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March 23, 2015

Mr. Keith Nowell
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: **Work Plan – Well Destruction and Waste Characterization**

Site: **76 Station No. 5191/5043**
449 Hegenberger Road
Oakland, California
Fuel Leak Case No. RO0000219

Dear Mr. Nowell;

I declare under penalty of perjury that to the best of my knowledge the information and/or recommendations contained in the attached report is/are true and correct.

If you have any questions or need additional information, please call:

Walter T. Sprague
Pacific Convenience & Fuel
7180 Koll Center Parkway, Suite 100
Pleasanton, California 94566
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WSprague@pcandf.com

Sincerely,

PACIFIC CONVENIENCE & FUEL

WALTER SPRAGUE
Director of Retail Services

Attachment

Work Plan - Well Destruction and Waste Characterization

76 Station No. 5191/5043
449 Hegenberger Road
Oakland, CA

Alameda County Health Care Services
Agency Fuel Leak Case No. RO0000219

San Francisco Bay, Regional Water Quality
Control Board Case No. 01-1601

GeoTracker Global ID No.T0600101476

Antea Group Project No. I42705191

March 23, 2015

Prepared for:
Mr. Keith Nowell
Alameda County Health Care
Services Agency
1131 Harbor Bay Parkway,
Suite 250
Alameda, CA 94502-6577

Prepared by:
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Antea USA, Inc.

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Work Plan

Well Destruction and Waste Characterization
76 Station No. 5191/5043

1.0 INTRODUCTION

Antea® Group is pleased to submit this *Work Plan – Well Destruction and Waste Characterization*, for the references site in Oakland, California (**Figure 1**). The proposed destruction of two (2) off-site monitoring wells is in response to the site meeting held at the Alameda County Health Care Services Agency (ACHCSA) office on February 24, 2015. In addition, three (3) soil borings will be advanced for the purpose of waste characterization in the areas of the proposed on-site soil excavation activities as detailed in the *Corrective Action Plan* (CAP), dated November 22, 2013, and submitted to the ACHCSA.

1.1 Site Description

The subject site is an operating 76 station located on the southwestern corner of Hegenberger Road and Edgewater Drive in Oakland, California **(Figure 1)**. This site contains six fuel dispensers on two islands under a single canopy, three fuel underground storage tanks (USTs) on the north side of the site, a carwash facility on the west side of the site, and a station building in the central portion of the site. The current site features are shown on **Figure 2**. A summary of previous site assessment, environmental investigations, remedial activities, and sensitive receptors are presented in **Appendix A.**

2.0 PROPOSED ACTIVITIES

2.1 Health and Safety

Before commencing field activities, Antea Group will prepare a Health and Safety Plan in accordance with state and federal requirements for use during investigation activities. Drilling permits will be obtained for the well destruction and soil borings from the Alameda County Public Works Agency (ACPWA). Prior to well destruction and soil boring advancement, Underground Service Alert (USA) will be notified, as required by law, and a private utility locator will be employed to clear the well and boring locations for underground utilities.

2.2 Well Destruction

Antea Group proposes destroying monitoring wells MW-7 and MW-8 as agreed upon during the meeting held at ACHCSA on February 24, 2015. Locations of monitoring wells MW-7 and MW-8 are shown on **Figure 2**. Prior to the destruction of each of the monitoring wells, the total depth of each monitoring well will be measured to assess if any obstruction or sediment is present. Well logs from the two monitoring wells are included as **Appendix B**. Subsequent to measuring the depths of the wells, the wells will cleared, removing the well casing, sanitary seal and well vault, to 5 feet below ground surface (bgs) using an air-knife to clear for underground utilities. Subsequent to air-knifing, the monitoring well will be destroyed by over-drilling.

Over-drilling will consist of using a truck mounted drill-rig equipped with 8-inch outside diameter hollow-stem augers to drill out the well casing and annular material to the total constructed depths of the two monitoring wells. Subsequent to over-drilling, each borehole will be backfilled with neat cement to just below ground surface. Each borehole will then be capped with asphalt to match existing grade.

2.3 Waste Characterization

In preparation for the proposed soil excavation activities, Antea Group must collect soil samples to properly characterize waste soil for disposal at an approved facility. One (1) sample is required for every 500 cubic yards of waste material. Based on the footprint and depth of the proposed excavation areas, it is estimated that approximately 1,475 cubic yards of material will be removed from the site during the excavation(s); therefore, three (3) samples must be collected from the site to satisfy the waste characterization requirements. Locations of the proposed soil borings for collection of soil samples are presented on **Figure 3**. The soil borings will be cleared to 5 feet bgs using a hand auger to clear for underground utilities. Subsequent to hand auger, the borings will be advanced to 12 feet bgs, the vertical extent of the proposed soil excavations, using direct push technology. Upon completion, the borings will be backfilled with neat cement and capped with concrete dyed to match existing grade.
Soil samples retained for laboratory analysis will be given a unique sample number, placed in an ice-cooled chest, and recorded on the chain-of-custody. All soil samples collected during borehole advancement activities will be submitted to Pace Analytical (Pace), a state of California Environmental Laboratory Accreditation Program (ELAP) certified laboratory (Certification No. 08263CA), and analyzed for the following constituents:

- Total petroleum hydrocarbons – gasoline range organics (TPHg), carbon chain range C05 – C12, and full suite of volatile organic compounds (VOCs) by Environmental Protection Agency (EPA) Method 8260B; and
- Total petroleum hydrocarbons – diesel range organics (TPHd) [silica gel treated] and total petroleum hydrocarbons – motor oil range organics (TPHmo) by EPA Method 8015; and
- LUFT 5 Metals, including cadmium, chromium, lead, nickel, and zinc by EPA Method 6010.

2.4 Disposal of Drill Cuttings and Waste Water

Drill cuttings and decontamination water generated during well destruction soil boring advancement activities will be placed into properly labeled 55-gallon Department of Transportation (DOT) approved steel drums and temporarily stored on the station property. Samples of the drill cuttings, and decontamination wastewater will be collected, properly labeled and placed on ice for submittal to a California-certified laboratory and will be analyzed for total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, and total xylenes (BTEX), and methyl tertiary-butyl ether (MTBE) by Environmental Protection Agency (EPA) Method 8260, and lead by EPA Method 6010. A chain-of-custody will accompany the samples during transportation to the laboratory. Subsequent to receiving the laboratory analytical results, the drummed drill cuttings and decontamination wastewater will be profiled, transported, and disposed of at an approved facility.

2.5 Reporting

A summary report, describing the well destruction and soil boring activities will be submitted no later than 60 days after the field work has been completed. Required electronic submittals will be uploaded to the State GeoTracker database.

3.0 REMARKS

The recommendations contained in this report represent Antea USA, Inc.'s professional opinions based upon the currently available information and are arrived at in accordance with currently accepted professional standards. This report is based upon a specific scope of work requested by the client. The contract between Antea USA, Inc. and its client outlines the scope of work, and only those tasks specifically authorized by that contract or outlined in this report were performed. This report is intended only for the use of Antea USA, Inc.'s client and anyone else specifically identified in writing by Antea USA, Inc. as a user of this report. Antea USA, Inc. will not and cannot be liable for unauthorized reliance by any other third party. Other than as contained in this paragraph, Antea USA, Inc. makes no express or implied warranty as to the contents of this report.

Date: 3/23/15

Edward T. Weyrens, G.I.T.
Project Professional

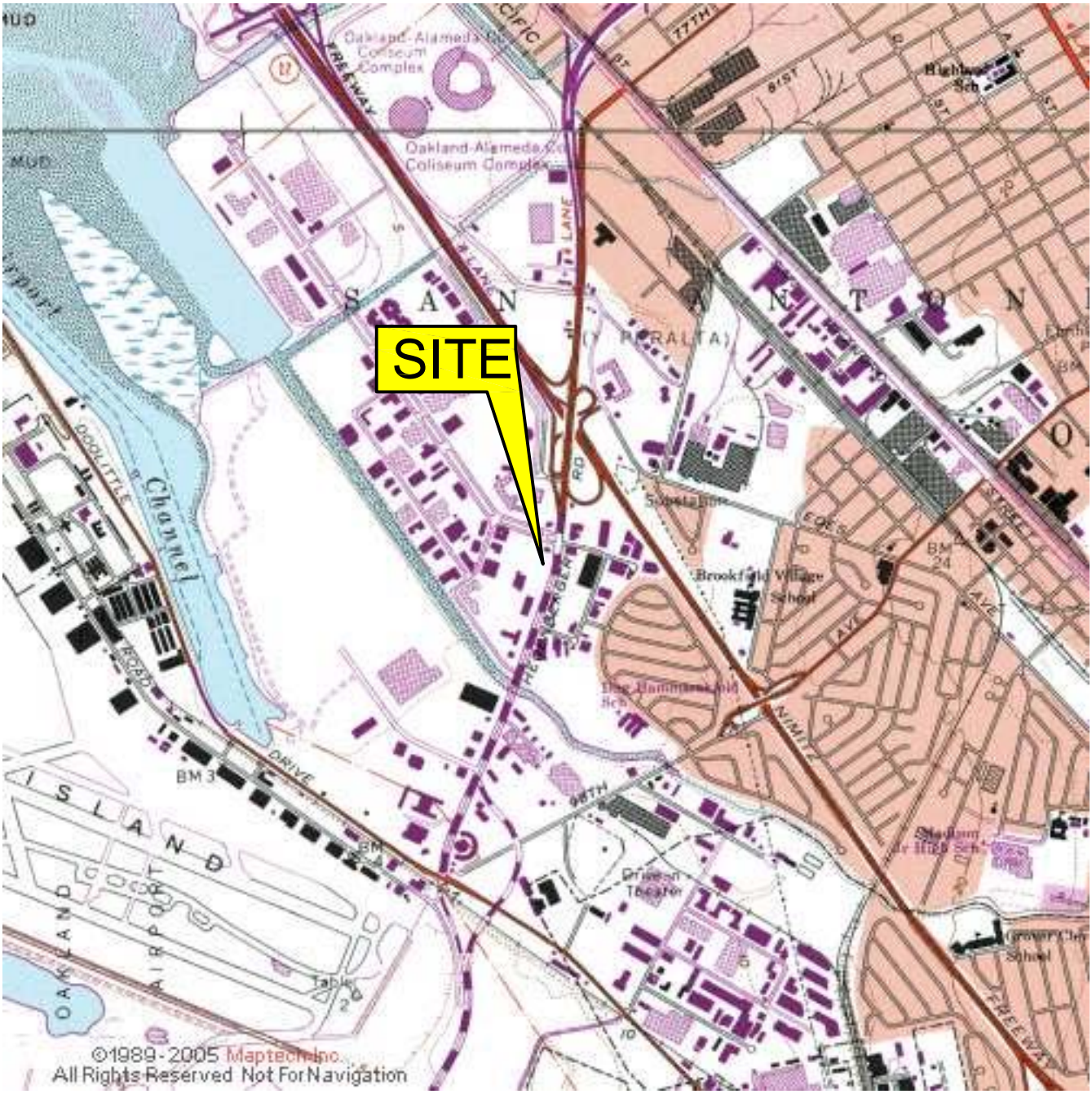
Reviewed by:

PROFESSIONAL GEOLOGIST
DENNIS SHANNON DETTLOFF
No. 7480
STATE OF CALIFORNIA

Date: 3/23/15

Dennis S. Dettloff, P.G.
Senior Project Manager
California Registered Geologist No. 7480

Figures



North

0 900 1800 FT

SCALE

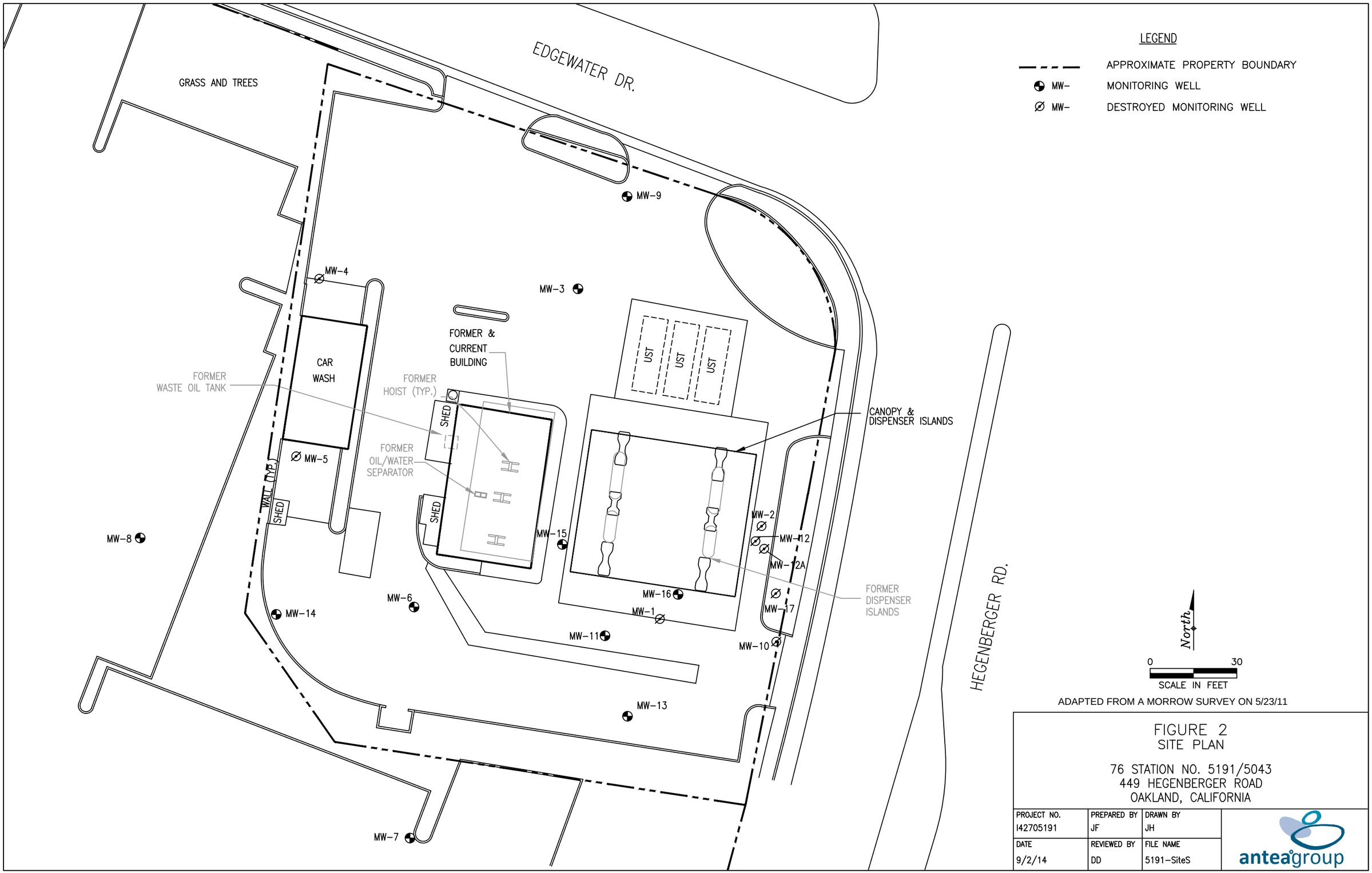
SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC MAP, OAKLAND EAST QUADRANGLE (1973)

FIGURE 1
SITE LOCATION MAP

76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

PROJECT NO.	PREPARED BY	DRAWN BY
142705191	EW	DR/JH
DATE	REVIEWED BY	FILE NAME
1/31/11	DD	5043-SiteLocator

antea group



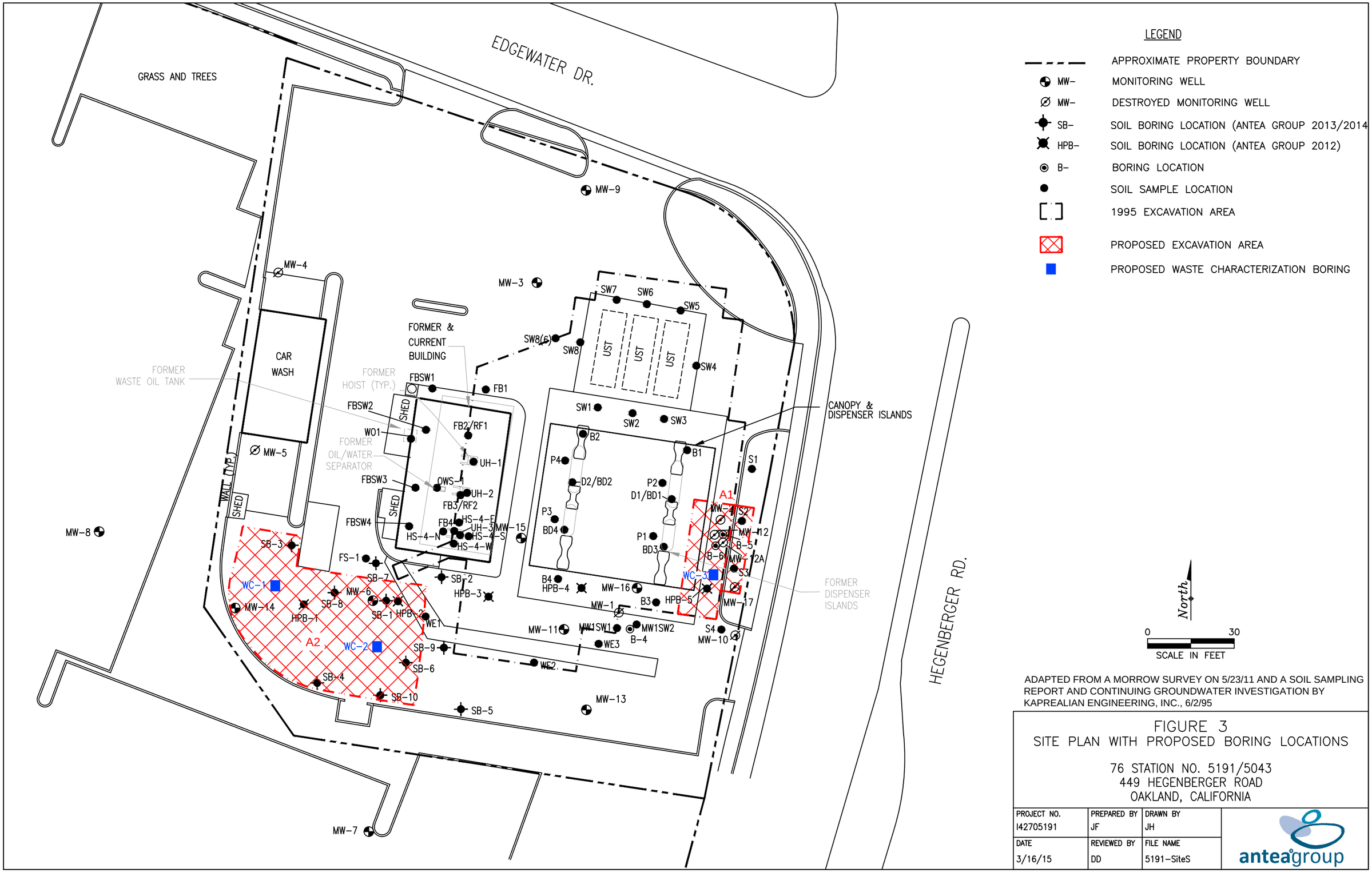
ADAPTED FROM A MORROW SURVEY ON 5/23/11

FIGURE 2
SITE PLAN

76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

PROJECT NO.	PREPARED BY	DRAWN BY
142705191	JF	JH
DATE	REVIEWED BY	FILE NAME
9/2/14	DD	5191-SiteS

antea group



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- MW– MONITORING WELL
- MW– DESTROYED MONITORING WELL
- SB– SOIL BORING LOCATION (ANTEA GROUP 2013/2014
- HPB– SOIL BORING LOCATION (ANTEA GROUP 2012)
- B– BORING LOCATION
- SOIL SAMPLE LOCATION
- 1995 EXCAVATION AREA
- PROPOSED EXCAVATION AREA
- PROPOSED WASTE CHARACTERIZATION BORING

North

0 30

SCALE IN FEET

ADAPTED FROM A MORROW SURVEY ON 5/23/11 AND A SOIL SAMPLING REPORT AND CONTINUING GROUNDWATER INVESTIGATION BY KAPREALIAN ENGINEERING, INC., 6/2/95

FIGURE 3
SITE PLAN WITH PROPOSED BORING LOCATIONS

76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

PROJECT NO.	PREPARED BY	DRAWN BY
142705191	JF	JH
DATE	REVIEWED BY	FILE NAME
3/16/15	DD	5191-SiteS

antea group

Appendix A

Previous Investigation and Site History Summary

PREVIOUS INVESTIGATION AND SITE HISTORY SUMMARY

October 1991 - Four soil samples were collected from the product pipe trenches at depths of approximately 3 feet below ground surface (bgs) during a dispenser island modification. The product pipe trenches were subsequently excavated to the groundwater depth at 4 to 4.5 feet bgs.

February 1992 - Three monitoring wells, MW-1 through MW-3, were installed at the site to depths ranging from 13.5 to 15 feet bgs.

August 1992 - Three additional monitoring wells, MW-4 through MW-6, were installed at the site to a depth of 13.5 feet bgs.

September 1994 - One 280-gallon waste-oil UST was removed from the site. The UST was made of steel, and no apparent holes or cracks were observed in the UST. One soil sample was collected from beneath the former UST at a depth of approximately 9 feet bgs. No petroleum hydrocarbons were reported.

January 1995 - Two additional monitoring wells, MW-9 and MW-10, were installed to depths of 13 and 15 feet bgs. In addition, monitoring wells MW-4 and MW-5 were destroyed by over-drilling the wells and backfilling with neat cement.

March 1995 - Two 10,000-gallon gasoline USTs and one 10,000-gallon diesel UST were removed from the site. Groundwater was encountered in the tank cavity at a depth of approximately 8.5 feet bgs. Soil samples contained total petroleum hydrocarbons as diesel (TPHd) and benzene, and TPH as gasoline (TPHg). Approximately 125,000 gallons of groundwater were pumped from the site for remediation and properly disposed off-site. Four fuel dispenser islands and associated product piping were also removed. Based on the results of the confirmation samples, the product dispenser islands were over excavated to approximately 6 feet bgs.

March-April 1995 - During demolition activities of the former station building, soil samples were collected from two excavations, which were subsequently over excavated. Confirmation samples contained petroleum hydrocarbons. An additional area on the south side of the former station building was excavated based on photo-ionization detector (PID) readings. Two monitoring wells, MW-1 and MW-2, were destroyed in order to allow for over excavation activities to extend to an area adjacent to the dispenser islands in the southeastern quadrant of the site. The excavated areas were subsequently backfilled with clean-engineered fill.

April 1997 - Two additional monitoring wells, MW-7 and MW-8, were installed off-site to the south and east on the neighboring property to a depth of 13 feet bgs. In addition, monitoring well MW-3, which was damaged during site renovation activities, was fully drilled out and reconstructed in the same borehole.

October 2003 - Site environmental consulting responsibilities were transferred to TRC.

April 8-9, 2005 - TRC conducted a 24-hour dual phase extraction (DPE) test at the site using monitoring well MW-6. The 24-hour DPE test was only moderately successful at removing vapor-phase petroleum hydrocarbons from the subsurface; therefore, TRC recommended DPE no longer be considered a viable remedial alternative for the site.

October 2007 - Site environmental consulting responsibilities were transferred to Delta Consultants.

December 2009 - Delta advanced two borings, B-4 and B-5, to depths of 20 feet bgs and 32 feet bgs, respectively. Analytical results from the soil and groundwater samples collected from these two borings indicated that the soil and the groundwater were impacted by petroleum hydrocarbons at these locations.

June 2010 – Delta installed two 4-inch diameter monitoring/extraction wells, MW-11 and MW-12, and two 2-inch diameter monitoring wells, MW-12A and MW-13, at the site. Analytical results from the soil and groundwater samples collected from the MW-12 and MW-12A boring locations indicated that the soil and the groundwater were impacted by petroleum hydrocarbons at these locations.

May 2011 – Antea Group (formally Delta Consultants) installed four 2-inch diameter monitoring wells, MW-14 through MW-17, and advanced one soil boring, B-6, at the site. All four monitoring wells were installed with ten feet of screen from 3 feet bgs to 13 feet bgs. Analytical results of soil samples collected during the monitoring well installation reported TPHg concentrations ranging from 1.0 milligrams per kilogram (mg/kg) (MW-14d13) to 2,490 mg/kg (B-6d9), benzene concentrations ranging from 0.67 mg/kg (B-6d21) to 26.4 mg/kg (B-6d9), toluene concentrations ranging from 0.2 mg/kg (MW-14d10) to 73.9 mg/kg (B-6d9), ethylbenzene concentrations ranging from 0.037 mg/kg (MW-14d13) to 58.1 mg/kg (B-6d9), total xylenes concentrations ranging from 0.066 mg/kg (MW-14d13) to 230 mg/kg (B-6d9), methyl tertiary-butyl ether (MTBE) concentrations ranging from 0.015 mg/kg (MW-15d13) to 0.19 mg/kg (MW-15d8), tertiary-butyl alcohol (TBA) concentrations ranging from 0.014 mg/kg (MW-16d8 and B-6d21) to 0.16 mg/kg (MW-15d8), and lead concentrations ranging from 5.5 mg/kg (MW-16d13) to 16.3 mg/kg (MW-17d9). Diesel range organics (DRO) and DRO with silica gel concentrations were reported; however, all of the results did not match the laboratory standard for diesel. Concentrations of DRO ranged from 2.9 mg/kg (MW-17d13) to 258 mg/kg (B-6d14) and DRO with silica gel concentrations ranged from 2.5 mg/kg (MW-17d13) to 250 mg/kg (B-6d14).

March 2012 – Antea Group advanced five soil borings (HPB-1 through HPB-5) at the site. The borings were advanced using direct push technology. The borings were used to obtain a hydraulic profile of the substrate beneath the site. The data obtained during the investigation will be used to determine the best path forward in terms of remediation.

July 2013 – Antea Group advanced ten soil borings (SB-1 through SB-10) at the site. The borings were advanced using direct push technology. The borings were used to delineate petroleum hydrocarbon impacted soil around

monitoring well MW-6. Results of the investigation can be found in the *Site Investigation Report*, dated January 9, 2014.

June 2014 – Antea Group destroyed monitoring wells MW-10, MW-12, MW-12A, and MW-17 by pressure grouting. The wells were destroyed in preparation for on-site soil excavation activities.

September 2014 – Antea Group advanced two (2) cone penetration test (CPT) borings CPT-1 and CPT-2 in preparation for soil excavations on site. Soil and groundwater samples were not collected. Data from the CPT borings was used to help design shoring for excavations. Antea Group advanced three (3) off-site soil borings, SB-13 through SB-15. Soil and grab-groundwater samples were collected from the borings.

SENSITIVE RECEPTORS

April 24, 2006, TRC completed a sensitive receptor survey for the site. According to the Department of Water Resources (DWR) records, three water supply wells are located within one-half mile of the site. The closest well is an irrigation well, reported to be, approximately 1,080 feet southeast of the site. In addition, two surface water bodies were observed within a one-half mile radius of the site. San Leandro Creek is located approximately 1,400 feet southwest of the site and flows into the San Leandro Bay. Elmhurst Creek is located approximately 2,220 feet north of the site and also flows into the San Leandro Bay.

Current Consultant: **Antea Group**

Appendix B

Well Logs

BORING LOG

Project No. KEI-P 91-1004.P8	**Boring Diameter** 8.5" **Casing Diameter** 2"	**Logged By** JGG D.L. CEG 1633
Project Name Unocal S/S #5043 499 Hegenberger Road Oakland, California	**Well Cover Elevation** N/A	**Date Drilled** 4/21/97
Boring No. MW7	**Drilling Method** Hollow-stem Auger	**Drilling Company** Woodward Drilling

Pene-tration blows/6"	G.W level	O.V.M. (P.P.M.)	Depth (feet) Samples	Stratigraphy USCS	Description
			0		A.C. pavement over sand and gravel base.
	▽			SP	Poorly graded sand, predominantly medium-grained, loose, moist grading to saturated, brown (fill).
			5	SW	Well graded sand with gravel, loose, saturated, very dark grayish brown (fill).
				ML	Clayey silt, soft, wet, black and dark greenish gray, mottled.
				ML	Sandy silt, soft, wet, dark greenish gray.
1/1/1				Pt	Peat, variable silt and clay content, soft, fibrous, wet, brown and black.
				ML	Clayey silt, soft, wet, black, with abundant plant remains.
			10		
6/7/9				CH	Silty clay, stiff, moist, dark gray, with plant remains and root holes.
					TOTAL DEPTH: 13'
			15		
			20		

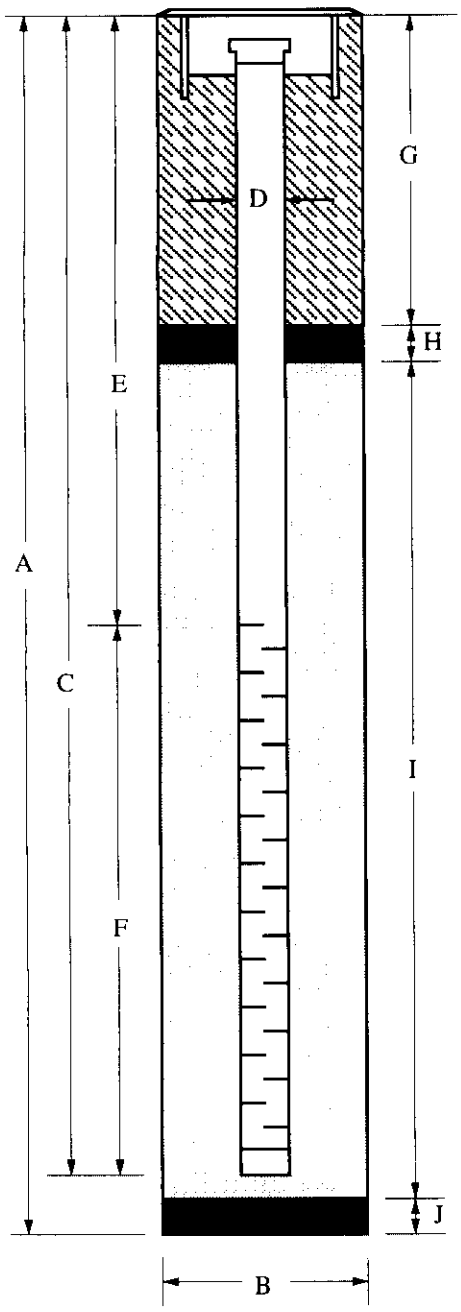
WELL CONSTRUCTION DIAGRAM

PROJECT NAME: Unocal S/S #5043, 499 Hegenberger Road, Oakland **WELL NO.:** MW7

PROJECT NUMBER: KEI-P91-1004.P8

WELL PERMIT NO.: ACFC & WCD #97187

Flush-mounted Well Cover



A. Total Depth : 13'

B. Boring Diameter: 8.5"

Drilling Method: Hollow Stem Auger

C. Casing Length: 13'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 2.375"

ID = 2.067"

E. Depth to Perforations: 3'

F. Perforated Length: 10'

Perforation Type: Machine Slotted

Perforation Size: 0.010"

G. Surface Seal: 2'

Seal Material: Neat Cement

H. Seal: 0.5'

Seal Material: Bentonite

I. Filter Pack: 10.5'

Pack Material: RMC Lonestar Sand

Size: #2/12

J. Bottom Seal: None

Seal Material: N/A

BORING LOG

Project No. KEI-P 91-1004.P8	**Boring Diameter** 8.5" **Casing Diameter** 2"	**Logged By** D.L. JLG CEG 1633
Project Name Unocal S/S #5043 499 Hegenberger Road Oakland, California	**Well Cover Elevation** N/A	**Date Drilled** 4/21/97
Boring No. MW8	**Drilling Method** Hollow-stem Auger	**Drilling Company** Woodward Drilling

Pene-tration blows/6"	G.W level	O.V.M. (P.P.M.)	Depth (feet) Samples	Stratigraphy USCS	Description
			0		A.C. pavement over sand and gravel base.
					Pocketed clay, silt and sand, firm to stiff, moist, dark olive gray and dark greenish gray (fill and or disturbed native soil).
					Silty gravel, medium dense, moist to very moist, (fill).
2/2/4			5		Silty very fine to fine-grained sand, estimated at 20-30% silt, firm to stiff, very moist, dark gray.
2/2/2	▽			ML	Clayey silt, firm, very moist to wet, black and dark greenish gray, with abundant plant remains lensed with black sandy silt, wet.
2/5/6			10	CL	Silty clay, stiff, moist, black, with minor plant remains, root holes common.
6/12/24				MH	Clayey silt, estimated at 30-40% silt, trace fine-grained sand, stiff to very stiff, moist, dark greenish gray and olive, mottled, with occasional root holes and plant fibers, clay content increases with depth.
			15		TOTAL DEPTH: 15'
			20		

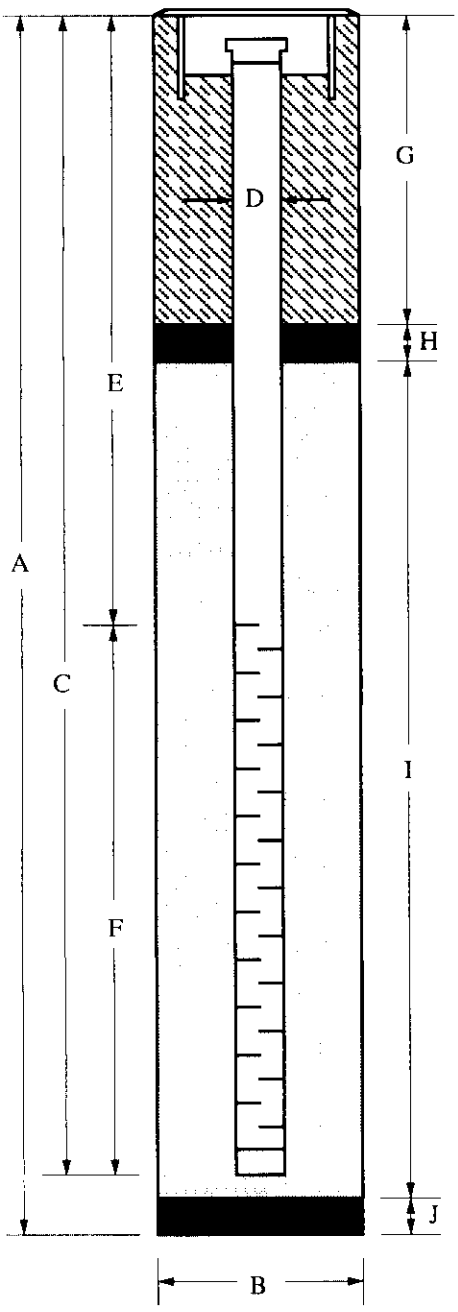
WELL CONSTRUCTION DIAGRAM

PROJECT NAME: Unocal S/S #5043, 499 Hegenberger Road, Oakland **WELL NO.:** MW8

PROJECT NUMBER: KEI-P91-1004.P8

WELL PERMIT NO.: ACFC & WCD #97187

Flush-mounted Well Cover



A. Total Depth : 15'

B. Boring Diameter: 8.5"

Drilling Method: Hollow Stem Auger

C. Casing Length: 15'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 2.375"

ID = 2.067"

E. Depth to Perforations: 3'

F. Perforated Length: 12'

Perforation Type: Machine Slotted

Perforation Size: 0.010"

G. Surface Seal: 2'

Seal Material: Neat Cement

H. Seal: 0.5'

Seal Material: Bentonite

I. Filter Pack: 12.5'

Pack Material: RMC Lonestar Sand

Size: #2/12

J. Bottom Seal: None

Seal Material: N/A