CAMBRIA

May 10, 1999

Mr. Amir Gholami, REHS
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: **Investigation Workplan**
2856 Helen Street
Oakland, California 94608
Cambria Project #193-1521-1
STID: 170

Dear Mr. Gholami:

On behalf of W. Taylor Partch, Cambria Environmental Technology, Inc., (Cambria) is submitting this work plan for a subsurface investigation at the site referenced above (Figure 1). The workplan was requested in your letters dated March 10, 1999, and April 30, 1999. The objective of the proposed work is to delineate the extent of hydrocarbons in soil and ground water in the vicinity of the former underground storage tanks (USTs) at the site. As stated in your letter dated April 30, 1999, the case could be evaluated for case closure if soil and ground water have not been significantly impacted.

As requested, Cambria has researched available information at your office to determine the ground water flow direction and gradient. The site background and our proposed scope of work for this investigation are described below.

SITE BACKGROUND

The following information has been compiled from a site visit, review of Mr. Partch's files, and our review of files for nearby sites available at the Alameda County Department of Environmental Health (ACDEH).

Site Description: The site is located on the east side of Helen Street, between 34th and 28th Streets, in a residential and light industrial area in Oakland, California. The site consists of a former mechanical contractor facility with a parking lot south of the building, and a vacant lot north of the building. Approximately three years ago a fire damaged the building, and the building was abandoned. Stockpiled soil and wood and miscellaneous debris are located in the southern parking area, while the northern lot is used for storage of seashells. The site owners recently began actively trying to sell the property.

Oakland, CA
Sonoma CA
Portland OR
Seattle WA

Cambria
Environmental
Technology, Inc

[illegible] 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

August 1996 UST Removal and Sampling Results: On August 6, 1996, two 1,000-gallon underground storage tanks (USTs) were removed from the site by Bamer Construction of Castro Valley, California. According to site owner Mr. Partch, the USTs were used for gasoline only and were last used in 1978. The UST and sampling locations and analytic results are included in Attachment A. TPH-g and BTEX concentrations were detected in soil beneath the southern UST at maximum concentrations of 290, 6.5, 17, 1.5, and 7.6 ppm, respectively. Trace petroleum hydrocarbons were detected in soil beneath the northern UST, with a maximum TPHg concentration of 0.49 ppm. No TPHg or BTEX were detected in a grab water sample collected from the excavation pit for the southern UST. While no chain-of-custody was in the reviewed files, the analytic laboratory received the water sample on August 12, 1996. In a letter dated September 22, 1997, Bamer Construction stated that county inspector Brian Oliva authorized collection of the unwitnessed water sample collection - Mr. Oliva missed the scheduled sampling due to an emergency. No formal UST removal report was prepared, but tank disposal certifications were enclosed with the September 22, 1997 letter. The northern UST pit was backfilled up to grade while stockpiled soil remains adjacent to the southern UST.

Groundwater: To estimate the groundwater gradient at the site, Cambria reviewed available file information for sites located at 3455 Ettie Street, 3456 Ettie Street, and 327 34th Street. Site-specific groundwater elevation data was available for 3456 Ettie Street (a few blocks away) and 327 34th Street (much farther away and near Broadway and 580). According to groundwater elevation data from site wells at 3456 Ettie, the groundwater gradient is west northwest at approximately 0.012 ft/ft. Groundwater elevation and gradient maps for 3456 Ettie Street from October 9, 1997, and April 20, 1998, are included in Attachment B. Depth to groundwater at the site is estimated to be approximately 8 ft below ground surface.

PROPOSED SCOPE OF WORK

To delineate the extent of hydrocarbons in soil and ground water beneath the site, Cambria proposes to perform grab sampling in a dynamic manner using a hydraulic-push sampling technique. In other words, Cambria plans to sample soil and ground water immediately adjacent to the two former USTs, and to step out beyond the immediate UST areas if field observations indicate the presence of hydrocarbons. The proposed boring locations are shown on Figure 2. For this investigation Cambria plans to assess the extent of hydrocarbons on site only. Due to physical site limitations and budgetary constraints, Cambria will perform off site investigations in the future only as merited or

required. Select soil and ground water samples will be analyzed for TPHg, BTEX, and MTBE. Our scope of work for this investigation includes the tasks described below.

Utility Location: Cambria will notify Underground Service Alert (USA) of our drilling activities. USA will have the utilities in the site vicinity identified and, if necessary, survey the location using a private line locating firm.

Site Health and Safety Plan: We will prepare a site safety plan to protect site workers. The plan will be kept on site at all times and signed by all site workers.

Permits: We will obtain the necessary boring permits from the Alameda County Public Works Agency and the City of Oakland.

Initial Sampling: A total of four soil borings will be completed using a hydraulic-push sampling rig immediately adjacent to the two former USTs. The boring locations are shown on Figure 2. The borings will be completed approximately 5 ft into the groundwater table (which is anticipated at approximately 8 ft depth). We will collect soil samples at five foot intervals, at lithologic changes when possible, and from just above the water table. We will collect one grab groundwater sample from each boring. Our standard field procedures for hydraulic-push sampling are included in Attachment C. If necessary to obtain a representative sample of groundwater, a temporary well may be installed in the boring, with removal of the temporary well by the end of the sampling event. Upon completion of the soil and groundwater sampling, each boring will be sealed with cement grout to match the existing ground surface. We will select soil samples for chemical analysis based on observations of staining and odor and on the results of field screening.

Additional Sampling: If field observations indicate the presence of hydrocarbons in the initial soil and groundwater samples, Cambria will 'step out' to boring locations further from the former USTs. This will be an iterative process until field observations suggest hydrocarbons are no longer present or until we reach the property boundary. The anticipated locations for additional sampling, if necessary, are shown on Figure 2. The actual sampling locations may change due to site constraints.

Chemical Analyses: The soil and groundwater samples will be analyzed for the following:

- Total petroleum hydrocarbons as gasoline (TPHg) by modified EPA Method 8015;
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8020;
- Methyl tert-butyl ether (MTBE) by EPA Method 8020; and
- If MTBE is detected in groundwater samples by EPA Method 8020, MTBE detection will be confirmed by EPA Method 8260.

Additional RBCA Analyses: To facilitate completion of a risk assessment, two soil samples collected from the borings for analysis for the following physical parameters (dry bulk density, moisture content, porosity, and fraction organic carbon). If no significant hydrocarbons are observed in field samples, Cambria will not analyze the soil samples for physical parameters to help control costs.

Reporting: After we receive the analytical results, we will prepare a subsurface investigation report that, at a minimum, will contain:

- A summary of the site background and history;
- Descriptions of the drilling and soil sampling methods;
- Boring logs;
- Tabulated soil and groundwater analytical results;
- Analytical reports and chain-of-custody forms;
- Soil and water disposal methods; and,
- A discussion of the hydrocarbon distribution in soil and groundwater.

SCHEDULE

Upon receiving written approval of our work plan from the ACDEH, Cambria will commence permitting and field work coordination.

Any efforts to expedite processing of this work plan are greatly appreciated since the property is currently on the market for sale. If you have any questions, please call me at (510)420-3303.

Sincerely,
Cambria Environmental Technology, Inc.

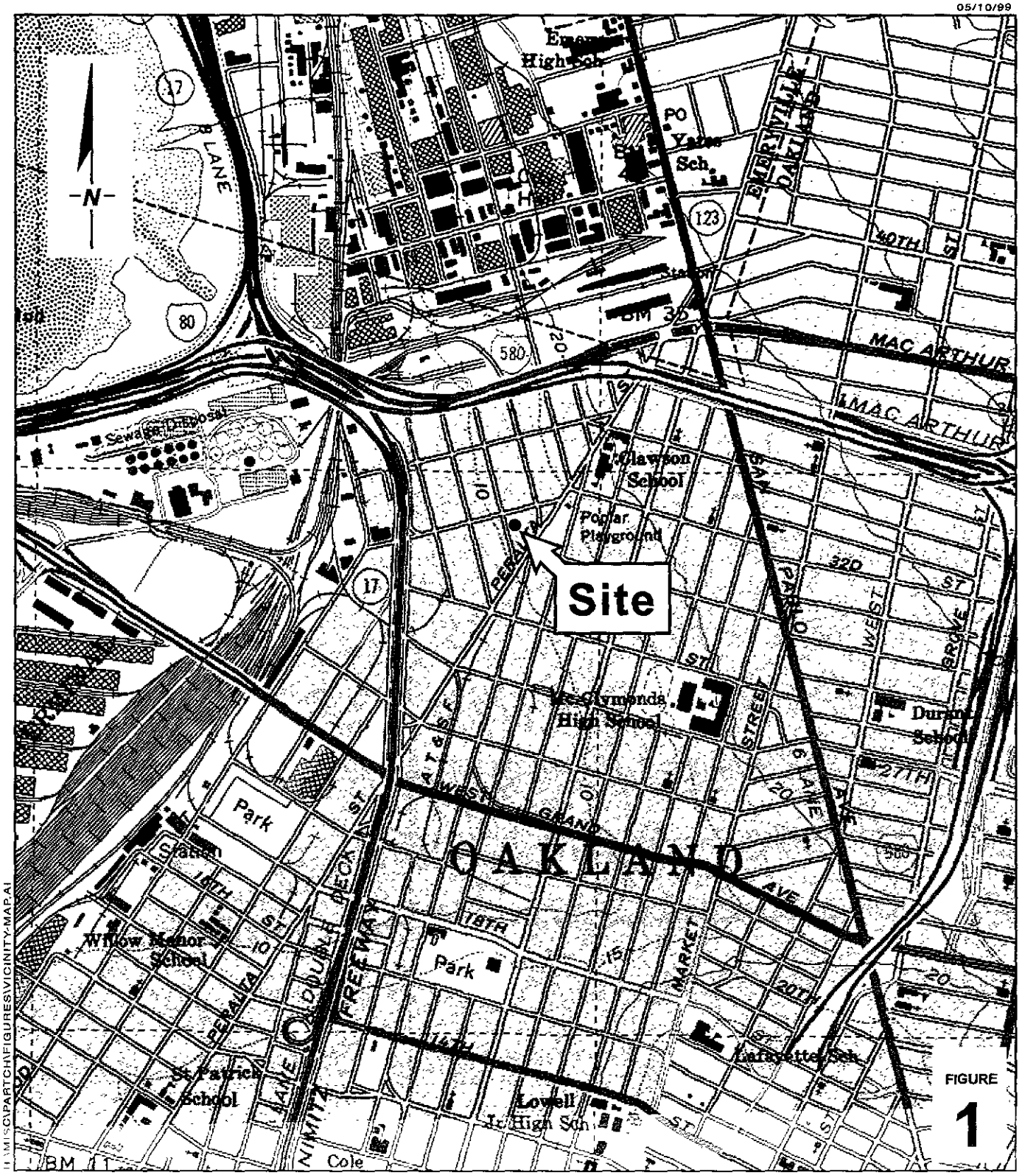
Bob Clark-Riddell, P.E.
Principal Engineer

H:\MISC Parch workplan.wpd

Figures: 1 - Site Location Map
2 - Proposed Sampling Locations

Attachments: A - UST and Sampling Locations and Analytic Results
B - Groundwater Elevation Maps for 3456 Ettie Street
C - Standard Field Procedures for Hydraulic-Push Sampling

cc: W. Taylor Partch, 2051 San Jose Avenue, Alameda, California 94501
Elizabeth McCune, 20068 Summerridge Drive, Castro Valley, California 94552



W.T. Partch

2862 Helen Street

Oakland, California

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Vicinity Map

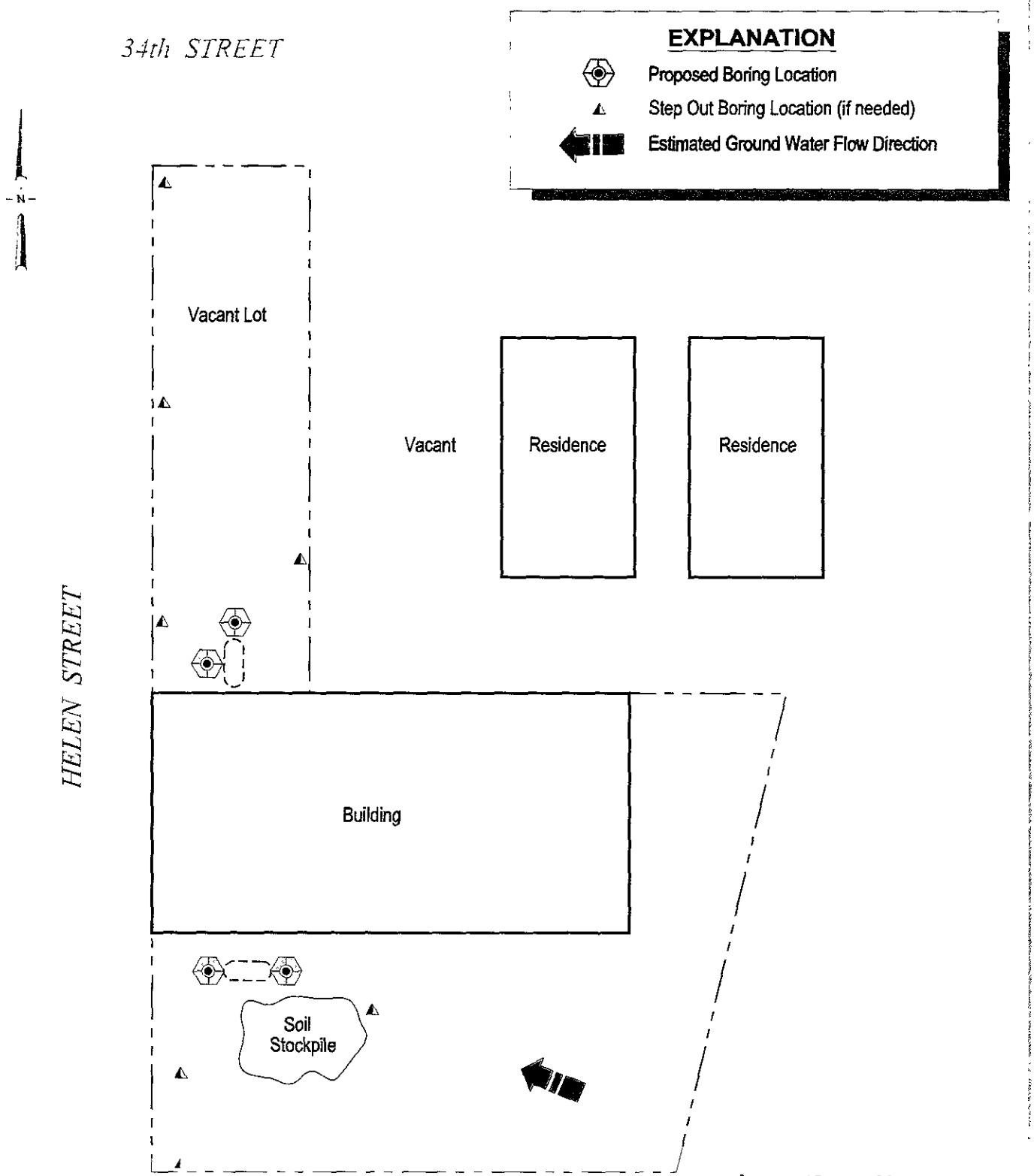

FIGURE
2

W.T. Partch
2862 Helen Street
Oakland, California

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Proposed Boring Locations

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Attachment A

UST and Sampling Locations and Analytic Results

CALCOAST ANALYTICAL

Materials Chemistry

Certified by
California Department of Health Services
City of Los Angeles, Dept. of Building & Safety

Mailed 8/9/96 MK

FAXED
AUG 09 1996
#Pages 4 MP

August 9, 1996

Bamer Construction
3137 Castro Valley Blvd.
Castro Valley, CA 94546

Attn: Mr. John Bamer

Ref: Lab File #0807-6A/F-96

1. SAMPLE(S):

Six (6) soil core samples from *2856 Helen St.; Oakland, CA., Project* № *616 806 "O"*

A. #1; South Tank, East End
B. #2; South Tank, West End
C. #3; North Tank, North End
D. #4; North Tank, South End
E. #5; North Composite of Piles
F. #6; South Composite of Piles

Received August 7, 1996

2. ANALYSIS REQUIRED:

A. Total lead (Pb) concentration by Atomic Absorption Spectroscopy (AAS).

B. Total Petroleum Hydrocarbons - gasoline (TPH-g) by Gas Chromatography (GC).

C. Benzene, Toluene, ethylbenzene, and xylenes (BTEX) concentration by Gas Chromatography / Mass Spectrometry (GC/MS).

TELEPHONE (510) 652-2979 P.O. BOX 8702 • EMERYVILLE, CA 94662

3. METHODS OF ANALYSIS:

A. Sample Digestion - EPA Method 3050; SW-846
AAS Analysis - EPA Method 7420; SW-846

B. GC by EPA Method 8015; SW-846

C. GC/MS by EPA Method 8240; SW-846

4. RESULTS:

A. Total Lead

	SAMPLE	TOTAL LEAD CONCENTRATION (mg/kg)
A.	S. Tank / E. End	4.7
B.	S. Tank / W. End	4.8
C.	N. Tank / N. End	32
D.	N. Tank / S. End	5.1
E.	N. Composite	78
F.	S. Composite	11

Method Blank = < 5.0 mg/kg (none detected)
Mean Spike Recovery = 108%

B. TPH-g

	SAMPLE	TPH-G CONCENTRATION (mg/kg)
A.	#1, S. Tank / E. End	200
B.	#2, S. Tank / W. End	290
C.	#3, N. Tank / N. End	0.43
D.	#4, N. Tank / S. End	0.49
E.	#5, North Composite	6.0
F.	#6, South Composite	10

Method Blank = < 0.05 mg/kg (none detected)
Mean Spike Recovery = 92%

4. RESULTS:(continued)

C. BTEX

P | BL

SAMPLE	CONCENTRATION (µg/kg)			
	BENZENE	TOLUENE	ETHYLBENZENE	XYLENE
A. #1, S. Tank / E. End	2,400	12,000	200	700
B. #2, S. Tank / W. End	6,500	17,000	1,500	7,600
C. #3, N. Tank / N. End	< 0.1 (ND)	< 0.1 (ND)	20	110
D. #4, N. Tank / S. End	< 0.1 (ND)	< 0.1 (ND)	< 0.1 (ND)	< 0.1 (ND)
E. #5, N. Composite	< 0.1 (ND)	590	< 0.1 (ND)	300
F. #6, S. Composite	140	880	290	610
Method Blank	< 0.1 (ND)	< 0.1 (ND)	< 0.1 (ND)	< 0.1 (ND)
Mean Spike Recovery	109%	114%	102%	88%

Ronald Shrewsbury
Analytical Chemist

RS:ag

ALL SAMPLES SUBMITTED FOR TESTING WILL BE HELD 30 DAYS FROM REPORT DATE AT WHICH TIME THEY WILL BE RETURNED TO CLIENT OR DESTROYED. CLIENT WILL BE RESPONSIBLE FOR ALL SHIPPING, HANDLING, AND DISPOSAL CHARGES. SAMPLES WILL BE STORED UPON WRITTEN INSTRUCTIONS AND FEE ARRANGEMENTS.

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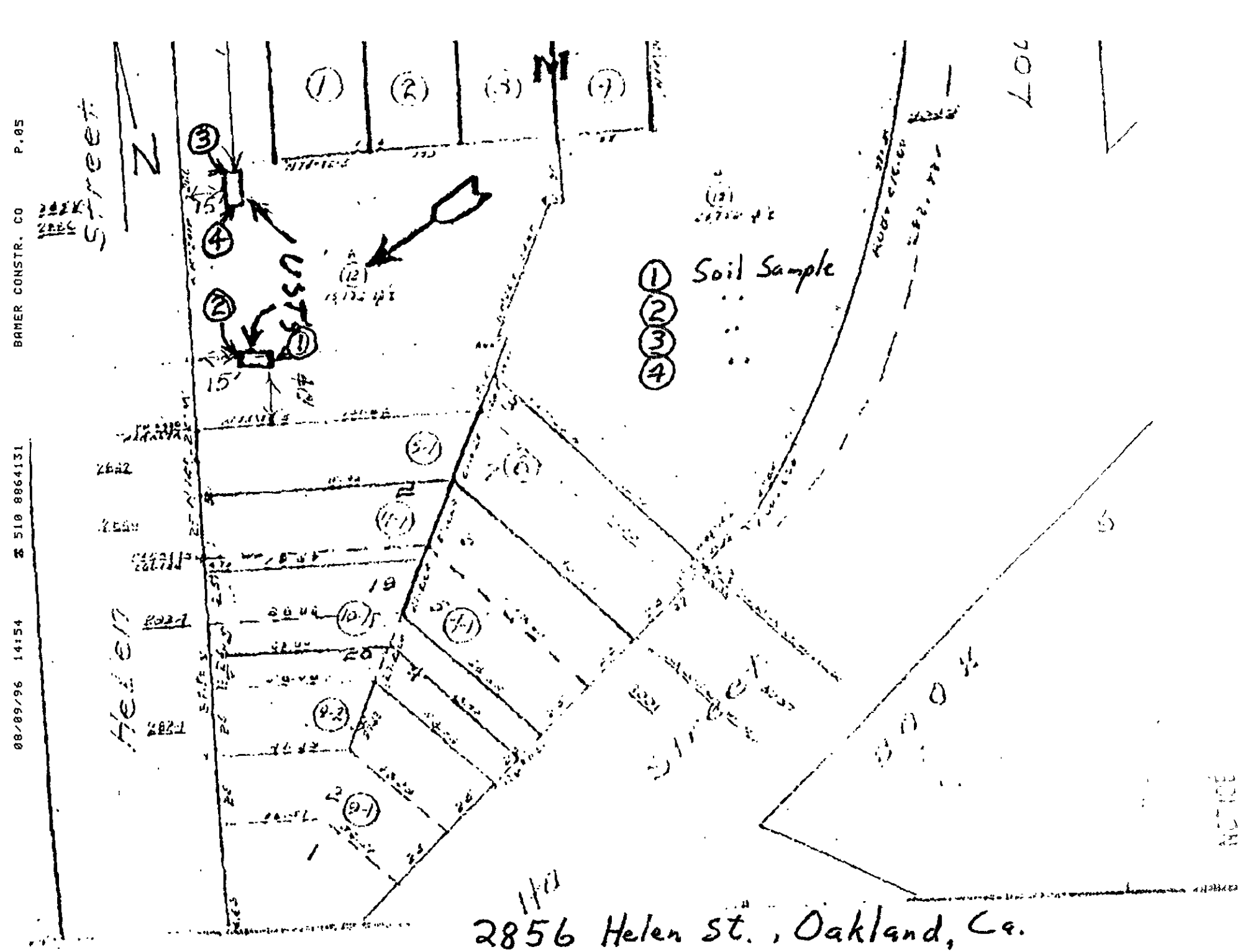

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CALCOAST ANALYTICAL

Materials Chemistry

Certified by
California Department of Health Services
City of Los Angeles, Dept. of Building & Safety

August 13, 1996

Bamer Construction
3137 Castro Valley Blvd.
Castro Valley, CA 94546

Attn: Mr. John Bamer

Ref: Lab File #0812-2A/C-96

1. SAMPLE(S):

Three (3) vials of water from *2856 Helen St.; Oakland, CA. Project No. 616 806 "O".* The three vials are to be analyzed as one sample.

Received August 12, 1996

2. ANALYSIS REQUIRED:

A. Total lead (Pb) concentration by Atomic Absorption Spectroscopy (AAS).

B. Total Petroleum Hydrocarbons - gasoline (TPH-g) concentration by Gas Chromatography (GC).

C. Benzene, toluene, ethylbenzene and xylenes (BTEX) concentration by Gas Chromatography / Mass Spectrometry (GC/MS).

3. METHODS OF ANALYSIS:

A. Sample Digestion - EPA Method 3005; SW-846
AAS Analysis - EPA Method 7420; SW-846

B. GC by EPA Method 8015; SW-846

C. GC/MS by EPA Method 8240; SW-846

TELEPHONE (510) 652-2979
FAX (510) 652-3085
P.O. BOX 8702 • EMERYVILLE, CA 94662
4072 WATTS STREET • EMERYVILLE, CA 94608

4. RESULTS:

A. Total Lead

The submitted sample contained < 0.05 mg/l lead (none detected).

Method Blank = < 0.05 mg/l (none detected)
Mean Spike Recovery = 108%

B. TPH-g

The submitted sample contained < 0.05 mg/l TPH-g (none detected)

Method Blank = < 0.05 mg/l (none detected)
Mean Spike Recovery = 111%

C. BTEX

Sample	Concentration (µg/ℓ)			
	Benzene	Toluene	Ethylbenzene	Xylene
2856 Helen	< 0.1 (ND)	< 0.1 (ND)	< 0.1 (ND)	< 0.1 (ND)
Method Blank	< 0.1 (ND)	< 0.1 (ND)	< 0.1 (ND)	< 0.1 (ND)
Mean Spike Recovery	113%	104%	104%	109%

Ronald Shrewsbury
Analytical Chemist

RS:ag

ALL SAMPLES SUBMITTED FOR TESTING WILL BE HELD 30 DAYS FROM REPORT DATE AT WHICH TIME THEY WILL BE RETURNED TO CLIENT OR DESTROYED CLIENT WILL BE RESPONSIBLE FOR ALL SHIPPING, HANDLING, AND DISPOSAL CHARGES. SAMPLES WILL BE STORED UPON WRITTEN INSTRUCTIONS AND FEE ARRANGEMENTS

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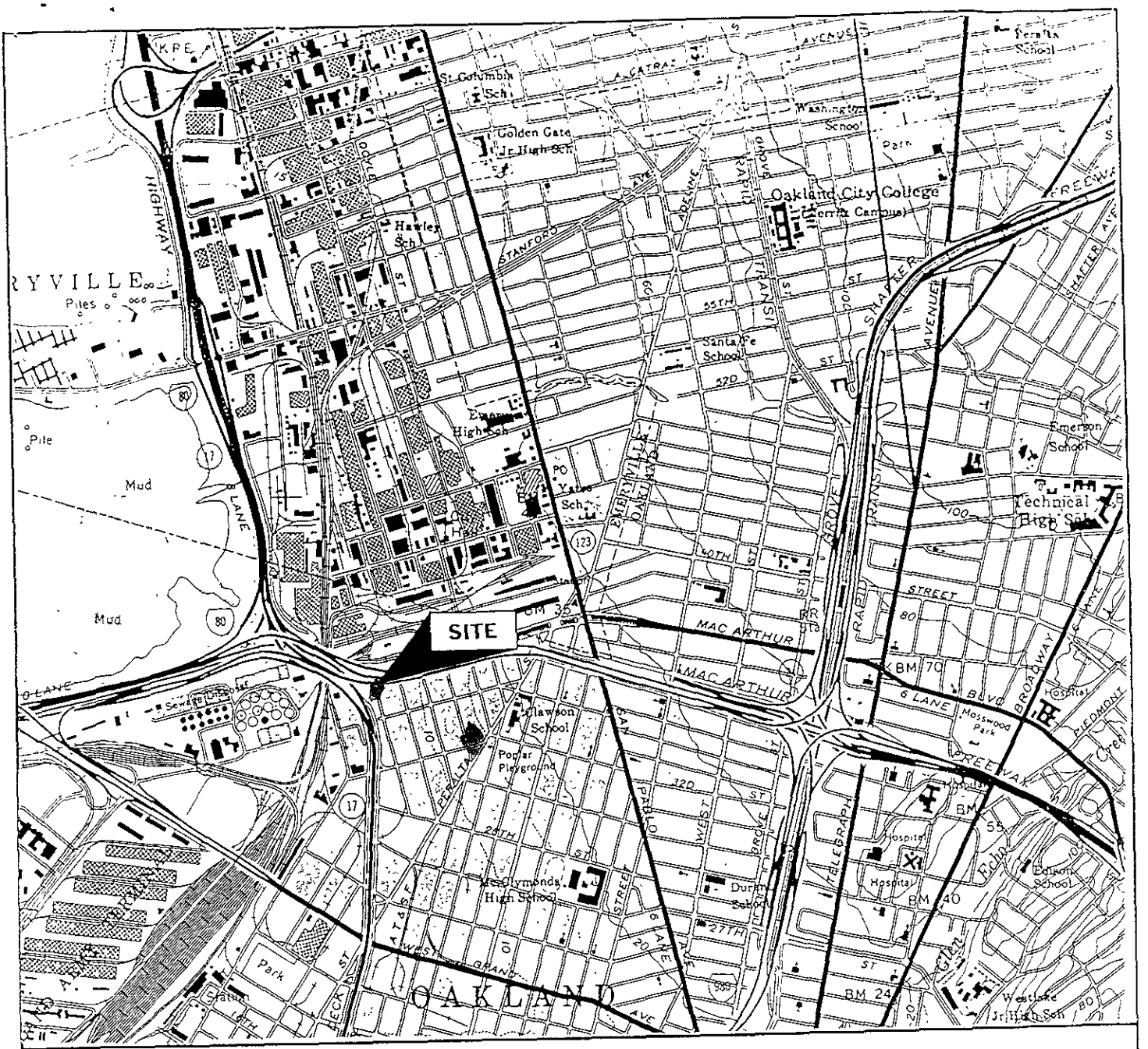
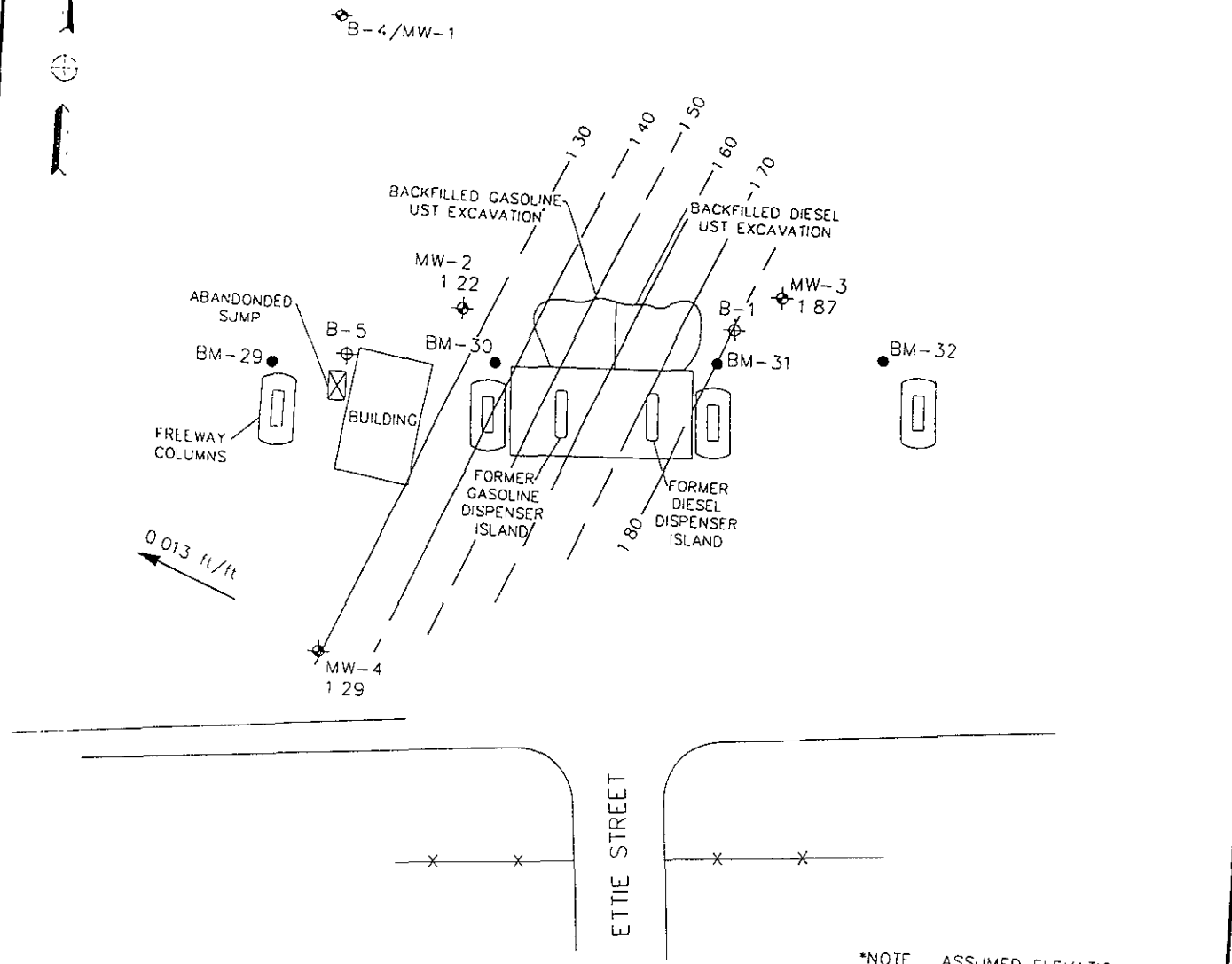
(3) Samples, analyzed as one sample, taken from south tank location ground water in bottom of excavation

Mean Spike Recovery required by EPA -

Attachment B

Groundwater Elevation Maps for 3456 Ettie Street


SITE
OAKLAND
Golden Gate Jr High Sch
Oakland City College
Santa Fe School
Emerson School
Technical High Sch
Lawson School
Poplar Playground
McClymonds High School
Durant School
Edison School
Mosswood Park
Westlake Jr High Sch
MAC ARTHUR
BOULEVARD
BROADWAY
FREEWAY
Mud
Piles
Pile
BM 70
BM 40
BM 24



*NOTE ASSUMED ELEVATION OF '0.0' AT FINISH FLOOR, BLDG NO 3

LEGEND

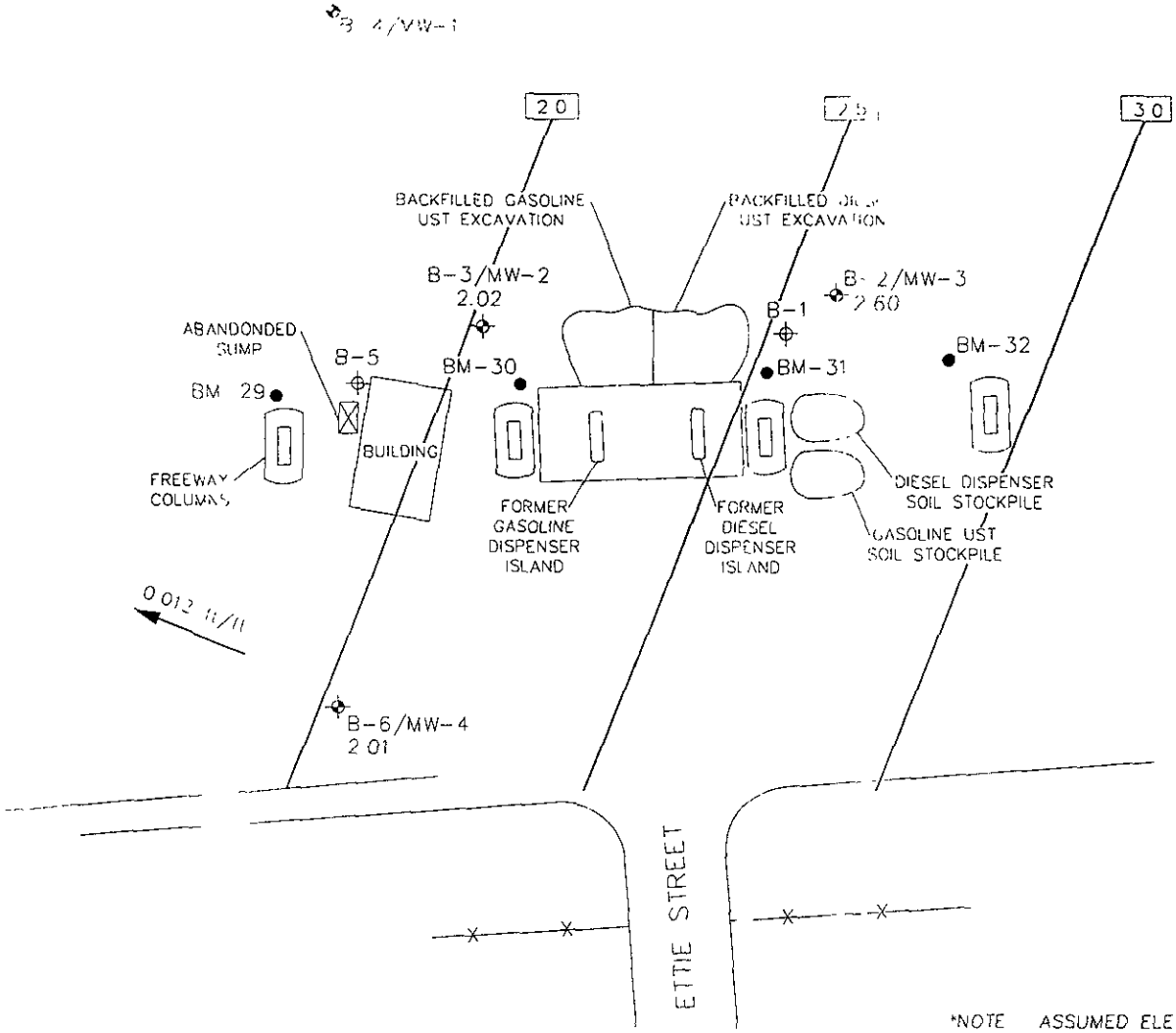
B-1 ⊕ BORING LOCATION AND DESIGNATION

B-2/MW-3 ⊕ GROUNDWATER MONITORING WELL LOCATION WITH GROUNDWATER ELEVATION
1 87

BM-29 ● PSI BORING (APRIL 4, 1996)

psi

4/20/98



LEGEND

⊕ B-1 BORING LOCATION AND DESIGNATION

⊕ B-2/MW-3 GROUNDWATER MONITORING WELL LOCATION WITH GROUNDWATER ELEVATION

10/09/97 | CKD

stated that there was no correlation between lead and TRPH concentrations and their spatial distribution (PSI report for Caltrans Distribution Structure April 4, 1996).

3.0 GROUNDWATER MONITORING ACTIVITIES

3.1 GROUNDWATER ELEVATION AND HYDRAULIC GRADIENT

On March 13, 1998, static groundwater elevations were measured in wells MW-2 through MW-4 (Figure 2). Due to construction activities and/or vandalism, groundwater monitoring well MW-1 has been damaged and was not accessible. The groundwater depths were measured in accordance with the field procedures outlined in Section 3.2, using a groundwater interface probe. A summary of the depth-to-groundwater data collected during this monitoring event and previous monitoring events is presented in Table 1. Consistent with previous measurements, the groundwater flow direction beneath the site is to the west with a hydraulic gradient of 0.013 meter per meter (0.013 foot per foot) (Figure 2). Groundwater elevations have risen an average of 0.21 meters (0.7 feet) since the last monitoring event.

3.2 GROUNDWATER SAMPLING

Groundwater samples were collected from monitoring wells MW-2, MW-3, and MW-4. The monitoring wells were not purged due to poor recovery after purging. Sampling without purging is consistent with Alameda County Health Care Services requested sampling methodology at other sites.

The following are procedures for well monitoring, well purging, and water sampling.

1. All equipment was washed prior to entering the well with an Alconox solution, followed by two tap water rinses and a deionized water rinse.

2 Prior to sampling the wells depth-to-water was measured to an accuracy of approximately 0 01 foot The measurements were made to the top of the well casing on the north side

4 Water samples were collected with a single-use Teflon bailer The water collected was immediately decanted into laboratory-supplied vials and

Attachment C

Standard Field Procedures for Hydraulic-Push Sampling

CAMBRIA

STANDARD FIELD PROCEDURES FOR GEOPROBE® SAMPLING

This document describes Cambria Environmental Technology's standard field methods for GeoProbe® soil and ground water sampling. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor odor or staining, estimate ground water depth and quality and to submit samples for chemical analysis.

Soil Classification/Logging

All soil samples are classified according to the Unified Soil Classification System by a trained geologist or engineer working under the supervision of a California Registered Geologist (RG) or a Certified Engineering Geologist (CEG). The following soil properties are noted for each soil sample:

- Principal and secondary grain size category (i.e., sand, silt, clay or gravel)
- Approximate percentage of each grain size category,
- Color,
- Approximate water or separate-phase hydrocarbon saturation percentage,
- Observed odor and/or discoloration,
- Other significant observations (i.e., cementation, presence of marker horizons, mineralogy), and
- Estimated permeability.

Soil Sampling

GeoProbe® soil samples are collected from borings driven using hydraulic push technologies. A minimum of one and one half ft of the soil column is collected for every five ft of drilled depth. Additional soil samples can be collected near the water table and at lithologic changes. Samples are collected using samplers lined with polyethylene or brass tubes driven into undisturbed sediments at the bottom of the borehole. The ground surface immediately adjacent to the boring is used as a datum to measure sample depth. The horizontal location of each boring is measured in the field relative to a permanent on-site reference using a measuring wheel or tape measure.

Drilling and sampling equipment is steam-cleaned or washed prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

Sample Storage, Handling and Transport

Sampling tubes chosen for analysis are trimmed of excess soil and capped with Teflon® tape and plastic end caps. Soil samples are labeled and stored at or below 4 C on either crushed or dry ice, depending upon local regulations. Samples are transported under chain-of-custody to a State-certified analytic laboratory.

Field Screening

After a soil sample has been collected, soil from the remaining tubing is placed inside a sealed plastic bag and set aside to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable GasTech® or photoionization detector measures volatile hydrocarbon vapor concentrations in the bag's headspace, extracting the vapor through a slit in the plastic bag. The measurements are used along with the field observations, odors, stratigraphy and ground water depth to select soil samples for analysis.

Grab Ground Water Sampling

Ground water samples are collected from the open borehole using bailers, advancing disposable Tygon® tubing into the borehole and extracting ground water using a diaphragm pump, or using a hydro-punch style sampler with a bailer or tubing. The ground water samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4° C, and transported under chain-of-custody to the laboratory.

Duplicates and Blanks

Blind duplicate water samples are usually collected only for monitoring well sampling programs, at a rate of one blind sample for every 10 wells sampled. Laboratory-supplied trip blanks accompany samples collected for all sampling programs to check for cross-contamination caused by sample handling and transport. These trip blanks are analyzed if the internal laboratory quality assurance/quality control (QA/QC) blanks contain the suspected field contaminants. An equipment blank may also be analyzed if non-dedicated sampling equipment is used.

Grouting

If the borings are not completed as wells, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.