RMC LONESTAR

6601 Koll Center Parkway
P.O. Box 5252
Pleasanton, CA 94566
(415) 426-8787

May 15, 1992

Ms. Eva Chu
Department of Environmental Health,
Alameda County Health Agency
80 Swan Way, Room 200
Oakland, CA 94621

Subject: Update 1544 Stanley Blvd., Pleasanton

Dear Ms. Chu:

Enclosed please find a copy of the Levine Fricke April 3, 1991 Ground-Water Investigation Report and the sampling locations and laboratory results from the November 7 through 18, 1990 excavation. I will be rewriting the soil excavation and sampling report to include our proposal for final remediation of the stockpiled soil. I have also included a copy of the latest groundwater sampling results. These sampling results indicate no presents of contaminants in the groundwater above the detection limits.

Should you have any questions or want to discuss this subject in further detail with me please contact me at (510) 426-2279.

Sincerely,

Bradd Statley
Environmental Engineer

enc.
file

Results of Soil and Ground-Water Investigation RMC LONESTAR Eliot Plant 1544 Stanley Boulevard Pleasanton, California

April 3, 1991
1667

Prepared for:
RMC LONESTAR Eliot Plant
11555 Dublin Canyon Road
Pleasanton, California

LEVINE·FRICKE

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

April 3, 1991

LF 1667

Mr. Louis Schipper
RMC LONESTAR
11555 Dublin Canyon Road
P.O. Box 5252
Pleasanton, California 94566

SUBJECT: Report of Results of Soil and Ground-Water Investigation, RMC LONESTAR Eliot Plant, Pleasanton, California

Dear Louis:

Enclosed are three copies of the subject report describing results of the soil and ground-water investigations conducted at the RMC LONESTAR facility ("the Site"), located at 1544 Stanley Boulevard in Pleasanton, California. This investigation was conducted as proposed in Levine·Fricke, Inc.'s (Levine·Fricke) May 1, 1989 "Proposal for Phase I Environmental Investigation," to investigate the lateral extent of fuel-affected soil and ground water in the vicinity of a steam-cleaning area at the Site.

Recommendations regarding the need for additional soil and ground-water characterization to further evaluate the extent of petroleum-affected soil in the vicinity of the steam-cleaning pad are discussed in the report. A proposal for these recommended further characterizations can be supplied upon request.

If you have any questions or comments regarding this report, please call me, Craig Benson, or Tom Johnson.

Sincerely,

Thomas Zakaria
Senior Hydrogeologist

Enclosures

LF 1667:SLM/FNC

1900 Powell Street, 12th Floor
Emeryville, California 94608
(415) 652-4500
FAX (415) 652-2246

Other offices in Irvine, CA; Sacramento/Roseville, CA; Tallahassee, FL

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April 3, 1991 LF 1667

RESULTS OF SOIL AND GROUND-WATER INVESTIGATION
RMC LONESTAR ELIOT PLANT
1544 STANLEY BOULEVARD
PLEASANTON, CALIFORNIA

1.0 INTRODUCTION

This report presents results of a soil and ground-water investigation conducted by Levine·Fricke, Inc. (Levine·Fricke) at the RMC LONESTAR Eliot Site, in Pleasanton, California ("the Site"; Figure 1). This investigation was conducted as proposed in the Levine·Fricke proposal entitled "Proposal for Phase I Environmental Investigation, RMC LONESTAR Eliot Plant, Pleasanton, California," dated May 1, 1989. The investigation focused on an area adjacent to the concrete pad where trucks and engine parts were steam cleaned. Untreated wastewater, possibly containing petroleum products from the steam cleaning activities, reportedly was discharged through a drainpipe into this area. A test pit was excavated at the outlet of the drain in 1988 and further excavated and enlarged in early 1989 (Figure 2).

The purpose of this investigation was to assess whether this excavation around the drainpipe outlet has removed soils affected by the presence of waste petroleum products in wastewater drained into this area and whether ground water has been affected.

This report presents the methods used to conduct this investigation, the results obtained, conclusions, and recommendations.

2.0 PURPOSE AND SCOPE OF WORK

The purpose of this investigation was to obtain soil and ground-water samples for chemical analysis from the excavated area adjacent to the drainpipe outlet. In addition to the discharge of wastewater into the drainpipe from steam-cleaning activities, oil from a nearby aboveground oil tank, which drained to the same drainpipe, may have been released into the Site. In 1988, RMC LONESTAR excavated a test pit in the vicinity of the drainpipe outlet to an approximate depth of 15 feet below grade surface (bgs). The subsurface soils, which consisted mainly of sand and gravel, were stained with

petroleum products. Analyses of soil samples collected at the base of the excavation reported concentrations of total petroleum hydrocarbons (TPH) up to 6,000 parts per million (ppm). The test pit was further enlarged in early 1989, and excavated soils stockpiled. The approximate location of the excavated pit is shown in Figure 2. Ground water was not encountered in this excavation.

The Scope of Work performed in the present investigation included collection of soil samples; drilling and installation of a ground-water monitoring well; collection of ground-water samples; analysis of soil and ground-water samples for benzene, toluene, ethylbenzene, and total xylenes (BTEX) and for TPH; and data evaluation and report preparation.

3.0 SITE LOCATION AND DESCRIPTION

The RMC LONESTAR Eliot Site is a sand and gravel quarry, located at 1544 Stanley Boulevard, directly east of Shadowcliffs Lake Park, in Pleasanton, California. Figure 1 shows the surrounding area and topographic features. The Site contains several quarry pits, excavation and conveyor belt facilities, a truck maintenance facility, and an office building (Figure 1).

4.0 SOIL SAMPLING

Soil samples were collected from the walls and bottom of the excavated area along the north, east, and south sides as indicated in Figure 2. On August 22, 1989, soil samples were collected from sampling locations S1 through S8. All samples were analyzed for TPH and BTEX using Modified EPA Method 8015. Additionally, samples from S1, S5, and S7 were analyzed for purgeable halocarbons using EPA Method 8010. On October 4, 1989, locations S4 and S6 were resampled, and the samples analyzed for TPH and BTEX using Modified EPA Method 8015.

4.1 Soil-Quality Results

TPH (characterized as oil) was detected in the sample from S1 taken on August 22, 1989, at a concentration of 540 ppm, but was not detected in the other samples (the laboratory method detection limit is 10 ppm). Toluene was detected in the August 22 samples collected from S4 and S6 at concentrations of 0.7 and 1.4 ppm, respectively, but was not detected in samples taken from S4 and S6 on October 4, 1989. No purgeable halocarbons (EPA Method 8010 compounds) were detected in any

of the samples analyzed. Table 1 summarizes the soil sample analysis results. Chain of custody forms and laboratory data sheets of the soil samples analyzed are included in Appendix A.

5.0 DRILLING AND MONITORING WELL INSTALLATION

On April 16 and 17, 1990, two monitoring wells (MW-1 and MW-1A) were drilled and installed at the Site using a dual-tube air-percussion method. This method consists of driving a dual-tube casing (10-inch outside diameter, 6-inch inside diameter) into the ground, while pressurized air is circulated down the borehole between the inner and outer casing, through the cutting bit, and up the inner tube. The upward pressurized air flow through the inner tube carries drill cuttings to the surface. At the surface, this mixture of air and drill cuttings is run through a cyclone drum to separate the cuttings from the air. Grab samples of drill cuttings were collected at the surface as drilling advanced and were examined visually for lithologic description and boring log preparation.

When the boring was completed, water was injected in the air circulation to clean the inner tube. After all drill cuttings had been removed from the inner tube, the boring was completed as a monitoring well. Premeasured, 4-inch-diameter, schedule 40 polyvinyl chloride (PVC) casing was placed through the inner tube of the drill casing. The lower part of the PVC casing consisted of a measured section of machine-slotted casing or well screen.

The annular space between the PVC slotted casing and the borehole was backfilled with a sand pack. The sand pack was placed by pouring clean silica sand through the space between the PVC casing and the drill casing, while the drill casing was pulled back. The amount of the sand-pack buildup around the well screen was controlled and checked using a weighted tape. The sand pack was placed to about 2 feet above the top of the well screen. Above this sand pack, a 2-foot bentonite seal was placed by pouring bentonite pellets through the annular space between the PVC well casing and the drill casing (as with sand pack placement). The rest of the annular space between the well casing and the borehole was backfilled using a sand-cement grout. The borehole was grouted by pouring the sand-cement mix through the annular space between the well casing and drill casing while removing the drill casing from the borehole. The well was completed by installing a protective cover over the wellhead.

The Work Plan specified drilling and installing one well. This well was to be completed with the screened interval crossing the water table, approximately 15 feet into the saturated zone and 5 feet above it, so that it would be easier to determine if free petroleum product was floating on top of the water table.

Water-table depth at the drill site was estimated to be about 70 feet before drilling and installation of well MW-1 on April 16, 1990. However, during drilling, water was not encountered until the borehole was approximately 84 feet deep, at which point drill cuttings came up moist and wet. Drilling was continued to 96 feet bgs. At that point, depth to water in the borehole was measured at about 84 feet. Drilling was then stopped, and the well casing installed with the well screen placed at a depth interval of 76 to 96 feet. A few hours after the well was completed, the water level in the well was sounded at about a 50-foot depth. Apparently, the water table was shallower than the water level first observed in the borehole. The air pressure during drilling most likely kept the borehole dry and prevented water from flowing into the boring when it penetrated the water table. Because it is important to install a well with the well screen crossing the water table, a second well (MW-1A), located 5 feet from the first one, was drilled and installed on April 17, 1990. This well is 57 feet deep with the well screen located at a depth interval between 37 and 57 feet.

Subsurface sediments encountered in both borings consisted mainly of a thick continuous sandy gravel deposit with occasionally thin (1 to 4 feet) silty interbeds, as presented in the boring logs (Figures 3 and 4).

6.0 GROUND-WATER SAMPLING AND ANALYSIS

On October 25, 1990, the monitoring wells were checked for the presence of floating petroleum product, and ground-water samples were collected. The presence of floating product was checked using a clean product bailer, which was lowered slowly into the well to just below water level. No oily sheen was observed in the water samples from either well. The wells were then developed, purged, and sampled.

Well development was accomplished by pumping and surging the well using a submersible pump. To produce a surge action, pumping was intermittent, and the submersible pump was moved up and down the water column in the well. Well development is intended to enhance hydraulic connection between the well and

the saturated sediments adjacent to the well screen and to clean out sediments left in the well during installation. During pumping, field water-quality measurements were conducted. The amount of water purged during development and the final field measurements are presented in Table 2.

Well MW-1 yielded water continuously at a rate of approximately 10 gallons per minute (gpm). The shallower well MW-1A can only be pumped intermittently, it dewaters fast and recovers slowly. After the purging process was completed, water samples for laboratory analysis were collected. The samples were collected using a clean Teflon bailer, and placed in three laboratory-supplied 40-ml VOA bottles and two 1-liter amber glass bottles. The sample bottles were labeled and stored in a chilled cooler for delivery to the analytical laboratory.

All equipment used in well development and sampling was prewashed with Alconox (a laboratory-grade detergent) and steam cleaned.

6.1 Chemical Analysis Results

Water samples from shallower well MW-1A were analyzed for TPH-Volatile Hydrocarbons and BTEX using EPA Methods 5030/8015 (mod)/8020. Water samples from well MW-1 were extracted and stored, pending analytical results of samples taken from well MW-1A. In the event that MW-1A samples showed significant petroleum hydrocarbon concentrations, then MW-1 water samples would be analyzed to evaluate the possible vertical migration of petroleum hydrocarbons. Analytical results (Table 3) from samples taken from well MW-1A showed no detectable TPH (less than 50 parts per billion [ppb]) and no detectable benzene or ethylbenzene (less than 0.5 ppb), and only a trace of toluene and total xylene isomers (2 ppb) were detected in the sample. Therefore, the MW-1 ground-water sample was not analyzed.

Copies of the chain-of-custody form and the laboratory analytical results sheet are included in Appendix A. Laboratory analysis was carried out by BC Analytical, a State-certified analytical laboratory located in Emeryville, California.

7.0 WATER-LEVEL MEASUREMENTS AND GROUND-WATER FLOW DIRECTION

Depth to water measurements were collected in both monitoring wells on October 25, 1990. At the same time, a survey was carried out to relate relative water levels in monitoring wells MW-1 and MW-1A, Shadowcliffs Lake, and the excavation pits to the north and east of the monitoring wells. The rim of the protective cover of MW-1 was assigned an arbitrary elevation of 200 feet above mean sea level (msl) and was used as a common datum for the water-level survey. Survey results are presented in Table 4.

Based on these relative elevations, a relative ground-water level contour map was drawn in the area bounded by Shadowcliffs Lake and the deep pits to the north and east of the Site (Figure 5). The horizontal ground-water flow direction at the monitoring well location is approximately northeast. The vertical ground-water flow is downward, typical for a recharge area. Based on water elevations in wells MW-1A and MW-1, the downward gradient is approximately 0.105 ft/ft.

8.0 CONCLUSIONS

The highest concentration of TPH (characterized as oil) in soil samples taken from the excavated area was found in sample S1 (540 ppm TPH), located immediately adjacent to the outfall of the drainpipe. These results indicate that the area nearest to the concrete pad contains petroleum-affected soil. Further investigation is needed to define the extent of petroleum products in soil in this area of the excavated pit. Soil sampling at locations S4 and S6 detected toluene concentrations of 0.7 and 1.4 ppm, respectively. However, these results were not confirmed during the second round of sampling, which showed nondetectable results.

Floating product was not detected in any of the monitoring wells. Analytical results of ground-water samples collected from well MW-1A detected very low concentrations of toluene and total xylene isomers, both at 2 ppb. The concentrations of xylenes and toluene are below the drinking water standard Maximum Contaminant Levels (MCLs) of 10 ppm and 1 ppm, respectively, designated by EPA Region IX (Jan. 30, 1991).

9.0 RECOMMENDATIONS

Based on the abovementioned results, we recommend the following actions:

- further soil sampling and analysis when the west side of the pit and the area under the concrete pad are excavated
- analysis of water samples from well MW-1A after 6 months to evaluate possible impacts on water quality. If analysis confirms that water quality is not affected, monitoring can be discontinued.

TABLE 1

SOIL SAMPLE ANALYSIS RESULTS (PPM)

Sampling Location	Date Sampled	Notes	Lab	Type of Analysis	TPH	Benzene	Ethylbenzene	Toluene	Xylenes	8010 Comp.
B-1	22-Aug-89	1)	B&C	Mod. 8015	540.	<0.3	<0.3	<0.3	<0.3	-
	22-Aug-89	2)	B&C	8010	-	-	-	-	-	<0.01
S-2	22-Aug-89		B&C	Mod. 8015	<10.	<0.3	<0.3	<0.3	<0.3	-
S-3	22-Aug-89		B&C	Mod. 8015	<10.	<0.3	<0.3	<0.3	<0.3	-
S-4	22-Aug-89		B&C	Mod. 8015	<10.	<0.3	<0.3	0.7	<0.3	-
	04-Oct-89		B&C	Mod. 8015	<10.	<0.3	<0.3	<0.3	<0.3	-
S-5	22-Aug-89		B&C	Mod. 8015	<10.	<0.3	<0.3	<0.3	<0.3	-
	22-Aug-89	2)	B&C	8010	-	-	-	-	-	<0.01
S-6	22-Aug-89		B&C	Mod. 8015	<10.	<0.3	<0.3	1.4	<0.3	-
	04-Oct-89		B&C	Mod. 8015	<10.	<0.3	<0.3	<0.3	<0.3	-
S-7	22-Aug-89		B&C	Mod. 8015	<10.	<0.3	<0.3	<0.3	<0.3	-
	22-Aug-89	2)	B&C	8010	-	-	-	-	-	<0.01
S-8	22-Aug-89		B&C	Mod. 8015	<10.	<0.3	<0.3	<0.3	<0.3	-

Notes:

1) TPH characterized as oil
2) All EPA method 8010 were below detection limits
Concentrations in mg/kg

TABLE 2

SUMMARY OF FIELD WATER-QUALITY PARAMETERS
MEASURED DURING SAMPLING
RMC LONESTAR, ELIOT PLANT
Pleasanton, California

Well No.	Date	Volume Withdrawn (gal)	Temp. (deg. C)	pH	Specific Conductance (umhos/cm)
MW-1	Oct. 25, 1990	480	18.5	7.06	836
MW-1A	Oct. 25, 1990	25	18.5	7.12	1044

TABLE 3

GROUND-WATER SAMPLE ANALYSIS RESULTS (PPB)

Well #	Date Sampled	Notes	Lab	Type of Analysis	TPH	Benzene	Ethylbenzene	Toluene	Xylenes	C4 to C12 Hydrocarbons
MW-1A	25-Oct-89		B&C	5030/ 8015(mod)/8020	<50.	<0.5	<0.5	2.	2.	<50.

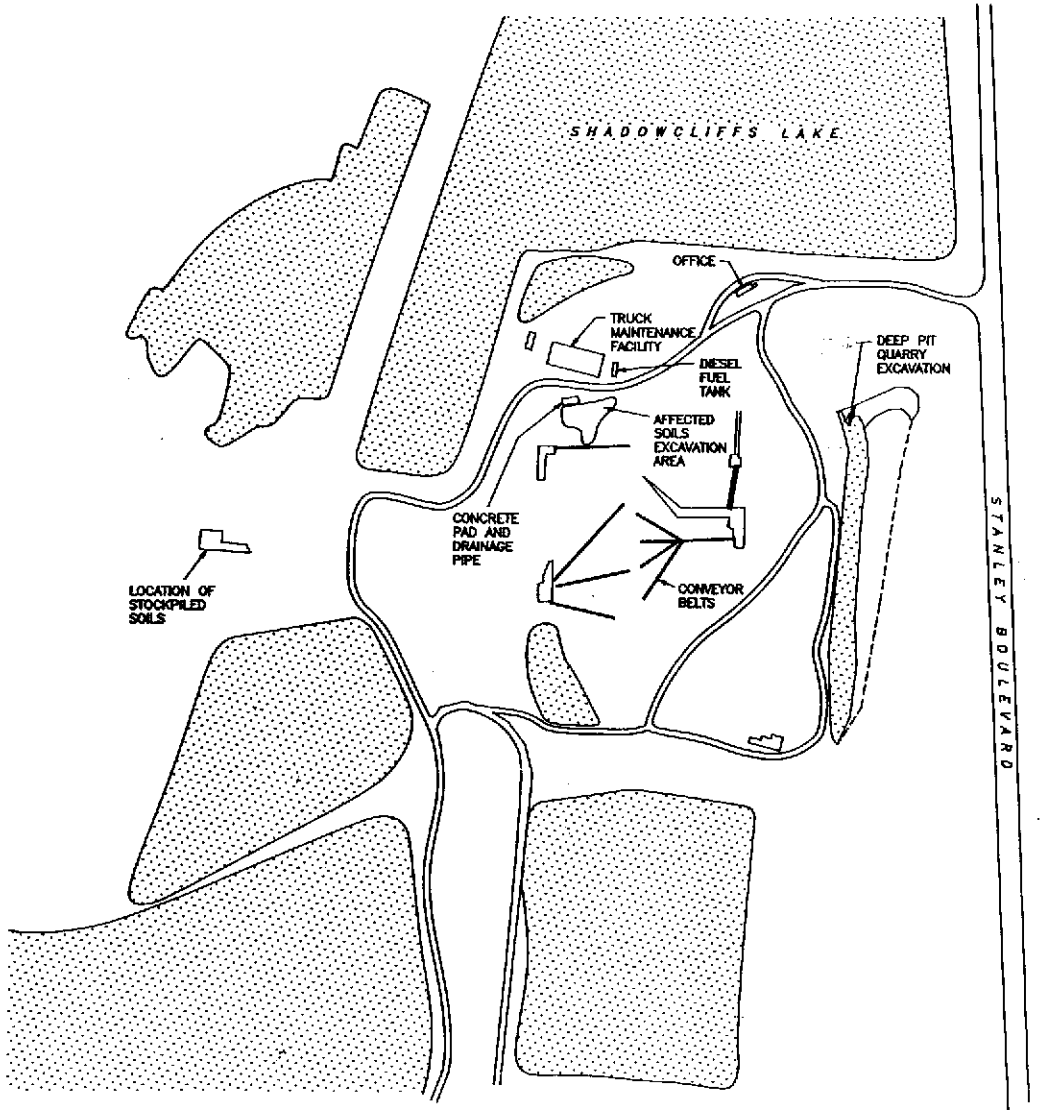
TABLE 4

RELATIVE WATER-LEVEL ELEVATIONS(a)
RMC LONESTAR, ELIOT PLANT
Pleasanton, California

Location	Water-Level Elevation
MW-1A	155.36
MW-1	151.90
Shadowlake	166.0
North Pit	142.5
West Pit	124.8

Note:

(a) Relative to arbitrary datum of MW-1 at 200 feet



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0 500 FEET

Figure 1 :

SITE PLAN

Project No. 1667 LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

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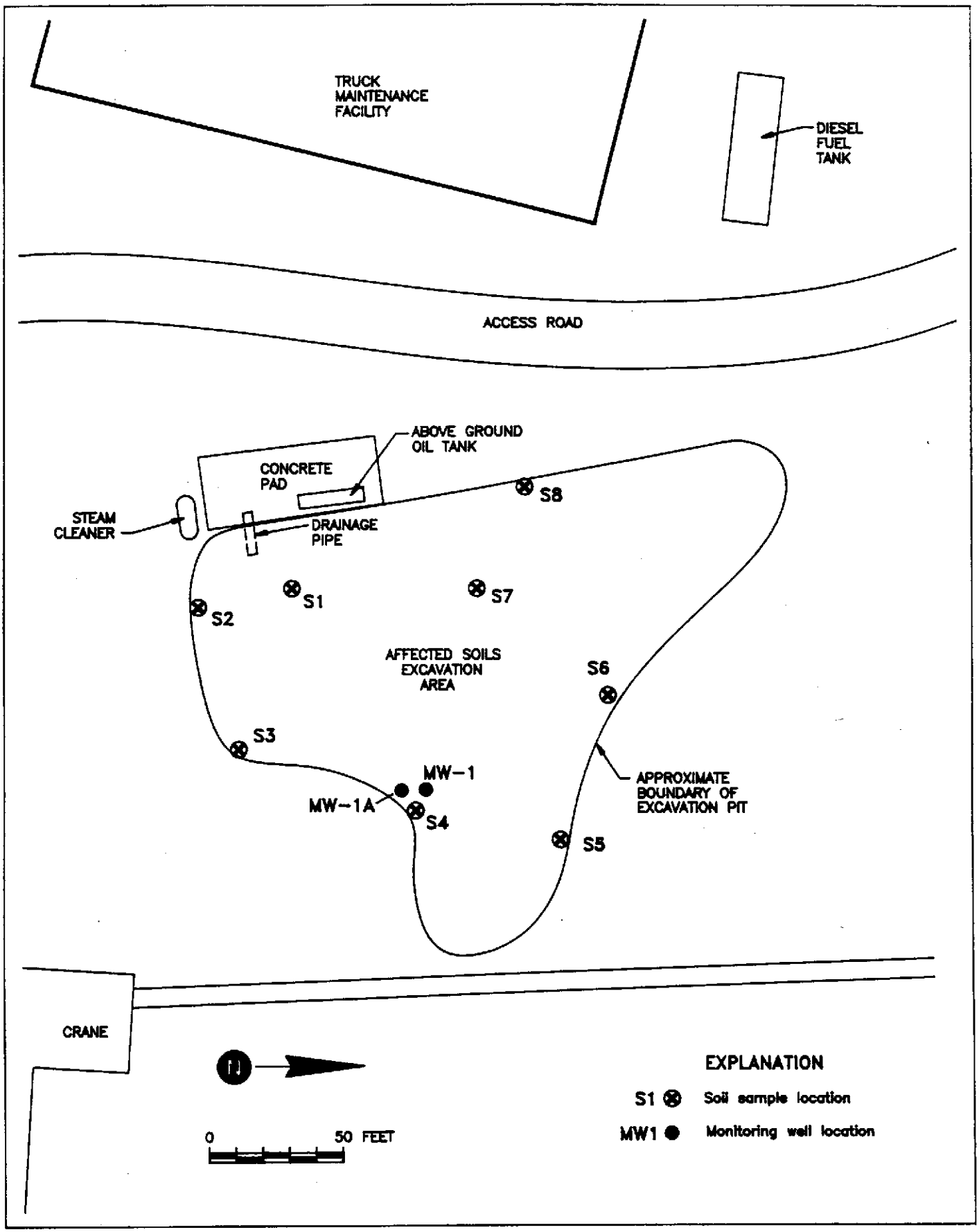

Figure 2 : MONITORING WELL AND SOIL SAMPLING LOCATIONS

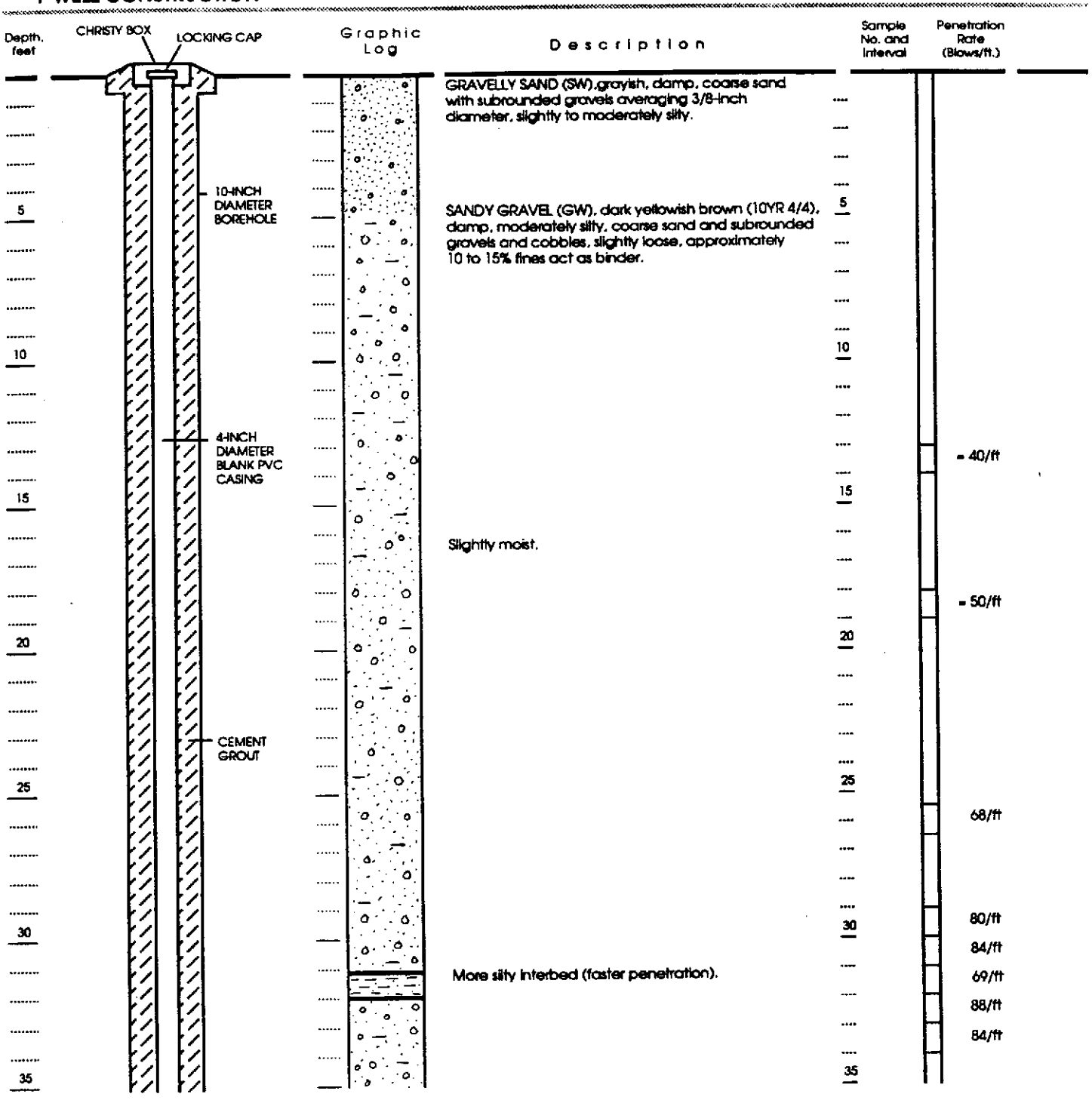

Figure 3a : WELL CONSTRUCTION AND LITHOLOGY FOR MONITORING WELL MW-1 (page 1 of 3)

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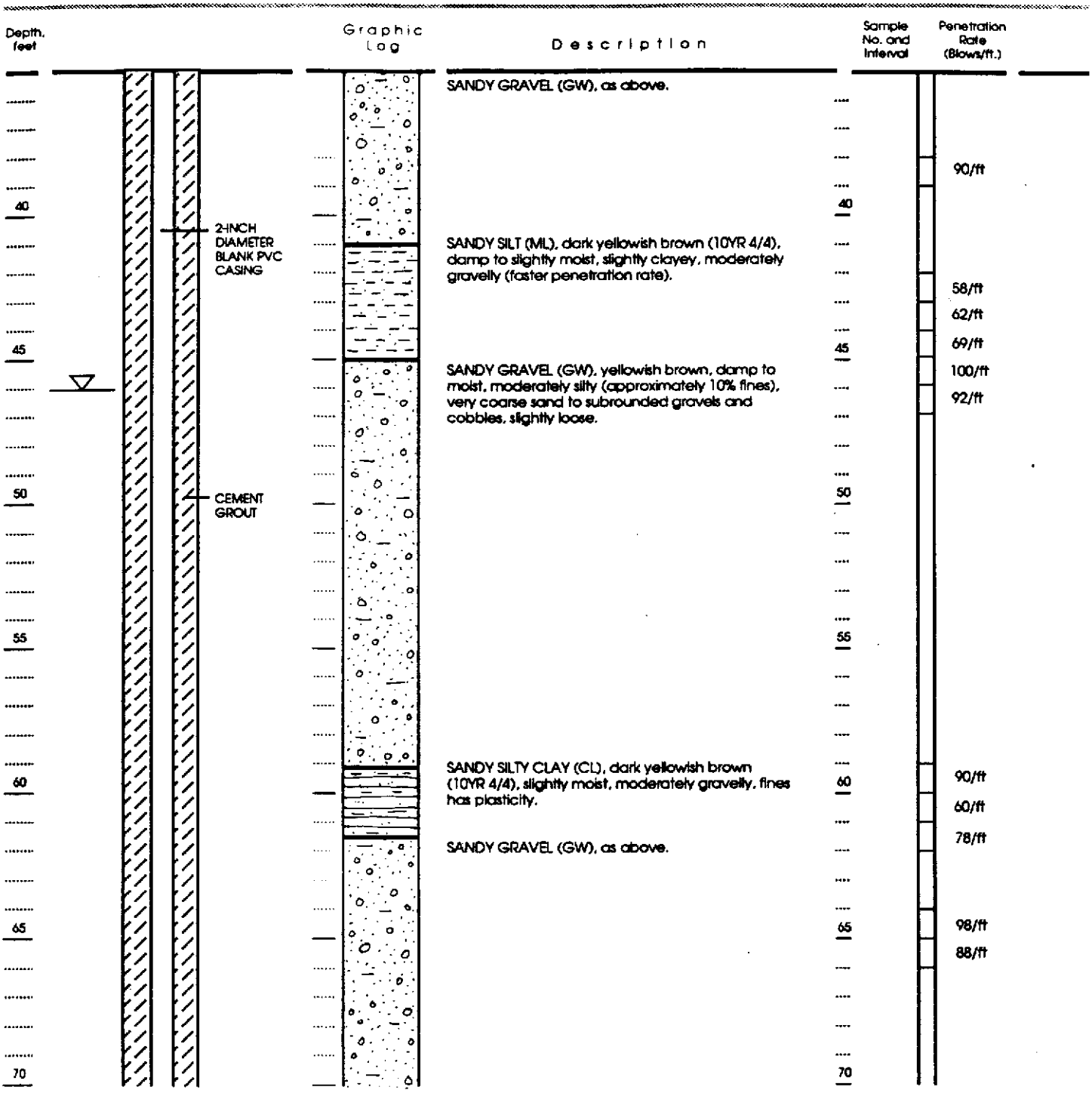

Figure 3b : WELL CONSTRUCTION AND LITHOLOGY FOR MONITORING WELL [redacted] (page 2 of 3)

Project No. 1667

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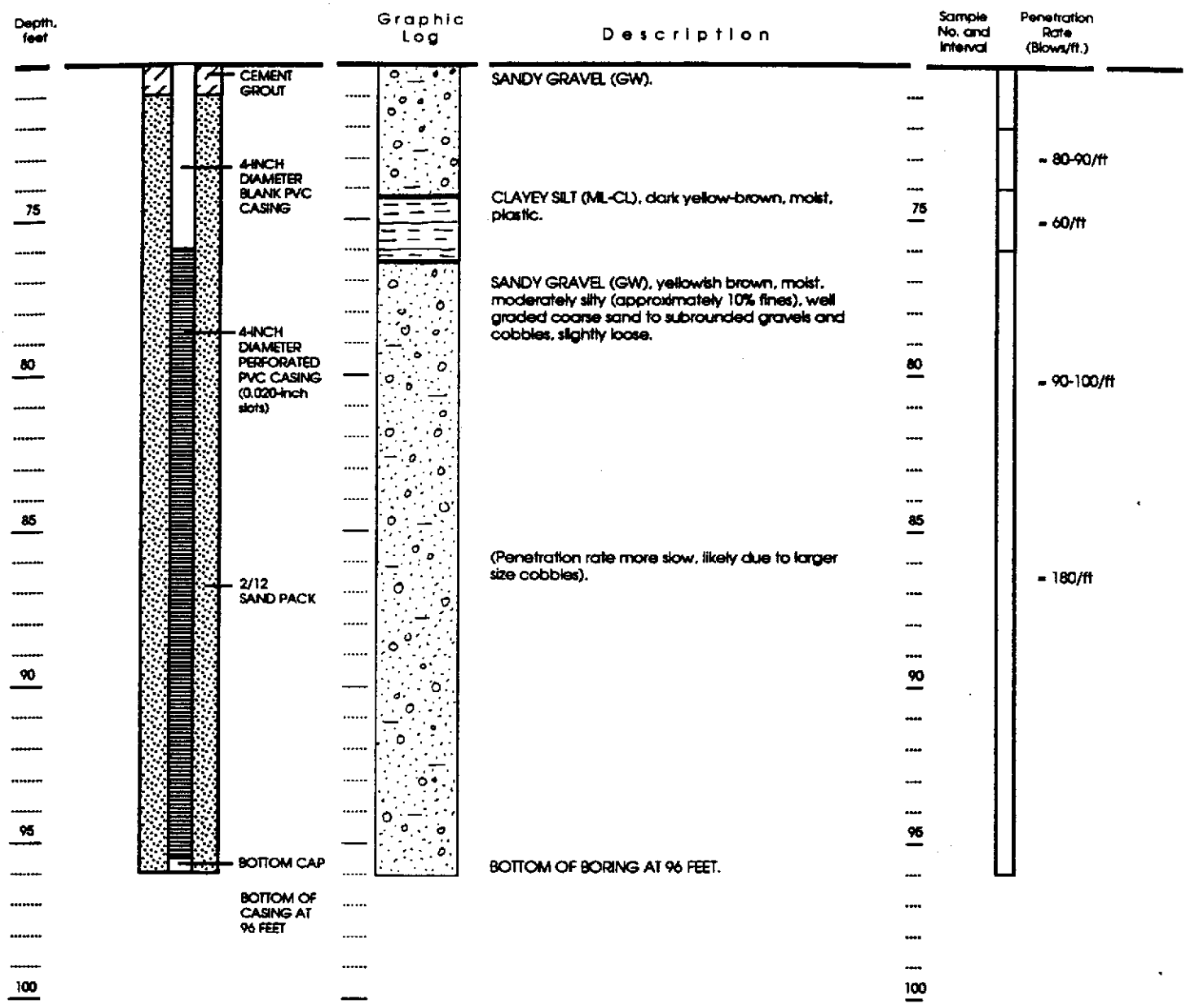

EXPLANATION

Clay
Silt
Sand
Gravel

Well Permit No. 90217
Date well drilled: 16 April 1990
Date water level measured: 25 October 1990
Well elevation:
LF Geologist: Tom Zakaria

Ground-water level

Approved by:

Figure 3c : WELL CONSTRUCTION AND LITHOLOGY FOR MONITORING WELL MW-1 (page 3 of 3)

Project No. 1667

LEVINE • FRICKE
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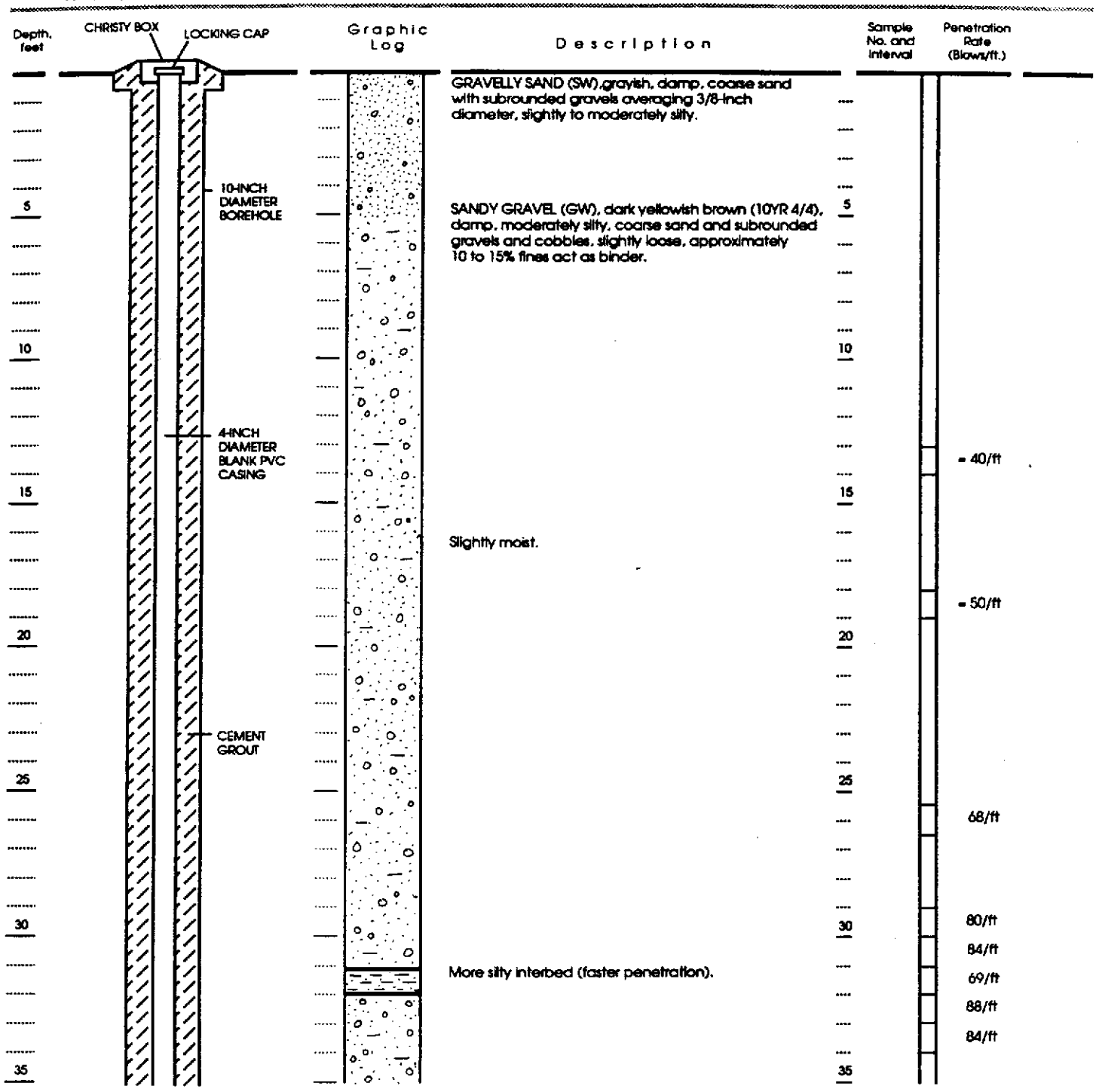

Figure 4a : WELL CONSTRUCTION AND LITHOLOGY FOR MONITORING WELL [redacted] (page 1 of 2)

Project No. 1667

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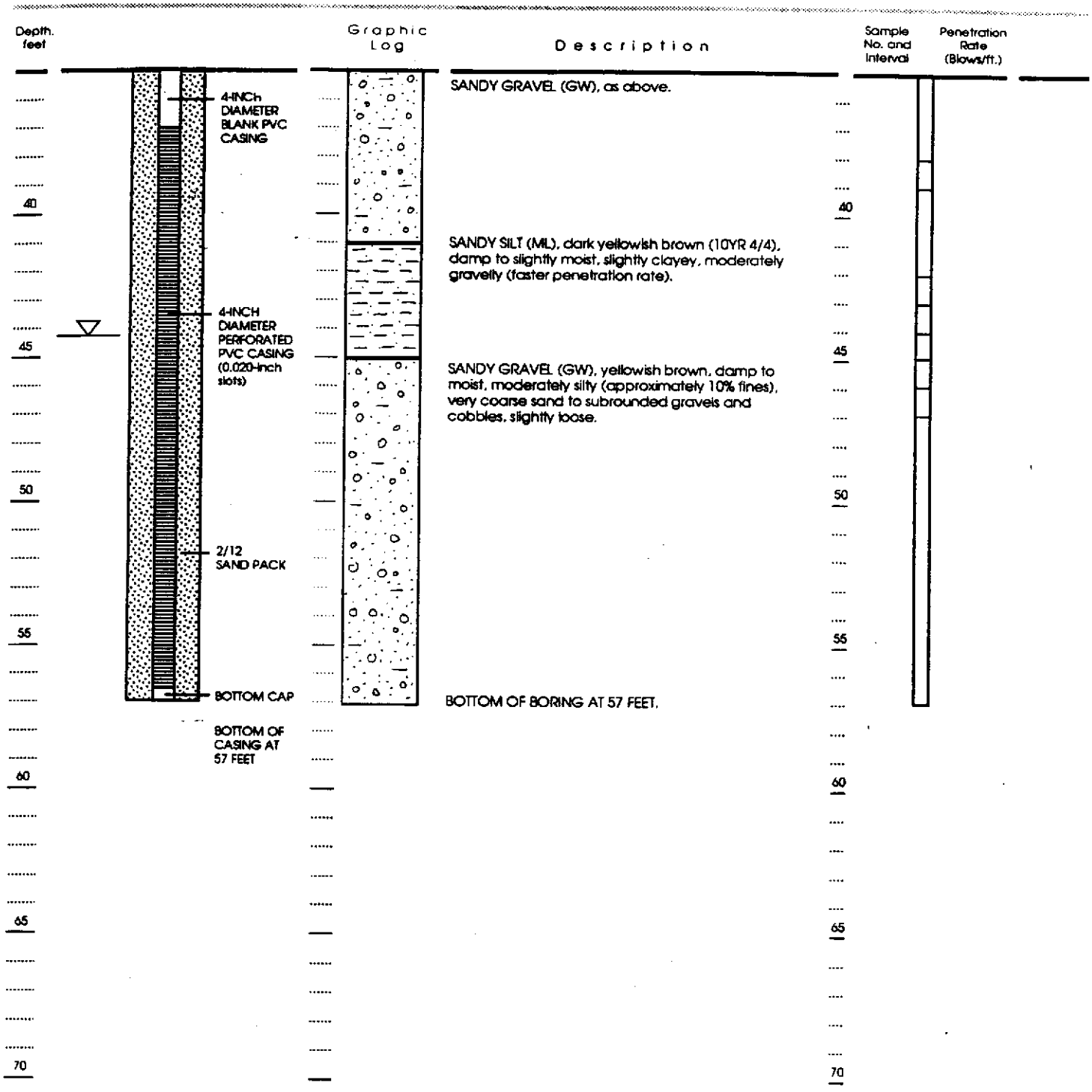

EXPLANATION

Clay
Silt
Sand
Gravel

Well Permit No. 90217
Date well drilled: 17 April 1990
Date water level measured: 25 October 1990
Well elevation:
LF Geologist: Tom Zakaria

Ground-water level

Approved by:

Figure 4b : WELL CONSTRUCTION AND LITHOLOGY FOR MONITORING WELL MW-1A (page 2 of 2)

Project No. 1667

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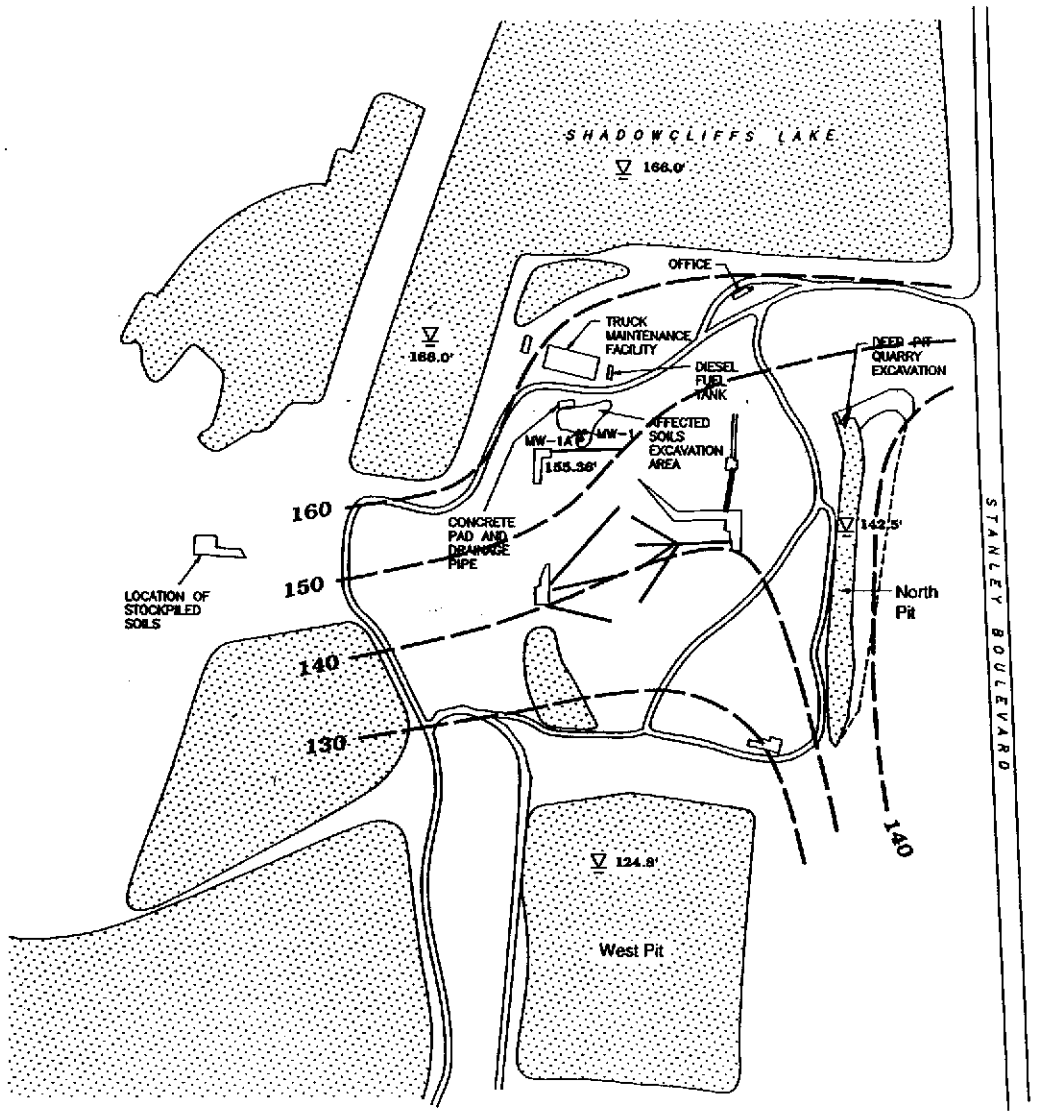

N

EXPLANATION

- • Monitoring well location
- 124.8' ▽ Ground-water table (feet)
- —130— Ground-water table contour (feet)

Note: Elevations refer to a local bench mark; top of steel protective cover of well W-1A (arbitrary elevation is 200 feet).

0 300 FEET

Figure 5 :
RELATIVE GROUND-WATER ELEVA
CONTOUR MAP
OCTOBER 25, 1990

Project No. 1667

LEVIN

1667\81PE0491.TXZ\em

APPENDIX A

LABORATORY ANALYTICAL RESULTS

BROWN AND CALDWELL LABORATORIES
1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: E89-08-478

Received: 22 AUG 89
Reported: 07 SEP 89

Dr. Akali Igbene
Levine - Fricke
1900 Powell Street 12th Floor
Emeryville, California 94608
CC: Roger Leventhal

Project: 1667

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
08-478-1	S-1	22 AUG 89
08-478-2	S-5	22 AUG 89
08-478-3	S-7	22 AUG 89

PARAMETER	08-478-1	08-478-2	08-478-3
TPH and BTEX - Modified 8015			
Date Analyzed	09.01.89	09.01.89	09.01.89
Dilution Factor, Times	1	1	1
Benzene, mg/kg	<0.3	<0.3	<0.3
Ethylbenzene, mg/kg	<0.3	<0.3	<0.3
Toluene, mg/kg	<0.3	<0.3	<0.3
Total Xylene Isomers, mg/kg	<0.3	<0.3	<0.3
Total Fuel Hydrocarbons, mg/kg	540	<10	<10
Fuel Characterization, .	OIL	---	---

This fuel characterization is a qualitative identification based upon a visual comparison of sample chromatograms with thos from authentic standards.

BROWN AND CALDWELL LABORATORIES
1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

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08-478-1	S-1	22 AUG 89
08-478-2	S-5	22 AUG 89
08-478-3	S-7	22 AUG 89

PARAMETER	08-478-1	08-478-2	08-478-3
EPA Method 8010			
Date Analyzed	08.28.89	08.29.89	09.02.89
Date Extracted	08.28.89	08.28.89	09.01.89
1,1,1-Trichloroethane, mg/kg	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane, mg/kg	<0.01	<0.01	<0.01
1,1,2-Trichloroethane, mg/kg	<0.01	<0.01	<0.01
1,1-Dichloroethane, mg/kg	<0.01	<0.01	<0.01
1,1-Dichloroethene, mg/kg	<0.01	<0.01	<0.01
1,2-Dichloroethane, mg/kg	<0.01	<0.01	<0.01
1,2-Dichlorobenzene, mg/kg	<0.01	<0.01	<0.01
1,2-Dichloroethene (Total), mg/kg	<0.01	<0.01	<0.01
1,2-Dichloropropane, mg/kg	<0.01	<0.01	<0.01
1,3-Dichlorobenzene, mg/kg	<0.01	<0.01	<0.01
1,4-Dichlorobenzene, mg/kg	<0.01	<0.01	<0.01
2-Chloroethylvinylether, mg/kg	<0.01	<0.01	<0.01
Bromodichloromethane, mg/kg	<0.01	<0.01	<0.01
Bromomethane, mg/kg	<0.01	<0.01	<0.01
Bromoform, mg/kg	<0.01	<0.01	<0.01
Chlorobenzene, mg/kg	<0.01	<0.01	<0.01
Carbon Tetrachloride, mg/kg	<0.01	<0.01	<0.01
Chloroethane, mg/kg	<0.01	<0.01	<0.01
Chloroform, mg/kg	<0.01	<0.01	<0.01
Chloromethane, mg/kg	<0.01	<0.01	<0.01
Dibromochloromethane, mg/kg	<0.01	<0.01	<0.01
Dichlorodifluoromethane, mg/kg			

SEP 2

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1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

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08-478-3	S-7	22 AUG 89

PARAMETER	08-478-1	08-478-2	08-478-3
Freon 113, mg/kg	<0.01	<0.01	<0.01
Methylene chloride, mg/kg	<0.01	<0.01	<0.01
Trichloroethene, mg/kg	<0.01	<0.01	<0.01
Trichlorofluoromethane, mg/kg	<0.01	<0.01	<0.01
Tetrachloroethene, mg/kg	<0.01	<0.01	<0.01
Vinyl chloride, mg/kg	<0.01	<0.01	<0.01
Cis-1,3-Dichloropropene, mg/kg	<0.01	<0.01	<0.01
trans-1,3-Dichloropropene, mg/kg	<0.01	<0.01	<0.01

SEP 2

BROWN AND CALDWELL LABORATORIES
1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: E89-08-478

Received: 22 AUG 89
Reported: 07 SEP 89

Dr. Akali Igbene
Levine - Fricke
1900 Powell Street 12th Floor
Emeryville, California 94608
CC: Roger Leventhal

Project: 1667

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
08-478-4	S-2	22 AUG 89
08-478-5	S-3	22 AUG 89
08-478-6	S-4	22 AUG 89
08-478-7	S-6	22 AUG 89
08-478-8	S-8	22 AUG 89

PARAMETER	08-478-4	08-478-5	08-478-6	08-478-7	08-478-8
TPH and BTEX - Modified 8015					
Date Analyzed	09.01.89	09.01.89	08.29.89	08.29.89	09.01.89
Dilution Factor, Times	1	1	1	1	1
Benzene, mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3
Ethylbenzene, mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3
Toluene, mg/kg	<0.3	<0.3	0.7	1.4	<0.3
Total Xylene Isomers, mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3
Total Fuel Hydrocarbons, mg/kg	<10	<10	<10	<10	<10
Other TPH and BTEX - Modified 8015	---	---	---	---	---

S. D. Lessley

Sim D. Lessley, Ph.D., Laboratory Director

SEP 12 [illegible]

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

LOG # 8908478

Project No.: 1667	Field Logbook No.:	Date: 8/22/89	Serial No.: № 4959
Project Name: LONESTAR PLEASANTON	Project Location: PLEASANTON, CA		
Sampler (Signature): Michael J. Barkett			Samplers: MJB / RDL

SAMPLES						ANALYSES								
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	EPA 601	EPA 624	EPA 8010	EPA 8015			HOLD	RUSH	REMARKS
S-1	8/22	1416		1-JAR	SOIL			X	X					NORMAL TURNAROUND
S-2		1419							X					
S-3		1422							X					SEND RESULTS ATTN:
S-4		1425							X					ROGER LEVENTHAL
S-5		1428						X	X					
S-6		1430							X					
S-7		1432						X	X					
S-8	↓	1435		↓	↓				X					

RELINQUISHED BY: (Signature) Michael J. Barkett	DATE 8/22/89	TIME 1600	RECEIVED BY: (Signature)	DATE 8/22/89	TIME 1600
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS:		

Sample Collector: LEVINE-FRICKE
1900 Powell Street, 12th Floor
Emeryville, Ca 94608
(415) 652-4500

Analytical Laboratory: BROWN AND CALDWELL
1255 POWELL ST
(415) 928-2300 EMERYVILLE, CA 94608
ATTN: TONY BRAUN

Shipping Copy (White) Lab Copy (Green) File Copy (Yellow) Field Copy (Pink) FORM NO. 86/COC/ARF

1667

BROWN AND CALDWELL LABORATORIES
1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: E89-10-053
Received: 04 OCT 89
Reported: 20 OCT 89

Dr. Akali Igbene
Levine - Fricke
1900 Powell Street 12th Floor
Emeryville, California 94608

Project: 1667

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
10-053-1	S-4A	04 OCT 89
10-053-2	S-6A	04 OCT 89

PARAMETER	10-053-1	10-053-2
TPH and BTEX - Modified 8015		
Date Analyzed	10.12.89	10.12.89
Dilution Factor, Times	1	1
Benzene, mg/kg	<0.3	<0.3
Ethylbenzene, mg/kg	<0.3	<0.3
Toluene, mg/kg	<0.3	<0.3
Total Xylene Isomers, mg/kg	<0.3	<0.3
Total Fuel Hydrocarbons, mg/kg	<10	<10
Other TPH and BTEX - Modified 8015	---	---

Sim D. Lessley, Ph.D. / Laboratory Director

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: 1667	Field Logbook No.:	Date: 10-4-89	Serial No.: № 4990
Project Name: LONESTAR ELIOT	Project Location: PLEASANTON, CA		
Sampler (Signature):			Samplers: RDL

SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CON-TAINERS	SAMPLE TYPE	EPA 601	EPA 624	MOD 8015				HOLD	RUSH	REMARKS
1	10-4-89				S			✓						S-4A
2	10-4-89				S			✓						S-6A
														ANALYZE FOR TPH & BTEX

RELINQUISHED BY: (Signature) [signature]	DATE 10-4-89	TIME 1038	RECEIVED BY: (Signature) Ulysses J Bellon	DATE 10/4/89	TIME 1038
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS: 8910053		

Sample Collector: LEVINE-FRICKE
1900 Powell Street, 12th Floor
Emeryville, Ca 94608
(415) 652-4500

Analytical Laboratory: BC - EVILLE

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FORM NO. 86/COC/ARF

FILE
1667

Analytical Report

LOG NO: E90-10-638

Received: 26 OCT 90
Reported: 06 NOV 90

Mr. Glenn Leong
Levine - Fricke
1900 Powell Street 12th Floor
Emeryville, California 94608

Project: 1667

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
10-638-1	MW-1A-1	25 OCT 90
10-638-2	MW-1-1	25 OCT 90

PARAMETER	10-638-1	10-638-2
Diesel Method 3510		
Date Analyzed	11.01.90	---
Dilution Factor, Times	1	---
Total Fuel Hydrocarbons, ug/L	<50	---
Other Diesel Method 3510	---	---
TPH-Volatile Hydrocarbons/BTEX		
Date Analyzed	10.27.90	---
Dilution Factor, Times	1	---
Benzene, ug/L	<0.5	---
Ethylbenzene, ug/L	<0.5	---
Toluene, ug/L	2*	---
Total Xylene Isomers, ug/L	2*	---
C4 to C12 Hydrocarbons, ug/L	<50	---
Other TPH-Volatile Hydrocarbons/BTEX	---	---

* Please Note: Compounds were confirmed by second column analysis.
As requested, Sample MW-1-1 was extracted by EPA method 3510,
but not analyzed for Diesel hydrocarbons.
T. Blake 10.08.90

Sim D. Lessley, Ph.D., Laboratory Director

NOV - 9 1990

1255 Powell Street
Emeryville, CA 94608

415/428-2300
Fax: 415/547-3643

BCA B C Analytical

BATCH QC REPORT: Definitions and Terms

Accuracy	The ability of a procedure to determine the "true" concentration of an analyte
Precision	The reproducibility of a procedure demonstrated by the agreement between analyses performed on either duplicates of the same sample or a pair of duplicate spikes
Batch	A group of samples analyzed sequentially using the same calibration curve, reagents, and instrument
Laboratory Control Standard (LCS)	Laboratory reagent water spiked with known compounds and subjected to the same procedures as the samples. The LCS thus indicates the accuracy of the analytical method and, because it is prepared from a different source than the standard used to calibrate the instrument, it also serves to double-check the calibration
Matrix QC	Quality control tests performed on actual client samples. For most inorganic analyses, the laboratory uses a pair of duplicate samples and a spiked sample. For most organic analyses, the laboratory uses a pair of spiked samples (duplicate spikes)
LC Result	Laboratory result of an LCS analysis
LT Result	Expected result, or true value, of the LCS analysis
R1, R2 Result:	Result of the analysis of replicate aliquots of a sample, with R1 indicating the first analysis of the sample and R2 its corresponding duplicate; used to determine precision
S1, S2 Result	Result of the analysis of replicate spiked aliquots, with S1 indicating one spike of the sample and S2 the second spike; used to determine precision and accuracy
R Bar Result	The average of replicate analysis results
S Bar Result:	The average of spike analysis results
True value	The theoretical, or expected, result of a spike sample analysis
Percent Recovery	The percentage of analyte recovered. For LCS, the percent recovery calculation is: $LC \div LT \times 100$ For spike recoveries, the percent recovery calculatiion is: $\frac{(\text{S Bar - Sample Concentration})}{\text{Spike Amount}} \times 100$
Relative Percent Difference (RPD)	Calculated using one of the following: $\frac{(R1 - R2) \times 100}{(R1 + R2) \div 2}$ $\frac{(S1 - S2) \times 100}{(S1 + S2) \div 2}$
Blank Result	The result of the analysis of a method blank,which is reagent water that is analysed using the same reagents, instruments and procedures as the samples in a batch; used to determine laboratory contamination
Reporting Detection Limit (RDL)	BCA-assigned limit based on—but not the same as—method detection limits (MDLs) determined using EPA guidelines

LES...	SAMPLE DESCRIPTION..	DETERM CODE....	DATE.... ANALYZED	METHOD.....	EQUIP.	BATCH	ID.NO
638*1	MW-1A-1	3510.DIESEL	11.01.90	3510/8015	516-08	250	7754
		GAS.5030.BTEX	10.27.90	5030/8015	516-19	277	7754
638*2	MW-1-1	3510.DIESEL	11.01.90	3510/8015	516-08	250	7754

Notes: Equipment = BC Analytical identification number for a particular piece of analytical equipment.

ID.NO = BC Analytical employee identification number of analyst.

BC ANALYTICAL

BATCH QC REPORT
ORDER: E9010638

ATE REPORTED : 11/07/90

LABORATORY CONTROL STANDARDS

PARAMETER	DATE ANALYZED	BATCH NUMBER	LC RESULT	LT RESULT	UNIT	PERCENT RECOVERY
esel Method 3510						
Dilution Factor	11.01.90	250	1	1	Times	100
Total Fuel Hydrocarbons	11.01.90	250	520	1000	ug/L	52
H-Volatile Hydrocarbons/BTEX						
Dilution Factor	10.27.90	277	1	1	Times	100
Benzene	10.27.90	277	23	25	ug/L	92
Ethylbenzene	10.27.90	277	24	25	ug/L	96
Toluene	10.27.90	277	24	25	ug/L	96
Total Xylene Isomers	10.27.90	277	52	50	ug/L	104
C4 to C12 Hydrocarbons	10.27.90	277	410	470	ug/L	87

BC ANALYTICAL

BATCH QC REPORT
ORDER: E9010638

ATE REPORTED : 11/07/90

MATRIX QC PRECISION (DUPLICATE SPIKES)

RAMETER	DATE ANALYZED	BATCH NUMBER	S1 RESULT	S2 RESULT	UNIT	RELATIVE %DIFF
esel Method 3510						
Dilution Factor	11.01.90	250	1	1	Times	0
Total Fuel Hydrocarbons	11.01.90	250	1100	1200	ug/L	9
H-Volatile Hydrocarbons/BTEX						
Dilution Factor	10.27.90	277	1	1	Times	0
Benzene	10.27.90	277	250	250	ug/L	0
Ethylbenzene	10.27.90	277	32	33	ug/L	3
Toluene	10.27.90	277	44	44	ug/L	0
Total Xylene Isomers	10.27.90	277	440	450	ug/L	2
C4 to C12 Hydrocarbons	10.27.90	277	1200	1200	ug/L	0
H-Volatile Hydrocarbons/BTEX						
Dilution Factor	10.27.90	277	1	1	Times	0
Benzene	10.27.90	277	23	23	ug/L	0
Ethylbenzene	10.27.90	277	24	24	ug/L	0
Toluene	10.27.90	277	24	24	ug/L	0
Total Xylene Isomers	10.27.90	277	52	52	ug/L	0
C4 to C12 Hydrocarbons	10.27.90	277	400	390	ug/L	3
H-Volatile Hydrocarbons/BTEX						
Dilution Factor	10.27.90	277	1	1	Times	0
Benzene	10.27.90	277	23	23	ug/L	0
Ethylbenzene	10.27.90	277	24	24	ug/L	0
Toluene	10.27.90	277	24	24	ug/L	0
Total Xylene Isomers	10.27.90	277	52	53	ug/L	2
C4 to C12 Hydrocarbons	10.27.90	277	390	400	ug/L	3

BC ANALYTICAL

BATCH QC REPORT
ORDER: E9010638

TE REPORTED : 11/07/90

MATRIX QC ACCURACY (SPIKES)

ARAMETER	DATE ANALYZED	BATCH NUMBER	SBAR RESULT	TRUE RESULT	RBAR RESULT	UNIT	PERCENT RECOVERY
sel Method 3510							
Total Fuel Hydrocarbons	11.01.90	250	1150	2000	<50	ug/L	58
PH-Volatile Hydrocarbons/BTEX							
Benzene	10.27.90	277	250	260	240	ug/L	SOR
Ethylbenzene	10.27.90	277	32.5	34	9.1	ug/L	94
Toluene	10.27.90	277	44	45	20	ug/L	96
Total Xylene Isomers	10.27.90	277	445	470	420	ug/L	SOR
C4 to C12 Hydrocarbons	10.27.90	277	1200	1400	910	ug/L	59
PH-Volatile Hydrocarbons/BTEX							
Benzene	10.27.90	277	23	25	<0.5	ug/L	92
Ethylbenzene	10.27.90	277	24	25	<0.5	ug/L	96
Toluene	10.27.90	277	24	25	<0.5	ug/L	96
Total Xylene Isomers	10.27.90	277	52	50	<0.5	ug/L	104
C4 to C12 Hydrocarbons	10.27.90	277	395	470	<50	ug/L	84
-Volatile Hydrocarbons/BTEX							
Benzene	10.27.90	277	23	25	<0.5	ug/L	92
Ethylbenzene	10.27.90	277	24	25	<0.5	ug/L	96
Toluene	10.27.90	277	24	25	<0.5	ug/L	96
Total Xylene Isomers	10.27.90	277	52.5	50	<0.5	ug/L	105
C4 to C12 Hydrocarbons	10.27.90	277	395	470	<50	ug/L	84

R = Spike Out of Range

BC ANALYTICAL

BATCH QC REPORT
ORDER: E9010638

DATE REPORTED : 11/07/90

METHOD BLANKS AND REPORTING DETECTION LIMIT (RDL)

PARAMETER	DATE ANALYZED	BATCH NUMBER	BLANK RESULT	RDL	UNIT
Diesel Method 3510					
Date Analyzed	11.01.90	250	1.01.90	NA	Date
Dilution Factor	11.01.90	250	1	NA	Times
Total Fuel Hydrocarbons	11.01.90	250	18	50	ug/L
BTEH-Volatile Hydrocarbons/BTEX					
Date Analyzed	10.27.90	277	0.27.90	NA	Date
Dilution Factor	10.27.90	277	1	NA	Times
Benzene	10.27.90	277	0	0.5	ug/L
Ethylbenzene	10.27.90	277	0	0.5	ug/L
Toluene	10.27.90	277	0.36	0.5	ug/L
Total Xylene Isomers	10.27.90	277	0.36	0.5	ug/L
C4 to C12 Hydrocarbons	10.27.90	277	2.4	50	ug/L

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

LOG# 9010638

Project No.: 1667	Field Logbook No.:	Date: 10/25/90	Serial No.: № 6000
Project Name: RMC Lonestar - Eliott	Project Location: Pleasanton		
Sampler (Signature): [signature]			Samplers: TXZ

SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	EPA 601	EPA 624					HOLD	RUSH	REMARKS
MW-1A-1	10/25	pm	(1400)	3 VOA	H_2O	} → GAS/BTX 8015/8020								
-"-	"	"		2, 1l.		Diesel method 3510								
MW-1-1	10/25	am	(11:30)	3 VOA	H_2O	}	—	"	—					} → Extract and Hold !
MW-1-1	-"-	---		2, 1l										

RELINQUISHED BY: (Signature) [signature]	DATE 10/24/90	TIME 12:00	RECEIVED BY: (Signature) [signature]	DATE 10/24/90	TIME 1200
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT: Hand delivered	DATE	TIME	LAB COMMENTS:		

Sample Collector: LEVINE-FRICKE
1900 Powell Street, 12th Floor
Emeryville, Ca 94608
(415) 652-4500

Analytical Laboratory: B&C

Shipping Copy (White) Lab Copy (Green) File Copy (Yellow) Field Copy (Pink)

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