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Refining & Supply Company
Global Remediation
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Jennifer C. Sedlachek
Project Manager

RECEIVED

7:59 am, Mar 16, 2007

Alameda County
Environmental Health

ExxonMobil
Refining & Supply

March 9, 2007

Mr. Steven Plunkett
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502

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

Dear Mr. Plunkett:

Attached for your review and comment is a copy of the *Subsurface Investigation Work Plan* for the above-referenced site. The work plan was prepared by ETIC Engineering, Inc. (ETIC) of Pleasant Hill, California, in response to a discussion as part of a meeting with the Alameda County Health Care Services Agency, ExxonMobil Refining and Supply Company, and ETIC. The work plan proposes the advancement of soil borings to further investigate groundwater conditions in the vicinity of the site.

Upon information and belief, I declare, under penalty of perjury, that the information contained in the attached work plan is true and correct.

If you have any questions or comments, please contact me at 510.547.8196.

Sincerely,



Jennifer C. Sedlachek
Project Manager

Attachment: ETIC Subsurface Investigation Work Plan dated March 2007

c: w/ attachment:
Ms. Paula Floeck – Jiffy Lube International
Mr. Joseph D. Phillips – Jiffy Lube Remediation Coordinator
Mr. William Slautterback – Cal Lube Real Estate Limited Partnership
Mr. William Peterson – Owner of Castro Valley Lumber Company

c: w/o attachment:
Ms. Christa Marting – ETIC Engineering, Inc.



Subsurface Investigation Work Plan

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

Prepared for

ExxonMobil Oil Corporation
4096 Piedmont Avenue #194
Oakland, California 94611

Prepared by

ETIC Engineering, Inc.
2285 Morello Avenue
Pleasant Hill, California 94523
(925) 602-4710

Yuko Mamiya
Project Geologist

3/9/07

Date

K. Erik Appel, P.G. #8092
Project Manager

3/9/07

Date



March 2007

SITE CONTACTS

Station Number: Former Mobil Station 04-334

Station Address: 2492 Castro Valley Boulevard
Castro Valley, California

ExxonMobil Project Manager: Jennifer C. Sedlachek
ExxonMobil Refining and Supply Company
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Consultant to ExxonMobil: ETIC Engineering, Inc.
2285 Morello Avenue
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(925) 602-4710

ETIC Project Manager: K. Erik Appel

Regulatory Oversight: Steven Plunkett
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502
(510) 567-6700

INTRODUCTION

At the request of ExxonMobil Oil Corporation (ExxonMobil), ETIC Engineering, Inc. (ETIC) has prepared this *Subsurface Investigation Work Plan* for former Mobil Station 04-334, located at 2492 Castro Valley Boulevard in Castro Valley, California (Figure 1). This work plan was prepared in response to a discussion held during the 27 October 2005 meeting between the Alameda County Health Care Services Agency (ACHCSA), ExxonMobil, and ETIC. At the meeting, case closure for the site was discussed, as the concentrations of hydrocarbons in groundwater appear favorable for closure. One groundwater monitoring well exists offsite in the downgradient direction; however, the collection of additional groundwater samples offsite in the downgradient direction was requested to further define the extent of any potential hydrocarbon impacts to groundwater downgradient of the site in support of case closure.

As such, a soil and groundwater investigation is proposed to further assess the potential impacts of hydrocarbons in the water bearing zone in the predominant downgradient direction of the site.

SITE BACKGROUND

Former Mobil Station 04-334 is an active Jiffy Lube-branded oil change service business located at 2492 Castro Valley Boulevard, on the northwest corner of the intersection of Castro Valley Boulevard and Stanton Avenue (Figures 1 and 2). 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 UST were installed. The service station was operated by Mobil Oil from 1969 to 1983. An 8,000-gallon UST was installed in 1971. In 1983, the three fuel USTs and one used-oil UST were removed from the site. The property is currently owned by Cal Lube Real Estate Limited Partnership.

The site lies in a predominantly commercial district. To the east, across Stanton Avenue, is a Tosco 76 Service Station which is a former Thrifty Oil station. The former Thrifty Oil site is an active Leaking Underground Storage Tank site under the jurisdiction of the ACHCSA. The former Thrifty Oil site has 12 groundwater monitoring wells, including one well (RS9) which is located adjacent to the east side of the former Mobil site. To the west of the former Mobil site is a Big-O Tire business and to the south across Castro Valley Boulevard is a Wendy's Restaurant. To the southeast of the site is the Castro Valley Lumber Co. business. To the north is a residential area.

The site is situated near the base of the northwest trending foothills separating Castro Valley from Hayward. The site is located at an elevation of approximately 180 feet above mean sea level.

SUMMARY OF INVESTIGATION ACTIVITIES

During removal of the USTs in 1983, soil samples were collected for geotechnical and physical properties analysis to determine compaction specifications for backfill of the tank cavity. Petroleum hydrocarbon odor was not noted during backfilling of the tank cavity (Judd Hall and Associates 1983).

In 1986, a geotechnical assessment was conducted by Giles Engineering Associates, Inc. on behalf of

California Lubricants Ltd. Six soil borings were advanced onsite and sampled. Slight to moderate petroleum hydrocarbon odor was noted from 3 feet to 8.6 feet below ground surface (bgs) while drilling in the backfill and former tank cavity (Alisto 1994). No soil samples were submitted for analysis during this assessment.

In March 1999, TRC advanced five direct-push borings (AB1 through AB5) to total depths ranging between 16 and 20 feet bgs. Selected soil and groundwater samples were analyzed for Total Petroleum Hydrocarbons as gasoline (TPH-g), Total Petroleum Hydrocarbons as diesel (TPH-d), benzene, toluene, ethylbenzene, and total xylenes (BTEX), and methyl tertiary butyl ether (MTBE). Selected soil and groundwater samples collected from AB2, located near the former used-oil tank, were also analyzed for oil and grease and halogenated volatile organic compounds (HVOCs). Soil samples from AB2 were further analyzed for CAM-17 metals (TRC 1999).

In November 2003, ETIC conducted a subsurface investigation. Seven direct-push soil borings (SB1-SB7) were advanced to total depths ranging between 15 and 20 feet bgs (with the exception of SB4 which was terminated at 2 feet bgs). Selected soil samples were collected from SB2, SB3, SB5, and SB6 and groundwater samples were collected from SB2, SB3, SB5, and SB6. The samples were analyzed for TPH-g, TPH-d, BTEX, and MTBE. Selected samples from boring SB2 were also analyzed for Total Recoverable Petroleum Hydrocarbons (TRPH) (ETIC 2004a).

In June 2004, ETIC observed the installation of three onsite groundwater monitoring wells (MW1, MW2, MW3), and one offsite groundwater monitoring well (MW4). Soil samples were collected and analyzed for TPH-g, TPH-d, BTEX, and MTBE (ETIC 2004b). Groundwater samples collected from the wells are analyzed quarterly.

Well construction details are provided in Table 1. Historical soil analytical results are summarized in Table 2. Groundwater sample analytical results for temporary borings are summarized in Table 3. Cumulative groundwater monitoring data are summarized in Table 4. The most recent groundwater analytical results and groundwater flow direction for the 6 November 2006 monitoring event (ETIC 2007) are included in Figure 2.

LOCAL GEOLOGY AND HYDROGEOLOGY

The geology and hydrogeology of the site have been evaluated using the boring logs from previous site investigations. The majority of the native soil types encountered during drilling consist of silts and clays to at least 20 feet bgs, the maximum explored depth. Relatively minor lenses of silty sand and silty gravel have been encountered within the major soil types with a thickness of no more than 4 feet beneath the site.

Depth to groundwater at the site ranges between approximately 3 and 8 feet bgs. Groundwater flow direction is generally toward the southeast.

PROPOSED SCOPE OF WORK

A soil and groundwater investigation is proposed to assess the potential impacts of hydrocarbons in the first water bearing zone in the predominant downgradient direction of the site. As such, ETIC

proposes the advancement of additional temporary soil borings for the collection of soil and groundwater samples at the locations shown in Figure 3. Any applicable permits or access agreements will be obtained prior to the performance of this work.

- The single-tube direct-push method will be used to advance approximately seven temporary soil borings. The borings will be cleared using a vacuum rig and advanced using a direct-push rig. The proposed locations of the borings are shown in Figure 3. Locations may need to be modified based on property access, utilities, vehicles, traffic requirements, or other obstacles encountered. Advancement and sample collection methods are described in the field protocols in Appendix A.
- The borings will be continuously logged to total depth. The borings will be advanced until first groundwater is encountered. Depth to groundwater at the site ranges between approximately 3 and 8 feet bgs. Actual boring depths will be dependent upon conditions encountered in the field.
- Soil samples will be continuously collected from the base of the cleared borings to total depth for observation of soils. Selected soil samples will be submitted for laboratory analysis based on significant changes in the soil characteristics and/or field photo-ionization detector measurements.
- One or more attempts will be made to collect a groundwater sample from the borings. Groundwater samples will be collected using a bailer, peristaltic pump, or inertial pump. Small-diameter well casing with 0.010-inch slotted well screen or equivalent may be installed to facilitate the collection of groundwater samples.

Soil and groundwater samples selected for analysis will be analyzed for:

- TPH-g by EPA Method 8015.
- TPH-d by EPA Method 8015.
- Benzene, toluene, ethylbenzene, and total xylenes by EPA Method 8021.
- MTBE by EPA Method 8260.

SCHEDULE AND REPORTING

Completion of the field work is contingent upon approval of this work plan by the ACHCSA and upon obtaining encroachment permits or access agreements with offsite property owners as necessary. The results of the investigation will be submitted to the ACHCSA after the field work is completed. ETIC will keep the ACHCSA informed of the status of the investigation.

REFERENCES

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

ETIC (ETIC Engineering, Inc.). 2004a. Subsurface Investigation Report, Former Mobil Station 04-334, 2492 Castro Valley Boulevard, Castro Valley, California. ETIC, Pleasant Hill, California. February.

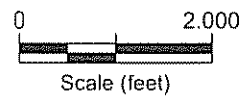
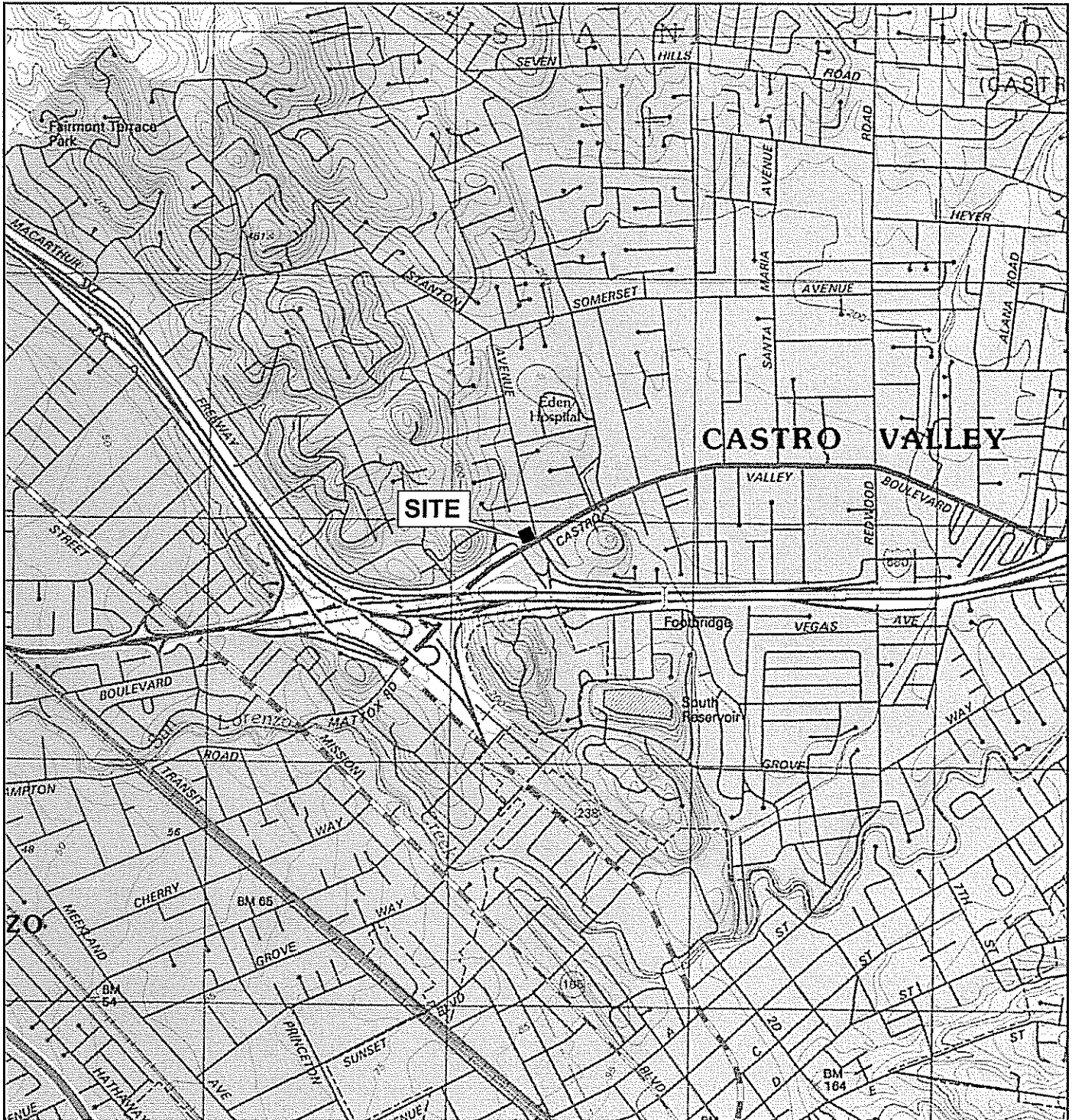
ETIC (ETIC Engineering, Inc.). 2004b. Report of Well Installation, Former Mobil Station 04-334, 2492 Castro Valley Boulevard, Castro Valley, California. ETIC, Pleasant Hill, California. September.

ETIC (ETIC Engineering, Inc.). 2007. Report of Groundwater Monitoring, Fourth Quarter 2006, Former Mobil Station 04-334, 2426 Castro Valley Boulevard, Castro Valley, California. ETIC, Pleasant Hill, California. January.

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

TRC (TRC Alton Geoscience). 1999. Initial Site Assessment Report, Former Mobil Station 04-334, 2492 Castro Valley Boulevard, Castro Valley, California. TRC, Concord, California. 3 September.

Figures



(Map Source: USGS Topographic Map)



SITE LOCATION AND TOPOGRAPHIC MAP
 FORMER MOBIL STATION 04-334
 2492 CASTRO VALLEY BOULEVARD
 CASTRO VALLEY, CALIFORNIA

FIGURE:

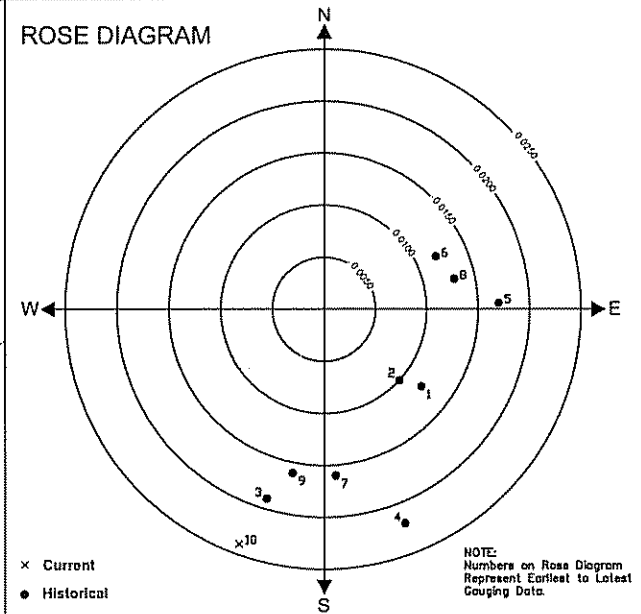
1

Benzene	<0.50
Toluene	<0.50
Ethylbenzene	<0.50
Xylenes	<0.50
TPH-g	<50.0
TPH-d	<47.2
MTBE (8260)	0.880

Benzene	60.0
Toluene	1.04
Ethylbenzene	47.3
Xylenes	3.09
TPH-g	561
TPH-d	106
MTBE (8260)	<0.500

Benzene	<0.50
Toluene	<0.50
Ethylbenzene	<0.50
Xylenes	<0.50
TPH-g	<50.0
TPH-d	<47.2
MTBE (8260)	<0.500

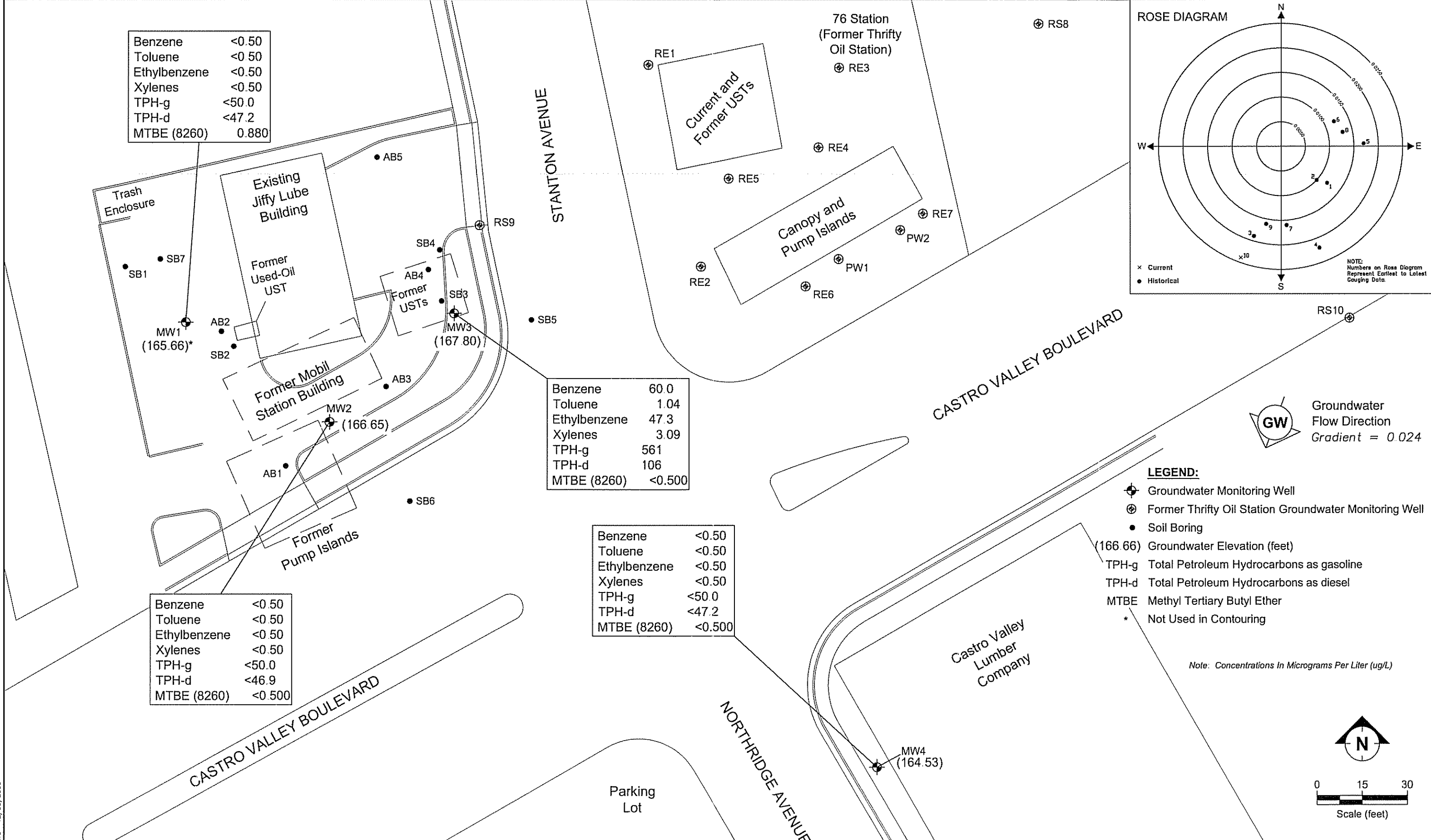
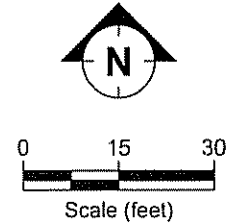
Benzene	<0.50
Toluene	<0.50
Ethylbenzene	<0.50
Xylenes	<0.50
TPH-g	<50.0
TPH-d	<46.9
MTBE (8260)	<0.500



GW Groundwater Flow Direction Gradient = 0.024

- LEGEND:**
- ⊕ Groundwater Monitoring Well
 - ⊗ Former Thrifty Oil Station Groundwater Monitoring Well
 - Soil Boring
 - (166.66) Groundwater Elevation (feet)
 - TPH-g Total Petroleum Hydrocarbons as gasoline
 - TPH-d Total Petroleum Hydrocarbons as diesel
 - MTBE Methyl Tertiary Butyl Ether
 - * Not Used in Contouring

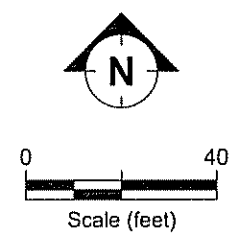
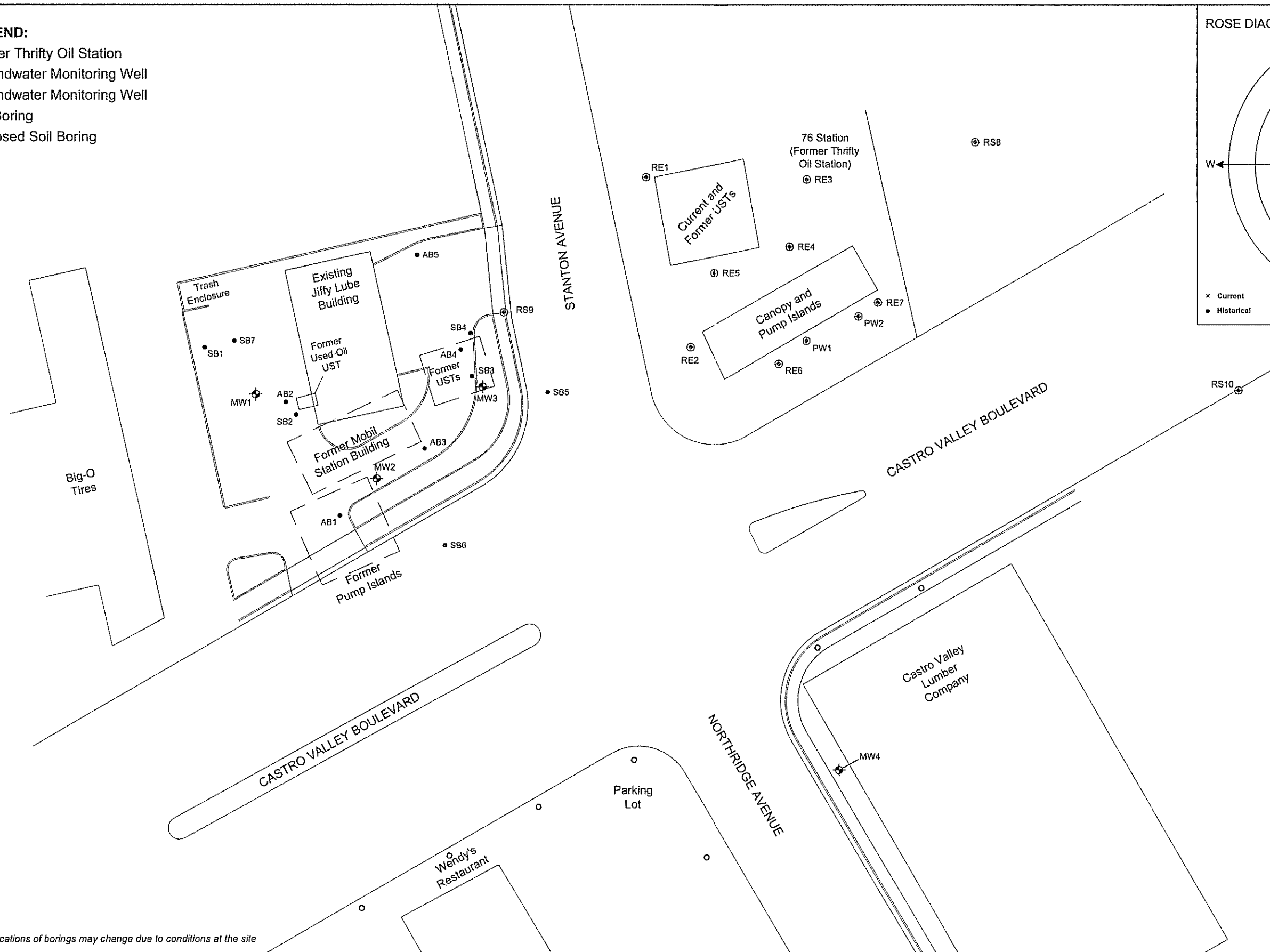
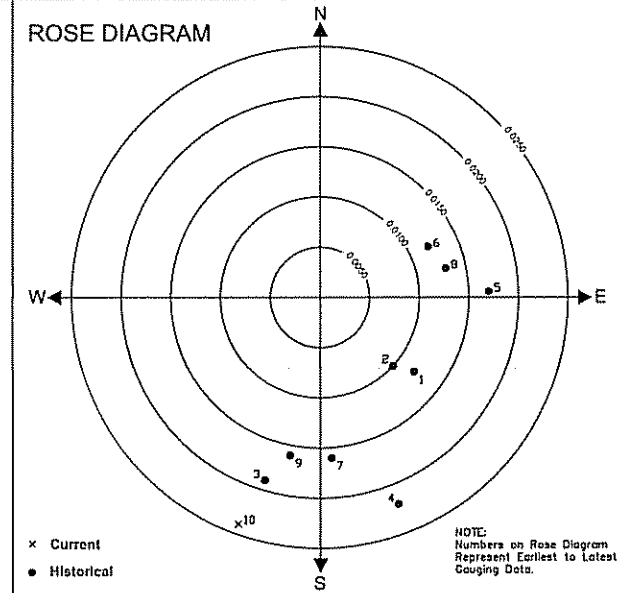
Note: Concentrations in Micrograms Per Liter (ug/L)



SITE PLAN SHOWING GROUNDWATER ELEVATIONS AND ANALYTICAL RESULTS
 FORMER MOBIL STATION 04-334
 2492 CASTRO VALLEY BOULEVARD, CASTRO VALLEY, CALIFORNIA
 6 NOVEMBER 2006

LEGEND:

- ⊕ Former Thrifty Oil Station
- ⊕ Groundwater Monitoring Well
- ⊕ Groundwater Monitoring Well
- Soil Boring
- Proposed Soil Boring



Notes: Actual locations of borings may change due to conditions at the site

SITE PLAN SHOWING LOCATIONS OF PROPOSED SOIL BORINGS
 FORMER MOBIL STATION 04-334
 2492 CASTRO VALLEY BOULEVARD
 CASTRO VALLEY, CALIFORNIA

FIGURE:
3

FILENAME: PROF0906.DWG 09/21/2006



Tables

TABLE 1 WELL CONSTRUCTION DETAILS, FORMER MOBIL STATION 04-334, 2492 CASTRO VALLEY BOULEVARD, CASTRO VALLEY, CALIFORNIA

Well Number	Well Installation Date	Elevation TOC (feet)	Casing Material	Total Depth (feet)	Well Depth (feet)	Borehole Diameter (inches)	Casing Diameter (inches)	Screened Interval (feet)	Slot Size (inches)	Filter Pack Interval (feet)	Filter Pack Material
MW1	a 06/24/04	173.23	PVC	20	20	8.25	2	5 - 20	0.010	4.5 - 20	#2/12 Sand
MW2	a 06/25/04	173.63	PVC	20	20	8.25	2	5 - 20	0.010	4.5 - 20	#2/12 Sand
MW3	a 06/25/04	171.91	PVC	20	20	8.25	2	5 - 20	0.010	4.5 - 20	#2/12 Sand
MW4	a 06/24/04	170.48	PVC	15	14	8.25	2	4 - 14	0.010	3.5 - 15	#2/12 Sand

a Well surveyed on 12 July 2004 by Morrow Surveying.

PVC Polyvinyl chloride.

TOC Top of casing.

TABLE 2 SOIL SAMPLE ANALYTICAL RESULTS,
FORMER MOBIL STATION 04-334, 2492 CASTRO VALLEY BOULEVARD, CASTRO VALLEY, CALIFORNIA

Sample ID	Date	Sample Depth (feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	TPH-g (mg/kg)	TPH-d (mg/kg)	MTBE (8021B) (mg/kg)	MTBE (8260B) (mg/kg)	TRPH (mg/kg)	CAM-17 (200 7) (mg/kg)	HVOC (8010) (mg/kg)
AB1	03/04/99	4-5	ND	ND	0 010	ND	3 2	ND	ND	--	--	--	--
AB1	03/04/99	10-11	ND	ND	ND	ND	ND	ND	ND	--	--	--	--
AB1	03/04/99	15-16	ND	ND	ND	ND	ND	ND	ND	--	--	--	--
AB1	03/04/99	19-20	ND	ND	ND	ND	ND	ND	ND	--	--	--	--
AB2	03/04/99	4-5	ND	ND	ND	ND	ND	ND	ND	--	ND	*	ND
AB2	03/04/99	10-11	ND	ND	ND	ND	ND	ND	ND	--	13	*	ND
AB2	03/04/99	15-16	ND	ND	ND	ND	ND	ND	ND	--	ND	*	ND
AB3	03/04/99	4-5	ND	0 09	1 9	ND	280	170	0 4	--	--	--	--
AB3	03/04/99	10-11	ND	ND	ND	ND	ND	ND	ND	--	--	--	--
AB3	03/04/99	15-16	ND	ND	ND	ND	ND	10	ND	--	--	--	--
AB4	03/04/99	4-5	0 2	ND	18	62	1,100	100	ND	--	--	--	--
AB4	03/04/99	10-11	3 4	18	38	170	2,600	700	8	ND	--	--	--
AB4	03/04/99	15-16	0 005	0 011	0 038	0 12	2 8	ND	ND	--	--	--	--
AB5	03/04/99	4-5	ND	ND	ND	ND	ND	ND	ND	--	--	--	--
AB5	03/04/99	10-11	ND	ND	ND	ND	ND	ND	ND	--	--	--	--
AB5	03/04/99	15-16	ND	ND	ND	ND	ND	ND	ND	--	--	--	--
SB1	11/12/03	5 5-6	<0 001	<0 001	<0 001	<0 001	<5 05	<9 88	--	<0 002	--	--	--
SB1	11/12/03	11-11 5	0 002	0 0022	<0 001	<0 001	<4 88	<10 1	--	<0 002	--	--	--
SB1	11/12/03	14 5-15	0 0027	0 0061	<0 001	0 0029	<4 98	<10 1	--	<0 002	--	--	--
SB1	11/12/03	17 5-18	0 0051	0 0112	0 0011	0 0039	<5 06	<10	--	<0 002	--	--	--
SB2	11/12/03	5 5-6	<0 001	<0 001	<0 001	<0 001	<4 93	<10	--	<0 002	47 4	--	--
SB2	11/12/03	10-10 5	0 0013	0 0023	<0 001	0 0018	<5 07	<9 96	--	<0 002	30 3	--	--
SB3	11/12/03	5-5 5	0 131	0 0027	0 0456	0 0153	6 19	<9 92	--	<0 002	--	--	--
SB3	11/12/03	10 5-11	2 67	0 782	19 6	32	1,960	876	--	<0 0502	--	--	--
SB3	11/12/03	15 5-16	0 0315	0 0043	0 0593	0 09	5 49	12	--	<0 002	--	--	--
SB3	11/12/03	16 5-17	1 83	0 529	8 13	14 8	932	178	--	<0 002	--	--	--
SB3	11/12/03	19 5-20	0 004	0 0042	0 0017	0 0037	<4 97	13 9	--	<0 002	--	--	--
SB4	11/12/03	Boring terminated at 2 feet bgs No soil samples collected											
SB5	11/13/03	8 5-9	<0 001	<0 001	<0 001	<0 001	<4 95	<9 84	--	<0 002	--	--	--
SB5	11/13/03	11 5-12	0 0039	0 0174	0 0098	0 018	14 2	<10 1	--	<0 002	--	--	--
SB5	11/13/03	15 5-16	<0 001	<0 001	<0 001	<0 001	<5 02	<10 1	--	<0 002	--	--	--
SB5	11/13/03	16 5-17	0 0014	<0 001	<0 001	<0 001	<5 03	<10 2	--	<0 002	--	--	--
SB6	11/13/03	8 5-9	0 0015	<0 001	0 0011	0 0014	<5 01	<10	--	<0 002	--	--	--
SB6	11/13/03	11-11 5	0 0028	0 0016	<0 001	<0 001	<5 02	<9 84	--	<0 002	--	--	--
SB6	11/13/03	14 5-15	0 0019	0 0012	<0 001	<0 001	<4 96	<10	--	<0 002	--	--	--
SB7	11/13/03	6 5-7	<0 001	<0 001	<0 001	<0 001	<4 98	<10 1	--	<0 002	--	--	--
SB7	11/13/03	9-9 5	<0 001	<0 001	<0 001	<0 001	<5 07	<10	--	<0 002	--	--	--
SB7	11/13/03	16-16 5	<0 001	0 0011	<0 001	<0 001	<4 97	<9 65	--	<0 002	--	--	--
MW1	06/23/04	5-5 5	<0 001	<0 001	<0 001	<0 001	<4 97	<10	--	<0 002	--	--	--
MW1	06/24/04	8 5-9	<0 001	<0 001	<0 001	<0 001	<4 98	<10 2	--	<0 002	--	--	--
MW1	06/24/04	16 5-17	<0 001	<0 001	<0 001	<0 001	<4 96	<10 1	--	<0 002	--	--	--
MW1	06/24/04	19 5-20	<0 001	<0 001	<0 001	<0 001	<5 04	<10 1	--	<0 002	--	--	--
MW2	06/23/04	5-5 5	<0 001	0 0018	<0 001	0 0039	<4 96	<9 84	--	<0 002	--	--	--
MW2	06/25/04	9-9 5	<0 001	<0 001	<0 001	<0 001	<5 01	<10 2	--	<0 002	--	--	--
MW2	06/25/04	13-13 5	<0 001	<0 001	<0 001	<0 001	<5 05	<10	--	<0 002	--	--	--
MW2	06/25/04	16 5-17	<0 001	<0 001	<0 001	<0 001	<4 97	<9 8	--	<0 002	--	--	--
MW2	06/25/04	19 5-20	<0 001	<0 001	<0 001	<0 001	<5 04	<10	--	<0 002	--	--	--
MW3	06/23/04	5-5 5	0 0324	0 0184	3 11	2 22	12 7	18 1	--	<0 0996	--	--	--
MW3	06/25/04	8-8 5	2 21	1 48	27 4	5 49	1,400	<10	--	<0 002	--	--	--
MW3	06/25/04	10 5-11	0 003	0 0014	0 001	<0 001	<4 95	<9 88	--	<0 002	--	--	--
MW3	06/25/04	12-12 5	0 0061	0 0059	0 0122	0 0111	<4 96	<10 1	--	<0 002	--	--	--

TABLE 2 SOIL SAMPLE ANALYTICAL RESULTS,
FORMER MOBIL STATION 04-334, 2492 CASTRO VALLEY BOULEVARD, CASTRO VALLEY, CALIFORNIA

Sample ID	Date	Sample Depth (feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Xylenes (mg/kg)	TPH-g (mg/kg)	TPH-d (mg/kg)	MTBE (8021B) (mg/kg)	MTBE (8260B) (mg/kg)	TRPH (mg/kg)	CAM-17 (2007) (mg/kg)	HVOC (8010) (mg/kg)
MW3	06/25/04	17-17.5	0.0012	<0.001	<0.001	<0.001	<5	<10.1	--	<0.002	--	--	--
MW3	06/25/04	19-19.5	<0.001	<0.001	<0.001	<0.001	<5.03	<9.92	--	<0.002	--	--	--
MW4	06/24/04	11.5-12	<0.001	<0.001	<0.001	<0.001	<4.97	<9.88	--	0.0024	--	--	--
MW4	06/24/04	13-13.5	<0.001	<0.001	<0.001	<0.001	<4.99	<10	--	<0.002	--	--	--
MW4	06/24/04	14.5-15	<0.001	<0.001	<0.001	<0.001	<4.99	<10.1	--	0.0024	--	--	--

* TRC's Initial Site Assessment report, dated 3 September 1999, states "Results were below preliminary remediation goals for residential soils as required by the USEPA Region 9"

TPH-g Total Petroleum Hydrocarbons as gasoline
 TPH-d Total Petroleum Hydrocarbons as diesel
 TRPH Total Recoverable Petroleum Hydrocarbons
 MTBE Methyl tertiary butyl ether
 HVOC Halogenated Volatile Organic Compounds
 ND Not detected
 -- Not analyzed.

bgs Below ground surface
 mg/kg Milligrams per kilogram

TABLE 3 GROUNDWATER SAMPLE ANALYTICAL RESULTS FOR TEMPORARY BORINGS,
FORMER MOBIL STATION 04-334, 2492 CASTRO VALLEY BOULEVARD, CASTRO VALLEY, CALIFORNIA

Sample ID	Date	Depth (feet)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)	TPH-g (µg/L)	TPH-d (µg/L)	MTBE (8021B) (µg/L)	MTBE (8260B) (µg/L)	TRPH (µg/L)	HVOC (8010) (µg/L)
AB1	03/05/99	8.7 ^a	ND	ND	ND	ND	ND	450	ND	--	--	--
AB2	03/05/99	4.2 ^a	ND	ND	0.8	ND	ND	730	ND	--	1.0	ND
AB3	03/05/99	8.3 ^a	210	7.5	660	34	4,300	2,100	ND	--	--	--
AB4	03/05/99	3.2 ^a	100	43	170	260	2,900	5,500	ND	--	--	--
AB5	03/05/99	9.65 ^a	ND	ND	1.9	ND	ND	1,600	ND	--	--	--
SB1	11/12/03	Boring dry. No groundwater samples were collected.										
SB2	11/13/03	2-17 ^b	<0.5	<0.5	<0.5	<0.5	<50	127	--	2.1	<100	--
SB3	11/12/03	0-12 ^b	1,170	65.0	1,780	2,240	46,700	13,400	--	<0.5	--	--
SB4	11/12/03	Boring terminated at 2 feet bgs. No groundwater samples were collected.										
SB5	11/13/03	0-12 ^b	6.30	2.6	2.8	1.4	760	173	--	<0.5	--	--
SB6	11/13/03	0-12 ^b	1.90	6.3	3.6	4.3	1,650	816	--	<0.5	--	--
SB7	11/13/03	Boring dry. No groundwater samples were collected.										

a Depth to water

b Interval of screen placed in boring

TPH-g Total Petroleum Hydrocarbons as gasoline

TPH-d Total Petroleum Hydrocarbons as diesel

TRPH Total Recoverable Petroleum Hydrocarbons

MTBE Methyl t-butyl ether

HVOC Halogenated Volatile Organic Compounds

ND Not detected

-- Not analyzed

bgs Below ground surface

µg/L Micrograms per liter

TABLE 4 GROUNDWATER MONITORING DATA, FORMER MOBIL STATION 04-334, 2492 CASTRO VALLEY BOULEVARD, CASTRO VALLEY, CALIFORNIA

Well ID	Date	Top of Casing Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	Concentration (µg/L)						
					Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH-g	TPH-d	MTBE
MW1	a 08/13/04	173.23	7.32	165.91	<0.5	0.7	<0.5	1.0	<50	71	1.20 ^b
MW1	11/09/04	173.23	6.96	166.27	<0.5	0.9	<0.5	0.9	<50	63	1.50 ^b
MW1	02/16/05	173.23	6.10	167.13	<0.5	1.0	<0.5	1.5	<50	78	1.30 ^b
MW1	05/16/05	173.23	5.81	167.42	<0.5	<0.5	<0.5	<0.5	<50	<50	1.40 ^b
MW1	08/17/05	173.23	6.70	166.53	<0.5	<0.5	<0.5	<0.5	<50	<50	1.19 ^b
MW1	11/15/05	173.23	7.55	165.68	<0.5	<0.5	<0.5	<0.5	<50	<50	1.13 ^b
MW1	02/06/06	173.23	6.40	166.83	<0.5	<0.5	<0.5	<0.5	<50	160	<0.5 ^b
MW1	05/03/06	173.23	6.95	166.28	<1.00	<1.00	<1.00	<3.00	<50.0	78	<0.50 ^b
MW1	08/04/06	173.23	7.71	165.52	<0.50	<0.50	<0.50	<0.50	<50.0	167	<0.500 ^b
MW1	11/06/06	173.23	7.57	165.66	<0.50	<0.50	<0.50	<0.50	<50.0	<47.2	0.880 ^b
MW2	a 08/13/04	173.63	6.96	166.67	<0.5	0.8	<0.5	1.0	<50	57	<0.5 ^b
MW2	11/09/04	173.63	6.44	167.19	<0.5	1.1	<0.5	1.2	<50	<50	<0.5 ^b
MW2	02/16/05	173.63	5.21	168.42	<0.5	0.9	<0.5	1.4	<50	55	<0.5 ^b
MW2	05/16/05	173.63	5.86	167.77	<0.5	<0.5	<0.5	<0.5	<50	<50	<0.5 ^b
MW2	08/17/05	173.63	5.72	167.91	<0.5	<0.5	<0.5	<0.5	<50	<50	<0.5 ^b
MW2	11/15/05	173.63	7.65	165.98	<0.5	<0.5	<0.5	<0.5	<50	<50	<0.5 ^b
MW2	02/06/06	173.63	6.24	167.39	<0.5	<0.5	<0.5	<0.5	<50	<50	<0.5 ^b
MW2	05/03/06	173.63	6.53	167.10	<1.00	<1.00	<1.00	<3.00	<50.0	<50	<0.50 ^b
MW2	08/04/06	173.63	7.65	165.98	<0.50	<0.50	<0.50	<0.50	<50.0	<47.2	<0.500 ^b
MW2	11/06/06	173.63	6.98	166.65	<0.50	<0.50	<0.50	<0.50	<50.0	<46.9	<0.500 ^b
MW3	a 08/13/04	171.91	5.36	166.55	100	2.0	187	59.6	1,440	352	<0.5 ^b
MW3	11/09/04	171.91	4.80	167.11	188	3.6	242	20.0	1,690	461	<0.5 ^b
MW3	02/16/05	171.91	3.10	168.81	66.2	1.4	61.1	12.6	575	269	<0.5 ^b
MW3	05/16/05	171.91	3.86	168.05	74.2	1.4	61.0	9.0	592	92	<0.5 ^b
MW3	08/17/05	171.91	4.75	167.16	231 ^c	2.35	102	11.4	1,130	416	<0.5 ^b
MW3	11/15/05	171.91	6.56	165.35	57.4	0.95	62.4	10.5	452	193	<0.5 ^b

TABLE 4 GROUNDWATER MONITORING DATA, FORMER MOBIL STATION 04-334, 2492 CASTRO VALLEY BOULEVARD, CASTRO VALLEY, CALIFORNIA

Well ID	Date	Top of Casing Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	Concentration (µg/L)						
					Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH-g	TPH-d	MTBE
MW3	02/06/06	171.91	4.00	167.91	69	<5.0	64	10	830	165	<0.5 ^b
MW3	05/03/06	171.91	5.44	166.47	52.1	<1.00	37.0	4.81	605	140	<0.50 ^b
MW3	08/04/06	171.91	5.25	166.66	15.2	<0.50	5.34	1.25	262	108	<0.500 ^b
MW3	11/06/06	171.91	4.11	167.80	60.0	1.04	47.3	3.09	561	106	<0.500 ^b
MW4	a 08/13/04	170.48	6.10	164.38	<0.5	0.8	<0.5	1.1	<50	72	2.80 ^b
MW4	11/09/04	170.48	5.54	164.94	<0.5	2.3	0.7	1.5	<50	<50	2.10 ^b
MW4	02/16/05	170.48	5.11	165.37	<0.5	1.1	<0.5	1.7	<50	<50	<0.5 ^b
MW4	05/16/05	170.48	5.44	165.04	<0.5	<0.5	<0.5	<0.5	<50	<50	<0.5 ^b
MW4	08/17/05	170.48	5.71	164.77	<0.5	<0.5	<0.5	<0.5	<50	<50	1.03 ^b
MW4	11/15/05	170.48	5.80	164.68	<0.5	<0.5	<0.5	<0.5	<50	<50	0.730 ^b
MW4	02/06/06	170.48	5.10	165.38	<0.5	<0.5	<0.5	<0.5	<50	85.2	<0.5 ^b
MW4	05/03/06	170.48	5.54	164.94	<1.00	<1.00	<1.00	<3.00	<50.0	<47	<0.50 ^b
MW4	08/04/06	170.48	5.75	164.73	<0.50	<0.50	<0.50	<0.50	<50.0	52.7	<0.500 ^b
MW4	11/06/06	170.48	5.95	164.53	<0.50	<0.50	<0.50	<0.50	<50.0	<47.2	<0.500 ^b

a Top-of-casing elevation surveyed by Morrow Surveying on 12 July 2004.

b Analyzed by EPA Method 8260.

c Concentration estimated. Analyte exceeded calibration range. Reanalysis not performed due to holding time requirements.

TPH-g Total Petroleum Hydrocarbons as gasoline.

TPH-d Total Petroleum Hydrocarbons as diesel.

MTBE Methyl tertiary butyl ether.

µg/L Micrograms per liter.

mg/L Milligrams per liter

Note Depth-to-water-level measurements in feet from top-of-casing.

Appendix A
Field Protocols

PROTOCOLS FOR INSTALLATION, SAMPLING, AND ABANDONMENT OF SINGLE-TUBE DIRECT-PUSH BORINGS

SUBSURFACE CLEARANCE SURVEY PROCEDURES

Prior to drilling, the proposed locations of the borings will be marked with white paint. Underground Service Alert (USA) will be contacted prior to subsurface activities and a “ticket” will be issued for this investigation. USA members will mark underground utilities in the delineated areas using standard color code identifiers.

Once USA has marked the site, all proposed boreholes locations will be investigated by subsurface clearance surveys to identify possible buried hazards (e.g. pipelines, drums, tanks). Subsurface clearance surveys use several geophysical methods to locate shallow buried man-made objects. The geophysical methods include electromagnetic induction (EMI) profiling, ground penetrating radar (GPR), and/or magnetic surveying. The choice of methods depends on the target object and potential interference from surrounding features.

Prior to drilling, all boreholes will be cleared of underground utilities to a depth of at least 4 feet below ground surface (bgs) in “non-critical zones” and to 8 feet bgs in “critical zones”. Critical zones are defined as locations that are within 10 feet from the furthest edge of any underground storage tank (UST), within 10 feet of the product dispenser islands, the entire area between the UST field and the product dispenser islands, and within 10 feet of any suspected underground line. An 8- to 12-inch-diameter circle will be cut in the surface cover at each boring location. A hole, greater than the diameter of the drilling tool being used, will then be cleared at each boring location, using a hand auger or vacuum excavation system. The vacuum system consists of a water or air lance, used to disturb native soil by injecting water or air into the soil, and a vacuum, used to remove the soil.

SOIL BORING PROCEDURES

Soil samples are collected for visual description and chemical analysis using a direct driven single tube soil coring system. A hydraulic hammer drives sampling rods into the ground to collect continuous or discrete soil cores. As the rods are advanced, soil is driven into an approximately 1.5-inch-diameter sample barrel that is attached to the end of the rods. Soil samples are collected in sleeves inside the sample barrel as the rods are advanced. After being driven 2 to 4 feet (depending on the sample interval and the length of the sample barrel), the rods are removed from the boreholes. The sleeves containing the soil samples are removed from the sample barrel, and can then be preserved for chemical analyses or used for visual identification. Samples to be preserved for chemical analyses are sealed with Teflon tape and caps, and placed in a cooler with ice. The soil is scanned with a flame ionization detector or a photo-ionization detector. After adding new sleeves, the drive sampler and rods are then lowered back into the boreholes to the previous depth and the process is repeated until the desired depth is reached.

All drive casing, sample barrels, rods, and tools are cleaned with Alconox or equivalent detergent and deionized water. All soil is contained in drums or stockpiles for later disposal.

GROUNDWATER SAMPLING PROCEDURES

After the targeted water-bearing zone has been penetrated, the drive casing, sample barrels, and rods are pulled up to allow groundwater to flow into the boreholes. Small-diameter well casing with 0.010-inch slotted well screen or equivalent may be installed in the boreholes to facilitate the collection of groundwater samples. Groundwater samples may then be collected with a bailer, peristaltic pump, bladder pump, or inertial pump until adequate sample volume is obtained.

Groundwater samples are preserved, stored in an ice-filled cooler, and are delivered, under chain-of-custody, to a laboratory certified by the California Department of Health Services for chemical analysis.

BOREHOLE GROUTING

Once the soil and water sampling is completed, boreholes will be abandoned with a neat cement grout. The grout is pumped through a tube positioned at the bottom of the boreholes.