

STID3809

JANUARY 1993  
QUARTERLY STATUS REPORT  
GREYHOUND TERMINAL  
OAKLAND, CALIFORNIA

• **Status of investigation and cleanup activities:**

A preliminary site investigation was completed by Engineering-Science, Inc. (ES) in January 1992. The Preliminary Site Investigation report was submitted to the Alameda County Department of Environmental Health (ACDEH) on January 27, 1992.

Based on the results of the preliminary investigation, a groundwater monitoring program consisting of monthly groundwater level measurements and quarterly groundwater sampling and reporting was initiated by Greyhound in June 1992.

Based on measurable thicknesses of free product discovered in four existing monitoring wells on-site, Greyhound subsequently proposed the installation of an automated free product recovery system. Upon ACDEH approval in October 1992, Greyhound obtained the required permits and installed a recovery system on-site during the week of November 9, 1992. A report detailing recovery system installation was submitted to ACDEH on December 18, 1992. The recovery system was placed in operation at the facility during the week of January 4, 1993 after discharge permit conditions were finalized with the East Bay Municipal Utility District (EBMUD).

ACDEH requested that Greyhound provide documentation regarding the underground fuel storage tank system (UST) removal, including disposal documentation in a letter to Greyhound dated October 23, 1992. Greyhound immediately responded by preparing a Tank Closure Documentation Report for this facility. This report was submitted to ACDEH on December 15, 1992. Greyhound still awaits any comments ACDEH may have regarding the current groundwater monitoring program, free product recovery operations, and tank closure documentation submitted for this location. ✓

• **Proposed continuing or next phase of investigation:**

In accordance with ACDEH's letter to Greyhound dated October 23, 1992 and Greyhound's response to the letter submitted to ACDEH on November 23, 1992, Greyhound proposed to conduct a supplemental site assessment investigation in the Spring of 1993. The purpose of the supplemental site assessment is to completely define the lateral extent of the dissolved contaminant plume. Greyhound has prepared a work plan for this investigation and will submit the work plan to ACDEH for review no later than April 2, 1993. Upon review and approval of the work plan by ACDEH, Greyhound will obtain the required permits and implement the supplemental site assessment at this location. ✓

Results of the supplemental assessment will be presented in a report that will be submitted to ACDEH. The report will also include an evaluation of clean-up standards and additional remedial action. In the interim, Greyhound will continue free product

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**QUARTERLY STATUS REPORT (CONTINUED)**

recovery operations, monthly groundwater monitoring, and quarterly sampling and analyses.

• **Method of cleanup proposed or implemented to date:**

In October 1992, Greyhound proposed a free product recovery system for the removal of free product in four wells. A hydrocarbon recovery system was installed in November 1992 after receiving approval from Ms. Susan Hugo (ACDEH). Recovery operations were initiated during the week of January 4, 1993. To date, 495 gallons of free product and contaminated groundwater have been recovered and properly disposed off-site by Evergreen Vacuum Services, a State of California-certified waste hauler.

• **Time schedules for the completion of the investigation of the site and remediation:**

The monthly monitoring, quarterly groundwater sampling and hydrocarbon recovery program will continue for a period of one year or until free product has been removed from the groundwater.

A work plan for the supplemental site assessment will be prepared and submitted to ACDEH no later than April 2, 1993. After review and approval of the work plan by ACDEH, Greyhound will implement the supplemental site assessment in accordance with the schedule provided in the work plan.

• **Method and location of disposal of the released hazardous substance and any contaminated soil, groundwater or surface water:**

Approximately 495 gallons of free product and contaminated groundwater have been recovered to date. Recovered diesel fuel and contaminated groundwater has been properly recycled off-site by Evergreen Vacuum Services, a State of California-certified waste hauler.

• **Manifest required for transport of hazardous substances:**

All disposal/transport manifests for recovered diesel fuel and contaminated groundwater have been included in Appendix A.

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- **Monitoring well data:**

The physical data obtained from the monitoring wells located at the facility on January 7, 1993 are presented in Table 1. Figure 1 is a site map showing the monitoring well locations. Free product has been observed in four out of eight of the on-site monitoring wells to date (Recovery wells ES-1, ES-2, ES-5, and BC-1). Figure 2 shows groundwater level elevations measured in January 1993. Note that groundwater levels in the area of the recovery wells (ES-1, ES-2, ES-5, and BC-1) are depressed due to recovery operations which have created a cone of depression toward the recovery wells, preventing further migration of contaminants off-site.

- **Analytical results of groundwater or soil sampling:**

Results of the most recent quarterly groundwater sampling event (January 1993) are summarized in Table 2. Four of the eight monitoring wells were sampled. Monitoring wells ES-1, ES-2, ES-5 and BC-1 were not sampled because free product was present. TPH-D concentrations were below the laboratory reporting limits in all of the groundwater samples collected. Benzene was detected in only two samples: ES-3 at 52.0 µg/l and ES-4 at 30.0 µg/l. Ethylbenzene was detected in three samples: ES-3 at 100 µg/l, ES-4 at 7.7 µg/l, and BC-2 at 1.5 µg/l. Toluene was detected in three samples: ES-3 at 49.0 µg/l, ES-4 at 6.7 µg/l, and BC-2 at 1.1 µg/l. Xylene (total) was detected in three samples: ES-3 at 250 µg/l, ES-4 at 16.0 µg/l, and BC-2 at 9.5 µg/l. BTEX concentrations in groundwater sample BC-3 were below the laboratory detection limits. Greyhound will resample these wells during the next quarterly sampling event in April 1993. In addition to BTEX and TPH-D, TPH-G will also be analyzed during the next and subsequent quarterly sampling events in accordance with ACDEH requirements (letter to Greyhound, October 23, 1992).

Groundwater analytical data from previous quarterly sampling events have been summarized on Table 3. Soil analytical data from the preliminary site investigation is included as Table 4.

- **A site map showing the "zero line" of contamination, and changes in analyses and gradient measurements over the last quarter:**

A "zero line" for groundwater contamination has not been mapped because the extent of dissolved contamination has not been completely defined. After the supplemental site assessment has been implemented, a zero line showing the extent of dissolved hydrocarbon contamination will be provided.

- **Tabulated data for all monitoring wells including groundwater elevations collected to date:**

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The physical data collected to date for all of the monitoring wells located at the facility are presented in Table 5.

- **A site map delineating groundwater elevation contours based on recent data:**

Groundwater elevations determined by water level measurements made on January 7, 1993 suggest an overall northerly groundwater flow direction with a strong influence of flow toward the recovery wells (ES-1, ES-2, ES-5, and BC-1) (Figure 2).

- **Analytical results from all previous sampling events including laboratory reports for the most recent sampling event and chain-of-custody documentation:**

A summary of the analytical results from previous groundwater sampling events is presented in Table 3. A summary of the analytical data for soil samples is presented in Table 4. The laboratory results from the most recent groundwater sampling event, including chain-of-custody documentation, are included in Appendix B.

- **Site map delineating contamination contours for soil and groundwater based on recent data:**

At the present time, a map delineating the extent of groundwater contamination has not been prepared due to lack of sufficient data points to construct the map. Figure 3 shows analytical data for groundwater samples collected on January 7, 1993 plotted on a site base map.

Figure 4 is a site map indicating areas of soil contamination based on data obtained during the preliminary site investigation. Soil contamination appears to be limited to the area near sample locations ES-1, ES-2, and ES-5. A 100 mg/kg TPHD contour has been included to illustrate the possible extent of TPHD contamination in this area. The extent of soil contamination at the site will be determined during the supplemental site assessment.

- **Tank owner commitment letter:**

The cover letter submitted with this report is intended to serve as the tank owner commitment letter.

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QUARTERLY STATUS REPORT (CONTINUED)**

- **The quantity of groundwater and vapors removed during the reporting period and cumulative to date:**

Approximately 495 gallons of recovered diesel fuel and contaminated groundwater have been removed to date. As of February 22, 1993, 31,706 gallons of carbon-treated groundwater have been processed through the recovery system on-site and discharged to the sanitary sewer.

- **Times and dates equipment was not operating, cause of shutdown, and a corrective action plan to insure similar shutdowns do not reoccur:**

The system has been operational with only brief shutdown periods since January 4, 1993. The shutdown periods happened as a result of the system's high level alarm switches which deactivate the system after the system's product reservoir becomes full. The system is currently monitored twice weekly to ensure that the system operates continuously.

- **Timelines for activities currently underway or proposed:**

Greyhound will continue the monthly groundwater monitoring, quarterly sampling, and hydrocarbon recovery program in accordance with all applicable LUFT and Tri-Regional requirements. At the end of 1993, an evaluation of the data obtained from these programs will be made to determine whether further action is required at the site. The next quarterly status report will be prepared and submitted to ACDEH on or before May 15, 1993.

Greyhound will submit a work plan for the Supplemental Site Assessment on or before April 2, 1993 for ACDEH review and approval. The supplemental site assessment activities and report preparation will follow the approved schedule which will be proposed in the work plan.

- **Estimates of the quantity of contamination remaining in soil and groundwater, and time for completing remediation:**

At the present time, there is insufficient data to make these estimates. The quantity of soil and extent of groundwater contamination and the time required to remediate this site will be carefully evaluated after the supplemental site assessment data are collected and one year of groundwater monitoring has been completed.

TABLE 1

MONITORING WELL DATA SUMMARY  
 Greyhound Terminal, Oakland, California  
 January 7, 1993

Location	Elevation of PVC T.O.C (Ft.)	Depth to Water (Ft.)	Groundwater Elevation (*) (Ft. MSL)	Product Layer Thickness (ft.)
ES-1	21.33	20.26	1.07	.01
ES-2	21.83	20.40	1.43	.35
ES-3	22.33	19.20	3.13	0
ES-4	21.09	18.76	2.33	0
ES-5	21.24	22.00	-0.76	2.65
BC-1	21.55	21.76	-0.21	2.16
BC-2	NA	13.50	NA	0
BC-3	NA	16.55	NA	0

T.O.C. – Top of Casing

NA – Not Available (Well casings not vertical.)

(\*) Elevations based on site surface vertical datum (97.50, on steel grate for storm sewer near wash rack) in the field and later converted to Mean Sea Level (MSL): 97.50 = 12.0 MSL.

TABLE 2

GROUNDWATER ANALYTICAL RESULTS  
GREYHOUND TERMINAL, OAKLAND, CALIFORNIA  
JANUARY 7, 1993

Location	Date Collected	Parameter	Result	Detection Limit
ES-3	1/7	Benzene <sup>1</sup>	52.0 ✓	1.5 ug/L*
		Ethylbenzene <sup>1</sup>	100.0	1.5 ug/L*
		Toluene <sup>1</sup>	49.0	1.5 ug/L*
		Xylenes (total) <sup>1</sup>	250.0	3.0 ug/L*
		TPH-D <sup>2</sup>	ND	0.05 mg/L
ES-4	1/7	Benzene <sup>1</sup>	30.0	0.3 ug/L
		Ethylbenzene <sup>1</sup>	7.7	0.3 ug/L
		Toluene <sup>1</sup>	6.7	0.3 ug/L
		Xylenes (total) <sup>1</sup>	16.0	0.6 ug/L
		TPH-D <sup>2</sup>	ND	0.05 mg/L
BC-2	1/7	Benzene <sup>1</sup>	ND	0.3 ug/L
		Ethylbenzene <sup>1</sup>	1.5	0.3 ug/L
		Toluene <sup>1</sup>	1.1	0.3 ug/L
		Xylenes (total) <sup>1</sup>	9.5	0.6 ug/L
		TPH-D <sup>2</sup>	ND	0.05 mg/L
BC-3	1/7	Benzene <sup>1</sup>	ND	0.3 ug/L
		Ethylbenzene <sup>1</sup>	ND	0.3 ug/L
		Toluene <sup>1</sup>	ND	0.3 ug/L
		Xylenes (total) <sup>1</sup>	ND	0.6 ug/L
		TPH-D <sup>2</sup>	ND	0.05 mg/L

<sup>1</sup> Analyzed by EPA Method 602

<sup>2</sup> Analyzed by DHS/LUFT Method Modified EPA 8015

\* Dilution Factor of 5

Wells ES-1, 2, 5, and BC-1 were not sampled due to the presence of free product

TABLE 3

SUMMARY OF PREVIOUS  
ANALYTICAL DATA – GROUNDWATER ANALYSIS  
GREYHOUND TERMINAL, OAKLAND, CALIFORNIA

Sampling Date	Location	Benzene ug/l	Toluene ug/l	Ethylbenzene ug/l	Xylene ug/l	Total BTEX ug/l	TPH-D(*) mg/l
07/08/92	ES-3	54	21	48	34	157	1.3
	ES-4	31	5.6	ND	2.8	39.4	ND
	BC-2	ND	ND	ND	8.4	8.4	2.1
	BC-3	ND	2.5	ND	6.1	8.6	3.9
10/06/92	ES-3	93	18	ND	11	122	ND
	ES-4	100	8.2	ND	7.6	115.8	ND
	BC-2	ND	1.1	0.9	7.2	9.2	ND
	BC-3	ND	1.9	0.5	1.8	4.2	0.8

ND – Parameter analyzed for but not detected above method detection limit.

(\*) – Total petroleum hydrocarbons diesel (TPH-D) were analyzed and characterized by GC/FID in accordance with DHS/LUFT method (modified EPA method 8015/ solution preparation method 3510).



**TABLE 4  
SOIL ANALYTICAL DATA SUMMARY  
GREYHOUND TERMINAL, OAKLAND, CALIFORNIA**

Location Sample Depth*	Benzene ug/kg	Toluene ug/kg	Ethylbenzene ug/kg	Xylenes ug/kg	Total BTEX ug/kg	TPHD(a) mg/kg
ES-1 (16-18)	ND	3,000	3,400	22,000	28,400	ND
ES-2 (16-18)	ND	27,000	28,000	150,000	205,000	ND
ES-3 (18-19)	ND	ND	ND	ND	ND	ND
ES-4 (16-16.5)	ND	ND	ND	ND	ND	ND
ES-5 (15-17)	ND	80	65	330	475	160
California ARARs:	0.3-1(b) (mg/kg)	0.3-50(b) (mg/kg)	1-50(b) (mg/kg)	1-50(b) (mg/kg)	---	100(c), 1000(d) (mg/kg)

**NOTES:**

ARAR = Available Applicable or Relevant Appropriate Requirements.

ND = Parameter analyzed for but not detected above method detection limit.

\* Depth given in feet below ground surface.

(a) Total petroleum hydrocarbons as diesel (TPHD) were analyzed and characterized by GCFID in accordance with DHS/LUFT Method (modified EPA Method 8015).

(b) California LUFT criteria. Note the ARARs are given in ppm, whereas the results are in ppb.

(c) RWQCB - Level that initiates a soil/groundwater characterization investigation.

(d) California Hazardous Waste based on ignitability.

TABLE 5

MONITORING WELL DATA SUMMARY  
GREYHOUND TERMINAL, OAKLAND, CALIFORNIA

Date	Well Location	Depth to Liquid (Ft.)	Depth to Water (Ft.)	Free Product Thickness (Ft.)
6/16/92	ES-1	20.18	23.78	3.60
	ES-2	18.63	18.64	.01
	ES-3	19.41	19.41	0
	ES-4	18.40	18.40	0
	ES-5	15.32	15.65	.33
	BC-1	20.64	20.84	.20
	BC-2	16.25	16.25	0
	BC-3	16.48	16.48	0
	7/7/92	ES-1	18.60	18.60
ES-2		20.02	19.62	.40
ES-3		19.52	19.52	0
ES-4		18.51	18.51	0
ES-5		22.23	20.23	2.0
BC-1		19.55	20.66	1.11
BC-2		16.89	16.89	0
BC-3		16.68	16.68	0
8/4/92	ES-1	18.80	18.81	.01
	ES-2	19.17	19.76	.59
	ES-3	19.68	19.68	0
	ES-4	18.66	18.66	0
	ES-5	18.16	20.43	2.27
	BC-1	18.47	20.90	2.43
	BC-2	18.46	18.46	0
BC-3	19.24	19.24	0	
9/31/92	ES-1	18.96	18.97	.01
	ES-2	19.29	19.90	.61
	ES-3	19.80	19.80	0
	ES-4	18.79	18.79	0
	ES-5	18.24	20.80	2.56
	BC-1	18.68	21.02	2.34
	BC-2	18.89	18.89	0
BC-3	19.10	19.10	0	

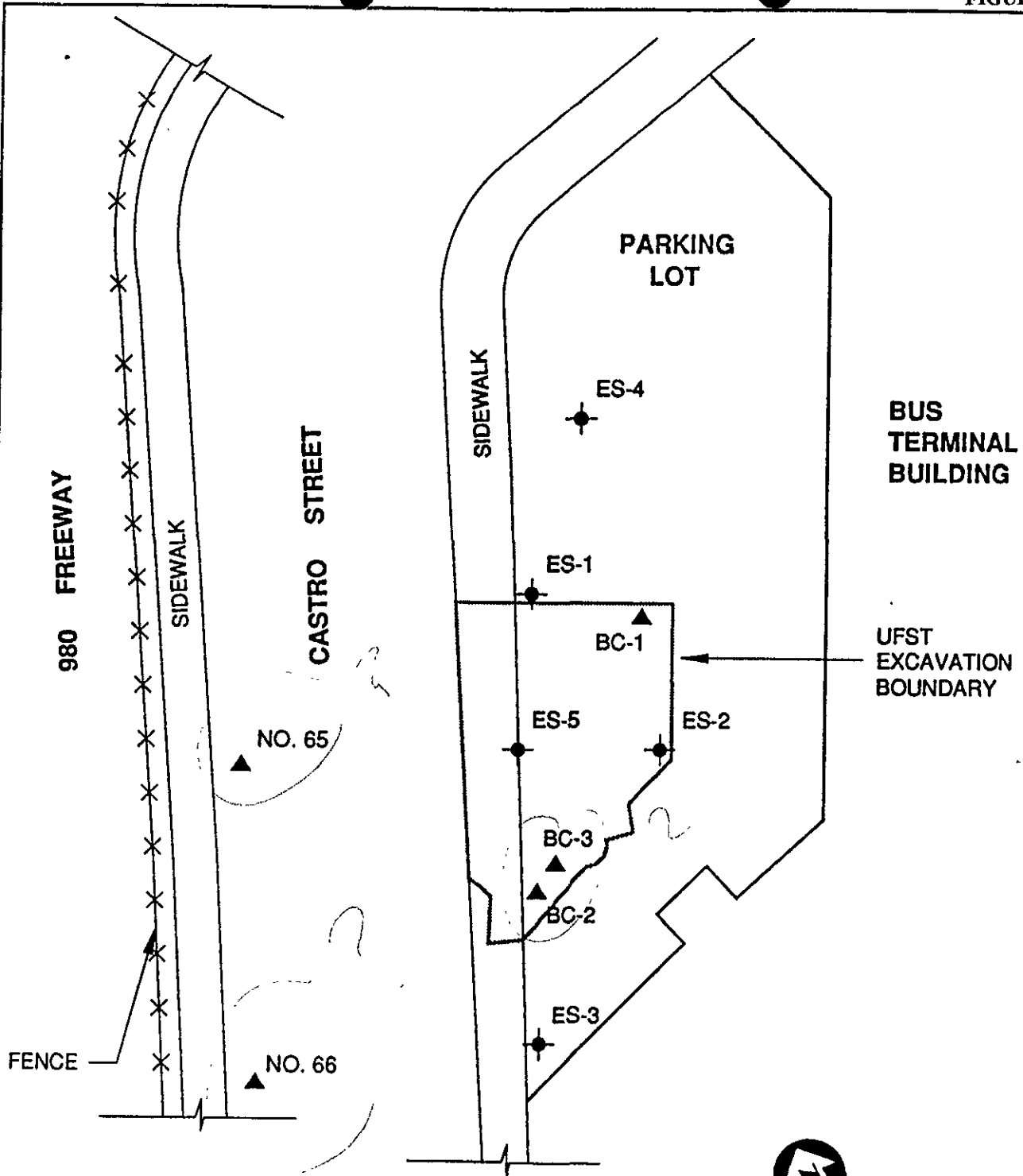
*Screen (ft)*  
 ES1 - 10-32  
 ES2 - 10-30  
 ES3 - 15-35  
 ES4 - 10-30  
 ES5 - 10-30

TABLE 5  
(Continued)

MONITORING WELL DATA SUMMARY

Date	Well Location	Depth to Liquid (Ft.)	Depth to Water (Ft.)	Free Product Thickness (Ft.)
10/6/92	ES-1	19.08	19.10	.02
	ES-2	19.41	20.00	.59
	ES-3	19.96	19.96	0
	ES-4	18.92	18.92	0
	ES-5	18.24	21.37	3.13
	BC-1	18.82	21.14	2.32
	BC-2	18.50	18.50	0
	BC-3	18.93	18.93	0
11/6/92	ES-1	18.52	18.53	.01
	ES-2	18.84	19.44	.60
	ES-3	18.84	19.84	0
	ES-4	18.94	18.94	0
	ES-5	17.60	20.92	3.32
	BC-1	18.24	20.69	2.45
	BC-2	15.98	15.98	0
	BC-3	16.81	16.81	0
12/12/92	ES-1	18.55	18.55	0
	ES-2	18.75	19.10	.35
	ES-3	19.10	19.10	0
	ES-4	18.51	18.51	0
	ES-5	17.50	20.35	2.85
	BC-1	18.25	20.75	2.50
	BC-2	12.17	12.17	0
	BC-3	17.84	17.84	0

FIGURE 1



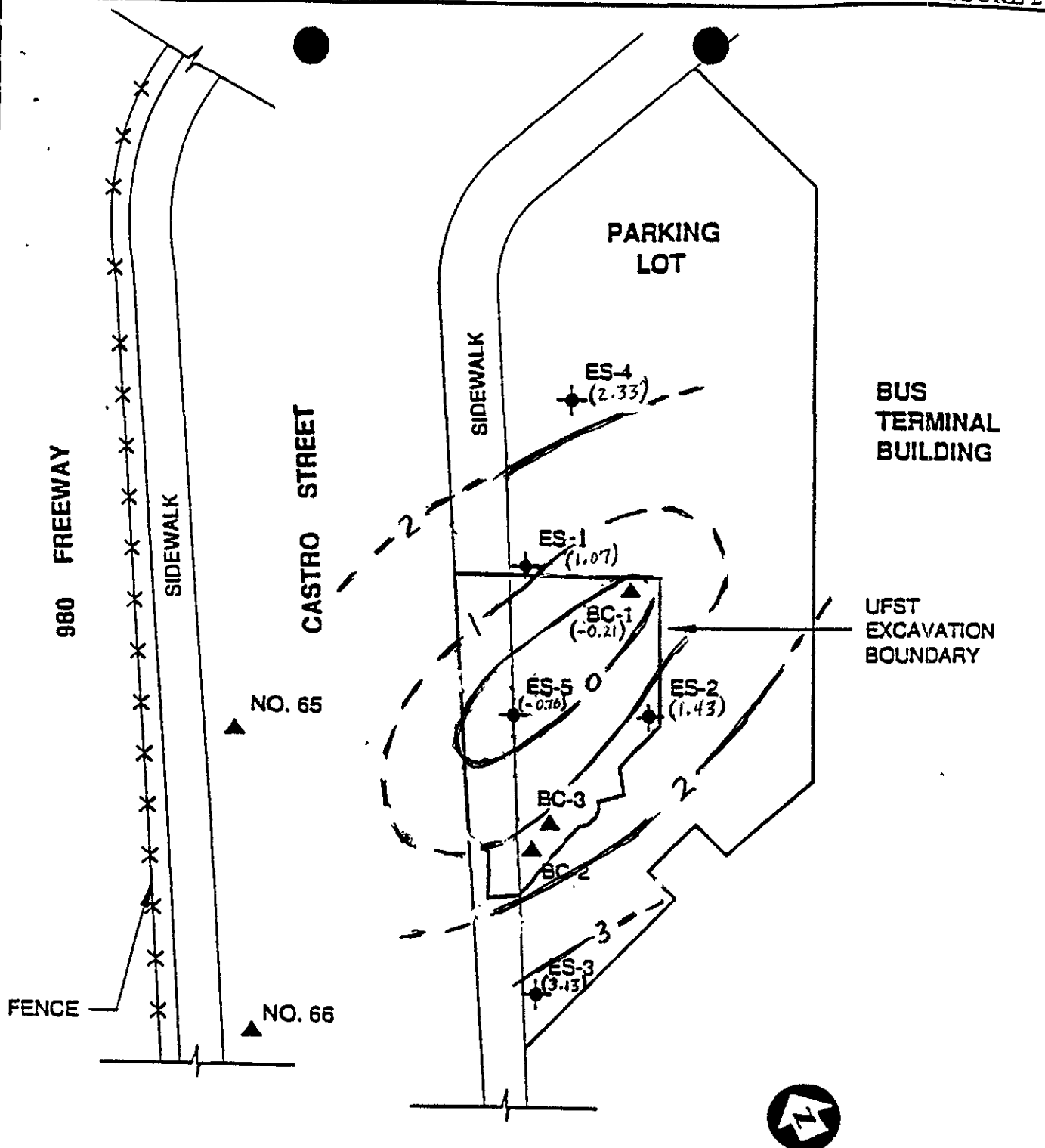
**EXPLANATION**

- 
ES-1  
NEW MONITORING WELL
- 
BC-1  
EXISTING MONITORING WELL

NOTE: WELLS BC-2, BC-3; CASINGS ARE NOT VERTICAL

GREYHOUND LINES, INC.  
 LOCATION 8934  
 2103 SAN PABLO AVENUE  
 OAKLAND, CALIFORNIA

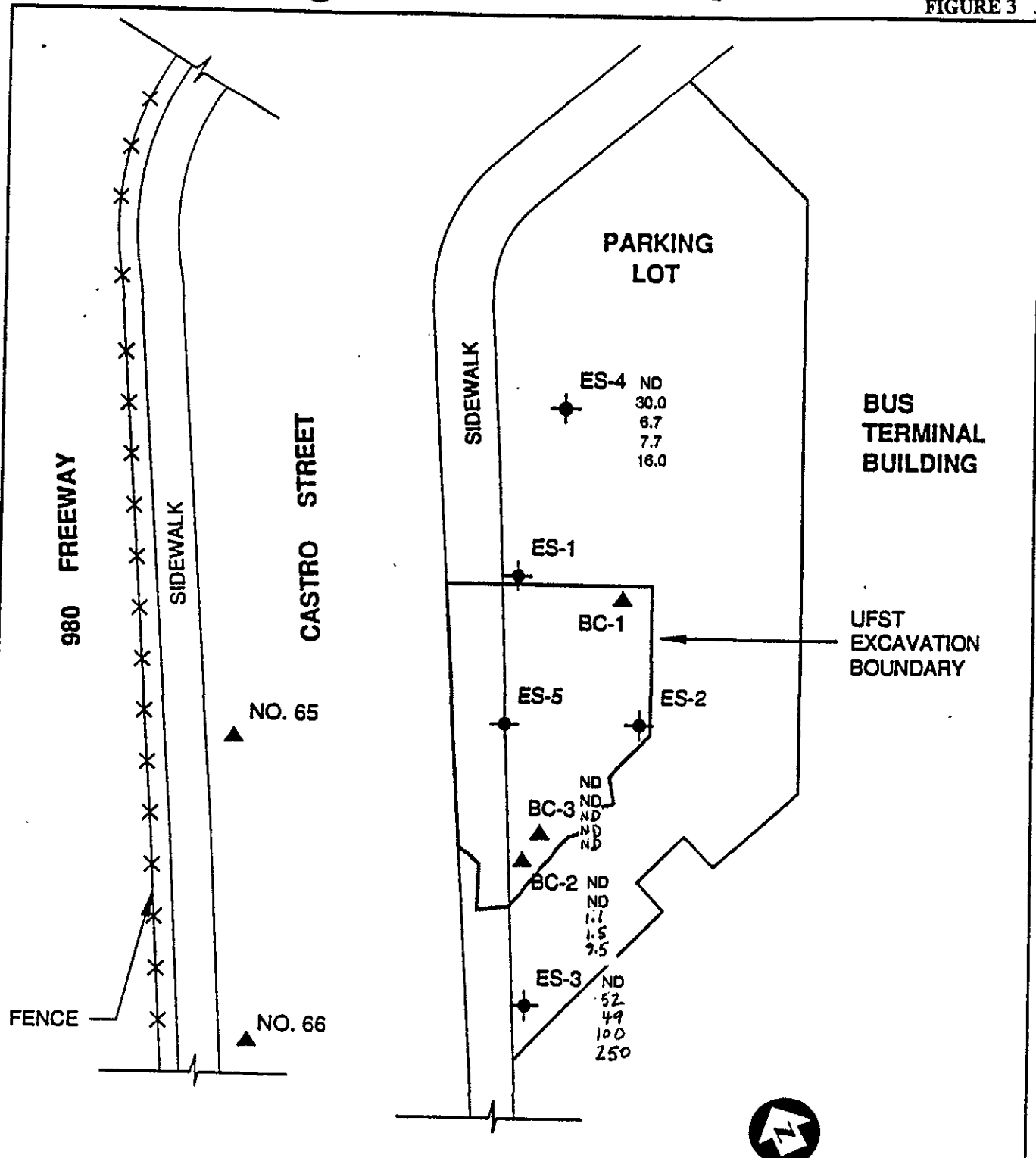
**WELL LOCATION MAP**





EXPLANATION	
(2.33)	GROUNDWATER ELEVATION AT WELL (FEET ABOVE MEAN SEA LEVEL)
- 2 -	Groundwater Elevation Contour (Based on Groundwater Level Measurements taken on 1/7/93)

GREYHOUND LINES, INC.  
 LOCATION 8934  
 2103 SAN PABLO AVENUE  
 OAKLAND, CALIFORNIA  
**GROUND WATER CONTOUR MAP**  
 (1/7/93)

FIGURE 3

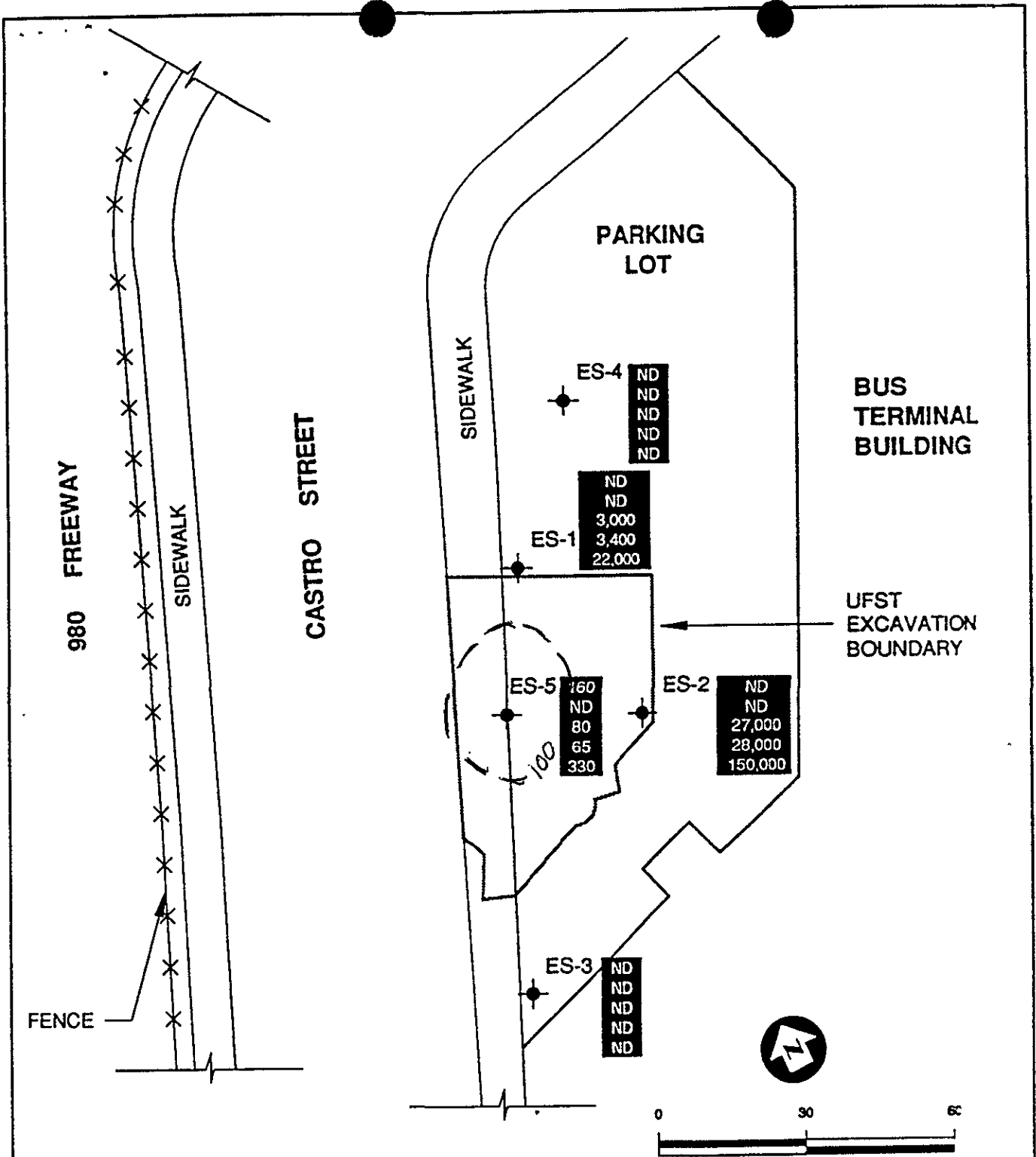


**EXPLANATION**

-  ES-1  
 NEW MONITORING WELL
-  BC-1  
 EXISTING MONITORING WELL
- ND TPHD CONCENTRATION (mg/l)
- ND BENZENE CONCENTRATION (µg/l)
- 1.1 TOLUENE CONCENTRATION (µg/l)
- 1.5 ETHYLBENZENE CONCENTRATION (µg/l)
- 9.5 XYLENE CONCENTRATION (µg/l)



GREYHOUND LINES, INC.  
 LOCATION 8934  
 2103 SAN PABLO AVENUE  
 OAKLAND, CALIFORNIA  
 JANUARY 7, 1993  
**ANALYTICAL RESULTS**  
**GROUNDWATER SAMPLES**



**EXPLANATION**

ES-1

NEW MONITORING WELL



100

TPHD ISOCONCENTRATION

ND
ND
ND
ND
ND

TPHD CONCENTRATION (mg/kg)  
 BENZENE CONCENTRATION (µg/kg)  
 TOLUENE CONCENTRATION (µg/kg)  
 ETHYLBENZENE CONCENTRATION (µg/kg)  
 XYLENE CONCENTRATION (µg/kg)

GREYHOUND LINES, INC.  
 LOCATION 8934

2103 SAN PABLO AVENUE  
 OAKLAND, CALIFORNIA  
 NOVEMBER 1991

**ANALYTICAL RESULTS  
 SOIL SAMPLES**