ETIC ENGINEERING

LETTER OF TRANSMITTAL

To: Mr. Amir K. Gholami
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway
Room 250
Alameda, CA 94502

Date: 7/23/03	
Project No. TM04334	**Task No.** 3
Re: Former Mobil Station 04-334, 2492 Castro Valley Boulevard, Castro Valley, California	

Enclosed are the following items:

No. Copies	Description
1	Site Assessment Workplan (by TRC, dated 5/16/03)

Alameda County
JUL 28 2003
Environmental Health

These are transmitted as checked below:

☒ For your use ☐ As requested ☐ For review and comment ☐ For your information

☐ Other:

Message:
Per our conversation on 23 July 2003, attached is a copy of the work plan by TRC for the site referenced above.

If you have any questions, please contact me at (925) 602-4710 extension 24. Thank you.

Bryan Campbell

Copy to: **Signed**

Sent via:

☐ Federal Express Priority ☐ Federal Express Standard ☐ Federal Express 2-Day
☐ Express Mail ☐ Priority Mail ☐ Hand delivery ☐ Courier Service
☐ UPS Ground ☒ First Class Mail ☐ Other

ExxonMobil
Refining & Supply Company
Global Remediation
2300 Clayton Road, Suite 1250
Concord, CA. 94520
(925) 246-8747 Telephone
(925) 246-8798 Facsimile
gene.n.ortega@exxonmobil.com

Gene N. Ortega
Territory Manager
Global Remediation – U.S. Retail

RO-386

ExxonMobil
Refining & Supply

May 16, 2003

TRC Project No. 41-0115

Alameda County Health Care Services Agency
1131 Harbor Bay Parkway
Room 250
Alameda, California 94502

ATTN: MR. AMIR K. GHOLAMI

SITE: FORMER MOBIL STATON 04-334
2492 CASTRO VALLEY BOULEVARD
CASTRO VALLEY, CALIFORNIA

RE: SITE ASSESSMENT WORKPLAN

Dear Mr. Gholami:

Please find enclosed a copy of the *Site Assessment Workplan*, for the former Mobil Station 04-334, located at 2492 Castro Valley, California.

If you have any questions or comments regarding this work plan please call me at (925) 246-8747.

Sincerely,

Gene Ortega
Territory Manager

TRC

Customer-Focused Solutions

Alameda County

MAY 23 2003

Environmental Health

Transmittal Form

TO:	
	Mr. Gene Ortega
	ExxonMobil Refining and Supply Company
	2300 Clayton Road, Suite 1250
	Concord, CA 94520

DATE: 5/16/03	PROJECT NO. 410115
Site Assessment Workplan	

WE ARE SENDING YOU:

COPIES	DESCRIPTION
1	Copy of the Site Assessment Workplan for former Mobil Station 04-334.

THESE ARE TRANSMITTED AS CHECKED BELOW:

- ☒ For Approval
- ☐ For your use
- ☐ As requested
- ☐ For review and comment
- ☐ For distribution
- ☐ Approved as submitted
- ☐ Approved as noted
- ☐ Returned
- ☐ For Your Signature
- ☒ Overnight
- ☐ Regular Mail
- ☐ Hand Deliver
- ☐ Fax

SIGNED:

Jonathan Scheiner

Jonathan Scheiner
Associate

5052 Commercial Circle • Concord, California 94520-1248
Telephone 925-688-1200 • Fax 925-688-0388

SITE ASSESSMENT
WORKPLAN

May 16, 2003

FORMER MOBIL STATION 04-334
2492 CASTRO VALLEY BOULEVARD
CASTRO VALLEY, CALIFORNIA

TRC Project No. 41-0115-80

Prepared For:

Mr. Gene Ortega
ExxonMobil Oil Corporation
2300 Clayton Road, Suite 1250
Concord, California

Prepared By:

Steve Kemnitz
Senior Staff Scientist

For
Jonathan Scheiner
Associate

TRC
5052 Commercial Circle
Concord, California 94520
(925) 688-1200

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1.0 INTRODUCTION

On behalf of ExxonMobil Oil Corporation (ExxonMobil), TRC submits this workplan for site assessment activities at the former Mobil station located at 2492 Castro Valley Boulevard in Castro Valley, California (the "Site") (Figure 1). This workplan presents a phased approach toward assessment of current site conditions. Phase one consists of a document review and advancing soil borings to collect grab groundwater and soil samples for laboratory analyses. Phase two will consist of the installation of monitoring wells for ongoing assessment of groundwater quality at the Site. The implementation of phase two activities will be contingent on the findings from the phase one portion of the investigation.

2.0 SCOPE OF WORK

The scope of work for assessment activities at the Site includes the following:

- Review files at the Alameda County Health Care Services Agency in order to assess whether other parties, located in the vicinity of the Site, may have contributed to the dissolved-phase petroleum hydrocarbon plume.

- Complete seven (7) direct-push soil borings on and around the Site, to approximately 15 to 20 feet below grade (fbg). Select soil samples and grab groundwater samples will be collected from each boring in order to better characterize the vertical and horizontal extent of the dissolved-phase hydrocarbon plume below the Site.

- Install approximately three (3) to four (4) groundwater monitoring wells on and around the Site for ongoing assessment of the groundwater. Phase one results will assist in the determination of optimum number, locations, and depths of the monitoring wells.

3.0 SITE DESCRIPTION

Location:	The Site is located at 2492 Castro Valley Boulevard in Castro Valley, California.
Past Site Use:	The site was previously operated as a service station by GP Petroleum from 1956 to 1969. In 1956, two 6,000-gallon underground storage tanks (USTs) and one used oil tank was installed. The service station was then operated by Mobil Oil from 1969 to 1983. An 8,000-gallon UST was installed in 1971.
Present Site Use:	The Site is currently a Jiffy Lube oil change service facility.

Adjacent Properties: The Site lies in a predominantly commercial district. To the east, across Stanton Avenue, is a Tosco 76 Service Station (formerly Thrifty Oil Company Station No. 054). The Thrifty Oil Company Station is an active LUST site, and has twelve groundwater monitoring wells, including monitoring well RS-9 which is adjacent to the Site. To the west of the Site lies a Big-O Tire retail facility. To the south, across Castro Valley Boulevard, is a Wendy's Restaurant. To the north is a residential area.

Geography: The Site is located on the northwest corner of the intersection of Castro Valley Boulevard and Stanton Avenue. The Site is situated on a gently sloping, northeast trending topography, and is located near the base of the northeast trending foothills separating Castro Valley from Hayward. (KEI, 1992).

Geology: The Site is underlain by Quanternary-age alluvium. Mapped bedrock outcrops adjacent to the Site include the marine Panoche Formation, which is described as a conglomerate with a sandstone matrix and the Knoxville Formation, which is described as micaceous shale with thin beds of sandstone (Alton, 1997).

Hydrogeology: The Site is located in the Castro Valley Groundwater Basin which is a 4-square mile basin that is drained by San Lorenzo Creek (DWR, 1975). Near surface groundwater at the Site was between 3 and 10 fbg during Site Assessment Activities conducted by TRC on March 3, 1999. Groundwater at the Tosco 76 Service Station, located southwest of the Site, is generally to the east-northeast at a gradient of 0.016 foot per foot (KEI, 1992).

4.0 SITE BACKGROUND

1983: Three fuel USTs and one used oil UST were removed from the Site in 1983. Soil samples were collected for geotechnical and physical analysis for compaction of the tank cavity. Petroleum hydrocarbon odor was not noted during backfilling of the tank cavity (Judd Hull and Associates, 1983).

1986: In 1986, a geotechnical assessment was conducted by Giles Engineering Associates, Inc. on behalf of California Lubricants Ltd. Six soil borings were advanced on site and sampled. Slight to moderate petroleum hydrocarbon odor were noted from 3 to 8.5 fbg while drilling in the backfill and former tank cavity. (Alisto, 1994). No soil samples were submitted for analysis during this assessment.

1999: In March of 1999, TRC advanced five direct push borings (AB-1 through AB-5) to total depths ranging from 16 to 20 fbg. Refer to figure 2 for former boring locations. Select soil and grab groundwater samples were analyzed for the following

- total petroleum hydrocarbons as gasoline (TPH-G)
- total petroleum hydrocarbons as diesel (TPH-D)
- benzene, toluene, ethylbenzene, xylenes (BTEX)
- methyl tert-butyl ether (MTBE)

Soil and groundwater samples collected from the former used oil tank area were also analyzed for the following:

- total oil and grease (TOG)
- halogenated volatile organic compounds (HVOC)
- CAM-17 metals (soil only)

Select soil samples collected from AB-4 at 10 to 11 fbg, contained the highest concentrations of TPH-G [2,600 milligrams per kilogram (mg/kg)], TPH-D (700 mg/kg), and benzene (3.4 mg/kg). The highest concentration of MTBE (8 mg/kg) was also detected in AB-4 at 10 to 11 fbg, but concentrations in the confirmation analysis were non-detectable at the laboratory detection limit. Additionally, boring AB-2 (10 to 11fbg) contained concentrations of TOG (13 mg/kg). Table 1 contains soil sample analytical results.

Grab groundwater samples collected from AB-3 contained the highest concentrations of TPH-G [4,300 micrograms per liter (µg/l)], benzene (210 µg/l, and ethylbenzene (660 µg/l). Groundwater collected from AB-4 contained the highest concentrations of TPH-D (5,500 µg/l), toluene (43µg/l) and total xylenes (260 µg/l). Groundwater collected from AB-2 contained concentrations of TOG (1.0 µg/l). However, HVOCs concentrations in the groundwater collected from AB-2 were below the laboratory detection limits. Table 2 contains groundwater analytical results.

5.0 SITE ASSESSMENT ACTIVITIES

5.1 File Review

Prior to the commencement of site assessment activities, a search of the Alameda County Health Care Services Agency files will be conducted for the surrounding properties. Results of the file review will provide an update of current area-wide environmental conditions and may identify additional sources of groundwater impacts.

5.2 Pre-field Activities

Prior to the commencement of field activities, boring permits and well installation permits will be acquired from the applicable regulatory agencies. Additionally, permission to access the Site and surrounding areas will be acquired from the current property owner, as applicable, and state and municipal regulatory agencies (e.g., for work in the public right-of-ways).

Underground Services Alert will be notified approximately three days, prior to soil boring and well installation activities, to mark underground utilities. In order to verify the absence of buried utilities, each soil boring and monitoring well location will be cleared to approximately 5 fbg with the use of a high pressure water knife and vacuum truck (Hydrovac).

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.

5.3 Direct-Push Soil Borings

Seven (7) direct-push soil borings will be advanced on-site and adjacent to the Site, to a depth of approximately 15 to 20 fbg. Soil and grab groundwater samples will be collected from each boring.

Soil sampling will be completed by direct-push sampling techniques using a truck-mounted direct-push rig. Soil samples will be collected continuously to the total depths drilled at each boring. Samples will be collected for soil description in accordance with the Unified Soil Classification System (ASTM D-2487) and field hydrocarbon vapor testing using a hand-held photo-ionization detector (PID). Two or three soil samples from each boring will be submitted for analysis by a state-certified laboratory. Selection of samples for analysis will be based on PID readings and field observations. General field procedures to be followed during this investigation are discussed in Appendix B.

Each boring will be completed to approximately 5 feet below the top of the first water bearing zone which is anticipated to be encountered from 4 to 10 fbg. When groundwater is encountered, a grab sample will be collected by placing a temporary ¾ - inch PVC well screen into the boring and collecting water samples using an appropriate bailer.

After sampling is completed, all borings will be properly sealed with neat cement grout. A tremie pipe will be used to place the grout from the bottom of the boring to one fbg in one continuous pour. The boring will then be completed to grade level with concrete.

5.4 Monitoring Well Installation

TRC proposes to install approximately three (3) to four (4) monitoring wells on and around the Site for ongoing assessment of the groundwater. The implementation of phase two activities will be contingent on the findings from the phase one portion of the investigation. Additionally, the findings of the phase one portion of the assessment will assist in the determination of optimum number, locations, and depths of the monitoring wells.

Monitoring well installations will be performed by a licensed driller using a truck-mounted hollow-stem auger drill. Prior to drilling, each boring location will be cleared to 8 fbg utilizing a high pressure water knife and vacuum truck (Hydrovac). Soil will be continuously logged by a qualified geologist in accordance with the Unified Soil Classification System (USCS) and recorded on boring logs. Soil samples will be collected at five foot intervals and screened for hydrocarbon vapor concentrations using a photo-ionization detector (PID).

Up to two soil samples from each well will be submitted to a State-certified laboratory for analysis. 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:

The proposed monitoring wells will be constructed of 2-inch diameter polyvinyl chloride (PVC) blank and screen (0.020 slot). The proper screen interval will be determined during phase one of the site assessment activities. 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 neat cement grout. The wellhead will be sealed with a watertight lockable well cap, and a flush-mount wellbox will be installed over the wellhead.

A minimum of 24-hours following installation, the wells will be developed (surged and bailed) to improve hydraulic communication between the geologic formation and the well. The wellhead reference point, typically a notch cut into the top of the well casing, will be surveyed. Future depth to groundwater measurements will be made from the wellhead reference point.

Fluid level measurements and groundwater sampling will be conducted no sooner than 48-hours after development of the wells. Fluid levels will be measured relative to the top of each casing with a precision of 0.01 feet. The presence and thickness of free-phase product will also be checked in each 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 PVC 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, thereby providing a continuous record of sample possession before actual analysis.

5.5 Soil and Groundwater Sampling

Soil and groundwater samples from each boring will be submitted to a State-certified laboratory for analysis. The selected samples will be properly preserved and transported to the laboratory under appropriate chain-of-custody protocol.

Soil and groundwater samples will be analyzed for the following constituents:

- TPH-G using EPA Method 8015 modified for gasoline
- TPH-D using EPA Method 8015 modified for diesel
- BTEX using EPA Method 8020
- MTBE using EPA Method 8260
- Oil and Grease using EPA Method 418.1 (near former used oil tank only)

5.6 Waste Disposal

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

5.7 Assessment Summary Report

A report summarizing site assessment activities will be prepared and will include the following:

- Site map showing soil boring and monitoring well locations
- Description of field work performed
- Tabulated results of laboratory analyses and copies of laboratory reports
- Geologic boring logs
- Well completion diagrams
- Summary of findings

6.0 WORK SCHEDULE

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

- Agency approval of workplan expected within four weeks of submittal.
- Conduct Phase One activities within six weeks of approval of workplan.
- Conduct Phase Two activities within six weeks of completion of Phase One activities.
- Submit technical report within six weeks of completion of field activities.

7.0 REFERENCES

Alisto Engineering Group, 1994, Workplan for Preliminary Site Investigation, Former Mobil Oil Corporation Station 04-334, February 3.

Alisto Engineering Group, 1997, Request for No Further Action Status, Former Mobil Station 04-334, June 16.

Alton Geoscience, 1997, Site Assessment Workplan, Former Mobil Station 04-334, July 17.

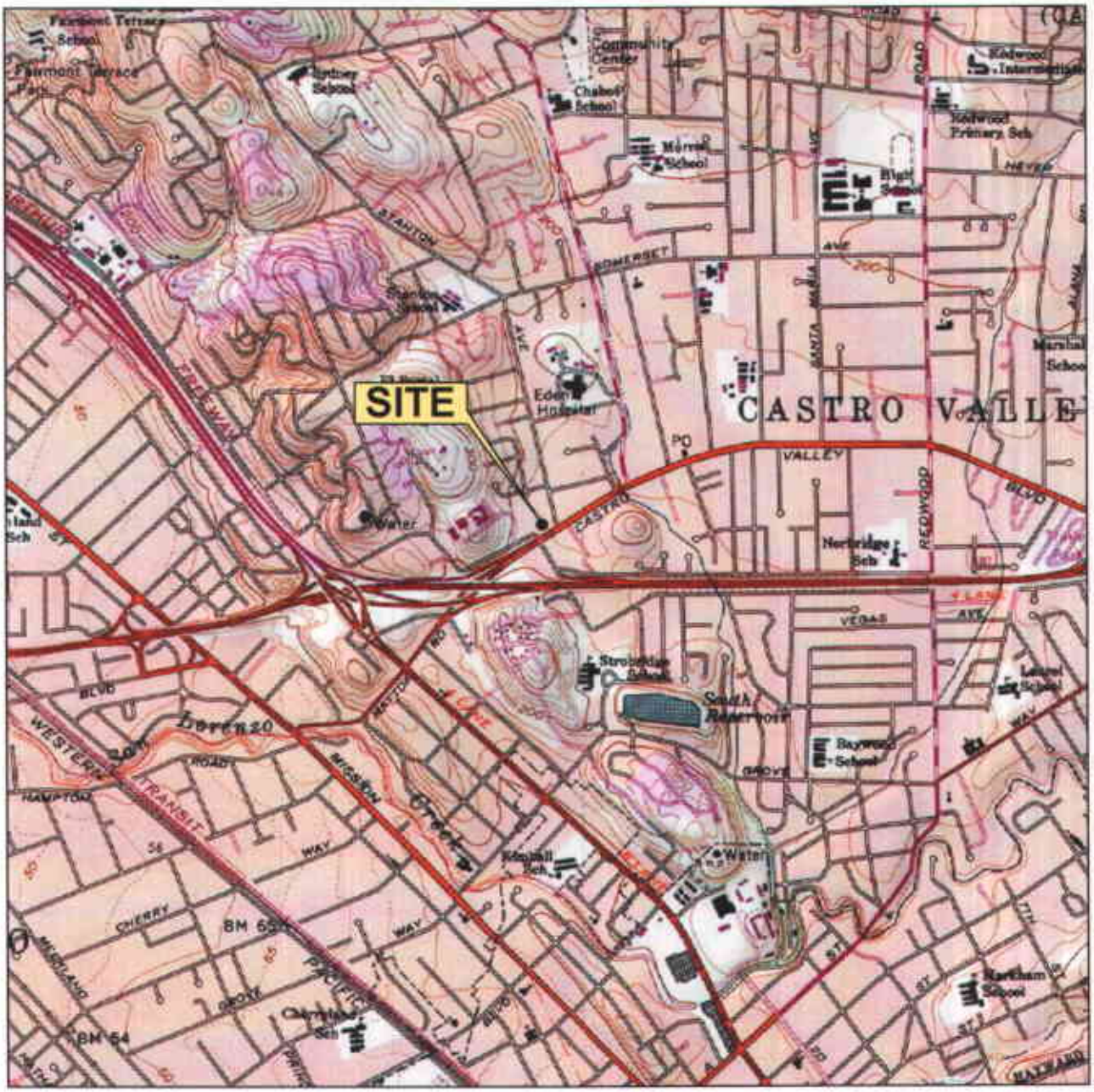
California Department of Water Resources (DWR), 1975, California's Ground Water, Bulletin No. 118, September.

Giles Engineering Associates, Inc., 1986, Geotechnical Engineering Exploration and Analysis, Proposed Jiffy Lube, June 26.

Judd Hull and Associates, 1983. Backfill of Tank Excavation at 2492 Castro Valley Boulevard, Alameda County, California. November 15.

Kaprealian Engineering, Inc. (KEI), 1992, Site Closure Report for Unocal Service Station #3072, December 21.

TRC/Alton Geoscience, 1999, Initial Site Assessment Report, Former Mobil Station 04-334, September 3.



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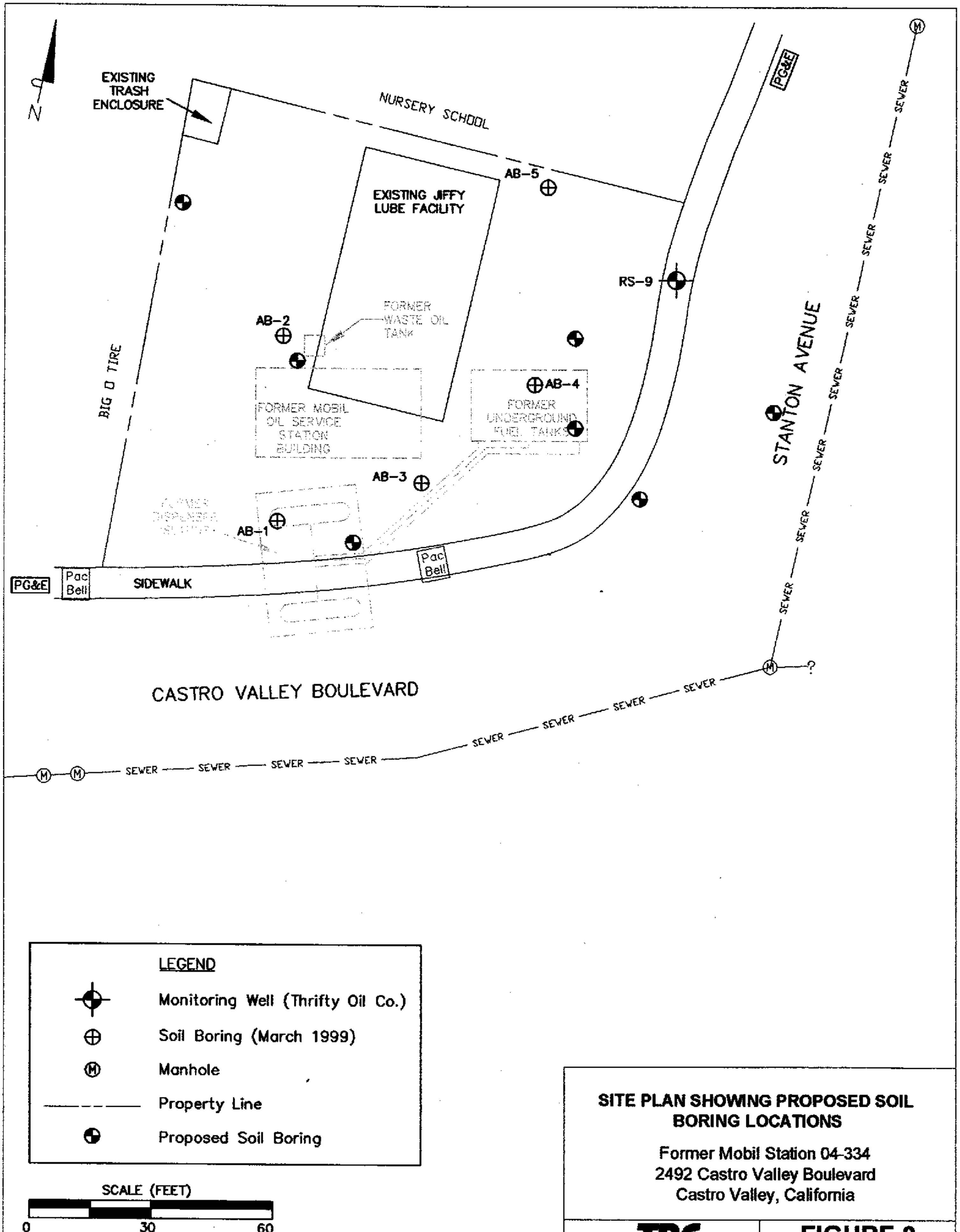
SOURCE:
United States Geological Survey
7.5 Minute Topographic Maps:
Hayward Quadrangle

VICINITY MAP

Former Mobil Station 04-334
2492 Castro Valley Boulevard
Castro Valley, California

TRC

FIGURE 1



SITE PLAN SHOWING PROPOSED SOIL BORING LOCATIONS

Former Mobil Station 04-334
2492 Castro Valley Boulevard
Castro Valley, California

TRC

FIGURE 2

Table 1

Summary of Soil Chemical Analysis

Former Mobil Station 04-334 - Castro Valley

Soil Sample	Date	Sample Depth (feet)	TPH-G (mg/kg)	TPH-D (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	MTBE 8260 (mg/kg)	TOG 5520 (mg/kg)	CAM-17 200.7 (mg/kg)	HVOC 8010 (mg/kg)	Lead (mg/kg)
AB-1	03/04/99	4.0 - 5.0	3.2	ND	ND	ND	0.010	ND	ND	—	—	—	—	—
AB-1	03/04/99	10.0 - 11.0	ND	ND	ND	ND	ND	ND	ND	—	—	—	—	—
AB-1	03/04/99	15.0 - 16.0	ND	ND	ND	ND	ND	ND	ND	—	—	—	—	—
AB-1	03/04/99	19.0 - 20.0	ND	ND	ND	ND	ND	ND	ND	—	—	—	—	—
AB-2	03/04/99	4.0 - 5.0	ND	ND	ND	ND	ND	ND	ND	—	ND	*	ND	—
AB-2	03/04/99	10.0 - 11.0	ND	ND	ND	ND	ND	ND	ND	—	13	*	ND	—
AB-2	03/04/99	15.0 - 16.0	ND	ND	ND	ND	ND	ND	ND	—	ND	*	ND	—
AB-3	03/04/99	4.0 - 5.0	280	170	ND	0.09	1.9	ND	0.4	—	—	—	—	—
AB-3	03/04/99	10.0 - 11.0	ND	ND	ND	ND	ND	ND	ND	—	—	—	—	—
AB-3	03/04/99	15.0 - 16.0	ND	10	ND	ND	ND	ND	ND	—	—	—	—	—
AB-4	03/04/99	4.0 - 5.0	1,100	100	0.2	ND	18	62	ND	—	—	—	—	—
AB-4	03/04/99	10.0 - 11.0	2,600	700	3.4	18	38	170	8	ND	—	—	—	—
AB-4	03/04/99	15.0 - 16.0	2.8	ND	0.005	0.011	0.038	0.12	ND	—	—	—	—	—
AB-5	03/04/99	4.0 - 5.0	ND	ND	ND	ND	ND	ND	ND	—	—	—	—	—
AB-5	03/04/99	10.0 - 11.0	ND	ND	ND	ND	ND	ND	ND	—	—	—	—	—
AB-5	03/04/99	15.0 - 16.0	ND	ND	ND	ND	ND	ND	ND	—	—	—	—	—
S-1	03/04/99	Composite	45	110	0.012	ND	0.31	0.17	ND	—	—	—	—	9.4

NOTES:

TPH-G = total petroleum hydrocarbons as gasoline
TPH-D = total petroleum hydrocarbons as diesel
TOG = total oil and grease
MTBE = methyl tert butyl ether
HVOC = halogenated volatile organic compounds
CAM 17 = metals analysis
mg/kg = milligrams per kilogram
ND = not detected at or above method detection limit
— = not analyzed
* = results were below preliminary remediation goals for residential soils as required by the USEPA Region 9

Table 2
Groundwater Levels and Chemical Analysis
Former Mobil Station 04-334

Sample ID	Date	Depth to Water (feet)	TPH-G (µg/l)	TPH-D (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE 8020 (µg/l)
AB-1	03/05/99	8.7	ND	450	ND	ND	ND	ND	ND
AB-2	03/05/99	4.2	ND	730	ND	ND	0.8	ND	ND
AB-3	03/05/99	8.3	4,300	2,100	210	7.5	660	34	ND
AB-4	03/05/99	3.2	2,900	5,500	100	43	170	260	ND
AB-5	03/05/99	9.65	ND	1,600	ND	ND	1.9	ND	ND

NOTES:
µg/l = micrograms per liter
TPH-G = total petroleum hydrocarbons as gasoline
TPH-D = total petroleum hydrocarbons as diesel
MTBE = methyl tert butyl ether
ND = not detected at or above method detection limit
— = not measured/not analyzed

APPENDIX A

HEALTH AND SAFETY PLAN

SITE HEALTH AND SAFETY PLAN

Site Assessment Activities
Former Mobil Station 04-334
Castro Valley, California

1.0 PLAN SUMMARY

This Site Health and Safety Plan (SHSP) establishes responsibilities, requirements, and procedures for the protection of personnel while performing activities at the above-referenced site. This site-specific plan conforms with the TRC Corporate Health and Safety Plan, Hazard Communication Program, and Injury and Illness Prevention Program (IIPP).

During site work, the use of proper health and safety procedures, in accordance with applicable Cal/OSHA regulations shall be required. Site-specific conditions may necessitate modification of the SHSP; however, except in emergency situations no deviations from the plan may be implemented without the prior notification and approval of the Site Safety Officer (SSO).

2.0 SITE INFORMATION

This SHSP considers the physical, chemical, and environmental hazards that may be encountered during work activities at the site. Operations associated with this SHSP will be conducted in accordance with an approved workplan. Any changes required or made to the planned activities will be immediately communicated to site personnel by the SSO. Summary information for this project is provided in the following table.

Workplan date	February 13, 2003
Principal activities:	Soil borings and monitoring well installation
Site description (see Attachment A for site map):	Currently a Jiffy Lube Oil Service Station
Approximate depth to groundwater:	8-15 fbg
Contaminants of concern (see Attachment C):	Gasoline Hydrocarbons

3.0 SITE SAFETY AUTHORITY

Contact information and names of authorized personnel are listed below. A description of responsibilities follows.

Role	Name	Company	Telephone
Site Safety Officer	Mark Trevor	TRC	(925) 260-6389 Cell
Alternate Site Safety Officer	Richard Evans	TRC	(925) 260-9491 Cell
Project Manager	Jonathan Scheiner	TRC	(925) 688-2473
Supervisor/Offsite Coordinator	Steve Kemnitz	TRC	(925) 688-2486
Local IIPP Coordinator	Steve Kemnitz	TRC	(925) 688-2486
Client Contact	Gene Ortega	Mobil Oil Corporation	(925) 246-8798

Site Safety Officer: The SSO is responsible for briefing site personnel on potential physical and chemical hazards prior to work start-up, during operations, and whenever other health and safety matters need to be addressed. The SSO will be in charge of conducting the daily Tailgate Safety Meetings. The SSO will see that this SHSP is available onsite and is understood and signed by personnel entering the site. The SSO is also responsible for implementing emergency response procedures when necessary. In the event the SSO is unable to perform these duties, the Alternate SSO will be responsible.

Project Manager: The Project Manager (PM), in coordination with the SSO, is responsible for implementing health and safety requirements, including seeing that the SHSP is prepared and available onsite. The PM is the central point of contact for the SSO, Client, and Field Personnel, and has overall responsibility for site operations.

Field Personnel: Field Personnel are responsible for understanding and complying with this SHSP. Field Personnel include both TRC employees and Subcontractors hired by TRC. Field Personnel are required to participate in briefings prior to commencement of site work; attend daily Tailgate Safety Meetings; and acknowledge receipt and understanding of the SHSP by signing the Compliance Log at the end of this plan.

Supervisor/Offsite Coordinator: The Supervisor/Offsite Coordinator, typically the TRC branch manager, should be contacted when mobilization of support from an Alton office is needed, and in case of an emergency requiring offsite assistance.

4.0 SITE CONTROL

Site control requires the establishment of a regulated area with designated work zones, evacuation protocol, location of medical assistance, site security, and communication guidelines that include a "Buddy System."

4.1 REGULATED AREA(S)

Each site will have an established Exclusion Zone with controlled access, and a Support Zone. Supervision and strict control of access to regulated areas is necessary to protect site personnel as well as the public.

Exclusion Zone: (*a.k.a. "Hot Zone"*) This is the area where personnel may be subject to chemical or physical hazards. It is the zone of known or suspected contamination, where equipment operation and/or environmental sampling will take place. The Exclusion Zone is to be clearly identified and isolated with cones, barricades, or high visibility caution tape. Personnel working in the Exclusion Zone will at a minimum use Level D personal protective equipment as described in **Section 7.0.**

The outer boundary of the Exclusion Zone *("Hot Line")* will be established by the SSO, so that sufficient area is available to conduct operations while providing a protective buffer for persons and property outside the zone.

Support Zone: *(a.k.a. "Safe Zone")* This is the area outside the Exclusion Zone where administrative and other support functions are located. Adverse exposure to contaminants and physical hazards are unlikely in the Support Zone.

4.2 EVACUATION PROTOCOL

Evacuation protocol and routes from the site will be established by the SSO, and communicated to Field Personnel during the Tailgate Safety Meeting(s) prior to initiating work. Evacuation protocol will be implemented as needed in emergency situations. In the event of an evacuation, personnel will meet at a preestablished location and the SSO will do a "head count" to see that everyone has left the hazard area.

Emergency Response procedures are outlined in **Section 12.0.** Directions to the nearest medical facilities are provided in **ATTACHMENT D.**

4.3 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.

4.4 COMMUNICATION

Communication is an important aspect of the site control program as well as the entire SHSP. Personnel should keep in mind that hazard assessment is a continuous process, and any potentially unsafe condition must be reported immediately to the SSO.

Onsite personnel will use the "Buddy System" and maintain communication or visual contact between team members during site operations. The Buddy System is used to provide assistance, monitor for chemical exposure and heat stress, and obtain emergency assistance for co-workers when necessary.

Site personnel will be familiar with the following emergency hand signals:

Hand gripping throat:	Can't breathe. Respirator problems.
Grip team member's wrist or both hands on team member's waist:	Leave site immediately, no debate!
Thumbs up:	Yes. I'm alright. I understand.
Thumbs down:	No. Negative.

5.0 HAZARD ASSESSMENT

Hazard assessment is essential for establishing hazard reduction measures. Hazard assessment will consist primarily of site inspections and monitoring. Known operational hazards (heavy equipment, overhead lines, etc.) and site characterization data (contaminant location, concentration, etc.) are also considered in the assessment. The following is a list of potential hazards associated with the activities planned for this site:

Physical Hazards	Heavy equipment Explosion and fire Traffic - vehicular and pedestrian Tripping, slipping, and falling Head, foot, eye, and back injuries Electrical equipment
Chemical Hazards	Gasoline / benzene, toluene, ethylbenzene, xylenes (BTEX) Diesel/ stove oil
Environmental Hazards	Noise exposure Weather - heat, cold, rain, fog

Walk-though safety inspections will be conducted by the SSO daily and as conditions change. Inspection results will be communicated to the work crews during the morning Tailgate Safety Meetings and as needed.

6.0 HAZARD REDUCTION

Personnel are required to exercise reasonable caution at all times during work activities. Failure to follow safety protocols and/or continued negligence of health and safety policies will result in expulsion of a crew member from the site and may result in termination of employment. In general, the potential for hazardous situations will be reduced by the following activities:

- ***Implementing engineering controls***
- ***Using personal protective equipment***
- ***Performing air monitoring***

Engineering Controls, corresponding to the hazard assessment for work at this site, are outlined below in **Sections 6.1 through 6.4**. Personal protective equipment (PPE) and air monitoring guidelines are outlined in **Sections 7.0 and 8.0**, respectively.

6.1 PHYSICAL HAZARDS AND CONTROLS

Heavy Equipment

The operation and use of heavy equipment presents the greatest potential for injury to personnel. To minimize these hazards, designated routes and specific traffic patterns will be established. Trucks will use spotters for backing. If personnel need to approach heavy equipment during operation, they will observe the following protocols: make eye contact with the operator, signal the operator to cease heavy equipment activity, and then approach the equipment to inform operator of intentions.

Only equipment that is in safe working order will be used. Only qualified personnel will be allowed to operate heavy equipment. Subcontractors will supply proof of qualifications to operate the equipment.

Those crew members directly involved in spotting for the operator will be the only personnel allowed within the operating radius of the heavy equipment. Other personnel will remain at a safe distance from these operations.

Explosion and Fire

Liquid petroleum products readily vaporize from standing pools or saturated soil. Ignition sources pose an explosion and fire hazard (e.g., engines, impact sparking, and heat or arc from inappropriate equipment or instrumentation). A direct-reading combustible gas indicator (CGI) will be used to evaluate the possible formation of flammable atmospheres in and around the work area. **See Section 8.0: Air Monitoring.**

Emergency services (911) are to be called immediately in case of a fire or explosion. A portable fire extinguisher will be kept onsite for use on small fires only. Only personnel trained in the proper use of fire extinguishers are authorized to use the onsite fire extinguisher.

Traffic - Vehicular and Pedestrian

A. Performing tasks in roadways:

- All employees are required to wear high-visibility clothing at all times while onsite.

- Review of site specific HASP should identify and require that the buddy system be implemented in areas considered high risk.
- Use of a minimum of 2 additional traffic control measures/devices.
- Lane closure procedures following appropriate regulatory standards (e.g. DOT/OSHA, National Highway Safety Uniform Traffic Control), local standards, or Global Remediation minimum standards.

B. Performing tasks in traffic areas (other than roadways) or any area where vehicular accidents could occur: (pump islands, parking lots/garages, up on curbed areas, in grass right of ways, etc.)

- All employees are required to wear high-visibility clothing at all times on site.
- Use of a minimum of 2 additional traffic control measures/devices.
- Review of site specific HASP should identify and require that the buddy system be implemented in areas considered high risk.

C. Long duration work: (geoprobe operations, drilling, trenching, etc.)
In addition to standard practices for work in roadway and/or other traffic areas:

- Placement of cones and barricades as needed to protect the work area.
- Placement of flags as needed to protect the work area.
- Placement of "Men Working" sign for advance warning to motorists.

Attachment B contains a Traffic Control Process Flow Diagram.

Vehicles driven by company personnel will yield to bikes and pedestrians, and at railroad crossings. Project personnel are required to follow state and local traffic laws. Access to work areas will be limited by the SSO to essential personnel. Delineators, barriers, and/or taping will be used to cordon off the work areas, and prevent pedestrian and vehicular traffic from entering the work zones.

Tripping, Slipping, and Falling

Personnel will be reminded daily to maintain sure footing on all surfaces. Use of safety harnesses is required for personnel working ***6 feet or more*** above any surface that does not have handrails (includes riding on manlifts). Work surfaces of unknown or suspect integrity will be strengthened or overlaid with a work platform capable of supporting personnel and equipment working in the area. To minimize tripping hazards caused by construction and other debris, material will be removed daily from the work areas and stockpiled in appropriate designated storage areas. This "housekeeping" effort will be enforced by the SSO at the end of each day.

Head, Foot, Eye, and Back Injuries

Hard hats, steel toe boots, and safety glasses will be worn during site operations. To avoid back injuries, personnel will be trained in and required to use proper equipment and lifting techniques for manual material handling.

Electrical Equipment

In order to prevent accidents caused by electric shock, electrical connections will be inspected on a daily basis. Equipment found to have frayed wiring or loose connections will be shut down and locked-out until a qualified electrician has effected repairs. Electrical equipment will be de-energized and tested before any electrical work is started. Equipment will be properly grounded prior to and during work.

6.2 CHEMICAL HAZARDS AND CONTROLS

Chemical Characteristics

Hazardous chemicals that may be encountered at this site include diesel and gasoline hydrocarbons. These chemicals are volatile, flammable, and moderately to extremely toxic when inhaled, ingested, or absorbed above certain concentrations. See **ATTACHMENT C** for specific exposure limits and basic toxicology information.

Personnel will use engineering controls and PPE (based on hazard assessment) to prevent chemical exposure.

Sample Collection

Workers who must come in direct contact with known or suspected contaminated soil or groundwater to collect samples are required to wear protective gloves and other PPE, as needed, to reduce the potential for exposure. Safety glasses will be worn to avoid potential splashing of chemicals into the eyes.

Disposition of Materials

Excavated soil will be stockpiled and covered, or stored in closed drums or roll-off bins. Purged water will be stored in closed drums or tanks. Drums, tanks, and/or roll-off bins containing soil or water will be labeled in accordance with the hazard communication standard and removed from the site in accordance with client-approved protocol.

Hygiene

Eating, smoking, and drinking is NOT ALLOWED in the work area. Site personnel will wash their hands, arms, and faces thoroughly prior to eating or drinking, and at the end of their shift. Food should never be stored where it may come into contact with, or be contaminated by, petroleum products or other toxic materials.

6.3 ENVIRONMENTAL HAZARDS AND CONTROLS

Noise Exposure

Hearing protection (ear plugs or ear muffs) will be worn when project personnel enter high-noise areas. The SSO should see that extra ear plugs are available onsite.

Heat Stress

Heat stress may be caused by the combination of ambient factors such as high air temperature, high relative humidity, and low air movement. This condition can result in heat rash, heat cramps, heat exhaustion, and/or heat stroke. It can impair worker coordination and judgement and directly impact health and safety. Heat stress is more likely when PPE is worn. Personnel are to drink plenty of water and take breaks (in shaded rest areas) as needed to help prevent heat stress. As part of the Buddy System, personnel should watch for signs and symptoms of heat stress in coworkers as well as themselves.

Cold Exposure

To guard against cold injury (frostbite and hypothermia), which is a danger when the temperature and wind-chill factor are low, employees will wear appropriate clothing, have warm shelter readily available, and maintain carefully scheduled work and rest periods.

7.0 PERSONAL PROTECTIVE EQUIPMENT

7.1 LEVEL OF PROTECTION

Personnel are required to wear PPE appropriate for the task and anticipated exposure to known contaminants. Selection of PPE will be based on hazard assessment, task performance, and air monitoring. Based on the history of this site, the initial level of protection will be Level D. At a minimum, Level D PPE will consist of the following:

- Hardhat

as required by JSA

- Boots: chemical-resistant, steel toe and shank
  at all times in work area
- Safety glasses, splash goggles, or hardhat with face shield
  when there is risk of hazardous substances (sampling) or flying particles (drilling, excavation, etc.) getting into eyes

- Ear plugs / hearing protection
  when high-noise equipment/drill rig is in operation

- Gloves: chemical-resistant
  when hand-digging in trenches

Site personnel also are required to *be prepared* with the following items:

- Respirators: half-face, air-purifying with appropriate cartridges
- Dust masks
- Tyvek coveralls and other suitable protective clothing
- Traffic safety vest
- Leather work gloves and back brace/lifting belt

Air monitoring information will dictate when and if a site will be upgraded to Modified Level D (Level D plus respirator).

7.2 RESPIRATOR SELECTION

For operations that require the use of a respirator, the SSO must verify that Field Personnel are medically approved to use respiratory equipment, fit tested, and trained in the proper use of air-purifying respirators. Site personnel are required have their respirator available and ready to use onsite. Only respirators that are NIOSH/MSHA approved are to be used.

Air monitoring will be performed to assess airborne contaminant levels onsite, and to evaluate suitable respiratory protection. Workers will be required to wear half-face, air-purifying respirators with organic vapor cartridges under the following circumstances, as indicated by onsite air monitoring:

- If 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]).

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

TLV values for gasoline are derived from American Conference of Governmental Industrial Hygienists (ACGIH) standards. Similar precautions will be taken with regard to other toxic chemicals, such as BTEX components. See **ATTACHMENT C** for additional information and regulatory exposure limits.

7.3 REASSESSMENT OF PPE

The levels of protection listed above will be upgraded (or downgraded) based on changes in activities, changes in site conditions, measurements of direct-reading instruments (compared to action levels for contaminants), or other findings. Changes in the level of protection require the approval of the SSO.

8.0 AIR MONITORING

Monitoring will be conducted as needed to characterize airborne contaminant levels. The potential hazards associated with the presence of hydrocarbons include (1) personnel exposure to chemicals, and (2) possible formation of flammable atmospheres in and around the work area.

Air sampling will be conducted in accordance with NIOSH, OSHA, or EPA methods. The SSO will check to see that air monitoring equipment brought onsite is properly calibrated prior to operation and recalibrate during the course of the day, as necessary.

8.1 FLAME IONIZATION DETECTOR

A flame ionization detector (FID) will be used for the monitoring of VOCs in the work area in accordance with the requirements outlined in Title 8 CCR 5192. Air monitoring will be conducted in the breathing zone of workers, and the data collected will be used to evaluate suitable respiratory protection against chemicals encountered. Refer to the Respirator Selection guidelines in **Section 7.2** for personal protection measures. Measurements will also be obtained periodically at the top of boreholes or excavation cavities, and during any construction activities in which hydrocarbon-affected soil is encountered; however, only breathing zone measurements will be used to determine whether PPE should be used or discontinued.

8.2 COMBUSTIBLE GAS INDICATOR

A direct-reading, portable CGI that measures VOC concentrations in ppm, or as a percentage of the lower explosive limit (LEL), will be used to monitor airborne concentrations of VOCs and evaluate the possible formation of flammable atmospheres in and around the work area. Data will be used to monitor and evaluate vapor concentrations within or emanating from well bores, excavations, and contaminated soil that is stockpiled, moved, or loaded on or about the site. Measurements will be obtained periodically at the top of boreholes or excavation cavities throughout drilling or excavation operations, and during any construction activities in which hydrocarbon-affected soil is encountered. Periodic measurements also will be taken in areas that may contain an accumulation of combustible vapors.

In the event that CGI readings on the site exceed 10 percent of the LEL, work will be suspended, monitoring will be continued as needed to isolate the area of concern, and the following applicable environmental controls will be implemented:

1. Vapors from pooled petroleum product will be suppressed (if necessary) by spraying with foam, appropriate chemical suppressant, or carbon dioxide in gas form or dry ice.

2. Air movers will be used to ventilate the areas of concentration to below 10 percent LEL.

3. Contaminated soil will be covered with clean soil and/or sprayed with water or deodorizing chemicals in order to reduce vaporization of VOCs.

9.0 DECONTAMINATION

Due to the expected low levels and types of contaminants at the site, it is anticipated that personnel will not perform routine decontamination procedures when leaving the Exclusion Zone. Project activities will be initially conducted in Level D PPE. When decontamination is necessary, it will consist of the following:

- Removal of contaminated garments in an "inside out" manner at a designated decontamination station located at the step-off location where personnel routinely enter/exit the Exclusion Zone.

- Placement of contaminated garments 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.

10.0 PERSONNEL TRAINING

Personnel who will perform field activities shall meet the training requirements specified in the OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) Standard [29 CFR 1910.120 (e)]. Prior to commencement of work, the SSO will discuss the potential physical and chemical hazards associated with site operations, and review safe work practices with personnel. Personnel are required to acknowledge their understanding and willingness to comply with this SHSP before admission to the site by signing the Compliance Log at the end of the SHSP.

Other job-specific training required to perform tasks within this operation will be verified by the SSO. This training may include, but is not be limited to respirator fit testing, safe lifting techniques, confined spaces, hearing conservation, and proper fire fighting procedures.

11.0 MEDICAL PROGRAM

The site medical program has two main components: a baseline medical surveillance program, and emergency medical assistance procedures.

11.1 BASELINE MEDICAL SURVEILLANCE

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 will 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.

Periodic: At least once every 12 months to measure changes in health status.

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.

11.2 EMERGENCY MEDICAL ASSISTANCE

An emergency medical assistance network will be established prior to work start-up. The nearest fire department, police, ambulance service, and hospital with an *emergency room* will be identified. **See ATTACHMENT D** for Emergency Services contact information. 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.

12.0 EMERGENCY RESPONSE PLAN

The SSO will have controlling authority during an emergency. In the SSO's absence, the Alternate SSO will be in charge. See ATTACHMENT D for the name, location, and telephone number of emergency response organizations in the vicinity of the project site, and a map to the nearest hospital(s).

12.1 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.

Address medical emergencies and apply first aid, if necessary.

Contain physical hazards.

(NOTE: 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 offsite supervisor and client, and initiate accident reporting procedures.

12.2 ACCIDENT REPORTING

In case of an accident, the SSO (or Alternate) will immediately notify the Supervisor/Offsite Coordinator at the nearest TRC office and later provide a report to the PM describing the following:

1. A description of the event (including date and time) that required notification of offsite personnel (i.e., medical facilities, fire department, police department) and the basis for that decision.
2. Date, time, and names of persons/agencies notified, and their response.
3. Details regarding personal injury and property damage, if any.
4. Resolution of incident and the corrective action involved.

All incidents and near misses are to be investigated in accordance with TRC IIPP. The Supervisor's Report of Accident is to be completed and submitted to the Human Resources department within 24 hours following any accident or injury.

SITE HEALTH AND SAFETY PLAN
COMPLIANCE LOG

I have reviewed this Site Health and Safety Plan and understand the contents of the plan. I hereby agree to comply with all safety requirements outlined herein.

Signature: _____ Date: _____
Safety Officer, TRC

Signature: _____ Date: _____
Safety Officer, TRC

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: _____

SITE HEALTH AND SAFETY PLAN
COMPLIANCE LOG
(Continued)

Signature: _____ Date: _____
Print Name: _____ Company: _____

Signature: _____ Date: _____
Print Name: _____ Company: _____

Signature: _____ Date: _____
Print Name: _____ Company: _____

Signature: _____ Date: _____
Print Name: _____ Company: _____

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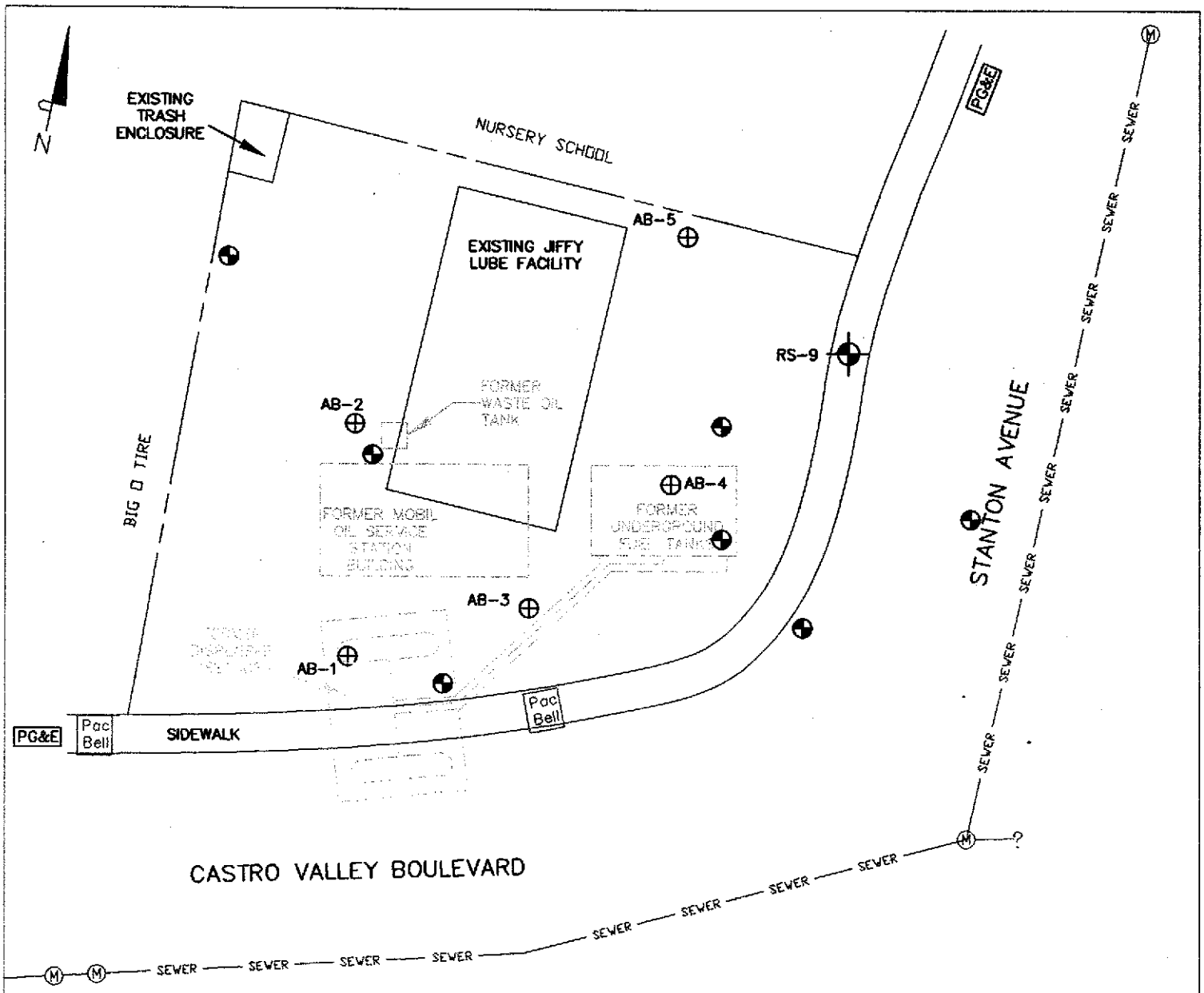
Signature: _____ Date: _____
Print Name: _____ Company: _____



LEGEND

- Monitoring Well (Thrifty Oil Co.)
- Soil Boring (March 1999)
- Manhole
- Property Line
- Proposed Soil Boring

SCALE (FEET)

0 30 60

SITE PLAN SHOWING PROPOSED SOIL BORING LOCATIONS

Former Mobil Station 04-334
2492 Castro Valley Boulevard
Castro Valley, California

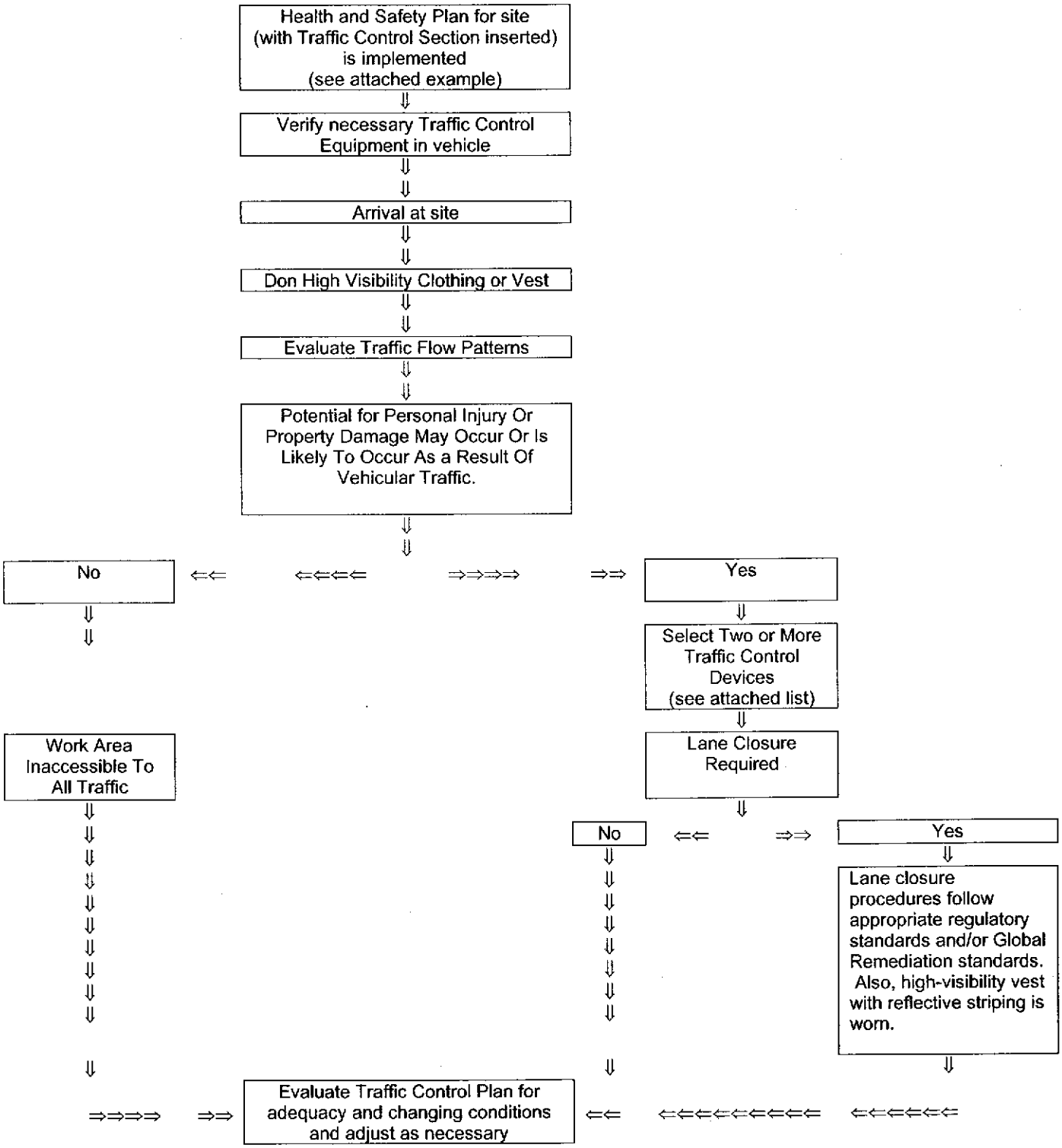
TRC

FIGURE 2

ATTACHMENT B

TRAFFIC CONTROL PROCESS FLOW DIAGRAM

TRAFFIC CONTROL PROCESS FLOW DIAGRAM



ATTACHMENT C

OCCUPATIONAL HEALTH GUIDELINES AND TOXICOLOGICAL INFORMATION

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

Contaminant	ACGIH TLV-TWA (ppm)	NIOSH REL (ppm)	STEL (ppm)	OSHA PEL (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	250-500 (NIOSH ceiling)	500	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	500 (ACGIH)	n/a	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 (NIOSH)	1	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	150 (NIOSH)	200	500	Inhalation, Absorption, Ingestion, Contact	No	Irritation to eyes, nose; fatigue, weakness, confusion, euphoria, dizziness, headache, dilated pupils, tears, nervousness, muscle fatigue, insomnia, dermatitis
Ethylbenzene	100	100	125 (NIOSH&ACGIH)	100	800	Inhalation, Ingestion, Contact	No	Irritation to eyes, skin, mucous membranes; headache, dermatitis, narcosis, coma
Xylenes (o,m,p,)	100	100	150 (NIOSH&ACGIH)	100	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

TABLE KEY

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)

DEFINITIONS

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 D

EMERGENCY SERVICES
PHONE NUMBERS, DIRECTIONS, AND LOCAL AREA MAP

EMERGENCY SERVICES

FACILITY / LOCATION	TELEPHONE
Emergency Situation	**911**
Laurel Grove Hospital 19933 Lake Chabot Road Castro Valley, California	(510) 537-1234

DIRECTIONS: FROM THE SITE TURN LEFT ONTO **CASTRO VALLEY BLVD.** TO **LAKE CHABOT ROAD**. TURN LEFT ONTO **LAKE CHABOT ROAD**. THE MEDICAL CENTER IS ON THE LEFT.

Fire Department Alameda County Fire Department 835 East 14th Street Hayward, California	911 or (510) 618-3490
Police Department Hayward Police Department 300 West Winton Avenue Hayward, California	911 or (510) 293-7272
Poison Control Center	(800) 876-4766
Office of Emergency Services	(800) 852-7550
USA North	(800) 227-2600

SOURCE:

1998 Thomas Guide
San Francisco / Alameda
Contra Costa Counties

HOSPITAL ROUTE MAP

Former Mobil Station 04-334
2492 Castro Valley Boulevard
Castro Valley, California

TRC | FIGURE

TAILGATE SAFETY MEETING CHECKLIST

Topics Covered
(Check off as discussed)

____ **Personnel training/qualifications:** Check cards for OSHA HAZWOPER 40-hour certification/8-hour-refresher training (other if appropriate).

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

____ **Emergency services:** Discuss location of nearest telephone and directions to hospital. Map, directions, phone numbers provided at end of SHSP (Attachment C).

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

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

____ **Potential hazards:** Discuss physical hazards (lifting, pinch points, traffic, working around machinery, etc.); chemical hazards (exposure limits, symptoms, air monitoring); and environmental hazards (heat stress, etc.).

____ **Air monitoring:** Necessary equipment is onsite and calibrated. Circle: CGI PID

____ **Personal protective equipment (PPE):** Discuss required level of protection. See that workers have appropriate PPE onsite; includes, but is not limited to, hardhat, steel-toe boots, safety glasses, ear plugs / hearing protection, respirator (with cartridges), gloves, traffic safety vest (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.

____ **Compliance log:** SHSP has been reviewed and signed by site personnel.

APPENDIX B

GENERAL FIELD PROCEDURES

APPENDIX B

GENERAL FIELD PROCEDURES

DRILLING AND SOIL SAMPLING

Soil borings are drilled using continuous-flight, hollow-stem augers or hydraulically actuated "direct push" and percussion equipment. Direct push borings that are not completed as monitoring wells are grouted to within 2 feet of the ground surface with a cement/bentonite slurry. The remaining 2 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 three 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

Soil sample handling follows the same basic protocol for both drilling and excavation activities. 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 maintained at approximately 4 degrees Celsius (C) with ice, 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 4-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 1-to 2-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 box or casing elevations are surveyed to within 0.02 foot relative to a county or city bench mark.

GROUNDWATER SAMPLING

Temporary groundwater sampling points are driven approximately one to three feet into groundwater using hydraulically-actuated "direct push" and percussion equipment. The groundwater sampling points consist of 1.5-inch-diameter hollow steel rods fitted with a reverse-threaded or sliding hardened drive point. At the selected depth, the rods are retracted slightly exposing a steel inner well screen to open formation groundwater. If no water is readily available for sampling, the hollow steel rods will be removed from the hole and a temporary 1-inch-diameter well screen will be inserted. A decontaminated stainless steel bailer is inserted down the center of the well screen to obtain a "grab-type" groundwater sample for analysis. The 1.5-inch-diameter holes are grouted to ground surface with cement/bentonite slurry. The samples are carefully transferred from the 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 Liqui-nox 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 Liqui-nox solution followed by two tap water rinses.