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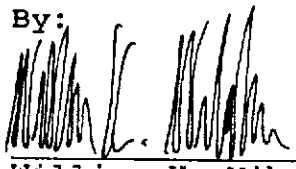
REVISED WORK PLAN
CONTAMINATED SOIL REMOVAL
UTILITY TRENCH ALIGNMENT
98TH AND EDES AVENUES
OAKLAND, CALIFORNIA
SCI 272.016

June 29, 1990

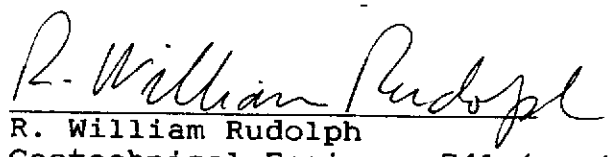
Prepared for:

Mr. Dan Lau
City of Oakland
Public Works Department
1419 Broadway, Suite 700
Oakland, California 94612

By:



William K. Wikander
Geotechnical Engineer 892 (expires 12/31/92)



R. William Rudolph
Geotechnical Engineer 741 (expires 12/31/92)

Subsurface Consultants, Inc.
171 12th Street, Suite 201
Oakland, California 94607
(415) 268-0461

June 29, 1990

I PROJECT BACKGROUND

The City of Oakland is planning to remove contaminated soil from within the alignment of its proposed joint utility trench in front of two former gasoline stations at 670 and 692 98th Avenue in Oakland, California. The site is located near the intersection of 98th and Edes Avenues, as shown on the Site Plan, Plate 1.

Subsurface Consultants, Inc. (SCI) previously performed preliminary soil and groundwater contamination assessments at the site, and presented the results in reports dated July 17, 1989 and April 10, 1990.

The City of Oakland is currently widening 98th Avenue. In April 1989, workers encountered contaminated soil while excavating utility trenches. Work on a 140-foot-long section of joint utility trench across the contaminated area was halted, pending remediation of the contaminated soil. Completion of the 98th Avenue widening project is predicated on installation of this joint utility trench.

SCI's research has indicated that 670 98th Avenue was occupied by a Union 76 service station from about 1947 through 1983. The service station had underground storage tanks in at least 3 separate locations, as shown on the Site Plan. The tanks reportedly stored gasoline and waste oil. The service station and tanks were removed in 1983. In addition, 692 98th Avenue was

occupied by a Richfield service station from 1947 through 1962. Four 1000-gallon underground storage tanks were removed from the site in 1970. The tank location(s) and the type(s) of material they stored is unknown at this time.

II INVESTIGATION TO DATE

SCI has obtained soil and groundwater samples from 26 test borings and 5 monitoring wells in the area. Analytical tests on the soil and groundwater samples indicated that they contained gasoline (detected as total volatile hydrocarbons (TVH) and as total extractable hydrocarbons (TEH); and benzene, toluene, xylenes and ethylbenzene (BTXE). The groundwater samples also contained a number of relatively common solvents (purgeable halocarbons). The highest concentrations of these contaminants encountered in soil samples and groundwater from the site are summarized below:

Contaminant	Highest Concentration Encountered Soil (ppm)	Groundwater (ppb)
TVH	25,000	134,000
TEH	5,650	17,000
TOG	840	120,000
Benzene (BTXE)	39.1	3,730
Toluene (BTXE)	270	8,920
Xylenes (BTXE)	1,000	22,500
Ethylbenzene (BTXE)	190	5,430
1,1-Dichloroethane	ND	4.9
1,1-Dichloroethylene	ND	7.1
Dichloromethane	ND	69.2
Tetrachloroethylene	ND	67.4
1,1,1-Tetrochloethane	ND	17.1
Trichloroethylene	ND	25.1

Based on the data to date, the approximate limits of soil containing hydrocarbon concentrations greater than 100 ppm is shown on the Site Plan. The limits are undefined downgradient of the site and at the former Richfield service station, where the zone of contaminated soil appears to extend off-premises.

III PROPOSED INTERIM REMEDIATION

The contaminated area is large and the hydrogeology is relatively complex. Additional study is necessary before determining the most appropriate remediation method. In the interim, the City of Oakland plans to remediate the contaminated soil in the vicinity of the planned joint trench to allow completion of the 98th Avenue widening project.

The approximate area of interim soil remediation is shown on the Site Plan. It will include soil within 5 feet of the joint trench centerline, and the former Union 76 fuel tank excavations. The excavation will extend to groundwater (at a depth of about 10 feet) or to the bottom of the excavation backfill, whichever is deeper. In addition, the interim remediation will include all soil that is encountered with TPH concentrations greater than 1000 ppm and at least two feet above the groundwater level during excavation. The remediation method will include excavation, on-site treatment of the contaminated materials, and transport to appropriate disposal facilities. On-site treatment will be by aeration, in accordance with Bay Area Air Quality Management District (BAAQMD) requirements.

A Site Safety Plan, and the completed Underground Tank Closure/Modification Plan, as required by the Alameda County Health Care Services Agency (ACHCSA) accompanies this work plan. Supplemental project information follows:

Property Owner

City of Oakland
One City Hall Plaza
Oakland, California 94612
Contact: Mr. Philip A. Grubstick (415) 273-3437

Company Overseeing Closure (Consultant)

Subsurface Consultants, Inc.
171 12th Street, Suite 201
Oakland, California 94607
Contact: Mr. William K. Wikander (415) 268-0461

Company Performing the Work (Contractor)

International Technology Corporation
4585 Pacheco Boulevard
Martinez, California 94533
Contact: Mr. Timothy B. Anenson (415) 372-9100

Site Location

670 and 692 98th Avenue
Oakland, California 94603

Tank Information

Three underground fuel storage tanks existed at 670 98th Avenue until their removal in 1986. Several fiberglass fuel lines still remain. Gasoline was stored in 8,000 and 10,000 gallon tanks; waste oil was stored in a 280-gallon tank. Four, 1000-gallon fuel storage tanks existed at 692 98th Avenue until their removal in 1970. Information regarding the location and type of materials stored in the tanks is unavailable.

IV CONTAMINATED SOIL EXCAVATION AND STOCKPILE

The approximate area to be excavated is shown on the attached Site Plan. The actual area excavated may vary from that shown if soil with TPH concentrations greater than 1000 ppm and at least 2 feet above groundwater are encountered at the proposed excavation perimeter. We estimate that about 1000 to 1500 cubic

yards (cy) of soil will be excavated. We also estimate that about 50, 25 and 25 percent of this material will contain petroleum hydrocarbon concentrations less than 100 ppm, between 100 and 1000 ppm, and greater than 1000 ppm, respectively.

During excavation, soil samples will be obtained and analytically tested on-site, using a mobile analytical laboratory. Soil with hydrocarbon concentrations less than 100 ppm will be temporarily stockpiled on-site, and then transported to a Class III landfill. Soil with TPH concentrations between 100 and 1000 ppm will be stockpiled in a separate location on-site, aerated as required, then transported to a Class III landfill. Soil with TPH concentrations above 1000 ppm will be stockpiled in another separate location on-site for later aeration and disposal at a Class I, II or III landfill. The stockpiles of soil containing TPH concentrations greater than 100 ppm will be covered with polyethylene sheeting until aeration and/or disposal.

V SOIL AERATION

Soil containing hydrocarbon concentrations greater than 100 ppm will be aerated on-site in accordance with the attached BAAQMD requirements. During aeration, the contaminated soil will be spread in a layer about 6 inches thick, and turned daily until analytical tests indicate hydrocarbon concentrations less than

100 ppm. The aerated soil will be disposed of at a Class II or III landfill, as appropriate.

Soils contaminated with heavier hydrocarbons, such as diesel and oils, will likely not be significantly remediated by aeration. These soils will be transported off-site to a suitable disposal facility, as necessary.

VI SAMPLING AND ANALYSES

A. Sampling

During excavation, at least one soil sample will be taken for every 50 cy of soil removed. After excavation, samples of the material to be left in place will be obtained. At least one soil sample will be taken from the excavation bottom for each 500 square feet (in plan) and at least one soil sample will be taken from the excavation side walls for each 50 linear feet.

Soil sampling will occur during excavation. For each sample, a backhoe bucket of soil will be brought to the surface. Our engineer/geologist will cut away several inches of soil, and a clean brass liner (4 to 6 inches long) will be driven into the soil. The ends of the filled sample liner will be covered with Teflon sheets before capping, sealing with plastic tape and labeling. Each sample will be refrigerated on-site and transported to an analytical testing laboratory. Chain-of-Custody records will be maintained.

The excavation will extend to (or slightly below) the groundwater surface. Accordingly, groundwater is anticipated to be encountered. At least one groundwater sample will be obtained during the work. The water sample will be taken with a Teflon sampling device, placed into the appropriate pre-cleaned containers, refrigerated and transported to the laboratory. Chain-of-Custody records will be maintained.

B. Analytical Testing

Analytical testing will be performed by a State of California Department of Health Services (DHS) certified laboratory. The previous use of the tanks were to store motor fuels. In addition, Class III landfills often require testing for lead contamination. Accordingly, the following analytical tests will be performed:

1. TVH, sample preparation and analysis using EPA Methods 5030 (purge and trap) and 8015 modified (gas chromatograph coupled to a flame ionization detector),

2. TEH, sample preparation and analysis using EPA Methods 3550 (sonication) and 8015 modified,

3. TOG, sample preparation and analysis using EPA Method 3550 (solvent extraction) and SMWW M503E (gravimetric determination),

4. BTXE, sample preparation and analysis using EPA Methods 5030 (purge and trap) and 8020 (gas chromatograph coupled to a photo-ionization detector), and

5. Total and Soluble Lead

VII BACKFILLING

If free product is encountered on the groundwater surface, it will be pumped out by a vacuum truck to the lowest possible level. The removed product/water will be transported under manifest to a recycling facility. Disturbed, loose soil will be removed from the excavation bottom. If necessary, a 1.5-foot-thick layer of granular soil will be placed in one lift at the bottom of the excavation to "bridge" the wet soil beneath and provide a firm base over which to compact backfill. The excavation will then be backfilled with compacted soil. The method and amount of compaction will be in accordance with the specifications for the current 98th Avenue widening project. City of Oakland personnel will observe excavation backfilling and perform field density tests to check soil compaction.

VIII PROPOSED SUBCONTRACTORS

A. Analytical Laboratories

1. Mobile Laboratory

GTEL Environmental Laboratories
4080 Pike Lane
Concord, California 94520
Contact: Mr. Troy Michaels (415) 685-7852
Hazardous Waste Testing Laboratory Certificate Number E628

2. Other Analytical Testing

Curtis and Tompkins, Ltd.
2323 Fifth Street
Berkeley, California 94710
Contact: Mr. Stephen L. Jensen (415) 486-0900

Hazardous Waste Testing Laboratory Certificate
Number 159

B. Waste Transporters

GSX
4501 Pacheco Boulevard
Martinez, California 94553
(415) 372-4800
EPA Identification No. CAD 000083121

IX MISCELLANEOUS

A. Non-hazardous waste manifests for transport will be prepared and accompany soils with TPH concentrations less than 1000 ppm. If hazardous waste manifests are required to transport other materials, they will be prepared and accompany transport of the materials.

B. Chain-of-Custody Records will be used to document all sample transfers from the site to the analytical laboratory.

C. A report will be submitted to the ACHCSA describing the closure activities, presenting sample analysis results and documenting the final disposal of waste materials. Copies of laboratory reports, Chain-of-Custody Records and manifests (if required) will be included in the report.

List of Plates

Plate 1 Site Plan

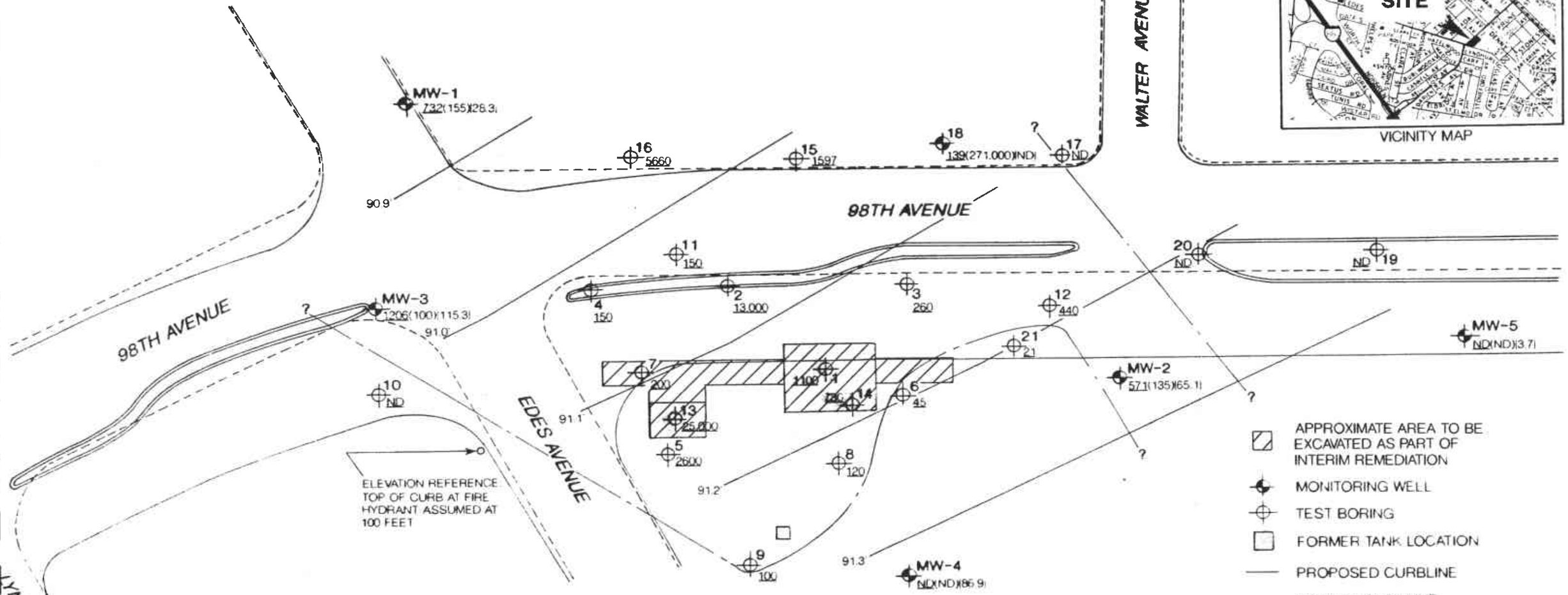
Underground Tank Closure/Modification Plans

Guideline Site Safety Plan

Distribution

4 copies: Mr. Dan Lau
City of Oakland
Public Works Department
1419 Broadway, Suite 700
Oakland, California 94612

WKW:RWR:JPB:mb1



SITE PLAN

Subsurface Consultants

98TH & EDES - PHASE 2 - OAKLAND CA

JOB NUMBER 272.016

DATE 2/14/90

APPROVED

PLATE 1

ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY
DEPARTMENT OF ENVIRONMENTAL HEALTH
HAZARDOUS MATERIALS DIVISION
80 SWAN WAY, ROOM 200
OAKLAND, CA 94621
PHONE NO. 415/271-4320

UNDERGROUND TANK CLOSURE/MODIFICATION PLANS

1. Business Name City of Oakland

   Business Owner NA

2. Site Address 670 98th Avenue

   City Oakland, California Zip 94603 Phone NA

3. Mailing Address One City Hall Plaza

   City Oakland, California Zip 94612 Phone 415-273-3051

4. Land Owner City of Oakland

   Address One City Hall Plaza City, State Oakland, CA Zip 94612

5. EPA I.D. No. CAC-000-289937

6. Contractor International Technology Corporation

   Address 4585 Pacheco Boulevard

   City Martinez, California 94553 Phone 415-372-9100

   License Type A, B, C(21,33,34&57) ID# 137422

7. Consultant Subsurface Consultants, Inc.

   Address 171 12th Street, Suite 201

   City Oakland, California 94607 Phone 415-268-0461

8. Contact Person for Investigation

Name William K. Wikander Title Engineer

Phone 415-268-0461

9. Total No. of Tanks at facility none

10. Have permit applications for all tanks been submitted to this office? Yes [ ] No [X]

11. State Registered Hazardous Waste Transporters/Facilities

a) Product/Waste Tranporter

Name NA EPA I.D. No. _____

Address _____

City _____ State _____ Zip _____

b) Rinsate Transporter

Name NA EPA I.D. No. _____

Address _____

City _____ State _____ Zip _____

c) Tank Transporter

Name NA EPA I.D. No. _____

Address _____

City _____ State _____ Zip _____

d) Tank Disposal Site

Name NA EPA I.D. No. _____

Address _____

City _____ State _____ Zip _____

e) Contaminated Soil Transporter

Name GSX EPA I.D. No. CAD-000-083121

Address 4501 Pacheco Boulevard

City Martinez State Californ. Zip 94553

12. Sample Collector

Name Dennis Alexander, Bill Wikander, and/or Jose Bermudez

Company Subsurface Consultants, Inc.

Address 171 12th Street, Suite 201

City Oakland State CA Zip 94607 Phone 415-268-0461

13. Sampling Information for each tank or area

Tank or Area		Material sampled	Location & Depth
Capacity	Historic Contents (past 5 years)		
	(The tanks were removed more than 5 years ago.)		
10,000 gal	Gasoline	NA	NA
10,000 gal	Gasoline	NA	NA
280 gal	Waste oil	NA	NA
5,000 gal?	Gasoline?	NA	NA
1,000 gal	Gasoline?	NA	NA
1,000 gal	Gasoline?	NA	NA
1,000 gal	Gasoline?	NA	NA
1,000 gal	Gasoline?	NA	NA

14. Have tanks or pipes leaked in the past? Yes [x] No [ ]

If yes, describe. The site contains petroleum contaminated soil, apparently due to tank and/or pipe leaks at the site.

15. NFPA methods used for rendering tank inert? Yes [ ] No [ ]

If yes, describe. NA

An explosion proof combustible gas meter shall be used to verify tank inertness.

16. Laboratories

Name GTEL (mobile laboratory)

Address 4080 Pike Lane

City Concord State CA Zip 94520

State Certification No. E628

17. Chemical Methods to be used for Analyzing Samples

Contaminant Sought	EPA, DHS, or Other Sample Preparation Method Number	EPA, DHS, or Other Analysis Number
Gasoline (TVH)	5030	8015mod
Diesel (TEH)	3550	8015mod
Benzene, Toluene, Xylenes and Ethyl-benzene	5030	8020
Oil and Grease	3550	503e
Lead (total and soluble)		

18. Submit Site Safety Plan (attached)

19. Workman's Compensation: Yes [x] No [ ]

Copy of Certificate enclosed? Yes [x] No [ ]

Name of Insurer Johnson and Higgins

20. Plot Plan submitted? Yes [x] No [ ]

21. Deposit enclosed? Yes [ ] No [x]

22. Please forward to this office the following information within 60 days after receipt of sample results.

a) Chain of Custody Sheets

b) Original Signed Laboratory Reports

c) TSD to Generator copies of wastes shipped and received

d) Attachment A summarizing laboratory results

I declare that to the best of my knowledge and belief the statements and information provided above are correct and true. I understand that information in addition to that provided above may be needed in order to obtain an approval from the Department of Environmental Health and that no work is to begin on this project until this plan is approved.

I understand that any changes in design, materials or equipment will void this plan if prior approval is not obtained.

I understand that all work performed during this project will be done in compliance with all applicable OSHA (Occupational Saftey and Health Administration) requirements concerning personnel and safety.

I will notify the Department of Environmental Health at least two (2) working days (48 hours) after approval of this closure plan in advance to schedule any required inspections. I understand that site and worker safety are solely the responsibility of the property owner or his agent and that this responsibility is not shared nor assumed by the County of Alameda.

Signature of Contractor

Name (please type) Tim Anenson, IT Corporation

Signature _____

Date 7-2-90

Signature of Site Owner or Operator

Name (please type) Danny Lau

Signature _____

Date 7/5/90

NOTES:

1. Any changes in this document must be approved by this Department.

2. Any leaks discovered must be submitted to this office on an underground storage tank unauthorized leak/contamination site report form within 5 days of its discovery.

3. Three (3) copies of this plan must be submitted to this Department. One copy must be at the construction site at all times.

4. After approval of plan, notification of at least two (2) working days (48 hours) must be given to this Department prior to removal of tank(s).

5. A copy of your approved plan must be sent to the landowner.

6. Triple rinse means that:

   a) Final rinse must contain less than 100 ppm of Gasoline (EPA method 8020 for soil, or EPA method 602 for water) or Diesel (EPA method 418.1). Other methods for halogenated volatile organics (EPA method 8010 for soil, EPA method 601 for water) may be required. The composition of the final rinse must be demonstrated by an original or facsimile report from a laboratory certified for the above analyses.

   b) Tank interior is shown to be free from deposits or residues upon a visual examination of tank interior.

   c) Tank should be labelled as "tripled rinsed; laboratory certified analysis available upon request" with the name and address of the contractor.

If all the above requirements cannot be met, the tank must be transported as a hazardous waste.

7. Any cutting into tanks requires local fire department approval.

UNDERGROUND TANK CLOSURE/MODIFICATION PLANS

ATTACHMENT A

SAMPLING RESULTS

Tank or Area	Contaminant	Location & Depth	Results (specify units)

INSTRUCTIONS

2. SITE ADDRESS
Address at which closure or modification is taking place.

5. EPA I.D. NO.
This number may be obtained from the State Department of Health Services, 916/324-1781.

6. CONTRACTOR
Prime contractor for the project.

7. OTHER
List professional consultants here.

12. SAMPLE COLLECTOR
Persons who are collecting samples.

13. SAMPLING INFORMATION
Historic contents - the principal product(s) used in the last 5 years.

Material sampled - i.e., water, oil, sludge, soil, etc.

16. LABORATORIES
Laboratories used for chemical and geotechnical analyses.

17. CHEMICAL METHODS:
All sample collection methods and analyses should conform to EPA or DHS methods.

Contaminant - Specify the chemical to be analyzed.

Sample Preparation Method Number - The means used to prepare the sample prior to analyses - i.e., digestion techniques, solvent extraction, etc. Specify number of method and reference if not an EPA or DHS method.

Analysis Method Number - The means used to analyze the sample - i.e., GC, GC-MS, AA, etc. Specify number of method and reference if not a DHS or EPA method.

NOTE:
Method Numbers are available from certified laboratories.

18. SITE SAFETY PLAN
A plan outlining protective equipment and additional specialized personnel in the event that significant amount of hazardous materials are found. The plan should consider the availability of respirators, respirator cartridges, self-contained breathing apparatus (SCBA) and industrial hygienists.

19. ATTACH COPY OF WORKMAN'S COMPENSATION

20. PLOT PLAN

The plan should consists of a scaled view of the facility at which the tank(s) are located and should include the following information:

a) Scale

b) North Arrow

c) Property Line

d) Location of all Structures

e) Location of all relevant existing equipment including tanks and piping to be removed

f) Streets

g) Underground conduits, sewers, water lines, utilities

h) Existing wells (drinking, monitoring, etc.)

i) Depth to ground water

j) All existing tanks in addition to the ones being pulled

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REGULATION 8
ORGANIC COMPOUNDS
RULE 40
AERATION OF CONTAMINATED SOIL
AND
REMOVAL OF UNDERGROUND STORAGE TANKS

INDEX

8-40-500 **MONITORING AND RECORDS (Not Included)**

8-40-600 **MANUAL OF PROCEDURES**

8-40-601 Soil Sampling
8-40-602 Measurement of Organic Content
8-40-603 Determination of Emissions

REGULATION 8
ORGANIC COMPOUNDS
RULE 40
AERATION OF CONTAMINATED SOIL
AND
REMOVAL OF UNDERGROUND STORAGE TANKS
(Adopted July 16, 1986)

8-40-100 GENERAL

8-40-101 **Description:** The purpose of this Rule is to limit the emission of organic compounds from soil that has been contaminated by organic chemical or petroleum chemical leaks or spills; to describe an acceptable soil aeration procedure; and to describe an acceptable procedure for controlling emissions from underground storage tanks during removal or replacement. (Amended February 15, 1989)

8-40-110 **Exemption, Storage Piles:** Calculations of aeration volume under Section 8-40-204 shall not include storage piles that are covered per Section 8-40-303; nor shall they include active storage piles.

8-40-111 **Exemption, Excavated Hole:** The exposed surfaces of an excavated hole shall not be included in calculations of aerated volume under Section 8-40-204.

8-40-112 **Exemption, Sampling:** Contaminated soil exposed for the sole purpose of sampling shall not be considered to be aerated. Removal of soil for sampling shall not qualify a pile as "active."

8-40-113 **Exemption, Non-volatile Hydrocarbons:** The requirements of all sections of this Rule shall not apply if the soil is contaminated solely by a known organic chemical or petroleum liquid, and that chemical or liquid has an initial boiling point of 302^{O}F or higher, provided that the soil is not heated. (Amended February 15, 1989)

8-40-114 **Exemption, Soil Excavation During Pipeline Leak Repairs:** The requirements of Section 8-40-402 shall not apply if soil is being excavated in order to repair leaking pipelines and if no more than 5 cubic yards are generated, and provided the requirements in Section 8-40-404 are satisfied. (Adopted February 15, 1989)

8-40-115 **Exemption, Soil Excavation Unrelated to Underground Storage Tank Activities:** The requirements of Section 8-40-402 shall not apply where contaminated soil is discovered during excavations unrelated to underground storage tank activites, and provided the requirements in Section 8-40-405 are satisfied. (Adopted February 15, 1989)

8-40-200 DEFINITIONS

8-40-201 **Active Storage Pile:** A pile of contaminated soil to which soil is currently being added or from which soil is currently being removed. Activity must have occurred or be anticipated to occur within one hour to be current.

8-40-202 **Aeration:** Exposure of excavated contaminated soil to the air.

8-40-203 **Aeration Depth:** The smaller of the following: the actual average depth of contaminated soil; or 0.15 meters (0.5 feet) multiplied by the daily frequency with which soil is turned. (Amended February 15, 1989)

8-40-204 **Aeration Volume:** The volume of soil being aerated shall be calculated as follows: the exposed surface area (in square feet or square meters) shall be multiplied by the aeration depth. The exposed surface area includes the pile of excavated soil unless the pile is covered per Section 8-40-303. (Amended February 15, 1989)

8-40-205 **Contaminated Soil:** Soil which has an organic content, as measured using the procedure in Section 8-40-602, exceeding 50 ppm(wt).

8-40-206 **Organic Compound:** Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate.

8-40-207 **Organic Content:** The concentration of organic compounds measured in the composite sample collected and analyzed using the procedures in Sections 8-40-601 and 8-40-602.

8-40-208 **Vapor Free:** The process of purging gases from a tank using dry ice to replace organic vapors with an inert atmosphere.

8-40-209 **Ventilation:** The process of purging gases from a tank by blowing or drawing another gas through the tank.

8-40-210 **Emergency Removal or Replacement or Excavation:** A removal or replacement of a tank or an excavation of soil carried out pursuant to an order of a state or local government agency issued because the contaminated soil poses an imminent threat to public health and safety. (Adopted February 15, 1989)

8-40-300 **STANDARDS**

8-40-301 **Uncontrolled Aeration:** A person shall not aerate contaminated soil at a rate in excess of that specified in Table 1 for the degree of organic content. The limitations in Table 1 apply to the entire facility, and indicate the volume of contaminated soil that may be added, on any one day, to soil that is already aerating.

Table 1
Allowable Rate of Uncontrolled Aeration

ORGANIC CONTENT ppm(weight)	RATE OF UNCONTROLLED AERATION Cubic meters/day	Cubic yards/day
<50	Exempt	Exempt
50 - 99	459.0	600
100 - 499	91.8	120
500 - 999	45.9	60
1000 - 1999	22.9	30
2000 - 2999	11.5	15
3000 - 3999	7.6	10
4000 - 4999	5.7	8
>5000	0.08	0.1

(Amended February 15, 1989)

8-40-302 **Controlled Aeration:** Soil may be aerated at rates exceeding the limitations of 8-40-301 provided emissions of organic compounds to the atmosphere are reduced by at least 90% by weight.

8-40-303 **Storage Piles:** Contaminated soil which is not being aerated shall be covered except when soil is being added or removed. Any uncovered contaminated soil will be considered to be aerated. The soil may be covered with a layer of uncontaminated soil no less than six inches deep; or it may be covered with a tarp or other covering, provided no head space where vapors may accumulate is formed and provided the covering is in good condition and is secured adequately so as to minimize emissions to the atmosphere. (Amended February 15, 1989)

8-40-310 **Underground Storage Tanks - Removal or Replacement:** Any person wishing to permanently remove or replace an underground storage tank which previously contained organic compounds shall follow the following procedure:

310.1 All piping shall be drained or flushed into the tank or other container.

310.2 All liquids and sludges shall be removed, to the extent possible, from the tank. A hand pump shall be used to remove the bottom few inches of product if necessary.

310.3 Vapors shall be removed from the tank using one of the following three methods:

3.1 The tank may be filled with water, displacing vapors and hydrocarbon liquids. Water used for this purpose must be collected and/or disposed of in a manner approved by the APCO.

3.2 Vapor freeing.

3.3 Ventilation.

(Amended February 15, 1989)

8-40-311 **Vapor Freeing:** No person shall vapor free a tank containing more than 0.001 gallons of liquid organic compounds per gallon of tank capacity unless emissions of organic compounds to the atmosphere are reduced by at least 90%.

8-40-312 **Ventilation:** No person shall ventilate a tank containing more than 0.001 gallons of liquid organic compounds per gallon of tank capacity unless emissions of organic compounds to the atmosphere are reduced by at least 90%.

8-40-400 ADMINISTRATIVE REQUIREMENTS

8-40-401 **Reporting, Removal or Replacement of Tanks:** The person responsible for the removal or replacement of tanks which are subject to the provisions of Sections 8-40-310 shall provide written notice to the APCO of intention to remove or replace tanks. The written notice shall be postmarked at least 5 days prior to commencement of such removal or replacement. In the case of emergency removal or replacement of tanks, notice shall be provided as early as possible prior to the commencement of such emergency removal or replacement, to be followed by written verification. The written notice of intention shall include:

401.1 Names and addresses of persons performing and responsible for the tank removal or replacement

401.2 Location of site at which tank removal or replacement will occur

401.3 Scheduled starting date of tank removal or replacement. The scheduled starting date may be delayed for no more than 5 working days, provided the APCO is notified by telephone as early as possible prior to the new starting date.

401.4 Procedures to be employed to meet the requirements of Sections 8-40-310.

401.5 If applicable, name, title and authority of the state or local government representative who has ordered a tank removal or replacement which is subject to emergency procedures.

(Adopted, February 15, 1989)

8-40-402 **Reporting, Excavation of Soil:** The person responsible for the excavation of soil subject to the provisions of Sections 8-40-301 or 302 shall provide written notice to the APCO of intention to excavate. The written notice shall be postmarked at least 5 days prior to commencement of such excavation. In the case of emergency excavations, notice shall be provided as early as possible prior to the commencement of such emergency excavation, to be followed by written verification. Written notice of intention to excavate may be submitted to the APCO at the same time written notice of intention to remove or replace tanks is submitted provided that such notification precedes the commencement of either tank removal or replacement or soil excavation by at least 5 days as indicated by postmark. The written notice of intention shall include:

402.1 Names and addresses of persons performing and responsible for excavation.

402.2 Location of site at which excavation will occur.

402.3 Scheduled starting date of excavation. The scheduled starting date may be delayed for no more than 5 working days, provided the APCO is notified by telephone as early as possible prior to the new starting date.

402.4 Procedures to be employed to meet the requirements of Sections 8-40-301 or 302.

402.5 If applicable, name, title and authority of the state or local government representative who has ordered an excavation which is subject to emergency procedures.

(Adopted February 15, 1989)

8-40-403 **Reporting, Aeration of Contaminated Soil**: The person responsible for aeration of any contaminated soil shall provide the District, by telephone, with the following information. This shall be provided no less than 24 hours prior to the spreading or heating of any contaminated soil. The District shall again be notified within 24 hours of a change in one or more of the following parameters.

403.1 Estimated total quantity of soil to be aerated.

403.2 Estimated quantity of soil to be aerated per day.

403.3 Estimated average degree of contamination, or total organic content of soil.

403.4 Chemical composition of contaminating organic compounds (i.e., gasoline, methylene chloride, etc.).

403.5 A description of the basis on which these estimates were derived (soil analysis test reports, etc.).

(Amended, Renumbered February 15, 1989)

8-40-404 **Reporting, Soil Excavation During Pipeline Leak Repairs:** The person responsible for the excavation of no more than 5 cubic yards of soil generated by a pipeline leak repair shall provide written notice to the APCO as early as possible, but not later than 10 working days, after excavation is completed. The written notice shall include:

404.1 Names and addresses of persons performing and responsible for excavation.

404.2 Location of site at which excavation occurred.

404.3 Date of excavation.

404.4 Quantity of soil excavated.

404.5 Estimated average degree of contamination, or total organic content of soil.

(Adopted February 15, 1989)

8-40-405 **Reporting, Soil Excavations Unrelated to Underground Storage Tank Activities**: The person responsible for soil excavations unrelated to underground storage tank activities where contaminated soil is discovered shall provide notice as early as possible upon detection of such contaminated soil, to be followed by written verification. The written verification shall include:

405.1 Names and addresses of persons performing and responsible for excavation.

405.2 Location of site at which excavation occurred.

405.3 Date of excavation.

405.4 Quantity of soil excavated.

405.5 Estimated average degree of contamination, or total organic content of soil.

(Adopted February 15, 1989)

8-40-600 MANUAL OF PROCEDURES

8-40-601 **Soil Sampling:** One composite sample shall be collected and analyzed for every 50 cubic yards of excavated contaminated soil to be aerated. At least one composite sample shall be collected from each inactive, uncovered storage pile within 24 hours of excavation. Samples are not required if the soil is uncontaminated.

601.1 Each composite sample shall consist of four separate soil samples taken using the procedures described below. The soil samples shall remain separate until they are combined in the laboratory just prior to analysis.

601.2 Each 50 cubic yard pile for which a composite sample is required shall be considered to have four equal sectors. One sample shall be taken from the center of each sector. Samples shall be taken from at least three inches below the surface of the pile. Samples shall be taken using one of the following methods:

1.1 Samples shall be taken using a driven-tube type sampler, capped and sealed with inert materials, and extruded in the lab in order to reduce the loss of volatile materials; or

1.2 Samples shall be taken using a clean brass tube (at least three inches long) driven into the soil with a suitable instrument. The ends of the brass tube shall then be covered with aluminum foil, then plastic end caps, and finally wrapped with a suitable tape. The samples shall then be immediately placed on ice, or dry ice, for transport to a laboratory.

(Amended February 15, 1989)

8-40-602 **Measurement of Organic Content:** Organic content of soil shall be determined by the Regional Water Quality Control Board's Revised Analytical Methods, Attachment 2, 11/8/85, any other method approved by the APCO, or EPA Reference Method 8010 or 8015. (Amended February 15, 1989)

8-40-603 **Determination of Emissions:** Emissions of organic compounds as specified in Sections 8-40-302, 8-40-311 and 8-40-312, shall be measured as prescribed in the Manual of Procedures, Volume IV, ST-7. (Amended February 15, 1989)

GUIDELINE SITE SAFETY PLAN
CONTAMINATED SOIL REMOVAL
UTILITY TRENCH ALIGNMENT
98TH AND EDES AVENUES
OAKLAND, CALIFORNIA
SCI 272.016

Prepared for:

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June 29, 1990

I INTRODUCTION

This Guideline Site Safety Plan pertains to excavation of contaminated soils at a site located near the intersection of 98th and Edes Avenues in Oakland, California. The project location is shown on the Site Plan, Plate 1. This Plan outlines a personnel and work site safety program to minimize the risks of endangering surrounding personnel and/or property.

The site is the former location of two former service stations. We understand that three underground motor fuel storage tanks and one waste oil tank were removed from the site at 670 98th Avenue in 1966 and 1983. Four underground tanks were reportedly removed from the site at 692 98th Avenue in 1970. Soil contaminated with motor fuel has recently been encountered at the site. The contaminant most prominent in the soil at the site is gasoline with comparatively small amounts of oil and grease.

The City of Oakland is currently widening 98th Avenue. Work on a joint utility trench across the site has been halted, pending remediation of the contaminated soil. This Site Safety Plan pertains to remediation of the contaminated soil in the vicinity of the proposed joint trench.

The approximate area of contaminated soil remediation will be within 5 feet of the joint trench centerline, and within the known former fuel tank excavation limits as shown on the Site

Plan. However, some additional excavation will be required where significant contamination is encountered, as outlined in the accompanying Work Plan. The depth of excavation will be about 10 feet. The soil remediation methods will include excavation, aeration if necessary, and transportation to Class I, II and/or III landfills. The excavation will be backfilled with imported soil.

II HEALTH AND SAFETY CONSIDERATIONS

A. Key Personnel

Health and Safety Officer

SCI will designate (1) a Health and Safety Officer who will be responsible for planning, implementing and auditing the health and safety program for the project, and (2) a field coordinator, who will be responsible for coordinating field health and safety activities.

B. Hazardous Substance Description

Gasoline (including benzene, toluene, xylene and ethylbenzene (BTXE)), and oil and grease, have been detected in soil at the site. The maximum concentrations that have been detected are as follow:

Material	Concentration (ppm)
Total Volatile Hydrocarbons (Gasoline)	25,000
Total Extractable Hydrocarbons (all within the gasoline range)	5,650
Total Oil and Grease (TOG)	840
Benzene	39.1
Toluene	270
Xylenes	1,000
Ethylbenzene	96.2

C. Chemical Distribution

Gasoline was encountered in the soil above the groundwater level. The gasoline concentrations appear to be greatest adjacent to the former tank locations, becoming less with distance from the tanks.

D. Chemical Hazards

Potential chemical hazards include skin and eye contact and inhalation or exposure to potentially toxic concentrations of chemical vapors. The identified toxic compounds that exist at the site are listed below with descriptions of specific effects of each. The list includes the main toxic constituents of motor fuel (benzene, toluene, xylene and ethylbenzene).

1. Benzene

a. **Characteristics:**

Clear, colorless, highly flammable liquid with characteristic odor

b. **High exposure levels may cause:**

Acute restlessness, convulsions, depression, respiratory failure, suspected carcinogen

c. **Permissible exposure level in air (PEL) for a time weighted average (TWA) over an 8-hour period:**

1.0 ppm

2. Toluene

a. **Characteristics:**

Refractive, flammable liquid with benzene-like odor

b. **High exposure levels may cause:**

Headache, nausea, eye irritation, mild macrocytic anemic, but not leukopenia (less toxic than benzene)

c. **PEL for an 8-hour TWA:**

100 ppm

3. Xylene

a. **Characteristics:**

Clear, mobile, flammable liquid

b. **High exposure levels may cause:**

Severe eye irritation, skin irritation, narcosis

c. **PEL for an 8-hour TWA:**

100 ppm

4. Ethylbenzene

a. **Characteristics:**

Colorless liquid, aromatic odor, highly flammable

b. **High exposure levels may cause:**

Skin, nose and eye irritation, dizziness, ataxia, loss of consciousness and respiratory failure

c. **PEL for an 8-hour TWA:**

100 ppm

E. Physical Hazards

Other on-site hazards may include physical injuries due to the proximity of workers to engine-driven heavy equipment and tools. Heavy equipment used during excavation will likely include a backhoe and may include other equipment as part of soil removal and the subsequent aeration and backfilling operations. Only

trained personnel will operate machines, tools and equipment; all will be kept clean and in good repair. Safety apparel required around heavy equipment will include a hard hat.

The perimeter of the excavation will be shored and/or sloped to create acceptable stable temporary cut slopes. All work will be performed in accordance with OSHA guidelines. The excavation area will be enclosed by fencing.

III WORK PLAN INSTRUCTIONS

A. Level of Protection

Regular surveys of the site and knowledge of the anticipated hazards will determine the level of protection and the proper safety procedures to be employed. The workers coming into contact with the excavated materials will wear disposable coveralls, boots, disposable latex gloves, a hard hat, and eye protection.

The level of protection for personnel working in the area will be upgraded if organic vapor levels exceed 5 ppm above background levels continuously for more than 5 minutes. In this event, personnel protective equipment will include double cartridge respirators for organic vapors, disposable coveralls, gloves, and hard hat with safety shield or safety glasses.

Excavation will cease, equipment will be shut down, and personnel with withdraw from the area if either (1) the organic vapor concentration in the operators' breathing zone exceeds 200 ppm for a period of 5 minutes, or (2) the combustible gas vapor concentrations two feet above the excavation exceeds 2000 ppm or 25 percent of the lower explosive limit. The Health and Safety Officer will determine when personnel may return to the work area.

In the event low levels of organic vapors are detected, personnel will wear appropriate respirators (using NIOSH approved combination cartridges for organic vapors and dusts).

B. **Combustible Gas and Organic Vapor Monitoring**

Site personnel will monitor ambient levels of combustible gas vapors using a Gastech Hydrocarbon Supersurveyor, Model 1314, and a portable organic vapor meter (OVM). The Health and Safety Officer will be notified if organic vapor levels in the samples exceed ambient concentrations in the samples.

C. **Site Entry Procedures**

The general work area is shown on the Site Plan. All personnel entering the work zone will be qualified field personnel wearing the proper level of protection. Eating, drinking, smoking and any other practices which increase the probability of combustion or hand-to-mouth transfer will be prohibited in the work zone. A first aid kit and a 20-pound ABC fire extinguisher and potable water will be available at the site.

D. **Decontamination Procedures**

Equipment decontamination areas will be designated by the Health and Safety Officer at the start of excavation. To prevent the transfer of contamination from the work zone into clean areas, all tools will be cleaned with a high pressure, hot water washer prior to removal from the work zone.

All disposable protective clothing will be put into plastic bags and disposed of in a garbage receptacle. Excavated soils

will be stockpiled in designated areas until chemical analyses have been performed on the soil samples. The soil will be covered with polyethylene sheeting.

In the event of a medical emergency, the injured party will be taken through decontamination procedures, if possible. However, the procedures will be omitted when it may aggravate or cause more harm to the injured party. A member of the work team will accompany the injured party to the medical facility to advise on matters concerning chemical exposure.

IV EMERGENCY MEDICAL CARE

In the event of an injury or suspected chemical exposure, the first responsibility of the Health and Safety Officer will be to prevent further injury. This objective will normally require an immediate end to work until the situation is rectified. The Health and Safety Officer may order an evacuation of the work party.

The Health and Safety Officer's primary responsibility in the event of an accident will be evacuation, first aid, and decontamination of injured team members. The Health and Safety Officer will determine safe evacuation areas and begin first aid.

V EMERGENCY PROCEDURES

A. Response to Emergency

In the case of an injury, the Field Coordinator will employ the appropriate first aid and contact off-site medical help, if appropriate. The Health and Safety Officer/Project Manager will be notified. The telephone number of the Health and Safety Officer/Project Manager is (415) 268-0461.

If medical evacuation is required, the route to the hospital shown on Plate 2 will be followed.

B. Emergency Contacts

Ambulance, Fire, Police: 911

Hospital - Humana Hospital
13855 East 14th Street
San Leandro, California 94578
(415) 357-6500

Chemical Spills: National Response Center (24 hours)
(800) 424-9300

Chemtrec: Chemical Releases (24 hours)
(800) 424-9300

Environmental Protection Agency Emergency Response Section:
(415) 974-7511

Poison Control Center (24 hours)
(415) 428-3248

Cal-OSHA District Office: Occupational Injuries
(415) 557-1677

Regional Water Quality Control Board:
(415) 464-1255

C. **Acute Exposure Symptoms and First Aid**

Exposure Route	Symptoms	First Aid
Skin	Dermatitis	Wash immediately with soap and water, contact ambulance if evacuation is necessary
Eye	Irritated eyes	Flush eyes with water, contact ambulance, if necessary
Inhalation	Vertigo, tremor	Move person to fresh air, cover source of chemicals
Ingestion	Nausea, vomiting	Call Poison Control Center, arrange transport to emergency medical facility

D. **Contingency Plan**

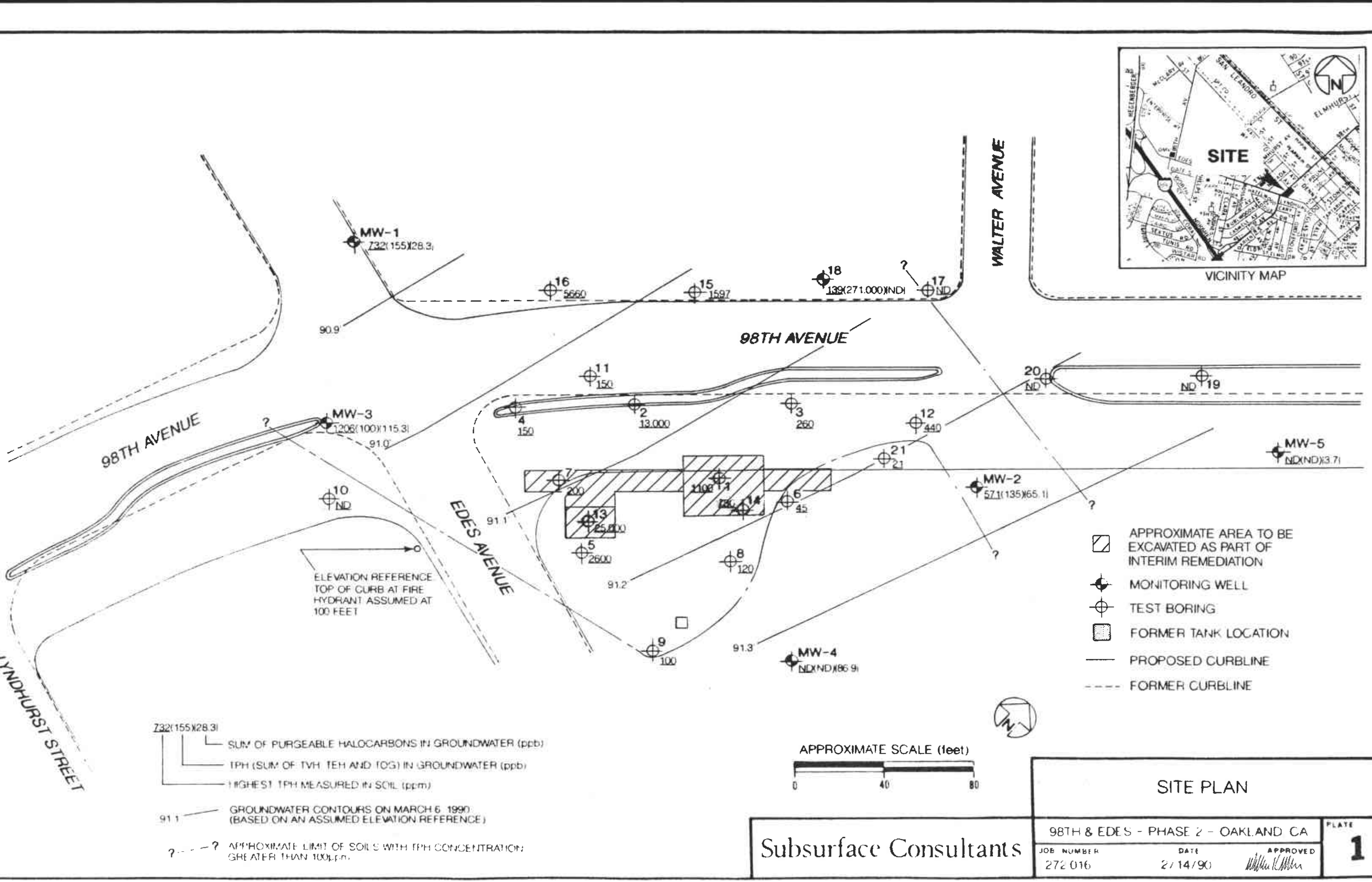
The following procedures will be sued in case of an unpredictable event:

Fire:	Use fire extinguisher if localized and call the fire department if uncontrolled
Chemical Exposure:	Follow first aid treatment specified previously
Physical Injury:	Provide first aid treatment and contact ambulance for evacuation, if appropriate

List of Attached Plates:

Plate 1	-	Site Plan
Plate 2		Escape Route

WKW:RWR:clh:mbl



SITE PLAN

Subsurface Consultants

98TH & EDES - PHASE 2 - OAKLAND CA

JOB NUMBER	DATE	APPROVED
272.016	2/14/90	

PLATE 1

ROUTE TO HOSPITAL

APPROXIMATE SCALE (feet)

0 2000 4000

ROUTE TO HOSPITAL

Subsurface Consultants	98th and EDES - OAKLAND, CA			PLATE 2
	JOB NUMBER 272.011	DATE 6/28/89	APPROVED	