

**CARGILL
SALT DIVISION**

7220 Central Ave.
Newark, CA 94560-4206
510/797-1820 1-800-321-1458
Fax: 510/790-8189

How can x-contam be prevented.
why 1" wells?
why screen over entire aquifer
Waterloo profiles

ENVIRONMENTAL
PROTECTION
99 JUL -8 PM 2:56

July 7, 1999

Alameda County Dept. of Environmental Health
Hazardous Materials Division
1131 Harbor Bay Parkway
Alameda, California 94502-6577
Attn: Eva Chu

**RE: Workplan for additional groundwater investigation activities,
Cargill Salt - Alameda facility**

Dear Ms. Chu:

We would like to continue our remedial investigation activities at the Cargill Salt Dispensing Systems Division facility located at 2016 Clement Avenue in Alameda, California. Results of a soil sampling investigation and a workplan for excavation and disposal of impacted soils and assessment of potential impact to groundwater were submitted by Cargill Salt to the Alameda County Department of Environmental Health (ACDEH) in October 1993. After approval of the workplan by ACDEH, Cargill Salt conducted several phases of soil remediation and groundwater characterization.

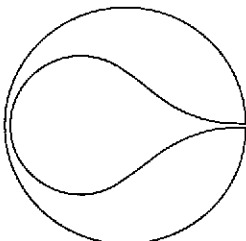
The results of these activities were submitted to the ACDEH in a July 31, 1995 report (Soil and Groundwater Investigations and Remedial Activities, July 1993 - September 1994, Cargill Salt - Alameda Facility, Alameda, California, prepared by Groundworks Environmental, Inc.). Recommendations for additional work to further delineate the lateral and vertical extent of volatile organic compounds (VOCs) in groundwater beneath the site were presented in the report.

As you requested, a workplan for additional groundwater investigation activities is attached. If you have any questions concerning this workplan, please do not hesitate to call me at (510) 790-8182, or our consultant, Mark Wheeler of Crawford Consulting, Inc. at (408) 287-9934.

Sincerely,



Barbara N. Ransom
Environmental Manager





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ENVIRONMENTAL
PROTECTION
99 JUL -8 PM 2:56

July 7, 1999
Project No. CS1605

Ms. Barbara Ransom
Cargill Salt
7220 Central Avenue
Newark, California 94560-4206

Re: Workplan for groundwater characterization and monitoring well installation,
2016 Clement Avenue, Alameda, California

Dear Ms. Ransom:

This letter presents a workplan for characterizing volatile organic compounds (VOCs) in groundwater and installing groundwater monitoring wells for the Cargill Salt Dispensing Systems Division facility (Alameda facility) at 2016 Clement Avenue, Alameda, California (Figure 1). Previous work at the facility identified VOC and metal impact in soil, and VOC impact in groundwater beneath the site.

Results of a soil sampling investigation and a workplan for excavation and disposal of impacted soils and assessment of potential impact to groundwater were submitted by Cargill Salt to the Alameda County Department of Health Care Services (ACEHS) in October 1993. After approval of the workplan by ACEHS, Cargill Salt conducted several phases of soil remediation and groundwater characterization. Surficial soils impacted by metals were excavated for disposal off site. Vadose-zone soils with the highest degree of impact by VOCs were also excavated for off-site disposal.

The results of these activities were submitted to the ACEHS in a July 31, 1995 report (*Soil and Groundwater Investigations and Remedial Activities, July 1993 - September 1994, Cargill Salt - Alameda Facility, Alameda, California*, prepared by Groundworks Environmental, Inc.).

Recommendations for additional work to further delineate the lateral and vertical extent of VOCs in groundwater beneath the site were presented in the report. As requested by the ACEHS in its letter of May 7, 1999, this letter presents a workplan for additional groundwater investigation activities at the site.

The proposed scope of work detailed below involves a field program with two steps. During the first step, VOCs in groundwater will be profiled along two transects to characterize the horizontal and vertical extent of VOCs in groundwater at the site. During the second step, three groundwater-monitoring wells will be installed to evaluate the direction of groundwater flow and allow ongoing monitoring of VOCs in groundwater. The second step of the field program will be implemented after reviewing the results from the first step and targeting appropriate locations for placement of the three groundwater monitoring wells.

The results of this field program will be evaluated to determine the need for additional off-site groundwater characterization.

Site Background

The Alameda facility is located on a rectangular lot in an industrial and residential neighborhood. The facility building occupies approximately one-third of the site and is separated from the vacant side of the lot by an asphalt driveway (Figure 2). The site is bordered by a sheet-metal shop and a residential lot to the northwest, an apartment complex to the southwest, and a residential lot to the southeast.

From 1951 to 1978, the Alameda facility produced salt-dispensing units, which required casting and milling aluminum parts. Casting now occurs off site; the facility still mills and repairs salt-dispensing units.

Constituents of concern associated with site operations have included casting sands with elevated concentrations of metals, and solvents, machine oils, and grease used in casting and milling operations.

Remedial measures have been taken to address solvents (VOCs), oil and grease, and elevated concentrations of metals in soil. Confirmation soil sampling has shown that the metals-impacted soils were successfully removed by excavation.¹

Vadose-zone soil impacted by VOCs and oil and grease were also removed by excavation. However, residual concentrations of solvents, primarily tetrachloroethene (PCE) and its breakdown products, remain in saturated soil. Soil samples collected beneath and adjacent to the excavation at depths between 5 and 10 feet below the ground surface (bgs) contained up to 31,000 micrograms per kilogram ($\mu\text{g}/\text{kg}$) PCE. No VOCs were detected in soil samples collected at depths between 11 and 25 feet bgs. The apparent area of solvent release and subsequent excavation is at the southwestern corner of the facility (Figure 2).

VOCs have affected groundwater beneath the site. PCE concentrations up to 11,000 micrograms per liter ($\mu\text{g}/\text{L}$) have been detected in groundwater samples from beneath the excavation area. Groundwater occurs at 5 to 6 feet bgs in silty sands with minor interbeds of sandy clay and clayey sand (a clay lens has been encountered at 11 to 12 feet bgs in the area of the excavation). Data from temporary piezometers indicated that groundwater flows north-northeast towards Clement Avenue at gradient of approximately 0.01.

Scope of Work

The following scope of work is designed to further characterize and monitor the impacts to groundwater at the site. The project will include the following tasks:

- Obtaining the necessary permits for field work
- Contacting Underground Service Alert and coordinating utility locating
- Sampling groundwater at various depths along two transects
- Analyzing grab groundwater samples for VOCs
- Drilling 3 borings and converting the boreholes to small-diameter monitoring wells

¹ Groundworks Environmental, Inc. 1995. *Soil and Groundwater Investigations and Remedial Activities, July 1993 – September 1994, Cargill Salt – Alameda Facility, Alameda, California.* July 31.

- Developing the newly installed wells and sampling groundwater for VOCs
- Surveying well elevations as part of evaluating the groundwater gradient at the site
- Preparing a report describing the methods and findings of this investigation

Utility Clearance and Permitting

Before beginning the proposed field activities, this workplan will be submitted to, and the field work schedule will be coordinated with, the ACEHS. A site-specific health and safety plan is provided as Attachment A. A drilling permit application will also be filed with the Zone 7 Water Agency of the Alameda County Flood Control and Water Conservation District. The proposed areas of investigation and monitoring well installation will be checked for underground utilities by contacting the Underground Service Alert (USA) a minimum of two working days before starting subsurface work at the site and contracting a private utility locator.

Groundwater Sampling

To characterize the VOC extent in groundwater at the site and properly locate monitoring wells, groundwater sampling along two transects will be conducted. Precision Sampling, Inc. (PSI) of San Rafael will conduct sampling at the site under the direction of Crawford Consulting, Inc. (CCI). PSI has a portable hydraulic groundwater-sampling rig that uses Geoprobe® sampling equipment to quickly collect groundwater grab samples. The proposed program consists of collecting four groundwater grab samples at approximately 6.5, 11.5, 16.5, and 22.5 feet bgs at six equally-spaced locations along the transects shown on Figure 3. A minimum of one groundwater grab sample will be collected at a depth of 27.5 feet bgs from the sampling location most immediately downgradient from the soil excavation area where the highest concentrations of PCE have been detected. Approximately three days of sampling will be conducted. The actual number and locations along the transects will be adjusted based on field conditions.

At each sampling point, Geoprobe® rods, equipped with a sacrificial drive point, will be driven to a targeted depth and then withdrawn to expose a 3-foot sampling interval. A small-diameter stainless steel bailer will then be used to collect a grab groundwater sample from the borehole. After each groundwater grab sample is collected, the boring will be backfilled with Type II Portland cement tremied through the rods as the rods are removed.

All groundwater samples will be preserved in 40 milliliter VOA bottles for VOC analysis. The sample bottles will be labeled, placed in a cooler chilled with blue ice, and delivered with chain-of-custody documentation to the laboratory for analysis.

All sampling equipment that will come in contact with groundwater will be thoroughly steam cleaned before use, or washed in a warm Liquinox solution and rinsed with deionized water to prevent cross contamination. Rinsate will be collected in 55-gallon drums for disposal off site.

Sample Analysis

Sequoia Analytical will analyze all groundwater samples collected during the investigation for VOCs using U.S. Environmental Protection Agency Method 8021B. Sequoia Analytical is certified by the

8120

State Environmental Laboratory Accreditation Program (ELAP). CCI will complete chain-of-custody records for all sample transfers to the laboratory and include them in an appendix in the final report.

Monitoring Well Installation

To evaluate groundwater movement and monitor chemistry across the site, CCI proposes to construct three small-diameter monitoring wells on site. An off-site well is not proposed at this time. The need for and possible placement of an off-site monitoring well will be evaluated based on the results of this investigation. Figure 3 shows three proposed monitoring well locations. The actual locations will be based on the results of sampling groundwater along the two transects.

CCI will use PSI's portable hydraulic soil-sampling rig to complete the borings for the wells. PSI rigs advance two steel drill tubes using a percussion hydraulic hammer and vibrator. The inner tube advances a 3-foot-long, 1 1/2-inch-diameter sample tube. The outer tube acts as temporary casing to prevent sloughing while withdrawing the smaller diameter inner sample tube with the soil cores. The outer drive casing is not withdrawn until the boring is advanced to its total depth, thereby preventing cross contamination of deeper soil samples. Continuous soil samples will be collected while coring to a depth of approximately 20 feet bgs. A geologist will log soil core according to the Unified Soil Classification System (USCS) under the supervision of a California Registered Geologist.

The monitoring wells will be constructed within the outer drive rods using **1-inch-diameter**, Schedule 40, flush-threaded PVC casing and 0.020-inch, machine-slotted screen. The **entire saturated interval of the aquifer will be screened**. An appropriately sized sand pack will be placed in the annular space around the casing from the bottom of the open boring to approximately 1.0 foot above the top of the piezometer screen. The sand pack size will be determined based on field observations. At least a 2-foot-thick seal of bentonite pellets will be placed above the sand pack. Above the bentonite, a sanitary seal of neat cement will be placed to within one foot of the ground surface. A water-tight vault will be installed at the surface. All well heads will be capped with water-tight locking expansion well caps. Piezometer construction will be recorded on a well completion diagram.

*do hollow stem
auger w/ 2" well*

All down-hole drilling equipment, casing, and screen will be steam cleaned before use. Rinsate will be collected in 55-gallon drums for disposal off site.

Well Development, Sampling, and Surveying

At least 48 hours after well installation, the wells will be developed using surge and bail techniques. The wells will be developed until the water is free of sediment, and the temperature, pH, and specific conductance of the water has stabilized.

Following development, the wells will be purged and sampled. The purge water generated during development will be contained and subsequently disposed of properly. Sequoia Analytical will analyze the samples for VOCs as described above. All sample collection and handling procedures will be conducted consistent with regulatory agency guidelines.

Also following well installation, a licensed surveyor will survey the top-of-casing elevation of all site groundwater monitoring wells to the nearest 0.01-foot relative to mean sea level (MSL).

Reporting of Field Work and Analytical Results

The data collected during this project will be evaluated and a report will be prepared presenting the results. The report will include a description of the field methods, an evaluation of the subsurface conditions and analytical results, maps illustrating the VOC conditions and groundwater elevation contours, boring logs, and copies of laboratory analytical reports. Recommendations for continued monitoring of the wells, or additional characterization for corrective action will be included in the report.

Schedule

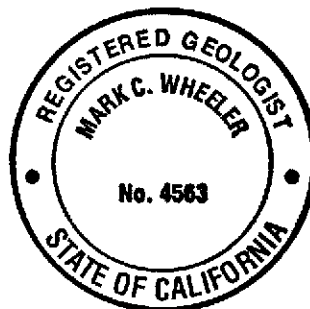
CCI is prepared to start work immediately upon receiving regulatory approval of the workplan. Permitting, scheduling and performing the groundwater sampling work along the transects, including receiving and evaluating analytical results, will require approximately six weeks to complete. Installing, developing, and sampling the monitoring wells will take approximately four weeks. Before proceeding with the second step of field work, CCI will review the proposed locations of the three monitoring wells with ACEHS staff. The project report can be completed within four weeks of receiving the second set of analytical results. CCI anticipates that the project can be completed within 16 weeks.

If you have any questions concerning this workplan, please call.

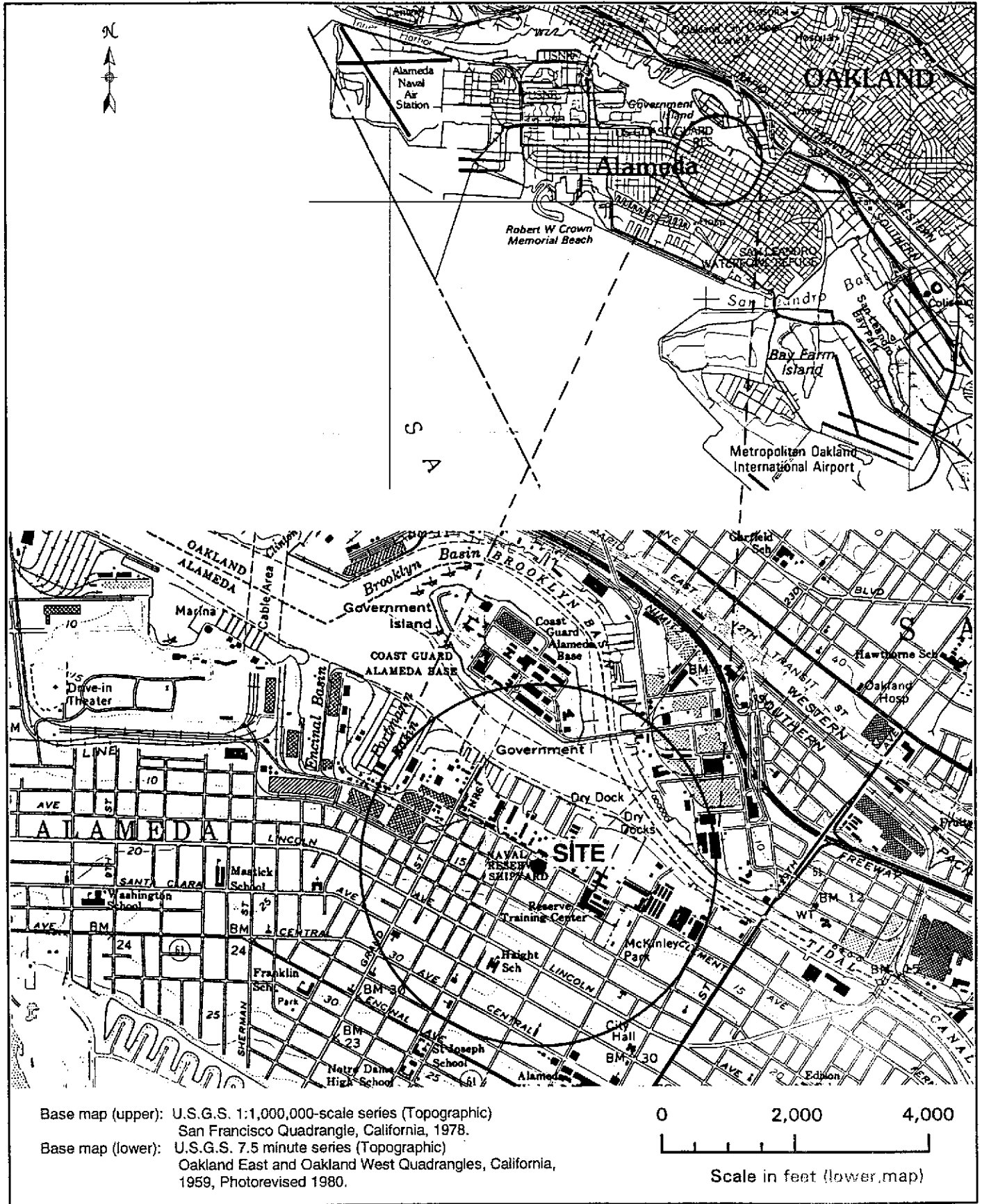
Sincerely yours,



Mark C. Wheeler
Project Manager
RG 4563

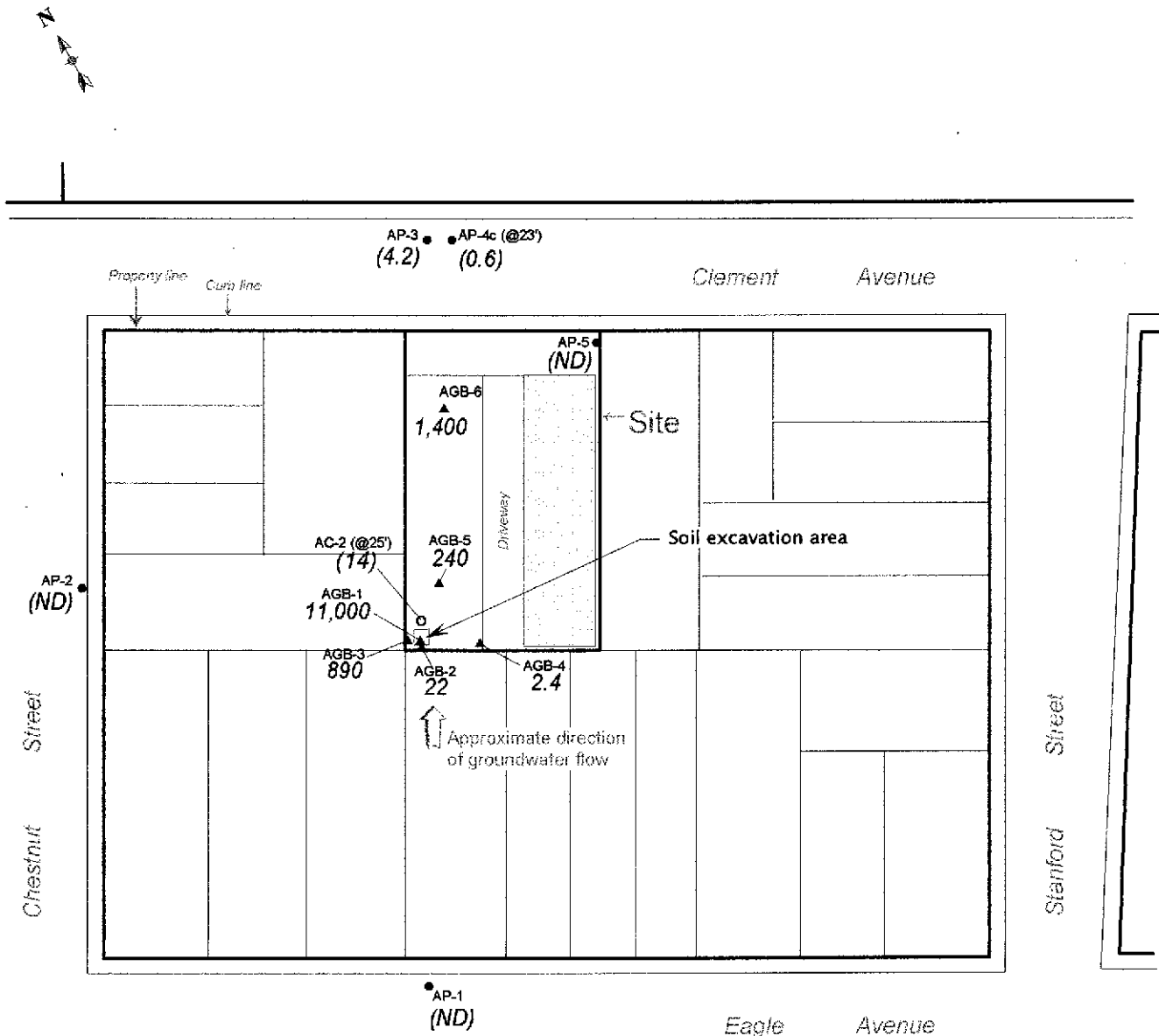


Attachments: Figure 1 - Site Location
Figure 2 - PCE Concentrations in Groundwater
Figure 3 - Proposed Groundwater Sampling and Monitoring Well Locations
Attachment A - Site Health and Safety Plan



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Project CS1603
Cargill Salt Dispensing Systems Division
2016 Clement Avenue, Alameda, California
Figure 1. Site Location



Explanation

- ▲ AGB-5 Hand-augered groundwater sampling boring (Oct-93)
- AP-1 Groundwater sampling probe (Sept-94)
- AC-2 Soil-core boring grab sample (Sept-94)
- 240 PCE concentration (µg/L) in groundwater (Oct-93)
- (4.2) PCE concentration (µg/L) in groundwater (Sept-94)
- ND Not detected

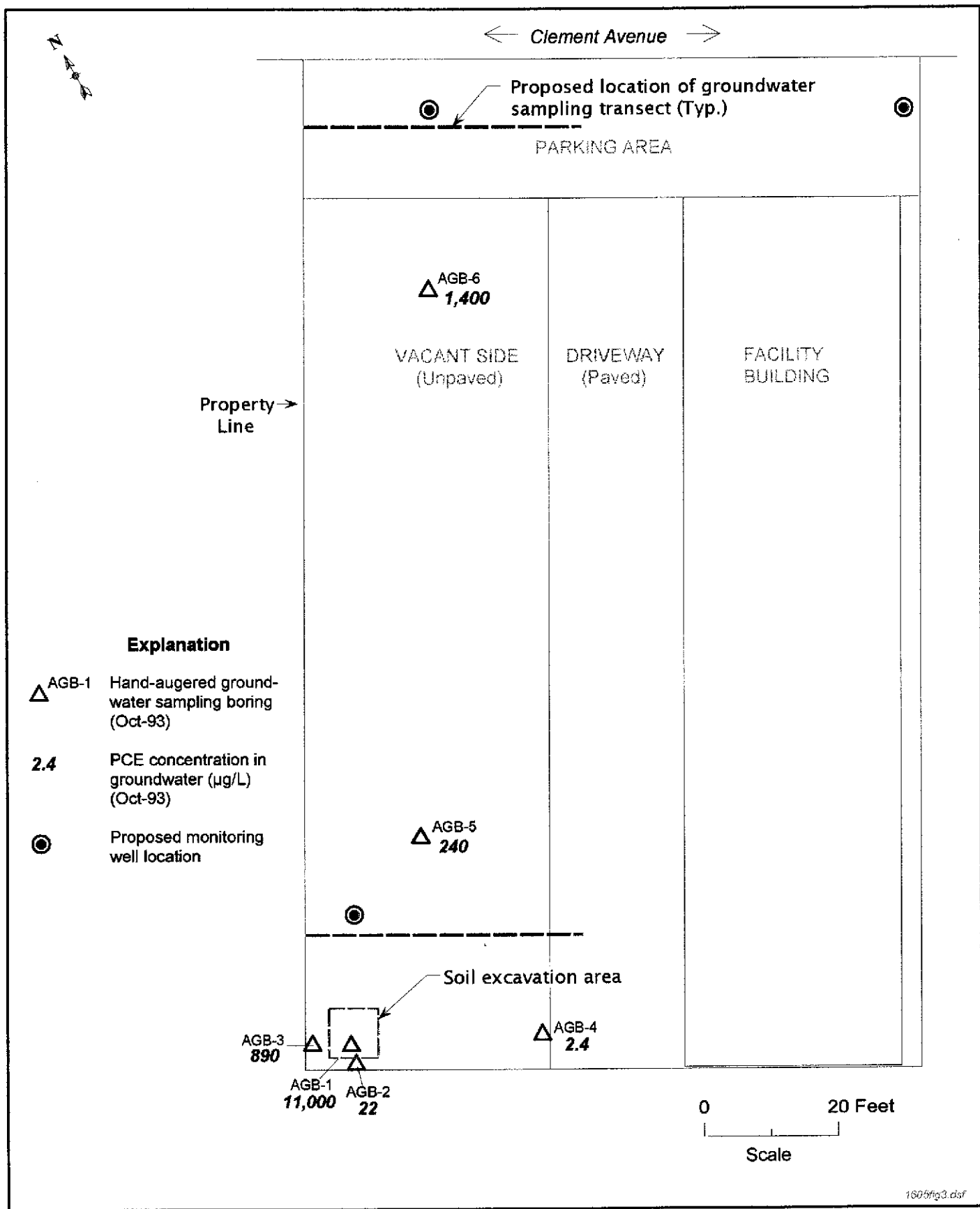


1605fig2.dsf



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Project CS1605
Cargill Salt Dispensing Systems Division
2016 Clement Avenue, Alameda, California
**Figure 2. PCE Concentrations in Groundwater
(October 1993 and September 1994)**



1603fig3.dsf



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Project CS1605
Cargill Salt Dispensing Systems Division
2016 Clement Avenue, Alameda, California
**Figure 3. Proposed Groundwater Sampling
and Monitoring Well Locations**

Attachment A
SITE HEALTH AND SAFETY PLAN
Cargill Salt Alameda Facility

PROJECT INFORMATION

Project Name: Groundwater characterization and monitoring well installation
Project Number: CS1605
Project Manager: Mark Wheeler
Field Supervisor: To be determined
Office Phone No.: 408-287-9934, pager 408-815-3694, cell 408-316-4401
Other contacts: Conor Pacific/EFW 650-843-3828
Precision Sampling, Inc. 415-456-9875

SITE INFORMATION

Site Owner: Cargill Salt
Site Address: 2016 Clement Avenue
County: Alameda
Directions to Site: Near intersection of Chestnut and Clement, in Alameda
Type of Facility: Machine shop
Site Owner Contact: Barbara Ransom @ 510-790-8182
Site Contact: Joe Esmond and David @ 510-523-6191

EMERGENCY INFORMATION

Emergency Phone No.: 911
Location of Nearest Phone: In facility building
Site Health and Safety Officer: Mark Wheeler
Hospital/Clinic: Alameda Hospital
Address: 2070 Clinton Ave.
Alameda CA 94501
Phone: 510-522-3700
Directions: From site, right onto Clement, right on Willow (about 5 blocks from site), follow Willow about 11 blocks to intersection of Willow and Clinton Ave. Hospital on far right corner of intersection.

Attachment A
SITE HEALTH AND SAFETY PLAN
Cargill Salt Alameda Facility
(Continued)

SITE SAFETY EVALUATION

Planned Activities:

Hydrogeologic investigation tasks as listed in the site work plan. Collect groundwater samples; collect and log soil samples. Chemical hazards at the site will be monitoring for VOCs in workers' breathing zone using hand-held instruments. Air monitoring equipment will be calibrated daily.

Chemical Hazards (Substances/Concentrations):

VOCs detected in soils during previous soil sampling: tetrachloroethene (tetrachloroethene, PCE, or "perk") @ 740 ppm, 1,1-dichloroethene @ 25 ppm. Oil and grease detected in soils: 1,100 ppm.

Chemical Exposure Information:

Tetrachloroethene (PCE): Colorless liquid with a mild, chloroform-like odor. PCE is considered an occupational carcinogen by NIOSH.

OSHA TWA = 25 ppm. IDLH = 500 ppm.

Exposure routes: inhalation, ingestion, skin or eye contact.

Exposure symptoms: - irritated eyes, nose, throat; nausea; flush face, neck; dizziness, vertigo, lack of coordination, headache, and somnolence.

If exposed: eyes - immediately wash eyes, lifting lids, get medical attention immediately, do not wear contacts; skin - soap wash promptly; if breath large amounts - respiratory support as needed; if swallow: get immediate medical attention.

Respiratory protection: Inhalation exposure will be minimized by allowing the air at the top of the sampling rods to vent away from workers' breathing space (workers should stand up-wind of the drill rods). If organic vapors are detected at 10 ppm or greater above background measurements in the workers' breathing space using an OVA, the SSO may attempt to mitigate the exposure. If organic vapors persist at 10 ppm or greater in workers' breathing space, affected workers will upgrade to level C respiratory protection using half-mask respirators with organic vapor cartridges.

1,1-Dichloroethene: OSHA TLV = 1 ppm. No IDLH. Odor threshold 190 ppm. Respiratory protection same as for tetrachloroethene.

Physical Hazards

Physical hazards include the presence of drilling equipment and the associated ambient noise, traffic along the roadway in the work area, and potential overhead and underground utilities (including water, electrical, gas, sewer, telephone, and cable) in the work area.

Drilling equipment will be operated by trained personnel only. All personnel working near the drill rig will maintain Level D PPE as described below. All personnel working around the drill rig will wear hearing protection. Appropriate traffic control will be used for any work taking place in or within 5 feet to the roadway or any active driveways. All proposed drilling locations will be cleared for utilities by a private utility contractor prior to commencing subsurface activities.

Attachment A
SITE HEALTH AND SAFETY PLAN
Cargill Salt Alameda Facility
(Continued)

SITE SAFETY EVALUATION (Continued)

Potential Explosion and Fire Hazards: None known.

Level of Personal Protective Equipment:

The designated level of protection for all site work is Level D, which includes hard hats, eye protection, leather steel-toed boots, and work gloves. Additionally, all personnel handling soil or water samples directly will use vinyl or nitrile gloves. All personnel within 20 feet of the drill rig will wear hearing protection during drilling operations.

Respiratory Protective Equipment:

If organic vapors are detected at 10 ppm or greater above background measurements in the workers' breathing space using the OVA, the SSO may attempt to mitigate the exposure. If organic vapors persist at 10 ppm or greater in workers' breathing space, affected workers will upgrade to level C respiratory protection using half-mask respirators with organic vapor cartridges. Cartridges should be changed after 5 hours of use. Respiratory protection can be downgraded only at the instruction of the SSO, if organic vapors in worker's breathing space remain below 10 ppm for at least five minutes. If organic vapors in workers' breathing space exceed 100 ppm for greater than five minutes, the SSO should remove any individuals from the exposure.

Ambient Air Monitoring Requirements:

In order to monitor for exposure to the chemical hazards described above, the air in workers' breathing space will be monitored at least every half hour or at peak expected exposure times (i.e., breaking rods, opening samples) using a flame-ionization detector (FID), Foxboro Century OVA Model 108.

Field Personnel Training Requirements:

Current OSHA 29 CFR 1910.120 training. Medical surveillance program required.

Decontamination/Disposal:

Setup decontamination station with Alconox wash and rinse for respirators, gloves, boots. Sampling tools to be cleaned in Alconox, rinsed in distilled water, fluids to be containerized. After use, containerize Tyvek suits and gloves and other disposable protective equipment.

Site Control Measures:

Establish exclusion zone. No non-OSHA trained (29 CFR 1910.120) personnel allowed to enter exclusion zone, or handle samples or cleaning fluids.

Attachment A
SITE HEALTH AND SAFETY PLAN
Cargill Salt Alameda Facility
(Continued)

GENERAL SAFETY GUIDELINES FOR FIELD OPERATIONS

Personal Protective Equipment

- Field personnel must use safety equipment specified in Site Safety Evaluation.

Work Practices

- Field personnel conducting or supervising field operations at sites potentially containing chemical or physical health hazards must participate in a medical surveillance program and hazardous waste operations training program.
- Field personnel must be trained in the proper use of field and safety equipment specified for the work site.
- Observe vehicular laws. Wear seat belts. Be familiar with and observe any work-site vehicle restrictions and speed limits.
- Field and safety equipment must be maintained in good operating condition and inspected as appropriate.
- Conduct field operations in upwind position of areas of known or suspected chemical contamination whenever possible.
- First aid supplies and fire extinguishers must be kept in all field vehicles and available at the work site.

Site Health and Safety Plan prepared by Martha J. Watson.
Attachments: Field investigation workplan.

THE UNDERSIGNED HAVE READ AND UNDERSTOOD THE ABOVE SITE SAFETY PLAN.

<u>NAME</u>	<u>COMPANY</u>	<u>DATE</u>
_____	_____	_____
_____	_____	_____
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