PORT OF OAKLAND

June 16, 1998

Madhulla Logan
Alameda County Health Agency
Division of Environmental Protection
1131 Harbor Bay Parkway, 2nd Floor
Alameda, CA 94502

Re: Port of Oakland v. Steam Valve Machine Company
Alameda County Superior Court Case No. 777068-7
(Transmittal of Workplan for the Steam Valve Portion of Cryer Boatyard Site at 1899 Dennison Street, Oakland)

Dear Ms. Logan:

As you are aware, your Agency has directed the Port of Oakland to prepare a Risk Assessment for the Port's side of the former Cryer Boatyard and submit that Assessment to your office by June 30, 1998. The Port has reviewed and analyzed the former investigations and conducted a further investigation on the Port-owned portion of the Cryer Boatyard as well as examined the former investigations conducted on the Steam Valve-owned portion of the site. As you are also aware, the investigation conducted by Steam Valve's consultant did not fully characterize the Steam Valve-owned portion of the site. Steam Valve's incomplete study has led to uncertainties in the extent and characteristics of the overall contamination of the Cryer Boatyard site. Also, the Port of Oakland has recently been sued in Alameda County Superior Court by a former Steam Valve partner alleging the Port's liability for the contamination of the former Cryer Boatyard.

It is the Port's understanding that your Agency desires a full characterization of the site (including both the Port-owned and the Steam Valve-owned portions). All this has made conducting a more complete investigation of the Steam Valve portion of the site all the more critical. Toward that end, the Port has directed its consultant, GAIA Consulting, Inc. ("GAIA"), to assess data gaps for the Steam Valve property and provide a Workplan to the Port for the additional investigation that will be necessary to more fully characterize the site. Please find GAIA's Workplan enclosed. The Port appreciates your review of this Workplan and would request that you provide your written comments on its adequacy at your earliest convenience.

It is the Port of Oakland's understanding of your Agency's orders regarding this site that it desires comprehensive Risk Assessment(s) including assessing risks from all portions of the former Cryer Boatyard site. The Port believes that the most logical, efficient and accurate method to accomplish this goal would be to conduct one Risk Assessment

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encompassing the entire site. Such an entire Risk Assessment would be generated from the data previously gathered and the data gathered from implementation of the enclosed GAIA Workplan. At this time, the Port believes that it will gain access to the Steam Valve portion of the site no later than September 1998. Therefore, the Port respectively requests an extension on the June 30, 1998, due date for the Risk Assessment for the Port portion of the Cryer Boatyard site in order to submit one Risk Assessment for the entire site. Based on our June 12, 1998, phone conversation, you agreed to a 90-day extension at this time. I believe, however, that it may take another 90 days to complete the field investigation, review the data, and complete the Risk Assessment. Therefore, the Port requests an extension for completion of the Risk Assessment until the end of the calendar year. If you have any questions concerning the Workplan or the Port's proposed approach to complying with your Agency's orders, please contact me at (510) 272-1184.

Sincerely,

PORT OF OAKLAND

Douglas P. Herman
Assistant Port Environmental Scientist

Enclosure:
GAIA's draft workplan

cc: Steve Hanson
Neil Werner
Diane Heinze

SUPPLEMENTAL SITE INVESTIGATION WORKPLAN

FORMER CRYER BOAT YARD
Steam Valve Machine Company's Portion of Property

OAKLAND, CALIFORNIA

MAY 28, 1998

Prepared for:
Port of Oakland
530 Water Street
Oakland, California 94607

Prepared by:
GAIA Consulting, Inc.
520 Third Street, Suite 104
Oakland, California 94607

SUPPLEMENTAL SITE INVESTIGATION WORKPLAN
FORMER CRYER BOAT YARD
Steam Valve Machine Company's Portion of Property
OAKLAND, CALIFORNIA

This Workplan describes the Port of Oakland's proposed supplemental investigation of the Steam Valve Machine Company's portion of the property located at 1899 Dennison Street, Oakland, California. The Workplan was developed by GAIA Consulting, Inc., on behalf of the Port.

Previous investigations have been performed at the Steam Valve property. The purpose of this supplemental investigation is to address the following data gaps:

- No samples have been collected from beneath the building on the north side of the property;
- Insufficient data exist to evaluate whether slag and/or oily gravel detected on the adjacent Port of Oakland property extend onto the Steam Valve property; and
- No subsurface survey has been performed to evaluate the presence of underground storage tanks or other subsurface structures; and
- Insufficient data exist site-wide to adequately characterize soil and groundwater conditions.

The body of this Workplan describes the soil and groundwater sampling and analyses to be performed. Attachment 1 describes on-site activities that will be completed to obtain subsurface geophysical information and soil and groundwater samples. Specifications and procedures associated with these activities are provided in Attachment 2 (soil and groundwater data collection) and Attachment 3 (geophysical survey).

Data obtained from this Workplan will be combined with data from previous investigations to assess whether any corrective actions are needed to facilitate the property's proposed use as part of Union Point park.

Proposed Sampling Locations and Depths

Up to six borings will be installed in open spaces across the site and two borings will be installed inside the building. Three soil samples and one groundwater sample will be collected from each boring. The soil samples will be collected at 2 feet bgs, 5-7 feet bgs, and the first encountered ground water (approximately 12 feet bgs); collection depths will be biased towards soils that are visibly stained, appear to contain slag, or are believed to contain organic

vapors based on field monitoring equipment. The proposed locations of these borings, which have been labeled SV-7 through SV-14, are depicted on Figure 1.

Proposed Soil Analyses

All soil samples will be analyzed for metals detected at elevated concentrations across both the Port and Steam Valve owned portions of the property (chromium, copper, lead, mercury, and zinc) using EPA Methods 6100/7000. Soil samples collected from apparent slag will be analyzed for all Title 22 metals via the same EPA Methods.

Soil samples collected from visibly stained soil will be analyzed for TPH-diesel using EPA Method 8015 modified. Soil samples that register on an organic vapor monitor will be analyzed for VOCs (including BTEX) using EPA Methods 8010/8020 and TPH-gas using EPA Method 8015 modified. A minimum of 30% of the collected samples will be analyzed for these compounds in the event that these criteria are not or seldom met. If TPH is detected at elevated concentrations, the four samples that contain the highest TPH will be analyzed for polynuclear aromatics (PNAs) using EPA Method 8270.

Proposed Groundwater Analyses

All groundwater samples will be filtered and analyzed for site-related or Title 22 metals (groundwater samples collected below any encountered slag will be analyzed for the full range of Title 22 metals). Depending on the overlying soil conditions and on the speed of groundwater recharge, additional groundwater samples will be collected and analyzed for TPH (gasoline and/or diesel), PNAs, and VOCs (especially from the two borings installed inside the building). Three samples will also be analyzed for total dissolved solids.

Reporting

After all analytical data is obtained from the laboratory, GAIA will develop a data summary report. In addition, GAIA will perform a screening risk assessment using site-wide data (from the Steam Valve and Port owned portions of the property) per Alameda County requirements to assess potential human health risks and ecological concerns associated with the site. Site-specific human health screening levels will be developed based on the proposed future use. Site-wide concentrations of chemicals will be compared to the screening levels to identify any areas that may pose concerns. Cumulative risks from multiple chemicals at the same location will also be evaluated. Ecological concerns will be evaluated by comparing detected

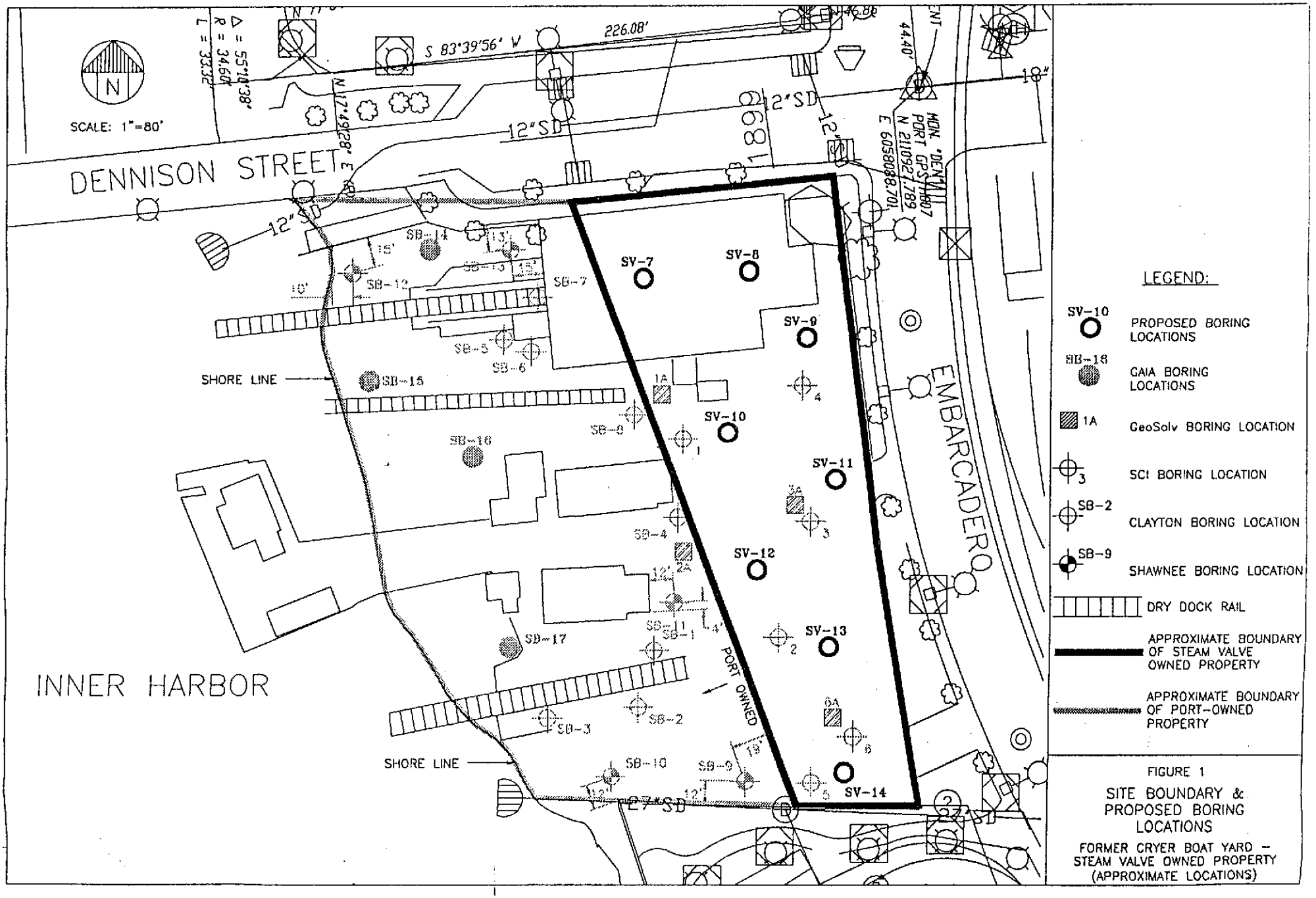


FIGURE 1

SITE BOUNDARY & PROPOSED BORING LOCATIONS

FORMER CRYER BOAT YARD – STEAM VALVE OWNED PROPERTY (APPROXIMATE LOCATIONS)

concentrations of chemicals to existing (RWQCB-approved) screening levels. A preliminary analysis of exposure pathways is provided below.

The proposed reuse for the site is a park (part of Estuary Park). The current plan calls for a soccer field covering most of the existing site area. Groundwater will not be used at the site. The future receptors are likely to be child and adult users of the park. Finally, construction workers may also potentially be exposed while demolition and park construction are occurring.

Potential exposures will vary for each of these types of receptors. Construction workers will have the most direct exposures. Children are expected to use the park frequently, whether as part of an organized soccer league, or simply for casual play. A daycare center is located within approximately three blocks of the proposed site; thus the park will likely be used regularly by children from the daycare center. Finally, landscape and other maintenance workers will likely be required to work at the park at least on a weekly basis.

Ecological concerns are potentially associated with two sources of exposures: run-off of contaminated soil into the Bay, and transport of contaminated groundwater into the Bay.

ON-SITE WORKPLAN

On-Site Workplan

This On-Site Workplan describes in detail the on-site activities, procedures, time, and personnel required to adequately investigate and characterize the subsurface conditions present at the Steam Valve portion of the former Cryer Boatyard located at 1899 Dennison Street, Oakland, California. On-site activities associated with the investigation will be minor in substance and brief in duration. Throughout implementation of the Workplan, measures will be taken to minimize the disruption to current site occupants.

Pre-Drilling Activities

Pre-drilling activities, which will be performed on Day 1, will include the demarcation of proposed boring locations with spray paint (and determining whether pre-coring of the pavement is required prior to drilling in any of these locations), a utility search, and a subsurface geophysical survey. Still photographs of site features may be taken during pre-drilling activities.

The subsurface survey will consist of two non-intrusive geophysical surveying technologies employed in series to evaluate the potential for underground tanks, slag, or other metallic debris at the site. First, the open spaces of the site will be gridded (with temporary hatch marks) and a magnetometry survey will be performed. Second, areas in which a significant amount of magnetic interference is obtained will be scanned using a ground penetrating radar technology. Access to the entire site (excluding the building) will be required to perform the survey, but the equipment and operator will not remain in any one location for more than several minutes.

Soil and Groundwater Sampling Activities

Activities associated with soil and groundwater sampling include installing up to six borings in open spaces across the site using a truck-mounted drill rig and installing two borings inside the building using the truck-mounted drill rig (if space permits) or a motor-powered hand-augering apparatus. Still photographs of site features and/or soil cuttings may be taken throughout the drilling activities.

Figure 1 depicts the proposed boring locations. The building floor will be cut as needed to install the two borings inside the building. Three soil samples and one groundwater sample will be collected from each boring for later chemical analysis. Soil samples will be collected at 2 feet below ground surface (bgs), 5-7 feet bgs, and the first encountered ground water (estimated to be approximately 12 feet bgs). Groundwater samples will be collected using the hydropunch groundwater grab sampling technique.

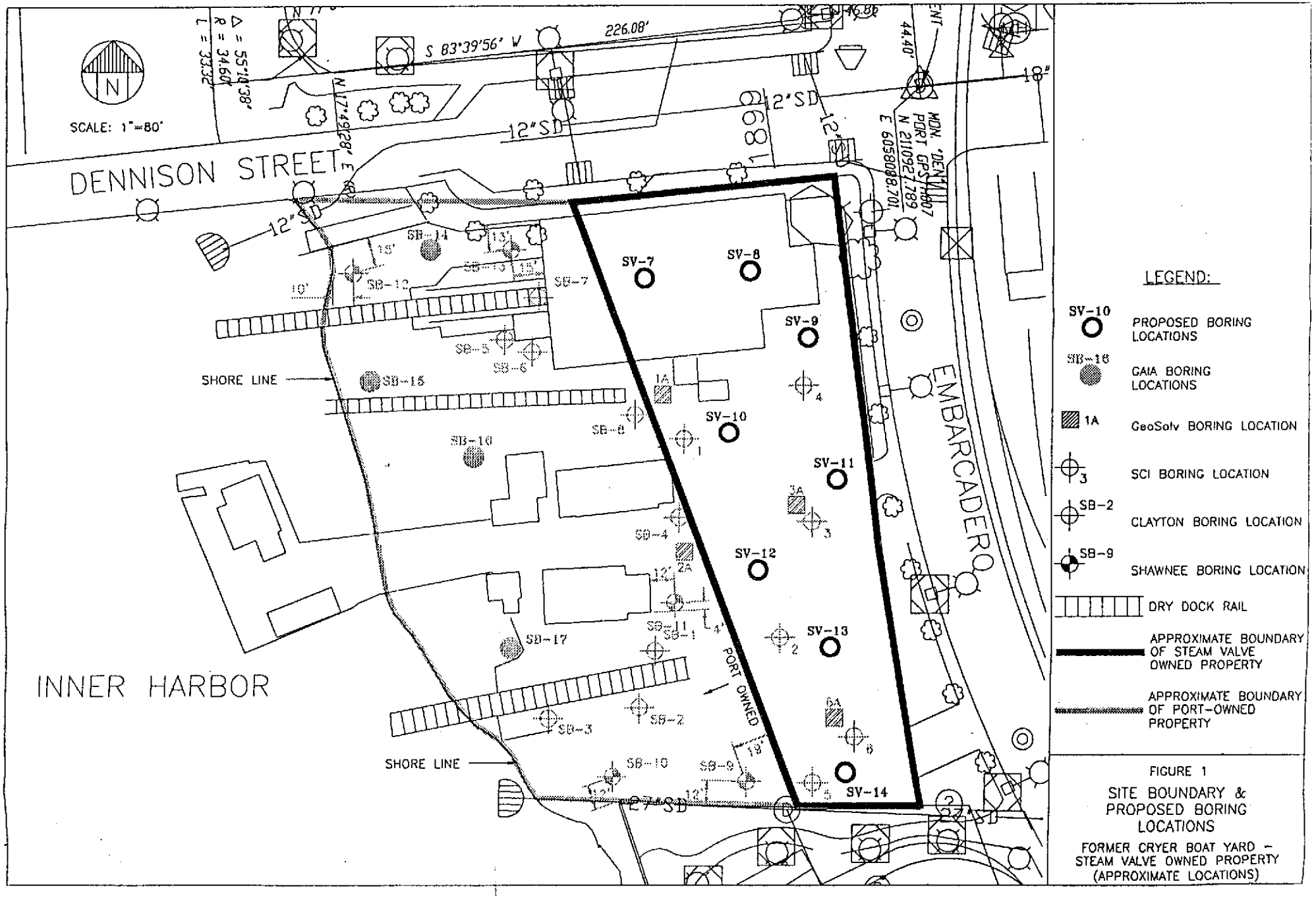


FIGURE 1

SITE BOUNDARY & PROPOSED BORING LOCATIONS

FORMER CRYER BOAT YARD – STEAM VALVE OWNED PROPERTY (APPROXIMATE LOCATIONS)

At the end of each day, the borings will be sealed to the ground surface using neat cement or sand-cement slurry in accordance with federal, state, and local guidelines, and the building floor and asphalt pavement will be repaired (native soil may be used to fill the top two to three feet for cosmetic purposes, as appropriate). Asphalt Patch™ or concrete will be used to patch any holes in pavement or concrete, respectively.

Soil cuttings and other investigation-derived waste (IDW) will be contained in 55-gallon D.O.T.-approved drums on site, properly labeled at the time of production, and transported to the Port-owned property to the west at the end of each day.

All drilling equipment will be inspected daily and maintained in safe working condition by the operator. All down-hole drilling equipment will be steam cleaned prior to arriving on site. Working components of the drill rig near the borehole, as well as augers and drill rods will be thoroughly steam cleaned between each boring location. GAIA drilling and sampling methods are consistent with ASTM Method D-1452-80, and local, state and federal regulations.

Workplan Time Table

The Workplan will be fully implemented in five days. Pre-drilling activities will be performed on Day 1. Soil and groundwater sampling will occur on Days 2 through 4. Day 5 will be used to perform any additional asphalt or flooring repair and will also serve as a contingency day.

Personnel

For the majority of the Workplan implementation activities, only four people – a drill rig operator, drill rig assistant, a GAIA geologist and a GAIA technician – will be on site. While the geophysical survey is being performed, up to two additional people may be present. Supervisors from GAIA, the Port of Oakland, and/or Alameda County may be on site at times during Workplan implementation. Finally, a subcontractor will be on site twice, once to generate and once to patch the two holes in the building floor.

SOIL AND GROUNDWATER SAMPLING PROCEDURES

Soil and Groundwater Sampling Procedures

Drilling and Soil Sampling

Permits, Site Safety Plan, Utility Clearance

GAIA Consulting, Inc., (GAIA) obtains all the required permits, unless otherwise contractually directed. GAIA prepares a site specific Site Safety Plan detailing site hazards, site safety and control, decontamination procedures, and emergency response procedures to be employed throughout the defined phase of work. At least 48 hours prior to drilling, Underground Service Alert (USA) or an equivalent agency is notified of the planned work to assist with the location of underground utilities. GAIA may employ a private, professional utility locator to refine the site utility inspection.

Soil Sampling and Lithologic Description

Whenever possible, the first boring to be drilled at a site is continuously cored to obtain a complete lithologic description. Otherwise, soil samples are typically collected every 5 feet to the total depth explored, using brass tubes fitted in a California-modified split spoon sampler. Because copper and zinc are constituents of concern for the investigation, stainless steel liners will be used (instead of brass liners). Additional soil samples may be collected based on significant changes in lithology or in areas of obvious soil contamination. During soil sample collection, the split spoon sampler is driven 18 to 24 inches past the lead auger by a 140-pound hammer falling a minimum of 30 inches. The number of blows necessary to drive the sampler and the amount of soil recovered is recorded on the Field Exploratory Soil Boring Log. New liners are always used.

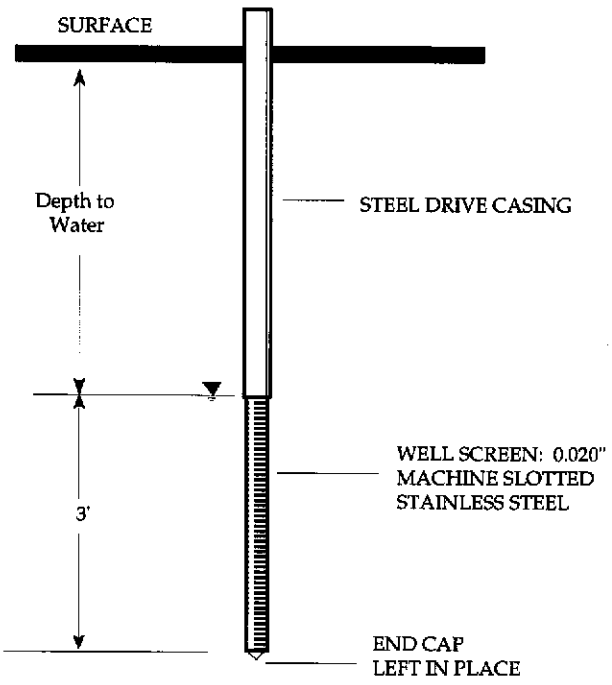
Soil samples selected for laboratory analysis are sealed on both ends with teflon tape and plastic end caps. The samples are labeled, documented on a chain-of-custody form and placed in a cooler for transport to a state certified analytical laboratory. Soil contained in remaining liners is removed for lithologic descriptions (according to the Unified Soil Classification System). Additional soil is screened for organic vapors by placing approximately 30 grams of soil in a sealed plastic bag or a glass jar sealed with aluminum foil. The bag or jar is left undisturbed for approximately 15 minutes, in the sun if possible. The head space in the bag is accessed in a manner to minimize entry of outside air, and is tested for total organic vapor using a calibrated organic vapor meter (OVM). The results of the field screening are noted with the lithologic descriptions on the Field Exploratory Soil Boring Log.

On encountering an impermeable (clayey) layer three feet or more in thickness below a saturated permeable layer, where the impermeable layer is considered to be a possible confining layer for an underlying aquifer, drilling is halted until a decision to proceed is obtained from the project manager.

This process minimizes the chance of introducing contamination to an underlying, clean aquifer.

Grab Groundwater Sampling

Figure 2: Grab Groundwater Sampling Configuration



After a boring has been installed into the water table, grab groundwater samples are collected by removing the inner rod and attaching a 4 foot stainless steel screen with a drive point at the end (Figure 2). The screen and rod is then inserted in the outer barrel and driven to the desired depth where the outer rod is retracted to expose the screen. If the stainless well screen does not produce enough water for sampling, a 1-inch PVC screen can be installed in the boring and the outer rod retracted to leave a temporary well point for collecting groundwater samples or water levels.

Prior to collecting groundwater from the borings, water levels are measured using an electronic water level gauge. Groundwater samples are collected using small diameter bailers. Groundwater samples are decanted into laboratory supplied containers. labeled, recorded on a chain-of-custody form and placed on ice for transport to a laboratory.

Borings located outside will be left open (covered and demarcated with a pylon) to allow for water level measurements throughout the day. If any fluctuations in groundwater levels are recorded, the fluctuations will be

correlated with tide tables to assess the potential connection of the shallow water-bearing zone to the Bay.

Quality Assurance Procedures

Quality Assurance Procedures

To prevent contamination of the samples, GAIA personnel adhere to the following procedures in the field:

- A new, clean pair of latex gloves are put on prior to sampling each location.

- During sample collection for volatile organic analysis, the amount of air passing through the sample is minimized. This helps prevent the air from stripping the volatiles from the water. Sample bottles are filled by slowly running the sample down the side of the bottle until there is a convex meniscus over the mouth of the bottle. The lid is carefully screwed onto the bottle such that no air bubbles are present within the bottle. If a bubble is present, the cap is removed and additional water is added to the sample container. After resealing the sample container, if bubbles still are present inside, the sample container is discarded and the procedure is repeated with a new container.

Laboratory and field handling procedures may be monitored, if required by the client or regulatory agency personnel, by including quality control (QC) samples for analysis with the groundwater samples. Examples of different types of QC samples are as follows:

- Trip blanks are prepared at the analytical laboratory by laboratory personnel to check field handling procedures. Trip blanks are transported to the project site in the same manner as the laboratory-supplied sample containers to be filled. They are not opened, and are returned to the laboratory with the samples collected. Trip blanks are analyzed for purgable organic compounds.

- Equipment blanks are prepared in the field to determine if decontamination of field sampling equipment has been effective. The sampling equipment used to collect the groundwater samples is rinsed with distilled water which is then decanted into laboratory-supplied containers. The equipment blanks are transported to the laboratory, and are analyzed for the same chemical constituents as the samples collected at the site.

- Duplicates are collected at the same time that the standard groundwater samples are being collected and are analyzed for the same compounds in order to check the reproducibility of laboratory data. They are typically

only collected from one well per sampling event. The duplicate is assigned an identification number that will not associate it with the source well.

Generally, trip blanks and field blanks check field handling and transportation procedures. Duplicates check laboratory procedures. The configuration of QC samples is determined by GAIA depending on site conditions and regulatory requirements.

SUBSURFACE SURVEYING PROCEDURES

Subsurface Surveying Procedures

The two methods of geophysical surveying proposed for use on this project, ground penetrating radar and magnetometry, are discussed below. As described in the body of the Workplan, a combination of these two techniques will be used to profile the site's shallow subsurface conditions. The instrumentation for both technologies is light, portable, and designed to make passive measurements allowing for rapid, non-destructive data acquisition.

Ground Penetrating Radar

Ground penetrating radar (GPR) is a method for obtaining a continuous reflection profile of shallow subsurface features or conditions. Electromagnetic pulses of short duration are continuously radiated into the ground from a transducer as it is moved along a traverse. The radar signal is sensitive to difference in electrical conductivity and electrical permittivity (the ability of material to hold an electric charge). Portions of the radar signal reflected back to the surface from interfaces of different materials are received by the same transducer and are transmitted to a graphical recorder. The recorded signals are printed in cross section form on a strip chart. These cross-sections can provide information regarding thickness of fill and the presence and location of buried tanks and debris.

Magnetometry

Magnetometer surveys consist of measuring variations in the earth's magnetic field. This may include measuring its total intensity and/or its vertical or horizontal gradient. Total field measurements can be helpful in locating buried ferrous objects such as tanks, pipelines, and metallic debris.