards to get TRC and other onsite personnel thinking about other potential safety hazards and mitigating actions for unsafe conditions and behavior during various works. TRC recognizes that JSA's may not cover every conceivable step or hazard that emerges during a job, so we've provided a "Field Change" section below to amend a JSA if required. The JSA does not supersede or replace any local, state or federal permit, regulation, statute or other entities policies and procedures but is simply a tool for enhancing the execution of safe work at a jobsite under TRC's supervision. Similarly, all subcontractors are required to provide their own JSA(s) for their specialty prior to performing any work for TRC or its customers in accordance with TRC's EHS Policy; however, any unsafe condition or hazard not covered in any JSA is ultimately the direct responsibility of the person or entity performing the work.

[1] List all activities/steps which present a significant hazard, preferably in sequence. FOCUS ON POTENTIALLY HAZARDOUS ACTIVITIES; not the trivial ones. Apply common, yet knowleable & informed, sense to identify what could reasonably be expected to cause danger.

[2] CONCENTRATE ON SIGNIFICANT HAZARDS. What can go wrong? How can someone get hurt? Can someone be struck by or strike an object?; caught on, in or between objects?; fall to ground or lower level?; experience excessive strain or stress? Be exposed to inhalation or skin hazards. Specify the hazards; be descriptive.

[3] Describe actions, procedures or limits necessary to eliminate or minimize the hazards. Be clear, concise and specific. Use objective, observable and quantified terms. Avoid subjective general statements such as, "be careful" or "use as appropriate".

ATTACHMENT F

TAILGATE SAFETY MEETING CHECKLIST

AND

HSP COMPLIANCE AGREEMENT

TAILGATE SAFETY MEETING CHECKLIST

Date / Time of Tailgate Meeting: _____

☐ **Vehicle Inspection:** Driver will perform Driver's Daily Vehicle Inspection Checklist before leaving the yard or if changing drivers during the day.

☐ **Personnel training/qualifications:** Check cards for OSHA HAZWOPER 40-hour certification/8-hour-refresher training (or any other specialized training to perform the task if appropriate). TRC personnel have been trained on the Company's Drug and Alcohol Policy and will inform all site personnel.

☐ **Supplies:** Indicate location of first aid kit, fire extinguisher, clean water supply (drinking, eye wash), and Site Health and Safety Plan (HSP).

☐ **Emergency services:** Discuss location of nearest telephone and directions to hospital. Map, directions, phone numbers are provided in the HSP (Attachment C).
The TRC Emergency Twenty-four Hour Number is 1-800-274-0972.

- **First-Aid/CPR volunteers:** _____
  _____

☐ **Site background:** Discuss types, locations, and concentrations of chemicals found onsite, presence of free product, depth to groundwater, etc.

☐ **Offsite Permits/Access Permits:** Discuss any permitting requirements for the site.

Work activities: Discuss scope of work for the day and activities to be performed.

☐ **Potential hazards: Review JSAs.** Discuss physical, chemical and biological hazards Discuss the prohibiting of any eating, drinking, and/or smoking in the work zone

☐ **Personal protective equipment (PPE):** Discuss required level of protection; review additional PPE requirements in JSAs, as needed.

☒ Hard Hat ☒ Safety Shoes/Boots ☒ Safety Vest ☒ Eye Protection - ☒ glasses ☐ goggles ☐ face shield
☒ Hand Protection - ☒ leather ☒ nitrile ☐ other _____ ☒ Hearing Protection
☐ Respiratory Protection - ☐ APR Particulate ☐ APR Chemical cartridge ☐ other _____
☐ Protective Clothing - ☐ Tyvex ☐ Nomex ☐ Coveralls ☐ other _____

☐ **Utilities:** Utilities have been cleared/marked by appropriate divisions.

☐ **Traffic control** (vehicular and pedestrian): Work area is properly delineated and cordoned off from traffic. Technician will put a traffic cone at all four corners of his parked vehicle. Upon completion of work, walk around vehicle to pick up cones and check all four sides and underneath vehicle for obstacles prior to moving truck.

☐ **Dispenser Emergency Shut-off Switch:** Location has been identified/communicated with field personnel.

☐ **Dealer Notification:** Notify dealer/owner of site work activities to be performed.

HSP COMPLIANCE AGREEMENT

By signing below, I have completed the Tailgate Safety Meeting Checklist, reviewed this Site Health and Safety Plan and the Job Safety Analysis (JSA) and understand their contents. I hereby agree to comply with all safety requirements outlined herein:

TRC

Signature: _____, **Site Safety Officer (SSO)**

Print Name: _____ **Date:** _____

Signature: _____, **Asst. Site Safety Officer** (Asst. SSO)

Print Name: _____ **Date:** _____

Contractor:

Signature: _____, **Site Safety Officer (SSO)**

Print Name: _____ **Date:** _____

Signature: _____, **Asst. Site Safety Officer** (Asst. SSO)

Print Name: _____ **Date:** _____

Contractor:

Signature: _____, **Site Safety Officer (SSO)**

Print Name: _____ **Date:** _____

Signature: _____, **Asst. Site Safety Officer** (Asst. SSO)

Print Name: _____ **Date:** _____

TRC Employees / Contractor Personnel / Visitors

Signature: _____ **Date:** _____

Print Name: _____ **Company:** _____

Signature: _____ **Date:** _____

Print Name: _____ **Company:** _____

HSP COMPLIANCE AGREEMENT (cont.)

By signing below, I have completed the Tailgate Safety Meeting Checklist, reviewed this Site Health and Safety Plan and the Job Safety Analysis (JSA) and understand their contents. I hereby agree to comply with all safety requirements outlined herein:

TRC Employees / Contractor Personnel / Visitors (cont.)

Signature: _____ Date: _____

Print Name: _____ Company: _____

Signature: _____ Date: _____

Print Name: _____ Company: _____

Signature: _____ Date: _____

Print Name: _____ Company: _____

Signature: _____ Date: _____

Print Name: _____ Company: _____

Signature: _____ Date: _____

Print Name: _____ Company: _____

Signature: _____ Date: _____

Print Name: _____ Company: _____

Signature: _____ Date: _____

Print Name: _____ Company: _____

Signature: _____ Date: _____

Print Name: _____ Company: _____

Signature: _____ Date: _____

Print Name: _____ Company: _____

Signature: _____ Date: _____

Print Name: _____ Company: _____

APPENDIX B

GENERAL FIELD PROCEDURES

GENERAL FIELD PROCEDURES

A description of the general field procedures used during site investigation and monitoring activities is presented below. For an overview of protocol, refer to the appropriate section(s).

DRILLING AND SOIL SAMPLING

Soil borings are drilled using continuous-flight, hollow-stem augers. Borings that are not completed as monitoring wells are grouted to within 5 feet of the ground surface with a cement/bentonite slurry. The remaining 5 feet is filled with concrete.

Soil samples are obtained for soil description, field hydrocarbon vapor screening, and possible laboratory analysis. Soil samples are retrieved from the borings by one of two methods: 1) continuously, using a 5-foot-long, continuous-core barrel sampler advanced into the soil with the lead auger; sample tubes are driven into the core with a mallet, or 2) at 2.5- or 5-foot intervals, using a standard split-spoon sampler lined with four 1.5-inch-diameter stainless steel or brass sample inserts. The split-spoon sampler is driven approximately 18 inches beyond the lead auger with a 140-pound hammer dropped from a height of 30 inches.

For hand auger borings and hand-held, power-driven auger borings, soil samples are retrieved using a hand-driven slide hammer lined with a 1.5-inch-diameter stainless steel sample tube.

During drilling activities, soil adjacent to the laboratory sample is screened for combustible vapors using a combustible gas indicator (CGI) or equivalent field instrument. For each hydrocarbon vapor-screening event, a 6-inch-long by 2.5-inch-diameter sample insert is filled approximately 1/3 full with the soil sample, capped at both ends, and shaken. The probe is then inserted through a small opening in the cap, and a reading is taken after approximately 15 seconds and recorded on the boring log. The remaining soil recovered is removed from the sample insert or sampler, and described in accordance with the Unified Soil Classification System. For each sampling interval, field estimates of soil type, density/consistency, moisture, color, and grading are recorded on the boring logs.

SOIL SAMPLE HANDLING

Upon retrieval, soil samples are immediately removed from the sampler, sealed with Teflon sheeting and polyurethane caps, and wrapped with tape. Each sample is labeled with the project number, boring/well number, sample depth, geologist's initials, and date of collection. After the samples have been labeled and documented in the chain of custody record, they are placed in a cooler with ice at approximately 4 degrees Celsius (°C) prior to and during transport to a state-certified laboratory for analysis. Samples not selected for immediate analysis may be transported in a cooler with ice and archived in a frostless refrigerator at approximately 4°C for possible future testing.

MONITORING WELL INSTALLATION

Monitoring wells are constructed of 2-inch-diameter, flush-threaded Schedule 40 PVC blank and screened (0.020-inch slot size) casing. Where possible, the screened interval will extend at least 10 feet above, and 10 to 20 feet below, the top of the groundwater table. The annular space surrounding

the screened casing is backfilled with No. 3 Monterey sand (filter pack) to approximately 2 feet above the top of the screened section.

During well construction, the filter pack is completed by surging with a rig-mounted surge block. A 3-foot-thick bentonite annular seal is placed above the filter pack. The remaining annular space is grouted with Portland cement and/or bentonite grout to the surface. Utility access boxes are installed slightly above grade. Locking, watertight caps are installed to prevent unauthorized access to the well, and limit infiltration of surface fluids.

FLUID LEVEL MONITORING

Fluid levels are monitored in the wells using an electronic interface probe with conductance sensors. The presence of liquid-phase hydrocarbons is verified using a hydrocarbon-reactive paste. The depth to liquid-phase hydrocarbons and water is measured relative to the well box top or top of casing. Well boxes or casing elevations are surveyed to within 0.02 foot relative to a county or city benchmark.

GROUNDWATER PURGING AND SAMPLING

Groundwater monitoring wells are purged and sampled in accordance with standard regulatory protocol. Typically, monitoring wells that contain no liquid-phase hydrocarbons are purged of groundwater prior to sampling so that fluids sampled are representative of fluids within the formation. Temperature, pH, and specific conductance are typically measured after each well casing volume has been removed. Purging is considered complete when these parameters vary less than 10% from the previous readings, or when four casing volumes of fluid have been removed. Samples are collected without further purging if the well does not recharge within 2 hours to 80% of its volume before purging.

The purged water is either pumped directly into a licensed vacuum truck or temporarily stored in labeled drums prior to transport to an appropriate treatment or recycling facility. If an automatic recovery system (ARS) is operating at the site, purged water may be pumped into the ARS for treatment.

Groundwater samples are collected by lowering a 1.5-inch-diameter, bottom-fill, disposable polyethylene bailer just below the static water level in the well. The samples are carefully transferred from the check-valve-equipped bailer to 1-liter and 40-milliliter glass containers. The sample containers are filled to zero headspace and fitted with Teflon-sealed caps. Each sample is labeled with the project number, well number, sample date, and sampler's initials. Samples remain chilled at approximately 4°C prior to analysis by a state-certified laboratory.

CHAIN OF CUSTODY PROTOCOL

Chain of custody protocol is followed for all soil and groundwater samples selected for laboratory analysis. The chain of custody form(s) accompanies the samples from the sampling locality to the laboratory, providing a continuous record of possession prior to analysis.

DECONTAMINATION

Drilling and Soil Sampling

Drilling equipment is decontaminated by steam cleaning before being brought onsite. The augers are also steam cleaned before each new boring is commenced. Prior to use, the sampler and sampling tubes are brush-scrubbed in a Liquinox and potable water solution and rinsed twice in clean potable water. Sampling equipment and tubes are also decontaminated before each sample is collected to avoid cross-contamination between borings.

Groundwater Sampling

Purging and sampling equipment that could contact well fluids is either dedicated to a particular well or cleaned prior to each use in a Liquinox solution followed by two tap water rinses, prior to analysis.