

September 10, 1992
Project C92034

Mr. Wayne Gathright
DECON Environmental Services, Inc.
23490 Connecticut Street
Hayward, CA 94545

Subject: Work Plan for Preliminary Site Characterization Investigation
891 Union Street, Alameda, CA

Dear Mr. Gathright;

In accordance with our agreement, Geo Plexus, Incorporated is pleased to submit the attached Work Plan and Health & Safety Plan for advancing three exploratory borings and installation of one open standpipe piezometer monitoring well at the subject site. Based on a ground water survey, the "down-gradient" boring would be completed as a monitoring well and sampled.


This Work Plan describes the proposed site investigation activities for a preliminary assessment of the ground water resources at the subject property. A Copy of this Work Plan should be submitted to the Alameda County Department of Environmental Health.

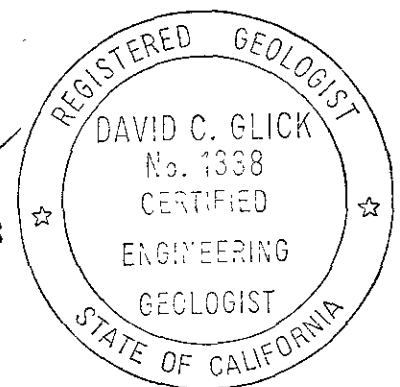
An application for a Piezometer/Monitoring Well Permit has been submitted to Alameda County Flood Control and Water Conservation District - Zone 7 for approval.

Should you have questions regarding the attached Work Plan or the proposed schedule, please contact our office.

Respectfully submitted,

Geo Plexus, Incorporated


David C. Glick, CEG 1338
Director, Geological and
Environmental Services



Attachments: (1) Work Plan
(2) Health & Safety Plan

Preliminary Site Characterization Investigation
Work Plan
for
891 Union Street
Alameda, CA

INTRODUCTION

The project site is located at 891 Union Avenue in the City of Alameda, in Alameda County, California as indicated on Figure 1. The site is occupied by a single family residential structure and it is understood that one underground heating fuel storage tank and one underground diesel fuel storage tank were removed in May, 1992 (see Figure 2).

Based on information provided through your office, and obtained during our site visit, it is understood that three exploration borings should be advanced and one ground water monitoring well should be constructed in the immediate vicinity of the former underground storage tanks at the project site (see Figure 2).

? → The project site is situated along the historic margin of Alameda Island and could be in-part occupied by man-made fill soil materials. Based on historic topographic maps and local ground water information, it is understood that ground water flow should be westerly beneath the site (towards the harbor area) and it is understood that the gradient in the immediate vicinity of the project site fluctuates with tidal influences. Based on these conditions, it has been determined that one ground water monitoring well should be installed at this time in the historic "down-gradient" direction of the former tanks to assess the potential impact to the underlying ground water resources.

SCOPE OF WORK

The proposed scope of work includes:

- (1) advancing three subsurface exploration borings, collection of soil samples, and installation of one open-standpipe piezometer monitoring well;
- (2) development the "down-gradient" monitoring well and collection of ground water samples for analytical testing;
- (3) performing analytical testing on the soil and ground water samples; and
- (4) preparation of a report documenting the findings of the investigation and presenting the results of the analytical testing.

Specifics of the individual investigative phases are described in the following sections of this Work Plan.

SUBSURFACE EXPLORATION

Subsurface Borings

Four subsurface exploration borings would be advanced at the project site at the locations identified on Figure 2 to characterize the subsurface soil conditions and to obtain soil samples for analytical testing. One of the borings would be completed as a ground water monitoring well.

The borings would be drilled by Exploration Geoservices, State of California Licensed Drilling Contractor, C57 License No. 489288. The borings would be logged under the supervision of a State of California Certified Engineering Geologist. Since one of the exploratory borings is intended to be completed as an open-standpipe piezometer monitoring well, an Alameda County Flood Control and Water Conservation (Zone 7) Piezometer/Well Permit would be obtained prior to drilling the exploratory borings.

The drill cuttings and soil samples obtained from the borings would be monitored during saturated zone. The borings which would not be converted to a monitoring well drilling to observe moisture changes in the soils and to determine the depth of the first would be terminated upon intercepting ground water and would be grout filled upon completion of drilling.

It is intended that the boring for the monitoring well would be advanced a minimum of 10 feet into the saturated zone (estimated total boring depth of 25 feet) unless a low permeable material is encountered prior to achieving this depth. Should a low permeable zone be encountered prior to achieving the 10 foot depth, the screened interval of the well would be reduced such that the low permeable zone is not penetrated to protect underlying aquifers.

The soil borings would be advanced using an eight-inch, nominal diameter, continuous flight hollow stem auger. Drilling and sampling equipment used for advancing the exploratory borings would be thoroughly steam cleaned before drilling begins and between each boring to prevent the introduction of off-site contamination and cross contamination between borings. Sampling equipment would be cleaned between sample events by steam cleaning or using a phosphate-free detergent bath and double rinsed in hot water baths to prevent cross contamination.

Pre-cleaned stainless steel or brass liners would be placed in the sampler to retain the soil. The drilling and sampling equipment would be steam cleaned subsequent to completion of the field activities. Soil cuttings and rinsate waters derived from the borings/cleaning would be retained in 55-gallon containers and stored on-site during the drilling pending results of the analytical testing.

Soil samples would be obtained at five (5) foot intervals throughout the borings, at changes in lithology, and where obvious soil contamination exists through the use of a 2 inch I.D. split-barrel sampler advanced into the undisturbed soil by a 140 pound hammer repeatedly falling 30 inches. Sand catchers would be used as necessary to retain the samples. A split-barrel, standard penetration sampler would be used should the 2 inch sampler prove ineffective at obtaining the samples. The drill cuttings and soil samples would be monitored in the field for evidence of hydrocarbon content through the use of a portable photo-ionization detector (PID), organic vapor meter (OVM), or similar device.

The soil samples would be immediately sealed in the liners using aluminum foil and plastic caps and properly labeled including: the date, time, sample location, and project number. The samples would be placed on ice immediately for transport to the laboratory under chain-of-custody documentation.

Monitoring Well Construction

The monitoring well would be constructed in accordance with Alameda County Monitoring Well Construction Guidelines by installing 2-inch diameter polyvinyl chloride (PVC) flush-threaded casing and slotted pipe directly through the hollow stem auger. The slotted section of the PVC pipe installed through the saturated zone would have 0.010 inch factory perforations. The slotted pipe would extend a minimum of two feet above the current ground water level to monitor fluctuations in the ground water level. Materials used in the well construction would be thoroughly cleaned prior to introduction into the boring.

The monitoring well would be filter-packed with clean monterey silica sand throughout the screened interval. The filter material would be determined based on lithology encountered during drilling and would likely consist of No. 2/16 Lonestar Sand. The filter-pack material would be installed in the annular spacing between the piezometer pipe and the auger as the auger is removed and would extend a minimum of two feet above the top of the screened interval. To assure continuity and integrity of the filter material, and to prevent the bore hole from caving, no more than five foot of auger would be removed at a time.

A one foot thick layer of bentonite pellets would be placed above the filter material to provide an annular seal and the remainder of the boring would be filled with an 11-sack sand-cement slurry to within one foot of grade under direct observation of Alameda County inspection personnel. Should ground water exist in the boring/well in excess of two feet above the bentonite seal, the cement slurry would be placed using the tremmie-method. The well casing would have a locking cap and will be enclosed inside a watertight cast iron or aluminum traffic box installed in concrete flush with the surface.

Ground Water Depth Measurements

The location and elevation of the well would be verified and surveyed. Vertical control would be to the nearest 0.01 inch. Water levels in the well would be measured using an electronic water level probe. The depth to water measurements would be consistently recorded from a scribed location on the top of the well casing.

MONITORING WELL DEVELOPMENT AND SAMPLING

The monitoring well would be allowed to stabilize for a minimum of 72 hours following construction prior to development activities. The initial well development would be through the use of a 1.7 inch Brainard-Kilman mechanical lift hand pump, an air-lift or nitrogen-lift pump, or a positive displacement bladder pump dependent on the depth to ground water and the screened interval. The well would be developed until a minimum of four well volumes have been purged and the discharged water appears clear of sediment. Electrical conductivity, temperature, and pH of the ground water would be recorded throughout the development process. The well development would continue until the electrical conductivity, temperature, and pH of the discharged water have stabilized. Depth to water measurements would be recorded prior to and following the well development activities.

The well would be allowed to recover for a minimum of 72 hours between development and sampling activities. Free product measurements would be obtained utilizing a product/ground water interface probe or through the use of an acrylic or teflon bailer lowered into the well to obtain a surface water sample. The teflon bailer would be used to collect a surface water sample to observe the presence of hydrocarbon odors, visible sheen, or free product. Depth to water measurements would be also be recorded at this time using an electronic water level probe.

Prior to sampling, a minimum of four well volumes would be purged from the well through the use of a positive displacement bladder pump or teflon bailer. Electrical conductivity, temperature, and pH of the ground water would be recorded throughout the purging process. The purging activities would continue until the electrical conductivity, temperature, and pH of the discharged water have stabilized. Water samples for analytical testing would be obtained through the use of the bladder pump or teflon bailer. The water developed from the monitoring wells would be contained on-site pending receipt of the laboratory test results.

The water samples would be collected in sterilized glass vials with Teflon lined screw caps. The samples would be immediately sealed in the vials and properly labeled including: the date, time, sample location, project number, and indication of any preservatives added to the sample. The samples would be placed on ice immediately for transport to the laboratory under chain-of-custody documentation. Travel blanks or duplicate field blanks are not anticipated to be carried or collected.

Free Product Measurements

Free product measurements would be obtained at the time of each sample acquisition utilizing a product/ground water interface probe or through the use of an acrylic or teflon bailer lowered into the well to obtain a surface water sample. The teflon bailer would be used to collect a surface water sample to observe the presence of hydrocarbon odors, visible sheen, or free product.

ANALYTICAL TESTING

Soil and ground water samples would be submitted to and tested by a State of California, Department of Health Services certified testing laboratory. Analytical testing would be scheduled and performed in accordance with the State of California, Regional Water Quality Control Board Guidelines.

Soil samples would be tested for Total Petroleum Hydrocarbons as diesel by RWQCB Method GCFID (3550/8015), Volatile Aromatics by EPA Method 8020 and Oil and Grease by EPA Method 5520 E&F.

The ground water samples would be tested for Total Petroleum Hydrocarbons as diesel by RWQCB Method GCFID (3550/8015), Volatile Aromatics by EPA Method 8020 and Oil and Grease by EPA Method 5520 B&F.

REPORT

A report documenting the findings and observations of the investigation and the results of the analytical laboratory testing would be prepared to include: the findings and boring logs for the subsurface investigation, well logs and well development records; analytical test data, chain-of-custody records, along with other pertinent information obtained throughout the investigative process.

SCHEDULE

The field investigation has been tentatively scheduled to begin on September 18, 1992.

The subsurface investigation and installation of the monitoring well are anticipated to be accomplished in one day. It is estimated that the well developed, well purging and sampling would be accomplished during the following week. Standard analytical testing turnaround time of two (2) weeks is anticipated to be used unless directed otherwise. The final report would be submitted within two weeks following receipt of the analytical test data for the ground water samples (estimated October 25, 1992).

Respectfully submitted,

Geo Plexus, Incorporated

DCG:dg



PROJECT SITE

BAY

- 1 STORYBOOK WK
 - 2 CORAL DEL
 - 3 HEATHER WK
-
- 1 FERDELL WALK
 - 2 MYRTLE WALK
 - 3 TAY WALK
 - 4 SAGEBERRY WALK
 - 5 CANDY TUFT WALK

891 Union street Alameda CA		
DATE	SCALE	DRAWN BY
9/11/92	N/A	TWF

LOCATION MAP.

Figure 1

Water

Rock wall

Lawn

Union

Sidewalk

STREET

Lawn

House

Plant box

PROPOSED WELL

MW1

AREA OF OVEREXCAVATION AND APPROX. LOCATION OF FORMER UNDERGROUND TANKS

PROPOSED BORINGS

B1

B3

LOCATION OF FORMER UNDERGROUND TANKS

Driveway

B2

Plant box

PROP line

891 Union Ave.

DATE

SCALE

DRAWN BY

9-3-92

1"=10'

TWF

SITE PLAN

Figure 2



Health & Safety Plan
for
Preliminary Site Characterization Investigation
891 Union Street
Alameda, CA 94606

INTRODUCTION

This Health & Safety Plan (HSP) has been prepared for the subsurface investigation work to be performed at 891 Union Street in the City of Alameda, in Alameda County, California.

The HSP establishes safety procedures to be followed to alert field personnel and others at the investigation site to potential hazards that could be encountered while conducting the subsurface investigation work and identifies the personal protective equipment required for the specific field activities.

This HSP generally complies with Federal Health and Safety regulations (29 CFR 1910 and 1926), California Health and Safety regulations as set forth in Title 8 of the California Administrative Code, and guidance established by the California Department of Health Services. This plan is to be used by Geo Plexus, Incorporated personnel as a supplement to presented regulations and guidance. Geo Plexus, Incorporated does not accept responsibility for subcontractor employee or property owner actions on any site.

APPLICABLE CODES, STANDARDS, AND REGULATIONS

California Health and Safety Code
Title 22, California Code of Regulations
California State Industrial Safety Orders
29 CFR (Code of Federal Regulations)
40 CFR (Code of Federal Regulations)
California Leaking Underground Fuel Tank (LUST) Manual

PERSONNEL

The field exploration work would be performed under the direction of Mr. David C. Glick, Project Geologist. The Project Manager for this project is Mr. Wayne Gathright (DECON Environmental). Mr. Glick will serve as the Site Safety Officer (SSO) for the field exploration and will perform on-site inspection and monitoring during the drilling. Mr. Dave Yeager (Exploration Geoservices), or assigned driller if Mr. Yeager is not assigned to the project, will be the drilling supervisor during the field investigation and would be responsible for operating the drill rig and coordinating the drilling activities. Grouting activities will be performed under the direction and coordination of Mr. Yeager.

The SSO must be on-site whenever work is being performed unless an alternate SSO, assigned during the tailgate safety meeting, has been delegated to be acting and all field personnel notified of the change in personnel responsibility. The SSO or any other employee of Geo Plexus Incorporated working within the project area is authorized to suspend work when working conditions become too hazardous and to remove from the site any employee of Geo Plexus, Incorporated or subcontractor employees whose conduct endangers the health and safety of the employee or of others.

The SSO has the responsibility for performing air monitoring for compliance with this SSP and to ensure that the required work practices are employed and correcting work practices that may result in injury or potential exposure to hazardous substances.

Geo Plexus, Incorporated and subcontractor personnel assigned to perform field activities covered by this plan must have active health and safety clearance statuses, which mean that during the past 12 months, they have been cleared to wear respirators and perform their field assignments and have satisfied health and safety training requirements specified in 29 CFR 1910.120 (e).

Anticipated visitors to the project site include representatives from the Alameda County Environmental Health Department and the property owner. Visitors to the project site would be subjected to comply with all regulations, including OSHA 29 CFR 1910.134 (Respiratory Protection) and 29 CFR 1910.120 (Hazardous Waste Operations).

DESCRIPTION OF WORK

The work to be performed consists of advancing four soil borings to an estimated depth of 25 feet below the ground surface, using an eight-inch, nominal diameter, continuous flight hollow stem auger. One of the borings would be completed as an open-standpipe piezometer monitoring well.

Details of the actual field activities are presented in the Attached Work Plan for the project site which is incorporated herein by reference.

JOB HAZARD ANALYSIS

Site hazards identified with the subsurface exploration and well construction activities include those encountered when operating mechanical equipment along those hazards associated with Portland Cement, grout mixing equipment, and grouting processes.

Site specific hazards exist due to the physical location of the proposed borings/wells include: underground pipelines and utilities, vehicle traffic around the existing facility, pedestrian traffic, and the potential for hazardous materials (defined below) to exist in the soils and ground water encountered by the borings/wells.

Since the investigation is located in the vicinity of former underground diesel and heating oil storage tanks, volatile organic compounds associated with halogenated hydrocarbon compounds, chlorinated hydrocarbon compounds, aromatic hydrocarbon compounds, and gasoline products have the potential to be present at the site.

It is anticipated that potential chemical exposure to site personnel could exist for short periods of time (intermittent for one field day). However if a site is unknown or not fully characterized, then the potential for exposure to elevated concentrations of fuel products could occur. Therefore, a brief overview of potential hazards associated with gasoline (highest probable constituent) is presented below:

Cal-OSHA Permissible Exposure Limit (PEL): 300 ppm

ACGIH Threshold Limit Value (TLV): 300 ppm

ACGIH Short Term Exposure Limit (STEL): 500 ppm

GENERAL SAFE WORK PRACTICES

Field personnel, equipment operators, and visitors to the site would be briefed each day in a "tailgate" safety meeting at which time specific daily objectives are discussed and equipment to be used on-site are identified. Potential contaminants which could be encountered during the investigation and risks from exposure and emergency procedures would also be reviewed. All personnel entering the project area (defined as 75 feet from the drill rig) would be required to sign the tailgate safety meeting form documenting their understanding of the HSP. A copy of this HSP and the Work Plan would be available at the job site at a location identified during the tailgate safety meeting.

A regulated project area shall be established as 75 feet from the drill rig. Within the project area, safety equipment shall be worn and smoking, eating, drinking, and use of tobacco products shall be prohibited. The work area defined in this plan includes 20 feet from the drill rig. The project area includes 75 feet from the drill rig. The project area would be marked with barricades and yellow "Caution" flagging to inhibit access to the area.

All field personnel working within the project area will be required to wear personal protection equipment (defined later in this safety plan) as directed by the SSO during the tailgate safety meeting or as directed by the SSO during the field investigation activities.

All personnel assigned to this project shall have been trained and fitted for use of respiratory protective equipment required for this project and any other protective equipment assigned to them.

The drilling and well installation is anticipated to be completed by the end of each working day. As such, fencing or additional site control measures would not be required. Barricades would be left in-place overnight over the completed monitoring wells to allow the concrete seal to cure. Temporary fencing would be installed around the drums containing the drill cuttings and rinsate water.

EXPOSURE MONITORING

Permissible Exposure Levels (PEL) established by the California Code of Regulations or 29CFR 1900.1000 Standards shall be adopted for the site.

Air monitoring shall be conducted on a continuous basis to monitor ambient air conditions within the project area to detect the presence of volatile organic vapors. The monitoring would be performed through the use of a Thermo Environmental 580A Organic Vapor Meter (OVM) or Photovac Photo-Ionization Detector (PID). Samples of the soil materials derived from the borings would be visually inspected and monitored with the OVM or PID to detect emission of volatile organic vapors to detect the presence of hydrocarbon contamination (as gasoline and/or diesel).

During drilling operations, vapor emissions from the boreholes will be measured through the use of the OVM or PID as the cuttings are generated from the borehole, when the auger is extracted from the boring, and during backfilling of the boring. The vapor measurements will be made at a minimum of two zones: approximately 12 inches above ground level adjacent to the auger; and with the breathing zone of the field personnel.

Should the vapor concentrations detected at the ground level zone exceed 1,000 ppm (level of audible alarm) or exceed the PEL within the breathing zone, operations would be suspended, the drill rig motor shut off, and personnel would be directed to remove themselves from the immediate area of the drill rig. The OVM would be removed from the drilling area with the field personnel to continue monitoring the ambient air conditions. Re-entry into the drilling area (20 feet from the drill rig) would be permitted upon reduced volatile concentrations (as determined by the audible alarm shutting off and a minimum 30-minute air monitoring period of readings below the PEL) or by personnel equipped with respirators equipped with appropriate organic cartridges. Work would not resume until an assessment has been made by the SSO and appropriate procedures, which include engineering control measures (i.e. increased ventilation or air circulation, etc), each personnel wearing respirators with appropriate organic cartridges, or each individual wearing supplied air or self contained breathing apparatus equipment and the SSO authorizes continuation of work.

PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment to be worn by all field personnel in the work area shall consist of neoprene or butyl steel toed boots (calf-length), hard hats, hearing protection, and work gloves. During operations involving eye hazards, safety goggles or glasses shall be worn.

Should inclement weather arise during the field activities, rain gear shall be worn at the discretion of the employee. Rain gear will not be used to replace required protective gear as required by the SSO.

Protective clothing such as polyethylene coated Tyvek coveralls could be worn as an option of the employee. Uncoated Tyvek coveralls may be worn within the work area in general use.

Nitrile, butyl or neoprene gloves must be worn when handling contaminated soil or water encountered during drilling. Surgical vinyl or latex inner gloves are recommended to be worn.

NIOSH-approved respiratory protection shall be worn by personnel potentially exposed to dust during the excavation and shall consist of, as a minimum, fitted half-face respirators equipped with air-purifying (particulate) cartridges.

NIOSH-approved respiratory protection shall be worn when organic vapors are determined to be present within the excavation at concentrations exceeding the PEL as indicated by the field monitoring equipment (OVM or PID). Respiratory protection shall include, as a minimum, fitted half-face air-purifying respirators equipped with organic vapor cartridges. Should concentrations exceed 2xPEL, as determined by the OVM or PID, the investigation activities shall be halted and field personnel shall be required to exit the work area. Personnel re-entering the work area shall be required to be fitted with positive pressure self-contained breathing apparatus (SCBA's). SCBA's shall be required until the concentrations diminish below 2xPEL. Atmospheres greater than 10% LEL, or less than 20% oxygen shall not be entered until the area is properly ventilated and the excavation is determined to be safe to enter by the SSO.

DECONTAMINATION

Decontamination of field equipment is required through steam cleaning and use of phosphate-free detergents as set forth in the work plan for the project. Field decontamination of personnel is not required except when contamination is obvious (visually, by odor, irritation, etc.). Petroleum hydrocarbon products should be removed from skin using a mild detergent and water. Hot water is more effective than cold water. The on-site steam cleaner would be a source of hot water if required. Liquid dish washing detergent is more effective than hand soap.

CONTINGENCY PLANS

Limited first-aid equipment (band aids, antiseptic wipes, cold packs, etc.) would be available at the construction site at a location specified during the tailgate safety meeting. A fire extinguisher will be available along with the drill rig and the location will be identified during the tailgate safety meeting.

Two gallons of de-ionized or distilled water will be available with the first aid equipment should water be required for flushing eyes for dislodging foreign particles or as necessary for first aid applications.

Directions to emergency phone access would be provided during the tailgate safety meeting. A portable cellular phone will be available at the project site and is located in the SSO's vehicle. Field personnel would be instructed about the location and operation of the phone during the tailgate safety meeting.

An alternate SSO would be identified during the tailgate safety meeting to function as SSO in the event the SSO becomes injured and is not capable of performing or coordination emergency activities.

The SSO will notify the PM of any emergency conditions which encountered during the investigation. If the SSO is incapacitated or absent from the site the designated alternate SSO will perform this notification.

In the event of accident, injury, or other emergency the SSO would notify appropriate government agencies or individuals as follows:

Police, Fire, or Ambulance emergency: 911

Nearest Emergency Hospital: Oakland Hospital
2648 E. 14th, Oakland
(510) 532-6300

Exploration Geoservices:(408) 280-6822

Geo Plexus, Incorporated: (408) 287-8588

DECON Environmental: (510) 732-6444

DATE

9/25/92

CONTACT LOG

FROM: Julius Stein AFFILIATION: _____
TITLE: _____ PHONE: _____
TO: David Blich AFFILIATION: Cooplurus
TITLE: _____ PHONE: (408) 287-8588

RE: ST/D 4243 - Clifford Residence

Ms. Stein called Cooplurus to request the information that indicated to this consulting firm what direction the gradient is beneath the site. Cooplurus proposed, in the work plan dated September 10, '92, that the gradient is generally headed in a southerly direction towards the bay. Therefore, they proposed to only install one monitoring well at the site. Ms. Stein requested info and said she would return it and get back to him thru the Coentop response.