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BASEWIDE QUARTERLY GROUNDWATER MONITORING REVISED FINAL SITE HEALTH AND SAFETY PLAN ADDENDUM NAS FORT WORTH TX
5/1/1995
LAW ENGINEERING AND ENVIRONMENTAL

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NAVAL AIR STATION
FORT WORTH JRB
CARSWELL FIELD
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INSTALLATION RESTORATION PROGRAM (IRP)
BASE-WIDE QUARTERLY GROUND-WATER MONITORING

REVISED FINAL
SITE HEALTH & SAFETY PLAN ADDENDUM

Naval Air Station Fort Worth, Joint Reserve Base, Carswell Field
Fort Worth, Texas

May 1995

PREPARED FOR

AIR FORCE BASE CONVERSION AGENCY (AFBCA/OL-H)
NAVAL AIR STATION FORT WORTH, JOINT RESERVE BASE, CARSWELL FIELD
FORT WORTH, TEXAS 76127-5000

UNITED STATES AIR FORCE
AIR FORCE CENTER FOR ENVIRONMENTAL EXCELLENCE
ENVIRONMENTAL RESTORATION DIRECTORATE
BASE CLOSURE RESTORATION DIVISION (ERB)
BROOKS AIR FORCE BASE, TEXAS 78235-5328

INSTALLATION RESTORATION PROGRAM (IRP)
BASE-WIDE QUARTERLY GROUND-WATER MONITORING
REVISED FINAL SITE SAFETY AND HEALTH PLAN ADDENDUM
FOR
NAVAL AIR STATION FORT WORTH, JOINT RESERVE BASE, CARSWELL FIELD
FORT WORTH, TEXAS 76127-5000

MAY 1995

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CONTRACTOR CONTRACT NO. F41624-94-D-8050 DELIVERY ORDER NO. 0001

United States Air Force
Air Force Center for Environmental Excellence
Environmental Restoration Directorate
Base Closure Restoration Division (HQ AFCEE/ERB)
Brooks Air Force Base, Texas 78235-5328
Capt. Feaster (Team Chief)

HEALTH AND SAFETY PLAN CERTIFICATION

This is to certify that I have received site-specific health and safety training, and have read and understand, and will abide by the requirements of this Site Safety and Health Plan for the Naval Air Station; Fort Worth Joint Reserve Base, Texas (formerly Carswell Air Force Base).

NAME (Please Print)	SIGNATURE	COMPANY	DATE

3517-3201.02

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1.0 INTRODUCTION

This addendum to the original site health and safety plan (SHSP) entitled Installation Restoration Program (IRP) RCRA Facility Investigation Health and Safety Plan, Carswell Air Force Base, Fort Worth, Texas, Law Environmental, Inc., February 1994, has been prepared by Law Environmental, Inc., (LAW) in response to the scope of work for Naval Air Station - Fort Worth (NAS - Fort Worth) Joint Reserve Base, Texas (formerly Carswell Air Force Base). The revised scope of work was issued under the Air Force Center for Environmental Excellence's (AFCEE) Contract No. F41624-94-D-8050, Delivery Order 0001.

1.1 PLAN OBJECTIVE

The objective of this addendum is to address health and safety requirements for performing base-wide quarterly ground-water monitoring at NAS - Fort Worth. The field activities to complete base-wide ground-water monitoring are addressed in this addendum. The primary chemical hazards are those associated with petroleum fuels and their decomposition products. This addendum is to be used in conjunction with the original SHSP.

1.2 OVERVIEW

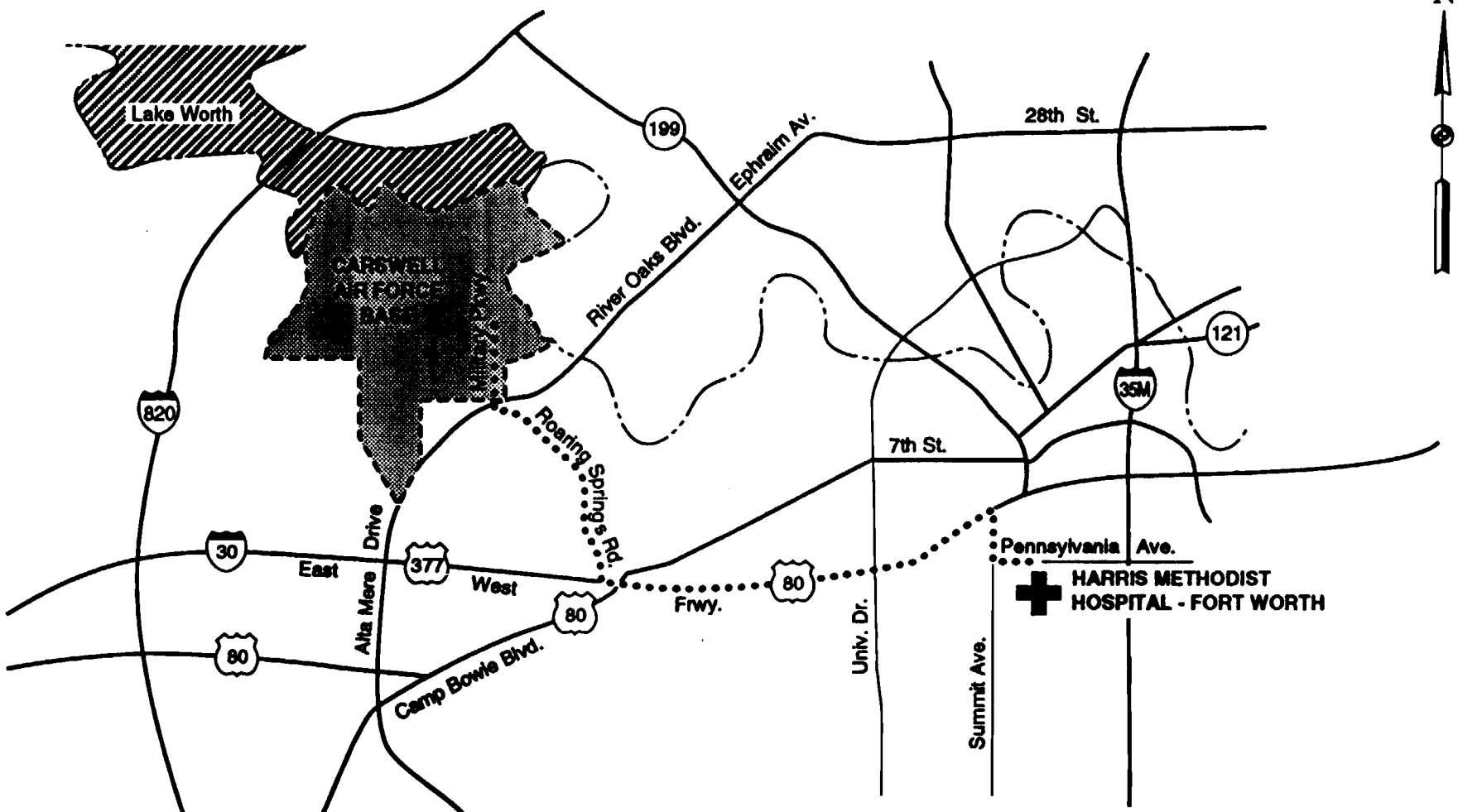
This addendum will address sites not previously discussed in the original LAW SHSP. The information and requirements of the original LAW SHSP will remain the same for the following topics:

- Site Description and Contaminant Characterization (Section 2.0 of the original SHSP)

- Staff Organization, Qualifications, and Responsibilities (Section 5.0 of the original SHSP)
- Training Requirements (Section 6.0 of the original SHSP)
- Personnel Monitoring and Protective Equipment (Section 7.0 of the original SHSP)
- Medical Surveillance (Section 8.0 of the original SHSP)
- Exposure Monitoring/Air Sampling Program (Section 9.0 of the original SHSP)
- Standard Operating Procedures/Engineering Controls and Work Practices (Section 10.0 of the original SHSP)
- Site Control Measures (Section 11.0 of the original SHSP)
- Personal Hygiene and Decontamination (Section 12.0 of the original SHSP)
- Emergency Equipment and First Aid Requirements (Section 13.0 of the original SHSP)
- Logs, Reports, and Record Keeping (Section 15.0 of the original SHSP)

Section 14.0 (Emergency Response and Contingency Procedures) will remain as discussed in Section 14.0 of the SHSP (LAW, 1993), with the exceptions of Dianna Johnson (404) 499-6870 as site manager, John O'Brien (404) 499-6886 as project manager, and Lynne Clem as Health and Safety Contact [office: (404) 499-6815; home: (404) 924-9811]. Also, a more detailed figure showing the route to Harris Methodist Hospital has been included in this addendum (Figure 1-1).

Section 16.0 (Site-Specific Concerns) is being replaced by the next section. Section 2 contains the constituents of concern, action levels, and work activities for the Base-wide Quarterly Ground-Water Monitoring Project.



EMERGENCY TELEPHONE NUMBERS

Ambulance, Fire, Police	911
Hospital	817/882-2000
Law Environmental, Inc. - Atlanta	404/499-6800
Project Manager: John O'Brien	404/928-1657 (Home)
Project Principal: Fred Sharpe	404/841-8591 (Home)
Health & Safety: Lynne Clem	404/924-9611 (Home)
Facility Point of Contact: Frank Grey	817/731-6671

UNITED STATES AIR FORCE
CARSWELL AFB
FT. WORTH, TEXAS

HEALTH & SAFETY PLAN

ROUTE TO HOSPITAL

PREPARED BY:	FIGURE NUMBER: 1-1	FILE DATE:	09, FEB. 95
CHECKED BY:		PLOT DATE:	26, APR. 95
APPROVED BY:		FILE NAME:	3517-0111.06

2.0 BASE-WIDE QUARTERLY GROUND-WATER SAMPLING (SOLVENT, PETROLEUM, AND PESTICIDE SITES)

This section presents information and procedures for those monitoring wells selected for quarterly ground-water sampling that are located at sites identified as containing solvents, petroleum, and/or pesticide constituents of concern.

2.1 CONTAMINANT CHARACTERIZATION

The primary constituents of concern at these sites are solvents, pesticides, and/or petroleum fuel constituents. Table 2-1 presents the important properties for each chemical of concern.

2.2 TASK-SPECIFIC HAZARDS

A description of anticipated potential hazards and an evaluation of these hazards is presented in the following subsections.

2.2.1 Potential Hazards

Potential hazards that may be associated with field activities at this site include the following:

- Personnel exposure to organic and inorganic chemicals via inhalation, incidental ingestion, and/or skin contact with ground-water contaminants
- Explosion and/or flammability of contaminants
- Biological hazards (snakes, mosquitoes, ticks)

TABLE 2-1

IMPORTANT PROPERTIES OF CONSTITUENTS OF CONCERN
BASE-WIDE QUARTERLY GROUND-WATER SAMPLING
(SOLVENT, PETROLEUM, and PESTICIDE SITES)
NAS-Fort Worth, Texas

Constituent	OSHA PEL (ppm)	ACGIH TLV (ppm)	IDLH (ppm)	UEL (%)/ LEL (%)	Odor Threshold (ppm)	Respirator Cartridge Breakthrough Time (min)[B]	Ionization Potential (eV)	Health Hazards (Acute/Chronic)
CLASS: HALOGENATED SOLVENTS								
Tetrachloroethylene	25	50 200 [ST]	500	NC/NC	50	107	9.32	Acute: Irritation of eyes, nose, or throat, nausea, flush face, neck, vertigo, dizziness, incoordination, headache, somnolence, skin erythema Chronic: Kidney and liver damage, carcinogen
Trichloroethylene	50 200 [ST]	50	1000	10.5/8	82	55	9.45	Acute: Headache, vertigo, visual disturbances, nausea, vomiting Chronic: Lung and liver cancer (in animals)
1,2-trans-Dichloroethene	200	200	4000	12.8/5.6	0.085	33	9.65	Acute: Eye and skin irritant, central nervous system depression, dizziness, nausea and vomiting Chronic: Liver and kidney dysfunction
Vinyl chloride	1 5 [C] [Ca]	5 [A1]	NE	33/3.6	4000	3.8	9.99	Acute: Eye and skin irritant, nausea, lightheadedness, dulling of vision and hearing Chronic: Cancer (liver, lung, CNS, lymphatic system), Raymond's phenomenon, liver damage
CLASS: PETROLEUM FUEL CONSTITUENTS								
Benzene	1 5 [ST]	10 [A2]	3000	7.9/1.3	4.68	73	9.24	Acute: Irritation of eyes, nose, or respiratory system, giddiness, headache, nausea, staggered gait, fatigue, anorexia, lassitude, dermatitis Chronic: Bone marrow depression, carcinogen
Coal tar pitch volatiles (PAHs)	0.2 mg/m³ [Ca]	0.2 mg/m³	700 mg/m³	V	V	V	V	Acute: Dermatitis, bronchitis Chronic: Lung, skin, urinary tract cancers

NOTES:
- B : Time to reach 1% breakthrough (tested at 1000 ppm, 50% relative humidity, 22°C, and 53 L/min)
- C : Ceiling limit
- ST : Short term exposure limit
- skin: Recognized as having potential for dermal absorption
- A2 : Suspected human carcinogen (ACGIH)
- Ca : Carcinogen (NIOSH)
- FMP : 5 minute maximum peak in any two hours
- CP : Combustible in dust or powdered form
- NC : Noncombustible solid or liquid
- NE : No evidence found for the existence of an IDLH (NIOSH)
- NA : Not available
- ND/NR : Not relevant
- UEL : Upper Explosive Limit
- LEL : Lower Explosive Limit
- Ukn : Unknown
- V : Varies according to compound

REFERENCES: ACGIH, Threshold Limit Values, 1994-1995.
NIOSH, Pocket Guide to Chemical Hazards, 1990.
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Sittig, Hazardous and Toxic Effects of Industrial Chemicals, 1979.
ATSDR, Toxicological Profiles for Constituents, 1987-1991.

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Ethyl benzene	100 125 [ST]	100 125 [ST]	2000	6.7/1.0	2.3	84	8.76	Acute: Irritation of eyes, mucous membrane, headache, dermatitis, narcosis, coma Chronic: Liver and kidney damage
Naphthalene	10 15 [ST]	10	500	5.9/0.9	0.084	NA	8.12	Acute: Eye and skin irritant, nausea, vomiting, headache, confusion, sweating, abdominal pain, jaundice, kidney damage Chronic: Kidney damage, cataracts
Toluene	100 150 [ST]	50	2000	7.1/1.2	2.9	94	8.82	Acute: Fatigue, weakness, confusion, euphoria, dizziness, headache, dilated pupils, lacrimation, nervousness, muscle fatigue, insomnia, paresthesia, dermatitis Chronic: CNS effects, brain dysfunction, liver and kidney damage
Xylene (o-,m-,p-isomers)	100 150 [ST]	100 150 [ST]	1000	7.0/ 1.1 (o) 1.0 (m) 1.1 (p)	1.1	NA (o) 99 (m) NA (p)	8.56 (o) 8.54 (m) 8.44 (p)	Acute: Dizziness, excitement, drowsiness, incoordination, staggering gait, irritation of eyes, nose, or throat, eye disorders, anorexia, nausea, vomiting, abdominal pain, dermatitis Chronic: Lung and liver effects
Total Petroleum Hydrocarbons (as gasoline)	300 500 [ST]	300 500 [ST]	NA	NA/NA	0.25	NR	NR	Acute: Irritation of upper respiratory tract, depression of central nervous system, irregular heartbeat, irritation of mucous membrane Chronic: Ukn

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CLASS: PESTICIDES								
Alpha-BHC	NA	NA	1000 mg/m³	NA/NA	0.088 (water)	NA	NA	Acute: Lung irritation, headache, heart and blood disorders, convulsions Chronic: Liver disease, liver cancer
Beta-BHC	NA	NA	1000 mg/m³	NA/NA	0.00032 (water)	NA	NA	Acute: Headache, vertigo, convulsions, coma, blood and heart disorders Chronic: Liver and kidney disease, possible mutagenic activity, liver cancer
Carbaryl (Sevin®)	5 mg/m³	5 mg/m³	800 mg/m³	NA/NA	NA	NA	?	Acute: Nausea, vomiting, dizziness, headache, difficulty in breathing, weakness, tremor, blurred vision, convulsions, nasal discharge Chronic: CNS effects, neuropathy
Chlordane	0.5 mg/m³ [skin]	0.5 mg/m³ [skin]	5600 mg/m³ [Ca]	NA/NA	NA	NA	Ukn	Acute: Blurred vision, confusion, ataxia, cough, delirium, abdominal pain, nausea, vomiting, diarrhea, irritability, tremor, convulsions, anuria Chronic: Genotoxicity, decreased fertility (in animals), liver tumors [Ca] in mice
DDT	1 mg/m³ [skin]	1 mg/m³	NE [Ca]	Ukn/Ukn	0.35	NA	Ukn	Acute: Movements of the tongue, lips, face, tremor, apprehension, dizziness, confusion, malaise, headache, fatigue, convulsions, vomiting, eye and skin irritant Chronic: Cancer

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Diazinon	NA	0.1 mg/m³ [skin]	5000	NC/NC	ND	NA	NA	Acute: Moderate organophosphate insecticide toxicity (see malathion for symptoms(Chronic: Minimal toxicity
Dieldrin	0.25 mg/m³ [skin] [Ca]	0.25 mg/m³ [skin]	450 mg/m³	NA/NA	0.041 (water)	NA	NA	Acute: Headache, dizziness, nausea, vomiting, malaise, sweating, limb jerks, convulsions, coma Chronic: Liver and kidney damage in animals, liver cancer in mice
Endosulfan sulfate	0.1 mg/m³ [skin]	0.1 mg/m³ [skin]	NE	ND/ND	ND	NA	NA	Acute: Dyspnea, cyanosis, GI distress, hyperactivity, salivation, tremor, convulsions Chronic: Neurotoxicity (EEG changes, brain damage), kidney damage in animals
Endrin	0.1 mg/m³ [skin]	0.1 mg/m³ [skin]	2000 mg/m³	NA/NA	0.28-6.4 mg/m³	NA	NA	Acute: Muscle twitching, dizziness, confusion, seizures Chronic: Pneumonia, respiratory effects, increased liver enzymes
Heptachlor	0.5 mg/m³ [skin] [Ca]	0.5 mg/m³ [skin]	700 mg/m³	NA/NA	0.3 mg/m³	NA	?	Acute: Liver toxicity (increased liver weight, increased enzyme levels), hypoactivity, tremors, ataxia, convulsions, EEG changes Chronic: Kidney, adrenal, blood effects, in animals: fetotoxic, carcinogenic

NOTES:
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Lindane (gamma-BHC)	0.5 mg/m³ [skin]	0.5 mg/m³ [skin]	1000 mg/m³	NA/NA	12 mg/kg (water)	NA	Ukn	Acute: Eye, nose, and throat irritant, headache, nausea, clonic convulsion, respiratory difficulty, cyanosis, aplastic anemia, skin irritant, muscle spasms Chronic: Nausea, spasms, ataxia, blood dyscrasia, aplastic anemia, liver damage
Malathion	10 mg/m³ [skin]	10 mg/m³ [skin]	5000 mg/m³	NA/NA	13.5 mg/m³	NA	?	Acute: Headache, wheezing, tightness in chest, pinpoint pupils, blurred vision, nausea, vomiting, lacrimation, salivation, diarrhea, tremors, weakness Chronic: Pulmonary edema, dermatitis, decrease cholinesterase levels

NOTES:
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Sittig, Hazardous and Toxic Effects of Industrial Chemicals, 1979.
ATSDR, Toxicological Profiles for Constituents, 1987-1991.

- Heat or cold stress, depending on season
- Excessive noise level from aircraft

2.2.2 Hazard Evaluation

The only intrusive activity at this site is ground-water sampling with a potential for exposure to hazardous materials via contaminated ground-water contact.

2.3 CHEMICAL INDICATORS OF HAZARD

Chemical indicators of hazard were selected from the primary constituents of concern at the site based on toxic and hazardous properties. The chemicals that have the greatest potential to cause adverse health effects at the lowest concentrations were selected as indicators in order to establish the most protective action level guidelines during field investigations. Exposure monitoring for the presence of these chemicals will be conducted during all intrusive investigative activities at this site.

Action guidelines for each chemical have been established based on regulatory or guideline exposure limits, or on toxic properties (where exposure limits are not available). These action guidelines will also protect workers from the other constituents anticipated to be encountered at the site.

The chemicals selected to serve as indicators of airborne organic vapor hazards at this site are:

- Benzene
- Naphthalene

2.4 PERSONNEL PROTECTIVE EQUIPMENT

Level D protection will be used initially during nonintrusive field activities, and Modified Level D will be used continuously during intrusive field activities covered by this plan. Skin protection shall be used at all times because some of the constituents of concern (i.e., pesticides) that may be present can be absorbed through the skin, and because current real-time monitoring technology for the presence of pesticides in ground water is not practical. PPE will be upgraded to Level C and/or Level B, as warranted by the monitoring of site conditions during work, according to the action levels for monitoring equipment described in Section 7.0 of the original SHSP.

2.5 AIR MONITORING

Air monitoring equipment will be used to measure combustible gases, oxygen, and organic vapors during site activities. Air monitoring is not practical for pesticides; however, pesticides dissolved in ground water are unlikely to present an inhalation hazard. Organic vapors, combustible gas, and oxygen levels will be measured at the tops of monitoring wells and in the breathing zone of the worker nearest to the monitoring well during ground-water sampling activities.

The monitoring equipment includes a combustible gas indicator, oxygen monitor, photoionization detector (PID), and detector tubes (Draeger tubes). A combustible gas indicator will be used at sites where methane is a potential contaminant (i.e., landfill and swampy sites). Action levels for the monitoring equipment are presented in Table 2-2.

A 10.2 eV lamp will be used in the PID and the span control will be set at 9.8 (benzene equivalent). Action levels for the PID are A

TABLE 2-2

MONITORING EQUIPMENT AND ACTION GUIDELINES
BASE-WIDE QUARTERLY GROUND-WATER SAMPLING
(SOLVENT, PETROLEUM, AND PESTICIDE SITES)
NAS-Fort Worth, Texas

EQUIPMENT:	* OXYGEN MONITOR[a][b]		COMBUSTIBLE GAS INDICATOR[a] (EXPLOSIMETER)		PHOTOIONIZATION METER (PID) AND CHEMICAL-SPECIFIC DETECTOR TUBES[c]			
ACTION GUIDELINES:	Oxygen Level	Action	LEL Levels	Action	PID Levels (ppm)	Draeger Tube Benzene Levels (ppm)		Action
	19.5-23.5%	Normal Oxygen Level	0-10%	No explosion hazard	0-1			Modified Level D
	>23.5%	Fire/Explosion hazard; Stop tasks, evacuate site; notify Site Manager			1-5	and	0-0.5	Modified Level D; begin monitoring for benzene (with 0.5/a Draeger tube) every 15 min.
	<19.5%	Oxygen deficient; Stop tasks, evacuate site; notify Site Manager; upgrade to Level B	>10%	Explosive hazard exists; stop tasks; evacuate site; notify Site Manager	5-250	and/or	1-25	Level C
					>250	and	>25	Stop work; notify COE regarding need to upgrade to Level B

(a) Monitoring to be conducted at top of monitoring well
(b) Used in conjunction with combustible gas indicator to confirm combustible gas indicator function
(c) Monitoring to be conducted in breathing zone of worker nearest to monitoring well; concentrations sustained for 5 min. above background

designed to be used in conjunction with the benzene detector tubes (Draeger tubes) and are based on half of the lowest TWA PEL or TLV of the suspected contaminants. Readings for the Draeger tubes for the PID are referenced to above background and reflect those sustained for more than 5 seconds in the breathing zone. If action levels requiring the use of Draeger tubes are reached, Draeger tube monitoring shall be performed every 15 minutes until PID concentrations fall below action levels.

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