DEPARTMENT OF TRANSPORTATION
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July 21, 1999

Mr. Barney M. Chan
Hazardous Materials Specialist
Alameda County Environmental Health Services
Environmental Protection (LOP)
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: South Oakland Maintenance Station, CA - Site Investigation

Dear Mr Chan:

For your review, a Draft Workplan for a Hazardous Waste Site Investigation for the above referenced site is enclosed. Please submit any comments you may have regarding this report.

If you have any questions regarding this matter, please contact Kathy Gill at (510) 286-6117.

Sincerely,

HARRY Y. YAHATA
District Director

By

SUBHASH AGARWAL
District Branch Chief
Office of Environmental Engineering

cc: Env. File, KG

99 JUL 22 PM 2:47
ENVIRONMENTAL PROTECTION

DRAFT
WORKPLAN
HAZARDOUS WASTE
SITE INVESTIGATION
TASK ORDER NUMBER 04-911175-DH
CONTRACT NUMBER 43A0012

SOUTH OAKLAND MAINTENANCE STATION
1112 29th AVENUE
OAKLAND, CALIFORNIA

7-20-99

prepared for

CALIFORNIA DEPARTMENT OF TRANSPORTATION
District 4
P.O. Box 23660
Oakland, California

prepared by

Professional Service Industries, Inc.
1320 West Winton Avenue
Hayward, California 94545
(510) 785-1111

July 20, 1999
575-9G014

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STATEMENT OF LIMITATIONS AND PROFESSIONAL CERTIFICATION

Information provided in this Workplan, prepared by Professional Service Industries, Inc. (PSI), is intended exclusively for the use of Caltrans for the evaluation of subsurface conditions as they pertain to the subject site. The professional services provided have been performed in accordance with practices generally accepted by other geologists, hydrologists, hydrogeologists, engineers, and environmental scientists practicing in this field. No other warranty, either expressed or implied, is made. As with all subsurface investigations, there is no guarantee that the work conducted will identify any or all sources or locations of contamination.

PSI reserves the right to deviate from the proposed scope of services outlined in this workplan as needed due to field conditions. If such deviation is necessary, PSI will seek prior approval from the client and the regulatory agency overseeing this project.

This workplan is issued with the understanding that Caltrans is responsible for ensuring that the information contained herein is brought to the attention of the appropriate regulatory agency. This workplan has been reviewed by a geologist who is registered in the State of California and whose signature and license number appear below.

Frank R. Poss, R.E.A.
Senior Hydrogeologist

Timothy R. O'Brien RG/CEG/CHG
Senior Geologist

1.0 INTRODUCTION

Professional Service Industries, Inc. (PSI) has been retained by the California Department of Transportation (Caltrans), under Task Order Number 04-911175-DH#1 and Contract Number 43A0012, to prepare this Workplan to assess current soil and groundwater conditions at the South Oakland Maintenance Station, 1112 29th Avenue, Oakland, California. The subject site location is presented on Figure 1.

The scope of work for this investigation includes:

- Complete a sensitive receptor survey
- Drill three soil borings to collect soil and groundwater samples,
- Chemical analyses of soil and groundwater samples; and
- Prepare a technical report describing the investigation and interpretation of the data generated.

1.1 PROJECT OBJECTIVE

The object of the project is to determine the concentrations of selected potentially hazardous constituents in soil and groundwater. Analytical results from the soil and groundwater investigation will be examined with respect to regulatory criteria and published guidelines. The purpose of this workplan is to define the scope of work and to describe the methodology to be utilized to complete the scope of work.

1.2 SITE HISTORY

According to the Caltrans Task Order 04-911175-DH dated March 4, 1999, the site has been used as a fueling and maintenance facility for approximately 40 years. On March 11, 1997, one 4,000 gallon diesel underground storage tank (UST) and one 2,000 gallon gasoline UST were removed from the subject site. Soil samples were collected as part of the tank removal activities with the results of the chemical analyses presented below.

- Methyl Tertiary Butyl Ether (MTBE): 0.041 to 9.15 milligrams per kilogram (mg/kg)
- Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX): 0.01 to 48.86 mg/kg
- Total Petroleum Hydrocarbons as Gasoline (TPH-G): 380 mg/kg
- Total Petroleum Hydrocarbons as Diesel (TPH-D): 4.9 to 21 mg/kg

Although groundwater was encountered in the excavation groundwater samples were not collected.

On April 6 and 7, 1999, PSI drilled six soil borings (B1 through B6) at the site. The boring locations are presented in Figure 2. All of the borings were converted to 1.3-centimeter (cm) (0.5-inch) inside-diameter temporary groundwater monitoring wells. Soil and groundwater samples were collected from the borings/temporary wells (PSI, 1999).

TPH-G was detected in one soil sample (B6-10 [13 mg/kg]). None of the soil samples contained detectable concentrations of TPH-D. MTBE was the only Volatile Organic Compound (VOC) detected in the soil samples analyzed. MTBE was detected in the sample B5-1.5 meters (0.16 mg/kg). No other soil sample contained a detectable concentration of MTBE (PSI, 1999).

TPH-G was detected in groundwater samples from Wells B3 (520 µg/l) and B4 (520 µg/l). No other groundwater samples contained detectable concentrations of TPH-G. No TPH-D was detected in any of the groundwater samples (PSI, 1999).

Benzene was detected in the water sample from Well WB3 (6.3 µg/l). MTBE was detected in the samples from Well WB5 (6,600 µg/l) and WB6 (24 µg/l). Concentrations of other gasoline related compounds were detected in samples from Wells WB1, WB3, WB4, and WB5 (PSI, 1999).

Chloroform was detected in water samples from Wells WB4 (2.4 µg/l) and WB6 (2.7 µg/l). Tetrachloroethene [synonym Perchloroethene (PCE)] was detected in the water sample from Well WB6 (12 µg/l).

2.0 PRE-FIELD ACTIVITIES

This section describes the tasks PSI will perform prior to initiating any field activities. These tasks include: 1) attending the Caltrans Task Order Meeting; 2) identifying borehole locations; 3) preparing the Pre-Work Site Visit Checklist; 4) locating any underground utility lines in conjunction with Underground Service Alert (USA); and 5) completing the Investigation Completion Schedule.

2.1 TASK ORDER MEETING

A Task Order Meeting was completed on March 17, 1999, with Mr. Frank Poss and Mr. Scott Bowers of PSI, and Ms. Kathy Gill of Caltrans in attendance. The primary purpose of the meeting was to familiarize PSI with site conditions that may impact field operations.

At the Task Order Meeting, the boring locations were determined and a Pre-Work Site Visit Checklist (Appendix A) was completed. Topics specified in the checklist included identification of borehole locations, confirmation of underground utility clearance, location of water/power supply sources, and storage areas for drill cuttings.

2.2 HEALTH AND SAFETY PLAN

Prior to the commencement of field activities at the site, a site-specific Health and Safety Plan (HSP) will be developed in compliance with 29 CFR 1910.120, under the supervision of a Certified Industrial Hygienist. The HSP is designed to address the potential hazardous materials that may be encountered during field activities at the site. Further, the HSP will be designed to minimize the exposure to potentially hazardous materials and unsafe working conditions to on-site personnel.

2.3 UTILITY CLEARANCE

At least 48 hours prior to drilling activities, PSI will contact Underground Service Alert (USA) to identify utility lines that may underlie the areas of investigation.

3.0 SUBSURFACE INVESTIGATION

This section describes the methodology that will be implemented during the soil and groundwater investigation at the site. The objectives of the sampling procedures are to provide an accurate assessment of the current soil and groundwater conditions and to minimize the potential for cross-contamination during sampling operations.

3.1 GEOPHYSICAL SURVEY

PSI will utilize Norcal Geophysical Surveys of Petaluma, California to perform a geophysical survey to identify the location of any subsurface utilities. Under the supervision of PSI personnel, Norcal Geophysical will complete the geophysical survey using both ground-penetrating radar (GPR) and electromagnetic line locating (ELL). GPR is the general term applied to techniques that employ radio waves, typically in the 1- to 1,000-megahertz frequency range, to map shallow subsurface structures and features. GPR is used to measure differences in electrical permittivity (the ability of a material to accept a charge when an electrical field is applied) to detect underground lines. GPR is performed by transmitting radio signals into the subsurface from a transducer as it is moved along the surface. When radio signals encounter subsurface changes in electrical permittivity, a portion of the signal is reflected back to the surface and printed out as a series of bands on the graphical recorder. Based on the signature of the recorded pattern, the identity of the object may be interpreted.

ELL techniques are used to locate active and abandoned underground utilities. This technique detects the time-varying magnetic fields resulting from an alternating electric current flowing on a pipeline or cable. The detectability of underground utilities is determined by the composition and construction of the line in question. Detectable utilities include: any continuously connected metal pipes, cables/wires, or non-metallic utilities with tracer wires. An instrument is used to trace the signal from the surface and identify the location of the utility line.

3.2 SOIL BORINGS

Three soil borings are scheduled to be drilled to investigate the soil and groundwater quality at the site. The boring locations are presented in Figure 2. V & W Drilling of Valley Springs, California will provide the drilling services. The borings will be drilled by the Geoprobe direct push drilling technique.

3.3 SOIL SAMPLING PROTOCOL

Soil samples will be collected by a PSI geologist working under the supervision of a State of California Registered Geologist. **Soil samples will be collected at 1.5-meter (5-foot) intervals from ground surface to the bottom of each boring. Borings will be at least** 6.1 meters (20 feet) in depth. The samples will be collected in 0.46-meter (1.5-foot) long acetate tubes. Upon retrieval of the sampler, a representative soil sample will be preserved for chemical analyses. Soil samples will be collected according to PSI standard operating procedures, as described in Appendix B.

The soil samples will be logged on chain-of-custody records and transported to Pace Analytical of Long Beach, California, a California Department of Health Services certified hazardous materials testing laboratory, following chain-of-custody protocol.

3.4 SOIL CLASSIFICATION

Soil will be described by a PSI geologist and recorded on a field boring log for each boring drilled. The data recorded on the logs will be based on examination of soil samples retrieved and drilling conditions observed in the field. Boring logs will include information regarding the location of the boring, type of sampler used, and geologic descriptions of materials encountered.

Soils will be classified according to the "Soil and Rock Logging Classification Manual" prepared by the State of California, Department of Transportation. The Soil and Rock Logging Manual is consistent with the Unified Soil Classification System. Other information that will be recorded on the logs will include indications of contamination and the occurrence of groundwater. Organic vapor analyzer (OVA) measurements for soil samples will be recorded on the field boring logs.

3.5 POTENTIAL CONDUIT SURVEY

The presence of potential conduits will be evaluated by researching the presence and construction details of wells and horizontal conduits (utility trenches).

The well survey will be performed to identify agricultural, domestic, and industrial wells within a radius of two thousand feet of the site. Groundwater monitoring wells will not be included in the survey because they are constructed under supervision of personnel familiar with groundwater hydrology and contaminant transport issues. This survey is to identify potential preferential migration pathways for site contaminants. PSI will include the owner's name and address, distance of the well from the site, well status, and type of well.

PSI will also review regulatory records to obtain information on remediation activities at nearby UST sites. That information will be used to determine if other sites might be contributing contaminants to the subject site. The location and depth of underground utilities and trenches located on or adjacent to the site will be investigated. The horizontal conduit evaluation will include analysis of utilities, trenches, depth to water, and potential for contaminant migration.

3.6 DECONTAMINATION PROCEDURES

Decontamination procedures will be implemented to maintain sample integrity and to prevent cross-contamination between sampling locations. All re-usable equipment will be cleaned with a non-phosphate detergent and rinsed twice with deionized water prior to use at a new sampling location. Sampling equipment includes:

- Stainless-steel sample barrel and tubes,
- Drilling equipment,
- Groundwater sampling equipment, and
- Sounders.

3.7 STORAGE AND DISPOSAL OF GENERATED WASTES

Water from equipment cleaning, well development, and well purging activities will be stored in individually labeled 55-gallon drums. Disposition of the water will be determined

upon receipt of laboratory analytical results of the soil and water samples. PSI will arrange for the management and appropriate disposal of soil and water generated during the field activities under Contract 43A0012.

GW samples ← specified?

4.0 LABORATORY ANALYSIS PROGRAM

The soil and groundwater samples collected during this investigation will be submitted to Pace Analytical, a State of California Department of Health Services certified hazardous waste laboratory. A summary of the types of analyses and analytical methods is presented below.

All soil and groundwater samples collected will be analyzed for the following:

- EPA Method 8015 modified - TPH-G;
- EPA Method 8015 modified - TPH-D;
- EPA Method 8260 – Volatile Organic Compounds (VOC), including fuel oxygenates

Soil samples collected below the saturated zone will be used for lithologic logging purposes only.

Groundwater samples will be field tested for pH, conductivity, and temperature.

5.0 FIELD QUALITY ASSURANCE/QUALITY CONTROL

The following equipment calibration procedure and field documentation procedures will be implemented by PSI field personnel.

5.1 SAMPLE IDENTIFICATION

Soil samples collected in the field will be labeled according to standard protocol, as outlined in Appendix B.

5.2 CHAIN-OF-CUSTODY PROCEDURES

Chain-of-custody records will be used to document sample handling and shipping procedures. Chain-of-custody records will trace the samples from collection, through any custody transfers to the analytical laboratory. Information recorded on the chain-of-custody records will include location of sample collection, sample identification, number, date and time of collection, number and type of sample containers, and analyses requested. The shipping conditions will also be described on the chain-of-custody records. The name of the sampler(s) as well as the name of the person relinquishing the samples will be documented. Chain-of-custody procedures are described in Appendix B.

5.3 FIELD INSTRUMENTS

An Organic-Vapor Analyzer (OVA) will be used in the field for health and safety monitoring, as well as site assessment purposes.

Organic Vapor Analyzer

The OVA will be calibrated daily using a reference calibration gas. Calibration gas is pre-bottled by a laboratory supply house and has a listed calibration value in parts per million for each specific gas. The OVA will be used as an indicator of total petroleum hydrocarbons in soil samples and for health and safety purposes.

6.0 DATA MANAGEMENT

In accordance Contract 43A0012, a Daily Work Force Log will be completed by on-site personnel for each day in the field. The log will include the following items listed below:

- Task order number and contract number;
- Project name and location;
- Name, Title, and Company of person performing the work;
- Date work is being performed;
- Actual begin and end times of work;
- Description of work being performed;
- Additional notations, observations, or remarks to further characterize or clarify work being performed;
- Equipment utilized on site; and
- Change orders issued during site activities.

6.1 DATA STORAGE

Project correspondence, field notes, maps, and data will be filed within the main project file at PSI's Hayward office. Chemical data will be entered onto a spreadsheet program for ease of organization, review, and presentation of data in the report. Hard copy files within the main project file may include, but not be limited to:

- Basic Data: Soil boring logs, field procedures, forms, maps, analytical data.
- Project Field Logs: The project notebook and all field memorandums.
- Correspondence: All written correspondence and telephone conversation records.
- Data Presentation: All maps and tables generated from basic data analyses.
- Data Verification: Documentation that all tables, maps and texts using basic information have been reviewed.

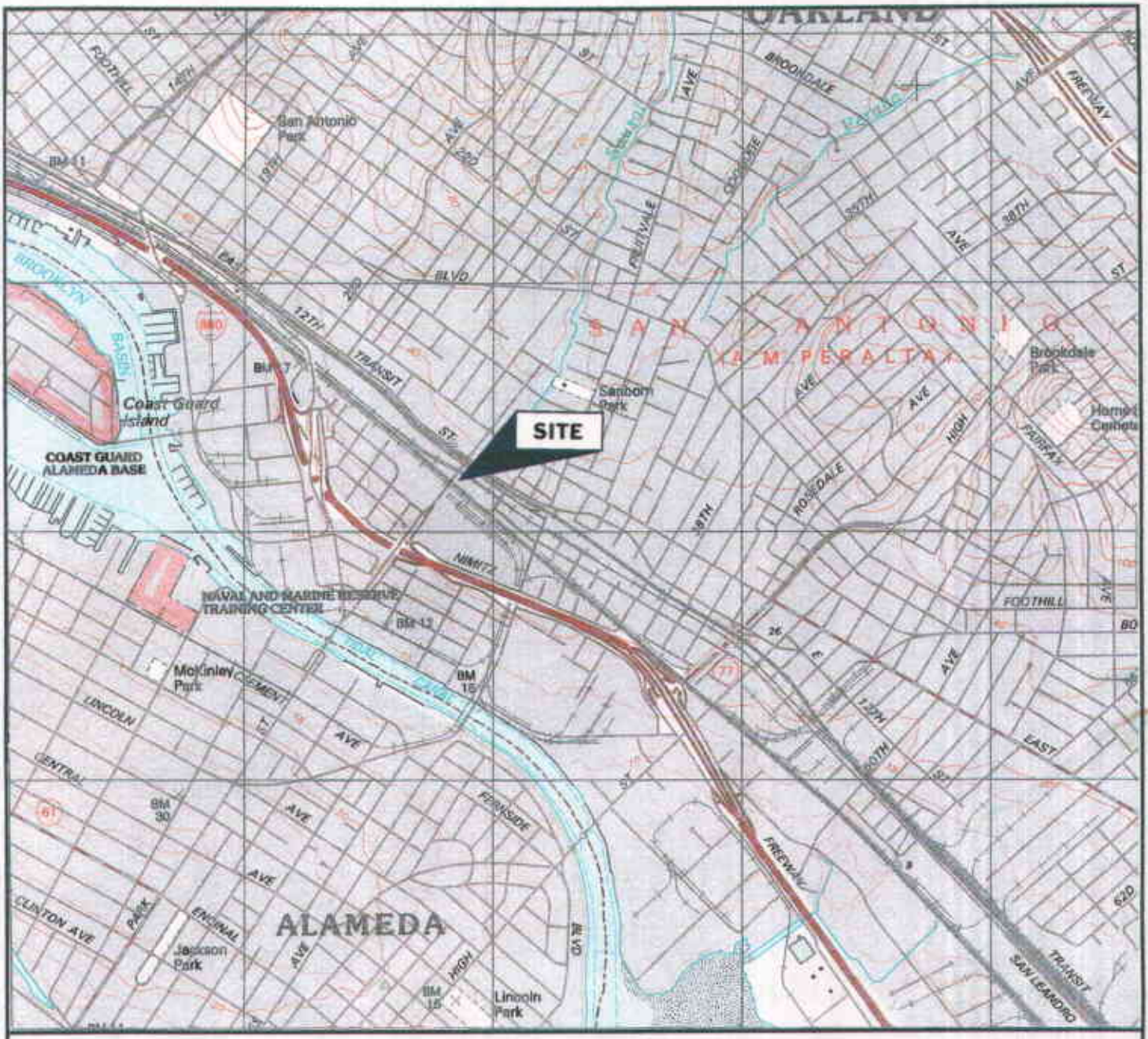
7.0 SITE INVESTIGATION REPORT PREPARATION

Upon completion of the field activities described in this workplan, a draft report will be prepared presenting the investigative methodology implemented, findings, and conclusions for the subject site. The report will include the following elements:

- Title sheet,
- Signature page,
- Table of contents,
- Investigative summary,
- Introductory narrative of the project,
- File review Information,
- Investigative methods,
- Investigative results and field observations,
- Data evaluation and discussion,
- Graphs, Tables and Figures,
- Summary table (s) indicating laboratory results,
- Contaminant concentrations, analytical methods, and detection limits,
- Copies of original laboratory documentation,
- Field procedure forms, and chain-of-custody records,
- Conclusions, and
- Recommendations.

REFERENCES

PSI, 1999, Hazardous Waste Preliminary Site Investigation Report, Task Order Number 04-911175-DH, prepared for Caltrans, May 25.



NORTH

0 1/2 1 MILE

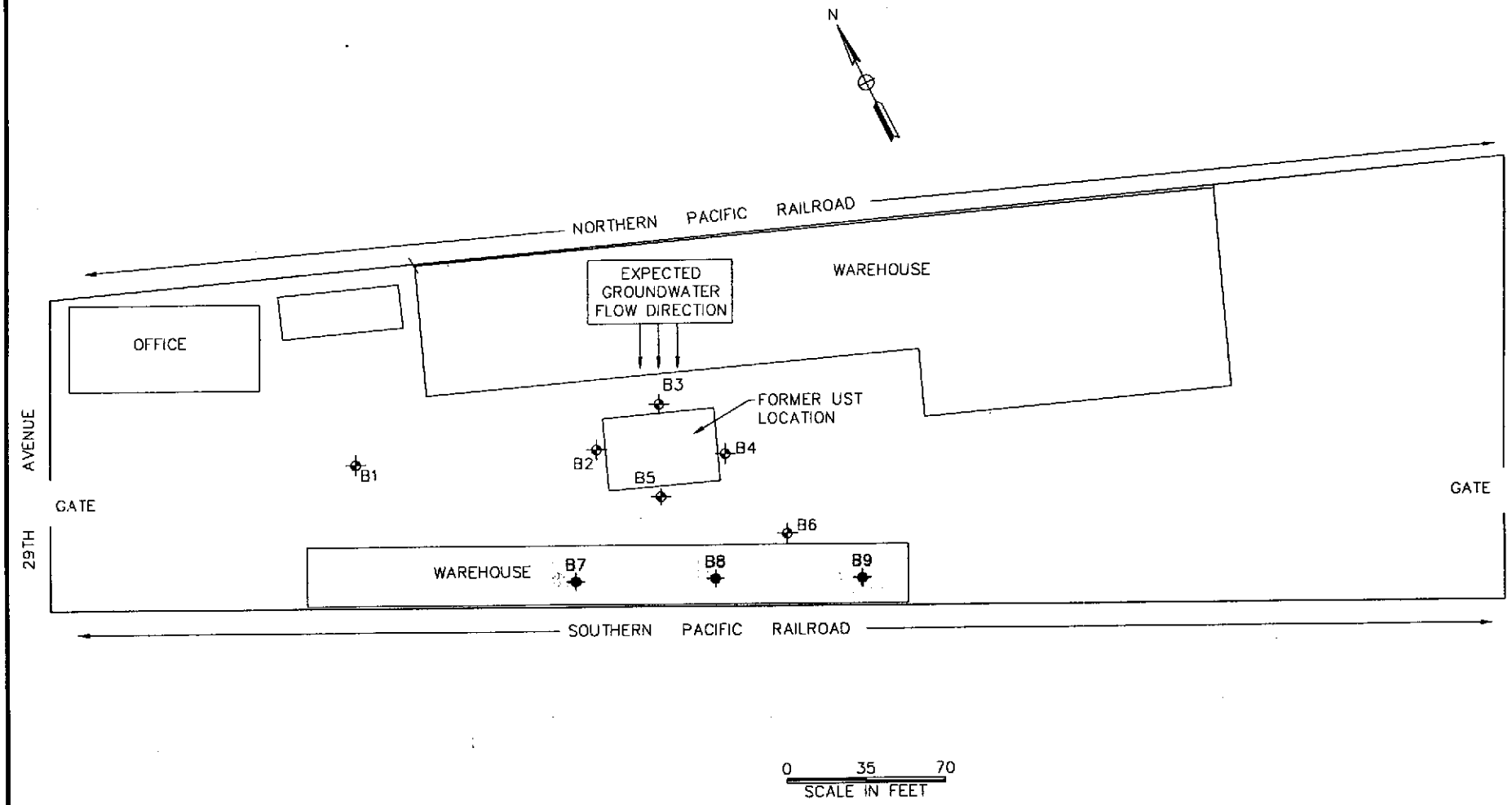
SCALE

REFERENCE:
U.S.G.S. OAKLAND EAST, CALIFORNIA, 1997

psi ENVIRONMENTAL GEOTECHNICAL CONSTRUCTION
CONSULTING • ENGINEERING • TESTING

SITE LOCATION
CALTRANS MAINTENANCE STATION
1112 29TH AVENUE
OAKLAND, CALIFORNIA
PROJECT NUMBER: 575-9G014

DATE: 3/23/99	CKD'D BY:	FIGURE NO.: 1
FILE NO.: 9G014-1		DRAWN BY: S. BOWERS



LEGEND

B2 FORMER SOIL BORING/TEMPORARY WELL LOCATION

B7 PROPOSED SOIL BORING

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PROPOSED SOIL BORING LOCATIONS
CALTRANS MAINTENANCE STATION
1112 29TH AVENUE
OAKLAND, CALIFORNIA
PROJECT NUMBER: 575--9G014

DATE: 7/20/99	CKD BY:	FIGURE NO.: 2
FILE NO: 9G014-2		DRAWN BY: S.BOWERS

APPENDIX A

FIELD PROCEDURES

APPENDIX A
FIELD PROCEDURES

I. DRILLING OF SOIL BORINGS AND COLLECTION OF SOIL SAMPLES

The following procedures will be used for the drilling and sampling of the soil borings drilled at the site:

1. Drilling will be conducted by V & W Drilling under the supervision of PSI. Drilling equipment will be pressure washed at the beginning of the day and between soil borings.

2. Prior to the commencement of drilling activities at the site, Underground Service Alert (USA) will be contacted to identify underground utilities in the areas that the borings will be located.

3. Boring logs for the soil borings drilled at the site will be prepared under the supervision of a State of California Registered Geologist. The soil cuttings observed during drilling will be described in accordance with the Unified Soil Classification System.

4. Soil samples will be collected using a 1-inch diameter stainless steel sampler. When the boring has been advanced to the appropriate sampling depth, a 1-inch diameter sampler lined with 1-inch diameter acetate tubes, with a retractable tip will be placed in the open boring. When the sampler is advanced to the appropriate depth, the tip will be retracted and an undisturbed soil sample will be collected by pushing the sampler into the subsurface using a percussion hammer.

5. Once the sampler has been retrieved the ends of the sample tube will be covered with Teflon sheets and capped with polyethylene end caps. The sample will be labeled and placed in a zip-lock bag in a chilled cooler pending delivery to the laboratory for analysis.

6. Soil samples will be assigned identification numbers such as B1-0.9, where B1 indicates the parcel address, boring 1 and -0.9 indicates that the sample was collected at 0.9 meters bgs from boring 1 at that address. The samples will be labeled with the sampling designation, depth, date, client name, and project number.

7. Soil samplers will be washed between sampling intervals with Alconox soap followed by two deionized-water rinses.

8. Chain-of-custody procedures using chain-of-custody forms will be used to document sample handling and transportation.

9. A Century 128 organic vapor analyzer (OVA) will be used to monitor volatile organic compounds (VOCs) in the ambient air during drilling at the site in accordance with the site health and safety plan. VOC concentrations in the soil will be measured and recorded on the borings logs for depths that soil samples were collected. VOCs in the soil will be measured at the sampling depths by partially filling a zip-loc bag with soil. The components of the soil are allowed to volatilize and fill the head space in the ~~tube~~ bag for approximately 30 minutes prior to inserting the OVA probe through ~~one of~~ the end ~~caps~~ of the bag and recording the measurements.

10. Soil cuttings and steam wash water generated during drilling activities at the site will be contained in Department of Transportation (DOT) approved 55-gallon drums. The drums will be labeled with the contents, date, well or boring number, client name, and project number.

II FIELD DOCUMENTATION OF SAMPLING PROCEDURES

The following outline describes the procedures adhered by PSI for proper sampling documentation.

1. Sampling procedures will be documented in a field notebook that will contain:

    1. Sample collection procedures
    2. Date and time of collection
    3. Date of shipping
    4. Sample collection location
    5. Sample identification number(s)
    6. Intended analysis
    7. Quality control samples
    8. Sample preservation
    9. Name of sampler
    10. Any pertinent observations

2. Samples will be labeled with the following information:

    1. Sample number
    2. Well number
    3. Date and time sample was collected
    4. Sampler's name
    5. Sample preservatives (if required)

3. The following is the sample designation system for the site:

    For Borings, the samples will be labeled B-(Boring Number)-(Depth) (i.e. sample collected from boring 4 at 5 feet would be B4-5)

    For groundwater samples (W) (Boring Number) (i.e. WB4)

4. Handling of the samples will be recorded on a chain of custody form which shall include:

    1. Site name
    2. Signature of Collector
    3. Date and time of collection
    4. Sample identification number
    5. Number of containers in sample set
    6. Description of sample and container
    7. Name and signature of persons, and the companies or agencies they represent, who are involved in the chain of possession
    8. Inclusive dates and times of possession
    9. Analyses to be completed

The following are procedures were implemented while performing well monitoring, well purging, and water sampling.

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

2. Prior to purging the wells, depth-to-water was measured using an Solinst groundwater interface probe to an accuracy of approximately 0.01 foot. The measurements were made to the top of the well casing on the north side.

3. Monitoring wells at the site were prepared for sampling by purging the well of approximately 3 well volumes of water using a polyvinyl chloride (PVC) bailer.

4. Water samples were collected with a single-use Teflon bailer after the well had been purged and water in the well had equilibrated to approximately 80 percent of the static water level or 2 hours after well purging, whichever occurred first. The water collected was immediately decanted into laboratory-supplied vials and bottles. The containers were overfilled, capped, labeled, and placed in a chilled cooler prior to delivery to the laboratory for analysis.

5. Chain-of-custody procedures, including chain-of-custody forms, were used to document water sample handling and transport from collection to delivery to the laboratory for analyses.

6. Groundwater samples were delivered to the State-certified hazardous waste laboratory within approximately 48-hours of collection.

7. Purged water was contained in a DOT approved 55-gallon drum. The drum was labeled with the contents, date, well number, client name, and project number.

III. GROUNDWATER SAMPLING

The following are procedures were implemented while performing well monitoring, well purging, and water sampling.

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

2. Prior to purging the wells, depth-to-water was measured using an Solinst groundwater interface probe to an accuracy of approximately 0.01 foot. The measurements were made to the top of the well casing on the north side.

3. Monitoring wells at the site were prepared for sampling by purging the well of approximately 3 well volumes of water using a polyvinyl chloride (PVC) bailer.

4. Water samples were collected with a single-use Teflon bailer after the well had been purged and water in the well had equilibrated to approximately 80 percent of the static water level or 2 hours after well purging, whichever occurred first. The water collected was immediately decanted into laboratory-supplied vials and

bottles. The containers were overfilled, capped, labeled, and placed in a chilled cooler prior to delivery to the laboratory for analysis.

5. Chain-of-custody procedures, including chain-of-custody forms, were used to document water sample handling and transport from collection to delivery to the laboratory for analyses.

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