CONESTOGA-ROVERS
& ASSOCIATES

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October 5, 2007

Mr. Steven Plunkett, Hazardous Materials Specialist
Alameda County Health Care Services Agency, Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502
510/383-1767

Re: **Onsite Characterization Work Plan**
Former ARCO Service Station
706 Harrison Street, Oakland, California
Fuel Leak Case No. RO0000484
CRA Project No. 231116

Dear Mr. Plunkett,

On behalf of Mr. Bo Gin, Conestoga-Rovers & Associates (CRA) is pleased to present this *Onsite Characterization Work Plan* for the above referenced site. This is in response to your August 2, 2007 letter. Pending your approval, we proposed to characterize onsite soil to attempt to determine if an onsite source currently exist. This will allow us to collect a more current representation of soil and groundwater conditions. After we have completed the onsite characterization, we would like to meet with you to discuss the project.

Please call me at (510) 420-3307 if you have any questions regarding this report or the project.

Sincerely,
Conestoga-Rovers & Associates

Mark Jonas, P.G.
Senior Project Manager

Attachment: *Onsite Characterization Work Plan*

cc: Mr. Bo Gin, 342 Lester Avenue, Oakland, California 94606

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CONESTOGA-ROVERS
& ASSOCIATES

Onsite Characterization Work Plan

Former ARCO Service Station
706 Harrison Street, Oakland, California
Fuel Leak Case No. RO0000484
CRA Project No. 231116

October 5, 2007

Prepared For:

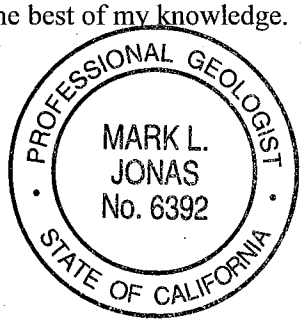
Mr. Bo K. Gin
342 Lester Avenue
Oakland, California 94606

Prepared By:

Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, California 94608

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

Mark Jonas, P.G.
Senior Project Manager



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Onsite Characterization Work Plan

Former ARCO Service Station

706 Harrison Street, Oakland, California

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CONESTOGA-ROVERS
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Onsite Characterization Work Plan
Former ARCO Service Station
706 Harrison Street, Oakland, California
Fuel Leak Case No. RO0000484
CRA Project No. 231116

October 5, 2007

1.0 INTRODUCTION

On behalf of Mr. Bo Gin, Conestoga-Rovers & Associates (CRA) is pleased to submit this *Onsite Characterization Work Plan (Work Plan)* for the above referenced site. This report is in response to the Alameda County Health Care Services Agency, Environmental Health Services (ACEH) letter from Mr. Steven Plunkett dated August 2, 2007 (Appendix A). ACEH is the lead agency for this site. Presented in this *Work Plan* are site background, a proposed scope of work for site characterization, and a quality assurance project plan.

2.0 SITE BACKGROUND

2.1. Site Description

The site is a former ARCO Service Station located at 706 Harrison Street in Oakland, California (Figure 1). An aerial photograph is presented as Figure 2. Figure 3 presents a site map and known subsurface utilities. The property is bound by Seventh Street to the southwest, Harrison Street to the northwest and commercial properties to the southeast and northeast, including a former Shell gasoline service station. Local land use is a mixed commercial and residential. The subject site is currently vacant and paved. Site elevation is approximately 30 feet above mean sea level. Regional topography generally slopes southward towards the Oakland Inner Harbor. The site is approximately one-half mile west of Lake Merritt and approximately one-half mile north of the Oakland Inner Harbor.

2.2. Previous Investigations and Activities

Environmental investigations have been performed at the site since 1988. Previous reports are identified in the reference section. The following provides a synopsis of environmental investigations and activities:

1963-1985: The site was apparently operated by the client as a gasoline service and repair station from approximately 1963 to 1985. The site may have also been used as a gasoline station prior to 1963. In 1963 the client leased the site from ARCO. In 1978 the client apparently purchased the facility (FLA 1991). Operations ceased at the facility in 1985.

August 1988: In August 1988, Frank Lee and Associates of Fremont, California advanced seven onsite soil borings to a maximum depth of 20 ft bgs. A maximum of 19 parts per million (ppm) total petroleum fuel hydrocarbons and 0.83 ppm benzene were detected in a composite sample collected from a boring drilled adjacent to the existing USTs, located at the southwestern corner of the site.

January 1991 Tank Removals: In January 1991, the service station buildings were demolished and seven underground storage tanks (USTs) were excavated and removed. Tank Protection Engineers of Union City, California removed four 1,000-gallon gasoline underground storage tanks (UST), two 6,000-gallon gasoline USTs, and one waste oil tank. Up to 9,400 ppm total petroleum hydrocarbons as gasoline (TPHg) and 82 ppm benzene were detected in the confirmation soil samples collected.

December 1991 UST Pipe Removal and Limited Subsurface Investigation: In December 12, 1991, Consolidated Technologies were contracted to perform a limited subsurface site investigation. Resampling of the former tank pits were supervised by Paul Smith from Alameda county Environmental Health (ACEH) (Hazardous Material Division).

February 1993 Overexcavations: In February 1993, Dennis Bates and Associates (DBA) of Monterey, California overexcavated an unspecified volume of hydrocarbon-bearing soil from three excavations in the vicinity of the former UST locations. Since they did not shore the excavations, they were unable to remove all of the hydrocarbon contaminated soil. A soil sample collected at 16 ft bgs contained 4,300 ppm TPHg and 66 ppm benzene.

July 1993 Monitoring Well and Soil Vapor Extraction Well Installation: In July 1993, DBA installed monitoring wells MW-1, MW-2, and MW-3 and soil vapor extraction wells VW-1 and VW-2. Maximum concentrations of 6,000 ppm TPHg and 210 ppm benzene were detected in the 17 ft bgs soil sample collected from VW-2.

December 1993 Soil Sampling, In December 1993, DBA collected shallow soil samples from a former pump island location. A maximum of 17 ppm organic lead was detected in a soil sample collected from 2 ft bgs.

April 1994 Soil Vapor Extraction Test: In April 1994, Remediation Testing and Design (RTD) of Santa Cruz, California conducted a soil vapor extraction (SVE) feasibility study. Up to 8,353 parts per million by volume (ppmv) TPHg were detected in the vapor samples. RTD concluded that soil vapor extraction was an effective remedial alternative for this site.

November 1994 Monitoring Well And soil Vapor Extraction Well Installation In November and December 1994, Cambria installed monitoring wells MW-4, MW-5, MW-6, and MW-7 and soil vapor extraction/air sparge wells VW/SP-3, VW/SP-4, and VW/SP-5. Maximum concentrations of 15,000 ppm TPHg and 160 ppm benzene were detected in the 17.5-foot bgs soil sample collected from VW-4.

May 1998 Onsite Remediation: In May 1998, Cambria installed and began operation of a SVE and air sparging (AS) system.

February 2001 Soil Vapor Extraction System Termination The soil vapor extraction system was eventually shut down in February 2001. But the AS system continued to inject air into wells SP-3, SP-4, and SP-5 to increase oxygen concentrations, thereby enhancing aerobic biodegradation.

March 2003 Groundwater Monitoring: Groundwater was sampled twice from vapor wells VW-3 and VW-4 in March 2003. No petroleum hydrocarbons or MTBE were detected in these wells.

2003 Air Sparge System Termination: The air sparge system was shutdown during the first quarter 2003 due to the absence of hydrocarbons in groundwater near air sparge wells SP-3 and SP-4. The air sparge equipment was removed from the site on May 8, 2003. The system enclosure, well manifold, and individual remediation piping remains in place

August 1993 Quarterly Groundwater Monitoring: The quarterly groundwater monitoring program has been ongoing at the site since August 1993. In May 2002, Cambria began sampling MW-3, MW-5, MW-6, and MW-7 semi-annually as per telephone discussions with Mr. Barney Chan of ACHCSA. Recently, however, low levels of petroleum hydrocarbons and MTBE have been detected in wells MW-6 and MW-7. As a result, Cambria has resumed quarterly sampling of these wells.

3.0 SITE CHARACTERIZATION

3.1. Geology and Hydrogeology

3.1.1. Regional and Local Geology

The site is located in the Coast Range Physiographic Province, characterized by northwest-southeast trending valleys and ridges. This region lies between the Pacific Ocean to the west and the Great Valley to the east. The oldest known bedrock in the Coast Range Province is marine sedimentary and volcanic rocks that from the Franciscan Assemblage. Geologic formations in the San Francisco Bay Region range in age from Jurassic to recent Holocene.

The site is located to the west of the Oakland-Berkeley Hills on the East Bay Plain, which slopes gently to the west towards San Francisco Bay. The San Francisco Bay is located in a broad depression in the Franciscan bedrock resulting from an east-west expansion between the San Andreas and Hayward fault systems. Unconsolidated sediments in the East Bay Plain varying in thickness, with some areas up 1,000 feet thick. From oldest to youngest, the unconsolidated

sediments are 1/ Santa Clara Formation, 2/ Alameda Formation, 3/ Temescal Formation, and 4/ artificial fill (DWR 2003). The Early Pleistocene Santa Clara Formation consists of alluvial fan deposits inter-fingered with lake, swamp, river channel, and flood plain deposits, ranging from 300 to 600 feet thick. The Late Pleistocene and Holocene Alameda Formation was deposited primarily in an estuarine environment and consists of alluvial fan deposits bound by mud deposits on the top and bottom of the formation. The Alameda Formation ranges from 26 to 245 feet thick and is subdivided into the Yerba Buena Mud, San Antonio, Merritt, and Young Bay Mud Members. The Early Holocene Temescal Formation is an alluvial fan deposit consisting primarily of silts and clays with some gravel layers, ranging from 1 to 50 feet thick, thinning toward the bay. Base on the United States Geological Service (USGS 2000), immediately under any artificial fill is the eolian Merritt Sand subdivision of the Alameda Formation. Clayey units may represent Holocene Bay Mud interfingering with Merritt Sand.

The geologic materials encountered during site investigative activities consist of green to reddish-brown, well-sorted sands to clayey sands. These materials extend to a maximum explored depth of 32 feet bgs.

3.1.2. Regional and Local Hydrogeology

The site is located in the East Bay Plain Subbasin, Groundwater Basin No. 2-9.04 (DWR 2004). The East Bay Plain Subbasin is a northwest trending alluvial basin, bounded on the north by San Pablo Bay, on the east by the contact with Franciscan basement rock, and on the south by the Nile Cone Groundwater Basin. The East Bay Plain Subbasin extends beneath the San Francisco Bay to the west. The East Bay Plain Subbasin aquifer system consists of unconsolidated sediments of Quaternary age. These include the Santa Clara Formation, Alameda Formation, Temescal Formation, and artificial fill.

In the project area most rainfall occurs between November and March. The average annual rainfall is approximately 23 inches.

Throughout most of the East Bay Plain, regional water level contours show that the direction of groundwater flow is generally east to west, towards San Francisco Bay, with some localized variation. Groundwater flow direction typically correlates to topography.

From 1860 to 1930 groundwater from the East Bay Plain was the major water supply of the East Bay, before Sierra water was imported into the area. By the late 1920's the groundwater supply was too small to meet the growing population and the wells often became contaminated by seepage or saltwater intrusion. By 1929, East Bay Municipal Utility District (EBMUD) provided imported

water to East Bay communities via the Mokelumne Aqueduct. This high-quality, reliable supply soon eliminated the need for local groundwater wells. In 1996, the Regional Board reviewed General Plans for Oakland and other communities. They found that Oakland and most other cities did not have any plans to develop local groundwater resources for drinking water, due to existing or potential saltwater intrusion, contamination, or poor or limited quality (Regional Board 1999).

First water in various borings was typically encountered around 20 to 25 feet (ft) below ground surface (bgs). Depth to groundwater in monitoring wells typically ranges from 13.5 to 17.5 feet bgs. Local groundwater flow is to the southwest with a gradient of 0.02 feet per foot (ft/ft). The gradient and flow direction are consistent with historical data.

3.2. Hydrocarbon Distribution

3.2.1. Hydrocarbons in Soil

COCs in soil include TPHg and aromatic hydrocarbon compounds (BTEX). The majority of the hydrocarbon source was removed during UST removal and overexcavation activities. However, residual hydrocarbons remained beyond the limits of the excavation along Harrison Street because additional un-shored excavation was not possible without undermining the structural integrity of Harrison Street. Thus, residual hydrocarbons were left in place along the western side of the property. The highest concentrations detected were 15,000 milligrams per kilogram (mg/kg) TPHg (VW/SP-4 at a depth of 17.5 feet) and 210 mg/kg benzene (VW-2 at a depth of 17 feet). Both VW/SP-4 and VW-2 were sampled prior to the May 1998, installation and operation of an onsite SVE and air sparging (AS) system. Further soil sampling is proposed in this Work Plan to determine the efficiency of the onsite remediation SVE and air sparge (AS) treatment system.

Figure 4, 5, and 6 present TPHg concentrations in soil for discrete depths. Figure 7, 8, and 9 present benzene concentrations in soil, also for discrete sampling depths.

3.2.2. Hydrocarbons in Groundwater

Elevated concentrations of gasoline-range hydrocarbons have been previously detected in the monitoring wells located at the MW-(1, 2,& 4). COCs in groundwater include TPHg, BTEX and MTBE. Historically, hydrocarbons in groundwater have been confined to the central and western portion of the site (Figure 2). The highest concentration of TPHg detected was 180,000 micrograms per liter (µg/L) (MW-2) in November 1999). The highest concentration of benzene detected was 18,000 µg/L (MW-1 in September 1997). The highest concentration of MTBE detected was 12,000

detected was 12,000 µg/L (MW-1 in May and November 2000). Hydrocarbon compounds were detected in well MW-(1, 2, & 4) during the most recent groundwater event (April 2007). The concentrations detected were 100,000 µg/L TPHg and 3,500 µg/L benzene in MW-2. Table 2 presents the historical analytical results of petroleum hydrocarbons in groundwater. Figure 10 presents a groundwater elevation contour and hydrocarbons concentration map for groundwater monitoring in April 2007.

An upgradient source or sources apparently resulted in contamination of groundwater under the subject site.

4.0 REMEDIATION

The initial SVE/AS system operated almost continuously, between May 6 1998 through October 12, 1998. After vapor extraction testing in December 1998, Cambria revised the remediation system by replacing the catalytic oxidizer with a blower and a granular activated carbon. This revised the SVE/AS system operated from May 5, 1999 to February 29, 2000. Hydrocarbon recovery was maximized during this period by achieving good well flow during the seasonally low groundwater levels. SVE system operations were discontinued in February 2000 after seeing a significant decrease in influent concentrations, well flow, and hydrocarbon recovery. The air sparge system was shutdown during the first quarter 2003 due to the absence of hydrocarbons in groundwater near air sparge wells SP-3 and SP-4. The combined SVE/AS system removed approximately 1,900 pounds of hydrocarbons from the subsurface. The air sparge equipment was removed from the site on May 8, 2003. The system enclosure, well manifold, and individual remediation piping remains in place

5.0 PROPOSED SCOPE OF WORK: PREFERENTIAL PATHWAY STUDY

The purpose of the preferential pathway study is to locate potential migration pathways and conduits to determine the probability of the plume encountering the pathways and conduits. The study includes a utility survey and well survey.

5.1. Utility Survey

CRA proposes to map the subsurface utility structures at the site by noting exposed features (e.g. manhole covers) and underground service alert markings, and reviewing engineering drawings from the utility purveyors, contacting Underground Service Alert (USA) to mark utility locations and completing a private utility mark out onsite. CRA will attempt to determine the top and bottom of utility trenches. Utilities will be shown on a scaled site plan, and if available the diameter, depth,

depth, and flow direction of the utilities will also be represented. CRA will also identify underground utilities on scaled cross-sections. Figure 3 present known subsurface utilities.

5.2. Well Survey

CRA will request the *Well Driller Completion Reports* from the California Department of Water Resources (DWR) for all wells located within a ½ mile radius of the site. In addition, CRA will contact Alameda County Public Works Agency to get a map and table of wells located within a ½ mile radius of the site. CRA will identify and discuss all surface water bodies within ½ mile radius of the site. CRA will identify and discuss any sites with sensitive land usage (i.e. schools, daycare, hospitals, and etc.) within 500 ft of the site. As a part of the well survey, a background study of the historical land use utilizing Sanborn maps, aerial photos, and etc. to identify possible pathways for contaminate migration. CRA will contact local agencies to determine if any municipal wells are located in the vicinity of the site. All wells identified will be tabulated and represented on a scaled map and included in the site characterization.

6.0 PROPOSED SCOPE OF WORK: ONSITE CHARACTERIZATION

This section presents the scope of work for an onsite characterization. In summary, soil and groundwater samples will be obtained and analyzed to characterize the site, post-remediaiton.

6.1. Sampling Rationale

The rationale for site characterization is to attempt to determine if the site has a current source potentially impacting groundwater.

6.2. Proposed Sampling Locations

Proposed boring locations for onsite soil characterization are presented in Figure 11 *Proposed Soil Boring Locations*. The locations are only approximate and may be modified based on access, subsurface and overhead utilities, unforeseen subsurface conditions, and limitations on selected property. Twenty six (26) soil borings will be advance in the vicinity of the location of the SVE/AS treatment system vapor extraction wells as well as in suspected source location. Soil and groundwater grab samples will be collected to verify either the presence or absence of petroleum hydrocarbons in soil.

6.3. Sampling Procedures

The section presents proposed offsite boring and sampling procedures.

6.3.1. Boring Procedures

After pre-sampling preparations are complete, a field program using a C-57 drilling contractor will be implemented. A hand auger then a geoprobe will be used to collect lithologic, PID, and soil analytical samples and then a groundwater sample. It is currently anticipated twenty-six (26) boreholes will be drilled to approximately thirty (30) feet bgs. A grab groundwater sample will be collected from the borehole. Standard field procedures for hand auger soil borings and geoprobes are presented in Appendix B *Standard Field Procedures*. These procedures provide general field guidance. After sampling activities are complete the boring will be properly closed with grout and capped with like material as the existing surface.

6.3.2. Groundwater Sampling Procedures

Groundwater samples will be collected from thirteen (13) boreholes, if possible, as well as from VW/SP-3, VW/SP-4, and VW/SP-5. CRA will attempt a joint groundwater monitoring event with the two up gradient sites 726 Harrison (former Shell/Chan's Service Station) and 800 Harrison (Unocal # 0752), during the next scheduled quarterly groundwater monitoring sampling event.

6.3.3. Soil Sampling Procedures

CRA proposes to collect soil samples for analysis from all borings.

Soil Borings/ Soil Sampling: Shallow soil samples may be collected with a hand auger and placed in a glass sampling container. Geoprobe borings shall be sampled using a clear, acetate liners contained within a stainless steel sampler (Macrocore ® or equivalent). Six-inch long sub-samples will be cut from the acetate cores at approximate 5-foot depth intervals, beginning at a depth of 5 feet, for submittal to the analytical testing laboratory. The recovery sub-samples will be sealed with Teflon™ sheeting and plastic caps. The samples will be labeled with sample point identification and dated and time of collection, and stored on ice until delivered to a state-certified environmental laboratory for analysis, under a chain-of-custody record. Representative portions of the soil cores will be placed in resealable plastic bags and field screened for volatile organics using a photoionization detector (PID). The soil cores will be logged using the modified Unified Soil Classification System (USCS). The on-site geologist will record information on the soil boring log form.

Grab Groundwater Sampling: After encountering groundwater in each boring, a grab groundwater sample will be collected using the Hydropunch groundwater sampling system. With this system, a groundwater sample is collected by driving the sampling system into undisturbed soil beneath the bottom of the boring, and exposing a screen, allowing groundwater to accumulate in a collection

chamber. If necessary, a temporary casing will be set to collect a groundwater sample. Groundwater samples shall be collected using a small diameter bailer.

6.4. Sampling Analysis

Groundwater and selected soil samples will be analyzed by a California-certified laboratory for the analyses presented below.

6.4.1. Groundwater Analysis

Groundwater samples will be analyzed for Total Petroleum Hydrocarbons as gasoline (TPHg); Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX); and MTBE. The following Table 6-1 presents groundwater analysis, sampling containers, preservation, detection limit, and holding time:

Table 6-1
Groundwater Analysis, Sampling Containers, Preservatives, Detection Limits, and Holding Times

Analysis and Method	Sampling Containers	Preservatives	Detection Limit	Holding Times
TPHg (EPA Method SW8015C)	3 VOAs	HCl	50 ug/L	14 days
BTEX (EPA Method SW8021B)		HCl	0.5 ug/L	14 days
Fuel Oxygenate MTBE, (EPA Method SW8260B)	2 VOAs	HCl	0.5 ug/L	14 days

6.4.2. Soil Analysis

Soil samples will be analyzed for TPHg, BTEX, TPHd, and MTBE. The following Table 6-2 presents soil analysis, sampling containers, preservation, detection limit, and holding time:

Table 6-2
Soil Analysis, Sampling Containers, Preservatives, Detection Limits, and Holding Times

Analysis and Method	Sampling Containers	Preservatives	Detection Limit	Holding Times
TPHg (EPA Method 8015M)	Glass or Tube	Cold	1.0 mg/kg	14 days
BTEX (EPA Method 8021B)	Glass or Tube	Cold	0.005 mg/kg	14 days
Fuel Oxygenate MTBE (EPA Method 8260B)	Glass or Tube	Cold	0.005 mg/kg	14 days

7.0 SAMPLING PREPARATIONS AND GENERAL PROCEDURES

7.1. Pre-Sampling Preparations

Prior to performing on-site sampling activities, regulatory approval will be received for the proposed sampling approach; a site-specific Health and Safety Plan will be prepared; utility clearance will be performed; we will attempt to acquire access agreements from selected property owners; boring permit(s) will be acquired; and encroachment permits will be submitted (if necessary) and approved.

7.1.1. Regulatory Approval of Sampling Approach

This scope of work presents the proposed scope of work for the sampling approach. The scope of work shall be approved by the ACEH prior to initiating field activities.

7.1.2. Health and Safety Plan

A site-specific Health and Safety Plan (HSP) will be prepared for the proposed field activities. The HSP will be maintained on-site during field work.

7.1.3. Utility Clearance

Prior to boring, the proposed boring locations will be marked with white paint and Underground Service Alert (USA) will be notified to perform a utility survey of USA members. Because of the limits of the USA survey, a utility locating service will be subcontracted to also perform additional utility survey of those areas proposed for borehole sampling. This will help to identify subsurface utilities at boring locations. In addition, during borings for grab groundwater samples, a hand auger may be used to clear to a reasonable depth and to collect shallow soil samples.

7.1.4. Permits

Based on regulatory requirements of the local agency, a soil boring permit will be obtained from Alameda County Public Works Agency. An encroachment permit will also probably be required for the offsite borings on public property.

7.2. Decontamination, Documentation, and Waste Management Procedures

The section presents equipment decontamination, documentation, and management of investigation derived waste.

7.2.1. Equipment Decontamination

Prior to use and between sampling events, all down hole and sampling equipment will be cleaned with Alconox, or an appropriate alternative, and deionized or distilled water.

7.2.2. Sample Documentation

Sampling containers will be labeled in the field with the job number, sampling location, date and time of sample, and requested analysis. A chain-of-custody record will be initiated and updated throughout handling of the samples and will accompany the samples to the laboratory.

7.2.3. Investigation Derived Waste

All investigation derived waste (IDW) will be temporarily stored on-site in sealed DOT-approved drums or other appropriate container(s). The drums will be labeled with the appropriate boring(s) identification number(s), date of collection, and nature of contents. All drummed IDW will be properly disposed of by the client.

7.2.4. Borehole Locations

Following borehole sampling, sampling locations will be defined based on field measurements from existing structures. Borehole sampling locations will be identified on a scaled figure.

8.0 REPORT

After receiving analytical results from the laboratory, an Onsite *Characterization Report and Preferential Pathway Study* or other appropriate reports will be provided with sampling methods, results, and conclusions.

9.0 QUALITY ASSURANCE PROJECT PLAN

This Quality Assurance Project Plan (QAPP) is intended to define procedures to facilitate the acquisition of accurate and reliable data.

9.1. Project Organization

Mr. Bo K. Gin is currently responsible for the site. CRA works for this client to provide consulting and sampling services. Subcontractors would be used for drilling, soil and groundwater analysis, soil gas sampling and analysis, and independent utility clearance. It is currently anticipated that California-certified Kiff Analytical Inc. or McCampbell Analytical Inc. will provide analytical services for

for groundwater and soil samples. Alameda County Health Agency is the lead agency and will provide oversight for sampling activities. Documents will be sent to the client and the lead agency for their consideration. Underground Service Alert (USA) (1-800/227-2600) will be contacted prior to performing any subsurface activities.

Following are principal contacts for organization currently associated with the project:

Client
Mr. Bo K. Gin
342 Lester Avenue
Oakland, CA 94606

Conestoga-Rovers & Associates
Mark Jonas, R.G
510/420-0700; 510/ 420-9170ax
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Alameda County Health Agency
Mr. Steven Plunkett
510/383-1767; 510/337-9335
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Oakland, California 94502-6577

Alameda County Public Works Agency
James Yoo (for Drilling Permit)
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Jamesy@acpwa.org
399 Elmhurst Street, Hayward, CA 94544

Kiff Analytical LLC
Mr. Troy Turpen
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McCampbell Analytical Inc.
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main@mccampbell.com
1534 Willowpass Road,
Pittsburg, CA 94565

9.2. Quality Assurance Objectives

The overall quality assurance objective is to develop and implement procedures for field sampling; chain-of-custody, laboratory analysis, and reporting that will provide results that are defensible and reliable. Quality assurance objectives for accuracy, precision, and method detection limits are discuss as follows:

Accuracy

The criterion for accuracy is a measurement of bias that exists in a measurement system. It refers to the degree of agreement of a measurement, X, with an accepted reference or true value, T, usually expressed as the difference between the two values, X-T. Accuracy can also be assessed by using percent bias and percent recovery information. Accuracy is difficult to measure for the entire data collection activity and specifically the sampling component. The criteria for accuracy is best addressed using laboratory matrix spikes.

Precision

The criterion for precision is a measure of the reproducibility of replicate analyses made under a given set of conditions. Specifically, it is a quantitative measure of the variability of a group of measurements as compared to their average value. The overall precision of each data collection activity should take into account both field sampling precision and analytical precision. The specific criterion for precision for each parameter is detailed within the individual analytical test method. If groundwater is sampled, a blind duplicate ground water sample will be collected and assessed as a means of assessing both sampling and analytical reproducibility and as a measure of the data collection activity's precision. The duplicate sample will be analyzed for the same suite of analyses as the original sample. All results will be included in a report.

Method Detection Limits

Anticipated method detection limits are based on a relatively standard sample with a manageable amount of interference. The specific character of a sample with respect to high concentrations of multiple contaminants can increase the actual detection limit above the anticipated method detection limit.

9.3. Sampling Procedures

Sampling procedures are presented in Sections 6 and 7.

9.4. Sample Custody Procedures and Documentation

Chain-of-custody procedures and documentation are covered in Section 7.

9.5. Field and Laboratory Calibration Procedures

Field Calibration Procedures

If a photoionization detector (PID) is used, it will be calibrated in the office or at an equipment supplier, prior to use in the field.

Laboratory Calibration Procedures

The analytical laboratory has calibration procedures as required by the current EPA Standard Methods and their own laboratory Quality Assurance/Quality Control (QA/QC) plan. The details associated with all the specific laboratory calibration procedures are available from the laboratory upon request.

9.6. Analytical Procedures

Analytical methods to be used are presented in Section 6. Specific laboratory procedures associated with each method are available upon request.

9.7. Certified Analytical Laboratory

Pursuant to Health and Safety Code Section 25198, a state-certified laboratory will perform analytical services. For this project it is anticipated that Kiff Analytical LLC Department of Health Services (DHS) License #2236, or McCampbell Analytical Inc. DHS License #1644, both California-certified laboratories, will perform soil and groundwater analytical services.

9.8. Data Assessment and Corrective Actions

Data Assessment

Data assessment within the analytical laboratory is defined by the specific requirements of the standard analytical method and the laboratory's QA/QC program. Procedures for analytical accuracy, precision, and completeness are in laboratory documents, available upon request. Accuracy and precision are also discussed in Section 9.2 "Quality Assurance Objectives." Completeness of analytical data is a measure of the amount of valid data obtained from the measurement system compared with the amount that was expected under normal conditions.

The analytical laboratory McCampbell Analytical will submit QC documentation with the analytical results. QC documentation includes a case narrative describing conformance; surrogate recoveries; spike amount(s), control limits, accuracy, and precision; calibration summaries; and a GC/MS internal standard summary. The soil gas analytical laboratory will also provide QC documentation with their analytical results.

Field data and analytical results will be evaluated by a Professional Geologist.

Corrective Actions

Unacceptable conditions or data, nonconformance with the QA procedures, or other deficiency may require corrective actions. A corrective action may be necessary if the nonconformance is of program significance. If required, the action to correct the nonconformance will be developed, initiated, and implemented.

Corrective action(s) may include:

- Reanalyzing the samples, if holding time permits.

- Resampling and reanalyzing.
- Evaluating and amending the sampling and analytical procedures.
- Accepting the data and acknowledging its level of uncertainty.

Necessary corrective actions will be documented.

9.9. Reporting Procedures

Reporting procedures for measurement of system performance and data quality are part of the laboratory's operating procedures and documentation is available upon request. Quality control documentation will be presented with analytical results from the laboratory.

9.10. Data Management

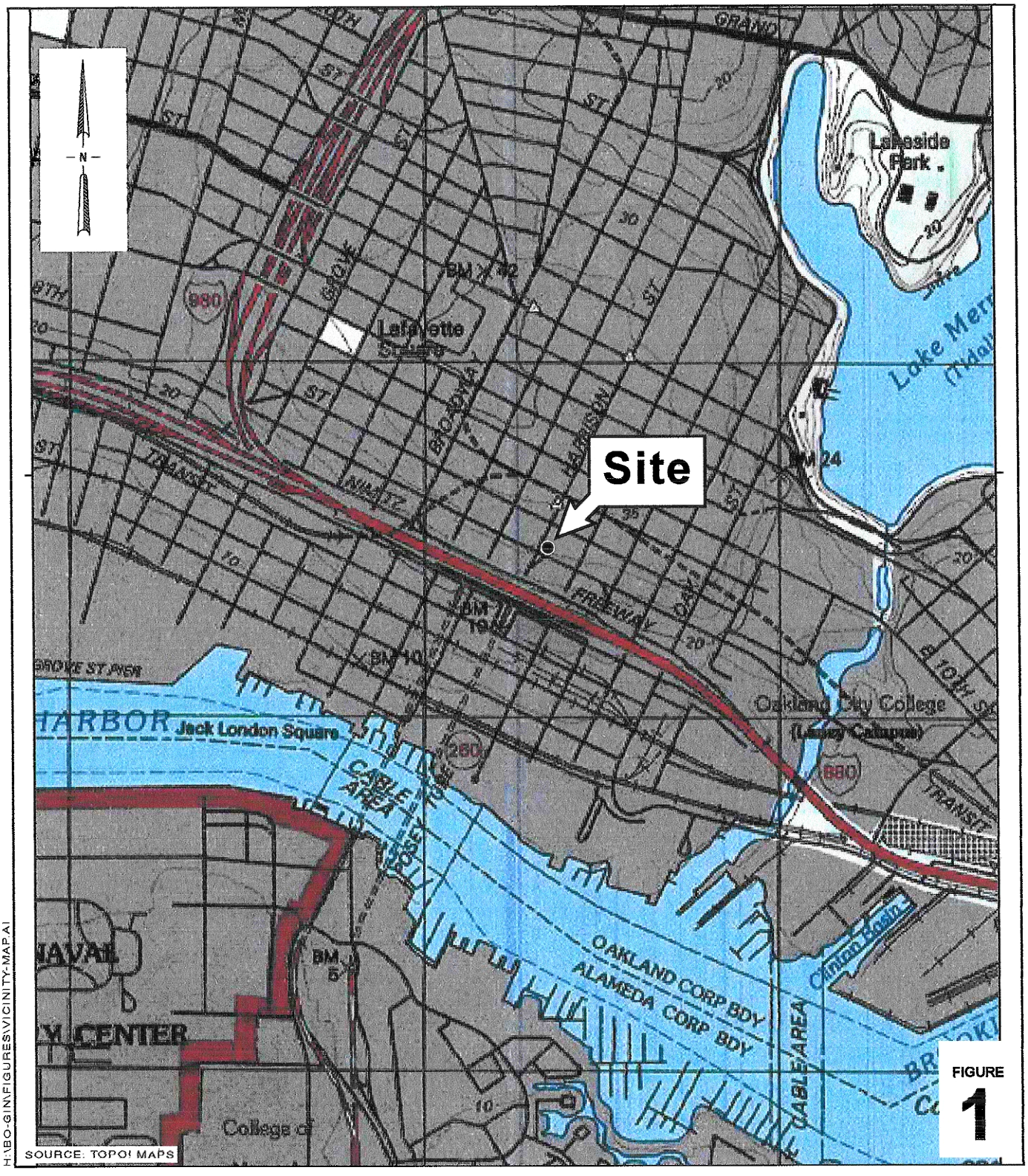
Laboratory data management, data reduction, and reporting requirements are in the laboratory's QA/QC program and operating procedures. Documentation from the laboratory is available upon request. Independent third-party (outside of McCampbell Analytical or Kiff) validation will not be performed. The laboratory will perform an internal review of analytical and QC results prior to release of a data package signed by a laboratory representative.

Laboratory results and associated quality control documentation will be presented in a report following field activities and sample analysis.

9.11. Internal Quality Control

Quality control is defined as the routine application of procedures for obtaining prescribed standards of performance. The procedures used for field work are discussed throughout this report, under Sections 6, and 7. Standards of performance are discussed in this section of the *Work Plan*. Laboratory documentation on standard analytical methods and the laboratory's QA/QC program is available upon request.

11/24/04



H:\BO-GIN\FIGURES\VICINITY-MAP.AI

FIGURE 1

0 1/8 1/4 1/2 1

SCALE : 1" = 1/4 MILE

Former ARCO Station

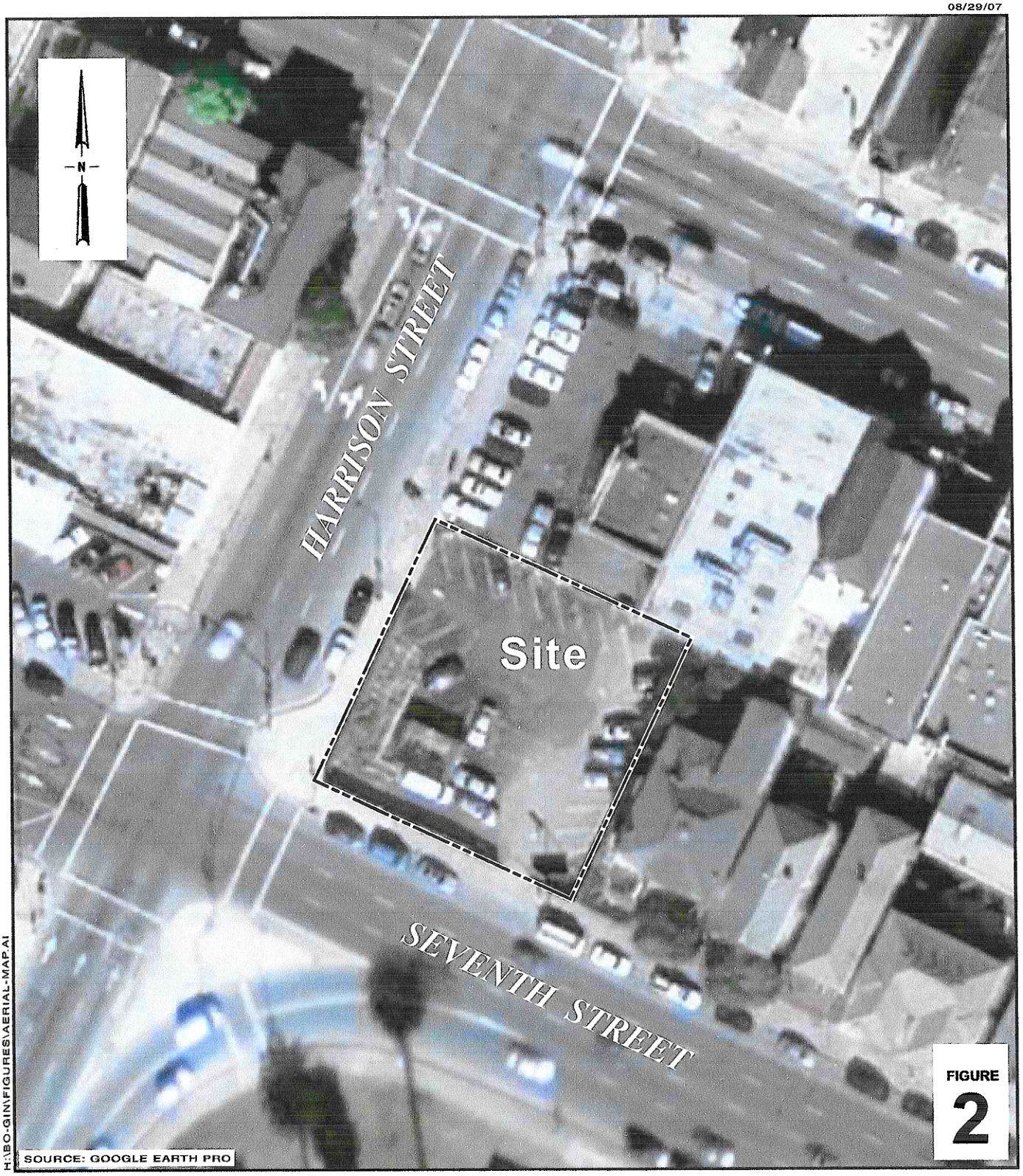
706 Harrison Street

Oakland, California

CONESTOGA-ROVERS & ASSOCIATES

Vicinity Map

08/29/07



H:\BO-GIN\FIGURES\AERIAL-MAP.AI

FIGURE
2

0 25 50 100 200

SCALE : 1" = 50'

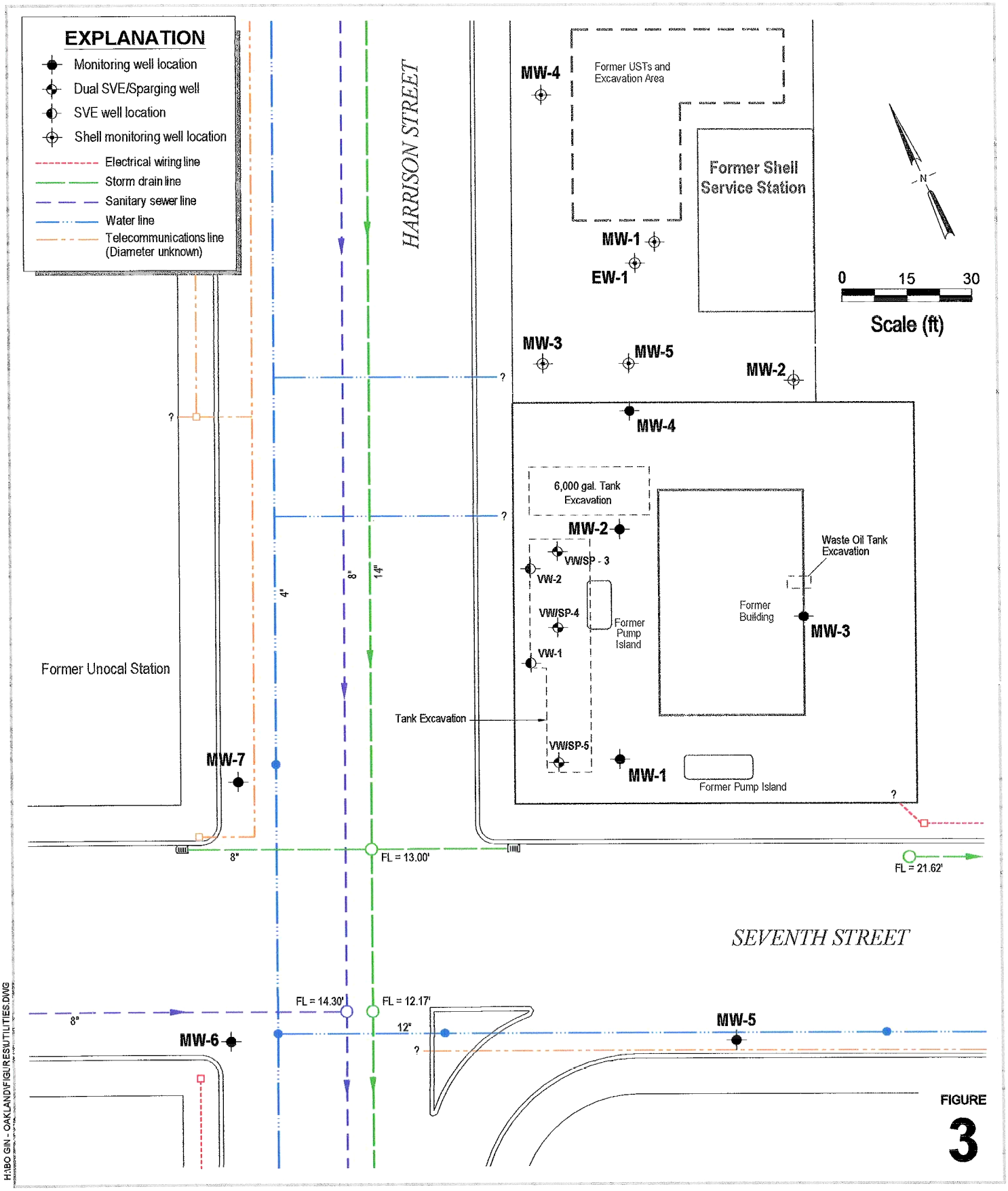
Former ARCO Station

706 Harrison Street

Oakland, California

CONESTOGA-ROVERS & ASSOCIATES

Aerial Photograph



H:\BO GIN - OAKLAND\FIGURES\UTILITIES.DWG

FIGURE

3

Former ARCO Station

706 Harrison Street

Oakland, California

CONESTOGA-ROVERS & ASSOCIATES

Subsurface Utility and Site Map

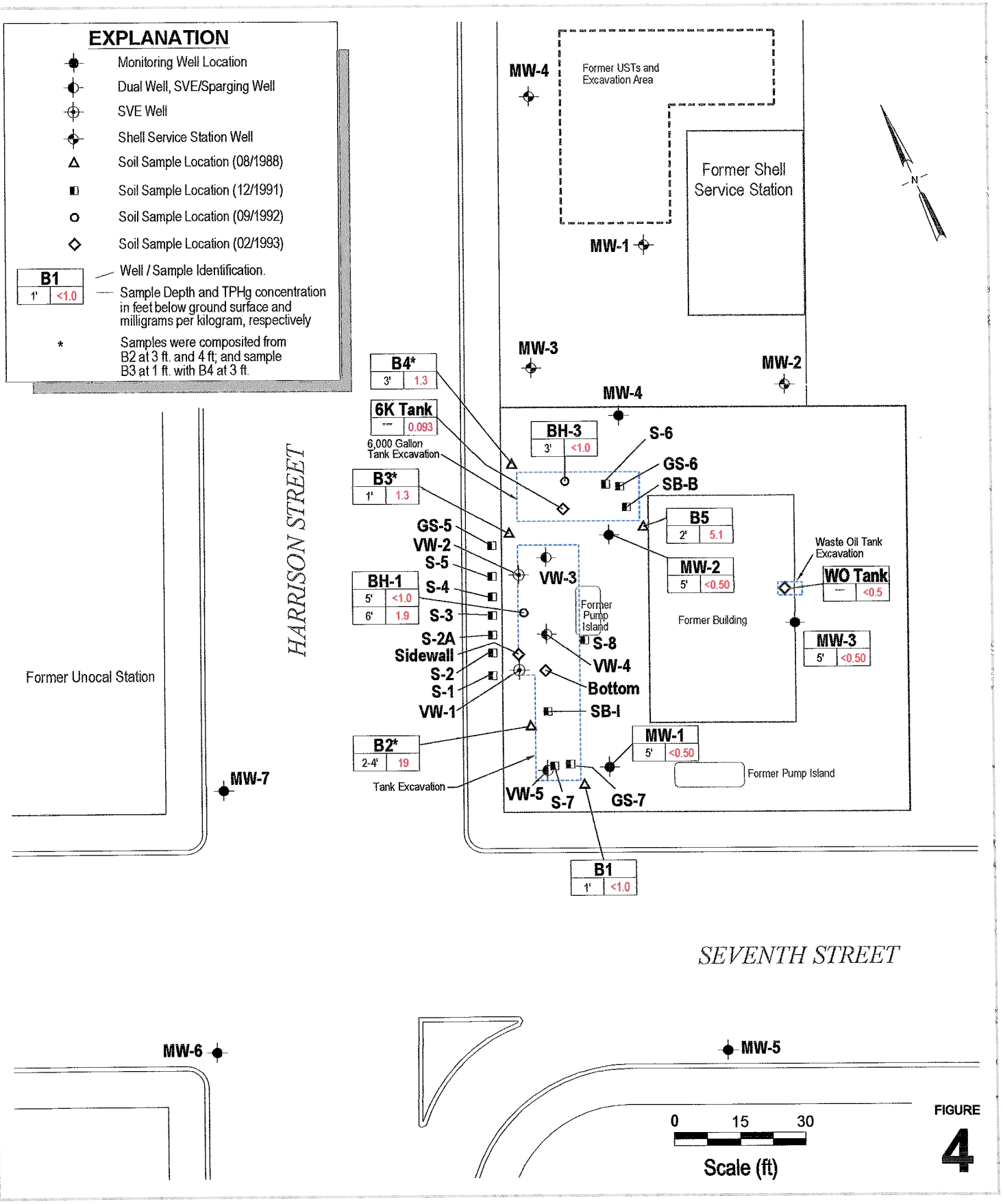


FIGURE 4

Former ARCO Station

706 Harrison Street

Oakland, California

CONESTOGA-ROVERS & ASSOCIATES

TPHg Concentrations in Soil Map

(0 - 9 feet bgs)

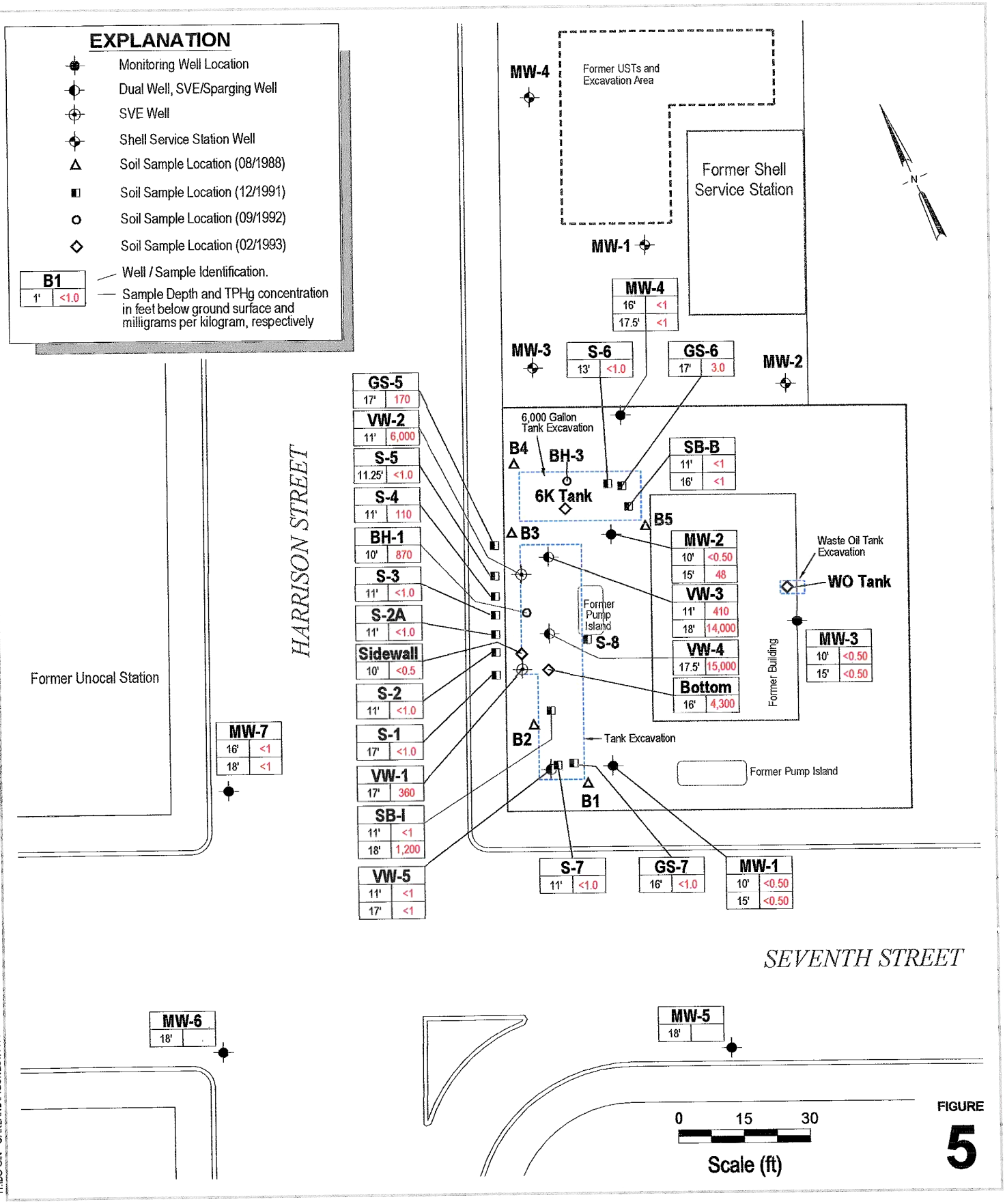


FIGURE 5

H:\BO GIN - OAKLAND\FIGURES\TPHG 10-19 FBG.DWG

Former ARCO Station

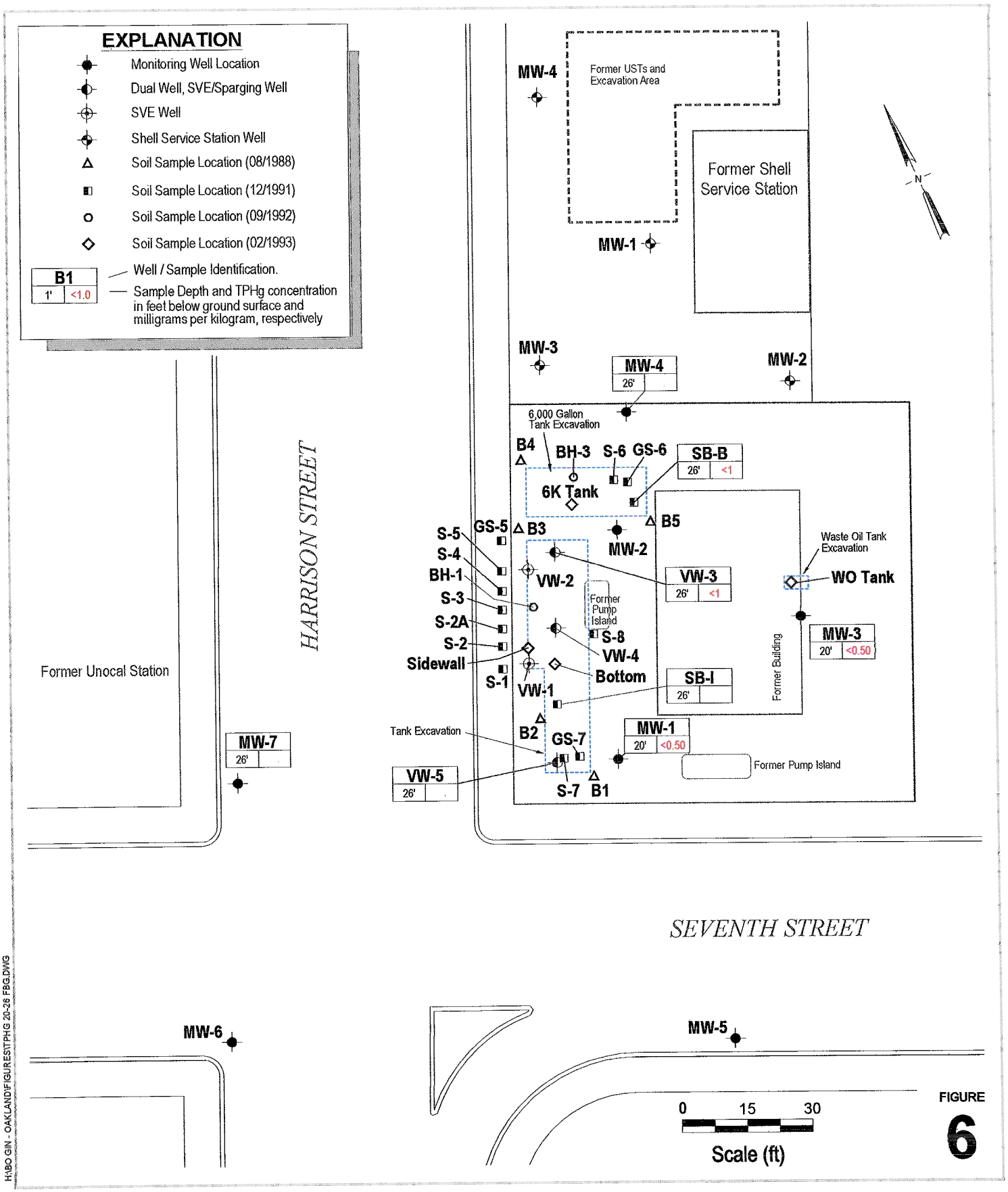
706 Harrison Street

Oakland, California

CONESTOGA-ROVERS & ASSOCIATES

TPHg Concentrations in Soil Map

(10 - 19 feet bgs)



H:\BO GIN - OAKLAND\FIGURES\TPHG 20-26 FBG.DWG

FIGURE
6

Former ARCO Station

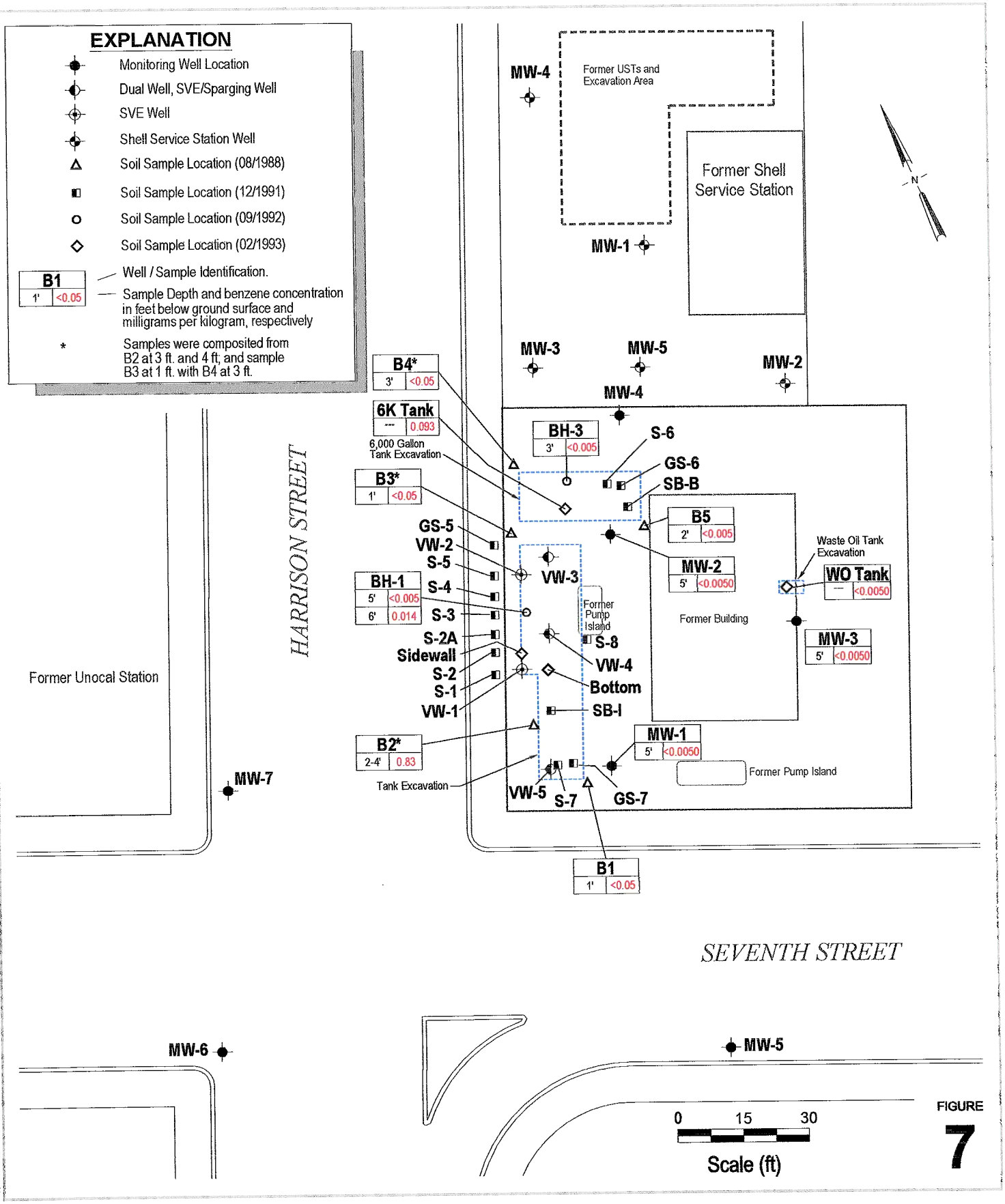
706 Harrison Street

Oakland, California

CONESTOGA-ROVERS & ASSOCIATES

TPHg Concentrations in Soil Map

(20 - 26 feet bgs)



H:\BO GIN - OAKLAND\FIGURES\BENZ 0-9 FBG.DWG

Former ARCO Station

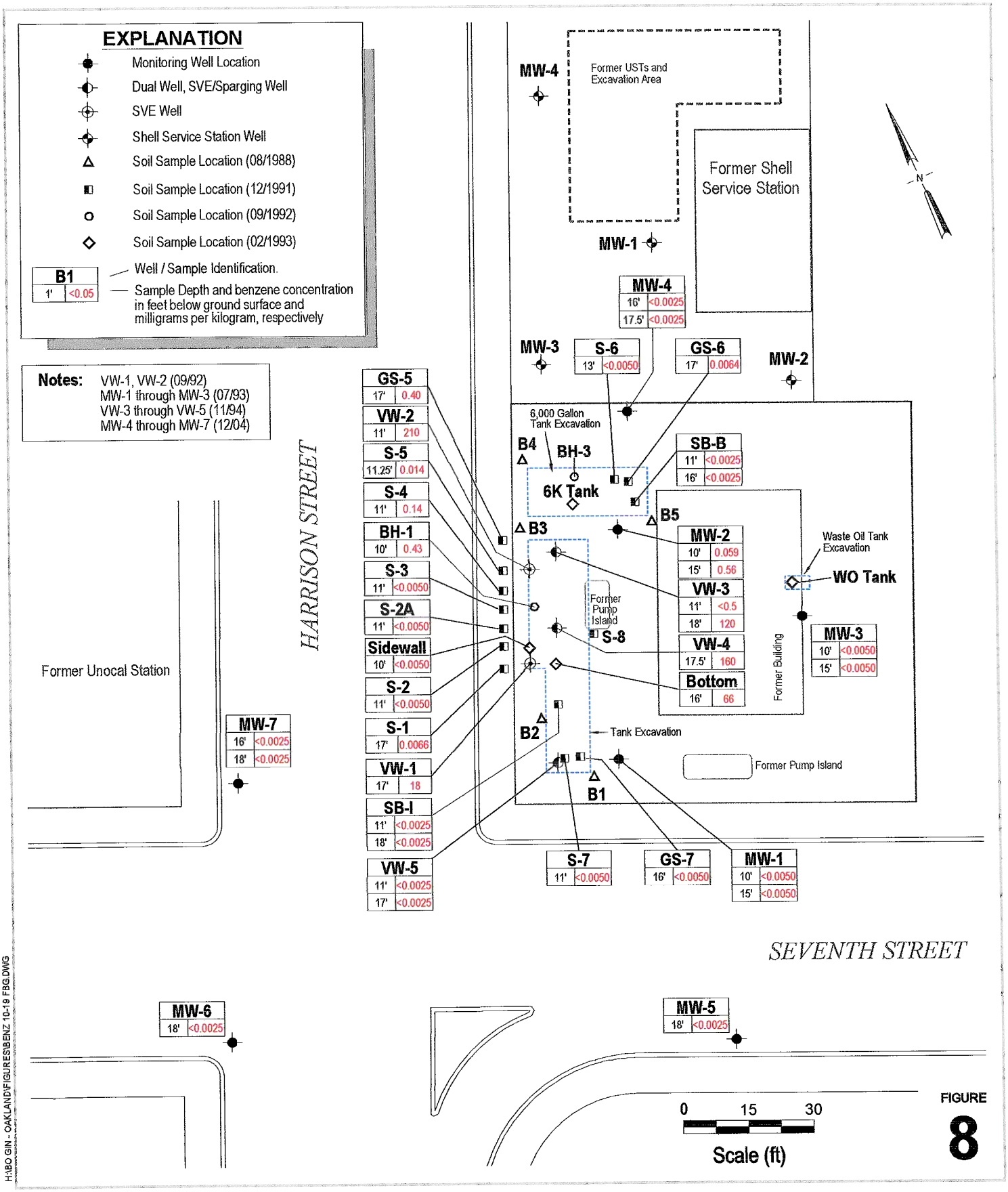
706 Harrison Street

Oakland, California

CONESTOGA-ROVERS & ASSOCIATES

Benzene Concentrations in Soil Map

(0 - 9 feet bgs)



H:\BO GIN – OAKLAND\FIGURES\BENZ 10-19 FBG.DWG

Former ARCO Station

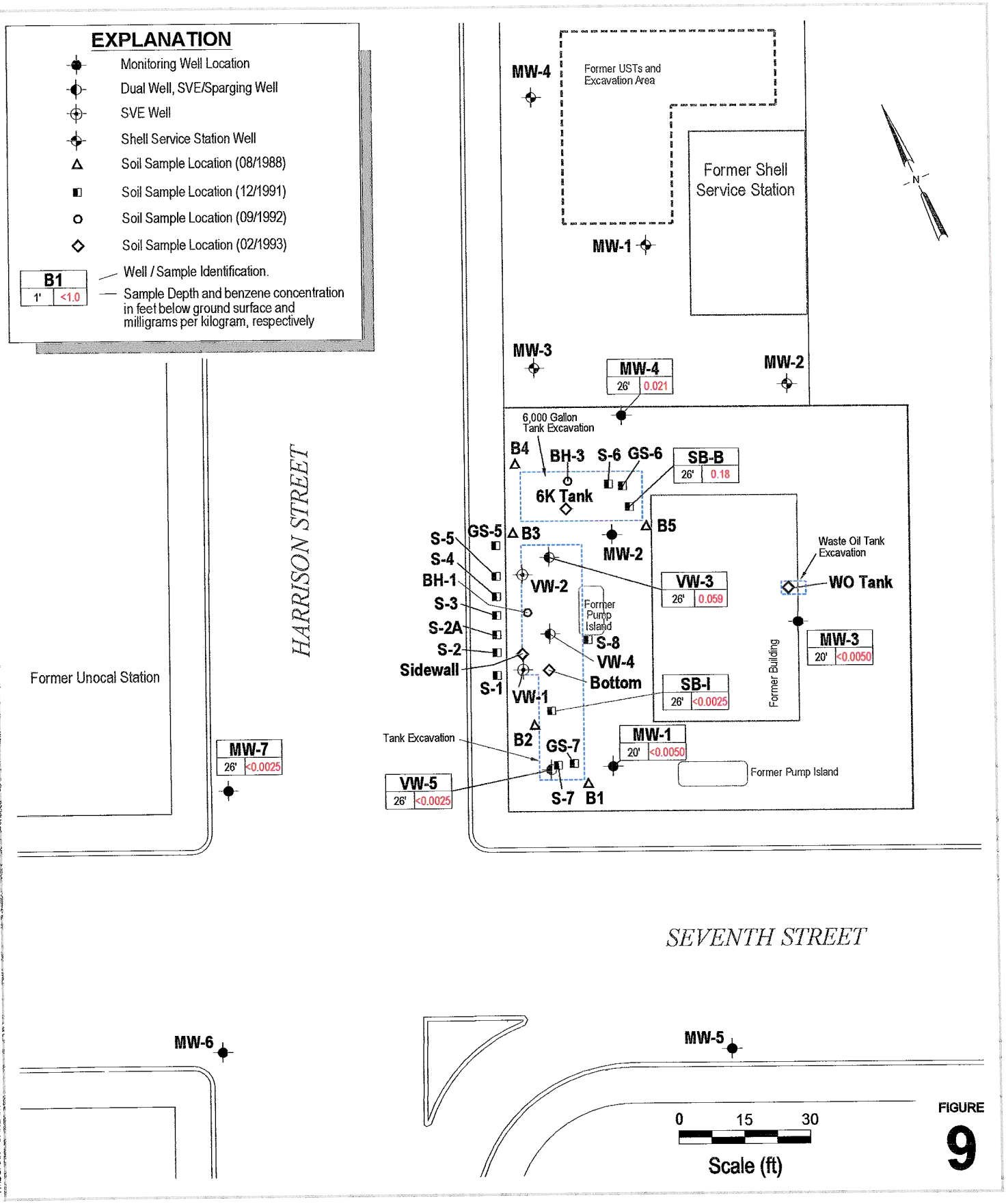
706 Harrison Street

Oakland, California

CONESTOGA-ROVERS & ASSOCIATES

Benzene Concentrations in Soil Map

(10 - 19 feet bgs)



H:\BO.GIN - OAKLAND\FIGUR.ES\BENZ 20-26 FBG.DWG

Former ARCO Station

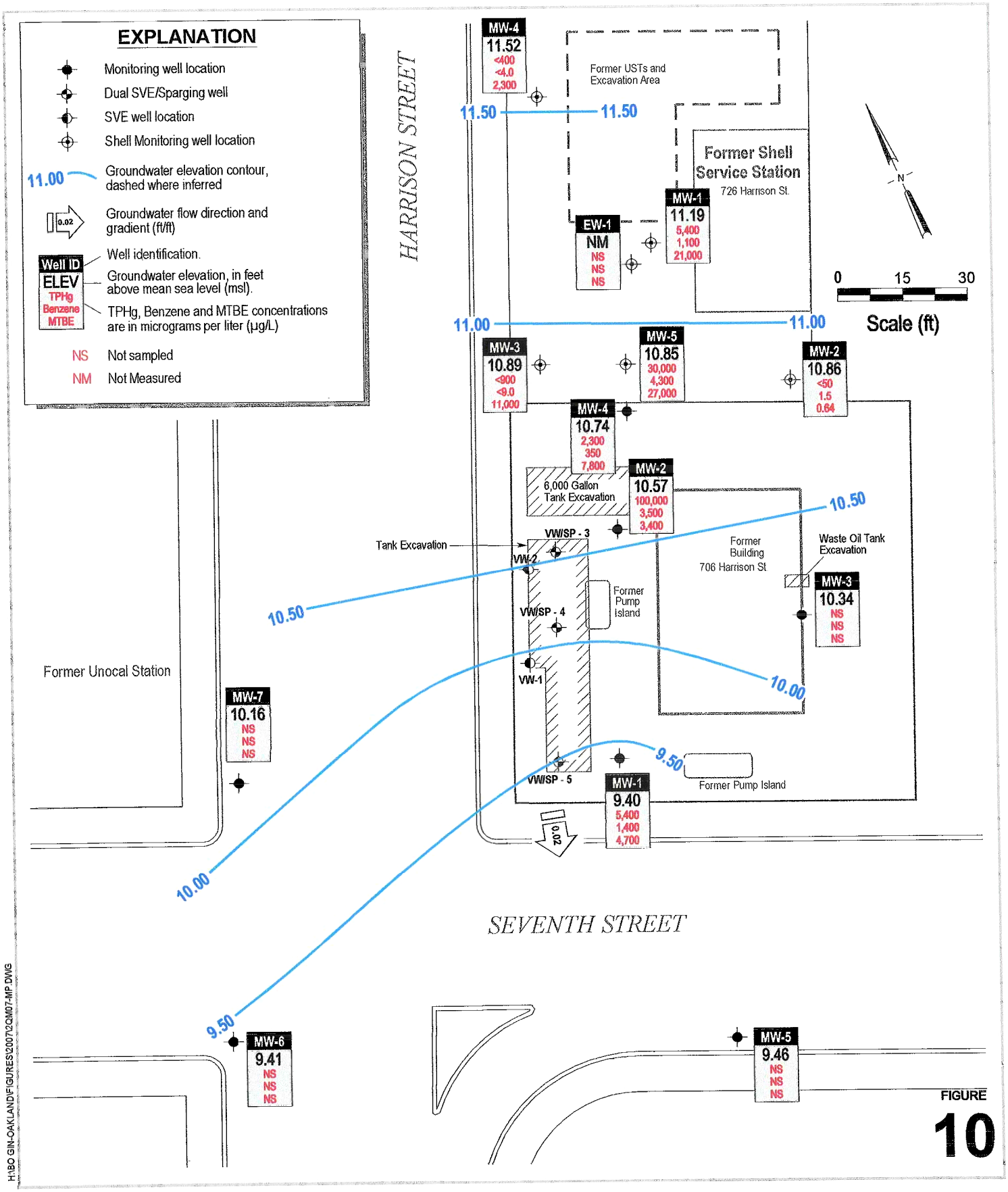
706 Harrison Street

Oakland, California

CONESTOGA-ROVERS & ASSOCIATES

Benzene Concentrations in Soil Map

(20 - 26 feet bgs)



H:\BO GIN-OAKLAND\FIGURES\20072QM07-MP.DWG

FIGURE
10

Former ARCO Station
706 Harrison Street
Oakland, California

CONESTOGA-ROVERS & ASSOCIATES

Groundwater Elevation Contour and Hydrocarbon Concentration Map
April 18, 2007

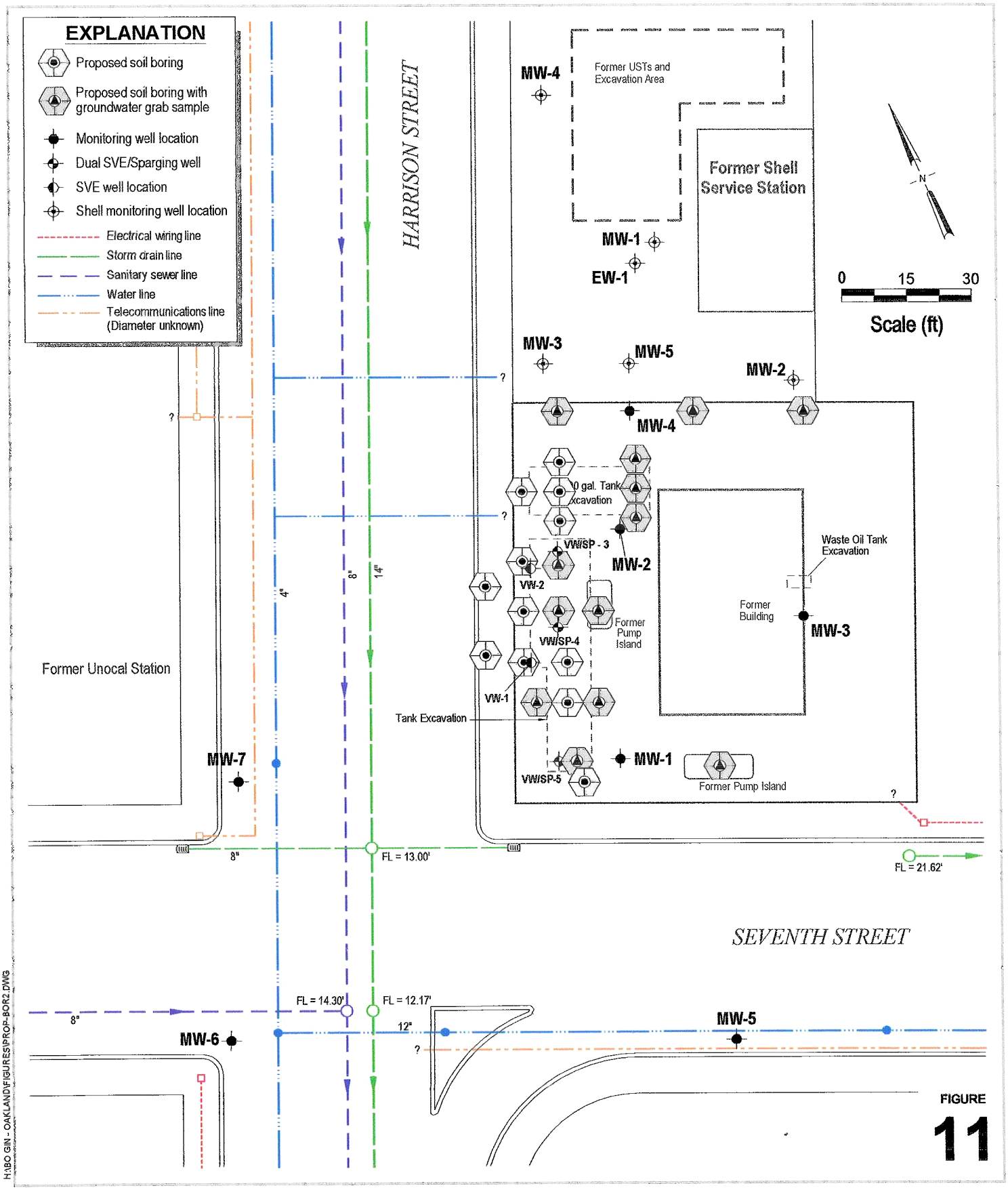


FIGURE
11

H:\BO GIN - OAKLAND\FIGURES\PROP-BOR2.DWG

Former ARCO Station
706 Harrison Street
Oakland, California

CONESTOGA-ROVERS & ASSOCIATES

Proposed Soil Boring Location Map

Table 1. Soil Analytical Data: Former ARCO Station - 706 Harrison Street, Oakland, California

Sample ID	Date Sampled	Depth (ft)	TPHg (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	TRPH (mg/kg)	Gravimetric Waste Oil (mg/kg)	Organic Lead (mg/kg)	Total Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Nickel (mg/kg)	Zinc (mg/kg)
Preliminary Investigation Samples by Frank Lee & Associates															
B1-1'	8/18/1988	1	ND<1.0	ND<0.05	ND<0.1	ND<0.1	ND<0.1	-	-	-	-	-	-	-	-
B2-3, B2-4	8/18/1988	-	**19**	**0.83**	**1.5**	**0.88**	**2.6**	-	-	-	**2.1**	-	-	-	-
B3-1, B4-3	8/18/1988	-	**1.3**	ND<0.05	ND<0.1	ND<0.1	ND<0.1	-	-	-	**2.3**	-	-	-	-
B5-2	8/18/1988	2	**5.1**	ND<0.005	ND<0.005	ND<0.005	**0.34**	-	-	-	-	-	-	-	-
Tank Removal Samples by Tank Protection Engineering															
Northern 6,000 gallon gasoline UST															
S1-N	1/17/1991	-	ND<1.0	**0.070**	**0.063**	**0.013**	**0.054**	-	-	-	ND<0.50	-	-	-	-
S1-S	1/17/1991	-	**390**	**0.69**	**0.56**	**3.1**	**8.7**	-	-	-	ND<0.50	-	-	-	-
Four 1,000 gallon gasoline USTs															
S2-N	1/17/1991	-	**6,800**	**75**	**290**	**980**	**540**	-	-	-	ND<0.50	-	-	-	-
S2-S	1/17/1991	-	**5,700**	**82**	**280**	**85**	**460**	-	-	-	**5.5**	-	-	-	-
S3-N	1/17/1991	-	**3,600**	**19**	**100**	**53**	**280**	-	-	-	ND<0.50	-	-	-	-
S3-S	1/17/1991	-	**4,600**	**30**	**210**	**78**	**470**	-	-	-	ND<0.50	-	-	-	-
S4-N	1/17/1991	-	ND<1.0	**0.013**	**0.010**	ND<0.0050	**0.026**	-	-	-	ND<0.50	-	-	-	-
S4-S	1/17/1991	-	**8,000**	**7.9**	**56**	**84**	**450**	-	-	-	ND<0.50	-	-	-	-
S5-N	1/17/1991	-	**9,400**	**17**	**160**	**97**	**650**	-	-	-	**4.7**	-	-	-	-
S5-S	1/17/1991	-	**12**	**0.023**	**0.016**	**0.053**	**0.19**	-	-	-	**3.3**	-	-	-	-
Southern 6,000 gallon gasoline UST															
S6-E	1/17/1991	-	**400**	**0.21**	**0.57**	**5.0**	**9.8**	-	-	-	**4.3**	-	-	-	-
S6-W	1/17/1991	-	ND<1.0	**0.010**	**0.010**	**ND<0.0050**	**0.030**	-	-	-	ND<0.50	-	-	-	-
Waste Oil UST															
WO-1	1/17/1991	-	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	-	ND<30	-	**28**	ND<0.50	**33**	**26**	**710**
Gasoline Dispenser Island															
I1-N	1/17/1991	-	ND<1.0	ND<0.0050	**0.0088**	ND<0.0050	**0.022**	-	-	-	**370**	-	-	-	-
I1-S	1/17/1991	-	ND<1.0	**0.0050**	**0.012**	**0.0092**	**0.050**	-	-	-	**45**	-	-	-	-
Preliminary Subsurface Site Investigation Samples by Consolidated Technologies															
Four 1,000 gallon gasoline USTs															
S-1	12/12/1991	17	ND<1.0	**0.0066**	**0.0084**	ND<0.0050	ND<0.0050	-	-	-	-	-	-	-	-
S-2	12/12/1991	11	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	-	-	-	-	-	-	-	-
S-2A	12/12/1991	11	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	-	-	-	-	-	-	-	-
S-3	12/12/1991	11	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	-	-	-	-	-	-	-	-
S-4	12/12/1991	11	**110**	**0.14**	**0.31**	**0.32**	**1.7**	-	-	-	-	-	-	-	-
S-5	12/12/1991	11.25	ND<1.0	0.014	ND<0.0050	ND<0.0050	ND<0.0050	-	-	-	-	-	-	-	-
GS-5	12/12/1991	17	**170**	**0.40**	**3.6**	**2.2**	**17**	-	-	-	-	-	-	-	-
Northern 6,000 gallon gasoline UST															
S-6	12/12/1991	13	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	-	-	-	-	-	-	-	-
GS-6	12/12/1991	17	**3.0**	**0.0064**	**0.0085**	**0.0084**	**0.040**	-	-	-	-	-	-	-	-

Table 1. Soil Analytical Data: Former ARCO Station - 706 Harrison Street, Oakland, California

Sample ID	Date Sampled	Depth (ft)	TPHg (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	TRPH (mg/kg)	Gravimetric Waste Oil (mg/kg)	Organic Lead (mg/kg)	Total Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Nickel (mg/kg)	Zinc (mg/kg)
Southern 6,000 gallon gasoline UST															
S-7	12/12/1991	11	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	-	-	-	-	-	-	-	-
GS-7	12/12/1991	16	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	-	-	-	-	-	-	-	-
Gasoline Dispenser Island															
S-8	12/12/1991	2.5	-	-	-	-	-	-	-	-	**36 mg/L (STLC)**	-	-	-	-
Soil Boring Investigation Samples by Miller Environmental Company															
BH1-5'	9/28/1992	5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	-	-	-	-	-	-	-	-
BH1-6'	9/28/1992	6	**1.9**	**0.014**	**0.017**	**0.14**	**0.15**	-	-	-	-	-	-	-	-
BH1-10'	9/28/1992	10	**870**	**0.43**	**15**	**120**	**19**	-	-	-	-	-	-	-	-
BH3-3'	9/28/1992	3	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	-	-	-	-	-	-	-	-
Stockpile Samples by Miller Environmental Company															
SP1	9/28/1992	-	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	-	-	-	-	-	-	-	-
SP2A	9/28/1992	-	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	-	-	-	-	-	-	-	-
SP2B	9/28/1992	-	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	-	-	-	-	-	-	-	-
SP3	9/28/1992	-	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	-	**300**	-	-	-	-	-	-
Excavation Samples by Dennis Bates Associates															
16 ft Bottom Sample	2/10/1993	16	**4,300**	**66**	**320**	**130**	**730**	-	-	-	-	-	-	-	-
Side Wall Sample	2/10/1993	10	ND<0.5	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.015	-	-	-	-	-	-	-	-
6K Tank	2/10/1993	--	**0.093**	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.015	-	-	-	-	-	-	-	-
WO Tank	2/10/1993	--	ND<0.5	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.015	-	-	-	-	-	-	-	-
Stockpile Samples by Dennis Bates Associates															
SPA	6/17/1993	-	**2.4**	ND<0.0050	ND<0.0050	**0.0072**	**0.11**	ND<50,000	-	-	**8.9**	-	-	-	-
SPB	6/17/1993	-	**3.4**	**0.0078**	**0.0074**	**0.044**	**0.18**	ND<50,000	-	-	**18**	-	-	-	-
Well Borehole Samples by Dennis Bates Associates															
MW-1	7/22-23/1993	5	ND<0.50	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.015	-	-	-	ND<3.6	-	-	-	-
MW-1	7/22-23/1993	10	ND<0.50	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.015	-	-	-	ND<3.6	-	-	-	-
MW-1	7/22-23/1993	15	ND<0.50	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.015	-	-	-	ND<3.6	-	-	-	-
MW-1	7/22-23/1993	20	ND<0.50	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.015	-	-	-	ND<3.6	-	-	-	-
MW-2	7/22-23/1993	5	ND<0.50	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.015	-	-	-	ND<3.6	-	-	-	-
MW-2	7/22-23/1993	10	ND<0.50	**0.059**	**0.036**	**0.0061**	**0.031**	-	-	-	ND<3.6	-	-	-	-
MW-2	7/22-23/1993	15	**48**	**0.56**	**2.8**	**1.5**	**8.8**	-	-	-	ND<3.6	-	-	-	-
MW-3	7/22-23/1993	5	ND<0.50	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.015	ND<50	-	-	ND<3.6	-	-	-	-
MW-3	7/22-23/1993	10	ND<0.50	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.015	ND<50	-	-	ND<3.6	-	-	-	-
MW-3	7/22-23/1993	15	ND<0.50	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.015	ND<50	-	-	ND<3.6	-	-	-	-
MW-3	7/22-23/1993	20	ND<0.50	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.015	ND<50	-	-	ND<3.6	-	-	-	-
VW-1	7/22-23/1993	17	**360**	**18**	**40**	**13**	**68**	-	-	-	ND<3.6	-	-	-	-

Table 1. Soil Analytical Data: Former ARCO Station - 706 Harrison Street, Oakland, California

Sample ID	Date Sampled	Depth (ft)	TPHg (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	TRPH (mg/kg)	Gravimetric Waste Oil (mg/kg)	Organic Lead (mg/kg)	Total Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Nickel (mg/kg)	Zinc (mg/kg)
VW-2	7/22-23/1993	17	**6,000**	**210**	**890**	**210**	**1,200**	-	-	-	ND<3.6	-	-	-	-
Stockpile Samples by Dennis Bates Associates															
PI1-2.5'	12/14/1993	2.5	-	-	-	-	-	-	-	ND<1.7	**130**	-	-	-	-
PI2-1.5'	12/14/1993	1.5	-	-	-	-	-	-	-	ND<1.7	**46**	-	-	-	-
PI3-2'	12/14/1993	2.0	-	-	-	-	-	-	-	**17**	**1,100**	-	-	-	-
VW1-1 and VW1-2	12/14/1993	-	-	-	-	-	-	-	-	ND<1.7	**15**	-	-	-	-
VW2-1 and VW2-2	12/14/1993	-	-	-	-	-	-	-	-	ND<1.7	**5.5**	-	-	-	-
Well Borehole Samples by Cambria Environemtal Technology, Inc.															
SB-A/MW-4	11/28/1994	16.0	ND<1	ND<0.0025	ND<0.0025	ND<0.0025	ND<0.0025	-	-	-	-	-	-	-	-
SB-A/MW-4	11/28/1994	17.5	ND<1	ND<0.0025	ND<0.0025	ND<0.0025	ND<0.0025	-	-	-	-	-	-	-	-
SB-A/MW-4	11/28/1994	26.0	ND<1	ND<0.0025	ND<0.0025	ND<0.0025	ND<0.0025	-	-	-	-	-	-	-	-
SB-A/MW-4	11/28/1994	26.0	ND<1	**0.021**	ND<0.0025	ND<0.0025	ND<0.0025	-	-	-	-	-	-	-	-
SB-B	11/28/1994	11.0	ND<1	ND<0.0025	ND<0.0025	ND<0.0025	ND<0.0025	-	-	-	-	-	-	-	-
SB-B	11/28/1994	16.0	ND<1	ND<0.0025	ND<0.0025	ND<0.0025	ND<0.0025	-	-	-	-	-	-	-	-
SB-B	11/28/1994	26.0	ND<1	ND<0.0025	ND<0.0025	ND<0.0025	ND<0.0025	-	-	-	-	-	-	-	-
SB-C/VW-3	11/28/1994	11.0	**410**	ND<0.5	**2.0**	**37**	**22**	-	-	-	-	-	-	-	-
SB-C/VW-3	11/28/1994	18.0	**14,000**	**120**	**620**	**220**	**1,100**	-	-	-	-	-	-	-	-
SB-C/VW-3	11/28/1994	26.0	ND<1	**0.059**	**0.041**	**0.0028**	**0.050**	-	-	-	-	-	-	-	-
SB-D/VW-4	11/29/1994	17.5	**15,000**	**160**	**700**	**240**	**1,200**	-	-	-	-	-	-	-	-
SB-E/VW-5	11/30/1994	11.0	ND<1	ND<0.0025	ND<0.0025	ND<0.0025	ND<0.0025	-	-	-	-	-	-	-	-
SB-E/VW-5	11/30/1994	17.0	ND<1	ND<0.0025	ND<0.0025	ND<0.0025	ND<0.0025	-	-	-	-	-	-	-	-
SB-E/VW-5	11/30/1994	26.0	ND<1	ND<0.0025	**0.012**	ND<0.0025	ND<0.0025	-	-	-	-	-	-	-	-
SB-F/MW-5	11/30/1994	18.0	ND<1	ND<0.0025	ND<0.0025	ND<0.0025	ND<0.0025	-	-	-	-	-	-	-	-
SB-G/MW-6	12/1/1994	16.0	ND<1	ND<0.0025	ND<0.0025	ND<0.0025	ND<0.0025	-	-	-	-	-	-	-	-
SB-H/MW-7	12/2/1994	16.0	ND<1	ND<0.0025	ND<0.0025	ND<0.0025	ND<0.0025	-	-	-	-	-	-	-	-
SB-H/MW-7	12/2/1994	18.0	ND<1	ND<0.0025	ND<0.0025	ND<0.0025	ND<0.0025	-	-	-	-	-	-	-	-
SB-H/MW-7	12/2/1994	26.0	ND<1	ND<0.0025	ND<0.0025	ND<0.0025	ND<0.0025	-	-	-	-	-	-	-	-
SB-I	12/2/1994	11.0	ND<1	ND<0.0025	ND<0.0025	ND<0.0025	ND<0.0025	-	-	-	-	-	-	-	-
SB-I	12/2/1994	18.0	**1,200**	ND<0.0025	**12**	**13**	**78**	-	-	-	-	-	-	-	-
SB-I	12/2/1994	26.0	**4.4**	ND<0.0025	**0.013**	**0.018**	**0.055**	-	-	-	-	-	-	-	-

Table 1. Soil Analytical Data: Former ARCO Station - 706 Harrison Street, Oakland, California

Sample ID	Date Sampled	Depth (ft)	TPHg (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	TRPH (mg/kg)	Gravimetric Waste Oil (mg/kg)	Organic Lead (mg/kg)	Total Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Nickel (mg/kg)	Zinc (mg/kg)

Abbreviations and Analyses:

mg/kg = Milligrams per kilogram

ND<0.5 = Not Detected (ND) above Detection Limit.

- = Not sampled, not analyzed, or not applicable

ft = Measured in feet

TPHg = Total petroleum hydrocarbons as gasoline by modified EPA Method 8015

Benzene, ethylbenzene, toluene and xylenes by EPA Method 8020.

TRPH = Total Recoverable Petroleum Hydrocarbons by EPA Method 418.1

Gravimetric Waste Oil = Gravimetric Waste Oil as Petroleum Oil by EPA Extraction Method 3550 and gravimetric determination by standard methods 5520.

Organic Lead by DHS Method

Total Lead by EPA Method 7420

Cadmium Chromium, nickel, and zinc by Method 6010.

Table 2. Groundwater Elevation and Analytical Data - Former ARCO Station - 706 Harrison Street, Oakland, California

Well ID/ Sample ID *TOC*	Date Sampled	Depth to Water (ft)	Groundwater Elevation (ft-msl)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE by 8021B (ug/L)	MTBE by 8260B (ug/L)	Notes
MW-1	8/13/1993	17.40	11.75	20,000	8,500	640	280	440	-	-	
29.15	12/14/1993	17.27	11.88	17,000	9,200	1,200	4,400	540	-	-	
	4/15/1994	17.00	12.15	9,500	3,600	530	160	280	-	-	
	12/29/1994	16.40	12.75	-	-	-	-	-	-	-	
	7/19/1996	15.83	13.32	17,000	5,200	1,100	330	530	-	-	sheen/odor
	1/27/1997	13.58	15.57	30,000	9,800	1,300	790	880	400	-	b, sheen/odor
	6/18/1997	16.11	13.04	19,000	5,600	1,400	510	770	1,200	800	a, b
	9/18/1997	16.62	12.53	48,000	18,000	4,400	1,000	1,700	ND<640	-	b
	12/10/1997	15.93	13.22	22,000	4,900	1,300	580	650	460	260	a, b, odor
	2/18/1998	11.56	17.59	16,000	5,000	750	400	780	1,800	-	b
	5/12/1998	13.53	15.62	19,000	4,600	810	450	770	5,500	-	b, c
	8/18/1998	15.19	13.96	12,000	3,600	1,300	300	570	5,100	3,700	a, b
	11/24/1998	15.67	13.48	13,000	3,600	890	330	380	6,100	-	b
	2/4/1999	15.31	13.84	20,000	5,900	830	450	500	4,900	-	b
	5/18/1999	14.95	14.20	23,000	7,000	1,600	520	830	6,100	-	b
	8/27/1999	15.84	13.31	19,000	5,800	1,700	410	710	1,800	2,100	a, b
	11/18/1999	16.39	12.76	20,000	4,900	630	410	580	4,900	3,600	b
	2/29/2000	13.43	15.72	12,000	2,800	24	290	170	3,100	3,400	a
	5/25/2000	15.08	14.07	12,000	2,200	120	330	260	9,100	12,000	a, b
	8/9/2000	16.09	13.06	13,000	2,500	44	310	140	16,000	-	b
	11/9/2000	15.90	13.25	11,000	2,500	140	380	150	11,000	12,000	b
	1/29/2001	16.05	13.10	9,600	3,100	100	77	200	2,600	2,400	b
	4/16/2001	16.90	12.25	3,300	1,200	4.4	2.7	28	900	940	b
	8/14/2001	17.13	12.02	2,000	500	3.4	24	7.8	68	53	a
	10/22/2001	16.11	13.04	220	83	0.63	2.8	ND<0.5	ND<10	5.7	a
	2/1/2002	16.93	12.22	640	220	1.7	4.7	0.57	ND<10	-	a
	5/10/2002	15.09	14.06	230	26	0.97	ND<0.5	ND<0.5	ND<5.0	-	a
	7/8/2002	15.20	13.95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	ND<0.5	
	10/2/2002	15.70	13.45	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	1/23/2003	15.09	14.06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	4/29/2003	13.02	16.13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
26.17	7/18/2003	14.50	11.67	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	10/9/2003	13.81	12.36	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	1/28/2004	13.09	13.08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	4/7/2004	14.97	11.20	180	60	0.56	1.9	ND<0.5	ND<5.0	-	a
	7/23/2004	14.15	12.02	130	36	ND<0.5	0.65	ND<0.5	ND<5.0	-	a

Table 2. Groundwater Elevation and Analytical Data - Former ARCO Station - 706 Harrison Street, Oakland, California

Well ID/ Sample ID *TOC*	Date Sampled	Depth to Water (ft)	Groundwater Elevation (ft-msl)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE by 8021B (ug/L)	MTBE by 8260B (ug/L)	Notes
MW-1 con't	10/12/2004	16.30	9.87	ND<50	2.5	1.5	ND<0.5	0.86	ND<5.0	-	
	2/14/2005	13.85	12.32	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	4/27/2005	13.35	12.82	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	7/19/2005	14.68	11.49	4,500	1,400	6.5	160	58	630	-	a
	10/18/2005	15.15	11.02	1,700	340	ND<5.0	28	ND<5.0	8,000	7,200	a
	1/23/2006	13.27	12.90	3,100	790	6.5	79	32	4,200	5,100	a
	4/12/2006	12.33	13.84	7,200	2,600	110	350	320	5,600	4,000	a
	7/10/2006	14.93	11.24	2,700	550	4.2	77	47	5,500	8,300	a
	10/16/2006	16.51	9.66	2,000	470	6.4	38	13	6,300	6,400	a
	1/26/2007	16.87	9.30	3,300	600	36	34	27	6,200	5,900	a
	4/18/2007	16.77	9.40	5,400	1,400	170	210	350	3,600	4,700	a,i
	8/2/2007	**17.21**	**8.96**	**6,100**	**1,200**	**130**	**140**	**240**	**5,300**	**5,400**	**a**
MW-2	8/13/1993	17.05	13.46	34,000	6,800	10,000	740	3,900	-	-	
30.51	12/14/1993	18.28	12.23	16,000	3,200	4,200	500	1,700	-	-	
	4/15/1994	18.10	12.41	23,000	2,500	4,200	470	1,800	-	-	
	12/29/1994	17.40	13.11	-	-	-	-	-	-	-	
	7/19/1996	16.72	13.79	90,000	7,300	14,000	1,600	7,300	-	-	odor
	1/27/1997	14.89	15.62	63,000	7,100	13,000	1,600	7,100	500	-	b, odor
	6/18/1997	17.12	13.39	52,000	5,100	10,000	1,400	6,000	ND<200	-	b
	9/18/1997	17.63	12.88	110,000	9,400	23,000	2,600	13,000	ND<890	-	b, sheen/odor
	12/10/1997	16.98	13.53	39,000	2,600	5,300	940	3,900	780	320	b, odor
	2/18/1998	12.61	17.90	85,000	9,000	19,000	2,300	11,000	2,400	-	b
	5/12/1998	14.45	16.06	110,000	9,500	21,000	2,500	12,000	ND<1,200	-	b
	8/18/1998	16.14	14.37	64,000	6,000	13,000	1,700	7,800	2,000	1,300	a, b
	11/24/1998	16.70	13.81	78,000	5,300	14,000	2,300	11,000	ND<2,000	-	b, g
	2/4/1999	18.39	12.12	66,000	5,800	16,000	2,600	12,000	3,000	-	b, g
	5/18/1999	15.90	14.61	78,000	6,700	17,000	2,400	10,000	4,300	-	b
	8/27/1999	16.79	13.72	91,000	7,400	17,000	2,300	11,000	1,200	1,000	a, b
	11/18/1999	17.32	13.19	180,000	7,000	20,000	3,300	16,000	ND<6,000	1,700	b,g
	2/29/2000	14.37	16.14	86,000	5,500	13,000	2,000	9,500	3,500	4,700	a
	5/25/2000	16.01	14.50	110,000	6,300	14,000	2,400	10,000	7,500	6,500	a, b, g
	8/9/2000	17.02	13.49	77,000	5,000	13,000	2,000	8,600	5,900	-	b
	11/9/2000	17.00	13.51	70,000	4,800	12,000	1,900	8,000	9,400	8,300	b
	1/29/2001	18.31	12.20	110,000	8,200	21,000	2,800	13,000	2,500	1,900	b,g
	4/16/2001	18.59	11.92	97,000	7,400	15,000	2,500	12,000	ND<3,000	ND<50	b,g
	8/14/2001	18.74	11.77	97,000	6,200	14,000	2,400	13,000	ND<250	ND<50	a,j

Table 2. Groundwater Elevation and Analytical Data - Former ARCO Station - 706 Harrison Street, Oakland, California

Well ID/ Sample ID *TOC*	Date Sampled	Depth to Water (ft)	Groundwater Elevation (ft-msl)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE by 8021B (ug/L)	MTBE by 8260B (ug/L)	Notes
MW-2[con't]	10/22/2001	18.27	12.24	71,000	5,900	15,000	2,400	12,000	ND<1,400	150	a
	2/1/2002	18.05	12.46	1,400	11	88	44	210	ND<5.0	-	a
	5/10/2002	17.15	13.36	97,000	4,500	15,000	2,500	12,000	ND<3,000	-	a,g
	7/8/2002	15.30	15.21	42,000	2,100	6,500	2,200	8,800	ND<1,000	65	a
	10/2/2002	15.89	14.62	70,000	1,700	5,700	1,900	8,300	ND<1,700	-	a
	1/23/2003	17.51	13.00	40,000	1,900	7,800	1,200	5,600	ND<1,000	-	a
	4/29/2003	15.31	15.20	82,000	2,500	11,000	2,200	9,400	ND<2,000	-	a
27.53	7/18/2003	16.84	10.69	57,000	2,100	8,700	2,200	10,000	-	ND<50	a
	10/9/2003	16.05	11.48	49,000	1,800	7,000	1,700	7,600	ND<1,500	26	a
	1/28/2004	15.39	12.14	550	21	33	3.0	61	ND<100	-	a
	4/7/2004	16.01	11.52	41,000	2,500	11,000	1,900	8,000	ND<2,000	-	a
	7/23/2004	15.30	12.23	81,000	2,000	12,000	2,500	12,000	ND<2,000	-	a,h
	10/12/2004	17.87	9.66	75,000	2,600	13,000	2,300	11,000	ND<1,300	-	a
	2/14/2005	14.80	12.73	75,000	2,600	12,000	2,400	10,000	ND<1,800	-	a,h
	4/27/2005	14.63	12.90	61,000	2,800	11,000	1,600	7,000	ND<2,700	-	a
	7/19/2005	15.60	11.93	90,000	3,700	14,000	2,600	10,000	ND<7,000	-	a
	10/18/2005	16.08	11.45	77,000	3,300	14,000	2,400	11,000	7,900	6,400	a
	1/23/2006	14.20	13.33	54,000	1,600	8,000	1,600	6,700	6,600	7,000	a
	4/12/2006	12.51	15.02	43,000	1,800	7,800	1,300	5,200	6,400	4,900	a
	7/10/2006	14.76	12.77	86,000	2,800	11,000	2,100	9,600	ND<6,500	400	a,h
	10/16/2006	16.74	10.79	110,000	3,600	16,000	2,400	12,000	ND<6,000	2,700	a,h
	1/26/2007	17.10	10.43	120,000	3,900	16,000	2,300	10,000	ND<5,000	3,000	a,h,i
	4/18/2007	17.02	10.51	100,000	3,500	18,000	2,500	12,000	5,200	3,400	a,h,i
	8/2/2007	**17.47**	**10.06**	**61,000**	**2,700**	**11,000**	**1,800**	**7,600**	**6,400**	**4,600**	**a,h**
MW-3	8/13/1993	17.05	12.72	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.5	-	-	No SVOCs.
29.77	12/14/1993	17.70	12.07	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.5	-	-	
	4/15/1994	17.40	12.37	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	-	
	12/29/1994	16.80	12.97	-	-	-	-	-	-	-	
	7/19/1996	16.28	13.49	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	-	
	1/27/1997	13.83	15.94	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	6/18/1997	16.53	13.24	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	9/18/1997	17.07	12.70	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	12/10/1997	16.15	13.62	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	2/18/1998	11.80	17.97	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	

Table 2. Groundwater Elevation and Analytical Data - Former ARCO Station - 706 Harrison Street, Oakland, California

Well ID/ Sample ID *TOC*	Date Sampled	Depth to Water (ft)	Groundwater Elevation (ft-msl)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE by 8021B (ug/L)	MTBE by 8260B (ug/L)	Notes
	5/12/1998	13.85	15.92	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	8/18/1998	15.57	14.20	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
MW-3[con't]	11/24/1998	16.04	13.73	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	2/4/1999	17.80	11.97	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	5/18/1999	15.29	14.48	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	8/27/1999	16.15	13.62	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	11/18/1999	16.77	13.00	-	-	-	-	-	-	-	
	2/29/2000	13.71	16.06	ND<50	2	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	5/25/2000	15.46	14.31	-	-	-	-	-	-	-	
	8/9/2000	16.46	13.31	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	11/9/2000	16.25	13.52	-	-	-	-	-	-	-	
	1/29/2001	16.52	13.25	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	4/16/2001	16.95	12.82	-	-	-	-	-	-	-	
	8/14/2001	17.11	12.66	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	10/22/2001	16.50	13.27	-	-	-	-	-	-	-	
	2/1/2002	16.90	12.87	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	5/10/2002	15.03	14.74	-	-	-	-	-	-	-	
	7/8/2002	14.45	15.32	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	10/2/2002	15.03	14.74	-	-	-	-	-	-	-	
	1/23/2003	15.48	14.29	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	4/29/2003	12.49	17.28	-	-	-	-	-	-	-	
26.79	7/18/2003	14.80	11.99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	10/9/2003	14.13	12.66	-	-	-	-	-	-	-	
	1/28/2004	13.47	13.32	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	4/7/2004	15.41	11.38	-	-	-	-	-	-	-	
	7/23/2004	14.54	12.25	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	10/12/2004	16.58	10.21	-	-	-	-	-	-	-	
	2/14/2005	14.19	12.60	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	4/27/2005	13.68	13.11	-	-	-	-	-	-	-	
	7/19/2005	15.15	11.64	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
MW-3[con't]	10/18/2005	15.60	11.19	-	-	-	-	-	-	-	
	1/23/2006	13.65	13.14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	270	260	
	4/12/2006	11.94	14.85	-	-	-	-	-	-	-	
	7/10/2006	14.48	12.31	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1,100	1,600	
	10/16/2006	16.19	10.60	-	-	-	-	-	-	-	
	1/26/2007	16.56	10.23	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2,500	3,400	
	4/18/2007	16.45	10.34	-	-	-	-	-	-	-	
	8/2/2007	**16.92**	**9.87**	**ND<100**	**ND<1.0**	**ND<1.0**	**ND<1.0**	**ND<1.0**	**3,300**	**3,500**	

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MW-4	12/16/1994	18.10	13.08	2,500	32	6.5	4.5	17	-	-	
31.18	12/29/1994	17.95	13.23	-	-	-	-	-	-	-	
	7/19/1996	17.38	13.80	3,300	520	39	67	60	-	-	
	1/27/1997	15.25	15.93	4,500	860	55	100	91	1,100	-	b
	6/18/1997	17.61	13.57	2,700	700	52	81	76	2,200	2,300	a, b
	9/18/1997	18.01	13.17	3,900	760	38	56	64	ND<170	-	b
	12/10/1997	17.45	13.73	12,000	1,800	120	210	210	2,900	2,600	a, b
	2/18/1998	13.09	18.09	1,700	210	8	6.7	16	200	-	b
	5/12/1998	14.78	16.40	2,100	300	15	36	34	920	-	b, c
	8/18/1998	16.59	14.59	4,700	1,000	130	110	150	5,200	4,900	a, b
	11/24/1998	17.18	14.00	3,000	810	44	76	94	4,800	-	b
	2/4/1999	18.90	12.28	2,800	770	50	69	69	3,100	-	b
	5/18/1999	16.30	14.88	4,000	780	57	7.7	79	4,800	-	b
	8/27/1999	17.21	13.97	4,100	870	51	74	99	3,300	4,100	a, b
	11/18/1999	17.77	13.41	3,000	760	43	67	65	5,100	5,400	b
	2/29/2000	14.85	16.33	4,600	1,000	64	94	170	4,100	4,600	a
	5/25/2000	16.45	14.73	2,600	540	39	59	41	3,500	5,300	b
	8/9/2000	17.47	13.71	4,400	930	66	98	79	9,400	-	b
	11/9/2000	17.45	13.73	4,200	630	34	54	44	7,800	9,400	b
	1/29/2001	18.90	12.28	3,100	710	34	66	51	9,400	8,000	b
	4/16/2001	19.17	12.01	160	1.2	1.3	ND<0.5	12	22	20	b
	8/14/2001	19.20	11.98	1,700	190	11	35	13	300	250	b
	10/22/2001	18.95	12.23	1,100	120	3.7	29	7.9	ND<25	16	a
	2/1/2002	19.05	12.13	2,600	25	43	21	280	ND<5.0	-	a
	5/10/2002	17.69	13.49	490	3.5	2.0	2.1	2.2	ND<5.0	-	a
	7/8/2002	15.75	15.43	170	0.51	0.62	1.6	1.2	ND<5.0	2.0	m
	10/2/2002	16.30	14.88	240	1.7	2.0	2.2	0.88	ND<5.0	-	a
	1/23/2003	17.74	13.44	ND<50	0.52	4.1	ND<0.5	1.9	ND<5.0	-	
	4/29/2003	15.47	15.71	1,300	75	4.8	21	7.3	130	120	a
28.20	7/18/2003	17.08	11.12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	0.74	a
	10/9/2003	16.25	11.95	210	4.7	0.57	1.6	1.1	ND<10	10	a
	1/28/2004	15.65	12.55	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	a
	4/7/2004	16.49	11.71	-	-	-	-	-	-	-	
	4/12/2004	-	-	770	56	3.2	7.0	6.5	120	160	a
	7/23/2004	15.86	12.34	1,100	130	11	17	17	790	800	a
	10/12/2004	18.05	10.15	150	0.86	ND<0.5	ND<0.5	0.97	ND<10	-	a

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Well ID/ Sample ID *TOC*	Date Sampled	Depth to Water (ft)	Groundwater Elevation (ft-msl)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE by 8021B (ug/L)	MTBE by 8260B (ug/L)	Notes
MW-4[con't]	2/14/2005	15.30	12.90	1,500	200	16	30	31	420	550	a
	4/27/2005	14.20	14.00	3,000	520	100	27	86	600	480	a
	7/19/2005	16.08	12.12	1,800	310	16	36	25	1,000	1,100	a
	10/18/2005	16.55	11.65	2,500	450	28	47	51	3,800	4,500	a
	1/23/2006	14.66	13.54	1,300	170	13	14	14	2,500	3,300	a
	4/12/2006	12.92	15.28	940	150	12	7.6	12	3,400	3,300	a
	7/10/2006	15.38	12.82	1,700	260	14	26	20	4,300	5,900	a
	10/16/2006	17.21	10.99	3,200	440	26	34	63	7,800	7,500	a
	1/26/2007	17.58	10.62	2,000	290	20	28	42	8,300	8,300	a
	4/18/2007	17.46	10.74	2,300	350	28	38	42	5,900	7,800	a,i
	8/2/2007	**17.95**	**10.25**	**3,600**	**480**	**33**	**47**	**72**	**7,500**	**9,000**	**a**
MW-5	12/16/1994	16.07	11.97	ND<50	1.1	ND<0.5	ND<0.5	2.4	-	-	
28.04	12/29/1994	16.10	11.94	-	-	-	-	-	-	-	
	7/19/1996	15.49	12.55	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	-	
	1/27/1997	13.60	14.44	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	6/18/1997	15.55	12.49	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	9/18/1997	16.16	11.88	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	12/10/1997	15.41	12.63	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	2/18/1998	10.93	17.11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	5/12/1998	13.25	14.79	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	8/18/1998	14.75	13.29	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	11/24/1998	15.15	12.89	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	2/4/1999	14.61	13.43	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	5/18/1999	14.15	13.89	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	8/27/1999	15.43	12.61	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	11/18/1999	15.97	12.07	-	-	-	-	-	-	-	
	2/29/2000	13.16	14.88	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	5/25/2000	14.72	13.32	-	-	-	-	-	-	-	
	8/9/2000	15.68	12.36	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	11/9/2000	15.39	12.65	-	-	-	-	-	-	-	
	1/29/2001	15.97	12.07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	4/16/2001	16.24	11.80	-	-	-	-	-	-	-	
	8/14/2001	17.39	10.65	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	10/22/2001	15.90	12.14	-	-	-	-	-	-	-	
	2/1/2002	16.55	11.49	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	5/10/2002	15.12	12.92	-	-	-	-	-	-	-	

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MW-5[con't]	7/8/2002	15.92	12.12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	10/2/2002	16.42	11.62	-	-	-	-	-	-	-	
	1/23/2003	14.90	13.14	ND<50	20	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	4/29/2003	12.05	15.99	-	-	-	-	-	-	-	
25.07	7/18/2003	14.28	10.79	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	10/9/2003	13.36	11.71	-	-	-	-	-	-	-	
	1/28/2004	12.68	12.39	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	4/7/2004	14.71	10.36	-	-	-	-	-	-	-	
	7/23/2004	13.49	11.58	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	i
	10/12/2004	15.88	9.19	-	-	-	-	-	-	-	
	2/14/2005	13.22	11.85	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	i
	4/27/2005	13.40	11.67	-	-	-	-	-	-	-	
	7/19/2005	14.21	10.86	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	i
	10/18/2005	14.79	10.28	-	-	-	-	-	-	-	
	1/23/2006	13.12	11.95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	i
	4/12/2006	11.39	13.68	-	-	-	-	-	-	-	
	7/10/2006	14.40	10.67	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	25	-	i
	10/16/2006	15.44	9.63	-	-	-	-	-	-	-	
	1/26/2007	15.76	9.31	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	490	-	
	4/18/2007	15.61	9.46	-	-	-	-	-	-	-	
	8/2/2007	**16.04**	**9.03**	**ND<50**	**ND<0.5**	**ND<0.5**	**ND<0.5**	**ND<0.5**	**660**	**760**	
MW-6	12/16/1994	17.74	11.36	-	-	-	-	-	-	-	
29.10	12/29/1994	17.40	11.70	-	-	-	-	-	-	-	
	7/19/1996	16.60	12.50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	-	
	1/27/1997	14.88	14.22	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	6/18/1997	16.73	12.37	51	22	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	c
	9/18/1997	17.24	11.86	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	12/10/1997	16.56	12.54	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	2/18/1998	12.93	16.17	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	5/12/1998	14.35	14.75	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	8/18/1998	15.94	13.16	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	11/24/1998	16.46	12.64	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	2/4/1999	18.25	10.85	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	5/18/1999	15.73	13.37	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	8/27/1999	15.64	13.46	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	11/18/1999	17.04	12.06	-	-	-	-	-	-	-	

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MW-6[con't]	2/29/2000	14.55	14.55	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	5/25/2000	15.86	13.24	-	-	-	-	-	-	-	
	8/9/2000	16.80	12.30	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	11/9/2000	16.60	12.50	-	-	-	-	-	-	-	
	1/29/2001	17.00	12.10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	4/16/2001	17.15	11.95	-	-	-	-	-	-	-	
	8/14/2001	17.30	11.80	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	10/22/2001	17.13	11.97	-	-	-	-	-	-	-	
	2/1/2002	16.57	12.53	70	37	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	a
	5/10/2002	15.25	13.85	-	-	-	-	-	-	-	
	7/8/2002	15.79	13.31	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	10/2/2002	16.38	12.72	-	-	-	-	-	-	-	
	1/23/2003	16.03	13.07	ND<50	21	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	4/29/2003	14.19	14.91	-	-	-	-	-	-	-	
26.13	7/18/2003	15.47	10.66	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	10/9/2003	14.73	11.40	-	-	-	-	-	-	-	
	1/28/2004	14.05	12.08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	4/7/2004	14.41	11.72	-	-	-	-	-	-	-	
	7/23/2004	15.15	10.98	3,300	1,300	ND<5.0	52	9.7	ND<50	-	a
	10/12/2004	17.29	8.84	-	-	-	-	-	-	-	
	2/14/2005	14.60	11.53	350	160	ND<0.5	ND<0.5	ND<0.5	ND<25	2.0	a,i
	4/27/2005	14.10	12.03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	ND<0.5	
	7/19/2005	15.18	10.95	110	15	ND<0.5	0.62	ND<0.5	ND<5.0	1.7	a,i
	10/18/2005	15.65	10.48	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	0.87	i
	1/23/2006	14.02	12.11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	0.50	i
	4/12/2006	12.66	13.47	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	ND<0.5	
	7/10/2006	14.64	11.49	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	ND<0.5	
	10/16/2006	16.50	9.63	-	-	-	-	-	-	-	
	1/26/2007	16.83	9.30	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	ND<0.5	
	4/18/2007	16.72	9.41	-	-	-	-	-	-	-	
	8/2/2007	**17.13**	**9.00**	**ND<50**	**ND<0.5**	**ND<0.5**	**ND<0.5**	**ND<0.5**	**ND<5.0**	**ND<0.5**	
MW-7	12/16/1994	17.07	12.60	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
29.67	12/29/1994	17.65	12.02	-	-	-	-	-	-	-	
	7/19/1996	16.44	13.23	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	1/27/1997	15.09	14.58	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	6/18/1997	16.59	13.08	73	ND<0.5	0.55	ND<0.5	ND<0.5	ND<5.0	-	d

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MW-7[con't]	9/18/1997	17.06	12.61	94	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	b, f
	12/10/1997	16.58	13.09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	2/18/1998	12.60	17.07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	5/12/1998	14.81	14.86	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	8/18/1998	15.67	14.00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	11/24/1998	16.30	13.37	200	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	d
	2/4/1999	15.99	13.68	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	5/18/1999	15.42	14.25	200	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	d
	8/27/1999	16.35	13.32	140	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	11/18/1999	16.81	12.86	--	--	--	--	--	--	-	
	2/29/2000	14.16	15.51	100	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	f
	5/25/2000	15.54	14.13	--	--	--	--	--	--	-	
	8/9/2000	16.56	13.11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	11/9/2000	16.45	13.22	-	-	-	-	-	-	-	
	1/29/2001	16.92	12.75	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	4/16/2001	17.03	12.64	-	-	-	-	-	-	-	
	8/14/2001	17.27	12.40	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	10/22/2001	16.95	12.72	-	-	-	-	-	-	-	
	2/1/2002	16.14	13.53	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	5/10/2002	15.30	14.37	-	-	-	-	-	-	-	
	7/8/2002	15.73	13.94	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	10/2/2002	16.24	13.43	-	-	-	-	-	-	-	
	1/23/2003	15.70	13.97	ND<50	23	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	4/29/2003	12.68	16.99	-	-	-	-	-	-	-	
26.70	7/18/2003	15.19	11.51	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	10/9/2003	14.45	12.25	-	-	-	-	-	-	-	
	1/28/2004	13.88	12.82	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	4/7/2004	15.71	10.99	-	-	-	-	-	-	-	
	7/23/2004	14.85	11.85	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	130	120	
	10/12/2004	16.90	9.80	-	-	-	-	-	-	-	
	2/14/2005	14.42	12.28	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	190	200	
	4/27/2005	13.75	12.95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	1.3	
	7/19/2005	14.91	11.79	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	65	66	
	10/18/2005	15.40	11.30	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	12	15	
	1/23/2006	13.99	12.71	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	2.2	
	4/12/2006	12.32	14.38	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	2.0	

Table 2. Groundwater Elevation and Analytical Data - Former ARCO Station - 706 Harrison Street, Oakland, California

Well ID/ Sample ID *TOC*	Date Sampled	Depth to Water (ft)	Groundwater Elevation (ft-msl)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE by 8021B (ug/L)	MTBE by 8260B (ug/L)	Notes
MW-7$^{con't}$	7/10/2006	14.31	12.39	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	1.5	
	10/16/2006	16.23	10.47	-	-	-	-	-	-	-	
	1/26/2007	16.61	10.09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	ND<0.5	
	4/18/2007	16.54	10.16	-	-	-	-	-	-	-	
	8/2/2007	**16.93**	**9.77**	**ND<50**	**ND<0.5**	**ND<0.5**	**ND<0.5**	**ND<0.5**	**ND<5.0**	**2.2**	
VW-3	3/6/2003	-	-	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	i
	3/25/2003	-	-	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	i
VW-4	3/6/2003	-	-	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	3/25/2003	-	-	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
Trip Blank	11/9/2000	-	-	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	
	2/14/2005	-	-	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	

Abbreviations and Analyses:

ug/L = Micrograms per liter

ND<0.5 = Not Detected (ND) above laboratory detection limit.

- = Not sampled, not analyzed, or not applicable

TOC = Top of casing elevation, measured in feet, relative to mean sea level

ft = Measured in feet

ft-msl = Elevation in feet relative to mean sea level

TPHg = Total petroleum hydrocarbons as gasoline by modified EPA Method SW8015C

Benzene, ethylbenzene, toluene and xylenes by EPA Method SW8021B.

MTBE = Methyl tertiary butyl ether by EPA Method SW8021B and/or SW8260B.

SVOCs = Semi-Volatile Organic Compounds (EPA Method 8270)

Wells were re-surveyed on October 27, 2003 to City of Oakland Benchmark 25A.

Analytical Laboratory Notes:

a = "unmodified or weakly modified gasoline is significant"

b = "heavier gasoline range compounds are significant"

c = "lighter gasoline range compounds are significant"

d = "isolated peaks are present"

f = "hydrocarbons with no recognizable patterns are present"

g = "lighter than water immiscible sheen is present"

h = "lighter than water immiscible sheen/product is present"

i = "sample contains greater than ~1 vol. % sediment"

j = "sample was diluted due to high organic content"

m = "no recognizable pattern"

Appendix A
Agency Correspondence

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

Mark Jones

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

August 2, 2007

Mr. Bo Gin
Oakland Auto Parts
342 Lester Avenue
Oakland, CA 94606

Subject: Fuel Leak Case No. RO0000484 (Global ID# T0600100985), Oakland Auto Parts, 706 Harrison Street, Oakland, CA

Dear Mr. Gin:

Alameda County Environmental Health (ACEH) staff have reviewed the fuel leak case file for the above referenced site including the reports entitled, "Request for Approval of Onsite Characterization and Remediation Status at Upgradient Site," dated January 2007 and "Proceed with Work Plan for Onsite Characterization," dated June 13, 2007, and "Second Quarter 2007 Monitoring Report" dated June 11, 2007 prepared by Conestoga Rovers & Associates (CRA). In response to your concern regarding impacts to your site from an upgradient source located at 726 Harrison Street, ACEH is currently requesting remedial action associated with the unauthorized release from this site.

Currently, groundwater analytical data collected in April 2007 identified elevated levels of dissolved phase TPHg, benzene and MtBE in onsite monitoring wells at maximum concentrations of up to 100,000 µg/L, 5,400 µg/L and 7,800 µg/L, respectively. Furthermore, separate phase petroleum hydrocarbon was detected in MW-2, which is adjacent to the former 8,000 gallonUST tank pit. The presence of free product in the tank pit indicates that residual contamination in soil may be adding mass to the dissolved phase petroleum hydrocarbon plume.

Based on the concentration of TPH and TPH constituents detected in groundwater, the presence of residual petroleum hydrocarbon contamination in the former 8,000 gallon tank pit, and considering site remediation activities were limited to the area immediately adjacent to the former southern tank pit and dispenser island. ACEH believes an additional investigation is necessary to determine the extent of soil and groundwater contamination near the former 8,000 gallon UST. Please submit a work plan detailing your proposal to evaluate the extent of soil and groundwater contamination at your site.

Based on ACEH staff review of the case file, we request that you address the following technical comments and send us the reports described below. Please provide 72-hour advance written notification to this office (e-mail preferred to steven.plunkett@acgov.org) prior to the start of field activities.

TECHNICAL COMMENTS

1. **Impact from Offsite Up-Gradient MtBE Source**. CRA asserts that an offsite, up-gradient source of MtBE contamination is impacting your site. Analytical data collected along the

northern property boundary in April 2007, from the upgradient site located at 726 Harrison Street, detected elevated concentrations of MtBE at up to 27,000 µg/L. In addition, groundwater analytical data collected from an onsite upgradient monitoring well (MW-4) indicates that dissolved phase MtBE contamination may be migrating in groundwater beneath your site from an upgradient offsite source. Further, CRA maintains the MtBE contamination beneath your site is not site sourced.

However, our review and comparison of historical groundwater analytical data collected between January 1998 and January 2001 indicate that MtBE concentrations in downgradient well MW-1 are consistently higher than MtBE concentrations in upgradient well MW-4. Additionally, between October 2001 and April 2004 MtBE was not detected above laboratory reporting limits in either monitoring well. Subsequently, from October 2005 through October 2006 MtBE concentrations in well MW-1 are once again higher than MtBE concentrations in upgradient well MW-4. It is inconclusive if MtBE detected in groundwater beneath 706 Harrison Street is from an offsite source. Moreover, groundwater analytical data indicate a source of MtBE may have been present beneath your site.

Furthermore, information from the California Water Quality Control Board, San Francisco Region states, "MTBE (methyl-*tert*-butyl ether) was initially used as an octane booster and replacement for lead in gasoline. The Atlantic Richfield Company (ARCO) obtained EPA approval to add up to 7.0% MTBE to unleaded gasoline in 1979. The approved percentage was increased to 11% in 1981 and 15% in 1988. Between 1980 and 1986, MTBE use increased approximately 40% per year." There is a distinct possibility the former ARCO station may have used gasoline from a refinery that contained MTBE in the formula.

2. **Preferential Pathway Study**. In February 2003, April 2002 and November 2000 ACEH requested a preferential pathway study be completed for your site. To date, we have not received verification the preferential pathway study was completed, nor have we received the requested document. ACEH request that you perform a preferential pathway study that details the potential migration pathways and conduits (wells, utilities, pipelines, etc.) for horizontal and vertical migration which may be present near the site. Discuss your analysis and interpretation of the results of the preferential pathway study (including the detailed well survey and utility survey requested below) and report your results in the Soil and Groundwater Investigation Report requested below. Include an evaluation of the probability of the dissolved phase and NAPL plumes for all constituents of concern encountering preferential pathways and conduits that could spread the contamination, particularly in the vertical direction to deeper aquifers. The results of your study shall contain all information required by 23 CCR, Section 2654(b).

   a) **Utility Survey**

      An evaluation of all utility lines and trenches (including sewers, storm drains, pipelines, trench backfill, etc.) within and near the site and plume area(s) is required as part of your study. Submittal of map(s) and cross-sections showing the location and depth of all utility lines and trenches within and near the site and plume area(s) is required as part of your study.

   b) **Well Survey**

The preferential pathway study shall include a detailed well survey of all wells (monitoring and production wells: active, inactive, standby decommissioned (sealed with concrete), abandoned, (improperly decommissioned or lost); and dewatering and cathodic protection wells) within a ½ mile radius of the subject site. The well survey should include well data from California Department of Water Resource well database and Alameda County Department of Public Works. As part of your detailed well survey, please perform a background study of the historical land uses of the site and properties nearby the site. Use the results of your background study to determine the existence or unrecorded/unknown (abandoned) wells, which can act as pathways for migration of contamination at and/or from your site. Please review historical maps such as Sanborn maps, aerial photos, etc., when performing the background study. Submittal of map(s) showing the location of all wells identified in your study, and the use of tables to report the data collected as part of your survey are required. Please refer to the Regional Board's guidance for identification, location, and evaluation of potential deep well conduits when conducting your preferential pathway study. Present the result from the preferential pathway study in the report requested below.

3. **Onsite Characterization and Post Remediation Soil and Groundwater Sampling.**

Our review of groundwater analytical data from April 2007 indicates that a source of residual petroleum hydrocarbon may exist beneath your site. Therefore, ACEH requests you perform additional site characterization to determine if the former UST tank pit is a source of residual pollution beneath your site. Please prepare a work plan that details your proposal to perform soil and groundwater sampling to evaluate the magnitude of residual soil and groundwater contamination associated with the 8,000 gallon tank pit, and thus determine if additional onsite remedial activities are warranted.

Onsite remediation completed to date indicates that the radius influence for the onsite treatment system was limited to the area immediately adjacent to the former fuel dispenser island and tank pit. In December 2003, prior to the evaluation of your site for regulatory case closure, ACEH required that confirmation soil and groundwater sampling must be completed to determine the efficacy of the onsite soil vapor extraction and air sparge treatment system. More importantly, confirmation soil and groundwater sampling will verify either the presence or absence of residual TPH and TPH constituents in soil and groundwater near the southern tank excavation, in the area where onsite remediation was focused. Please collect groundwater samples from onsite wells VW/SP-3, VW/SP-4 and VW/SP-5 and propose soil boring and grab groundwater sample locations to document post remediation contamination concentrations. Please include the post remediation soil boring locations in the work plan requested below and submit the results from groundwater sampling in the Soil and Groundwater Investigation report requested below.

4. **Combined Groundwater Monitoring**. ACEH recommends a program of joint groundwater monitoring be implemented for your site and the adjacent site located at 726 Harrison (former Shell/Chan's Service Station) and the site located at 800 Harrison (Unocal # 0752). A program of combined groundwater monitoring will refine local hydrogeologic conditions, and provide a better understanding of the extent of possible impacts to 706 Harrison from offsite upgradient sources of TPH and TPH constituents.

5. **Hydrogeologic Cross Sections.** To help evaluate the lateral and vertical extent of contamination in relation to the depth of existing monitoring and remediation wells, please prepare a minimum of two cross sections. One of the hydrogeologic cross sections should include lithologic data from the upgradient site located at 726 Harrison and extend in a downgradient direction through the former UST pit. The cross sections are to illustrate the lateral and vertical extent of soil layers, depths where groundwater was first encountered in borings and the static water levels, observations of free product, staining, or odor, the approximate location of the groundwater table, USTs and dispensers (including the tank pit backfill), and analytical data from soil samples and groundwater samples for each of the borings and wells shown on the cross sections. In addition, please show the total depth and screen interval for all wells and sparge points. Please present the cross sections in the Soil and Groundwater Investigation Report requested below.

TECHNICAL REPORT REQUEST

Please submit technical reports to Alameda County Environmental Health (Attention: Steven Plunkett), according to the following schedule:

- **September 5, 2007** – Work Plan for Soil and Groundwater Investigation with Preferential Pathway Study.

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program ftp site are provided on the attached "Electronic Report Upload (ftp) Instructions." Please do not submit reports as attachments to electronic mail.

Submission of reports to the Alameda County ftp site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) Geotracker website. Submission of reports to the Geotracker website does not fulfill the requirement to submit documents to the Alameda County ftp site. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitor wells, and other data to the Geotracker database over the Internet. Beginning July 1, 2005, electronic submittal of a complete copy of all necessary reports was required in Geotracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.swrcb.ca.gov/ust/cleanup/electronic_reporting).

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

LANDOWNER NOTIFICATION REQUIREMENTS

Pursuant to California Health & Safety Code Section 25297.15, the active or primary responsible party for a fuel leak case must inform all current property owners of the site of cleanup actions or requests for closure. Furthermore, ACEH may not consider any cleanup proposals or requests for case closure without assurance that this notification requirement has been met. Additionally, the active or primary responsible party is required to forward to ACEH a complete mailing list of all record fee title holders to the site.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please be aware that you may be eligible for reimbursement of the costs of investigation from the California Underground Storage Tank Cleanup Fund (Fund). In some cases, a deductible amount may apply. If you believe you meet the eligibility requirements, we strongly encourage you to call the Fund for an application.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

If you have any questions, please call me at (510) 383-1767.

Sincerely,

Steven Plunkett
Hazardous Materials Specialist

cc: Mr. Mark Jonas, Conestoga Rover & Associates, 5900 Hollis Street, Suite A, Emeryville, CA 94608
Mr. Robert Kitay, Aqua Science Engineers, W. Pintado Road, Danville, CA 94526
Mr. Sunil Ramdass, SWQCB UST Cleanup Fund, 1001 I Street, 17th Floor, Sacramento, CA 95814-2828
Mr. Kin Chan, Chan's Shell, 4328 Edgewood Avenue, Oakland, CA 94602-1316
Mr. Peter Yee, Peter & Judy yee Trust, 1000 San Antonio Avenue, Alameda, CA 94501
Donna Drogos, ACEH, Steven Plunkett, ACEH, File

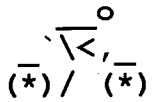
Jonas, Mark

From: Plunkett, Steven, Env. Health [steven.plunkett@acgov.org]
Sent: Thursday, October 04, 2007 1:45 PM
To: Jonas, Mark
Subject: RE: Request for Extension - Bo Gin RO0000484

Mark,

I have just returned from vacation this week. The new date for a work plan is now due on October 5, 2007

Regards,
Steven Plunkett
Hazardous Materials Specialist
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
510-383-1767
510-337-9355 Fax
steven.plunkett@acgov.org



From: Jonas, Mark [mailto:mjonas@craworld.com]
Sent: Tuesday, September 18, 2007 4:42 PM
To: Plunkett, Steven, Env. Health
Subject: Request for Extension - Bo Gin RO0000484

Dear Steven:
Please approve an extension for submittal of the Work Plan to October 5, 2007.

Thanks again for your time and consideration.

Sincerely,
Mark Jonas
Mark Jonas, P.G.
Conestoga-Rovers & Associates, Inc.
5900 Hollis Street, Suite A
Emeryville, California 94608
510/420-3307 direct
510/420-9170 fax

www.CRAworld.com

Appendix B
Standard Operating Procedures

Conestoga-Rovers & Associates

STANDARD FIELD PROCEDURES FOR SOIL BORINGS

This document describes Conestoga-Rovers & Associates' standard field methods for drilling and sampling soil borings. 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 modified 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 product saturation percentage,
- Observed odor and/or discoloration,
- Other significant observations (i.e. cementation, presence of marker horizons, mineralogy), and
- Estimated permeability.

Soil Boring and Sampling

Soil borings are typically drilled using hollow-stem augers or hydraulic push technologies. Samples are collected using lined split-barrel or equivalent samplers driven into undisturbed sediments beyond the bottom of the borehole. The vertical location of each soil sample is determined by measuring the distance from the middle of the soil sample tube to the end of the drive rod used to advance the split barrel sampler. All sample depths use the ground surface immediately adjacent to the boring as a datum. The horizontal location of each boring is measured in the field from an onsite permanent reference using a measuring wheel or tape measure.

Drilling and sampling equipment is cleaned 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

Soil is screened in the field using a portable photoionization detector (PID). Soil is placed in a bag and set aside to allow hydrocarbons to volatilize from the soil. After a few minutes, the PID measures volatile hydrocarbon vapor concentrations in the headspace. PID measurements are used along with the field observations, odors, stratigraphy and ground water depth to select soil samples for analysis.

Water Sampling

Water samples, if they are collected from the boring, are either collected using a driven Hydropunch type sampler or are collected from the open borehole using bailers. 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.

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.

Waste Handling and Disposal

Soil cuttings from drilling activities are usually stockpiled onsite on top of and covered by plastic sheeting. Soil cuttings are transported by licensed waste haulers and disposed in secure, licensed facilities based on the composite analytic results.

Ground water removed during sampling and/or rinsate generated during decontamination procedures are stored onsite in sealed 55 gallon drums. Each drum is labeled with the drum number, date of generation, suspected contents, generator identification and consultant contact. Disposal of the water is based on the analytic results. The water is either pumped out using a vacuum truck for transport to a licensed waste treatment/disposal facility or the individual drums are picked up and transported to the waste facility where the drum contents are removed and appropriately disposed.