Site Health & Safety Plan

CHEVRON, USA Service Station 9-0020

1633 Harrison Street at 17th Street
Oakland, California

including Level C
→ Covering Standard

Prepared for

Chevron, USA

09/25/91

Prepared by

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620 Contra Costa Blvd Suite 209
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Project 320-90.01

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SITE HEALTH & SAFETY PLAN

1.0 INTRODUCTION

A. OVERVIEW

The following site health and safety plan has been prepared for the installation of groundwater monitoring wells at Chevron USA Service Station 9-0020, located at 1633 Harrison Street in Oakland, California (Figure 1).

The site is located in a mixed commercial, residential and light industrial region of downtown Oakland. The site had been investigated in November 1988, when monitoring wells MW-1 through MW-3 were installed. Wells MW-4 through MW-8 were installed in April of 1989, and Wells MW-9 through MW-12 were installed in June of 1990. There are currently twelve groundwater monitoring wells on and in the vicinity of the site.

2.0 PROJECT SAFETY AUTHORITY

A. ON-SITE PROJECT SAFETY

Personnel responsible for the project safety are:

Nancy Vukelich	Environmental Engineer Chevron, USA
~~Saulius~~ ~~Germanas~~ Madeleine Fulford	Staff Geologist Project Safety Officer (Pacific Environmental Group, Inc.)

Edward Buskirk	Company Safety Officer (Pacific Environmental Group, Inc.)

The Project Safety Officer has the authority to upgrade or downgrade the provisions of this Site Safety Plan as site conditions change. In addition, the Project Safety Officer shall be responsible for the following:

- o Safety Supplies & Equipment Inventory for the Project Site
- o Accident/Incident Reporting
- o Decontamination/Contamination Reduction Procedures.

B. PACIFIC ENVIRONMENTAL GROUP, INC. SAFETY OFFICER

The Company Safety Officer reports to the Pacific Environmental Group, Inc. (PACIFIC) Senior Management and is responsible for assuring on-site safety and loss prevention functions.

Responsibilities include:

- o Health surveillance of all PACIFIC employees.
- o Assuring that safety procedures in effect are in compliance with all appropriate federal, state, and company regulations.
- o Maintenance of personnel exposure monitoring records.
- o Assuring appropriate personal protective equipment is adequate for actual hazards of on-site conditions.
- o Assuring appropriate exclusion areas are identified and delineated.

3.0 JOB HAZARD ANALYSIS

A. CHEMICAL HAZARDS

The contaminants likely to be encountered on the project are gasoline compounds including BTEX, and halocarbons including 1,2-dichloroethane, carbon tetrachloride, chloroform, tetrachloroethene, trichloroethene, and t-1,2-dichloroethene.

Inhalation and dermal absorption hazards are the major area of concern, regarding the exposure to VOCs. Results of toxicological studies on animal exposure to pure concentrations of the VOCs that have been detected at the site are detailed in *Handbook of Toxic and Hazardous Chemicals*, by M. Sittig (1981), and *Dangerous Properties of Industrial Materials*, by N. Irving Sax (1984). An additional reference source used for the development of this Site Safety Plan is the *Documentation of the Threshold Limit Values*, published by the ACGIH (American Conference of Governmental Industrial Hygienists, Inc.).

Gasoline

Gasoline is a clear, aromatic, volatile liquid, which is a mixture of aliphatic hydrocarbons. The flash point is listed at -50 degrees Fahrenheit, with an LEL (Lower Explosive Limit) of approximately 1.3 percent.

The TLV for gasoline is listed as 300 parts per million (ppm) in air.

Benzene

Benzene is a common constituent of gasoline and other petroleum product materials. It is a clear, colorless liquid, with a flash point listed at 12 degrees Fahrenheit.

The currently established TLV for Benzene is 10 ppm in air. However, the American Conference of Governmental Hygienists (ACGIH) has recommended a TLV of 1 ppm be adopted.

Toluene

This material is a flammable, colorless liquid, with a benzol-like odor. The flash point is listed at 40 degrees Fahrenheit. The currently established TLV is 100 ppm in air.

Ethylbenzene

Ethylbenzene is a flammable, colorless liquid with an aromatic odor. The flash point is 59 degrees Fahrenheit, and the currently established TLV is 100 ppm in air.

Xylene Compounds

These materials area clear liquids with a flash point of 100 degrees Fahrenheit The TLV is currently established at 100 ppm in air. Xylene compounds are currently under study as possible carcinogens.

Carbon tetrachloride

A colorless liquid with a heavy, ethereal odor, a vapor pressure of 100 mm (@23.0), and a TLV of 5 ppm in air.

Chloroform

A colorless liquid with a heavy, ethereal odor, a vapor pressure of 100 mm (@10.0), and a TLV of 10 ppm in air.

1,2-Dichloroethane

Colorless liquid with a sweet odor, a flash point of 55 degrees Fahrenheit, and a TLV of 50 ppm in air.

1,2-Dichloroethene

Colorless liquid with a flash point of 39 degrees Fahrenheit, a vapor pressure of 400 mm (@41.0), and a TLV of 200 ppm in air.

Tetrachloroethene

Colorless liquid with a chloroform-like odor, a vapor pressure of 16 mm (@22.0), and a TLV of 50 ppm in air.

Trichloroethene

Colorless liquid with a chloroform-like odor, a vapor pressure of 100 mm (@32), and a TLV of 50 ppm in air.

It is not anticipated that the potential levels of exposure will reach personal exposure limit (PEL) or threshold limit value (TLV) limits, but this is based solely on limited available specific information. It is expected that inhalation and dermal contact will be the potential exposure pathways of concern.

Should respiratory irritation occur, appropriate air-purifying respiratory protective devices will be worn, with organic vapor cartridges and dust pre-filters, or with high efficiency organic vapor/HEPA stack-type cartridges. Typically, the cartridge will require replacement daily.

B. Physical Hazards

Existing utilities on the site must be avoided in the process of normal site work. Overhead power lines which may be located throughout the site present a potential for electrical contact. All overhead lines located in the work area will be noted prior to starting work. A minimum distance of 10 feet from power lines will be maintained at all times. Underground utilities may also be encountered during drilling activities. Efforts will be made to locate such utilities, and to prevent contact during the drilling.

There is a small risk of hazards based upon the Lower Explosive Limit (LEL) of the specific compounds encountered on the project site. As the majority of the petroleum fuel hydrocarbon materials have low flash points, it is important to measure the presence of the concentrations or amounts of vapor present. This will be accomplished using organic vapor detection instruments and/or indicator tubes.

A potential for elevated noise exposure exists when operating or working around heavy equipment. The use of hearing protection such as ear plugs and/or ear muffs will be required, as necessary.

Additionally there is a potential for physical hazards resulting from falling objects such as tools or equipment, from falls from elevations, or from tripping over pipes, tools hoses, and other equipment lying on the ground. Improper use and/or maintenance of equipment and tools is another potential source of physical hazards on site. These sorts

of physical hazards must be avoided through proper site management and control of the work area by the Project Safety Officer.

4.0 RISK ASSESSMENT SUMMARY

It is anticipated that there will be no significant or major potential source of exposures due to the scope of work to be followed on this project. The potential of any increased risk of exposure on other workers or the surrounding community is minimal. The basic potential exposure would probably originate from airborne dusts, during the drilling of the monitoring wells, and those dusts containing low level concentrations of VOC materials in the soils.

Due to this potential, the Contractor will have equipment on-site to provide for dust control during the drilling activities, if it appears that dust control is warranted. Also, perimeter air monitoring, to detect potentially migrating contaminants, may be conducted to ensure no hazardous materials are migrating to the surrounding community.

5.0 EXPOSURE MONITORING PLAN

A. General

An air quality monitoring program shall be implemented to provide baseline and on-going air quality data for site operations. This program shall include an on-going evaluation of on-site atmospheric contaminant concentrations during work site activities that involve significant surface disturbances using organic vapor detection instruments and/or detector tubes.

Additionally, the program may include a preliminary survey of existing air quality conditions, prior to any surface disturbances and, if possible, under anticipated "worst case" weather conditions, to be used to establish baseline levels for input into the respiratory protection selection process. The Project Safety Officer may also decide to perform perimeter monitoring of downwind air quality conditions during significant surface disturbances.

B. Action Levels

If it is determined based on PID readings that total hydrocarbon levels in the work area reach 10 ppm in the breathing zone for 5 minutes, half mask respirators with organic vapor cartridges will be required.

If PID readings indicate total hydrocarbon levels reach 25 ppm in the breathing zone for 5 minutes, work activities will be suspended until the airborne hydrocarbon concentrations decrease to less than 10 ppm. If airborne levels remain at 25 ppm or more, all work will cease until all personnel working in the exclusion zone are equipped with full face or if necessary supplied air respiratory protection including pressure demand air supplied respirators or self contained breathing apparatus (SCBA).

6.0 PERSONAL PROTECTIVE EQUIPMENT

A. Introduction

It is important that personal protective equipment and safety requirements be appropriate to protect against the potential hazards at the site. Protective equipment will be selected based on the contaminant type(s), concentration(s), and route of entry. In situations where the type of materials and possibilities of contact are unknown or the hazards are not clearly identifiable, a more subjective determination must be made of the personal protective equipment.

A minimum of modified Level D safety equipment and clothing will be required for all workers and visitors on the site. All personnel must be prepared to step up to higher levels of protective equipment as conditions warrant.

B. LEVELS OF PROTECTION

The basic required work uniform for the site is modified Level D protection which will include:

- o hardhat
- o steel toed boots
- o safety glasses
- o polyvinyl gloves for handling soil or liquid samples
- o neoprene overgloves for handling augers or other contaminated items

If Level C protection is deemed necessary by the Site Safety Officer based on field conditions, the protective equipment will include:

- o modified Level D equipment including gloves and polycoated Tyvek coveralls
- o respiratory protection which may include half face respirator with organic vapor cartridges depending on respiratory action levels listed above

The necessity for Level A or Level B protection is not expected to be encountered on this or other PACIFIC sites. If site conditions indicate that Level C protection is inadequate, all site activities are to be ceased pending further review by the Company Safety Officer and PACIFIC Senior Management.

7.0 WORK ZONES AND SECURITY MEASURES

A. General

A site must be controlled to reduce the possibility of exposure to any contaminants present and their transport by personnel or equipment from the site.

The possibility of exposure or translocation of contaminants will be reduced or eliminated by implementing the following practices:

- o Setting up physical barriers (ie. construction barricades, warning tape) to exclude unnecessary personnel from the general area of work. Only necessary and appropriately safety-certified personnel will be permitted within the exclusionary zone.

- o Minimizing the number of personnel and equipment in the vicinity of the work area consistent with effective operations
- o Establishing work zones within the site
- o Conducting operations in a manner to reduce the exposure of personnel and equipment
- o Minimizing the airborne dispersion of contaminants
- o Implementing the appropriate personnel and equipment decontamination procedures, with gross decontamination occurring within the exclusionary zone established prior to the commencement of work.

B. Field Operations Work Area

Work areas (zones) will be established based on anticipated contamination. Within these zones prescribed operations will occur utilizing appropriate personal protective equipment. The planned zones are:

1. Exclusion Area (contaminated). The actual areas where work is being performed are considered to be the exclusion areas. Access to these areas will be strictly limited to the personnel needed to conduct the work being performed.

2. Contamination Reduction Area. An area near to each active work zone will be designated as the contamination reduction area. Disposable protective gear will be removed and placed in garbage bags prior to leaving the reduction zone. Heavy equipment and non-disposable gear will be cleaned at a decontamination area within this zone.

3. Support Area (non-contaminated). Areas located away from active work areas and out of the zone of potential impact of hazards will be used for staging and support of the work being performed on site. Any materials, equipment, or clothing of personnel must be fully decontaminated prior to entering these areas.

8.0 DECONTAMINATION PROCEDURES

As part of the system to prevent or reduce the physical transfer of contaminants by people and/or equipment from on-site, procedures will be instituted for decontaminating anything leaving the Exclusion Area and Contamination Reduction Area. These procedures include the decontamination of personnel, protective equipment, monitoring equipment, clean-up equipment, etc. In cases where the Contamination Reduction Zone is not directly adjacent to the Exclusion Area, gross decontamination will occur in the Exclusion Area, followed by more detailed cleaning in the Reduction Area. This gross decontamination will be performed to the extent necessary to keep contaminants from spreading to other "clean" areas of the site. In general, decontamination at the site consists of rinsing equipment, personnel, etc., with copious amounts of water and washing with detergent water solutions. The spent solution, brushes, sponges, containers, stands, etc., used in the decontamination process must be properly disposed.

9.0 GENERAL SAFE WORK PRACTICES

The project operations shall be conducted with the following minimum safety requirements employed:

1. Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand to mouth transfer and ingestion of materials is prohibited in any area where the possibility of contamination exists.

2. Hands must be thoroughly washed upon leaving a contaminated or suspected contaminated area before eating, drinking, or any other activities transpire.

3. Legible and understandable precautionary labels shall be prominently affixed to containers of raw materials, intermediates, products, mixtures, scrap, waste, debris, and contaminated clothing.

4. Contaminated protective equipment shall not be removed from the regulated area until it has been cleaned or properly packaged and labeled.

5.Removal of materials from protective clothing or equipment by blowing, shaking, or any other means which may disperse materials into the air is prohibited.

6.Personnel on-site must use the "buddy" system when wearing any respiratory protective devices. Communications between members must be maintained at all times. Emergency communications shall be prearranged in case of encountering unexpected situations. Visual contact must be maintained between "pairs" on-site, and each team should remain in close proximity to assist each other if necessary.

7.Personnel should be cautioned to inform each other of subjective symptoms of chemical exposure such as headache, dizziness, nausea, and irritation of the respiratory tract.

8.No excessive facial hair which interferes with a satisfactory fit of the facepiece-to-face seal, will be allowed on personnel required to wear respiratory protective equipment.

9.All respiratory protection selection, use, and maintenance shall meet the requirements of established PACIFIC procedures, recognized consensus standards (AIHA, ANSI, NIOSH), and shall comply with the requirements set forth in 29 CFR 1910.134.

10.Contact with surface and groundwater shall be minimized.

In addition, the following precautions shall be implemented for all personnel working on the project:

- o Gross decontamination and removal of all personal protective equipment shall be performed prior to exiting the facility. Contaminated personnal protective clothing of worn, will be removed and collected in a drum for disposal.
- o Field operations personnel shall be cautioned to inform each other of non-visual effects of the presence of toxics, such as: headaches, dizziness, or nausea.

10.0 STANDARD OPERATING PROCEDURES

A. Respiratory Protection Program Guidelines

Respirators will be provided by PACIFIC when such equipment is deemed necessary to protect the health of PACIFIC employee. PACIFIC shall provide respirators which are applicable and suitable for the purpose intended. The employer shall be responsible for the establishment and maintenance of this respiratory protection program. The Company Safety Officer will approve the selection, purchase, and inspection of the models and types of respiratory protective devices.

A medical evaluation is required prior to wearing any respirator, except where emergency escape respirators are provided. The contract physician shall determine annually if any health or physical conditions exist which would prohibit a worker from being assigned to an area requiring respiratory protection. A record will be retained in the employee's medical file, which will be retained at the medical clinic or doctor's office.

Respirators shall not be worn when conditions prevent a facepiece-to-face seal. Such conditions as facial hair, scars, wrinkles, facial diseases, dentures removal, or other disorders could prevent a proper facepiece-to-face seal. In these cases, corrective action will be taken to ensure a proper seal. Contact lenses shall not be worn when using any respirator.

For the safe use of any respirator, it is essential that the user be properly instructed in its operation and maintenance. Both supervisors and employees shall be so instructed. Employees shall be instructed and trained in the proper selection and use of respirators and their limitations. The employee shall use the provided respirator in accordance with instructions and training received. All training shall be documented with records retained in the employee's training files.

The PACIFIC Respirator Program will meet the 11 points as specified in Title 29 CFR 1910.134*, and CAC Title 8.

11.0 EMERGENCY PROCEDURES

A. Site Emergency Warnings

Several warning systems may be utilized depending on the work site conditions or emergency involved:

1.Verbal Communications

2.Vehicle Horns

Verbal instructions between crew members are typically adequate to communicate steps that are required in emergency situations. In cases where parts of the crew are distant from the center of activity, vehicle horns may be necessary to indicate site emergencies. This type of communication needs to be followed by verbal instructions on necessary emergency actions.

B. Emergency Equipment

The following equipment comprises the basic elements for emergency preparedness. All or some of these items will be available at the work site:

1.Fire extinguishers - dry chemical

2.First aid kits

C. General Emergency Procedures

In case of an emergency or hazardous situation, the person that observes this condition shall immediately sound the alarm.

1.Upon hearing an alarm, all non-emergency communications will cease and the person giving the alarm will proceed to give the Project Safety Officer all pertinent information.

2.Power equipment will be shut down and operators will stand by for instruction.

3.Injured personnel will be transported to the Contamination Reduction Line.

4.The PACIFIC office will be notified immediately.

5.In case of a fire, explosion, or hazard alarm, personnel will immediately proceed to assigned pre-arranged safe locations.

6.Upon arrival at the safe locations, a complete head count will taken by the Project Safety Officer and personnel will stay at the safe locations until the area is secured.

D. Personal Injury

If an injury occurs due to an accident or exposure to a hazardous substance, the PACIFIC office will be notified. The Company Safety Officer will be given all appropriate information concerning the nature and cause of the injury so that treatment preparations can be initiated. The injured person will be transported to the Contamination Reduction line where appropriate first aid and treatment can begin. The Project Manager will be informed and will investigate the cause of the injury and make any necessary changes in work procedures.

In the event of an accident resulting in physical injury, first aid will be administered, and the injured worker will be transported to Merritt-Peralta Medical Center for emergency treatment.

Hospital.....Merritt-Peralta Medical Center
350 Hawthorne Avenue at Webster Street
Oakland, California

Directions to Hospital:

Upon leaving the site, prodeed north (left from the site) on Harrison Street, turn left (west) on 19th Street, turn right (north) on Broadway, and proceed approximately 1.5 miles to 34th Street. Turn left at 34th Street, and the hospital will be on the left.

EMERGENCY CONTACT LISTING

Nature of Emergency	Phone Number	Alternate Phone Number
Ambulance	911	(415) 273-3211
Fire	911	(415) 444-1616
Police	911	(408) 273-3211
Poison Control Center	911	(800) 523-2222
Office of Emergency Services	(800) 852-7550	(415) 272-6878
Chemical Spills	(800) 424-8802	(415) 444-1616
Hospital	(415) 420-6080	
Other Contingencies	Pacific Environmental Group, Inc. > ————>	(408) 984-6536

12.0 TRAINING REQUIREMENTS

All personnel assigned to this project will be required to demonstrate that they have completed the Initial Training Requirements (40 hours), according to Federal OSHA Standards under 29 CFR 1910.120.

Field personnel from PACIFIC and their sub-contractors will attend a project briefing for safety issues and project work task review before beginning work. All PACIFIC site personnel shall have completed training relative to the project operations plans, and the materials to be encountered during the project.

13.0 MEDICAL SURVEILLANCE

PACIFIC personnel and sub-contractors engaged in project operations shall be participants in the Medical Surveillance program, and must be cleared by the examining

physician(s) to wear respiratory protection devices and protective clothing for working with hazardous materials. The applicable requirements under Federal OSHA, 29 CFR 1910 will be observed.

A. Examination Requirements

All PACIFIC personnel on-site shall have successfully completed a pre-placement or periodic medical examination in accordance with established PACIFIC policies and procedures, and consistent with the provisions of the OSHA carcinogen standards. This examination shall include a complete medical and occupational history, physical examination, and selected biological sampling. Laboratory studies include a complete blood count (CBC), urinalysis, chemistry panel (SMAC), pulmonary function (FEV and FVC), chest X-ray, audiometry, and vision screening.

14.0 RECORDKEEPING

A. General

Recordkeeping shall be consistent with OSHA regulations in all respects. The following permanent records will be maintained in the PACIFIC offices:

1.Safety Inspection Reports

2.Personnel Exposure Monitoring Records

3.OSHA 200 - Current to within 90 days

4.Accident reports consistent with established PACIFIC procedures

B. Medical Records

Permanent medical records shall be maintained in confidential files by the contract physician/medical clinic. The physician will supply PACIFIC with a medical status document, certifying that the personnel assigned to the project are physically capable of performing their individual work tasks.

15.0 SIGNATURES

Site Health & Safety Plan Approved By:

Signature: _____ Date: 9/27/91

Name: Jerry Mitchell

Title: Project Manager,
Pacific Environmental Group, Inc.

CONTRACTOR AND SUB-CONTRACTOR AGREEMENTS

1. Contractor certifies that the following personnel to be employed on the subject project have met the following requirements of the OSHA Hazardous Waste Operator Standard (29 CFR 1910.120) and other applicable OSHA standards.
2. Contractor certifies that in addition to meeting OSHA requirements, it has received a copy of this Site Health & Safety Plan and will ensure that its employees are informed and will comply with both OSHA requirements and the guidelines in this Site Health & Safety Plan.
3. Contractor further certifies that it has read and understands and will comply with all provisions of this Health & Safety Plan and will not hold Pacific Environmental Group, Inc. responsible or liable for any injury or health problems that may arise.

Print Name	Signature	Date

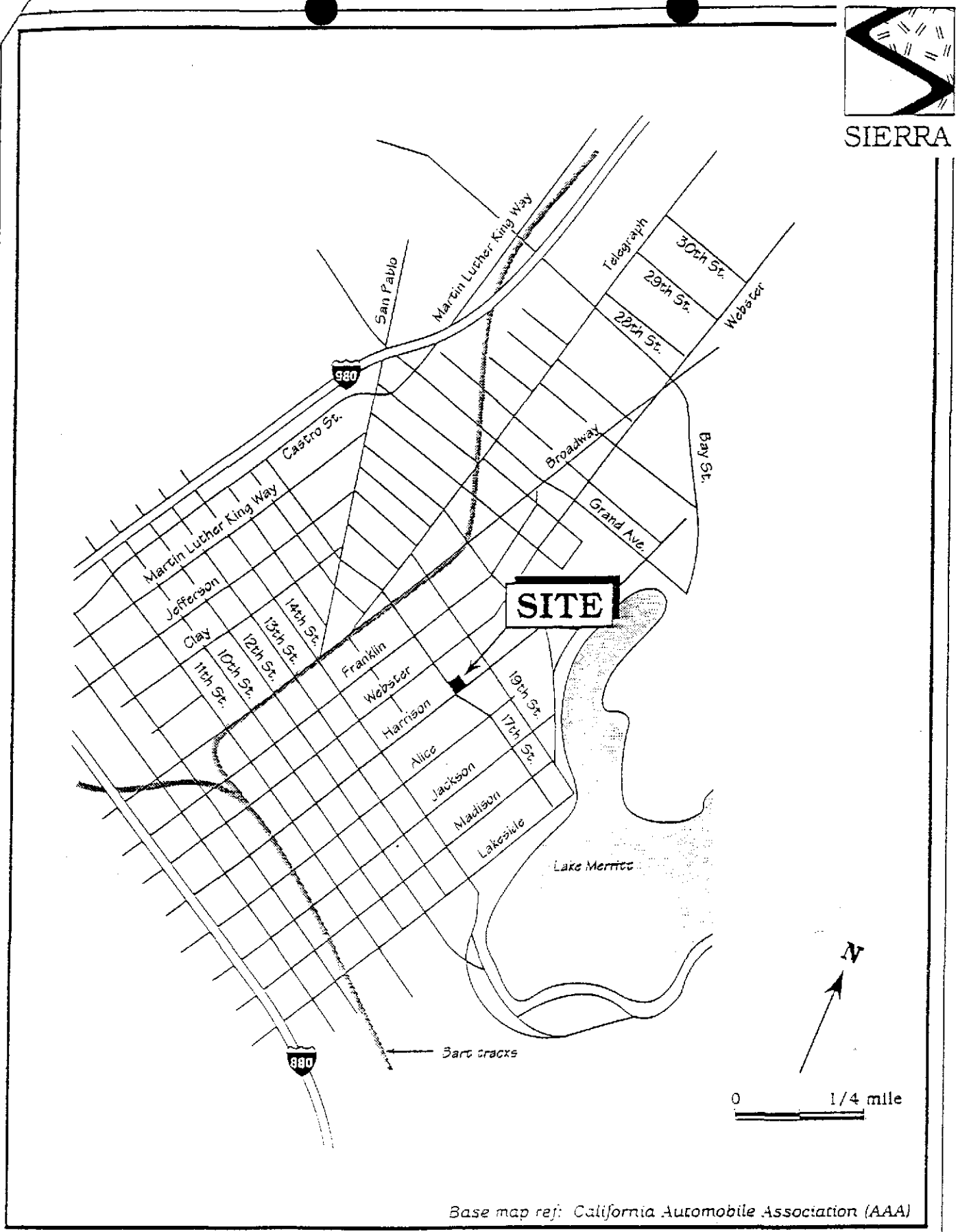
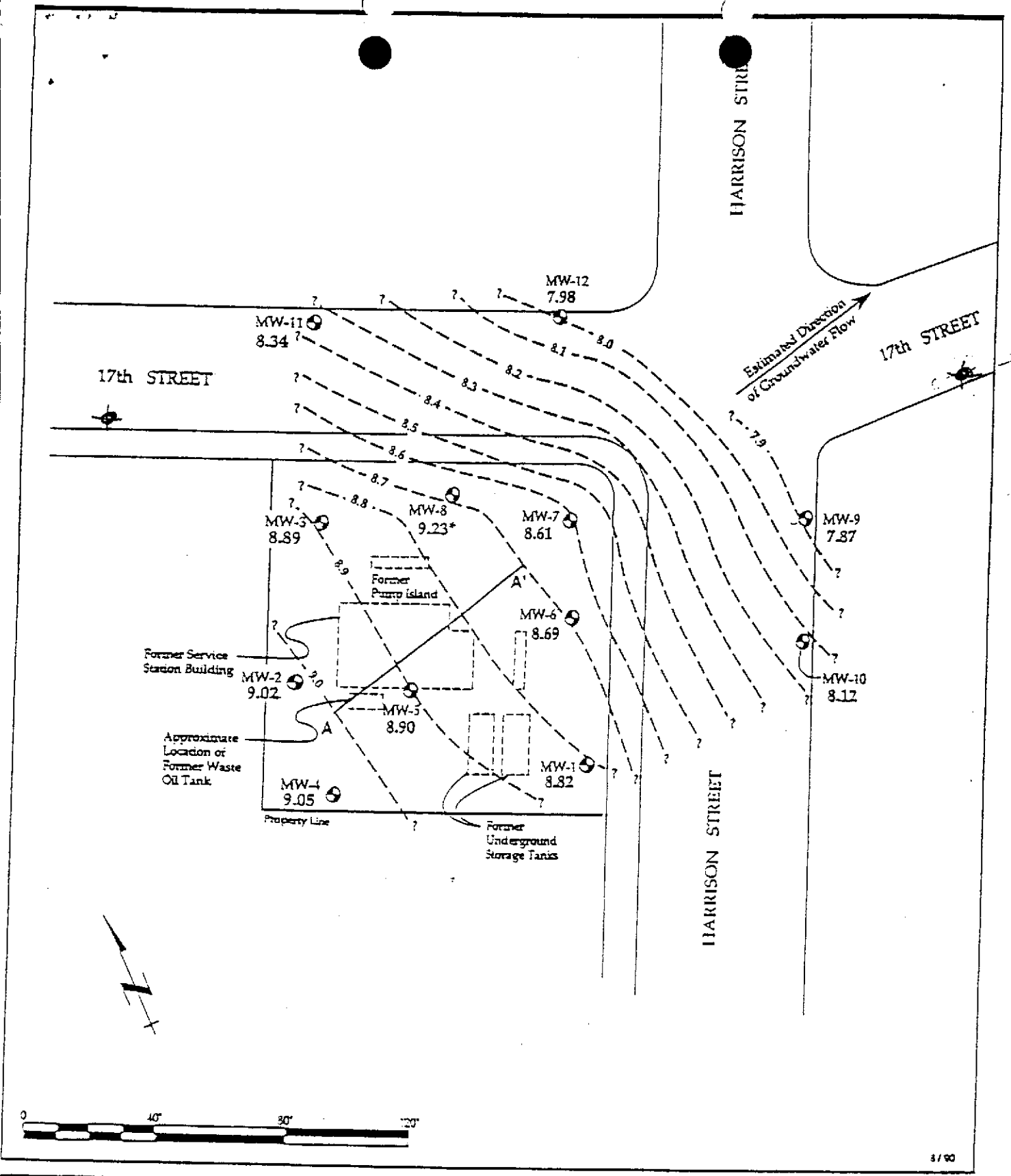


Figure 1. Site Location Map - Chevron Service Station #9-0020, 17th Street and Harrison Street, Oakland, California



EXPLANATION

- MW-1 / 8.82 — Monitor Well location and Groundwater elevation, in feet above mean sea level
- 9.23* — Anomalous elevation, not used in contouring
- 9.0 ——?—— Groundwater elevation contour, in feet above mean sea level, dashed where inferred, queried where uncertain
- Proposed groundwater monitoring well location

Potentiometric Surface of Shallow Groundwater
Former Chevron Service Station #90020
1633 Harrison Street,
Oakland, California

FIGURE 6 2

WESTERN GEOLOGIC RESOURCES, INC.

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