

SITE HEALTH AND SAFETY PLAN

**Wyle Laboratories
1841 Hillside Avenue
Norco, California**

Prepared for:

Wyle Laboratories
Norco, California

Prepared by:

ENVIRON International Corporation
Irvine, California

June 10, 2005

ENVIRON SITE HEALTH AND SAFETY PLAN

This Site Health and Safety Plan is specifically prepared for:

Project Location: **1841 Hillside Avenue, Norco, California 92860-3053**

Case Number: **04-8099V**

All personnel participating in the field, which may involve potential exposure to hazardous substances must be trained in the general and specific hazards unique to the job and, if applicable, meet recommended medical surveillance requirements (see Attachments 3 and 4 for personnel training requirements and medical surveillance program, respectively). All site personnel and visitors shall follow the guidelines, rules, and procedures contained in this safety plan. The Project Manager or Site Health and Safety Officer (SHSO) may impose any other procedures or prohibitions believed to be necessary for safe operations.

The purpose of this document is to provide detailed information regarding anticipated site health and safety matters, and to establish policies and procedures adequate to protect workers, the public and the environment from the predicted site hazards. This plan is prepared to inform all field personnel, including contractors and subcontractors, of the potential hazards on the site. However, each contractor or subcontractor must assume direct responsibility for its own employees' health and safety.

This plan supersedes all other health and safety plans written for this site.

CONTENTS

I.	INTRODUCTION	1
II.	PERSONS RESPONSIBLE AND INVOLVED	2
III.	FACILITY BACKGROUND AND PLANNED ACTIVITIES	3
IV.	IDENTIFIED CHEMICAL CONTAMINANTS.....	7
V.	GENERAL WORK PRACTICES	9
VI.	SITE CONTROL/WORK ZONES	12
VII.	SITE RESOURCES	13
VIII.	HAZARD ANALYSIS	14
IX.	HAZARD MITIGATION.....	15
X.	AIR MONITORING.....	20
XI.	REQUIRED PERSONAL PROTECTIVE AND SAFETY EQUIPMENT.....	23
XII.	DECONTAMINATION AND SPILL CONTAINMENT.....	25
XIII.	HAZARD COMMUNICATION	27
XIV.	DOCUMENTATION	28
XV.	CONTINGENCY/EMERGENCY INFORMATION.....	30
Attachment 1:	Hazardous Property Information and MSDS	
Attachment 2:	Levels of Personal Protective Equipment (PPE)	
Attachment 3:	Personnel Training Requirements	
Attachment 4:	Medical Surveillance	
Attachment 5:	Spill Containment and Drum/Container Handling Procedures	
Figure B-1:	Site Vicinity Map	5
Figure B-2:	Area Considered in RAW	6
Figure B-3:	Hospital Location Map	31

I. INTRODUCTION

A. SITE LOCATION: **1841 Hillside Avenue, Norco, California**

B. PLAN PREPARED: Name Date
Mauricio H. Escobar June 2005

C. PLAN APPROVED: Project Manager Date
Bitá Tabatabai, P.E. June 2005

HSC Date
Yi Tian, C.I.H. June 2005

D. PLAN REVISED: Name Date
(if applicable)

E. REVISION APPROVED: Project Manager Date
(if applicable)

HSC Date

F. SUMMARY OF POSSIBLE HAZARDS ON THIS JOB (SEE SECTION VIII FOR LIST):

- **Mechanical hazards consist of ground water well installations;**
- **Physical hazard include trip and fall;**
- **Electrical hazards include potential underground utilities;**
- **Acoustic hazards include elevated noise exposure from heavy machinery and moving vehicle;**
- **Ergonomic hazards include exerting excessive force when lifting heavy equipment;**
- **Thermal hazards include possible heat stress and sun burn;**
- **Traffic hazards include moving vehicles in the work site; and**
- **Chemical hazards include possible inhalation and dermal exposure to low levels of volatile organic compounds (VOCs) and/or perchlorate.**

G. SUMMARY OF REQUIRED PERSONAL PROTECTIVE EQUIPMENT FOR THIS PROJECT:

Hardhat and safety glasses (for construction oversight activities); steel-toe boots; gloves and Tyvek should be worn if there is contact with soil or ground water; earplugs (if there is elevated noise); and respirator (see Section X for PPE list). Work area will be secured with appropriate barriers and signage, as necessary and appropriate.

II. PERSONS RESPONSIBLE AND INVOLVED

- A. PROJECT MANAGER: **Bitu Tabatabai, P.E.**
- Health and Safety Responsibilities: Overall responsibility for project compliance with health and safety plan.
- B. SITE SUPERVISOR: **TO BE DETERMINED**
- Health and Safety Responsibilities: Implementation of the site-specific health and safety plan for all field-related activities.
- C. SITE HEALTH AND SAFETY OFFICER: **TO BE DETERMINED**
- Health and Safety Responsibilities: Same as site supervisor.
- D. OTHERS: **Yi Tian, C.I.H.**
- Health and Safety Responsibilities: Responsible for providing health and safety consultation for the project.
- E. SUBCONTRACTORS: **TO BE DETERMINED**
- Health and Safety Responsibilities: Responsible for the safe operation of equipment while on-site, and for the health and safety of their own employees both on-site and off-site. This includes implementing a site and task specific health and safety plan.

III. FACILITY BACKGROUND AND PLANNED ACTIVITIES

A. FACILITY BACKGROUND AND DESCRIPTION:

The site is comprised of 10 parcels totaling approximately 429 acres in Norco, Riverside County, California (Figure 1). Assessor parcel numbers 123-260-003-5, 123-250-005-6, 123-250-006-7, 123-250-007-8, 123-260-004-6, 123-260-006-8, 123-320-001-8, 123-330-001-9, 123-330-011-8, and 123-330-036-1 comprise the site. The property is predominantly undeveloped land. Generally, Wyle's activities have been restricted to the central portion of the site, while the perimeter of the site is left undeveloped to act as a buffer zone between the test areas and residential areas. The site is located in a generally residential area of Norco.

B. SITE HISTORY (USE OF SITE, ORIGIN OF CONTAMINATION):

The site was undeveloped until at least 1952. Wyle first occupied the site in approximately 1957, starting in the western portion of the site and later expanding in the eastward direction. The buildings and test areas have been used historically for testing aerospace components and systems, including pumps, valves, piping and propulsion systems; ordnance and weapons systems; performing environmental and dynamic simulation tests; and, infrequent munitions detonation and solid rocket motor firings. Several buildings not used for testing are used for administrative functions, chemical storage, vehicle maintenance, metal machining/parts fabrication, and, historically, photographic developing. Chemical use at the site has included explosives, solid rocket motor fuel, cryogenics, petroleum hydrocarbons, hypergolic fuels, and solvents; use of hypergolic fuels and solvents was discontinued in the early 1990s.

Beginning in 1995, numerous subsurface investigations involving the installation and sampling of soil borings and monitoring wells, in addition to surface soil sampling, ground water "grab" sampling, and surface water sampling (of the stream) have been conducted at the site. These investigations have resulted in the collection of numerous soil and ground water samples in various locations at the site. In addition, several removal actions have been performed at the site in which TPH and VOC-impacted soil was removed and appropriately disposed.

The focus of the Presumptive Removal Action Workplan (RAW) is the Northwest Area of the Site (see Figures B-2). Based on the results of previous investigations conducted at the site to date, contaminants of concern in this area include perchlorate and VOCs. Historically, VOCs detected in this portion of the site have included PCE, TCE, and benzene. The source of VOC contamination in ground water is believed to be parts cleaning solvents, or wash water containing parts cleaning solvents that was released directly to the ground surface. Historically, such releases are believed to have occurred at the Site, resulting in direct impact to ground water, and accumulation of VOC mass in soil gas that continues to act as a contaminant source. The presence of perchlorate in ground water is likely due to a source or multiple sources located on-site

C. HAZARDOUS INCIDENT HISTORY (HISTORY OF INJURIES, EXPOSURE, CHEMICAL SPILLS, COMPLAINTS, ETC.):

Hydraulic oil leaked from testing machines into sumps, or directly onto soil. Oil was rinsed out of the sumps onto the dirt, where storm or rinse water washed it away. This rinse water typically contained degreasers (PCE, TCE) to clean the hydraulic oil off the machine parts and sometimes the floors. Other contaminant releases are believed to have been more localized, i.e. perchlorate, NDMA and hydrazine, in areas where specific testing was being conducted that may have involved rocket fuels.

D. OBJECTIVE OF ENVIRON'S WORK AND SUMMARY OF PLANNED ACTIVITIES (INCLUDE LOCATIONS OF AREAS OF KNOWN OR SUSPECTED CONTAMINATION):

The objective of ENVIRON's Presumptive RAW is to implement a remedial action that will treat soil vapor at the Northwest Area of the Site (see Presumptive RAW for details). Tasks to be completed will include: 1) remediation system construction oversight 2) installation of additional permanent soil vapor probes; and 3) remedial action operation and maintenance activities, including soil gas sampling.

E. SITE STATUS (ACTIVE, INACTIVE, UNKNOWN):

Site is inactive.

F. SURROUNDINGS (LOCATIONS OF CITY, ROADS, RESIDENCES, BUSINESS, NATURAL FEATURES, GRADIENTS, TANKS, ETC):

The immediate vicinity of the site consists primarily of residences.

G. SITE MAP (ATTACHED MAP AT END OF THIS PLAN SHOWING SALIENT FEATURES, INCLUDING LOCATIONS OF ENVIRON'S WORK AND LOCATIONS OF CONTAMINATED AREAS).

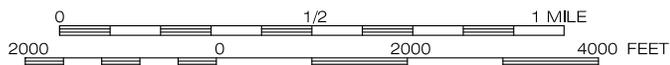
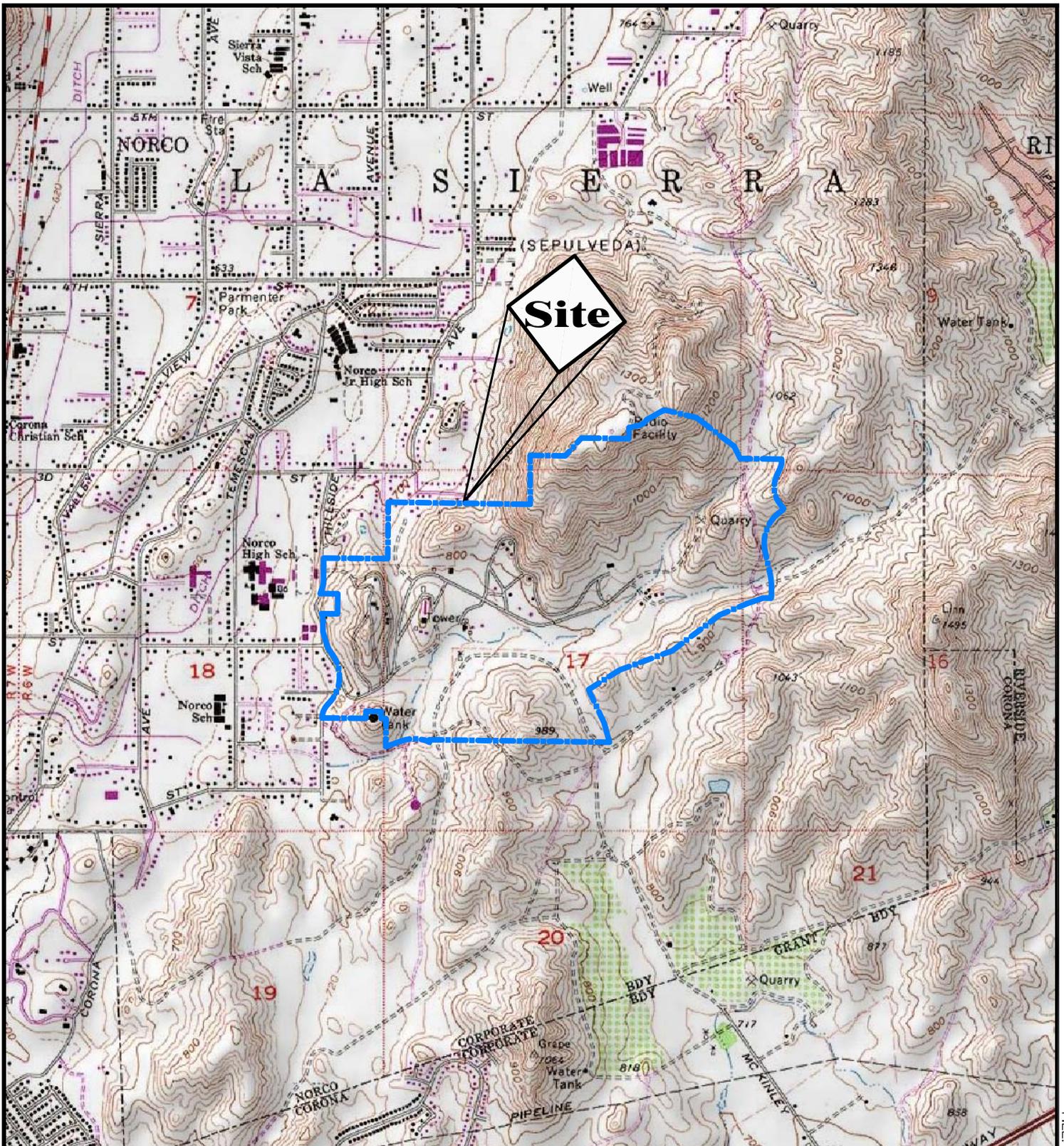
Refer to Figure B-1 and B-2

H. CLIMATE (PROVIDE CURRENT WEATHER INFORMATION):

AVERAGE WIND SPEED AND DIRECTION: 0-9.8 mph out of the WSW

MEAN HIGH TEMPERATURE DURING THE DAY: November – April (71°F), May – October (87°F)

MEAN LOW TEMPERATURE DURING THE DAY: November – April (43°F), May – October (55°F)



SOURCE:
 U.S.G.S. 7.5 minute series (topographic)
 Corona North Quadrangle, CA, version 1978, current as of 1981

CONTOUR INTERVAL 40 FEET
 DOTTED LINES REPRESENT 10-FOOT CONTOURS
 NATIONAL GEODETIC VERTICAL DATUM OF 1929
 SCALE 1:24000



ENVIRON

Site Vicinity Map
 Wyle Laboratories
 1841 Hillside Avenue, Norco, California

Figure
B-1

Drafter: JJC

Date: 1/31/02

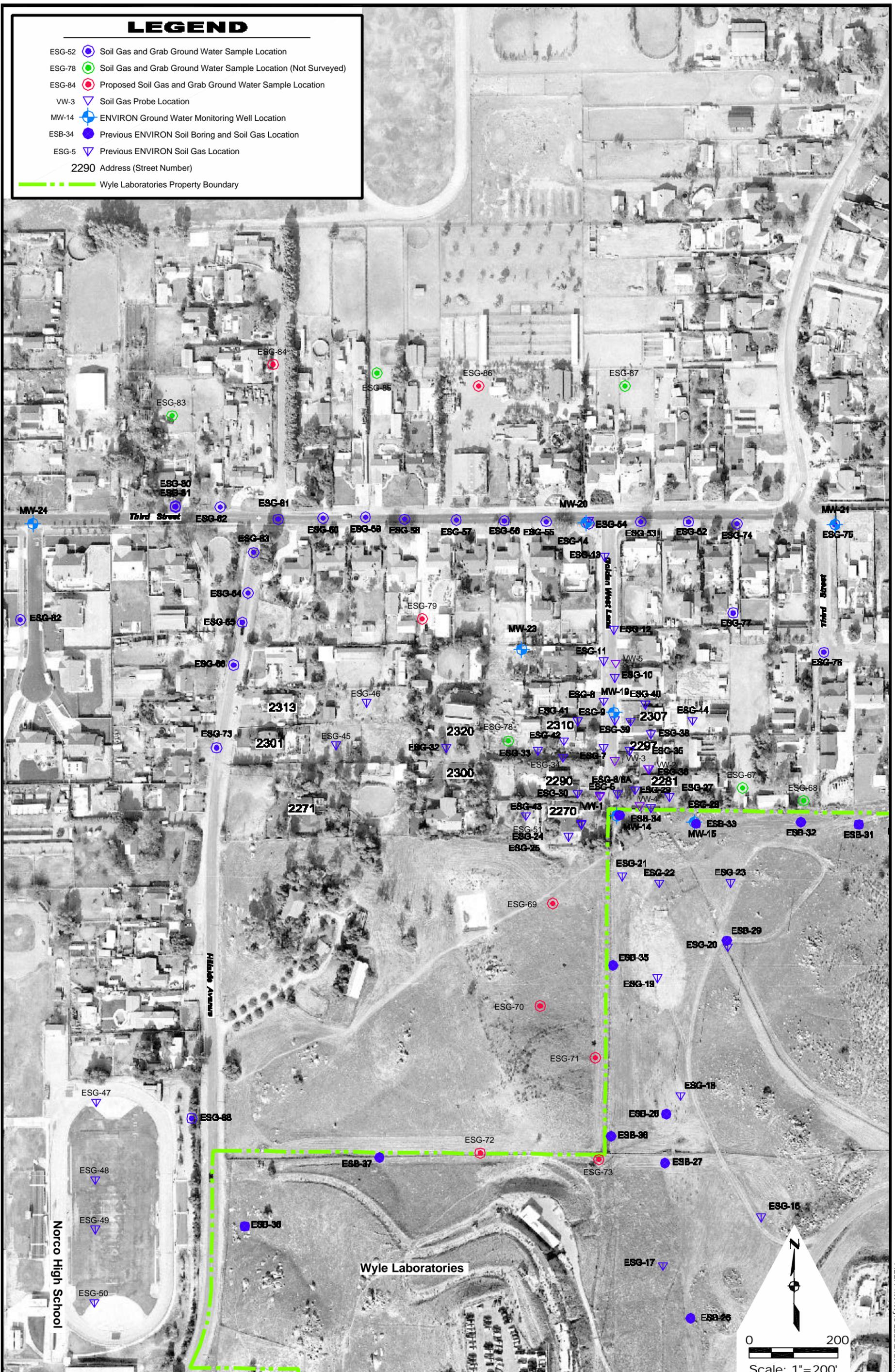
Contract Number: 04-8099D

Approved:

Revised: 6/09/05

LEGEND

- ESG-52  Soil Gas and Grab Ground Water Sample Location
- ESG-78  Soil Gas and Grab Ground Water Sample Location (Not Surveyed)
- ESG-84  Proposed Soil Gas and Grab Ground Water Sample Location
- VW-3  Soil Gas Probe Location
- MW-14  ENVIRON Ground Water Monitoring Well Location
- ESB-34  Previous ENVIRON Soil Boring and Soil Gas Location
- ESG-5  Previous ENVIRON Soil Gas Location
- 2290 Address (Street Number)
-  Wyle Laboratories Property Boundary



IV. IDENTIFIED CHEMICAL CONTAMINANTS

A. IDENTIFIED CHEMICAL CONTAMINANTS KNOWN TO BE PRESENT

List chemical contaminants that have been identified, their concentration, and the environmental media in which they are present. Hazardous property information for selected chemicals appears in Attachment 1. Review this information for all chemicals listed below. If chemicals are not listed in the attachment, you must enter the hazardous property information in the attachment in the spaces provided.

Table 1. Compounds Detected in Ground Water Samples in the Northwest Area		
Chemical	Highest Measured Concentrations (µg/l)	Region IX PRGs¹ in Tap Water (µg/l)
Benzene	13	0.35
<i>cis</i> -1,2-Dichloroethene	4.6	61
Perchlorate	19	3.6
Tetrachloroethene	45	0.1
Trichlorofluoromethane	270	1,300
Trichloroethene	13,000	0.28 1.4 ²
Notes:		
¹ Preliminary Remediation Goals – Direct Contact Exposure Pathways		
² Cal-Modified PRG		
µg/l: micrograms per liter		

In addition to the COCs, many VOCs, semi-VOCs, and metals, not determined by the risk assessment to be COCs, were identified in soil and/or ground water at the Site.

Codes for environmental media:

SI	Sludge
GW	Ground water
SW	Surface water
LW	Liquid waste
So	Soil
A	Air
Other -	Specify

B. SUSPECTED CHEMICAL CONTAMINANTS ON-SITE

List chemical contaminants that are suspected to be present.

See Table 1 above.

SI	Sludge
GW	Ground water
SW	Surface water
LW	Liquid waste
So	Soil
A	Air
Other -	Specify

C. CHEMICAL CONTAMINANTS CHARACTERIZATION

Has the site been adequately characterized to the best of your knowledge?

Yes **No XX**

If yes, list applicable references or previous reports/studies.

V. GENERAL WORK PRACTICES

- All personnel who perform on site operations with the potential for exposure to hazardous substances are required to meet personnel training requirements and medical surveillance criteria, which are described in Attachment 3 and 4 of this site health and safety plan, respectively.
- All hazardous substances and contaminated soils, liquids, and other residues shall be handled, transported, labeled, and disposed of in accordance with the material handling procedures described in Attachment 5 of this site health and safety plan.
- No one will be permitted to engage in work operations alone.
- Smoking, eating, drinking, and chewing gum or tobacco will not be permitted within the work zones.
- Personnel should keep track of weather conditions and wind direction to the extent they could affect potential exposure.
- Personnel should be alert to any abnormal behavior on the part of other workers that might indicate distress, disorientation, or other ill effects.
- Personnel should never ignore symptoms that could indicate potential exposure to chemical contaminants. These should be immediately reported to their supervisor or the Site Health and Safety Officer.
- Visible indicators of potential immediate danger to life and health (IDLH) conditions include:
 - 1) Large containers and tanks that must be entered.
 - 2) Enclosed spaces such as buildings or trenches that must be entered.
 - 3) Potentially explosive or flammable situations (indicated by bulging drums, effervescence, gas generation, or instrument readings).
 - 4) Extremely hazardous materials (such as cyanide, phosgene, or radiation sources).
 - 5) Visible vapor clouds.
 - 6) Areas where biological indicators such as dead animals or vegetation are located.
- Others (specific to tasks: trenching safety, drill rig safety, site entry, etc.):

Heavy equipment

Truck-mounted drilling equipment, backhoes, forklift, trucks, and other soil excavation equipment are the expected types of heavy equipment that will be used during field activities. Heavy equipment can represent a substantial hazard to workers. The following procedures should be followed when heavy equipment is in use:

1. Use common sense. Do not assume that the equipment operator is keeping track of your whereabouts. Never walk directly in back of, or to the side of, heavy equipment without the operator's knowledge.
2. All heavy equipment must be shut down during refueling.
3. Maintain visual contact of moving equipment at all times.
4. Establish hand signal communication when verbal communication is difficult.
5. All heavy equipment shall have backup alarms of some type.
6. Use chains, hoist, straps, and any other equipment to safely aid in moving heavy materials.
7. Never use a piece of equipment unless you are familiar with its operation. This applies to heavy as well as light equipment (i.e. steam cleaners, hand tools, etc.).
8. Be sure that no underground or overhead power lines, sewer lines, gas lines, or telephone lines, will present a hazard in the work area.
9. Restrict all non-essential people out of the work area.
10. Prohibit loose-fitting clothing or loose long hair around moving machinery.
11. Instruct equipment operators to report any abnormalities such as equipment failures, unusual odors, etc.
12. Implement an ongoing maintenance program for all tools and equipment. Inspect all tools and moving equipment regularly to ensure that parts are secured and intact. Promptly repair or replace any defective items.
13. Store tools in clean, secure areas so that they will not be damaged, lost or stolen.
14. When an equipment operator must negotiate in tight quarters, provide a second person to ensure adequate clearance.
15. All heavy equipment must properly leveled and supported prior to use.
16. Heavy equipment and trucks will be operated in specific site control zones and marked traffic lanes.

Sampling activities

1. All sampling activities will be performed in accordance with the health and safety requirement outlined within this document.

2. Extreme care must be employed during sampling operations. Air monitoring using an PID will be performed continually to assess and avoid exposure to unsafe levels of VOCs. The use of protective clothing (i.e. gloves) is essential to prevent personnel contamination.

Drilling rig operations

1. Prior to drilling start-up, thorough inspection of the drilling rig shall be conducted. Any defects or unsafe conditions related to the drilling rig should be noted. Any defects identified during the inspection shall be corrected before the start-up of drilling.
2. Extreme care must be employed during addition or removal of augers and/or casing and start-up of rotating drilling equipment (hollow-stem augers, rotary tables, cathead, etc.), due to potential injury or death from being caught or pinched in drilling equipment; keep loose fitting clothing and jewelry away from moving equipments.

VI. SITE CONTROL/WORK ZONES

Appropriate site control procedures shall be developed before site work begins. Pursuant to 8 CCR 5192 (d), a site control program shall, as a minimum, include: A site map; site work zones; the use of a "buddy system;" site communications including alerting means for emergencies; the standard operating procedures or safe work practices; and, identification of nearest medical assistance. These requirements are covered in this section and throughout this HASP.

- A. DESCRIBE LOCATIONS OF EXCLUSION ZONE, HOT LINE, CONTAMINATION REDUCTION ZONE, AND DECONTAMINATION AREA AND SUPPORT ZONE. SHOW LOCATIONS ON SITE PLAN.

The exclusion zone will be that area immediately surrounding the work being performed. It will be the responsibility of the Site Health and Safety Officer to prevent unauthorized personnel from entering the exclusion zone. When necessary, such as in high traffic areas, the exclusion zone will be delineated with barricade tape, cones, and/or barricades. It is not anticipated that a contamination reduction zone, decontamination area, or support zone will be required.

- B. DEFINE THE SITE CONTROL/SECURITY MEASURES (FENCING, LOCKED GATES, KEYS, SECURITY GUARDS, FLAGGING, ETC.).

The site is locked. Work areas shall be considered restricted to 40-hour OSHA HAZWOPR-certified personnel. Barrier tape and barricades will be placed around the exclusion areas, and in high traffic areas near the exclusion zone.

- C. DESCRIBE SAFETY PLAN LOCATIONS.

A copy of the health and safety plan will be kept in the ENVIRON field vehicle and on-site at all times.

VII. SITE RESOURCES

SITE RESOURCES LOCATIONS

Toilet facilities: **On-site.**

Drinking water supply: **ENVIRON's truck (bring your own drinking water).**

Telephone: **Use of cellular phone.**

Other:

VIII. HAZARD ANALYSIS

POST AT JOB SITE (AS APPROPRIATE)

[List all activities in the Job Activity Column and assign a number to each activity
Identify which hazards exist for each activity, for example:]

Activity Number	Job Task	Mechanical	Physical	Electrical	Chemical	Temperature	Acoustical	Ergonomic	Fire	O ₂ Deficiency	Radiation	Biohazard	Traffic
1	Remediation system construction oversight	X	X	X	X	X	X	X				X	X
2	Remediation system operation and maintenance	X	X	X	X	X	X	X				X	X
3	Quarterly ground water sampling	X	X	X	X	X	X	X				X	X

- (A) Mechanical hazards include all hazards associated with handling field equipment and machinery (e.g. hand and foot injuries and burns).
- (B) Physical hazards include slip, trip, and fall (from an elevated surface or into a trench).
- (C) Electrical hazards include electrical shocks from field equipment and underground utilities.
- (D) Chemical hazards include inhalation and dermal exposure to various chemicals.
- (E) Temperature hazards include heat stress, sunburn, heat exhaustion, hypothermia, frostbite, and cold stress.
- (F) Acoustical hazards include exposure to elevated levels of noise.
- (G) Ergonomic hazards include back strain caused by improper lifting, improper illumination in the work area, etc.
- (H) Fire hazards include explosion hazards.
- (I) Oxygen deficiency hazards include enclosed spaces and poor circulation.
- (J) Radiation hazards include radiation greater than 2mR/hr.
- (K) Biohazards include exposure to vegetation, insects, animals, and blood-borne pathogens.
- (L) Traffic hazards include moving vehicles.

IX. HAZARD MITIGATION

Identify procedures to mitigate all hazards listed in Section VIII by placing the task number next to the appropriate mitigating measure. Listing of standard procedures is not inclusive. A specific procedure must be entered to mitigate each hazard identified in Section VIII.

NE = Not Expected

Activity

List Number

A. MECHANICAL HAZARDS

- 1 Do not stand near backhoe buckets and earthmoving equipment.
- 1,2,3 Verify that all equipment is in good condition.
- 1 Do not stand or walk under elevated loads or ladders.
- 1 Do not stand near unguarded excavations and trenches.
- 1 Do not enter excavations or trenches over 5 feet deep that are not properly guarded, shored, or sloped.
Consult HSC if other mechanical hazards exist.

B. PHYSICAL HAZARDS

- 2,3 Placing all purged water in drums for removal to avoid creating a wet surface.
- 1,2,3 If the area is wet, wear boots with good treads and alert the personnel of wet surface.
- 1,2,3 If the area is wet or muddy, sprinkle saw dust on the surface to prevent slip.
- 1,2,3 The “buddy system” is required.
Consult HSC if other mechanical hazards exist.

C. ELECTRICAL HAZARDS

- 1 Locate and mark buried utilities before drilling.
Utilities located by: To be determined
- 1 Maintain at least 10-foot clearance from overhead power lines. The minimum clearance distances from overhead power lines are as follows:

750-50,000 Volts	10 Feet Clearance
50,000-75,000 Volts	11 Feet Clearance
75,000-125,000 Volts	13 Feet Clearance
125,000-175,000 Volts	15 Feet Clearance
175,000-379,000 Volts	21 Feet Clearance
379,000-550,000 Volts	27 Feet Clearance
550,000-1,000,000 Volts	42 Feet Clearance

Contact utility company for minimum clearance from high power lines.
If unavoidably close to buried or overhead power lines, have power turned off, with circuit breaker locked and tagged.

- 1,2,3 Properly ground all electrical equipment.
- 1,2,3 Avoid standing in water when operating electrical equipment.
If equipment must be connected by splicing wires, make sure all connections are properly taped.
Be familiar with specific operating instructions for each piece of equipment.

D. CHEMICAL HAZARDS

- 1,2,3 Use personal protective equipment indicated in Section XI.
- 1,2,3 Conduct direct reading air monitoring to evaluate respiratory hazards (list instrument, action level, monitoring location, and action to be taken in Section X).
Consult HSC for personal air monitoring.

E. TEMPERATURE HAZARDS

- 1,2,3 Heat Stress – If employees will wear impermeable suits during this project, take frequent breaks in shaded area when the ambient temperature exceeds 75°F. Unzip or remove coveralls during breaks. Have cool water or electrolyte replenishment solution available. Drink small amounts frequently to avoid dehydration. Count the pulse rate for 30 seconds as early as possible in the rest period. If the pulse rate exceeds 110 beats per minute at the beginning of the rest period, shorten the work cycle by one-third. Signs and symptoms of heat stress include:

1. Heat rash, which may result from exposure to heat or humid air.
2. Heat cramps are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include muscle spasms and pain in the hands, feet and abdomen. Persons experiencing these symptoms should rest in a cooler area, drink cool liquids (not cold) and gently massage cramped muscles.
3. Heat exhaustion occurs from increased stress on various body organs including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include pale, cool, moist skin; heavy sweating; dizziness; nausea; and fainting. Persons experiencing these symptoms should lie down in a cooler area, drink cool liquids with electrolytes, remove any protective clothing, and cool body with wet compresses at forehead, back, neck, and/or armpits.
4. Heat stroke is the more serious form of heat stress. Temperature regulation fails and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and/or death occur. Competent medical help must be obtained. Signs and symptoms are: red, hot, usually dry skin; lack of or reduced perspiration; nausea; dizziness and confusion; strong, rapid pulse; and coma.

Sunburn Hazards – Skin exposure to ultraviolet rays can result in sunburn. Wear light-colored long-sleeved shirt, hat, and sunscreen to protect against sunburn.

NE

Hypothermia and Frostbite

Hypothermia is a condition that occurs when the internal body (core) temperature falls below 95 °F, at which time the body tries to generate more heat through shivering. Further heat loss would result in the following symptoms: speech difficulty, loss of manual dexterity, lethargy, slow reactions, mental confusion, and muscle rigidity.

When the ambient temperature is below freezing, frostbite or trench foot (immersion foot) may accompany or complicate the symptoms of hypothermia. Frostbite is the freezing of living tissues with a resultant breakdown of cell structure. Symptoms include superficial redness of the skin, dull pain, blisters, and skin discoloration (white, yellow-white or blue-white) when tissue becomes frozen.

During the winter season, the following protective measures will be taken by the Site personnel:

1. All outside operations will cease when the wind chill becomes -25 °F or colder, or at the discretion of the SHSO.
2. Wear layers of loose, dry clothing and stay dry.
3. Avoid overheating and remove clothing layers when starting to perspire.
4. Perform periodic exercise to help keep the extremities warm.
5. Do not touch frozen metal with bare skin.
6. Avoid skin contact with evaporative liquids (such as gasoline and alcohol) below 39 °F.
7. Keep all exposed skin covered and keep head covered at all times. Humans lose 75% of their body heat from the head.
8. Wear boots that are waterproof, with liners. Remove liners at night to let them dry.
9. Use foot powder inside boots to absorb any moisture in boots.
10. Use safety sunglasses with green or amber lenses on sunny days to prevent snow blindness.

If hypothermia or frostbite occurs, the victim will be treated only by the personnel who have been trained in treating such injuries.

F. ACOUSTICAL HAZARDS

1,2,3 Wear ear plugs if elevated noise is encountered (e.g. difficult to carry out conversations when standing next to each other).

Measure the noise levels using either a sound level meter or a noise dosimeter.

Table 2. Permissible Noise Exposure¹

Sound Level (dBA)	Permitted Duration Per Workday (hours-minutes)	Hours	Sound Level (dBA)	Permitted Duration Per Workday (hours-minutes)	Hours
90	8-0	8.00	103	1-19	1.32
91	6-58	6.96	104	1-9	1.15
92	6-4	6.06	105	1-0	1.00
93	5-17	5.28	106	0-52	0.86
94	4-36	4.60	107	0-46	0.76
95	4-0	4.00	108	0-40	0.66
96	3-29	3.48	109	0-34	0.56
97	3-2	3.03	110	0-30	0.50
98	2-38	2.63	111	0-26	0.43
99	2-18	2.30	112	0-23	0.38
100	2-0	2.00	113	0-20	0.33
101	1-44	1.73	114	0-17	0.28
102	1-31	1.52	115	0-15	0.25

G. ERGONOMIC HAZARDS

1,2,3 While lifting heavy equipment, keep the back straight and legs bent. If the equipment can not be lifted in this manner, it is too heavy to lift alone. Call other personnel, or use a mechanical device for lifting.

1,2,3 If insufficient lighting is expected, additional lights should be made available for the duration of this project. Use a light meter if necessary. Areas accessible to employees shall be lighted to not less than the minimum illumination intensities listed in the Table G below while any work is in progress:

Table G
Minimum Illumination Intensities in Foot-Candles

Foot Candles	Areas or Operations
5	General site areas.
3	Excavation and waste areas, access ways, active storage areas, loading platforms, refueling, and field maintenance areas.
5	Indoors: Warehouses, corridors, hallways, and exit ways.
5	Tunnels, shafts, and general underground work areas. (EXCEPTION: Minimum of 10 foot-candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Mine Safety and Health Administration approved cap lights shall be acceptable for use in the tunnel heading.)
10	General shops (e.g., mechanical and electrical equipment rooms, active storerooms, barracks or living quarters, locker or dressing rooms, dining areas, and indoor toilets and workrooms.)
30	First aid stations, infirmaries, and offices.

H. FIRE AND EXPLOSION HAZARDS

NE Conduct direct reading air monitoring to evaluate explosion hazards (list instrument, action level, monitoring location, and action to be taken in Section X).
Compressed air/gas cylinders and lines

I. O₂ DEFICIENCY

NE Oxygen deficiency is generally concerned with confined spaces. Confined spaces include trenches, pits, sumps, elevator shafts, tunnels, or any other area where circulation of fresh air is restricted or ability to readily escape from the area is restricted. ENVIRON has developed a Confined Space Entry Program. Consult HSC prior to entering confined space.

- Obtain permit for confined space entry.
- Monitor O₂ and organic vapors before entering. If following values are exceeded, do not enter:
 1. O₂ less than 19.5% or greater than 23.5%.
 2. Total hydrocarbons greater than 5 ppm above background, if all air contaminants have not been identified.
 3. Concentrations of specific contaminants exceeding action level in Section IX if all contaminants are identified.
- Monitor O₂ and organic vapors continuously while inside confined space. If values cited in Section IX are exceeded, evacuate immediately. Record instrument readings.

- At least one person must be on standby outside the confined space who is capable of pulling workers out of confined space in an emergency.
- Use portable fans or blowers to introduce fresh air to confined spaces whenever use of respirator is required.
- Work involving the use of flame, arc, spark, or other source of ignition is prohibited within a confined space.

J. RADIATION HAZARDS

NE If radiation meter indicates 2 mR/hr or more, leave the area and consult HSC.

K. BIOHAZARD

1,2,3 Poison oak, poison ivy.

1,2,3 Rabid animals.

1,2,3 Poisonous reptiles.

1,2,3 Insects that are potential disease carriers, harmful, or poisonous. Examples:

Ticks,

Mosquitoes,

Fire ants,

Africanized honey bee (killer bee),

Poison spiders, and

Scorpions

1,2,3 Avoid breathing dust in dry desert or central valley areas (valley fever).

NE Biological or animal laboratories.

NE Infectious waste.

NE Raw sewage (which may contain pathogenic organisms such as Salmonella and bloodborne pathogens).

1,2,3 Rats and rodents (Be ware of rodent droppings. The deer mouse and the cotton rat carry the Hantavirus)

Bloodborne pathogens

L. TRAFFIC HAZARDS

1,2,3 Traffic will be controlled when work is performed in public streets. The work area will be coned-off and appropriate signage will be posted. Workers will wear high visibility vests when appropriate.

X. AIR MONITORING

Air monitoring should be conducted with instruments selected to measure contaminants to which employees may be exposed. Measurements should be taken within the breathing zones of workers. If action levels are reached for a 1-minute reading, appropriate action must be taken.

A. GASES AND VAPORS

Air monitoring of gases and vapors, the action levels and the actions to be taken are summarized in the following table. Background readings will be taken everyday and recorded to the field log. Personnel exposures shall be monitored continuously during intrusive activities, and readings shall be recorded every 15 minutes or so. The information in the table needs to be project-specific and the action levels need to be reviewed and approved by the HSC.

Instrument & Agents Monitored	Calibration Standard	Action Levels*	Actions
Photo- ionization Detector (PID)	Isobutylene (100 ppm)	1 ppm above background sustained for 1 minute	If PID reading is above 1 ppm for 1 minute in the breathing zone, stop work and employ mitigation measures such as increased ventilation to the work area. If unable to reduce the VOC concentrations to less than 1 ppm, don a respirator, resume work, and continue monitoring.
		10 ppm above background sustained for 1 minute	Stop work and contact HSC

X. AIR MONITORING (Continued)

B. EXPLOSION HAZARD Not Expected

- Instrument and Date of Calibration:
- Calibration Gas Standard:
- Frequency/Duration of Monitoring:
- Action Level(a)(b) Above Background in Breathing Zone:
- Action:

C. OXYGEN DEFICIENCY Not Expected

- Instrument and Date of Calibration:
- Calibration Gas Standard:
- Frequency/Duration of Monitoring:
- Action Level^{(1), (2)} Above Background in Breathing Zone:
- Action:

D. OTHER INSTRUMENTS

Instrument & Agents Monitored	Calibration Standard	Action Levels*	Actions
Particulate Matter Monitor (Respirable PM)	Zero check (in the field)	5 mg/m ³ in the breathing zone sustained for > 1 minute.	Stop work and water the work area or implement other fugitive dust control measures so that the concentration is <5 mg/m ³ .

XI. REQUIRED PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

The harmful effects chemical substances may have on the human body often necessitate the use of protective clothing. Protection against different types of chemicals and differing concentrations of those substances can be different. The work function and the probability of exposure to the substance must be considered when specifying protective clothing. Appropriate clothing can be selected once the specific hazard has been identified. The protection level must match the hazard. Protective ensembles range from safety glasses hard hats, and safety shoes to fully encapsulating suite with a supplied source of breathing air.

Place the activity number from Section VIII next to each item of personal protective equipment required for that task. All personal safety must meet American National Standard Institute (ANSI) standards or equivalent. See Attachment 3 for a complete list of PPE ensembles.

LEVEL A. B. C. D. **XX**

Comments:

Head

1,2,3 Hardhat

Eye/Face

1,2,3 Safety Glasses

Hand

1,2,3 Nitrile

NITRILE GLOVES MUST BE CHANGED IMMEDIATELY AFTER CONTACT WITH SOIL OR GROUND WATER

Body

1,2,3 Tyvek® Suit – Avoid direct dermal contact with the soils and ground water on site

**XI. REQUIRED PERSONAL PROTECTIVE AND RELATED SAFETY EQUIPMENT
(Continued)**

Lung

1,2,3

Half Face Respirator, with organic vapor/particulate filters combination cartridges (if leveling up to C). Action levels are specified in Section X (Air Monitoring). Cartridge will be changed out at the end of the work shift.

Ear

1,2,3

Earplug, type = foam

Earmuffs will be worn in addition to the earplugs if sound level exceeds 115 dBA sustained for more than 1 minute next to the employee's ear.

Foot

1,2,3

Steel-toed Boots

Other Safety Equipment

Ventilation blower/fan

As needed

Traffic cones

Lifeline harness

As needed

Barrier tape

Radiation Dosimeter

Blast alarm

Ground fault circuit interrupter

Comments: At a minimum, respirator cartridges will be changed out everyday or every 8-hour working period, whichever is sooner. If, when using a gas or vapor respirator cartridge (chemical cartridge or canister), any of the warning properties (e.g. odor, taste, eye irritation, or respiratory irritation) occur, workers will promptly leave the area and check the following: 1) Proper face seal; 2) Damaged or missing respirator parts; 3) Saturated or inappropriate cartridge. If no discrepancies are observed, workers will replace the cartridge or canister. If any of the warning properties appear again, the concentration of the contaminants may have exceeded the cartridge or canister design specification.

XII. DECONTAMINATION AND SPILL CONTAINMENT

- A. SAMPLING AND CONSTRUCTION EQUIPMENT DECONTAMINATION: List solvents used, equipment, and method of disposal. Attach site decontamination map as necessary.

Decontamination involves the orderly controlled removal of contaminants. All undedicated sampling equipment and sampling meters (as applicable) will be cleaned prior to and between each use. All on-site equipment will be decontaminated and allowed to air dry before leaving the site. Decontamination may be accomplished using an approved cleaner, water, and steam. Subcontractors will be responsible for decontamination of their own equipment used during field operations. Decontamination fluids will be contained and disposed of in 55-gallon drums that will be stored on-site pending fluid/waste characterization.

- B. PERSONNEL DECONTAMINATION (SOLVENTS USED, METHOD OF SOLVENT DISPOSAL; INCLUDE DECONTAMINATION METHOD OF PPE AND DISPOSAL OF PPE). ATTACH DECONTAMINATION MAP AS NECESSARY.

All site personnel should minimize contact with contaminants. All disposable PPE will be disposed of in on-site 55-gallon drums (including respirator cartridges). Non-disposal PPE must be decontaminated, particularly the safety boots. Any PPE that cannot be decontaminated should be disposed of along with waste generated from field operations. Personnel shall wash and remove PPE prior to leaving the site. At a minimum, gross removal of contaminants from the PPE, removal of the PPE, and washing of hands and face shall be required upon exiting the work area.

During emergencies, the need to quickly respond to an accident or injury must be weighed against the risk to the injured party from chemical exposure. It may be that the time lost or additional handling of an injured person during the decontamination process may cause greater harm to the individual than from the exposure that would be received by undressing that person without proper decontamination. The decision must be made by the HSC.

- C. INVESTIGATION-DERIVED MATERIAL DISPOSAL

1. Drill cuttings/well water: **on-site 55-gallon drums**
2. Decontamination solutions: **on-site 55-gallon drums**
3. Other:

D. SPILL CONTAINMENT AND DRUM/CONTAINER HANDLING

- Any tank system must be surrounded by containment equipped with a sump pump. The capacity of the containment area must meet all applicable EPA requirements.
- All drums and containers used during site activities shall meet appropriate DOT, OSHA, and EPA regulations for the waste that they will contain.
- Drums and containers shall be inspected and their integrity assured prior to being moved.
- Operations on site will be organized so as to minimize the amount of drum or container movement.
- Employees involved in the drum or container operations shall be trained of the hazards associated with the cleaning any spills of hazardous materials, and warned of the hazards associated with the containers.
- Drums or containers that cannot be moved without failure shall be emptied into a second container.
- Fire extinguishing equipment meeting OSHA 29 CFR Part 1910 Subpart I shall be on hand and ready for use to control fires.

A spill containment and drum/container handling program in compliance with 8 CCR 5192 (j) is included in Attachment 5.

XIII. HAZARD COMMUNICATION

In order to comply with OSHA 29 CFR 1910.1200, Hazard Communication, ENVIRON has established a written Hazard Communication Program, which is maintained at each ENVIRON's office. The following procedures are applicable to this site. All employees will be briefed on this program, and will have a written copy for review.

A. CONTAINER LABELLING

All containers received on site will be inspected to ensure the following: (1) All containers will be clearly labeled as to the contents; (2) the appropriate hazard warnings will be noted; and (3) the name and address of the manufacturer will be listed.

All drums or bins to be shipped off the site will have a label affixed with the following information: (1) the identity of the waste generator, (2) the boring, well, or excavation identification and sample depth, (3) the waste matrix (e.g. soil, water, product), and (4) the date of waste generation.

B. EMPLOYEE TRAINING AND INFORMATION

Prior to starting work, each employee will attend a health and safety orientation and will receive information and training on the following:

- (1) An overview of the requirements contained in the Hazard Communication Standard, 29 CFR 1910.1200;
- (2) Hazardous chemicals present in their workplace operations;
- (3) Location and availability of a written hazard communication program;
- (4) How to read labels and review MSDSs to obtain appropriate hazard information;
- (5) Locations of MSDS files and the hazardous chemical inventory;
- (6) Physical and health effects of the hazardous chemicals;
- (7) Methods and observation techniques used to determine the presence or release of hazardous chemicals;
- (8) How to lessen or prevent exposure to these hazardous chemicals through usage of control/work practices and personal protective equipment; and
- (9) Emergency procedures to follow if they are exposed to these chemicals.

ENVIRON employee(s) will inform its subcontractor(s) the hazardous chemicals brought on-site by ENVIRON; and likewise, subcontractors shall inform ENVIRON employees the same.

XIV. DOCUMENTATION

ENVIRON PERSONNEL TRAINING AND MEDICAL RECORDS ARE AT ENVIRON CORPORATION, 2010 MAIN STREET, SUITE 900, IRVINE, CALIFORNIA 92614, RECORDS WILL BE MAINTAINED ON-SITE AS NECESSARY.

A. PROJECT PERSONNEL LIST AND SAFETY PLAN DISTRIBUTION RECORD

1. ENVIRON Employees

All project staff must sign indicating they have read and understand the Site Health and Safety Plan. A copy of this Site Health and Safety Plan must be made available for their review and readily available at the job site.

<u>Employee Name/Job Title</u>	<u>Date Distributed</u>	<u>Signature</u>

2. Contractors, Subcontractors

A copy of this safety plan shall be provided to contractors and subcontractors who may be affected by activities covered under the scope of this Site Health and Safety Plan for their information only, although the contractors and subcontractors remain responsible for the safety of their own employees. All contractors and subcontractors must comply with applicable OSHA, EPA, and local government rules and regulations.

<u>Firm Name</u>	<u>Contract Person</u>	<u>Date Distributed</u>

XIV. DOCUMENTATION (Continued)

B. HEALTH AND SAFETY MEETING - ALL PERSONNEL PARTICIPATING IN THE PROJECT MUST RECEIVE INITIAL HEALTH AND SAFETY ORIENTATION. THEREAFTER, A BRIEF TAILGATE SAFETY MEETING IS REQUIRED AS DEEMED NECESSARY BY THE SITE HEALTH AND SAFETY OFFICER (OR AT LEAST ONCE EVERY 10 WORKING DAYS).

<u>Date</u>	<u>Topics</u>	<u>Name of Attendee</u>	<u>Employee Firm Name</u>	<u>Initials</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

C. VISITOR - IT IS ENVIRON'S POLICY THAT VISITORS MUST FURNISH THEIR OWN PERSONAL PROTECTIVE EQUIPMENT. ALL VISITORS ARE REQUIRED TO SIGN THE VISITOR LOG AND COMPLY WITH HEALTH AND SAFETY PLAN REQUIREMENTS. IF THE VISITOR REPRESENTS A REGULATORY AGENCY CONCERNED WITH SITE HEALTH AND SAFETY ISSUES, THE SITE HEALTH AND SAFETY OFFICER SHALL ALSO IMMEDIATELY NOTIFY HSC.

<u>Name of Visitor</u>	<u>Firm Name</u>	<u>Date of Visit</u>	<u>Signature</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

XV. CONTINGENCY/EMERGENCY INFORMATION

A. REQUIRED EMERGENCY EQUIPMENT LOCATION

Safety shower/eyewash: **In first aid kit**
First aid kit: **In ENVIRON field vehicle**
Fire extinguisher: **In ENVIRON field vehicle**
Other: **N/A**

B. EMERGENCY TELEPHONE NUMBERS

Ambulance: **911**
Police: **911**
Fire department: **911**
Hospital: **Corona Medical Center (909) 737-4343**
Client contact:
Poison Control Center: **(800) 233-3360**
CHEMTREC: **(800) 424-9300**
Project Manager (office): **((949) 261-5151** Cellular **(949) 395-8182** **(Bita Tabatabai)**
HSC (office): **(949) 261-5151** Cellular **(949) 278-8426** **(Yi Tian)**

C. STANDARD PROCEDURES FOR REPORTING EMERGENCIES

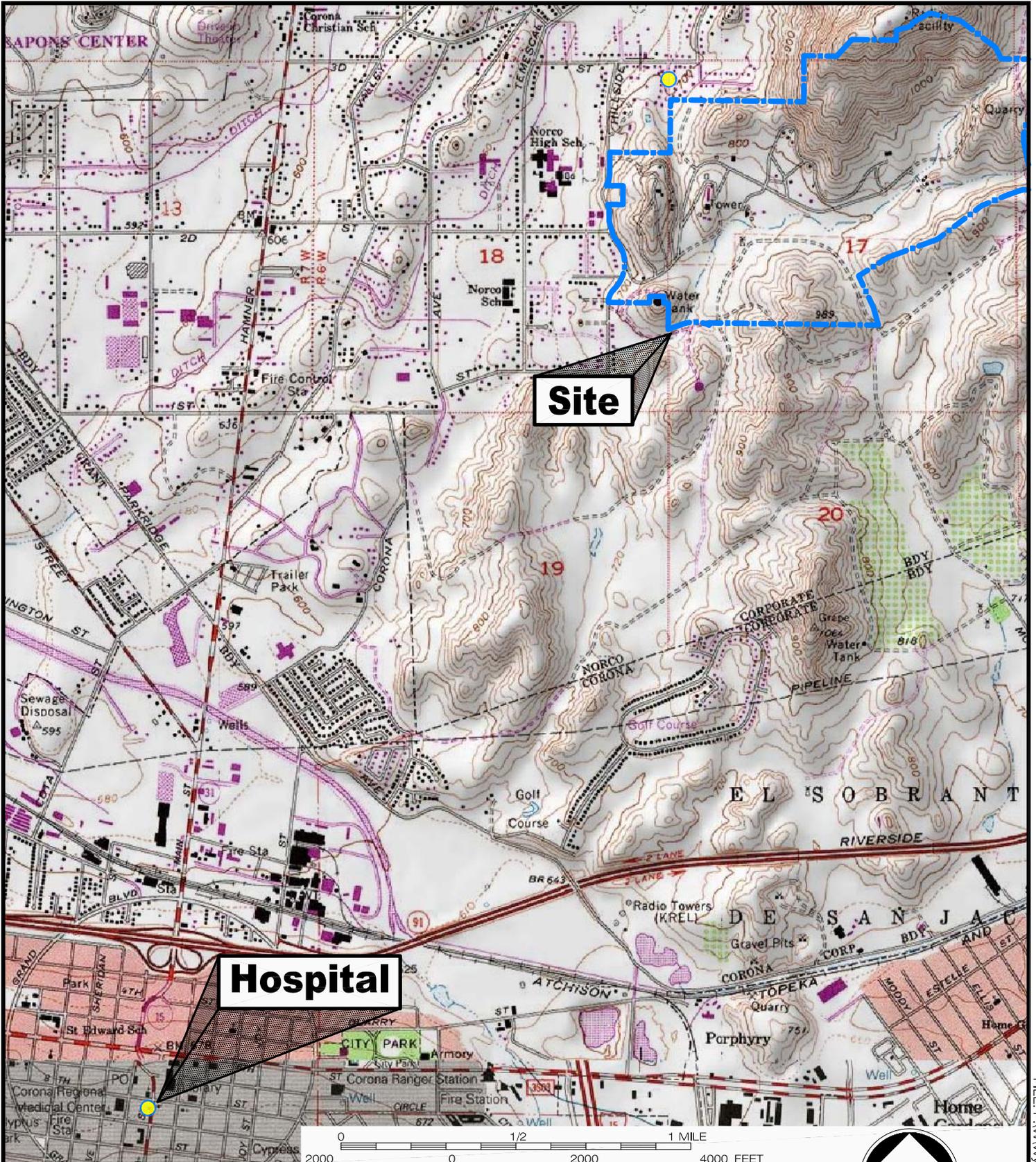
When calling for assistance in an emergency situation, the following information should be provided:

1. Name of person making call
2. Telephone number at location of person making call
3. Name of person(s) exposed or injured
4. Nature of emergency
5. Actions already taken

Recipient of call should hang up first--**not** the caller.

D. EMERGENCY ROUTES: ATTACH MAP SHOWING ROUTE TO NEAREST HOSPITAL. DESCRIBE NARRATIVELY THE ROUTE TO THE HOSPITAL. HAS HOSPITAL BEEN CONTACTED TO DETERMINE IF THEY WILL HANDLE A CHEMICAL EXPOSURE?

Refer to Figure B-3



SOURCE:
 U.S.G.S. 7.5 minute series (topographic)
 Corona North Quadrangle, CA, version 1978, current as of 1981
 Corona South Quadrangle, CA, version 1997, current as of 1997

CONTOUR INTERVAL 40 FEET
 DOTTED LINES REPRESENT 10-FOOT CONTOURS
 NATIONAL GEODETIC VERTICAL DATUM OF 1929
 SCALE 1:24000



ENVIRON

Hospital Location Map

Corona Medical Center
 800 South Main Street, Corona, California

Figure
B-3

Drafter: JJC

Date: 2/25/05

Contract Number: 04-8099P

Approved:

Revised: 6/09/05

FILE: P:\VW\kyle\labbst\Drawings\8099P\F101

XV. CONTINGENCY/EMERGENCY INFORMATION (Continued)

E. ROUTE TO THE HOSPITAL:

Corona Medical Center, 800 S. Main Street, Corona, California

Exit site via Golden West Lane and turn left onto 3 rd Street, follow to Hillside Avenue	0.1	↙
2. Turn Left onto Hillside Avenue and follow to 2 nd Street	0.4	↙
3. Turn Right onto 2 nd Street, merge onto I-15 South ramp towards "San Diego"	1.8	↘
4. Exit CA-91 West ramp towards "Beach Cities"	1.0	↑
5. Exit at Main Street	0.3	↑
6. Turn left onto Main Street	0.6	↙

H. CONTINGENCY PLANS AS APPROPRIATE: DESCRIBE CONTINGENCY PLANS FOR EMERGENCIES SUCH AS FIRES, EMERGENCY CARE, INJURY, PIPE OR OTHER EQUIPMENT FAILURE. INCLUDE EMERGENCY SIGNALS AND EVACUATION ROUTES. IF FORMAL CONTINGENCY PLAN DOCUMENT HAS BEEN PREPARED, ATTACH A COPY.

In case of emergency, all personnel will meet by ENVIRON's truck for a head count. All minor injuries will be treated in the field. All personnel requiring medical attention will be taken to the hospital.

A T T A C H M E N T 1

Hazardous Property Information

Instructions: Place a check mark (“X”) in the first column of the table for those chemicals that may be present at the site. If the chemical is not listed in the table, add it to the end of the table after looking up the hazardous properties.

**ATTACHMENT 1
HAZARDOUS PROPERTY INFORMATION**

Check if Present	Material	Water Solubility ^a	Specific Gravity	Vapor Density	Flash Point °F ^c	Vapor Pressure	LEL UEL	LD ₅₀ mg/kg	PEL-TWA ^g	IDLH Level	Odor Threshold or Warning Concentration (ppm)	Hazard ^j Property	Dermal ^k Toxicity	Acute ^l Exposure Symptoms
Volatile Organic Compounds (VOCs)														
	Acetone	Soluble	0.79	2.0	0	180 mm	2.5% 12.8%	9,750	1,000 ppm	2,500 ppm	62	BCD	DI	H
	Acrolein	40%	0.8410	1.9	-15	210 mm	2.8% 31%	46	0.1 ppm	2 ppm	1.8	BCED	BJ	ABDFGHK LMNOPQR
	Acrylonitrile	7.1%	0.8060	1.8	30	83 mm	3% 17%	82	2 ppm	85 ppm	1.6	BCEGO	DIG	FGIKLMNO R
X	Benzene	0.07%	0.8765	2.8	12	75 mm	1.2% 7.8%	3800	1 ppm	500 ppm	61-97	BCGO	CIG	BCDFHIKL MNOQR
	Bromomethane	2%	1.732	3.3	--	1.88 atm	10% ^c 16.0%	214	20 ppm ^h	250 ppm	No odor	CD	--	BCDEIJKLM NOQR
	Bromodichloromethane	Insoluble	1.980	--	--	--	Non-flam	916	None established	None specified	--	CGO	--	BIMN
	Bromoform	0.01%	2.887	--	--	5 mm	Non-flam	1,147	0.5 ppm	850 ppm	--	CED	--	BCDKLM
	Carbon Tetrachloride	0.05%	1.5967	5.3	--	91 mm	Non-flam	2,800	10 ppm ^h	200 ppm	250-252	CD	JGH	ABCFGHKM O
	Chlorobenzene	0.05%	1.1058	3.9	82	9 mm	1.3% 9.6%	2,910	75 ppm	1000 ppm	1.3	BCD	CIF	BCFIKLMN OPQR
	Chloroethane	0.6%	0.8978	2.2	-58	1000 mm	3.8% 15.4%	--	1000 ppm	3800 ppm	--	BCD	--	BFHIKMNP
	2-Chloroethylvinyl Ether	0.015%	1.0475	3.7	16	30 mm	--	250	None established	None specified	--	BCD	--	NIM
	Chloroform	0.5%	1.4832	4.12	--	160 mm	Non-flam	800	C 50 ppm ^h	500 ppm	192	CD	--	BCDGIKLM N

**ATTACHMENT 1
HAZARDOUS PROPERTY INFORMATION**

Check if Present	Material	Water Solubility ^a	Specific Gravity	Vapor Density	Flash Point °F ^c	Vapor Pressure	LEL UEL	LD ₅₀ mg/kg	PEL-TWA ^g	IDLH Level	Odor Threshold or Warning Concentration (ppm)	Hazard ^j Property	Dermal ^k Toxicity	Acute ^l Exposure Symptoms
	Chloromethane	0.5%	0.9159	1.8	--	5.0 atm	7.6% 19%	1,800	100 ppm ^h	2000 ppm	160	BCD	DHF	ABCDEFGHIJKLOQR
	Dibromochloromethane	Insoluble	2.451	--	--	--	--	848	None established	None Specified	--	BCD	--	BFHIMNPQ
	1,1-Dichloroethane (DCA)	0.6%	1.1757	8.4	2	182 mm	5.4% 11.4%	725	100 ppm	3,000 ppm	--	BCD	--	AGHIMNO
	1,2-Dichloroethane	0.9%	1.2554	3.4	56	64 mm	6.2% 16%	670	50 ppm ^h	50 ppm	87	BCDG	--	BCFGOLMNQ
	1,1-Dichloroethylene (DCE)	0.04%	1.21	3.4	-2	500 mm	6.5% 15.5%	200	5 ppm ^h	ND	--	BCD	--	BIMN
	Cis-1,2-Dichloroethene	0.08%	1.21	--	6	331.5 mm	6.5% 12.8%	132	200 ppm	1,000 ppm	--	BCD	--	ABFILOQ
	Trans-1,2-Dichloroethylene	Slightly soluble	1.2565	--	2	331.5 mm	6.5% 12.8%	132	200 ppm	1,000 ppm	--	BCD	--	ABFILOQ
	1,2-Dichloropropane	0.3%	1.16	3.9	15	40 mm	3.4% 14.5%	1,900	75 ppm	400 ppm	0.52	BCD	--	ABGHIKMNO
	Cis-1,3-Dichloropropane	Insoluble	1.2	3.8	83	28 mm	5.3% 14.5%	20	1 ppm ^h	None Specified	--	BCD	--	ABGIKLMNP
	Trans-1,3-Dichloropropane	Insoluble	1.2	3.8	83	28 mm	5.3% 14.5%	--	1 ppm ^h	None specified	--	BCD	--	ABGIKLMNP
	Ethylbenzene	0.01%	0.867	3.7	55	7 mm	0.8% 6.7%	3,500	100 ppm	800 ppm	--	BCD	CIF	ABFHIKLMNPQR
	Methyl Ethyl Ketone	28%	0.81	2.5	16	78 mm	1.4% 11.4%	3,000	200 ppm	3000 ppm	16-17	B	--	FIKLPN
	Methylene Chloride	2%	1.335	2.9	--	350 mm	13% ^c 23%	167	25 ppm ^h	2,300 ppm	160	CED	CIF	BCIKLMNPR

**ATTACHMENT 1
HAZARDOUS PROPERTY INFORMATION**

Check if Present	Material	Water Solubility ^a	Specific Gravity	Vapor Density	Flash Point °F ^c	Vapor Pressure	LEL UEL	LD ₅₀ mg/kg	PEL-TWA ^g	IDLH Level	Odor Threshold or Warning Concentration (ppm)	Hazard ⁱ Property	Dermal ^k Toxicity	Acute ^l Exposure Symptoms
	Phenol	9% (77°F)	1.0576	3.2	175	0.36 mm	1.8% 8.6%	414	5 ppm	250 ppm	0.060	C	J	ABCDGIKM NOQR
	1,2,4-Trichlorobenzene	0.003%	1.45	--	222	1 mm	-- 6.6%	756	C 5ppm	ND	--	B	H	AINQ
	1,1,2,2-Tetrachloroethane	0.3%	1.5953	5.8	--	5 mm	Non-flam	200	5 ppm ^h	100ppm	7.3	CD	H	ABCFHKL MNOQ
X	Tetrachloroethylene	0.02%	1.6227	5.8	--	14 mm	Non-flam	8,850	100 ppm ^h	150 ppm	71	CD	H	ACFHKL MNP
	1,1,1-Trichloroethane (TCA)	0.4%	1.3390	4.6	--	100 mm	7.5% ^c 12.5%	10,300	350 ppm	700 ppm	710	BCED	H	ABEFHKL NOP
	1,1,2-Trichloroethane	0.04%	1.4397	4.6	--	19 mm	15.5% 6%	1,140	10 ppm	100 ppm	--	C	--	DEFGHIK MNOQ
X	Trichloroethylene (TCE)	0.1% (77°F)	1.4642	4.5	--	58 mm	8% 10.5%	4,920	100 ppm ^h	1,000 ppm	82-110	BC	H	BFKLNO PQ
X	Trichlorofluoromethane	0.1% (75°F)	1.47	--	--	0.91 atm	Non-flam	>352	1,000 ppm	2000 ppm	--	CD	H	BFHKLQ
	Toluene	0.07% (74°F)	0.866	3.2	40	21 mm	1.1% 7.1%	5000	200 ppm	500 ppm	1.6	BC	BHE	DEFHIK LMNO PQ
	Vinyl Chloride	0.1% (77°F)	0.09100	2.24	--	3.31 atm	3.6% 33%	500	1 ppm	None Detect	--	BCEG	DJG	ABFHKL M N
	Xylene	Insoluble	0.8642	3.7	81-90	7-9 mm	1% 7%	5,000	100 ppm	900 ppm	0.62-40	BCD	H	ABFHKL M NPQ
	Dibutylphthalate	0.001%	1.05	9.6	315	0.00007 mm	0.5% --	7,499	5 mg/m ³	4,000 mg/m ³	--	AB	H	AGILQ
	Cis-1,2-Dichloromethene	0.4%	1.27	3.4	36-39	180-265 mm	5.6% 12.8%	--	200 ppm	1,000 ppm	--	ABC	--	AFHILM NP QR

**ATTACHMENT 1
HAZARDOUS PROPERTY INFORMATION**

Check if Present	Material	Water Solubility ^a	Specific Gravity	Vapor Density	Flash Point °F ^c	Vapor Pressure	LEL UEL	LD ₅₀ mg/kg	PEL-TWA ^g	IDLH Level	Odor Threshold or Warning Concentration (ppm)	Hazard ⁱ Property	Dermal ^k Toxicity	Acute ^l Exposure Symptoms
	2,4-Dinitrotoluene	Insoluble	1.32	--	404	1 mm	-- --	268	0.15 mg/m ³	Ca 50 mg/m ³	--	B	--	FHKLQR
	Diethylphthalate	0.1%	1.12	7.6	322	0.002 mm	0.7% --	8,600	5 mg/m ³	None Specified	--	BC	--	AFL
	Bis-2-Ethylhexyl-phthalate	0.00003%	0.99	--	420	<0.01 mm	0.3% --	--	5 mg/m ³	5,000 mg/m ³	--	--	--	--
	Hydrazine	Miscible	1.01	1.04	99	10 mm	2.9% 98%	6700	0.01 ppm	50 ppm	3.7	AB	J	ADEIKLMN PQR
	Methyl tertiary butyl ether	4.2g/100ml	0.7	3.0	-28°C	27 KPa	1.6 15.1	4,000	40 ppm	--	--	B	H	AFHIKLNPR
	Endrin	Insoluble	1.7	--	--	0.00001 mm	--	171	0.1 mg/m ³	2 mg/m ³	--	C	CEHI	ADFIQ
	1,1,2-Trichloroethylene	0.1g/100ml	1.46	4.5	--	7.8 KPa	8 10.5	4,920	25 ppm	Ca 1000 ppm	82	B	H	AFHIKLNPR
	1,1,2-Trichloro-1,2,2-trifluoroethane	0.02%	1.56	6.5	--	285 mm	-- --	43,000	1,000 ppm	2,000 ppm	--	BC	H	EHINP
	1,2,4-Trimethylbenzene	0.006%	0.88	--	112	1 mm	0.9% 6.4%	5,000	25 ppm	None specified	2.4	B	H	EFHIKNQ
	Acetic acid	Miscible	1.05	2.1	103	11 mm	4.0% 19.9%	3310	10 ppm	50 ppm	0.074	AB	J	AFGIMNQ

Metals

**ATTACHMENT 1
HAZARDOUS PROPERTY INFORMATION**

Check if Present	Material	Water Solubility ^a	Specific Gravity	Vapor Density	Flash Point °F ^c	Vapor Pressure	LEL UEL	LD ₅₀ mg/kg	PEL-TWA ^g	IDLH Level	Odor Threshold or Warning Concentration (ppm)	Hazard ⁱ Property	Dermal ^k Toxicity	Acute ^l Exposure Symptoms
	Arsenic	b	2.21 ^x	--	--	--	f	763	0.010 mg/m ³	5 mg/m ³	--	CEG	CJG	ACDGMQOR
	Beryllium	b	1.85	--	--	--	f	51	2 µg/m ³	4 mg/m ³	--	C	--	IJMN
	Cadmium	b	8.642	--	--	--	f	225	0.005 mg/m ³	9 mg/m ³	--	C	--	ABGHKLMNQR
	Chromium	b	7.20	--	--	--	f	27.5	1 mg/m ^{3h}	250 mg/m ³	--	C	--	FMNQ
	Copper	b	8.94	--	--	--	f	0.07	1 mg/m ³	100 mg/m ³	--	C	--	FGIJMOR
	Lead	b	11.3437	--	--	--	f	--	50 mg/m ³	100 mg/m ³	--	C	--	ACDFGKQOR
	Mercury	b	13.5939	7.0	--	0.0012 mm	f	--	0.1 mg/m ^{3h}	10 mg/m ³	--	C	--	AGLMNQ
	Nickel	b	8.9	--	--	--	f	250	1 mg/m ³	10 mg/m ³	--	C	--	DGHLMNQ
	Silver	b	10.5	--	--	--	f	--	0.01 mg/m ³	10 mg/m ³	--	C	--	IN
	Thallium	b	11.85	--	--	--	f	7	0.1 mg/m ³	15 mg/m ³	--	C	BG	ABGLNOQ
	Zinc	b	7.14	--	--	--	f	--	None established	None specified	--	C	--	DF
	Aluminum	Insoluble	2.70	--	--	0 mm	Non-flam	--	5 mg/m ³	None specified	--	B	-	--
	Antimony	Insoluble	6.69	--	--	0 mm	Non-flam	80	0.5 mg/m ³	50 mg/m ³	--	C	-	AGNQ

**ATTACHMENT 1
HAZARDOUS PROPERTY INFORMATION**

Check if Present	Material	Water Solubility ^a	Specific Gravity	Vapor Density	Flash Point °F ^c	Vapor Pressure	LEL UEL	LD ₅₀ mg/kg	PEL-TWA ^g	IDLH Level	Odor Threshold or Warning Concentration (ppm)	Hazard ⁱ Property	Dermal ^k Toxicity	Acute ^l Exposure Symptoms
	Barium	9%	3.24	--	--	Low	Non-flam	--	0.5 mg/m ³	50 mg/m ³	--	B	-	IMN
	Cobalt	Insoluble	8.92	--	--	0 mm	Non-flam	100	0.02 mg/m ³	20 mg/m ³	--	B	-	AIMNQ
	Manganese	Insoluble	7.20	--	--	0 mm	Non-flam	9,000	0.2 mg/m ³	500 mg/m ³	--	B	--	ALM
	Molybdenum	Insoluble	10.28	--	--	0 mm	Non-flam	70	10 mg/m ³	5,000 mg/m ³	--	--	--	--
	Selenium	Insoluble	4.28	--	--	0 mm	Non-flam	6	0.2 mg/m ³	1 mg/m ³	--	B	--	FGIJKLMNQ R

Miscellaneous

	Asbestos	Insoluble	2.5	--	--	--	Non-flam	--	0.1 fibers/cc	None specified	--	CG	--	MN
	Cyanides	58-72%	--	--	--	--	Non-flam	3	2 mg/m ³		--	CE	--	FKLMPQ
	PCB (generic)	Slightly	1.38	--	--	--	Non-flam	1,080	0.5 mg/m ³ⁱ	5 mg/m ³	--	CG	--	CHLPQ
	Naphthalene	0.003%	1.15	4.42	174	0.08 mm	0.9% 5.9%	490	10 ppm	250 ppm	0.038		--	
	Chromic Acid	63%	2.70	--	--	--	Non-flam	--	0.05 mg/m ³	None specified	--	ACEG	--	GHI
	Diesel Fuel	Insoluble	0.81-0.90	--	130	--	0.6-1.3 6-7.5	24,500	None established	None specified	0.08	BC	ABC	IN

**ATTACHMENT 1
HAZARDOUS PROPERTY INFORMATION**

Check if Present	Material	Water Solubility ^a	Specific Gravity	Vapor Density	Flash Point °F ^c	Vapor Pressure	LEL UEL	LD ₅₀ mg/kg	PEL-TWA ^g	IDLH Level	Odor Threshold or Warning Concentration (ppm)	Hazard ⁱ Property	Dermal ^k Toxicity	Acute ^l Exposure Symptoms
------------------	----------	-------------------------------	------------------	---------------	-----------------------------	----------------	---------	------------------------	----------------------	------------	-----------------------------------------------	------------------------------	------------------------------	--------------------------------------

EXPLANATIONS AND FOOTNOTES

Water solubility is expressed in different terms in different references. Many references use the term "insoluble" for materials that will not readily mix with water, such as gasoline. However, most of these materials are water soluble at the part per million or part per billion level. Gasoline, for example, is insoluble in the gross sense, and will be found as a discrete layer on top of the ground water. But certain gasoline constituents, such as benzene, toluene, and xylene, will also be found in solution in the ground water at the part per million or part per billion level.

^a Water solubility expressed as 0.2 g means 0.2 grams per 100 grams water at 20 °C.

^b Solubility of metals depends on the compound in which they are present.

^c Several chlorinated hydrocarbons exhibit no flash point in a conventional sense, but will burn in the presence of high energy ignition source or will form explosive mixtures at temperatures above 200 °F.

^d Practically non-flammable under standard conditions.

^e Expressed as mm Hg under standard conditions.

^f Explosive concentrations of airborne dust can occur in confined areas.

^g OSHA Time-weighted Average (TWA) Permissible Exposure Limits (PELs) except where noted in h and i.

^h TLV-TWA adopted by the American Conference of Governmental Industrial Hygienists (ACGIH), which is lower than the OSHA PEL.

ⁱ REL-TWA recommended by the National Institute for Occupational Safety and Health (NIOSH). A TLV or PEL has not been adopted by ACGIH or OSHA.

^j

A	-	corrosive
B	-	flammable
C	-	toxic
D	-	volatile
E	-	reactive
F	-	radioactive
G	-	carcinogen
H	-	infections

**ATTACHMENT 1
HAZARDOUS PROPERTY INFORMATION**

Check if Present	Material	Water Solubility ^a	Specific Gravity	Vapor Density	Flash Point °F ^c	Vapor Pressure	LEL UEL	LD ₅₀ mg/kg	PEL-TWA ^g	IDLH Level	Odor Threshold or Warning Concentration (ppm)	Hazard ⁱ Property	Dermal ^k Toxicity	Acute ^l Exposure Symptoms
------------------	----------	-------------------------------	------------------	---------------	-----------------------------	----------------	---------	------------------------	----------------------	------------	-----------------------------------------------	------------------------------	------------------------------	--------------------------------------

^k Dermal Toxicity data is summarized in the following three categories;

Skin Penetration

- A - negligible penetration (solid-polar)
- + B - slight penetration (solid-nonpolar)
- ++ C - moderate penetration (liquid/solid-nonpolar)
- +++ D - high penetration (gas/liquid-nonpolar)

Systemic Potency

- E - slight hazard - LD₅₀ = 500-15,000 mg/kg
lethal dose for 70 kg man = 1 pint-1 quart
- F - moderate hazard - LD₅₀ = 50-500 mg/kg
lethal dose for 70 kg man = 1 ounce-1 pint
- G - extreme hazard - LD₅₀ = 10-50 mg/kg
lethal dose for 70 kg man = drops to 20 ml

Local Potency

- H - slight - reddening of skin
- I - moderate - irritation/inflammation of skin
- J - extreme - tissue destruction/necrosis

^l Acute Exposure Symptoms

- A - abdominal pain
- B - central nervous system depression
- C - comatose
- D - convulsions
- E - confusion
- F - dizziness
- G - diarrhea
- H - drowsiness
- I - eye irritation
- J - fever
- K - headache
- L - nausea
- M - respiratory system irritation
- N - skin irritation
- O - tremors
- P - unconsciousness
- Q - vomiting
- R - weakness

^x Relative density with respect to Air at ambient temperatures.

A T T A C H M E N T 2

Levels of Personal Protective Equipment (PPE)

This section of the Site Health and Safety Plan is a reference of selection for different levels of PPE. The protective equipment will be selected based on the contaminant type(s), concentration(s) in air (if any), standing liquid (if any), or other applicable matrix, and the known route(s) of entry into the human body. In situations where the type of materials, their concentrations, or exposure potentials are unknown, a decision based on professional judgment regarding the assignment of personal protective equipment will be made by the HSC.

1. Selection of PPE

The selected PPE should be able to resist degradation, penetration, and permeation by the contaminants present at the Site. In selecting the appropriate protective material, the following should be considered: chemical resistance; tear and puncture resistance; flexibility; thermal stress; cleanability; and durability. PPE will be selected, used and maintained in accordance with 29 CFR 1910.132, *General requirements*. Eye and face PPE requirements will be in accordance with 29 CFR 1910.133, *Eye and face protection*, and ANSI Z87.1-1979. Respiratory protection will be selected in accordance with 29 CFR 1910.134, *Respiratory protection*. Selection of foot protection will conform with ANSI Z41.1-1983, and 29 CFR 1910.136, *Occupational foot protection*. PPE for the head will be in accordance with 29 CFR 1910.135, *Occupational head protection*, and ANSI Z89.1-1986.

Levels of PPE

The four levels of PPE are Levels A, B, C, and D, with Level A providing the highest available level of respiratory, skin, and eye protection. A summary of the basic PPE ensemble for Levels A, B, C, and D is provided below. PPE selection for operations at the Site will be tailored to address specific task conditions.

Level A

Level A PPE provides the maximum degree of respiratory, skin, and eye protection. A Level A PPE ensemble should include:

- Full-facepiece self-contained breathing apparatus (SCBA) or full-facepiece supplied air respirator with escape SCBA;
- Fully encapsulating, chemical-resistant suit, safety boots and inner gloves; and
- Hard hat (if overhead or bump hazards exist).

Level B

Level B PPE provides the maximum level of respiratory protection. Since chemical-resistant clothing is not considered gas, vapor, or particulate tight, Level B PPE does not provide the maximum skin protection. However, a good quality, hooded, chemical-resistant one-piece garment with taped wrists and ankles provides a reasonable degree of protection against splashes of liquids and lower concentrations of chemicals in ambient air. It is the minimum level

recommended for confined space entries and initial Site entries until the hazards have been further identified. Level B PPE should be used when **any** one of the following criteria is met:

- The type and atmospheric concentration of substances have been identified and require a high level of respiratory protection but less skin protection -- this includes atmospheres with IDLH concentrations of specific substances that do not represent a severe skin hazard or atmospheres that do not meet the criteria for use of air-purifying respirators;
- Atmosphere contains less than 19.5% oxygen; or
- Presence of incompletely identified vapors or gases is indicated by air monitoring instruments but vapors and gases are not suspected of containing high levels of chemicals harmful to skin or capable of being absorbed through the intact skin.

Level C

Level C PPE provides the same level of skin protection as Level B PPE, but a lower level of respiratory protection. Air-purifying respirators can be used only if the substance has adequate warning properties; the individual passes a qualitative fit-test for the mask; an appropriate cartridge/canister is used and its service limit concentration is not exceeded; and Site operations are not likely to generate unknown compounds or excessive concentrations of already identified substances. Level C PPE can be used when **all** of the following conditions are met:

- Oxygen concentrations are not less than 19.5%;
- Atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect any exposed skin;
- Types of air contaminants have been identified, concentrations measured, and a cartridge or canister is available that can remove the contaminant;
- Atmospheric contaminant concentrations do not exceed IDLH levels; and
- Job functions do not require self-contained breathing apparatus (SCBAs).

Level D

Level D PPE provides minimal skin protection and no respiratory protection. Level D PPE can be used when the following conditions are met:

- Atmosphere contains no known hazard;
- Oxygen concentrations are not less than 19.5%; and

- Work functions preclude splashes, immersion, or the potential for unexpected inhalation of or contact with hazardous levels of any chemicals.

2. Respirator Fit Test

A respirator fit test will be conducted on all Site personnel who will perform work operations in areas other than the Support Zone. Prior to the initiation of any fit testing, personnel must be certified as medically able to wear a respirator. The respirator fit test is conducted to ensure proper facepiece-to-face seal. A secure fit is important with positive-pressure equipment, and is essential to the safe functioning of negative-pressure equipment, such as most air-purifying respirators. Personnel will receive instruction on proper wear and maintenance of the respirator.

Qualitative fit tests will be conducted annually in accordance with the ANSI *Practices for Respiratory Protection*, Z88.2-1989. In addition, a negative and positive fit check will be performed each time an employee dons the air-purifying respirator (APR). Documentation of annual respirator fit tests will be kept in the Support Zone.

Negative and Positive Fit Check

The negative and positive pressure fit check will be performed each time an employee dons the APR. The negative pressure fit check involves closing off the inlet openings to the APR cartridges by covering with the palms of the hands. If an inward leakage of air is detected, the APR should be checked for material defects and refitted or replaced with another APR.

The positive pressure fit check is performed by placing the palm of hand over the exhalation valve and gently exhaling for 10 seconds to create positive pressure inside the facepiece. If an outward air leak is detected, the APR should be readjusted. If after readjustment leakage still occurs, another APR should be used.

3. PPE Inspection Checklist and Maintenance

PPE inspections will be conducted upon receipt of PPE from the factory or distributor; when it is issued to workers; after use or training; and prior to maintenance. Periodic inspections of stored equipment will be conducted routinely, whenever a question arises concerning the appropriateness of the selected equipment, or when problems with similar equipment arise. At a minimum, PPE inspection should include the following:

A. Clothing

Before use:

- Determine that the clothing material is correct for the specified task.
- Visually inspect for:
 - Imperfect seams
 - On-uniform coatings
 - Tears
 - Malfunctioning Closures

- Hold up to light and check for pinholes
- Flex product:
 - Observe for cracks
 - Observe for other signs of shelf deterioration
- If the product has been used previously, inspect inside and out for signs of chemical breakthrough or deterioration, such as:
 - Discoloration
 - Swelling
 - Stiffness

During the work task, periodically inspect for:

- Evidence of chemical attack such as discoloration, swelling, stiffening, and softening. Keep in mind that chemical permeation can occur without any visible effects.
- Closure failure
- Tears
- Punctures
- Seam discontinuities

B. Gloves

Before use, pressurize glove to check for pinholes. Either blow into glove, then roll gauntlet towards fingers or inflate glove and hold under water. In either case, no air should escape.

C. Respirators

SCBA/supplied air/air-purifying:

- Inspect SCBA/supplied air/air-purifying respirators before and after each use, at least monthly when in storage and during cleaning. Air-purifying respirators should be inspected before each use to be sure they have been adequately cleaned.
- Check all connections for tightness, inspect air lines prior to each use for cracks, kinks, cuts, frays, and weak areas.
- Check for proper setting and operation of regulators and valves (according to manufacturer's recommendations) and check operation of alarms.
- Check material conditions for:
 - Signs of pliability
 - Signs of deterioration
 - Signs of distortion

- Check faceshields and lenses for:
 - Cracks
 - Crazing
 - Fogginess

- Examine cartridges or canisters to ensure that:
 - They are the proper type for the intended use,
 - The expiration date has not passed, and
 - They have not been opened or used previously.

A T T A C H M E N T 3

Personnel Training Requirements

All personnel performing on-site operations with the potential for exposure to hazardous substances or health hazards will meet the personnel training requirements in accordance with 29 CFR 1910.120(e) and 8 CCR 5192(e). The training policies and procedures will ensure that personnel can recognize hazards, understand emergency response procedures, and have the knowledge necessary to enable them to perform their assigned jobs in a manner that ensures employee and public safety. Documentation of appropriate health and safety training, as described below, and medical surveillance participation, as described in Section 7 of Part A of the HASP, will be required to gain access to on-site areas other than the Support Zone. Documentation of all training, including initial 24-hour or 40-hour health and safety training, 8 hours of annual refresher training, 8 hours of supervisor training, supervised field experience, first aid training, CPR certification, and confined space entry or Level B training, if applicable, will be kept on-site.

1. Initial Training

A. Basic Health and Safety Training

A minimum of 24 hours of initial health and safety training off-site is required to obtain on-site access to areas other than the Support Zone. All personnel engaged in or supervising activities in the EZ or CRZ will have a minimum of 40 hours of initial health and safety training off-site, meeting the requirements of 29 CFR 1910.120(e)(3).

All personnel involved in planning or participating in confined space entry(ies) will be trained as described in Section 11 of Part A of the HASP. This will include training in use of Level B personal protective equipment (PPE). Section 11 of Part A of the HASP provides detailed information on personnel training requirements for confined space entry.

B. Supervised Field Experience

All personnel with 24 hours of initial health and safety training are also required to have a minimum of 1 day of field experience under the direct supervision of an experienced supervisor. Personnel with 40 hours of initial health and safety training are required to have a minimum of 3 days of field experience under the direct supervision of an experienced supervisor.

C. Supervisor Training

All on-site managers and supervisors directly responsible for, or who supervise personnel engaged in invasive site activities will have received the initial 40-hour health and safety training and at least 8 additional hours of specialized off-site training consistent with 29 CFR 1910.120(e)(4). This specialized training will include topics such as, but not limited to, regulatory compliance, management of on-site health and safety hazards and recognition of special personnel training needs.

D. Health and Safety Officer Training

Health and safety officers will be trained to a level required by their job function and responsibility. This will include training in implementation of HASPs and compliance with applicable health and safety requirements.

E. First Aid and CPR Training

A minimum of two individuals certified by the American Red Cross (or equivalent) to render first aid and CPR will be available during each shift. The Site Health and Safety Officer (SHSO) will have first aid and CPR training. A list of additional on-site personnel qualified to perform first aid and CPR will be posted throughout the Site.

2. Refresher Training

All personnel who have received 24 hours or 40 hours of initial health and safety training will receive 8 hours of refresher training annually, as specified in 29 CFR 1910.120(e)(8). Topics to be covered in this training program will include those specified in the initial 40-hour health and safety training and/or those specified in the supervisory training course, as well as a critique of incidents that could serve as training examples.

Project-specific refresher training will be provided when the project scope is changed and/or when the hazards change.

A. Site Safety Briefings

Site safety briefings will be conducted prior to the start of each work day or work shift to discuss health and safety issues, changes in work procedures, exposure incidents and other relevant information. The SHSO and Site Coordinator will conduct these meetings. Prior to each change in operations, the meetings will address PPE use and maintenance, physical safety hazards from machinery, protection from chemical hazards, decontamination procedures, protection from heat/cold stress and specific safety requirements associated with the new operations. During the meetings, the SHSO or SC will identify on-site personnel qualified to perform first aid and CPR. All changes in the HASP will be reviewed during the morning safety briefing. A record of the meeting will be written daily and signed by all participants. These records will be stored in the field office.

B. Visitor's Briefing

Visitors will not be permitted to enter areas other than the Support Zone unless documentation of training, as described above, is presented to the SHSO. All visitors will be trained by the SHSO in hazard recognition, personnel hygiene and Site safety rules, use of PPE, and emergency response procedures. Visitors requesting on-site access to areas other than the Support Zone will be required to review and sign off on the HASP (see Section 12 of the HASP) to ensure understanding and compliance with the provisions in the HASP.

A T T A C H M E N T 4

Medical Surveillance

The goals of the medical surveillance program are to monitor the health of potentially exposed personnel through the use of medical examinations and diagnostic laboratory testing, to provide medical care for occupational injury or illness, to keep accurate records for future reference and to ensure the selection of personnel physically able to safely perform the work assigned. The medical surveillance program supports and monitors the effectiveness of the primary health and safety goal of controlling worker exposure to hazardous substances. OSHA regulations relating to medical surveillance during hazardous waste operations are detailed in 29 CFR 1910.120(f) and 8 CCR 5192(f). Medical examinations will be performed by or under the supervision of a licensed physician, preferably one knowledgeable in occupational medicine.

Documentation of current participation in a medical surveillance program and fitness for duty, including ability to wear respiratory protective equipment, will be necessary for all personnel who work on-site in areas other than the Support Zone. However, all specific medical information and examination results obtained in the course of administration of the medical surveillance program will be maintained by the examining physician as confidential.

1. Baseline Medical Examinations

The baseline medical examination serves two major purposes: (1) it determines the individual's fitness for duty, including the ability to work while wearing a respirator; and (2) it provides baseline data for comparison with future medical data. The baseline medical examination will include, at a minimum, the following:

- Complete occupational and medical history;
- Physical examination;
- Blood count and chemistry profile;
- Urinalysis with microscopic review;
- Chest x-ray;
- Pulmonary function tests;
- Resting electrocardiogram (EKG); and
- Cardiac stress test (at physician's discretion).

Certification of fitness for duty and ability to wear personal protective equipment must be provided to gain access to on-site areas other than the Support Zone. However, all specific medical information obtained in the course of administration of the medical surveillance program will be maintained as confidential.

2. Periodic Medical Examinations

Each individual enrolled in the medical surveillance program will be subject to periodic medical surveillance examinations. In general, personnel involved in field activities with a frequency of greater than 30 days per year will receive medical examinations at least annually. Periodic medical examinations should include the parameters included in the baseline examination, with the exception of the chest x-ray

and EKG, which are repeated after the baseline examination at the physician's discretion and with agreement of the individual.

3. Special Medical Examinations

Special medical examinations or consultations will be arranged for personnel exposed in an emergency situation to hazardous substances at concentrations above the OSHA-PELs without adequate protection. This will be done as soon as possible after the overexposure has been determined by the SHSO, in consultation with the Health and Safety Manager.

Special medical examinations shall also be arranged upon notification by the individual that he/she has developed signs or symptoms indicating a possible overexposure to hazardous substances, or if the examining physician determines that more frequent medical examinations are necessary. Non-scheduled medical examinations may also be directed at the discretion of the Health and Safety Technical Committee and the Site Health and Safety Officer.

4. Special Circumstances

Any individual who is on a medication that may interfere with the ability to perform his/her job function, or who may require special medical attention, must notify the SHSO of these circumstances prior to commencing work at the Site.

A T T A C H M E N T 5

Spill Containment and Drum/Container Handling Procedures

Spill Containment and Drum/Container Handling Procedures

(1) General.

- (A) Hazardous substances and contaminated soils, liquids, and other residues shall be handled, transported, labeled, and disposed of in accordance with this subsection.
- (B) Drums and containers used during the clean-up shall meet the appropriate U.S. Department of Transportation (DOT), OSHA, and EPA regulations for the wastes that they contain.
- (C) When practical, drums and containers shall be inspected and their integrity shall be assured prior to being moved. Drums or containers that cannot be inspected before being moved because of storage conditions (i.e., buried beneath the earth, stacked behind other drums, stacked several tiers high in a pile, etc.) shall be moved to an accessible location and inspected prior to further handling.
- (D) Unlabeled drums and containers shall be considered to contain hazardous substances and handled accordingly until the contents are positively identified and labeled.
- (E) Site operations shall be organized to minimize the amount of drum or container movement.
- (F) Prior to movement of drums or containers, all employees exposed to the transfer operation shall be warned of the potential hazards associated with the contents of the drums or containers.
- (G) U. S. Department of Transportation (DOT) specified salvage drums or containers and suitable quantities of proper absorbent shall be kept available and used in areas where spills, leaks, or ruptures may occur.
- (H) Where major spills may occur, a spill containment program which is part of the employer's safety and health program required in subsection (b) of this section shall be implemented to contain and isolate the entire volume of the hazardous substance being transferred.
- (I) Drums and containers that cannot be moved without rupture, leakage, or spillage shall be emptied into a sound container using a device classified for the material being transferred.
- (J) A ground-penetrating system or other type of detection system or device shall be used to estimate the location and depth of buried drums or containers.
- (K) Soil or covering material shall be removed with caution to prevent drum or container rupture.
- (L) Fire extinguishing equipment meeting the requirements of 8 CCR, Ch. 4, Subch.7, Group 27 of the General Industry Safety Orders shall be on hand and ready for use to control incipient fires.

(2) Opening drums and containers.

The following procedures shall be followed in areas where drums or containers are being opened:

- (A) Where an airline respirator system is used, connections to the bank of air cylinders shall be protected from contamination and the entire system shall be protected from physical damage.
- (B) Employees not actually involved in opening drums or containers shall be kept a safe distance from the drums or containers being opened.
- (C) If employees must work near or adjacent to drums or containers being opened, a suitable shield that does not interfere with the work operation shall be placed between the employee and the drums or containers being opened to protect the employee in case of accidental explosion.
- (D) Controls for drum or container opening equipment, monitoring equipment, and fire suppression equipment shall be located behind the explosion-resistant barrier.
- (E) When there is a reasonable possibility of flammable atmosphere being present, material handling equipment and hand tools shall be of the type to prevent sources of ignition.
- (F) Drums and containers shall be opened in such a manner that excess interior pressure will be safely relieved. If pressure cannot be relieved from a remote location, appropriate shielding shall be placed between the employee and the drums or containers to reduce the risk of employee injury.
- (G) Employees shall be instructed not to stand upon or work from drums or containers.

(3) Material handling equipment.

Material handling equipment used to transfer drums and containers shall be selected, positioned and operated to minimize sources of ignition related to the equipment from igniting vapors released from ruptured drums or containers.

(4) Radioactive wastes.

Drums and containers containing radioactive wastes shall not be handled until such time as their hazard to employees is properly assessed.

(5) Shock sensitive wastes.

As a minimum, the following special precautions shall be taken when drums and containers containing or suspected of containing shock-sensitive wastes are handled:

- (A) All non-essential employees shall be evacuated from the area of transfer.

- (B) Material handling equipment shall be provided with explosive containment devices or protective shields to protect equipment operators from exploding containers.
- (C) An employee alarm system capable of being perceived above surrounding light and noise conditions shall be used to signal the commencement and completion of explosive waste handling activities.
- (D) Continuous communications (i.e., portable radios, hand signals, telephones, as appropriate) shall be maintained between the employee-in-charge of the immediate handling area and both the site safety and health supervisor and the command post until such time as the handling operation is completed. Communication equipment or methods that could cause shock sensitive materials to explode shall not be used.
- (E) Drums and containers under pressure, as evidenced by bulging or swelling, shall not be moved until such time as the cause for excess pressure is determined and appropriate containment procedures have been implemented to protect employees from explosive relief of the drum.
- (F) Drums and containers containing packaged laboratory wastes shall be considered to contain shock-sensitive or explosive materials until they have been characterized.

CAUTION: Shipping of shock sensitive wastes may be prohibited under U. S. Department of Transportation (DOT) regulations. Employers and shippers should refer to 49 CFR 173.21 and 173.50.

(6) Laboratory waste packs.

In addition to the requirements of subsection (j)(5), the following precautions shall be taken, as a minimum, in handling laboratory waste packs (lab packs).

- (A) Lab packs shall be opened only when necessary and then only by an individual knowledgeable in the inspection, classification, and segregation of the containers within the pack according to the hazards of the wastes.
- (B) If crystalline material is noted on any container, the contents shall be handled as a shock-sensitive waste until the contents are identified.

(7) Sampling of drum and container contents.

Sampling of containers and drums shall be done in accordance with a sampling procedure which is part of the site safety and health plan developed for and available to employees and others at the specific worksite.

(8) Shipping and transport.

- (A) Drums and containers shall be identified and classified prior to packaging for shipment.
- (B) Drum or container staging areas shall be kept to the minimum number necessary to safely identify and classify materials and prepare them for transport.
- (C) Staging areas shall be provided with adequate access and egress routes.
- (D) Bulking of hazardous wastes shall be permitted only after a thorough characterization of the materials has been completed.

(9) Tank and vault procedures.

- (A) Tanks and vaults containing hazardous substances shall be handled in a manner similar to that for drums and containers, taking into consideration the size of the tank or vault.
- (B) Appropriate tank or vault entry procedures as described in the employer's safety and health plan and meeting the requirements of 8 CCR, Ch. 4, Subch. 7, Article 108 of the General Industry Safety Orders shall be followed whenever employees must enter a tank or vault.