



A RESNA Company

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RESNA

Environmental Solutions
Through Applied Science,
Engineering & Construction

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LETTER REPORT
GROUND-WATER MONITORING
SECOND QUARTER

at

BP Facility No. 11124

3315 High Street

Oakland, California

Job No. 30061-2

94619

Nov 6, 1991



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November 6, 1991

Mr. Peter DeSantis
BP Oil Company
2868 Prospect Park Drive
Suite 360
Rancho Cordova, California 95670

Subject: Ground-Water Monitoring, Second Quarter 1991, at BP Facility No. 11124,
3315 High Street, Oakland, California.

Mr. DeSantis:

At the request of BP Oil Company (BP), RESNA Industries (RESNA, formerly Applied GeoSystems) performed the second quarter, 1991 ground-water monitoring event at the site and is submitting this letter report on the sampling of ground water in the three monitoring wells at BP Facility No. 11124. The subject site is on the northwest corner of High Street and Porter Street in Oakland, California, as shown on the Site Vicinity Map (Plate 1). The purpose of this sampling is to evaluate the ground-water quality, flow direction, and gradient beneath the site. The work for this ground-water monitoring event included subjectively analyzing ground water from the three monitoring wells, collecting and analyzing ground-water samples for gasoline hydrocarbons, and evaluating the ground-water flow direction and gradient beneath the site.

BACKGROUND

It is our understanding, based on conversations with personnel of BP, that two 10,000-gallon underground storage tanks, one 12,000-gallon underground storage tank, and one waste-oil tank are currently at the site. We currently do not know the capacity of the waste-oil tank. We understand the 10,000- and 12,000-gallon tanks are used to store regular and unleaded gasoline, respectively. The locations of the monitoring wells and site features are shown on the Generalized Site Plan (Plate 2).

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BP Facility No. 11124, Oakland, California

RESNA

In July 1986, Kaprealian Engineering, Inc. (Kaprealian) of Martinez, California, installed three ground-water monitoring wells (MW-1 through MW-3) at the site for Mobil Oil Corporation (the previous property owner). Samples of ground water collected from each well did not contain detectable concentrations of gasoline hydrocarbons (Kaprealian Engineering, Inc., September 6, 1986, Report No. KEI-J86-042). In addition, according to the conclusions and recommendations in the referenced Kaprealian report, a sufficient volume of soil had been removed from the site to significantly reduce adverse environmental impact to the ground water; therefore, Kaprealian recommended no further monitoring at the site.

On November 12, 1990, at the request of BP (the current property owner) a geologist from RESNA collected a ground water sample from wells MW-1 and MW-2. A sample was not obtained from well MW-3 due to an obstruction in the well. Analytical results for water samples collected from wells MW-1 and MW-2 indicated hydrocarbons were below the laboratory's limits of detection (Applied GeoSystems, February 13, 1991, Letter Report 30061-1).

On May 13 and 14, 1991, a geologist from RESNA observed the abandonment of well MW-3, the installation of well MW-4, and the drilling of two soil borings adjacent to the waste-oil tank. Soil samples collected during drilling were analyzed for total petroleum hydrocarbons as gasoline (TPHg) and diesel (TPHd), benzene, toluene, ethylbenzene, and total xylene isomers (BTEX), total oil and grease (TOG), nonhalogenated volatile organic compounds, selected metals, and haloethers. Toluene was detected at a maximum concentration of 0.011 parts per million (ppm) and TOG was detected at a concentration of 120 ppm in one boring near the station building at a depth of 10 feet. Metals were reported above the laboratory's limits of detection, but below the Total Threshold Limit Concentrations. The other analytes were not detected.

PRESENT GROUND-WATER SAMPLING

A technician from RESNA visited the site on July 15, 1991, to measure the depth to ground water and collect ground water samples from wells. Our technician performed this work following the methods outlined in an attachment to this report.

Evaluation of Ground-Water Flow Direction and Gradient

The depth-to-water surface in each monitoring well was measured to the nearest 0.01 foot with a Solinst water-level indicator. This information was then used in conjunction with the surveyed well head data to prepare a Potentiometric Map showing the direction of ground-

water flow and gradient (Plate 3). Ground water beneath the site is flowing to the southwest with a gradient of 0.0174.

Samples of ground water were collected from each monitoring well for subjective analysis of hydrocarbons using the methods summarized in an attachment to this report. No obvious product sheen was noted in the ground water samples. The results of the subjective analyses are presented in Table 1.

Following the subjective analyses, monitoring wells MW-1, MW-2, and MW-4 were purged and ground-water samples were collected for laboratory analyses. The purged water was left in drums at the site pending analytical results. Since the analytical results were below the MCL's for all analyzed compounds, the water was disposed of onsite.

Laboratory Analyses and Results

The ground-water samples were analyzed for TPHg using Environmental Protection Agency (EPA) Method 8015 (modified) and BTEX using EPA Method 602 at Applied Analytical Environmental Laboratories in Rancho Cordova, California (Hazardous Waste Testing Laboratory Certificate No. E773). The results of the analyses of water samples collected from monitoring wells MW-1 and MW-2 indicated that concentrations of TPHg and BTEX were not present above detection limits established by the laboratory. The sample collected from well MW-4 contained 0.5 ppb toluene and 0.8 ppb total xylene isomers; all other analytes were below the laboratory's limits of detection. The results of these and previous ground-water analyses are summarized in Table 2.

RECOMMENDATIONS

Based on the reported 0.5 ppb toluene and 0.8 ppb total xylene isomers and the location of well MW-4 (downgradient of the waste-oil tank), RESNA recommends continuing to monitor the ground water quarterly for 1 year for TPHg, BTEX, and TOG. If after 1 year of ground-water monitoring, no increase in compounds is reported in ground-water samples, the site should be closed to environmental work.

We also recommend signed copies of this report be forwarded to Mr. Tom Callaghan of the California Regional Water Quality Control Board, San Francisco Bay Region, 1800 Harrison Street, Suite 700, Oakland, California 94612, Mr. Paul Smith of the Alameda County Department of Environmental Health, Hazardous Materials Division, 80 Swan Way, Suite 200, Oakland, California 94621, and Mr. Jerry Blueford of the City of Oakland Fire Department, 1605 Martin Luther King Way, Oakland, California 94612. Please call if you

November 6, 1991
BP Facility No. 11124, Oakland, California



have questions regarding the information in this report.

Sincerely,
RESNA Industries

A handwritten signature in black ink, appearing to read "Eric J. Holm". The signature is written in a cursive style with a large initial "E".

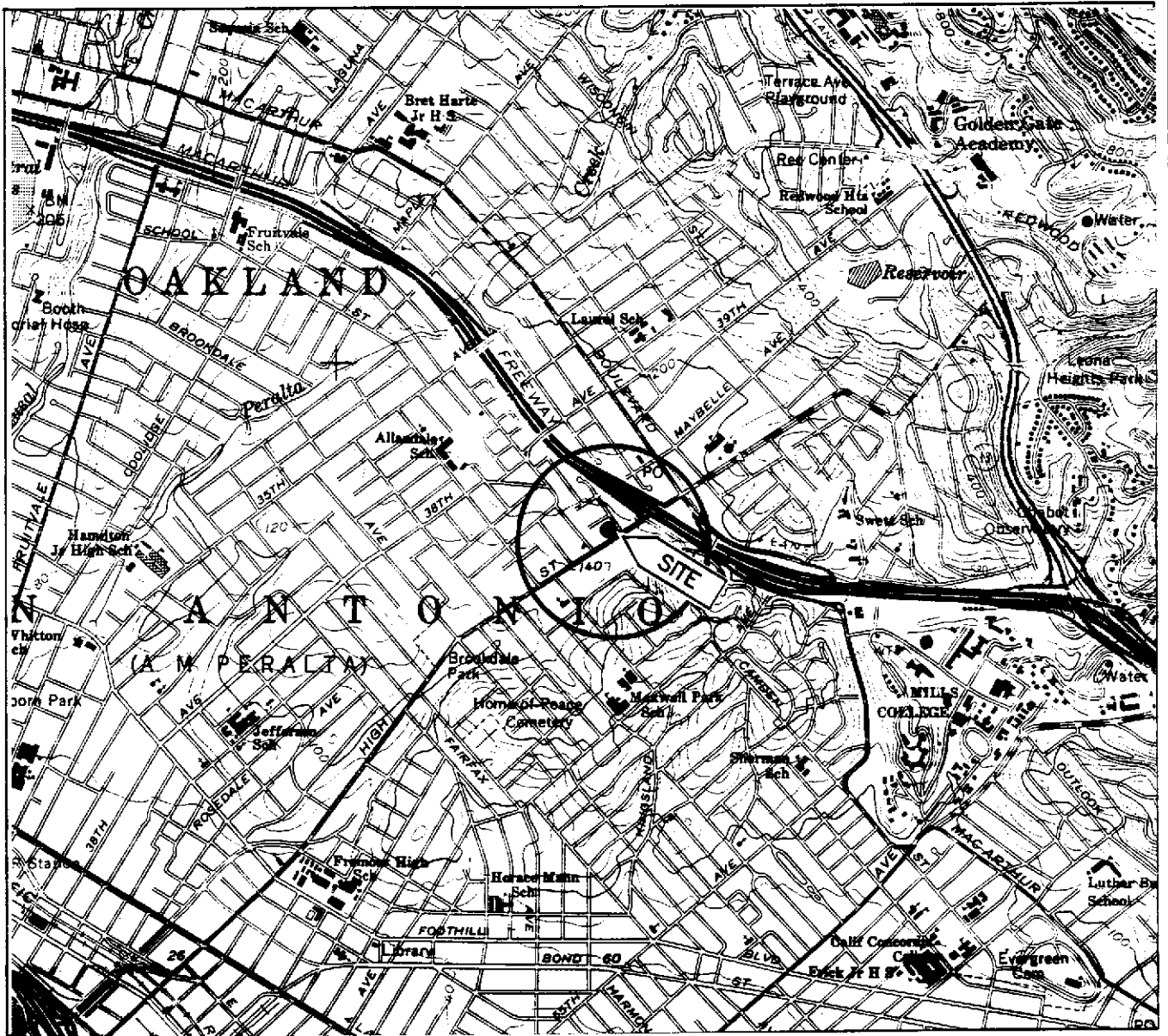
Eric J. Holm
Project Geologist

A handwritten signature in black ink, appearing to read "John B. Bobbitt". The signature is written in a cursive style with a large initial "J".

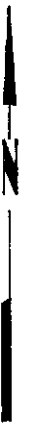
John B. Bobbitt
R.G. 4313

Attachments:

- Plate 1: Site Vicinity Map
- Plate 2: Generalized Site Plan
- Plate 3: Potentiometric Map
- Table 1: Depth to Water and Results of Subjective Analyses
- Table 2: Cumulative Results of Analyses of Water Samples
- Field Methods
- Chain of Custody Record
- Laboratory Analyses Report



Source: U.S.G.S. 7.5-Minute Quadrangle
 Oakland East, California
 (1980)

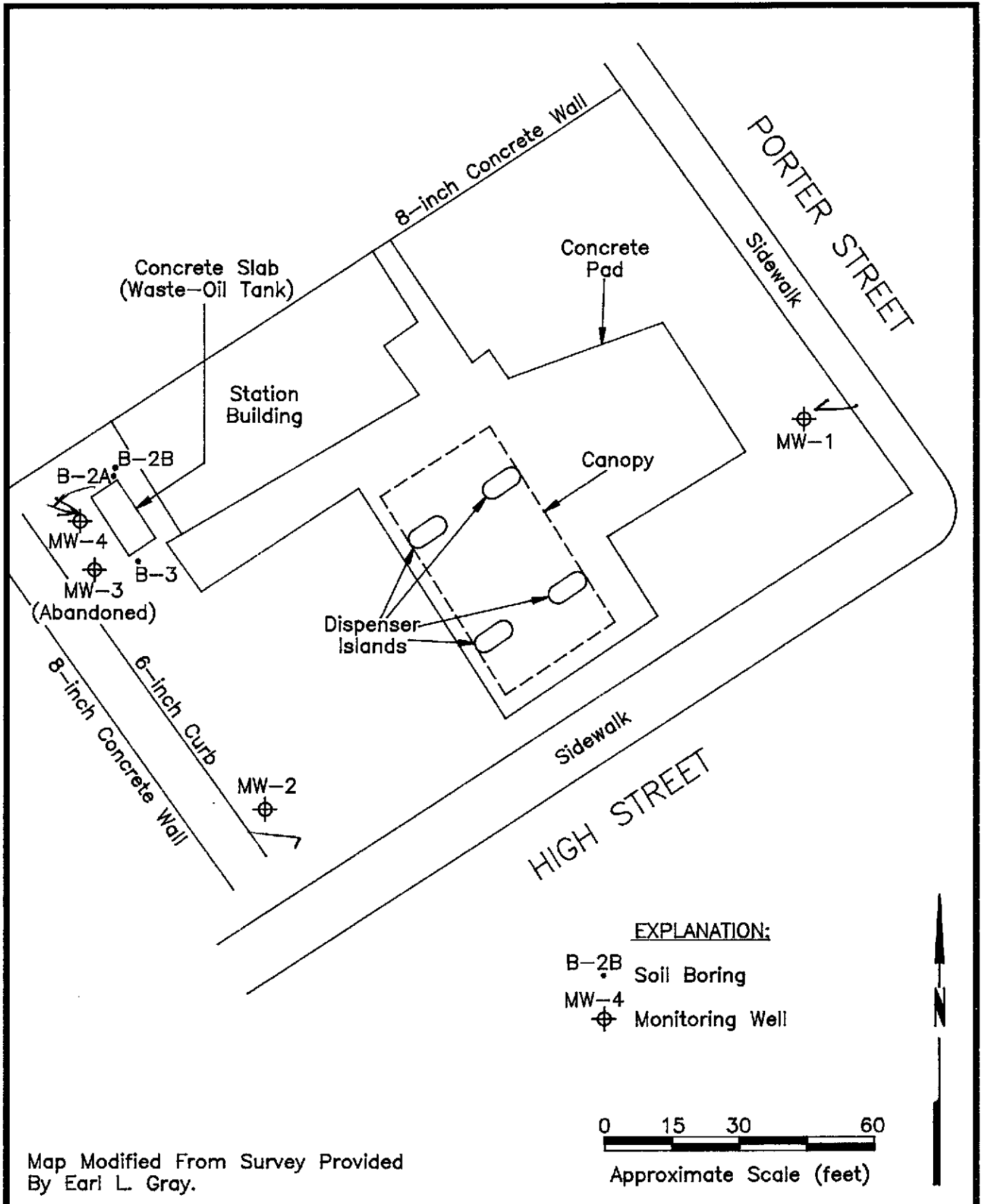


PROJECT NO. 30061-2

SITE VICINITY MAP
BP Facility No. 11124
3315 High Street
Oakland, California

PLATE

1



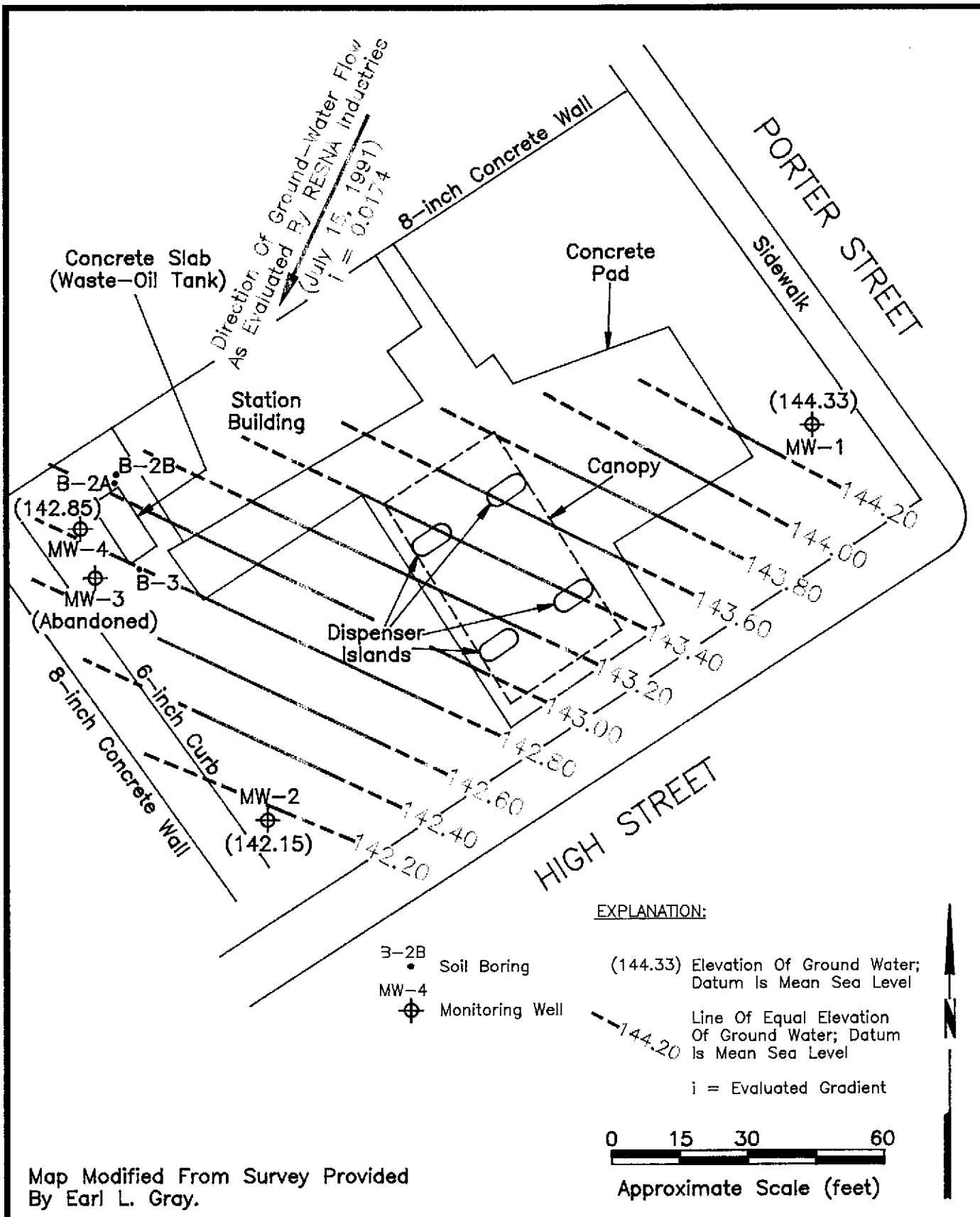
Map Modified From Survey Provided
By Earl L. Gray.



PROJECT NO. 30061-2

GENERALIZED SITE PLAN
BP Facility No. 1124
3315 High Street
Oakland, California

PLATE
2



PROJECT NO. 30061-2

POTENTIOMETRIC MAP (July 15, 1991)
BP Facility No. 1124
3315 High Street
Oakland, California

PLATE
3

November 6, 1991
 BP Facility No. 11124, Oakland, California



TABLE 1
 DEPTH TO WATER AND
 RESULTS OF SUBJECTIVE ANALYSES
 BP Facility No. 11124
 3315 High Street
 Oakland, California

Well Number	Sample Date	Depth to Water	TOC (MSL)	Water Level Elevation (MSL)	Floating Product	Sheen	Emulsion
MW-1	08/18/86	10.1	154.99	144.89	None	None	None
	11/12/90	11.42	154.99	143.57	None	None	None
	07/15/91	10.66	154.99	144.33	None	None	None
MW-2	08/18/86	10.0	152.02	142.02	None	None	None
	11/12/90	10.94	152.02	141.08	None	None	None
	07/15/91	9.87	152.02	142.15	None	None	None
MW-3	08/18/86	9.6	NM	---	None	None	None
	11/12/90	NM	NM	---	NM	NM	NM
	07/15/91	WA	NM	WA	WA	WA	WA
MW-4	07/15/91	9.92	152.77	142.85	None	None	None

TOC = Top of well casing
 well casing
 MSL = Mean Sea Level
 NM = Not Measured
 WA = Well Abandoned

TABLE 2
 CUMULATIVE RESULTS OF ANALYSES OF WATER SAMPLES
 BP Facility No. 11124
 3315 High Street
 Oakland, California

Sample ID	Sample Date	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes
MW1*	08/18/86	<50	<1.0	<1.0	<1.0	<1.0
W-11-MW1	11/12/90	<50	<0.5	<0.5	<0.5	<0.5
W-10-MW1	07/15/91	<50	<0.5	<0.5	<0.5	<0.5
MW2*	08/18/86	<50	<1.0	<1.0	<1.0	<1.0
W-11-MW2	11/12/90	<50	<0.5	<0.5	<0.5	<0.5
W-10-MW2	07/15/91	<50	<0.5	<0.5	<0.5	<0.5
MW3*	08/18/86	<50	<1.0	<1.0	<1.0	<1.0
MW3	11/12/90	NS	NS	NS	NS	NS
MW3	07/15/91	WA	WA	WA	WA	WA
W-10-MW4	07/15/91	<50	<0.5	0.5	<0.5	0.8

Results in parts per billion (ppb)

TPHg = Total petroleum hydrocarbons as gasoline

< = Below detection limit of method of analysis used

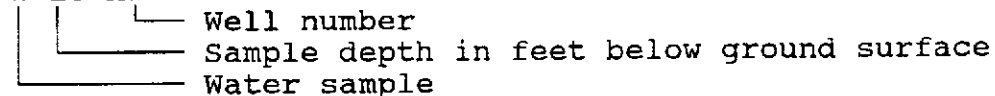
* = Sample collected by Kaprealian Engineering, Inc.

WA = Well Abandoned

NS = Not Sampled

Sample designation:

W-10-MW4



FIELD METHODS**Subjective Observations**

The depth to ground water in the monitoring wells was measured to the nearest 0.01-foot with an electronic water-level indicator. Samples of ground water were collected for subjective analysis from the air-fluid interface in each well by lowering approximately half the length of a clear Teflon bailer through the interface. The bailer was retrieved and the water sample examined for free product, sheen, or other subjective evidence of hydrocarbons.

Purging

A minimum of three well volumes of ground water, corresponding to approximately 40 to 50 gallons, were purged from wells MW-1, MW-2, and MW-4 using an electric submersible pump. The ground-water temperature, pH, and conductivity were monitored to assure that a representative sample was obtained from the aquifer. The purged water was placed into labeled 55-gallon 17-E drums approved for this use by the California Department of Transportation and stored temporarily onsite pending the results of laboratory analyses.

Ground-Water Sampling

Ground-water samples were collected after water in each well recovered to near its original level. The ground-water samples were collected by lowering a clean Teflon bailer gently through the air-water interface to a depth approximately 3 feet below the ground-water surface. The bailer was retrieved and the samples were transferred slowly to laboratory-cleaned, 40-milliliter glass vials or other appropriate containers as required by the laboratory. The vials and bottles contained hydrochloric acid and were filled so that no headspace was left in the containers. The field technician initiated a Chain of Custody Record and it accompanied the samples to the analytical laboratory. A copy of that record is attached to this letter report.

APPLIED ANALYTICAL

Environmental Laboratories

4191-E Power Inn Road
Sacramento, CA 95826
Bus: (916) 452-7136
Fax: (916) 452-0534

ANALYSIS REPORT

1020lab.frm

Attention: Mr. Eric Holm
Applied GeoSystems
4191-E Power Inn Road
Sacramento, CA 95826

Date Sampled: 05-13,14-91
Date Received: 05-16-91
BTEX Analyzed: 05-28-91
TPHg Analyzed: 05-28-91
TPHd Analyzed: 05-29-91
Matrix: Soil

Project: AGS 30061-1

	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl- benzene</u>	<u>Total Xylenes</u>	<u>TPHg</u>	<u>TPHd</u>
	<u>ppm</u>	<u>ppm</u>	<u>ppm</u>	<u>ppm</u>	<u>ppm</u>	<u>ppm</u>
Detection Limit:	0.005	0.005	0.005	0.005	1	10

SAMPLE

Laboratory Identification

S-18-B2 S3106197	ND	ND	ND	ND	ND	ND
S-15-B1 S3106195	ND	ND	ND	ND	ND	ND
S-0514-1abcd S3106200	ND	ND	ND	0.018	ND	ND
S-10-B3 S3106198	ND	ND	ND	ND	ND	ND

ppm = parts per million = mg/kg = milligrams per kilogram.

ND = Not detected. Compound(s) may be present at concentrations below the detection limit.

NR = Analysis not requested.

ANALYTICAL PROCEDURES

BTEX- Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction using EPA Method 5030 followed by analysis using modified EPA Method 8020/602, which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID) and a flame-ionization detector (FID) in series.

TPHg-Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are measured by extraction using EPA Method 5030, followed by analysis using modified EPA Method 8015, which utilizes a GC equipped with an FID.

TPHd-Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3550 for soils and EPA Method 3510 for water, followed by modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.


Laboratory Representative

06-03-91
Date Reported

APPLIED ANALYTICAL

Environmental Laboratories

4191-E Power Inn Road
Sacramento, CA 95826
Bus: (916) 452-7136
Fax: (916) 452-0534

ANALYSIS REPORT

Attention: Mr. Eric Holm
Applied GeoSystems
4191-E Power Inn Road
Sacramento, CA 95826
Project: AGS 30061-1

Date Sampled: 05-13,14-91
Date Received: 05-16-91
BTEX Analyzed: 05-28-91
TPHg Analyzed: 05-28-91
TPHd Analyzed: 05-29-91
Matrix: Soil

1020lab.frm

	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl- benzene</u>	<u>Total Xylenes</u>	<u>TPHg</u>	<u>TPHd</u>
	<u>ppm</u>	<u>ppm</u>	<u>ppm</u>	<u>ppm</u>	<u>ppm</u>	<u>ppm</u>
Detection Limit:	0.005	0.005	0.005	0.005	1	10

SAMPLE

Laboratory Identification

S-5-B1 S3106194	ND	ND	ND	ND	ND	ND
S-10-B2 S3106196	ND	ND	ND	ND	ND	ND
S-17-B3 S3106199	ND	ND	ND	ND	ND	ND

ppm = parts per million = mg/kg = milligrams per kilogram.

ND = Not detected. Compound(s) may be present at concentrations below the detection limit.

NR = Analysis not requested.

ANALYTICAL PROCEDURES

BTEX— Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction using EPA Method 5030 followed by analysis using modified EPA Method 8020/602, which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID) and a flame-ionization detector (FID) in series.

TPHg— Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are measured by extraction using EPA Method 5030, followed by analysis using modified EPA Method 8015, which utilizes a GC equipped with an FID.

TPHd— Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3550 for soils and EPA Method 3510 for water, followed by modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.


Laboratory Representative

06-03-91
Date Reported

CHAIN-OF-CUSTODY RECORD

PROJECT NO: 30061-1
 FIELD SITE NAME: B.P (Oakland "High Street")

CLIENT NO: _____
 SAMPLES (Signature): *Claudio Acosta*

DATE MM/DD/YY	TIME	SAMPLE ID.	No. of Containers	ANALYSIS					
				THG	STX	THG	Oil & Grease D/E	B270	26 Comp.
5/13/91	1000	S-5-B1	1	X	X	X	X	X	
	1030	S-15-B1	1	X	X	X	X	X	
	1045	S-20-B1	1						
	1100	S-25-B1	1						
	1130	S-30-B1	1						
5/14/91	830	S-5-B2	1						
	840	S-10-B2	1	X	X	X	X	X	
	900	S-15-B2	1						
	910	S-18-B2	1	X	X	X	X	X	
	920	S-5-B3	1						
	930	S-10-B3	1	X	X	X	X	X	
	945	S-15-B3	1						
	1000	S-17-B3	1	X	X	X	X	X	
5/14/91	1015	S-05/4-1A	1	X	X	X	X	X	
	1015	S-05/4-1B	1	X	X	X	X	X	
	1015	S-05/4-1C	1	X	X	X	X	X	
	1015	S-05/4-1D	1	X	X	X	X	X	

Composite

LABORATORY I.D. NUMBER

194
 195 If an analyzed sample reports a compound above detection limits - run the sample for Cd, Cr, Pb & Zn using AA and B270 for 40 compounds.
 196
 197 Please send sub-out analyses to:
 198 Chemtech
 3017 Kilgore Rd. #110
 199 Rancho Cordova, CA 95743
 635-3962

Composite 250

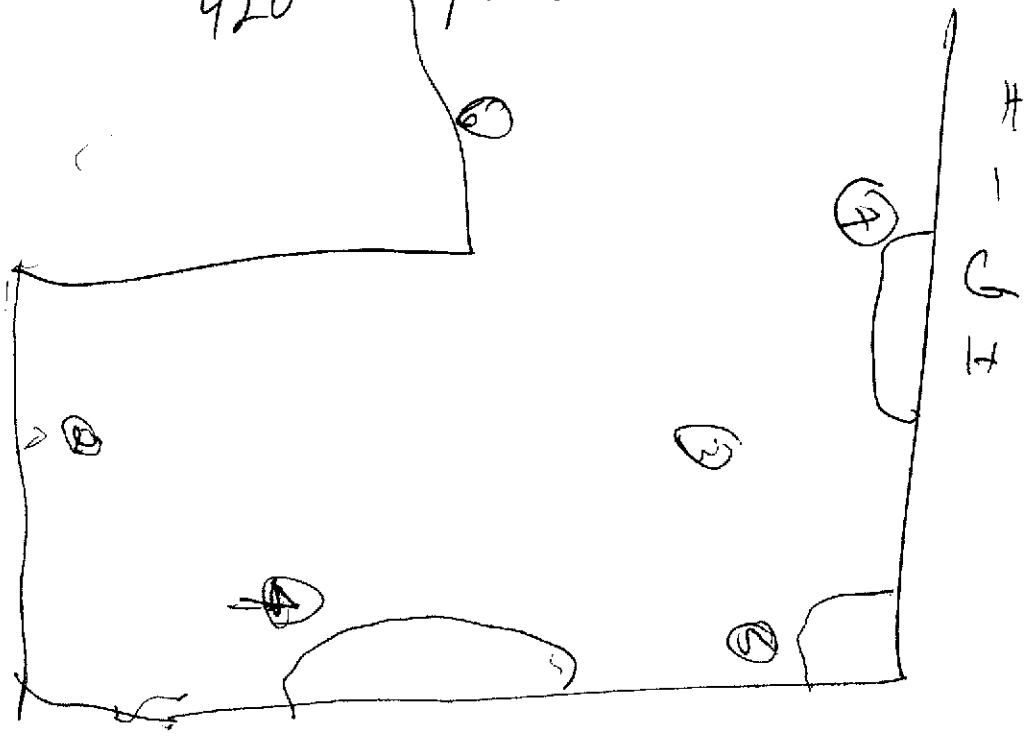
RECEIVED BY (Signature): *Claudio Acosta*
 DATE / TIME: 5/14/91 4:50
 RECEIVED BY (Signature): *E. J. Holm*
 DATE / TIME: 5/14/91 4:55
 RECEIVED BY (Signature): _____
 DATE / TIME: _____

RECEIVED BY (Signature): *E. J. Holm*
 DATE / TIME: 5/14/91 4:50
 RECEIVED BY (Signature): _____
 DATE / TIME: _____
 RECEIVED BY (Signature): *Guy McLean*
 DATE / TIME: _____

IN FILE: Regular TAT

SEND RESULTS TO:
Applied GeoSystems
 4191 Power Inn Road
 Suite D & E
 Sacramento, California 95826
 (916) 452 2901
 Proj. Mgr.: E. Holm

4280 High St



Foot hill