INNOVATIVE TECHNICAL SOLUTIONS, Inc.

ITSI

February 10, 1997

Mr. John Prall
Associate Environmental Scientist
Port of Oakland
530 Water Street
Oakland, California 94604

Workplan for Groundwater Monitoring and Sampling
801 Maritime Street
Oakland, California
(Work Order No. 202863)

Dear Mr. Prall:

Innovative Technical Solutions, Inc. (ITSI) is pleased to provide this Workplan for Groundwater Monitoring and Sampling of one monitoring well, MW-1, located at 801 Maritime Street in Oakland, California.

BACKGROUND

Figure 1 shows the site layout and approximate location of the monitoring well. Groundwater is present beneath the surface at depth of approximately 7 feet. Table 1 provides a summary of historic groundwater elevations for the monitoring well at the site.

A review of historical laboratory results for the 801 Maritime Street site indicate groundwater has been impacted by petroleum hydrocarbons from three former underground storage tanks (USTs), CF-06, CF-07, and CF-35. Table 2 provides a summary of laboratory results for historic groundwater samples. Total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene and xylenes (BTEX), and TPH as diesel (TPHd) have been observed in the monitoring well.

SCOPE OF WORK

Prior to initiating field efforts, quarterly monitoring activities at the 801 Maritime Street site will be coordinated with Alisto Engineering Group's quarterly monitoring activities conducted in the

1330 Broadway, Suite 1625, Oakland, CA 94612 (510) 286-8888 (510) 286-8889 fax

PORT OF OAKLAND

February 18, 1997

Ms. Jennifer Eberle
Hazardous Materials Specialist
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway
Alameda, CA 94502-6577

SUBJECT: WORKPLAN FOR GROUNDWATER MONITORING AND SAMPLING and GROUNDWATER MONITORING AND SAMPLING REPORT, 801 MARITIME STREET
STID #3780

Dear Jennifer:

On the behalf of the Port of Oakland, Innovative Technical Solutions Inc. (ITSI) has prepared two documents titled "Workplan for Groundwater Monitoring and Sampling", dated February 10, 1997 and ."Groundwater Monitoring and Sampling Report", dated February 12, 1997. The reports addresses groundwater monitoring and sampling of a single monitoring previously installed at 801 Maritime Street by Alisto Engineering Group in July 1996. ITSI was requested to coordinate field activities with a similar quarterly monitoring event conducted at the former Mobil Oil Company and Ashland Oil Company of California sites located directly west of the 801 Maritime Street site. ITSI, unfortunately, experienced a delay performing their work due to the presence of numerous shipping containers that are presently stored at the site. In the future, quarterly monitoring events could be similarly delayed due to the same problem.

A copy of the reports are enclosed for your review and comment. Should you have any questions regarding the report, please contact me at 272-1373.

Sincerely,

John Prall, R.G.
Associate Environmental Scientist

Enclosures
cc: Neil Werner

vicinity of nearby Berth 24. Additionally, Mr. Jerry Battle, the Port of Oakland Wharfinger, will be notified to arrange for access to the monitoring well.

Once onsite, the monitoring well will be gauged for depth to water and checked for the presence of separate phase hydrocarbons. Depth to water will be measured using a Solinst water level meter, or equivalent, accurate to 0.01 foot, or with an oil/water interface probe, if free product is present. The depth to water measurement will be recorded on a Monitoring Well Purge and Sample Form.

After the depth to water measurement is recorded, and if no free product is observed in the monitoring well, the well will be purged and sampled using a disposable bailer. Approximately three casing volumes of water will be removed, or until pH, conductivity, and temperature readings have stabilized indicating formation water has entered the monitoring well. Field parameters will be obtained using a HYDAC temperature, pH, and conductivity meter, or equivalent. Field parameters will be recorded on the Monitoring Well Purge and Sample Form.

Samples will then be collected and placed into laboratory provided containers. Samples will be properly labeled with the sample number, date and time of collection, and sampler's initials. Groundwater samples will then be placed on ice in an insulated cooler. A chain-of-custody will be filled out and will be kept with the samples until relinquished to the current Port of Oakland contract laboratory. At this time, the samples will be provided to Pace Analytical in Petaluma, California.

Groundwater samples will be analyzed according to the following schedule:

Monitoring Well I.D.	Analyses		
	TPHg[1]	BTEX[2]	TPHd[3]
MW-1	x	x	x

[1] TPH as gasoline by Modified EPA Method 8015.
[2] Benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 602.
[3] TPH as diesel by Modified EPA Method 8015 with silica gel cleanup procedure.

Purge water will be placed in 55-gallon drums located near the monitoring well at the site. The volume of water in the drums will be monitored. When inadequate volume remains in the drums to accommodate purge water from an additional monitoring event, the current Port of Oakland disposal contractor will be notified to arrange for transfer and disposal of the purge water.

The above field activities will be performed in accordance with the site-specific Health and Safety Plan for groundwater monitoring activities at the site. A copy of this Health and Safety Plan is included as Attachment A.

REPORTING

Results of the groundwater monitoring and sampling will be summarized in a brief report, and will include tabulated laboratory results, a figure showing the groundwater gradient and flow direction at the time of monitoring, copies of laboratory results and chain-of-custody forms, and copies of field forms.

A draft report will be submitted to the Port of Oakland for review and approval. Once approved, a final report will be prepared and submitted to the Port of Oakland for submittal to appropriate regulatory agencies.

Please give us a call if you have any questions or comments.

Sincerely,

Jim Schollard
Environmental Scientist

Jeffrey D. Hess, R.G.
Project Director

Attachments

TABLE 1

GROUNDWATER ELEVATIONS
801 MARITIME STREET
OAKLAND, CALIFORNIA

Monitoring Well ID	Elevation of Top of Casing (feet)	Date of Monitoring	Measured Depth to Water (feet)	Product Thickness (feet)	Groundwater Elevation (feet)	Note
MW-1	10.61	07/10/96	7.36	-	3.25	1

1. Data from Table 2, Summary of Results of Groundwater Sampling, Port of Oakland Tanks CF-06, CF-07, and CF-35, 801 Maritime Street, Oakland, California, dated August 7, 1996, by Alisto Engineering Group.

TABLE 2

SUMMARY OF LABORATORY RESULTS

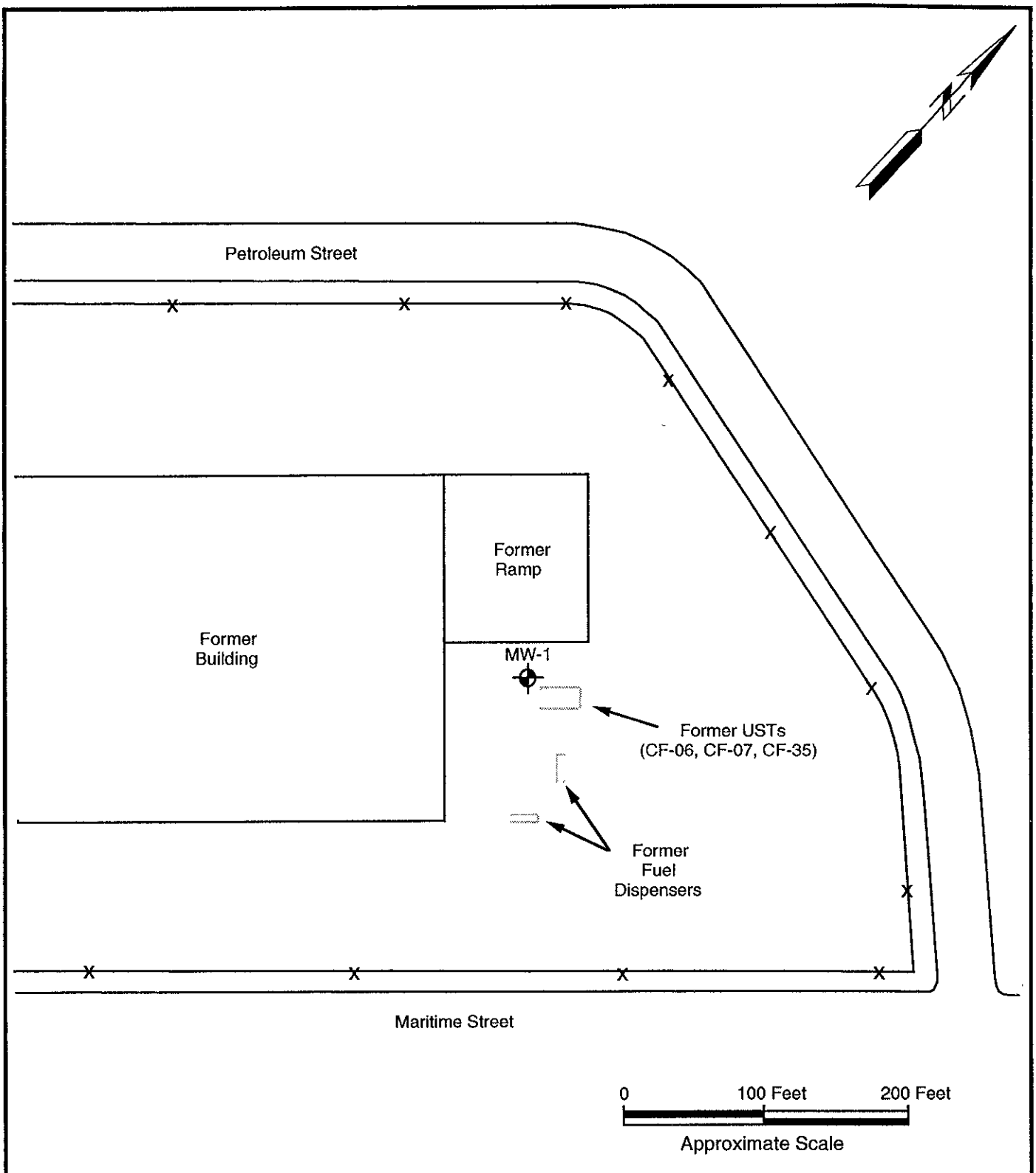
801 MARITIME STREET
OAKLAND, CALIFORNIA

Monitoring Well ID	Date of Sampling	TPHg (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Xylenes (µg/l)	TPHd (µg/l)	Note
MW-1	07/10/96	180	27	14	5.4	23	7,100	1

1. Data from Table 2, Summary of Results of Groundwater Sampling, Port of Oakland Tanks CF-06, CF-07, and CF-35, 801 Maritime Street, Oakland, California, dated August 7, 1996, by Alisto Engineering Group.

TPHg = Total petroleum hydrocarbons (TPH) as gasoline.
TPHd = TPH as diesel.

95-113.22/F.1-SiteLay



Legend

Monitoring Well

Source Adapted from Figure 2, Site Plan, 801 Maritime Street, Alisto Engineering Group, August 7, 1996.

FIGURE 1

SITE LAYOUT AND LOCATION OF MONITORING WELL

801 Maritime Street
Oakland, California

PORT OF OAKLAND

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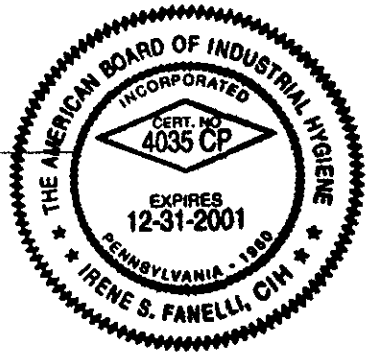
INNOVATIVE TECHNICAL SOLUTIONS, INC.

This health and safety plan has been developed for groundwater sampling activities to be conducted at the Port of Oakland property at 801 Maritime Street in Oakland, California. The plan has been prepared in accordance with project specifications, 8 CCR 5192 and other applicable regulations, and good industrial hygiene practice.

This plan is intended to apply to groundwater sampling at the above listed site only, and must not be extrapolated to other substances, work activities or project locations without modification to address the specific hazards associated with those substances, activities and/or any other specific regulatory requirements.

Irene S. Fanelli

Irene S. Fanelli, CIH



11/27/96

Date

HEALTH AND SAFETY PLAN

GROUNDWATER MONITORING ACTIVITIES
801 MARITIME STREET
PORT OF OAKLAND

1.0 INTRODUCTION

This Health and Safety Plan (Plan) will be in effect during groundwater monitoring and sampling activities at the Port of Oakland property at 801 Maritime Street in Oakland, California. This Plan addresses the potential exposure to groundwater containing petroleum hydrocarbons during monitoring and sampling of groundwater monitoring wells. The sampling is expected to be conducted utilizing hand bailers.

This Plan covers ITSI personnel only. All other personnel on site will be expected to possess the appropriate training, experience, and personal protective equipment. This Plan is based upon extensive experience with similar operations, and assumes a Level "D" site. If circumstances outside the scope of this Plan occur on site, the Plan will be amended to account for such circumstances.

2.0 PERSONNEL

Site Health and Safety Officer - The Site Health and Safety Officer will be responsible for briefing field personnel and contractors on the potential site hazards, personal protective equipment to be used on site, work rules and safe work practices, and implementation of the Plan, prior to initiation of work.

The Health and Safety Officer will also conduct tailgate safety meetings as appropriate during field operations, to inform the field personnel and contractors of changing field conditions and any potential changes in the Plan.

Project Manager - The Project Manager, Jim Schollard, will be responsible for all technical aspects of the project, and will assure that the requirements of the Plan are implemented.

Consulting Certified Industrial Hygienist - The Consulting Certified Industrial Hygienist, Irene S. Fanelli, CIH, has reviewed this Health and Safety Plan, and will provide consulting support for the project activities on an as-needed basis.

Field Personnel - Field personnel will be responsible for understanding and complying with the requirements of this Plan. They will acknowledge and sign a copy of this Plan, and will attend tailgate safety meetings, as required.

Field personnel will have the appropriate prior experience and training, in compliance with 8 CCR 5192. Such training includes the 40-hour basic training, three days of supervised field experience, 8-hour update training, and 8-hour supervisory training, as appropriate.

3.0 CONTAMINANTS

The potential chemical hazards on site consist of groundwater containing petroleum hydrocarbons as gasoline and diesel, and aromatic petroleum hydrocarbons including benzene, toluene, ethylbenzene, and xylenes. General symptoms of exposure to these chemicals include: irritation of the eyes, nose, mucous membranes, and respiratory system; headache; nausea, vomiting, abdominal pain; giddiness, excitement, dizziness, staggered gait; fatigue, weakness, lassitude; anorexia; corneal vacuolization; dermatitis; and bone marrow depression (benzene). Target organs include the central nervous system, eyes, skin, gastrointestinal tract, blood, liver, and kidneys.

Benzene and gasoline are listed under California's Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) as chemicals known to the State of California to cause cancer. Toluene is listed as a chemical known to cause reproductive harm. For this reason, the following warning will be given to all on-site personnel:

> "This area contains chemicals known to the State of California to cause cancer and reproductive harm ."

The table below lists toxicological information for the site contaminants:

Chemical	Cal/OSHA PEL or TLV (ppm)	Carcinogen?	Absorbed through skin?
Gasoline	300	Yes	Yes
Petroleum Hydrocarbons as Diesel	none	No	Yes
Benzene	1	Yes	Yes
Toluene	50	No	Yes
Ethylbenzene	100	No	No
Xylenes	100	No	Yes

4.0 POTENTIAL FOR EXPOSURE AND ROUTES OF ENTRY

Chemical hazards may be encountered during the sampling operations. During these operations, site personnel may be exposed to any or all of the chemicals noted in the table. Exposure may occur

through inhalation, ingestion, and dermal contact, although due to the nature of the work, the potential for exposure through inhalation is considered to be minimal. Dermal exposure will be controlled by limiting contact through safe work practices, the use of chemical protective clothing, and personal hygiene. Ingestion hazards will be controlled by strict limitation of eating, drinking, and smoking in the work areas, and by rigorous application of decontamination and personal hygiene protocols.

5.0 PHYSICAL HAZARDS

No confined spaces will be entered during the work.

Notable physical hazards will be posed by vehicle and heavy equipment traffic as part of daily operations at the Port of Oakland terminal facilities. All vehicles will be appropriately identified and flagged while working in areas of terminal operations. In addition, all personnel working in vehicle traffic areas will wear orange reflective vests for improved visibility.

Excessive noise may be encountered while working in areas with heavy equipment. Personnel working in these areas will utilize their choice of hearing protection.

Heat stress may also be a potential physical hazard during the work. Personnel must be familiar with the symptoms of heat stress, and the conditions during which it may occur. Heat stress symptoms may include nausea, headache, lightheadedness, lack of coordination, or slurred speech. The use of protective clothing greatly enhances the likelihood of heat stress. Where site conditions warrant, site personnel will monitor for heat stress and implement work/rest regimens, if necessary. Potable water and/or an electrolyte replacement fluid such as Gatorade will be available on-site at all times.

6.0 AIR MONITORING/ACTION LEVELS

Direct reading air monitoring will be conducted during the initial day of sampling for organic vapors using a Photo Ionization Detector (PID). All direct-reading monitoring results will be compared to background levels, as measured at locations upwind of the work area. All equipment will be calibrated at least daily, according to the manufacturer's instructions. Additional calibration will be carried out as necessary. Calibration and monitoring data will be recorded in the field log for the project.

All site workers will be informed that they are always entitled to make use of respiratory protection prior to reaching a work area action level. Once an action level is reached, designated protection levels will be mandatory. All respiratory protection will be NIOSH/MSHA approved equipment. If PID readings consistently reach 10 ppm above background for five minutes, workers will upgrade to respirators with organic vapor cartridges. If PID readings consistently reach 50 ppm, workers will leave the area until organic vapor levels are below this level.

7.0 PERSONAL PROTECTIVE EQUIPMENT

All personnel in the active work area will be required to wear a hard hat, steel-toed boots, and safety glasses to protect against injury, and orange reflective safety vests in traffic areas. Personnel working in proximity to heavy equipment will utilize their choice of hearing protection. Personnel will also be required to wear tyvek coveralls and nitrile gloves when working around groundwater potentially containing petroleum hydrocarbons. Personnel will utilize appropriate decontamination techniques prior to leaving the work area. These measures include proper containment and disposal of disposable protective equipment, washing and rinsing of reusable equipment, and washing of hands before eating, drinking, or smoking.

8.0 EMERGENCIES IN THE FIELD

In case an accident should occur in the field, the nearest appropriate emergency facility will be notified immediately. The locations of the nearest emergency facilities to the project site are:

Hospital

- Kaiser Permanente Medical Center
  280 West MacArthur Boulevard — (510) 596-7600

Police Department

- Oakland Police Department — 911 or (510) 238-3481

Fire Department

- Oakland Fire Department — 911 or (510) 238-3851

Other Numbers

- ITSI - Jeff Hess — (510) 256-8898
- EHCI - Irene Fanelli — (415) 347-9205

To get to the hospital from the site take Maritime Street, then right on Grand Avenue, then left on Peralta Street, then right on West MacArthur Boulevard, then left into Kaiser Permanente Hospital at West MacArthur Boulevard and Broadway Avenue. Because of continuing highway construction in the area, this route is subject to change.

Spills will be controlled through the use of sorbent material. Used sorbent materials will be disposed of properly.

9.0 ACCIDENT REPORT

In case of accident, the on-site Health and Safety Officer will provide a report to the Project Manager describing the following:

- The nature of the event that required notification of off-site personnel or agencies.
- The date, time and names of personnel and agencies notified, and their response.
- A description of personal injury and/or property damage.
- A description of the resolutions of the incident.

10.0 ACKNOWLEDGEMENT AND UNDERSTANDING OF THIS PLAN

Field personnel will be briefed on the nature of work at the site, potential hazards, and protective clothing requirements prior to site work. The personnel will then be asked to sign the following statement:

This Health and Safety Plan has been explained to me. I acknowledge receipt of this Plan and obligate myself to read it. I agree to abide by the Plan and procedures outlined herein. I understand that non-compliance with the Plan may lead to termination of my employment.

Signature:	Date:
_____	_____
_____	_____
_____	_____